
I hereby give notice that a hearing by commissioners will be held on:

Date: Monday, 7 December 2020
Time: 9.30AM
Meeting room: Boardroom
Venue: Ground Floor, Auckland Town Hall
301 Queen Street, Auckland

PRIVATE PLAN MODIFICATION 35
HEARING REPORT
FOSTER CRES, SNELLS BEACH
PRIME PROPERTY GROUP LTD

COMMISSIONERS

Chairperson Robert Scott
Commissioners Janine Bell
William Kapea

Prasta Rai
HEARINGS ADVISOR

Telephone: 021 527 196 or 09 352 2616
Email: prasta.rai@aucklandcouncil.govt.nz
Website: www.aucklandcouncil.govt.nz

Note: The reports contained within this document are for consideration and should not be construed as a decision of Council. Should commissioners require further information relating to any reports, please contact the hearings advisor.

WHAT HAPPENS AT A HEARING

At the start of the hearing, the Chairperson will introduce the commissioners and council staff and will briefly outline the procedure. The Chairperson may then call upon the parties present to introduce themselves to the panel. The Chairperson is addressed as Mr Chairman or Madam Chair.

Any party intending to give written or spoken evidence in Māori or speak in sign language should advise the hearings advisor at least five working days before the hearing so that a qualified interpreter can be provided.

Catering is not provided at the hearing. Please note that the hearing may be audio recorded.

Scheduling submitters to be heard

A timetable will be prepared approximately one week before the hearing for all submitters who have returned their hearing appearance form. Please note that during the course of the hearing changing circumstances may mean the proposed timetable is delayed or brought forward. Submitters wishing to be heard are requested to ensure they are available to attend the hearing and present their evidence when required. The hearings advisor will advise submitters of any changes to the timetable at the earliest possible opportunity.

The Hearing Procedure

The usual hearing procedure (as specified in the Resource Management Act) is:

- The applicant will be called upon to present his/her case. The applicant may be represented by legal counsel or consultants and may call witnesses in support of the application. After the applicant has presented his/her case, members of the hearing panel may ask questions to clarify the information presented.
- Submitters (for and against the application) are then called upon to speak. Submitters may also be represented by legal counsel or consultants and may call witnesses on their behalf. The hearing panel may then question each speaker. The council officer's report will identify any submissions received outside of the submission period. At the hearing, late submitters may be asked to address the panel on why their submission should be accepted. Late submitters can speak only if the hearing panel accepts the late submission.
- Should you wish to present written information (evidence) in support of your application or your submission please ensure you provide the number of copies indicated in the notification letter.
- Only members of the hearing panel can ask questions about submissions or evidence. Attendees may suggest questions for the panel to ask but it does not have to ask them. No cross-examination - either by the applicant or by those who have lodged submissions – is permitted at the hearing.
- After the applicant and submitters have presented their cases, the chairperson may call upon council officers to comment on any matters of fact or clarification.
- When those who have lodged submissions and wish to be heard have completed their presentations, the applicant or his/her representative has the right to summarise the application and reply to matters raised by submitters. Hearing panel members may further question the applicant at this stage.
- The chairperson then generally closes the hearing and the applicant, submitters and their representatives leave the room. The hearing panel will then deliberate "in committee" and make its decision by way of formal resolution. You will be informed in writing of the decision and the reasons for it.

A NOTIFIED PRIVATE PLAN MODIFICATION TO THE AUCKLAND UNITARY PLAN BY PRIME PROPERTY GROUP LTD

TABLE OF CONTENTS		PAGE NO.
Reporting officer's report		5 - 44
Appendix 1	Plan Change 35	45- 50
Appendix 2	Request including Section 32 report	51 – 554
Appendix 3	Submissions and further submissions	555- 570
Appendix 4	Recommended changes	571-574
Appendix 5	Council expert reviews	575 - 607

Reporting officer, David Wren

Reporting on an proposed private plan modification to rezone approx. 4.64ha of land at Lot 1 DP 149776 (which is located at the southern end of Foster Crescent) from Residential – Large Lot to Residential – Single House zone at Foster Cres, Snells Beach.

APPLICANT: PRIME PROPERTY GROUP LTD

SUBMITTERS:	
Page 557	Ron Goodwin
Page 558	Watercare Services Attn: Ilze Gotelli
Page 563	Ministry of Education Attn: Jess Rose
Page 567	Nigel Ross
Page 569	Hayley Gates



Hearing Report for Proposed Plan Change 35: Foster Crescent, Snells Beach to the Auckland Unitary Plan (Operative in part)

Section 42A Hearing Report under the Resource Management Act 1991

Report to: Hearing Commissioners

Hearing Date/s: To be confirmed

File No: S42A Hearing Report PPC 35

File Reference U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\PC035 - Foster Cres Snells Beach (Private)

Report Author David Wren – Consultant

Report Approvers Peter Vari – Team Leader Planning North, West and Islands

Report produced 23 October 2020

Summary of Proposed Plan Change 35: (Foster Crescent, Snells Beach)

Plan subject to change	Auckland Unitary Plan (Operative in part), 2016
Number and name of change	Proposed Plan Change 35 – (Snells Beach) to the Auckland Unitary Plan
Status of Plan	Operative in part
Type of change	Requested (private) proposed plan change.
Committee date of approval (or adoption) for notification	6 August 2019
Parts of the Auckland Unitary Plan affected by the proposed plan change	Planning Maps
Date draft proposed plan change was sent to iwi for feedback	6 August 2018
Date of notification of the proposed plan change and whether it was publicly notified or limited notified	24 October 2019 – Public notification
Plan development process used – collaborative, streamlined or normal	Normal
Submissions received (excluding withdrawals)	5 Submissions received
Date summary of submissions notified	5 December 2019
Number of further submissions received (numbers)	Nil
Legal Effect at Notification	No
Main issues or topics emerging from all submissions	Protection of wastewater network, safety of school pupils during construction, traffic safety and congestion, wastewater disposal, storm water and flooding, construction effects.

Contents

EXECUTIVE SUMMARY	3
1. BACKGROUND	5
2. EXISTING PLAN PROVISIONS	6
3. PROPOSED PLAN CHANGE PROVISIONS	7
4. HEARINGS AND DECISION MAKING CONSIDERATIONS	8
5. STATUTORY AND POLICY FRAMEWORK	9
6. ASSESSMENT OF EFFECTS ON THE ENVIRONMENT (FOR PRIVATE PLAN CHANGE REQUESTS)	21
7. CONSULTATION	30
8. NOTIFICATION AND SUBMISSIONS	32
9. CONCLUSIONS	37
10. RECOMMENDATIONS	38
11. SIGNATORIES	39

Abbreviations

Abbreviations in this report include:

Abbreviation	Meaning
PC35	Proposed Plan Change 35
RMA	Resource Management Act 1991
AUP	Auckland Unitary Plan

Attachments	
Appendix 1	Plan Change 35
Appendix 2	Request including Section 32 Report
Appendix 3	Submissions and Further Submissions
Appendix 4	Recommended Changes
Appendix 5	Council Expert Reviews

EXECUTIVE SUMMARY

1. The purpose of this requested plan change (PC35) is to rezone an area of land in Foster Crescent, Snells Beach from Residential - Large Lot Zone to Residential – Single House Zone. The land involved covers an area of 4.6384ha located at the end of Foster Crescent in Snells Beach. The land is currently vacant.
2. The normal plan change process set out in Schedule 1 of the Resource Management Act 1991 ('RMA'), was adhered to in developing PC35
3. PC35 was publicly notified on 24 October 2019 with the closing date for submissions on 22 November 2019. The summary of decisions requested was notified on 5 December 2019 with the closing date for further submissions on 19 December 2019.

4. A total of 5 submissions were received. There were no late submissions and there were no further submissions received.
5. In preparing for hearings on PC35, this hearing report has been prepared in accordance with section 42A of the RMA.
6. This report considered the issues raised by submissions on PC35. The discussion and draft recommendations in this report are intended to assist the Hearing Commissions, and those persons or organisations that lodged submissions on PC35. The recommendations contained within this report are not the decisions of the Hearing Commissioners.
7. This report also forms part of council's on-going obligations, which is, to consider the appropriateness of the proposed provisions, as well as the benefits and costs of any policies, rules or other methods, as well as the consideration of issues raised submissions on PC35.
8. A report in accordance with section 32 of the RMA has also been prepared by the applicant for this purpose and attached in Appendix 2. This 'Section 32 report' and associated documentation related to PC35, on the council's website should be considered in making decisions on PC35.
9. It is recommended that PC35 be approved subject to amendments.

1. BACKGROUND

1.1 Request

10. PC35 is a private requested plan change. The request was lodged on 04 March 2019 and seeks to rezone Lot 1 DP 149776 at Foster Crescent, Snells Beach (comprising 4.6384ha), from Residential - Large Lot zone to Residential - Single House zone (**SHZ**).
11. The applicant provided the following documentation in support of the request:
- Private plan change report with assessment of environmental effects
 - Section 32 analysis
 - Geotechnical report
 - Engineering Report
 - Soil Contamination PSI Report
 - Traffic Impact Assessment
 - Ecological assessment
 - Landscape assessment
 - Consultation report
 - Open Spaces and Community facilities report
 - Cultural impact assessment
 - Archaeological assessment.
12. The request seeks more intensive residential development on the subject site. The site is located on the edge of the traditional single house zone style development in Snells Beach and the request seeks that the site be able to be developed at a density similar to that existing to the east. The current zone is Residential - Large Lot Zone (**LLZ**) which provides for lower residential density (4,000m² per site), but the land is still located within the Rural Urban Boundary (RUB).
13. PC35 does not seek to change any of the objectives, policies or rules applying within the zone and it does not seek to change any of the Auckland wide rules that apply to the land.

1.2 Context

Existing Environment

14. The applicant provided a description of the site and surrounds. I visited the site on the 18 April 2019 and on 27 February 2020 and I concur with the applicant's assessment as set out in Section 4 of the request document. The land has an area of 4.6384ha with access to the end Foster Crescent via Te Whau Lane. The site slopes down from Te Whau Lane to the esplanade reserve that adjoins an inlet of the Mahurangi Harbour.
15. The land to the east is zoned SHZ while the land to the west, which is also accessed via Te Whau Lane is zoned LLZ. The land to the south, which is marginally higher and is accessed from Dawson Road, contains a reserve and the Snells Beach School.
16. The site is shown in Figure 1 below.



Figure 1

1.3 Clause 23 Request for Further Information

17. On 28 March 2019, prior to accepting PC35, I requested that the applicant provide further information in accordance with Clause 23 of the RMA. The purpose of the further information request was to enable council to better understand the effects of PC35 on the environment and the ways in which any adverse effects may be mitigated. The request included matters relating to landscape and traffic effects and some technical matters regarding the structure of the request.
18. The applicant responded to the request by providing an updated s32 report. The most up to date version is contained within **Appendix 2** to this report.

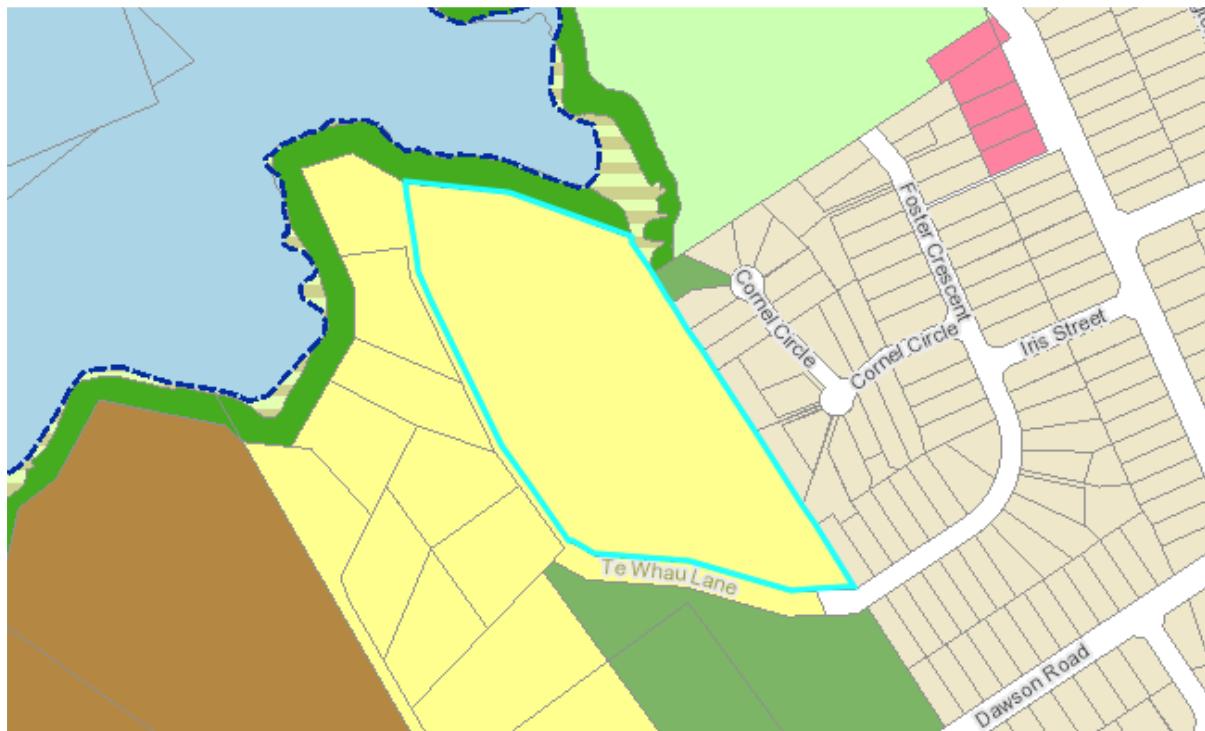
2. EXISTING PLAN PROVISIONS

19. The land that is subject to PC35 is currently zoned Residential Large Lot – Zone (**LLZ**). This zone provides for large lot residential development on the periphery of urban areas. Large lot development is managed to address one or more of the following factors:
 - It is in keeping with the area’s landscape qualities; or
 - The land is not suited to conventional residential subdivision because of the absence of reticulated services or there is limited accessibility to reticulated services;
 - There may be physical limitations to more intensive development such as servicing, topography, ground conditions, instability or natural hazards where more intensive development may cause or exacerbate adverse effects on the environment.

To manage existing or potential adverse effects, larger than standard site sizes are required and building coverage and impervious areas are restricted.

20. In general terms there is less provision for non-residential activities in the LLZ than in the Single House Zone (**SHZ**) and the yard and building coverage rules require greater areas of space between buildings. The minimum vacant site subdivision lot size is 4000m² compared to 600m² minimum lot size in the adjoining SHZ.
21. The existing provisions do not include any overlays or precinct provisions.
22. The current zoning of the site and its surrounds is depicted in Figure 2 below.

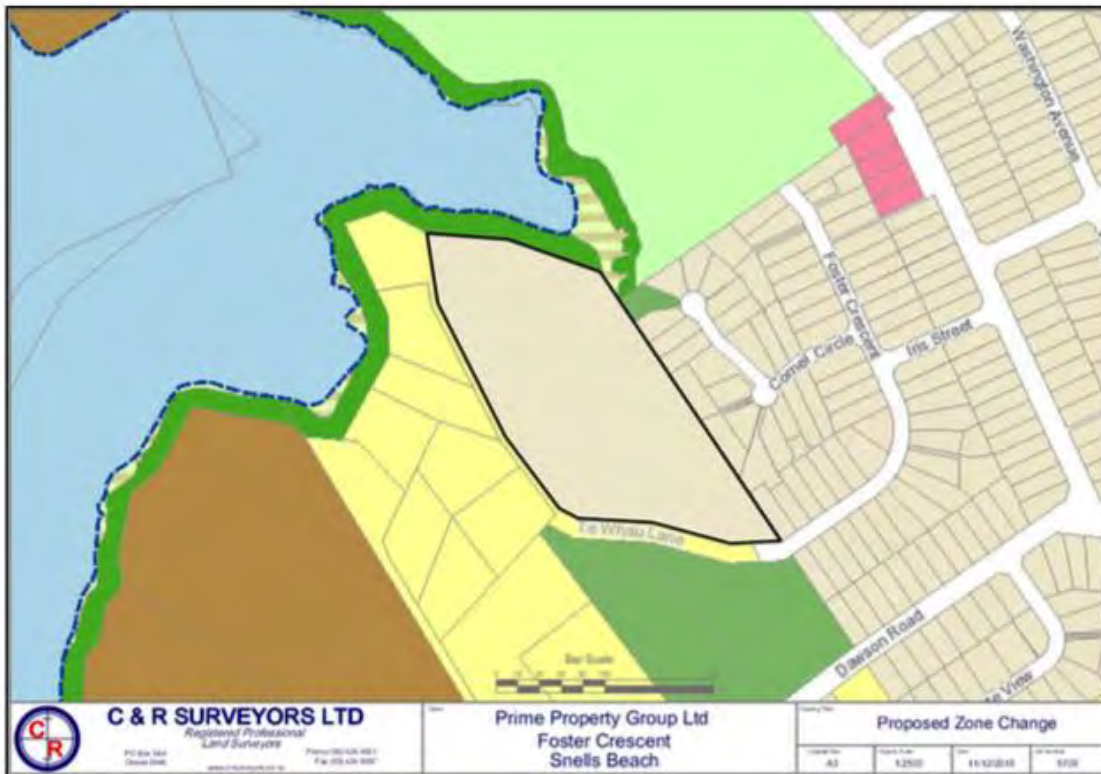
Figure 2 – Existing AUP(OP) zoning of the site and surrounds



3. PROPOSED PLAN CHANGE PROVISIONS

23. As noted above PC35 does not make any change to the text based provisions of the AUP(OP). PC35 proposes the SHZ zone for the land the subject of the plan change. It does not introduce any changes to any other layers within the planning maps.
24. The purpose of the SHZ is to maintain and enhance the amenity values of established residential neighbourhoods in a number of locations. The particular amenity values of a neighbourhood may be based on special character informed by the past, spacious sites with some large trees, coastal setting or other factors such as established neighbourhood character. To provide choice for future residents, SHZ zoning may also be applied in greenfield developments. To support the purpose of the zone, multi-unit development is not anticipated, with additional housing limited to the conversion of an existing dwelling into two dwellings and minor dwellings. The zone is generally characterised by one or two storey high buildings consistent with a suburban built character.
25. The proposed zoning is depicted on Figure 3.

Figure 3 – Proposed AUP(OP) zoning of PC35 site.



4. HEARINGS AND DECISION MAKING CONSIDERATIONS

26. Clause 8B (read together with Clause 29) of Schedule 1 of RMA requires that a local authority shall hold hearings into submissions on a proposed private plan change.
27. Hearings Commissioners have delegated authority to consider PC35 and determine council's decisions on the plan change and on submissions on PC35, under section 34 of the RMA. Hearing Commissioners will not be recommending a decision to the council, but will be issuing the decision directly.
28. This report summarises and discusses submissions received on PC35. It makes recommendations on whether to accept, in full or in part; or reject, in full or in part; each submission. This report also identifies what amendments, if any, can be made to address matters raised in submissions. Any conclusions or recommendations in this report are not binding to the Hearing Commissioners.
29. The Hearing Commissioners will consider all the information in submissions together with evidence presented at the hearing.
30. This report has been prepared by the following author(s) and draws on technical advice provided by the following technical experts:

Author(s)	David Wren – Planning Consultant
Healthy Waters/ Stormwater	Iresh Jayawardena
Parks and Reserves	Maylene Barret

	Ezra Barwell
Archaeology	Robert Brassey
Landscape	Peter Kensington
Traffic	Martin Peake
Geotechnical	Charlie Brightman

5. STATUTORY AND POLICY FRAMEWORK

31. Private plan change requests can be made to the Council under Clause 21 of Schedule 1 of the RMA. The provisions of the private plan change request must comply with the same mandatory requirements as council initiated plan changes. The private plan change request must contain an evaluation report in accordance with section 32 of the RMA (clause 22(1), Schedule 1, RMA).
32. PC35 is a private plan change request made to the Council by the applicant in accordance with Clause 21 of Schedule 1 of the RMA.
33. Further information was sought in accordance with clause 23 to Schedule 1 of the RMA, which is summarised in section 1.3 of this report.
34. PC35 was accepted by the Council in accordance with Clause 25(2)(b) of Schedule 1 of the RMA by Auckland Council's Planning Committee on 6 August 2019.
35. PC35 was publicly notified on 24 October 2019 with 5 submissions received by the Council. The summary of submissions was notified by the Council on 5 December 2019 and no further submissions were received.
36. The RMA requires territorial authorities to consider a number of statutory and policy matters when developing proposed plan changes. There are slightly different statutory considerations if the plan change affects a regional plan or district plan matter.

5.1. Resource Management Act 1991

37. The key directions of the RMA with regard to consideration of private plan changes are set out in the table and paragraphs below.

Table 1: Sections of the RMA relevant to private plan change decision making

Section	Matters
Part 2	Purpose and intent of the Act
Section 31	Outlines the functions of territorial authorities in giving effect to the Resource Management Act 1991.
Section 32	Requirements preparing and publishing evaluation reports. This section requires councils to consider the alternatives, costs and benefits of the proposal

Section 72	Sets out that the purpose of district plans is to assist territorial authorities to carry out their functions in order to achieve the purpose of the Act.
Section 73	Sets out Schedule 1 of the RMA as the process to prepare or change a district plan.
Section 74	Matters to be considered by a territorial authority when preparing a change to its district plan. This includes its functions under s31, Part 2 of the RMA. national policy statement, other regulations and other matters.
Section 75	Contents of district plans – sets out the requirements for district plan provisions , including what the district plan must give effects to, and what it must not be inconsistent with.
Schedule 1	Sets out the process for preparation and change of policy statements and plans by local authorities. It also sets out the process for private plan change applications.

38. The mandatory requirements for plan preparation are comprehensively summarised by Environment Court in *Long Bay-Okura Great Park Society Incorporated and Others v North Shore City Council* (Decision A078/2008) ¹, where the Court set out the following measures for evaluating objectives, policies, rules and other methods. This is outlined in Box 1.

Box 1

A. General requirements

1. *A district plan (change) should be designed to accord with, and assist the territorial authority to carry out its functions so as to achieve, the purpose of the Act.*
2. *When preparing its district plan (change) the territorial authority must give effect to any national policy statement or New Zealand Coastal Policy Statement.*
3. *When preparing its district plan (change) the territorial authority shall:*
 - (a) *have regard to any proposed regional policy statement;*
 - (b) *not be inconsistent with any operative regional policy statement.*
4. *In relation to regional plans:*
 - (a) *the district plan (change) must not be inconsistent with an operative regional plan for any matter specified in section 30(1) [or a water conservation order]; and*
 - (b) *must have regard to any proposed regional plan on any matter of regional significance etc.;*
5. *When preparing its district plan (change) the territorial authority must also:*
 - *have regard to any relevant management plans and strategies under other Acts, and to any relevant entry in the Historic Places Register and to various fisheries regulations; and to consistency with plans and proposed plans of adjacent territorial authorities;*
 - *take into account any relevant planning document recognised by an iwi authority; and*
 - *not have regard to trade competition;*
6. *The district plan (change) must be prepared in accordance with any regulation (there are none at present);*
7. *The formal requirement that a district plan (change) must also state its objectives, policies and the rules (if any) and may state other matters.*

¹ Subsequent cases have updated the Long Bay summary, including *Colonial Vineyard v Marlborough District Council* [2014] NZEnvC 55.

B. Objectives [the section 32 test for objectives]

8. Each proposed objective in a district plan (change) is to be evaluated by the extent to which it is the most appropriate way to achieve the purpose of the Act.

C. Policies and methods (including rules) [the section 32 test for policies and rules]

9. The policies are to implement the objectives, and the rules (if any) are to implement the policies;

10. Each proposed policy or method (including each rule) is to be examined, having regard to its efficiency and effectiveness, as to whether it is the most appropriate method for achieving the objectives of the district plan taking into account:

- (a) the benefits and costs of the proposed policies and methods (including rules); and
- (b) the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods.

D. Rules

11. In making a rule the territorial authority must have regard to the actual or potential effect of activities on the environment.

E. Other statutes:

12. Finally territorial authorities may be required to comply with other statutes. Within the Auckland Region they are subject to:

- the Hauraki Gulf Maritime Park Act 2000;
- the Local Government (Auckland) Amendment Act 2004.

5.2. National policy statements

39. Pursuant to Sections 74(1)(ea) and 75 RMA the relevant national policy statements (NPS) must be given effect to in the preparation of the proposed plan change and in considering submissions. There are 4 NPS of relevance to PC35, the National Policy Statement on Urban Development, the National Coastal Policy Statement, the Hauraki Gulf Marine Park Act (which should be treated as an NPS) and the National Policy Statement on Freshwater Management.

5.2.1 National Policy Statement on Urban Development (NPSUD)

40. The NPSUD 2020 came into effect on 20 August 2020. It sets out the objectives and polices concerning urban environments. The objectives are;

Objective 1: *New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.*

Objective 2: *Planning decisions improve housing affordability by supporting competitive land and development markets.*

Objective 3: *Regional policy statements and district plans enable more people to live in, and more businesses and community services to be located in, areas of an urban environment in which one or more of the following apply:*

- a) *the area is in or near a centre zone or other area with many employment opportunities*
- b) *the area is well-serviced by existing or planned public transport*

- c) *there is high demand for housing or for business land in the area, relative to other areas within the urban environment.*

Objective 4: *New Zealand's urban environments, including their amenity values, develop and change over time in response to the diverse and changing needs of people, communities, and future generations.*

Objective 5: *Planning decisions relating to urban environments, and FDSs, take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).*

Objective 6: *Local authority decisions on urban development that affect urban environments are:*

- a) *integrated with infrastructure planning and funding decisions; and strategic over the medium term and long term; and*
b) *responsive, particularly in relation to proposals that would supply significant development capacity.*

Objective 7: *Local authorities have robust and frequently updated information about their urban environments and use it to inform planning decisions.*

Objective 8: *New Zealand's urban environments: support reductions in greenhouse gas emissions; and are resilient to the current and future effects of climate change.*

41. The applicant's request did not address this NPS as it came into force after the request was made and the plan change notified.

Comment

42. It is my assessment that while PC35 does not directly implement the NPSUD it is not inconsistent with the NPS as it generally provided for increased urban development opportunities within a location convenient to a small centre and public transport. I consider that the proposal is not located so as to trigger some of the explicit height rules set out in the NPS.

5.2.2 New Zealand Coastal Policy Statement (NZCPS)

43. The applicant has considered the NZCPS in section 6.1.2 of the request document. This acknowledges that the site has a coastal context and as such the NZCPS is relevant. The applicant states that PC35 is considered to give effects to the NZCPS for the following reasons;
- The rezoning will increase the density of the existing residential zone thereby consolidating the existing coastal settlement (Policy 6(1)(c));
 - The rezoning will result in development that maintains the character of the existing built environment (Policy 6(1)(f));
 - The visual impacts of development will be minimal as the site is discretely located in a shallow gully, not on a sensitive coastal location (Policy 6(1)(h));
 - The site is set back from the coastal marine area by the existing Te Whau River walkway. (Policy 6(1)(i)).

Comment

44. I largely agree with this assessment. I would also consider that PC is likely to be consistent with other aspects of the NZCPS such as follows;

- Policy 4 – Integration – the existing esplanade reserve located between the site and the coastal marine area provides for separation between the site and the coast to the extent that specific integration actions are less necessary than if the reserve was not there.
- Policy 7 – PC35 does not impact on strategic planning as it is not introducing a new land use (i.e. the land is already zoned for urban development).
- Policy 13 and 15 – the land has not been identified as an area of high natural character.
- Policy 18 – Public open space Policy 19 – Walking access. PC35 does not impact on the existing public open space in the esplanade reserve and potentially provides greater opportunity to provide new connections to that open space through subsequent subdivision of the land.

45. Overall I consider that PC35 is consistent with the NZCPS.

5.2.3 Hauraki Gulf Marine Park Act

46. The applicant's assessment notes that the purpose of the Act is to establish the Marine Park and Forum and to:

- Establish objectives and integrate the management of the natural, historic and physical resources of the Hauraki Gulf, its islands and catchments; and
- Recognise the historic, traditional, cultural and spiritual relationship of the tangata whenua with the Hauraki Gulf and its island;

47. The applicant considers that this has been achieved through the consultation undertaken by the applicant in the preparation of PC35 and addition, potential effects on the ecological health of the Gulf through sedimentation will be appropriately addressed at the subdivision stage through conditions of consent.

Comment

48. I consider that PC35 addresses these concerns as set in the request document.

5.2.4 National Policy Statement on Freshwater Management 2020

49. The National Policy Statement for Freshwater Management 2020 includes a fundamental concept – Te Mana o te Wai. This refers to the fundamental importance of water and recognising that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between water, the wider environment, and the community.

50. The objective of the NPS is to ensure that natural and physical resources are managed in a way that prioritises;

- a) First, the health and well being of water bodies and freshwater ecosystems
- b) Second, the health needs of people (such as drinking water)
- c) Third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

Comment

51. The application is proposing to restore a wetland and stream on the site as part of the development of the site. This restoration relies in part on a proposed subdivision layout that is not part of the plan change. The restoration proposed is therefore not part of PC35.

However the applicant has demonstrated that the NPS can be generally complied with through such restoration.

52. I consider that the subdivision provisions of the AUP are sufficient to manage these effects. For example the stream and wetland areas must be identified on any subdivision plan (Rule E38.6.6) and the objectives and policies of the Subdivision Chapter require the protection of natural streams (Objective E38.2.8 and Policy E38.3.22.).

5.3. National environmental standards or regulations

53. Under section 44A of the RMA, local authorities must observe national environmental standards in its district/ region. No rule or provision may duplicate or in conflict with a national environmental standard or regulation.
54. The applicant has assessed PC35 in general terms against the provisions of the National Environmental Standards for Air Quality (NESAQ), National Environmental Standard for Sources of Drinking Water (NESSDW) and the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCO). The applicant has concluded that there are adequate provisions within the AUP:OP to manage any effects on air quality and drinking water resulting from the development of the site. The application also contains a Preliminary Investigation Report relating to soil contamination. This has concluded that it is unlikely that a HAIL (Hazardous activities and industries list) activity has occurred on the site and therefore the NESCO does not apply.
55. The site is also subject to the NES for Freshwater which came into force on 3 September 2020.

Comment

56. I agree that the proposed development of the site will be adequately controlled by the AUP so that air and water quality effects will be suitably managed as are all other urban land development sites. I also accept the findings of the soil contamination report. If during the subdivision and development process soil contamination is found the provisions of the NES will apply regardless.
57. While the eventual development of the land may require a resource consent under the NES Freshwater if the stream and wetlands are modified, that will be a matter considered at the time of any subdivision consent.
58. Accordingly I consider that PC35 is not in conflict with the relevant national environmental standards.

5.4. Auckland Unitary Plan Regional Policy Statement.

59. Section 75(3)(c) of the RMA requires that a district plan must give effect to any regional policy statement.
60. The aspects of the Regional Policy Statement relevant to PC35 include:
- B2. Urban Growth and Form
 - B3. Infrastructure, transport and energy
 - B7. Natural resources
 - B8. Coastal environment
 - B10. Environmental risk

B2 Urban Growth and Form

61. Chapter B2 promotes a compact urban form and requires that sufficient land supply is provided to accommodate urban growth. In respect of this site the Objective B2.2.1 is “urbanisation is contained within the Rural Urban Boundary, towns and rural and coastal towns and villages”.
62. The applicant’s request states that PC35 is consistent with the Chapter B2 Objectives and Policies for the following reasons
- *Rezoning this site represents a quality compact urban form due to the higher density, and better use of existing infrastructure (Objective B2.2.1(1));*
 - *It is urbanisation within a coastal town (Objective B2.2.1(4)), that includes the provision of appropriate infrastructure (Objective B2.2.1(5));*
 - *The residential intensification is located in and around a local centre, and is close to social, educational and healthcare facilities, and open spaces (Policy B2.2.2(5), Objective B2.4.1(3), and Policy B2.4.2(2));*
 - *The proposed residential area will be in keeping with the built character of the existing area due to the similar density between the existing residential area and the density provided for under the Single House zone (Objective B2.4.1(2));*
 - *It is a medium residential intensity that is in close proximity to the Snells Beach shopping centre, public transport and social facilities like the Mahurangi East Library and the Mahurangi Community Centre (Policy B2.4.2(3));*
 - *The current lower residential intensity zoning of the subject site is not considered an efficient use of the land because: the site is close to Snells Beach centre; it is not subject to high environmental constraints or significant natural hazard risks; there are no natural or physical resources scheduled in the AUP; the site can be serviced by existing infrastructure, and; there are no existing incompatible activities that would result in reverse sensitivity effects (Policy B2.4.2(4) and (5));*
 - *There will be the creation of reserves as indicated on the engineering plans, increased public access, and a degraded wetland will be restored (Policy B2.6.2(2)); and*
 - *Public access to the coastline will be enhanced through linkages to the coastal walkway (Objective B2.7.1(2)).*

Comment

63. I consider that much of these claimed benefits will likely result from PC35 acting in concert with existing AOP:OP provisions. The site is located within the bounds of the township and does represent a more compact urban form than the current large lot zoning. The main issue I see in respect of this chapter is determining the appropriate location of the boundary between the large lot zone and the single house zone. There are several locational advantages in my view to shifting the boundary as proposed in PC35. Firstly it will provide for more children to be located in close walking proximity to the Snells Beach School. Secondly it matches up the western extent of the SHZ on both the north and south sides of Dawson Road. Thirdly while I do not agree that the site is located next to the Snells Beach town centre, the reserve area to the north of the site provides very good pedestrian access from this area to the centre and its development as a SHZ site will facilitate better pedestrian access from the school and Dawson Road to the centre.

B7 Natural resources

64. The issues identified in this chapter relate to the combination of urban growth and past land, coastal and freshwater management practices that have placed increasing pressure on land and water resources including habitats and biodiversity.

65. The applicant's request states that PC35 will give effect to this chapter of the RPS for the following reasons:

- *There are no areas of significant indigenous biodiversity value on the subject site, as identified in the Ecological Assessment (Objective B7.2.1(1), Policy B7.2.2(1));*
- *Through the subdivision process, it is proposed to restore a degraded wetland and section of permanent stream on the site (Objectives B7.2.1(2) and B7.3.1(1), Policy B7.3.2(3));*
- *Water supply, storm water and wastewater infrastructure are adequately provided for (Policies B7.3.2(1) and B7.4.2(1)(a));*
- *The proposed change in residential density will have no effects on the coastal waters as there is an existing 20-metre-wide (approx.) coastal esplanade reserve between the site and the Harbour which will act as a buffer. In addition, subdivision conditions will manage any effects from sedimentation (Objective B7.4.1(5), Policy B7.4.2(8));*
- *Mana Whenua have been consulted on the Plan Change and no cultural concerns have been identified that would not otherwise be addressed (Objective B7.4.1(6)); and*
- *There will be no effects from wastewater discharges as the site can be fully serviced by connecting to the existing reticulated wastewater (Policy B7.4.2(10)).*

Comment

66. I largely agree that given the provisions of the AUP:OP that will manage the on-going development and use of the land, PC35 is likely to give effect to this part of the RPS. One concern relates to the effect of more intensive development on the Mahurangi Harbour. The harbour has been identified in Chapter B7 as a degraded area in Fig B7.4.2.1. Policy B7.4.2(6) is "Progressively improve water quality in areas identified as having degraded water quality through managing subdivision, use, development and discharges".

67. The advice from the Council Healthy Waters section as discussed below in section 6.6 is that these matters can be adequately managed at subdivision stage if the appropriate infrastructure is installed.

B8 Coastal Environment

68. Chapter B8 Coastal Environment states that subdivision, use and development in the coastal environment needs to be an appropriate location and of an appropriate form.

69. The application states that PC 35 gives effect to this for the following reasons:

- *It is not located in a coastal area identified as having outstanding or high natural character (Objective B8.2.1(1));*
- *The character of the coastal environment will not be affected as there is a minimum of 5 metre (approx.) difference in elevation between the coastal marine area and the building platforms on the propose lots along the coastal edge of the site. In addition, the vegetation along the coastal walkway screens the site from the coastal environment. The elevation and the vegetation combined will reduce any potential effects on the character of the coastal environment (Objective B8.2.1(2), Policy B8.2.2(4));*
- *The site is considered to be located in an appropriate place as it is a shallow discrete gully, and it is an area already identified for residential use (Objective B8.3.1(1), Policy B8.3.2(2)); and*
- *Public access to the coastal marine area will be enhanced through linkages provided at the subdivision stage (Objective B8.4.1(1), Policy B8.4.2(1)).*

Comment

70. I agree that the development that will be allowed by PC35 is appropriate given the particular topographical and locational characteristics of the site as set out in the request. I consider that the site is not visually obvious from the CMA. The existing esplanade reserve, the planting on the reserve and the higher elevation of the subject land is such that the development is well screened and will not impact on the coastal environment. I also agree that the potential for greater subdivision of the land will act to enable improved pedestrian linkages to the CMA.

B10 Environmental Risk

71. The applicant's request suggests that the issues of relevance from Chapter B10 are natural hazards and climate change. I agree that these are the relevant issues. In respect of these issues the request states that PC35 is consistent with objectives and policies related to natural and climate change for the following reasons.

- *The subdivision, use and development of this site will not create new risks to people, property or infrastructure because the site is set back from the coastal environment by the Te Whau River walkway. There is a minimum of 5 metre difference in elevation between the Mean High Water Springs (MHWS) and the buildable areas on the proposed lots along the northern boundary of the site (refer **Appendix 3**, Sheet 1 of LDE Engineering Drawings). This is considered sufficient for sea level rise, given the allowance of 1 metre is used for the purpose of local government planning (MfE publication Coastal Hazard and Climate Change Guide for Local Government, December 2017, Chapter 5, section 5.7). In addition, the subject site is located in the upper reaches of the Mahurangi Harbour, which is a low energy wave environment. Therefore, the potential effects from future sea rise are likely to be less pronounced (Objective B10.2.1(3)).*
- *The conveyance function of overland flow paths will be maintained (Objective B10.2.1(6)).*

Comment

72. Given that the site is clear of predicted sea level rise and that the site is already zoned for urban purposes and that existing overland flows (see section 6.6 below) can be managed I consider that the proposed change in zone is consistent Chapter B10.

5.5. Auckland Unitary Plan District Plan

73. The applicant has provided an assessment against the objectives and policies of the AUP(OP) district plan in terms of the currently applying Residential - Large Lot Zone and the proposed Residential- Single House Zone. The assessment of these concluded that:

- *The factors describing why Large Lot residential is provided for, rather than conventional residential development, when applied to the subject site supports the re-zoning of the site.*
- *Residential – Single House zoning is considered to be more appropriate for the site because it will enable an efficient use of the land resource that is in keeping with the established character of the residential areas to the east of the site.*

Comment

74. I consider that the majority of the reasons given by the applicant to suggest that the Residential Large Lot zoning is inappropriate are valid. The land is able to be serviced, is

in keeping with the neighbouring landscape values and most physical limitations appear to be able to managed. I do have some concerns about increased sediment discharges on water quality in the Mahurangi Harbour, however I agree that there are mechanisms within the AUP aimed at managing this as detailed in the Healthy Waters assessment below.

75. In respect of the appropriateness of the Residential Single House zone I agree that it will enable a more efficient use of the land resource and that it is keeping with the established character of the residential area to the east of the site.

5.6. Auckland Plan

76. Section 74(2)(b)(i) of the RMA requires that a territorial authority must have regard to plans and strategies prepared under other Acts when considering a plan change.

77. The Auckland Plan 2050 prepared under section 79 of the Local Government (Auckland Council) Act 2009, is a relevant strategy document that council should have regard to when considering PC35.

78. The Auckland Plan contains the following directions and focus areas that are of particular relevance to PC35:

- Direction 1: Develop a quality compact urban form to accommodate Auckland's growth;

79. The Development Strategy that sits within this notes in respect of quality;

- Most development will occur in areas that are easily accessible by public transport, walking and cycling;
- Most development is within reasonable walking distance of services and facilities including centres, community facilities, employment opportunities and open space;
- Future development maximises efficient use of land;
- Delivery of necessary infrastructure is coordinated to support growth in the right place at the right time.

80. It also explains that compact means that:

- Future development will be focused within Auckland's urban footprint, with most of that growth occurring in existing urban areas;
- By 2050, most growth will have occurred within this urban footprint, limiting both expansion into the rural hinterland and rural land fragmentation.

81. I consider that PC35 is consistent with this strategy. There are some issues (discussed later in 6.4) in respect of accessing public transport but otherwise the site is located in reasonable walking distance of other facilities and open spaces, is located within the existing urban area and is an efficient use of the land.

5.7. Any relevant management plans and strategies prepared under any other Act

82. Other relevant plans and strategies to be considered under Section 74(2)(b)(i) and of relevance to PC35 are summarised below.

- The Long-Term Plan 2018-2028 sets out Council's budget over the 2018-2028 period and identifies key projects to be delivered. These include planned transport improvements such as the Matakana Road Link (and the allied but not Council northern motorway extension to Warkworth), upgrade of the Snells Beach water

supply systems and waste water systems. The rezoning of this land is largely supported by the transport and other infrastructure improvements provided for in the Long-Term Plan.

83. I consider that the Regional Public Transport Strategy 2018 is not particularly relevant to the consideration of this plan change as there is little public transport change proposed in the Snells Beach area.

5.8. Other Plans and Reports (Non-statutory)

84. The applicant has identified the following plans and reports as relevant.

Open Space and Community Facilities

85. The application has identified the following plans as being relevant:

- Open Space Provision Policy 2016
- Rodney Greenways paths and Trails Plan: Puhoi to Pakiri 2017; and
- Community Facilities Network and Action Plan.

86. The applicant has identified that these plans have been taken into account in the preparation of PC35. Overall the Council's Park Planning Specialist notes that the site is well served with regards to existing walkway networks and open space provision/community facilities. It will be important to ensure that the proposal makes good use of these existing facilities and provides good connections to ensure connectivity and good CPTED outcomes.

Sandspit- Snells Beach – Algies Bay Structure Plan 1999 (SSASP)

87. The applicant notes that the previous low intensity zone under the Rodney District Plan 2000 was consistent with the Sandspit – Snells Beach – Algies Bay Structure Plan 1999 for similar reasons that apply to the current zoning. The reasons given for the change between the existing zone and the proposed zone as set out in paragraph 70 above also apply to this structure plan.

88. I consider that the SSASP is now less relevant than the AUP:OP and that the reasons within the SSASP for a low intensity zone are also likely to be less relevant currently.

Rodney Greenways Paths and Trails Plan: Puhoi to Pakiri 2017

89. The Greenways Plan 2017 aims to provide cycling and walking connections which are safe and pleasant while also improving ecology and access to recreational opportunities. The plan identifies a network of priority routes around the site ; through the Goodall Reserve, connecting with the coastal walkway to the boat ramp at Dawson Road and back through the reserve adjacent to the Snell Beach School.

90. There is potential through development subsequent to provide additional linkages both through the site and between the site and the existing network.

91. Overall I consider that PC35 is consistent with this plan.

Rodney Local Board Plan 2017

92. The Rodney Local Board Plan was completed in 2017. It includes five outcomes to guide council and the community's work to make Rodney a better community for all. The site

the subject of PC35 is located within the Rodney Local Board area. Two outcomes within the Plan are relevant to the consideration of PC35. Firstly the proposal does not impact on Outcome 1 – We can get around easily and safely. Secondly the storm water and wastewater upgrades recently made will ensure that PC35 is consistent with Outcome 4 – Our harbours, waterways and environment are cared for, protected and healthy.

5.9. Section 32 evaluation.

93. Section 74 of the RMA requires that a plan change must have particular regard to an evaluation report prepared in accordance with Section 32 of the RMA.
94. Section 32 of the RMA requires an evaluation report examining the extent to which the objectives of the plan change are the most appropriate way to achieve the purpose of the Act. Section 32 also requires the report to examine whether the provisions are the most appropriate way of achieving the objectives.
95. The applicant has prepared an assessment against Section 32 (noting that PC35 contains no objectives) in section 10 of the application documents. Some key observations are:
96. While no new objectives are proposed as part of PC35 the report concludes that the plan change will achieve the objectives of the SHZ which are to seek to ensure development is on keeping with the residential amenity values and character values of the area.
97. The application considers that PC35 is consistent with section 5 as urban development remains and the existing AUP provisions will ensure adequate protection of natural resources including the Mahurangi Harbour.
98. PC 35 does not compromise relevant matters of national importance including the provision of public access to the coastal marine area, responds to matters of importance to Mana Whenua, does not impact on any historic heritage and will not involve significant risks from natural hazards. Similarly PC35 is consistent with s7 as the proposed zoning provides for more efficient use of the land and the SHZ provisions provide for a high quality built environment.
99. PC35 will not offend against the principles of the Treaty of Waitangi.
100. The application has assessed a number of options for achieving the objectives including:
 - Option 1 – do nothing – retain existing zoning;
 - Option 2 – Re-zone half the land to SHZ;
 - Option 3 – Seek a resource consent for a similar development;
 - Option 4 – Re-zone all of the PC35 land to SHZ (Preferred Option).
101. The application concluded that the preferred option is the most efficient and effective option and gives effect to the RPS particularly in relation to urban growth. It also notes that the site has linkages to and is in easy walking distance to educational, social, health and commercial facilities and natural resources such as parks and the coastal walkway. The site is adjacent to existing residential areas and is a logical extension. Within the site, the potential effects of development can be appropriately managed through the application of the standard zone and Auckland-wide rules, and that the land can be adequately serviced.

102. I consider that the Section 32 evaluation report provided by the applicant and the on-going evaluation provided in this report go some way to justifying PC35. It is also necessary in my view to assess the potential effects on the environment of PC35.

6. ASSESSMENT OF EFFECTS ON THE ENVIRONMENT (FOR PRIVATE PLAN CHANGE REQUESTS)

103. Clause 22 of Schedule 1 to the RMA requires private plan changes to include an assessment of environmental effects that are anticipated by the Plan Change, taking into account the Fourth Schedule of the RMA.

104. An assessment of actual and potential effects on the environment (“AEE”) is included in the Section 32 Evaluation Report. The submitted Plan Change request identifies and evaluates the following actual and potential effects:

- Urban form
- Open space and community facilities
- Landscape values and amenity
- Transport
- Ecology
- Flooding, storm water management, wastewater and water servicing
- Coastal inundation
- Earthworks
- Archaeology
- Land contamination
- Geotechnical
- Positive effects

105. A review of the AEE, including its supporting documents is provided below.

6.1. Urban Form

Applicant's Assessment

106. The applicant's assessment supports the proposed urban form for the following reasons;

- There is continuity with the residential area to the east;
- The proposal reflects the topography of the site;
- The site is framed by open space;
- There is a close connection to the Snells Beach School;
- The site is visually separated from the Mahurangi Harbour;
- There is potential for pedestrian connections to the Goodall Reserve.

Peer Review

107. The applicant's landscape assessment has been reviewed by Peter Kensington (Landscape Architect) on behalf of the Council. Mr Kensington's review is in Appendix 5. Mr Kensington notes that he largely agrees with these conclusions in the applicant's supporting documents.

Comments

108. I largely agree this assessment. The urban form that will be provided by PC35 is largely in keeping with that developed in the Foster Crescent area and the framework of open space linkages already provided to the north and south of the site will visually isolate the new residential development from the estuary, while providing appropriate pedestrian linkages.

6.2. Open Space and Community Facilities

Applicant's assessment

109. The applicant's assessment is that due to the small scale of PC35 and the confined nature of the location, the existing community facility infrastructure is sufficient to support the potential population increase. It also notes that the land is in close proximity to significant open space and that there are good linkages between the site and that open space.

Peer Review

110. PC35 has been reviewed by Maylene Barrett, Principal Specialist Parks Planning and Ezra Barwell, Senior Policy Advisor Community Investment (Appendix 5). Mr Barwell has advised that the Parks and Recreation Policy Team have no comments on PC35 or the submissions. Ms Barrett notes that the proposed development site is well served with regards to existing walkways and open space/ community facilities.

111. Ms Barrett notes some concerns with some specific aspects of lots layout within the potential subdivision plan that the applicant has prepared.

Comments

112. I agree with the general conclusions in the applicant's assessment. The site is well contained and in close proximity to existing parks and open space and there would be little benefit in providing additional open space within the site. It will however be important that pedestrian linkages are provided between the future development and the existing reserve network. I note that any future subdivision will be subject to Policy E38.3(18)(c) which requires subdivision to provide for the recreation and amenity needs of residents by providing for pedestrian and/or cycle linkages.

113. With respect to Ms Barrett's detailed comments I note that the subdivision plan is not part of PC34 and the actual layout of lots and connections to the esplanade reserve will be determined at the time of subdivision of the land should the plan change be approved. I consider that these the subdivision provisions of the AUP:OP are sufficient to resolve these matters at the time of subdivision or development and it is not practicable or necessary to address these at AUP level.

114. Based on this directive policy I consider that such linkages will be provided in any future subdivision of the land. According I consider that PC provides sufficiently for the open space and community facility needs of future residents.

6.3. Landscape Values and Amenity

Applicant's assessment

115. In respect of landscape values the applicant's landscape assessment notes that:

In landscape terms, the proposal is a predicable and logical fit within that pattern and its wider impact is considerably constrained by the topographic characteristics of the land (as distinct, for example, from the level of landscape impact that may arise if the Site had instead sat across a ridge or spur in a more isolated setting).

Adverse landscape, visual and natural character effects have been assessed as being largely at the lower end of the scale , and less than moderate-low, with higher (moderate through to high) effects being restricted to those occupying a small number of immediately adjacent properties where the land use change will be most directly experienced.

116. In respect of character and amenity effects the applicant notes that consideration of visual amenity effects is framed around the difference between the site being developed into SHZ residential use (approximately 50 lots) and LLZ residential use (approximately 11 lots). The report states that PC addresses these issues as follows;
- As the new development will be similar to existing development to the east, those effected will experience a residential character similar to their own.
 - The properties on Te Whau lane already provide an appropriate transition to the rural land to the west.
 - While there will be a change in character this will be adequately addressed at subdivision stage.
 - The SHZ standards will provide adequately for the amenity of neighbours.
 - There will be private covenants to provide additional separation to the existing large lot development in Te Whau lane.

Peer Review

117. The applicant's landscape assessment has been reviewed by Peter Kensington (Landscape Architect) on behalf of the Council. Mr Kensington's review is in Appendix 5. Mr Kensington notes that while he agrees with much of the applicant's evaluation he does note that he does not agree that:
- *... This Plan Change application is to address the use of the land, and any potential visual and/or amenity effects will be dealt with at subdivision stage.*
 - *The site size of the Single House zone and the development controls that apply, including height in relation to boundary, maximum building coverage and minimum landscaped area for example, will ensure that potential privacy and dominance effects to neighbours will be effectively managed*

118. Mr Kensington has some concerns that the AUP provisions will not fully provide for or require appropriate amenity outcomes at subdivision stage, particularly as neighbours have limited ability at that stage to influence development outcomes and would prefer a landscape design lead approach to the development of the land. He does however acknowledge that the Council has limited scope to include bespoke provisions within the plan change.

Comments

119. While I acknowledge that there will be change in character and amenity as a result of PC35, the overall landscape effects are considered acceptable taken on a broad scale. There will be some change in effects on immediate neighbours who under the current zoning have the potential benefit of outlooks over the more open environment of the Large Lot Zone. However the change in potential amenity values will result in an environment similar to that existing for all other residents in the Foster Crescent area and this is not a

low level of amenity and is consistent with the amenity provided for in the SHZ. I agree with Mr Kensington that the form of the AUP:OP is not to provide specific bespoke provisions for small areas of land and in any case PC35 does not include any such provisions.

120. I have also reviewed the subdivision provisions in the plan, and while subdivision is not landscape lead, there are a number of specific objectives and policies (i.e. Objective E38.2.(8) and Policies E38.3(3) and (14) that ensure that landscape and amenity matters are considered in the design of subdivision.
121. Overall I have concluded that PC35 will have acceptable landscape and visual amenity effects.

6.4. Transport

Applicant's assessment

122. The applicant has prepared a Traffic Impact Assessment (TIA) for PC35. The assessment concluded that the predicted increase in traffic movements associated with PC35 is not expected to generate a notable concern with respect to delay or queuing or delay on Foster Crescent and Iris Street, nor at the intersection of Iris Street and Mahurangi East Road. In addition, the local road network within the PC35 area can be designed to be well connected and appropriately provide for all modes.

Peer Review

123. The applicant's TIA has been reviewed by Martin Peake of Progressive Transport Solutions Ltd for the Council (Appendix 5). The peer review examines the plan change as well as a potential internal site layout that was initially proposed by the applicant. This is not assessed as part of this report as it is not part of PC35 and alternative subdivision patterns could be developed in the future.
124. Mr Peake considers that the traffic effects of the proposed development can be appropriately addressed provided that:
- The roads within the subject site are designed to promote speeds less than 30km/hr;
 - The roads within the site and interface between Foster Crescent and the new site roads are designed to enable vehicles on Foster Crescent (such as drop-off and pick-up for the school) to be able to exit the area safely.

125. Mr Peake also notes that the site is not readily accessible to public transport.

Comments

126. While there are some issues with the interface between the end of Foster Crescent and the new road these can likely be resolved at subdivision stage. The traffic effects on the rezoning are considered acceptable, however a number of details will have to be worked out at the subdivision resource consent stage. I have reviewed the relevant objectives and policies of the subdivision chapter which will guide decision makers at subdivision time are in my view sufficient to ensure a safe and pedestrian friendly street layout.

6.5. Ecology

Applicant's Assessment

127. The applicant has taken an ecological assessment that addresses terrestrial ecology and freshwater ecology. This assessment and the applicant's overall assessment is:

In relation to ecology, the assessment makes the following conclusions and recommendations:

- *The permanent section of Watercourse 1 as well as the wetland and its associated boggy areas and ephemeral reaches is considered to have the highest current ecological value and the highest potential ecological value. Through the design process these areas of highest ecological value should be retained;* [L] [SEP]
- *The proposed Plan Change provides for the reclamation of: the ephemeral reaches associated Watercourses 1-3; the short permanent section of Watercourse 2 (10m); and the artificial stock pond and the boggy area associated with Watercourse 3. All of these areas are considered to have a low or very low current ecological value. In addition, these areas are also considered to have low ecological potential due to their relatively small catchments, lack of aquatic habitat, and lack of upstream connectivity. Consequently, the adverse aquatic ecological effects of the proposed development are considered minor;* [L] [SEP]
- *Due to the very low terrestrial ecological value of the site the adverse terrestrial ecological effects of the proposed development are considered minor;* [L] [SEP]
- *It is recommended that the permanent section of Watercourse 1 (downstream of the culvert) as well as the wetland and its associated boggy areas are enhanced through restoration planting and protected through a covenant. There should also be a requirement for a Weed Management and Planting Plan prior to earthworks commencing; and* [L] [SEP]
- *The recommended enhancement would entail the restoration of approximately 40m of permanent watercourse and 110m² of wetland habitat, including the retention of the t tara.*

Overall the proposed development would constitute a net biodiversity gain. [L] [SEP] The areas recommended for enhancement are all located within an indicative reserve of the subdivision. Based on the ecological assessment, the recommended enhancements to the wetland area and the watercourses can be addressed through the resource consent process. [L] [SEP] To facilitate an urban development of the land some filling of ephemeral watercourses, 10m of a permanent watercourse, an artificial stock pond, and a boggy area will be required. The effects of any required filling and the adequacy of the mitigation proposed would be considered as part of the resource consent process under the standard AUP provisions. [L] [SEP]

The National Policy Statement for Freshwater Management 2011 (NPSFM) sets a national policy framework for managing freshwater quality and quantity. Objective A2 seeks that the overall quality of fresh water is maintained or improved. Given the proposed restoration of the wetland and stream on the site, this proposal is [L] [SEP] considered to be consistent with the NPS on Freshwater Management. The wetland and stream restoration will be assessed against the Auckland Unitary Plan provisions through the subdivision application.

On the basis of the above, it is considered that the potential effects of the rezoning Plan Change on the ecological values of the environment related to terrestrial and freshwater ecology will be minor, due to the low ecological values currently on the site. In addition, the proposed development will have a positive ecological effect taking into account the recommended restoration of the wetland and permanent watercourse within indicative reserves.

Comments

128. While I have not received any feedback from the Council's specialists, it is my view based on the information provided by the applicant that the proposed plan change will have little effect on the ecology of the land proposed to be rezoned. There are however aspects of the potential urbanisation of the land (including on the existing water on site) that will have to be addressed at subdivision stage. I consider that the AUP is sufficiently equipped through the subdivision provisions to address these matters at that time and that the limited ecological values of the site can be adequately protected.

6.6. Flooding, stormwater management, wastewater and water servicing

Applicant's assessment

129. The applicant provided an engineering report in Appendix 3 of its assessment that addressed these matters.

130. In respect of flooding the assessment notes that the site is not within a flood plain and there is no substantial risk of flooding or inundation of adjoining properties as a result of the additional impervious surfaces on the site.

131. In respect of storm water the assessment notes that the eventual subdivision will be guided by the standard quality rules in Chapter E8 Stormwater Discharge and Diversion of the AUP. The applicant proposes to use storm filters for the treatment of storm water runoff from both road areas and residential areas. The report considers that no further treatment is necessary. The report also considers that no storm water flow attenuation is required as runoff is discharged directly into the Mahurangi Harbour. Overall the report considers that storm water can be managed on site and that effects on the harbour are minor.

132. In respect of wastewater disposal the report notes that two wastewater lines extend through the property. A final wastewater system has not yet been confirmed it is proposed to install a new gravity wastewater network within the proposed subdivision which will connect to an existing manhole located near the pump station near the northern corner of the site. The report states that Watercare Services have confirmed that there is capacity within the wastewater network to accommodate the proposed increase in dwellings.

133. In respect of water supply the report notes that Watercare Services have also confirmed that there is sufficient capacity within the existing network to supply the proposed increase in dwellings.

134. In respect of other utilities the report considers that existing networks can be extended into the site, and that this will be required to be confirmed at subdivision stage.

Peer Review

135. The applicant's storm water report has been reviewed by Iresh Jayawardena, Specialist at Healthy Waters for the Council (Appendix 5). This review notes the following:
136. In respect of hydrological mitigation PC35 will increase the impervious area from 35% to 60% and this will have potential implications for the Mahurangi Harbour which is identified as a Significant Ecological Area. However these effects can be mitigated through the provision of hydrological mitigation as described in the Council standard GD01/GD04. The peer review also notes that storm water attenuation may also be required by the existing catchment management consent. It also notes that further work is required to identify any risk of coastal erosion as a result of the increased storm water flows.
137. In respect of water quality the review notes that Healthy Waters is unlikely to accept the installation of Storm Filters given the high maintenance and cost concerns. The review recommends that the applicant explore alternative options using GD01/GD04 at the subdivision design stage.
138. The review notes that because the site is located at the bottom of the catchment PC35 will not result in any flooding on beyond the site. However it is considered that a more rigorous approach will be needed to assessing how the existing overland flow paths on the site will be managed. These matters can be adequately assessed at subdivision stage.

Comments

139. I consider that there may be some additional matters that will be required to adequately manage the servicing and infrastructure effects of the proposed increase in dwellings on the site. In considering a plan change it is not in my opinion necessary to ensure all adverse effects are adequately dealt with if the AUP:OP provides for these matters to be resolved at development or subdivision stage. PC35 provides for a zone that will allow greater density however the mechanisms for putting that development into place are provided throughout the AUP.
140. After considering the peer review undertaken by Healthy Waters I consider (based on my own understanding of the AUP and on the advice of the Council experts) that the issues raised in that review can and will be adequately dealt with at the resource consent stage and that the AUP provisions are sufficient to adequately manage these effects. The AUP zoning provides a framework for development and it is not appropriate to provide additional rules within a zone, if the effects of concern will be adequately dealt with by existing AUP provisions.

6.7. Coastal Inundation

Applicant's Assessment

141. The applicant's report notes that a small portion of the site will be affected the 1% Annual Exceedance Probability (AEP) event. The report notes that this portion of the site will be a reserve.

Comment

142. The eventual boundaries of the residential lots and any reserve including esplanade reserve will be determined at the subdivision stage. I consider that the subdivision provisions within the AUP are sufficient to ensure any new residential development is not adversely affected by predicted coastal inundation. The review by Ms Barrett for the

Council notes that an assessment of the erosion potential of the esplanade reserve will be required at subdivision stage.

6.8. Earthworks

Applicant's Assessment

143. The applicant has provided an engineering report that sets out the likely extent of earthworks required for future development of the land. The assessment notes that the scale of earthworks and the control of sediment will be managed through the subdivision and development process and that existing provisions within the AUP are adequate to manage such effects.

Comment

144. It is considered that the existing AUP provisions are sufficient to manage any earthworks effects resulting from the development of this land.

6.9. Archaeology

Applicant's Assessment

145. The applicant has prepared an assessment of the archaeology of the site. No archaeological sites are recorded by the Council and none were identified during the site surveys. While there is some potential to expose unidentified sites during earthworks, this potential is considered to be low and if a site is discovered the accidental discovery rule in the AUP will apply.

Peer Review

146. The applicant's assessment has been peer reviewed by Robert Brassey, Principal Specialist Cultural Heritage. Mr Brassey advises that he has no issues with the archaeological assessment and there are no identified effects on historic heritage. He does note some inaccuracies in the applicants proposed accidental discovery protocol but notes that the AUP rules will need to be complied with in this regard regardless.

Comment

147. I consider based on the applicant's report and the peer review that there will be no adverse effects on historic heritage as a result of PC35. The ADP of the AUP will be applied at subdivision stage.

6.10. Geotechnical

Applicant's Assessment

148. The applicant has prepared a preliminary geotechnical report to inform PC35. This concludes that buildings associated with the subdivision can be safely located on the site provided that the recommendations given are adhered to. Those recommendations cover matter such as development in swampy areas, settlement after dewatering, flow paths, cuts, fill, site contouring, top soiling, roads, building setback lines, retaining walls, foundation design and construction, verification checks, and service pipes. The overall conclusion is that the land conditions are generally suitable for more intensive urban development.

Peer Review

149. The geotechnical report has been assessed by Charlie Brightman, Principal Geotechnical Specialist for the Council. Mr Brightman considers that in reference to the applicant's geotechnical report, the report indicates that subdivision infrastructure and buildings can be supported on the land provided that appropriately designed remediation and earthworks, structures and storm water are constructed to prevent the effects of the geotechnical effects identified in the report. However Mr Brightman recommends that the resource consent stage is the most appropriate time to address the specific geotechnical issues on site and that the Unitary Plan provisions are appropriate to manage these.

Comments

150. Based on the information available I have concluded that the land is geotechnically able to be developed for the requested level of residential development provided that appropriate consideration, assessment and actions under the AUP:OP are undertaken.

6.11. Contamination

Applicant's Assessment

151. The applicant has undertaken a preliminary site investigation to determine if any potential sources of contamination from past or present land uses exist. The results of the investigation indicate that a very low potential for ground contamination exists within the property and that the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) Regulations 2011 does not apply. Accordingly the development of the site is unlikely to propose a risk to human health.

Comments

152. Based on the applicant's expert review I consider that soil contamination will not pose a risk to human health in the development of this land.

6.12. Positive Effects

Applicant's assessment

153. The applicant's assessment is that PC 35 will result in a number of positive effects including:

- The proposal is an efficient residential use of the site.
- The restoration of the degraded wetland and permanent stream.

Comment

154. I consider that PC35 will result in an efficient use of the site. It is less clear whether the stream and wetland restoration is a result of PC35 that would not have occurred under the existing large lot zone.

6.13. Effects Conclusion

155. Based on the discussion above I consider that the adverse environmental effects of PC35 are acceptable given the existing provisions of the AUP:OP that manage the

development and subdivision of land in the zone. I also consider that the effects on landscapes, the harbour and existing residents will be acceptable.

7. CONSULTATION

156. Section 8 of the applicant's request summarises the consultation and engagement undertaken in the preparation of PC35. The following stakeholders have been consulted;

- Mana Whenua
- Landowners and occupiers of land around the Plan Change area;
- Key stakeholders, including Auckland Council, Watercare Services, Auckland Transport and Snells Beach Primary School
- Local interest groups including Friends of the Mahurangi and Mahurangi Action and the Snells Beach Ratepayers and Residents Association.

157. The key outcomes of engagement with these stakeholders is summarised as follows:

- **Ngati Manuhiri** identified no major cultural concerns in their Cultural Impact Assessment. The detail is set out below. ^[1]_[SEP]
- **Te Whau Lane neighbours** have raised concerns, relating to the visual and amenity effects of the increased density. These matters can and will be addressed and dealt with at the time a subdivision consent is lodged for the site, and are not relevant to the consideration of the Plan Change application. A letter of support for the Plan Change has been provided by each of the five ^[1]_[SEP] Foster Crescent Plan Change Prepared by Briar Belgrave B&A Ref: 16220 29 Reviewed by Burnette O'Connor ^[1]_[SEP] property owners on Te Whau Lane on the basis that the conditions agreed between the parties will be secured at subdivision stage;
- For the **neighbours along the eastern boundary** of the site, a consultation pack was mailed out, and an invitation to a community meeting about the proposal. A number of these residents attended the public meeting. Burnette O'Connor also conducted a one to one meeting with Rachel Baikie, the owner of 19 Cornel Circle. Requests for further information have been provided, including to Mr and Mrs Wallbank of 2 Foster Crescent regarding their driveway;
- **Watercare** – Discussions were undertaken with Watercare in 2016, and written confirmation was provided from Watercare stating that the site could be serviced with wastewater provided a number of conditions are met. In addition, they confirmed via email that there is sufficient capacity to service the site with reticulated water. Given the time that has passed, a 'new' request has been made to Watercare for confirmation that the subject site can be serviced with water and wastewater. Watercare have provided that confirmation. ^[1]_[SEP]
- **Auckland Council** – Meetings have been held on 14 December 2016 and 2 November 2017. Matters raised have been investigated, and the Plan Change proposal has been amended accordingly; ^[1]_[SEP]
- **Auckland Transport** – Feedback from Auckland Transport states that they have no issues with the Plan Change, as the development trip generation is low, and there are no known existing traffic issues at this location. ^[1]_[SEP]
- **Snells Beach Primary School** – Consultation package was provided, and meetings were held with the Principal and with the Board of Trustees. The main

concern raised by the Board was around traffic issues and safety of children on Foster Crescent and Iris Streets. The Traffic Impact Assessment considers that the additional traffic movements attributed to the proposed residential subdivision will not noticeably affect pedestrian safety or amenity on Foster Crescent and Iris Street; ^[17]_{SEP}

- **Friends of the Mahurangi and Mahurangi Action** – The Mahurangi Action Committee advised that they do not see what benefits the proposal for a 52-lot subdivision extension to urban Snells Beach would present socially or environmentally, including landscape and visual impact, over the current Large Lot zoning. Based on their current understanding of the private Plan Change proposal, Mahurangi Action cannot provide support; and ^[17]_{SEP}
- **Snells Beach Ratepayers and Residents Association** – Phone and email contact with the Chairman has been undertaken, with the proposal discussed. An invite ^[17]_{SEP} to the community meeting was emailed. No written feedback has been provided to date.

158. In respect of Iwi consultation ten Iwi groups were contacted regarding this proposal whose rohe (area of interest) covered the Snells Beach area.

159. Manuhiri Kaitiaki Charitable Trust prepared a Cultural Impact Assessment. The applicant states that there were no major cultural concerns raised in the CIA. A number of recommendations were made, which were agreed to. For example; having a representative present during ground disturbing activities adjacent to waterways; to be able to review the Erosion and Sediment Control Plan; and, that eels are relocated before the pond is de-watered. A recommendation to remove the proposed lots along the coastal edge of the subject site was not agreed to. However the actual layout of lots will be determined at subdivision stage.

160. Details of the responses are included in the Consultation Report that can be found here: <https://www.aucklandcouncil.govt.nz/UnitaryPlanDocuments/pc35-appendix-9-consultation-report.pdf>

161. The Council has also sought comment from the Rodney Local Board, which has provided the following comments.

- I. *the Unitary Plan provides a clear direction with infrastructure provision and staging of development; anything occurring outside of this means existing development rights within current zones could be affected as infrastructure capacity is used up earlier than planned*
- II. *the increased development as a result of the proposed rezoning will not be met by a corresponding acceleration of infrastructure provision to meet the increased demands as there are no current plans for additional infrastructure to cope with unplanned growth in Snells Beach, and since council does not have the funding available to expand ad hoc infrastructure this will create substantive disruption to existing communities on a peninsula with limited access* ^[17]_{SEP}
- III. *there is sufficient land within the existing zones to provide for Auckland's housing needs and chipping away at the boundaries undermines the integrity of the Unitary Plan and sets a precedent* ^[17]_{SEP}
- IV. *the existing zoning currently in place provides a buffer between zones in Snells Beach that should be protected and this application undermines that* ^[17]_{SEP}. *the local*

board expresses its concerns about adverse effects to the receiving environment in the Mahurangi Harbour as a result of the proposed intensification. ^[17]
[SEP]

8. NOTIFICATION AND SUBMISSIONS

8.1. Notification details

162. Details of the notification timeframes and number of submissions received is outlined below:

Date of public notification for submissions	24 October 2019
Closing date for submissions	22 November 2019
Number of submissions received	5
Date of public notification for further submissions	5 December 2019
Closing date for further submissions	19 December 2019
Number of further submissions received	Nil

163. All submissions were received on time. There are no late submissions. Copies of the submissions are attached as **Appendix 3** to this report.

8.2. Legal and statutory context relevant to submissions

164. There are no scope matters to discuss.

8.3. Analysis of submissions and further submissions

165. The following sections address the submissions received on P35. It discusses the relief sought in the submissions, and makes recommendations to the Hearing Commissioners.

166. Submissions that address the same issues and seek the same relief have been grouped together in this report under the following topic headings:

- Submissions supporting PC35 in part
- Submissions opposing PC35 in its entirety
- Submissions seeking amendments to PC35

8.3.1. Submissions supporting PC35 in part

Sub. No.	Name of Submitter	Summary of the Relief Sought by the Submitter	Further Submissions	Planners Recommendation
1	Ron Goodwin	Supports PC35 subject to appropriate land stability remedial works, and the upgrade of the outfall pipe.	Nil	Accept

Discussion

167. Mr Goodwin is in support of PC35 but wishes to ensure that any site stability issues on the land are remedied. In addition Mr Goodwin is concerned whether the existing sewer pipe from the treatment plan is able to cope with the additional pressure from increased urbanisation.

168. The land stability issues have been assessed by the applicant and the Council's Principal Geotechnical Specialist in section 6.10 above. Based on that assessment it is considered that land stability matters can be addressed through the provisions of the AUP:OP at the time of subdivision and development.

169. In respect of the sewer pipe, it is considered that this is largely a matter for Watercare Services and is discussed in section 8.3.3 of this report below.

Recommendations on submissions

170. That submission **1** be accepted for the following reasons:

- The applicant has provided sufficient evidence that the site stability issues with the site are able to be adequately managed through the development process in accordance with the submitter's request.
- Watercare Services is responsible for ensuring that the wastewater pipe that serves Snells Beach will be maintained.

171. There are no amendments associated with this recommendation.

8.3.2. Submissions Opposing PC35 in its entirety

Sub. No.	Name of Submitter	Summary of the Relief Sought by the Submitter	Further Submissions	Planners Recommendation
4	Nigel Ross	Opposes PC35	nil	Reject
5	Hayley Gates	Opposes PC35	nil	Reject

Discussion

172. Mr Ross and Ms Gates have made identical submissions opposing PC35. Mr Ross owns and occupies a property at 17 Cornel Circle and Ms Gates owns a property at 25 Cornel Circle. Both properties share a boundary with the land the subject to PC35. Both properties contain houses that overlook the subject land, which is located to the west of the submitters' properties.

173. The submitters oppose the plan change in its entirety. The concerns raised in the submissions include;

- Changes to the current rural out look from the submitters' properties and the effects of having dwellings located closer to the common boundaries including privacy and noise.
- Safety of children walking to school along Foster Crescent
- Increase in traffic on narrow streets including Iris Street, Foster Crescent, Cornel Circle and Te Whau Lane.
- Effects on amenity generally
- Effects on infrastructure including septic, flooding and drainage
- Construction effects including dust and noise.

174. These matters are discussed below;

Outlook and Amenity

175. It is apparent that PC35 will change the outlook and amenity experienced by residents of properties that adjoin the subject land. The outlook will change from a semi rural outlook to a residential one. These effects are discussed in section 6.3 above and in the report of Mr Kensington. Mr Kensington considers that in landscape terms the effects on amenity will be moderate.

176. I consider that while the outlook will be reduced, the outlook and amenity likely to be experienced by residents adjoining the plan change site will be similar to that of other residents in the area and in the wider Auckland Area that are located within the Single House Zone. The level of amenity in the new dwellings that will be built within the site, should the plan change proceed, will also experience that level of amenity. Accordingly while there may be a reduction in spaciousness and the extent of outlook, these will not be reduced by an unreasonable amount given the level of amenity that is provided for in the Single House Zone.

Increase in traffic and safety

177. The submitters are concerned about the increase in traffic on the roads that lead into the site. The increases in traffic on these roads and pedestrian safety have been assessed by Mr Peake and are discussed above in section 6.4 of this report. Overall Mr Peake has concluded that the traffic effects of the proposed development can be appropriately addressed provided that a low speed environment is encouraged within the development and the interface between Foster Crescent and the land subject to PC35 is suitably designed. These are largely matters that will be determined at subdivision stage.

178. I consider that based on this assessment and the applicants traffic assessment that the traffic effects of PC35 are acceptable.

Effects on infrastructure including septic, flooding and drainage

179. The submitters are concerned that the effects of serving including wastewater, flooding and drainage.

180. These matters have been addressed by the applicant and in the review undertaken by Healthy Waters for the Council. These are discussed in section 6.6 of this report.

181. Overall I consider that, based on the assessments set out above, these matters are able to be addressed through the development of the site and that the provisions of the AUP are suitable for this to occur.

Construction effects including dust and noise.

182. The development of the site will create some level of noise and dust. These are temporary effects. In addition the levels of such effects will be managed by the subdivision process in line with the provisions of the AUP. For example Chapter E25 contains specific rules that control construction noise and vibration. These are the same rules that apply to the site currently. While the amount of construction will be greater under PC35 the land is currently available for construction and noise and dust and similar effects will be generated regardless of the proposed zone change.

183. I consider that these effects will be suitably managed through the development process.

Submitter Agreement

184. It is understood that Ms Gates and Mr Ross have been in discussion with the applicant since lodging their submissions. It is further understood that an agreement concerning the form of development on any new sites adjacent to their properties has been reached between the parties and that Ms Gates and Mr Ross will not be attending the hearing. However at the time of writing this report, the submissions have not been withdrawn.

Recommendations on submissions

185. That submissions **4** and **5** be rejected for the following reasons:

- a) While the level of amenity (particularly in relation to outlook) for some existing neighbouring residents to the site may be reduced by PC35, the overall level of amenity for existing residents will remain consistent with the Single House zone.
- b) The traffic and safety effects of PC35 are acceptable.
- c) The site is able to be adequately serviced and the existing AUP provisions are sufficient to manage the effects of the additional construction effects likely to be generated.

186. There are no amendments associated with this recommendation.

8.3.3. Submissions requesting changes to PC35

Sub. No.	Name of Submitter	Summary of the Relief Sought by the Submitter	Further Submissions	Planners Recommendation
2.1	Watercare Services Ltd	Seeks a decision that ensures that the wastewater network, in particular the wastewater rising main, is adequately protected.	Nil	Accept in part
2.2	Watercare Services Ltd	Seeks either submission point 2.3, or that the scheme plan is updated to provide that Lots 18-23 will vest to Council as public drainage reserve.	Nil	Accept in part
2.3	Watercare Services Ltd	Seeks either submission point 2.2, or that Lots 18-23 are enlarged or otherwise reconfigured so that they are of adequate size to provide for a housing foundation and yard space for each lot that will not compromise the protection of the Watercare network.	Nil	Accept in part
3.1	Ministry of Education	Amend the plan modification if it is not declined.	Nil	Reject
3.2	Ministry of Education	Seeks if that the consent authority approves the plan change, that the Ministry of Education and Snells Beach School Board are engaged with and consulted throughout	Nil	Reject

		the subdivision application and construction process to ensure that the safety of school students is maintained throughout the construction and establishment of the site.		
--	--	--	--	--

Discussion

187. The submission from Watercare Services states that there is adequate capacity within the water and wastewater network to service the land with a zoning of Residential – Single House Zone, however the proposed layout of Residential Lots 18-23 does not adequately protect the existing 375mm wastewater rising main that runs through these proposed sites.
188. The request from Watercare Services seeks specific changes to a subdivision plan that the applicant has shown as an example of what could potentially occur if the plan change is made operative. The subdivision plan shows a number of lots that include a drainage easement and are located adjacent to the esplanade reserve at the north of the site. The subdivision plan is not part of PC35, instead it simply provides for a change in the zone and not a specific layout of sites.
189. The actual layout of sites will be determined at the subdivision stage. At that time is a standard practice that Watercare Services will be involved in the subdivision application and will be able to determine the correct layout of sites or other means to protect the wastewater main at that stage. The submission itself also notes that Watercare Services has its own powers under the Auckland Water and Wastewater Bylaw 2015 to restrict works within 10m of its infrastructure.
190. Following discussions between the applicant and Watercare Services an alternative relief has been developed that would appear to resolve the Watercare submission. It is proposed that the existing ‘subdivision variation control’ would be applied to that portion of the site in the vicinity of the Watercare pipeline. This would have the effect of ensuring that any site in this area would have a minimum site size of 1000m². It is understood that this would give protection to the pipeline in line with the request from Watercare Services. Because this methodology closely follows the request from Watercare Services I consider that it is within the scope of the submission. There is no other land within Snells Beach that is subject to the subdivision variation control, and accordingly it is appropriate that this is referred to as the Snells Beach subdivision variation control. I also note that as a ‘control’ it is not necessary for this to apply along existing property boundaries. Other ‘controls’ such as the microinvertebrate community index control for example does not apply on property boundaries.
191. The submission from the Ministry of Education seeks that the Ministry of Education and Snells Beach School Board are engaged with and consulted throughout the subdivision application and construction process to ensure that the safety of school students is maintained throughout the construction and establishment of the site. The reasons for the submission relate to concerns about the safety of pupils accessing and leaving the adjacent Snells Beach School through the adjacent streets and the effects on this of additional traffic.
192. I consider that this request is valid and something that should occur at the time of future subdivision. It is however not something that can be easily inserted into the AUP. Since lodging its submission, the MOE has been in discussion the applicant. I understand that the MOE and the applicant have come to agreement that applicant will consult and engage with the MOE at the time of subdivision the consultation and the outcomes of the

consultation and engagement will be included within any subsequent subdivision application. I suggest that the applicant comments on this at the hearing and consider that such an agreement effectively meets the concerns of the submitter.

Recommendations on Submissions

193. That submission **2** be accepted in part to the extent that the amendments set out in paragraph 195 of this report be made to the AUP:OP for the following reason:

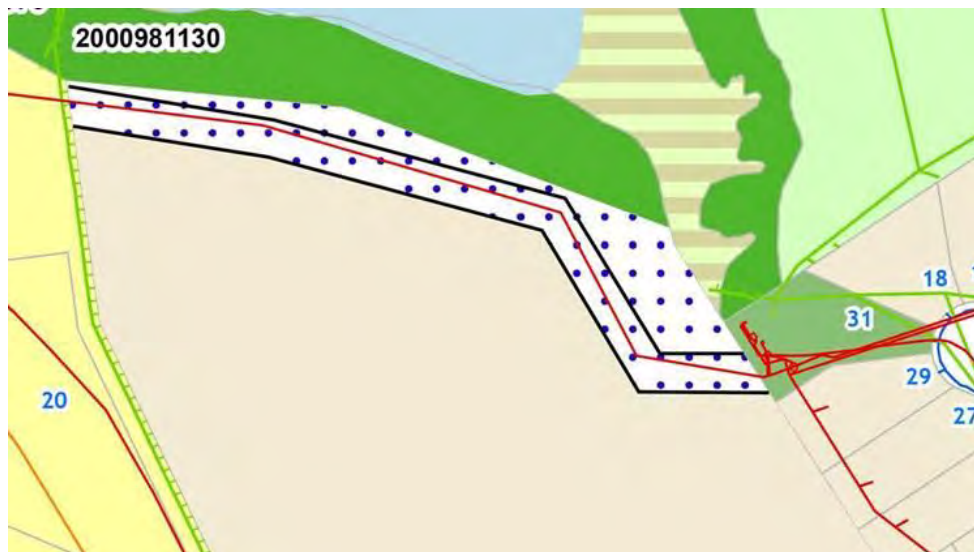
- a) the changes proposed are within scope of the submission and will contribute to the ongoing protection of the Watercare Services pipe line in conjunction with the subdivision consent process and through the provisions of the Auckland Water and Wastewater Bylaw 2015.

194. That submission **3** be rejected for the following reason:

- a) The request from the Ministry of Education for on-going engagement will occur at the time of subdivision but it is not something that can appropriately be included with PC35.

195. The following amendments are associated with this recommendation.

- a) Amend the planning maps by inserting the Subdivision Variation Control (Snells Beach) over the land shown dotted in the map below.



- b) Amend Table E38.8.2.4.1 Subdivision of sites identified in the Subdivision Variation Control by adding a new row as follows;

Area	Minimum net site area
<u>Snells Beach</u>	<u>1000m²</u>

9. CONCLUSIONS

196. A small number of submissions have been received in support of and in opposition to PC35. A number of these submissions raise matters that are more properly dealt with at the subdivision stage. It is considered that the changes to the amenity of neighbouring

properties will be reduced, however the level of amenity that will be experienced by neighbours will remain consistent with that expected in the Residential – Single House Zone. Adequate protection will be given to existing infrastructure.

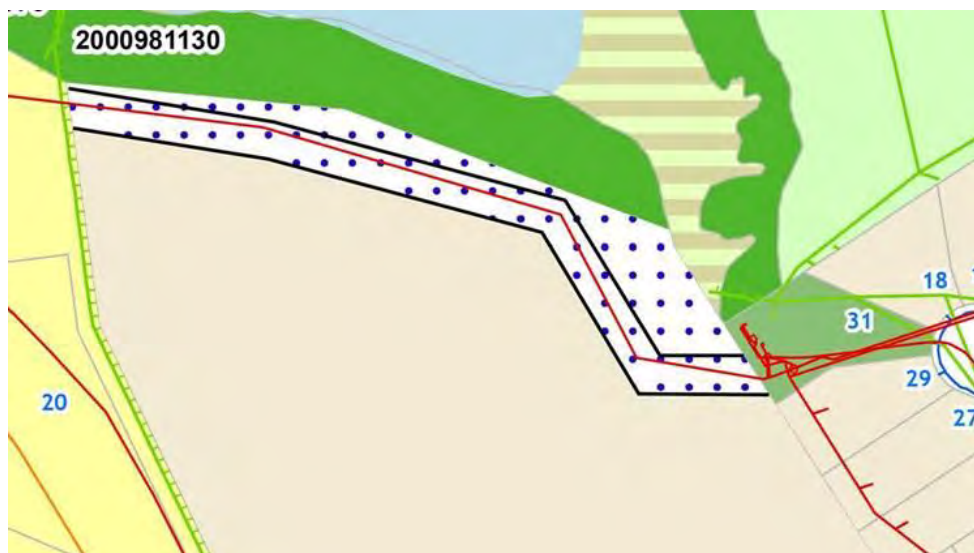
197. Having considered all of the submissions and reviewed all relevant statutory and non-statutory documents, I recommend that Plan Change 35 should be approved as notified subject to amendments.

198. The approval of PC 35 will:

- assist the council in achieving the purpose of the Resource Management Act 1991
- give effect to the National Policy Statement on Urban Development Capacity
- give effect to the National Coastal Policy Statement
- give effect to the Hauraki Gulf Marine Park Act
- give effect to the National Policy Statement on Freshwater Management
- be consistent with Auckland Unitary Plan Regional Policy Statement
- be consistent with the relevant parts of the Auckland Unitary Plan
- be consistent with the Auckland Plan.

10. RECOMMENDATIONS



1. That, the Hearing Commissioners accept or reject submissions (and associated further submissions) as outlined in this report.
2. That Proposed Plan Change 35 be approved subject to the amendments set out in (a) and (b) below:
 - a. Amending the planning maps by inserting the Subdivision Variation Control (Snells Beach) over the land shown dotted in the map below.



- b. Amending Table E38.8.2.4.1 Subdivision of sites identified in the Subdivision Variation Control by adding a new row as follows;

Area	Minimum net site area
<u>Snells Beach</u>	<u>1000m²</u>

11. SIGNATORIES

	Name and title of signatories
Authors	 David Wren – Consultant
Reviewer / Approver	 Peter Vari – Team Leader Planning, North West and Islands.

APPENDIX 1
PLAN CHANGE 35

Appendix 1 – Plan Change 35 (Foster Crescent, Snells Beach), As Notified

B&A Urban & Environmental * Whangarei Workworth Auckland Napier Christchurch	20 Baxter Street Workworth 0910 * PO BOX 591 Workworth 0941
warkworth@barker.co.nz barker.co.nz	T +64 9 422 3336

14 February 2019

Auckland Council
Private Bag 92 300
Victoria Street West
AUCKLAND 1142

Attention: Peter Vari

Dear Peter,

RE: Private Plan Change Request – Lot 1 DP 149776, Foster Crescent, Snells Beach

Please find enclosed a private plan change request for Lot 1 DP 149776, a 4.6384 ha site at the southern arm of Foster Crescent, Snells Beach.

The plan change is for a small scale and discrete rezoning of a clearly defined area of land. The land is already subject to a residential zoning (Large Lot). The proposed plan change seeks to apply a different residential zoning that will enable a higher residential density (Single House), and more efficient use of the land resource. The plan change seeks a straight zoning change and no changes to the zone provisions are being sought.

Given the site specific and limited nature of this plan change which simply proposes to change the type of residential zoning, it is considered appropriate that the plan change is processed as a resource consent application. In addition, a subdivision application will be lodged to be processed concurrently.

We request that this private plan change application is considered for limited notification under Clause 5A of the First Schedule, Resource Management Act 1991. We consider that this plan change application is eligible for limited notification because all persons who are directly affected can be identified as required under Clause 5A(2). Thorough consultation with the community has been undertaken and written approval obtained from the immediately surrounding property owners (see Appendix 8 of Consultation Report).

The logo for B&A, consisting of the letters 'B' and 'A' in a large, bold, sans-serif font, with an ampersand (&) between them.

B&A Urban & Environmental • Whangarei Workworth Auckland Napier Christchurch workworth@barker.co.nz barker.co.nz	20 Baxter Street Workworth 0910 • PO BOX 591 Workworth 0941 T +64 9 422 3336
---	---

The plan change site is private land held in a single certificate of title. As the land is a single defined site, it is possible to clearly identify the parties who are directly affected by the proposed change in residential zoning. The following parties are considered directly affected by the proposed change in zoning:

- Western immediately adjoining properties – 14, 16, 18, 20 and 22 Te Whau Lane are directly affected because they have a common boundary with the plan change site and the increased density that will be enabled on their boundary will be appreciably different to what is enabled by the Residential – Large Lot zoning that exists at present;
- Eastern immediately adjoining properties – 2 Foster Crescent and 11, 17, 19, 25, 27 and 29 Cornel Circle are directly affected as they have a common boundary with the plan change site and because the increase in residential density that will be enabled will be appreciably different from what could be expected with the existing zoning;
- Due to the increase in vehicle movements that will result from the future subdivision, the following properties are considered directly affected: 1, 3 – 19, 20A, 21, 22, 23A, 23B, 27, 29 and 31 Foster Crescent and 4 Iris Street;
- Watercare are the infrastructure owners of the pump station located at 31 Cornel Circle which adjoins the site, and Watercare are the asset owners of the wastewater rising main that is located through the northern portion of the subject site. Therefore, Watercare are considered directly affected; and
- Auckland Council Parks Department are considered directly affected as the plan change site adjoins Goodall Reserve, and the future subdivision will provide linkages through to the reserve.

B&A

B&A Urban & Environmental • Whangarei Warkworth Auckland Napier Christchurch	20 Baxter Street Warkworth 0910 • PO BOX 591 Warkworth 0941
warkworth@barker.co.nz barker.co.nz	T +64 9 422 3336

While the site adjoins the Te Whau coastal walkway, members of the public who use this walkway are not considered directly affected by the plan change because the residential use of the site is continuing. The increase in density proposed is not considered to affect public users of this coastal walkway because the walkway is visually screened from the site due to vegetation, and the walkway is 4-5m lower in elevation than where dwellings will be established on the proposed lots. In addition, there will be a building setback from the walkway because of the wastewater rising main easement along the coastal frontage of the site. Therefore, dwellings will be located at least 15m back from the shared boundary with the walkway.

The Snells Beach Primary School (62 Dawson Road) (Ministry of Education and Board of Trustees) is not considered directly affected because the plan change will not result in a change on their boundary, and the residential use of the site is proposed to continue under the plan change. There is a reserve area between the school and the plan change site, and approximately 140m between the school buildings and the site, and 45m between the end of the school playing fields and site. In addition, the footpath that students use that crosses the reserve between the school and Foster Crescent will not be affected by the Plan Change.

Properties further east along Foster Crescent and Cornel Circle are not considered directly affected because the plan change will not result in a change on their boundary and they will not be directly affected by changes to the use of the local road network. Some of these properties have a line of sight to the subject property, but this is not considered a direct effect because the residential use of the subject site is proposed to continue and the distance from which these sites view the property is through other dwellings and in the context of the wider residential area.

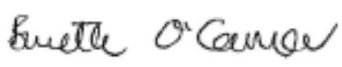
Given the amendments to the Act that provide the option to limited notify a plan change request we consider that this proposal provides the perfect example of when limited notification is an appropriate process. For the reasons outlined in the plan change application and supporting consultation report, it is considered that this proposal fulfils the criteria for limited notification of a plan change and therefore, we respectfully request that notification of this private plan change is limited to the directly affected persons identified above.



B&A Urban & Environmental • Whangarei Workworth Auckland Napier Christchurch	20 Baxter Street Workworth 0910 • PO BOX 591 Workworth 0941
workworth@barker.co.nz barker.co.nz	T +64 9 422 3336

Appendix 1 of the Auckland Unitary Plan sets out the Structure Plan Guidelines and the documents that must be taken into account, the matters that must be identified and addressed and the specialist documents required to support the structure plan as part of the plan change process. This plan change application, and the supporting documentation provides everything we think is necessary to support this rezoning request.

Yours faithfully
Barker & Associates Ltd



Burnette O'Connor
Senior Associate

DDI: 09 422 3336
Mob: 021 422 346
Email: burnetteo@barker.co.nz



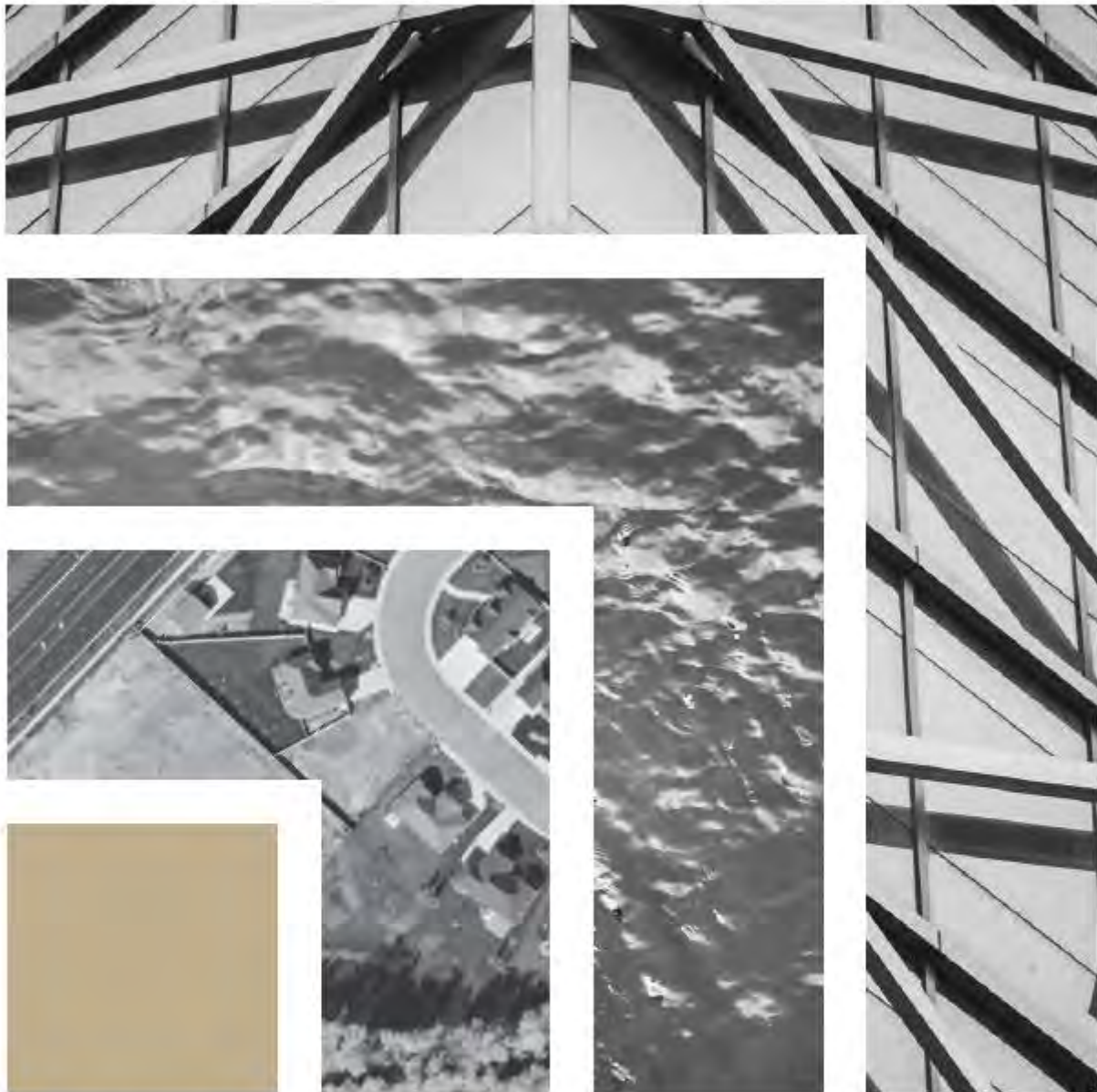
Briar Belgrave
Senior Planner

Mob: 027 238 6456
Email: briarb@barker.co.nz



APPENDIX 2

REQUEST INCLUDING SECTION 32 REPORT



S32 EVALUATION - PRIVATE PLAN CHANGE REQUEST

30-May-2019

FOSTER CRESCENT
SNELLS BEACH

ASSESSMENT OF ENVIRONMENTAL EFFECTS
AND STATUTORY ANALYSIS

PREPARED FOR:
PRIME PROPERTY GROUP LIMITED

B&A
Urban & Environmental

CONTENTS

1.0	THE APPLICANT AND PROPERTY DETAILS	1
2.0	EXECUTIVE SUMMARY	2
3.0	INTRODUCTION	5
3.1	Background To Zoning On Subject Site	5
3.2	Accepting The Plan Change Request (Clause 25)	6
4.0	SITE LOCATION AND DESCRIPTION	7
4.1	Site Description	7
4.2	Surrounding Locality	8
5.0	DESCRIPTION OF THE PLAN CHANGE REQUEST	13
5.1	Overview Of The Proposed Zoning	13
5.2	Purpose And Reasons For The Plan Change	14
6.0	STRATEGIC FRAMEWORK	15
6.1	National Policy Documents	15
6.2	National Environmental Standards	17
6.3	Council Strategic Plans	18
6.4	Other Plans And Reports (Non-Statutory)	26
7.0	STATUTORY CONSIDERATIONS	28
8.0	CONSULTATION AND ENGAGEMENT	29
8.1	Consultation And Engagement	29
8.2	Cultural Values	31
9.0	ASSESSMENT OF ENVIRONMENTAL EFFECTS	31
9.1	Urban Form	31
9.2	Open Space And Community Facilities	32
9.3	Landscape Values And Amenity	32
9.4	Transport	35
9.5	Ecology	36
9.6	Flooding, Stormwater Management, Wastewater And Water Servicing	40
9.7	Coastal Inundation	42
9.8	Earthworks	42
9.9	Archaeology	43
9.10	Land Contamination	43
9.11	Geotechnical	44
9.12	Positive Effects	44
9.13	Summary Of Effects	44
10.0	SECTION 32 ANALYSIS	45
10.1	Appropriateness Of The Proposal To Achieve The Purpose Of The Act	45
10.2	Appropriateness Of The Provisions To Achieve The Objectives	47
11.0	CONCLUSION	51

B&A

APPENDICES:

- Appendix 1: Certificate of Title and Documents
- Appendix 2: Geotechnical Report
- Appendix 3: Engineering Report
- Appendix 4: Soil Contamination PSI Report
- Appendix 5: Traffic Impact Assessment
- Appendix 6: Ecological Assessment
- Appendix 7: Landscape Assessment
- Appendix 8: Consultation Report
- Appendix 9: Open Spaces and Community Facilities Report
- Appendix 10: Cultural Impact Assessment
- Appendix 11: Archaeological Assessment

B&A

1.0 THE APPLICANT AND PROPERTY DETAILS

To:	Auckland Council
Applicant's Name:	Prime Property Group Limited
Address for Service:	Barker & Associates Ltd PO Box 591 Baxter Street Warkworth 0941 Attention: Briar Belgrave / Burnette O'Connor
Legal Description:	Lot 1 DP 149776 (refer to Certificate of Title in Appendix 1)
Site Address:	Foster Crescent, Snells Beach
Site Area:	4.6384 hectares
AUP Zoning:	Residential – Large Lot Zone
Brief Description of Proposal:	Private Plan Change request to rezone the site from Residential – Large Lot to Residential – Single House zone.

B&A

2.0 EXECUTIVE SUMMARY

Prime Property Group Limited is applying for a Plan Change to the Auckland Unitary Plan – Operative in Part (“AUP”) to rezone Lot 1 DP 149776 (approximately 4.6384 hectares) from Residential – Large Lot to Residential – Single House zone. Following lodgement of the Plan Change request, a resource consent application will be lodged for a vacant lot subdivision in accordance with the Residential – Single House zone rules.

A Plan Change has been determined as the best option to secure development of the site in the manner proposed. Given the location of the site in close proximity to the school and community facilities, the most efficient use of the land is one that enables a higher density of residential development than is enabled with the Large Lot zoning. Alternative options such as seeking resource consent as a discretionary activity for either freehold sites or a comprehensive form of urban development were considered due to the defined site-specific nature of the proposal. However, the objectives and policies for the Residential – Large Lot zone were not considered to provide a sufficient level of flexibility to enable the proposed density of residential development sought. A Private Plan Change request is therefore the best option.

The site subject to the proposed rezoning is shown in Figure 1 below:



Figure 1: Showing Lot 1 DP 149776, proposed to be rezoned to Residential - Single House

B&A

Under the legacy Operative Rodney District Plan the site was zoned 'Low Intensity Residential'. This zoning was consistent with the adopted Sandspit – Snells Beach – Algies Bay Structure Plan (1999). The Residential – Large Lot zoning under the AUP is effectively a roll-over of the legacy plan zoning.

However, there is a different objective set by the Regional Policy Statement ("RPS"); Chapter B of the AUP. The RPS emphasises the need to increase the supply of land available for urban development in order to meet the growth demands of Auckland. This includes housing supply and business land. The RPS stipulates that urban development shall be undertaken in a manner that achieves a quality compact urban form that makes efficient use of the land resource and infrastructure, while responding to the local character and sense of place. The proposed re-zoning is considered to achieve this outcome.

Taking into account the land required for access and roading, utilities and reserve, the proposed rezoning would allow for approximately an additional 39 to 41 lots to be developed on the site, compared with the existing Residential – Large Lot zoning which would enable approximately 11 lots (approximately 50 to 52 lots in total if zoned Single House).

This nature and density of development is consistent with the Residential – Single House development to the east and the wider Snells Beach area and makes the best utilisation of the positive location attributes of the primary school, playing fields, community facilities and the adjacent walkway.

Taking into account the actual and potential effects of the proposal on the environment, the rezoning is considered to meet the key policies of the AUP for the following reasons:

- Residential amenity and character:
 - The density enabled by Single House zone (600m²) is consistent with the residential density to the east, which represents the predominate character of the Snells Beach settlement;
 - The lot sizes of the Single House zone and the applicable development standards such as yards, height in relation to boundary and maximum building coverage, will ensure that potential privacy and dominance effects to neighbours will be effectively managed;
 - With respect to any potential visual effects arising from the increased density of the site, this can be addressed and managed at subdivision stage because the existing subdivision assessment criteria provide a relevant basis to do so. Therefore, the visual effects associated with future subdivision design, layout and built form are not a consideration of the Plan Change application.

- Infrastructure capacity:
 - There is sufficient capacity in the road network to accommodate the proposed increase in dwellings;
 - Watercare have confirmed that there is sufficient capacity in the wastewater and water supply networks to accommodate the proposed increase in dwellings; and
 - Stormwater from the site discharges via a restored wetland into the Mahurangi Harbour, and there is no risk of downstream flooding. Devices can be installed within the development to ensure that stormwater is sufficiently treated prior to being discharged.
- Ecological values:
 - There are opportunities for ecological enhancement through restoring approximately 40m of a permanent watercourse and a degraded wetland at the north-eastern edge of the site. These areas will form part of a proposed reserve that links with the Te Whau esplanade reserve and wider open space network of Goodall Reserve.
- Geotechnical:
 - In terms of the geotechnical conditions of the site, these have been assessed and the analysis confirms that the groundwater conditions can support greater development on the site.
- Open Space and Community Facilities:
 - The site has excellent connections to open space networks, community facilities, shops and the Snells Beach Primary school.

We seek that Auckland Council processes the Private Plan Change concurrently with the resource consent for subdivision that will be lodged in the near future. This will ensure that all necessary resource consent applications required to facilitate the development are achieved in a similar timeframe to the rezoning. While the proposed subdivision is a separate application to Council, it is complimentary to this Plan Change request and given the site specific and limited nature of this development, the Plan Change could be processed as a resource consent. This is an option available to Council and it is sought that this option is considered.

The rezoning to Residential – Single House, would enable approximately 50 – 52 residential lots to be achieved in comparison to the 11 lots that can be achieved under the current Residential – Large Lot zoning.

A range of technical reports have been procured to inform the Plan Change request and suitability of the proposed subdivision:

- Archaeology Assessment by Clough and Associates Ltd;

- Consultation Report by B&A;
- Cultural Impact Assessment by Ngati Manuhiri;
- Ecological Assessment prepared by Bioresearches;
- Engineering Report prepared by LDE Limited;
- Geotechnical Report prepared by LDE Limited;
- Landscape Assessment prepared by Littoralis;
- Open Spaces and Community Facilities Assessment by B&A;
- Preliminary Contamination Assessment by LDE; and
- Traffic Impact Assessment prepared by TEAM Limited.

3.0 INTRODUCTION

3.1 BACKGROUND TO ZONING ON SUBJECT SITE

The land within the Plan Change area is currently zoned Residential – Large Lot under the AUP. The subject site is located within the urban area of the existing Snells Beach township. Under the legacy Operative Rodney District Plan, the site was zoned 'Low Intensity Residential' consistent with the Snells Beach - Algies Bay Structure Plan (which zoned the site Low Intensity Urban (L1)). This area was zoned Low Intensity Residential because of potential slope instability and sensitivity of the Mahurangi receiving environment to sedimentation, including sedimentation from intensive urban development (Section 2.3.2 of Decision Report 2298 to the Proposed Rodney District Plan 2000).

In response to these two concerns, the geotechnical conditions of the site have been assessed in the Geotechnical Report (Appendix 2) which confirms that the ground conditions can support greater development on the site.

Sedimentation and other effects arising from earthworks can and will be managed through the subdivision and development process. Potential earthworks mitigation measures are discussed in the Engineering Report (Appendix 3).

During the AUP process the New Zealand Institute of Architects (NZIA) and the Urban Design Forum lodged submissions seeking rezoning of the Dawson Road peninsula to enable a greater density and range of residential development opportunities. One of the points raised in the submission was that if Council wanted to achieve the Auckland Plan's objective of enabling growth and development, then the AUP needs to provide for residential intensification. To this end, the NZIA submission appended maps showing spatially where residential intensification could be achieved, while not losing those features that make Auckland special, such as the coastal character.

B&A

For the area that includes the proposed Plan Change site, NZIA sought a zoning of Single House, Mixed Housing and Terrace Housing and Apartment Building zones rather than Large Lot residential (refer to Figure 2 below). The explanation provided by NZIA for the rezoning was –

Density too low. Large lot is an inefficient use of resource and prevents consolidation of Snells Beach as a coastal residential centre. Future Urban, Single House or Mixed Housing will provide for a diversity of residential options.

This Plan Change supports the rationale in the NZIA submission, and considers that Single House residential is a more efficient use of the subject site.



Figure 2: Map identifying the subject site for rezoning (Source: NZIA Submission on the PAUP, pg 73)

3.2 ACCEPTING THE PLAN CHANGE REQUEST (CLAUSE 25)

Council has the discretion to adopt the change, or part of the change as if it were a Council Plan Change; accept the plan change enabling it to be notified; or reject a Plan Change. The Council may also decide to process the request as a resource consent. Clause 25(4)(a)-(e) of Schedule 1 of the Resource Management Act 1991 (RMA) sets out these options.

In considering whether to accept or reject Plan Change requests, the Council has developed criteria to aid its assessment, which was endorsed by the Planning Committee on 28 March 2017. These criteria are as follows:

The outcomes of the private plan change:

- *Align with the Future Urban Land Supply Strategy;*

- *Give effect to the Auckland Plan;*
- *That any structure planning and subsequent plan changes follow Appendix 1 – Structure Plan Guidelines of the AUP; and*
- *Gives effect to the environmental outcomes expected and effectiveness of the AUP.*

Detailed discussion that outlines how this Plan Change request satisfies the matters outlined in Clause 25 and the Council's additional criteria is provided throughout this section 32 report and it is concluded that the Council can accept it for processing.

In addition, Schedule 1, Clause 25(4) states that Council may only reject the request in whole, or in part on the grounds that –

- (a) The request, or part of the request is frivolous or vexatious; or*
- (b) Within the last 2 years, the substance of the request or part of the request*
 - (i) Has been considered and given effect to, or rejected by, the local authority or the Environment Court; or*
 - (ii) Has been given effect to by regulations made under section 360A; or*
- (c) The request or part of the request is not in accordance with sound resource management practice; or*
- (d) The request or part of the request would make the policy statement or plan inconsistent with Part 5; or*
- (e) In the case of a proposed change to a policy statement or plan, the policy statement or plan has been operative for less than 2 years.*

In summary, the Plan Change request, including the planning analysis, supporting technical analysis, the process undertaken to prepare the request, including public consultation, demonstrate that the proposal accords with the Council's strategic documents, is consistent with the objectives and policies of the AUP, and is consistent with sound resource management practice. The request is not frivolous or vexatious and the subject matter has not been considered in the last two years. The request will not make the plan inconsistent with Part 5 and the Unitary Plan has now been operative for more than two years. Therefore, Council is able to accept the Plan Change request.

4.0 SITE LOCATION AND DESCRIPTION

4.1 SITE DESCRIPTION

The subject site, shown with the property boundary highlighted in Figure 3 below, has a total area of 4.6384 hectares. The site is irregular in shape and has undulating terrain that generally falls downwards from south to north. The site is currently vacant and mostly in pasture.

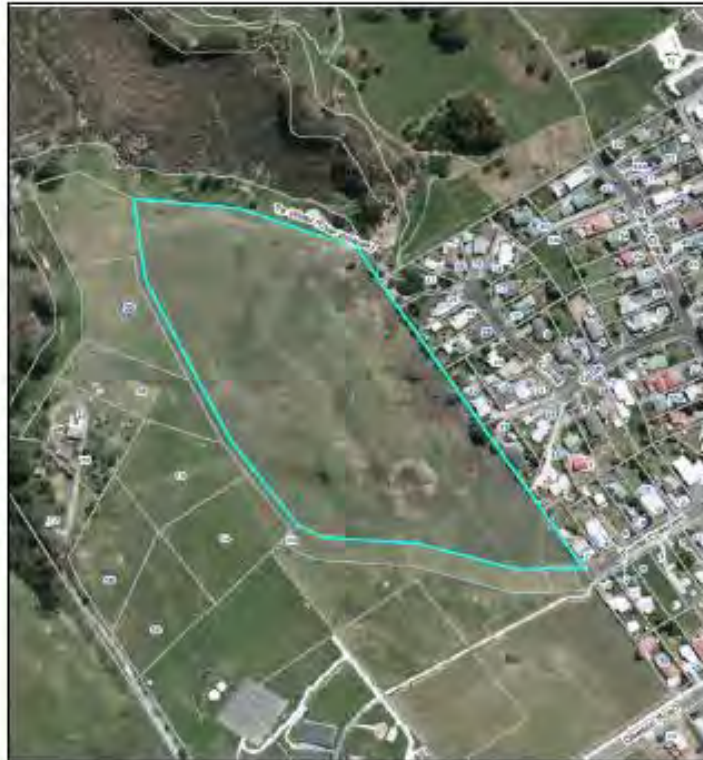


Figure 3: The subject site, Foster Crescent, Snells Beach (Source: GeoMaps, 2017)

Legal access to the site is provided from the southern end of Fosters Crescent. To the west the legal termination of Fosters Crescent adjoins Te Whau Lane, a private accessway that provides legal access to five properties. Te Whau Lane has a legal width of approximately 18 metres where it joins Foster Crescent, then reduces to a 6-metre width from 22 Te Whau Lane (Lot 5 DP 476107) onwards.

4.2 SURROUNDING LOCALITY

The Plan Change area is located immediately to the west of the existing Snells Beach settlement. The neighbouring properties are established residential houses which gain access off Foster Crescent and Cornel Circle (refer Figures 4, 5 and 6).

B&A



Figure 4: Neighbouring properties to the east (Source: B&A 2018)



Figure 5: Neighbouring properties to the east (Source B&A 2018)

B&A



Figure 6: Neighbouring properties to the east (Source: B&A 2018)

The northern boundary of the site abuts the Te Whau River walkway which extends from the Goodall reserve around the coastal edge of the Dawson Road peninsula to the boat ramp at the western end of Dawson Road (refer Figures 7 and 8). These adjoining reserve areas are zoned Open Space – Conservation. The Dawson Creek arm of the Mahurangi Harbour extends up to the north eastern boundary of the site. This area is zoned Coastal Transition in the AUP. as.



Figure 7: Linkage between site and Goodall Reserve (Source: B&A 2018)

B&A



Figure 8: Linkage between site and Te Whau coastal walkway (Source: B&A 2018)

To the west of the Plan Change area, following a spur is Te Whau Lane. The land provides legal access to a discrete area of land recently developed for Large Lot Residential land uses (refer Figures 9, 10 and 11). About half the sites are built on to date. The Rural Coastal zoned land is further west again. It is mostly in pasture and is being farmed, gaining access off Dawson Road.



Figure 9: Neighbouring properties to the west (Source: B&A 2018)

B&A



Figure 10: Neighbouring properties to the west (Source: B&A 2018)



Figure 11: Neighbouring properties to the west (Source: B&A 2018)

Uphill from the site on the southern boundary, is a Council reserve located to the east of Snells Beach Primary School (refer Figure 12). There is walking access from the school across the reserve to Foster Crescent and the subject site (approximately 100m).

B&A



Figure 12: Neighbouring properties to the north (Source: B&A 2018)

5.0 DESCRIPTION OF THE PLAN CHANGE REQUEST

5.1 OVERVIEW OF THE PROPOSED ZONING

The Plan Change seeks to rezone approximately 4.6384 hectares, held in one certificate of title, from Residential – Large Lot to Residential – Single House, as shown in Figure 13 below.



Figure 13: Proposed Re-Zoning Map

The proposal provides for the establishment of additional residential development that logically extends from the existing housing community and builds on the specific density and scale of the area and characteristics of the land.

It is considered that the standard zone, overlay and Auckland-wide provisions will ensure future development gives effect to the AUP, RPS and Part 2 of the RMA.

Controls for the Plan Change site are proposed to be applied at the subdivision stage to restrict buildings and other activities along the northern fringe of the site where there is a wastewater rising main. Consultation with Watercare is ongoing on this matter. Details of any potential development restrictions will be included with the subdivision application in the same manner that the additional restrictions agreed with the Te Whau Lane land owners will be.

It is intended to lodge a resource consent application for the subdivision of the land and related land use consents to be processed concurrently with the Plan Change, unless the Council decides to process this request as a resource consent; in which case the applications would be processed together.

5.2 PURPOSE AND REASONS FOR THE PLAN CHANGE

Clause 22(1) of the RMA requires that a Plan Change request explains the purpose of, and reasons for the proposed Plan Change.

The applicant is the owner of the Plan Change area and intends to develop their landholdings in a manner consistent with the proposed zoning which this Plan Change request will enable. As detailed below, the proposal will provide additional housing land supply in a location that is well serviced and accessible to a range of open space and community facilities. This is consistent with the objectives of the Council's planning documents and in this regard, the reasons for the Plan Change are justified and consistent with sound resource management practice.

The current objectives, policies and rules for the Residential – Large Lot zone makes subdivision and development to a density such as that proposed difficult. This is because; quite rightly the objectives and policies refer to maintaining a spacious landscape character and ensuring that development is in keeping with landscape qualities or natural features. Discretionary activity resource consents could be applied to enable single housing outcomes, however because of the objectives and policies that apply to the Large Lot zone this option was considered too great a risk. Therefore, a Plan Change has been determined as the best option to secure the most efficient and effective development of the site. A Plan Change is also considered to be a more transparent and open approach that will enable a zoning that properly reflects the type and density of residential development sought.

6.0 STRATEGIC FRAMEWORK

A number of strategic and statutory planning documents have informed the Plan Change process. This section provides a summary of those documents.

6.1 NATIONAL POLICY DOCUMENTS

6.1.1 Hauraki Gulf Marine Park Act 2000

The subject site is within the drainage catchment for the Hauraki Gulf, as defined by Schedule 3 in the Hauraki Gulf Marine Park Act 2000. The purpose of this Act is to establish the Marine Park and Forum, and to:

- Establish objectives and integrate the management of the natural, historic and physical resources of the Hauraki Gulf, its islands and catchments; and
- Recognise the historic, traditional, cultural and spiritual relationship of the tangata whenua with the Hauraki Gulf and its island;

The Plan Change is considered to give effect to the requirements of this Act. Tangata whenua have been consulted and they have no cultural concerns with the proposal (refer Appendix 10). In addition, potential effects on the ecological health of the Gulf through sedimentation will be appropriately addressed at the subdivision stage through conditions of consent. The proposal includes earthworks mitigation measures including silt traps, refer to the Engineering Report (Appendix 3).

6.1.2 New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement (NZCPS) sets out an overarching policy framework for the coastal environment, including the landward interface with the Coastal Marine Area. The northern boundary of the site is approximately 20 metres from the coastal marine area of the Mahurangi Harbour. The Te Whau River walkway is between the site and the Harbour.

The site therefore has a coastal context and as such policies within the NZCPS are applicable, particularly those relating to the location and appropriateness of development, for example Policy 6 Activities in the Coastal Environment. The Plan Change is considered to give effect to the NZCPS for the following reasons:

- The rezoning will increase the density of the existing residential zone thereby consolidating the existing coastal settlement (Policy 6(1)(c));
- The rezoning will result in development that maintains the character of the existing built environment (Policy 6(1)(f));

- The visual impacts of development will be minimal as the subject site is discretely located in a shallow gully, not on a sensitive coastal location like a headland or prominent ridgeline (Policy 6(1)(h)); and
- The subject site is set back from the coastal marine area by the existing Te Whau River walkway. Public access to the coastal environment will be provided for through the subdivision layout (Policy 6(1)(i)).

The Plan Change is consistent with Policy 2 of the Treaty of Waitangi. Tangata whenua have been consulted and they have no major concerns with the Plan Change (refer Appendix 10).

The Plan Change is also considered consistent with Policy 7 – Strategic Planning, as the site has already been identified as an appropriate location for residential use. The Plan Change simply seeks to change the density of the residential use (Policy 7(1)(b)).

6.1.3 National Policy Statement on Urban Development Capacity

The National Policy Statement on Urban Development Capacity 2016 (NPS on Urban Development Capacity) came into effect on 1 December 2016. It recognises the national significance of urban environments and provides direction to the decision-makers on planning for urban environments. The NPS on Urban Development Capacity seeks to ensure there is sufficient development capacity and supply of developable land for housing and business with a suite of objectives and policies to guide decision-making in urban areas. There is an emphasis on integrated planning of land use, development and infrastructure provision.

NPS Policy PA1 sets out housing and business land development capacity that local authorities are required to provide in the short, medium and long-term. Auckland Council's Future Urban Land Supply Strategy (FULSS) is the key strategic document that gives effect to this National Policy Statement, and identifies future housing and business land for development.

Snells Beach is not included in FULSS. This is discussed further in Section 6.3.2. However, the proposed Plan Change will assist in that there is a sufficient supply of housing provided in this high demand location and in a location that is able to be serviced without further extension or significant investment in infrastructure.

6.1.4 National Policy Statement for Freshwater Management

The National Policy Statement for Freshwater Management 2011 (NPSFM) sets a national policy framework for managing freshwater quality and quantity. The NPSFM was updated in August 2017 to incorporate amendments from the National Policy Statement for Freshwater Amendment Order 2017. The amendments came into effect on 6 September 2017 and include provisions that seek to improve fresh water

quality with a target to increase the proportion of rivers and lakes suitable for primary contact to 90 per cent by 2040. There are also new provisions that enable the use of freshwater for economic wellbeing.

The NPSFM is further discussed in Section 9.5.3 under Ecology.

6.2 NATIONAL ENVIRONMENTAL STANDARDS

6.2.1 National Environmental Standards for Air Quality

The National Environmental Standards (NES) for Air Quality contains standards: banning activities that discharge significant quantities of toxins; ambient outdoor air quality; new wood burners in urban areas; and large landfills to collect greenhouse gas emissions. These standards are set to ensure a guaranteed minimum level of health protection for all New Zealanders. Due to the earthworks and cut and fill required to redevelop the site, the NES for Air Quality is considered to be relevant. Adequate mitigation measures will be proposed as part of the resource consent process for the subdivision proposal to ensure compliance with the standards for ambient outdoor air quality.

6.2.2 National Environmental Standards for Sources of Drinking Water

The NES for Sources of Drinking Water sets requirements for protecting sources of human drinking water from becoming contaminated. It is intended to reduce the risk of contaminants entering natural water bodies such as lake, river or ground water. For the purpose of this NES, the standards apply to the source water before it is treated and only sources used to supply human drinking water. Given the construction activities associated with implementing the subdivision consent and as such the potential for contaminants to enter drinking water supplies, the NES for Sources of Drinking Water is considered to be relevant. Erosion and sediment controls such as sediment detention ponds, clean water diversion channels and bunds and dirty water diversion bunds will be undertaken in accordance with industry best practices and resource consent requirements.

6.2.3 National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health

The NES for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) is a nationally consistent set of planning controls and soil contaminant values. It ensures that land affected by contaminants in soil is appropriately identified and assessed before it is developed – and if necessary, the land is remedied or the contaminants contained to make the land safe for human use. Given the previous and present use of the site for stock grazing and the proposed change of land use,

the NESCS is considered to be relevant. However, the results of the Preliminary Investigation Report (refer to Appendix 4) concluded that it is unlikely that a HAIL (Hazardous activities and industries list) have occurred on site and therefore the NESCS does not apply.

6.3 COUNCIL STRATEGIC PLANS

6.3.1 Auckland Unitary Plan (Operative in Part)

The Auckland Unitary Plan (AUP) is the primary statutory planning document for Auckland. It is comprised of the Regional Policy Statement, Regional Coastal Plan, Regional Plan and District Plan. The AUP provides the regulatory framework for managing Auckland's natural and physical resources while enabling growth and development and protecting matters of national importance.

6.3.1.1 Regional Policy Statement

Chapter B1 of the Regional Policy Statement (RPS) provides an overview of the resource management issues of significance for the region. The regionally significant issues of particular relevance to this Plan Change are the provisions relating to B2 Urban growth, B7 Natural resources, B8 Coastal environment and B10 Environmental risk.

Chapter B2 Urban growth of the RPS contains provisions directing urban growth and form in Auckland. It promotes providing for Auckland's growing population in an integrated manner within the Urban Area (as defined in Appendix 1A of the AUP) and to enable urban growth and intensification within the Rural Urban Boundary, towns, and rural and coastal towns and villages. According to the Auckland Plan 2050, around 62% of development is anticipated within the existing urban area and the remaining development is anticipated to occur in future urban areas (32%) and in rural areas (6%). There is an emphasis on the need to provide for integrated land use, development and the provision of infrastructure. The RPS emphasises the need to increase housing supply to achieve a 'quality compact' urban form that makes efficient use of land and existing infrastructure while responding to local character and sense of place.

We note of relevance the comments made in the Independent Hearing Panel's report to Auckland Council (Topics 016, 017 RUB, 080 Rezoning and precincts – general and 081 Rezoning and precincts – geographic areas) where in the overview of recommendations it was stated:

'The panel considers the Rural Urban Boundary an appropriate planning tool to define the extent of the large urban areas (including the satellites of Warkworth and Pukekohe). The Panel recommends also placing the Rural

B&A

Urban Boundary around Kumeu-Huapai because its proximity to the main urban area of Auckland puts it under particular growth pressure. The panel does not consider it appropriate to place the Rural Urban Boundary around rural and coastal villages because they do not exhibit the same growth pressures. Instead, the Panel consider that structure planning of any proposed change from rural zones to urban zone should adequately address growth issues’.

While the subject site is not within the Urban Area or the Future Urban zone, it is considered that the proposed Plan Change is consistent with Chapter B2 Objectives and Policies for the following reasons:

- Rezoning this site represents a quality compact urban form due to the higher density, and better use of existing infrastructure (Objective B2.2.1(1));
- It is urbanisation within a coastal town (Objective B2.2.1(4)), that includes the provision of appropriate infrastructure (Objective B2.2.1(5));
- The residential intensification is located in and around a local centre, and is close to social, educational and healthcare facilities, and open spaces (Policy B2.2.2(5), Objective B2.4.1(3), and Policy B2.4.2(2));
- The proposed residential area will be in keeping with the built character of the existing area due to the similar density between the existing residential area and the density provided for under the Single House zone (Objective B2.4.1(2));
- It is a medium residential intensity that is in close proximity to the Snells Beach shopping centre, public transport and social facilities like the Mahurangi East Library and the Mahurangi Community Centre (Policy B2.4.2(3));
- The current lower residential intensity zoning of the subject site is not considered an efficient use of the land because: the site is close to Snells Beach centre; it is not subject to high environmental constraints or significant natural hazard risks; there are no natural or physical resources scheduled in the AUP; the site can be serviced by existing infrastructure, and; there are no existing incompatible activities that would result in reverse sensitivity effects (Policy B2.4.2(4) and (5));
- There will be the creation of reserves as indicated on the engineering plans, increased public access, and a degraded wetland will be restored (Policy B2.6.2(2)); and
- Public access to the coastline will be enhanced through linkages to the coastal walkway (Objective B2.7.1(2)).

Taking into account the land required for roading and access, utilities and stream and wetland restoration, the proposed rezoning will enable an additional 39 to 41 lots (approx.) to be developed on the site, compared with the existing Residential - Large Lot zoning which would enable approximately 11 lots.

The extra lots will provide additional housing capacity within the existing urban area and make efficient use of land and existing infrastructure resources. The nature and

density of development will also be consistent with the established residential development to the east and the wider Snells Beach area.

The existing Large Lot zone to the west of the site ensures that a visual transition in residential density is achieved between the residential area in the east and the rural coastal land further west thereby retaining the area's sense of place.

Chapter B7 Natural resources has identified that the combination of urban growth and past land, coastal and freshwater management practices as an issue as it has placed increasing pressure on land and water resources including habitats and biodiversity. The objectives and policies to address this issue that are relevant to the Plan Change site are indigenous biodiversity, freshwater systems, and coastal water.

The proposed Plan Change will give effect to Chapter B7 Objectives and Policies for the following reasons:

- There are no areas of significant indigenous biodiversity value on the subject site, as identified in the Ecological Assessment (Appendix 6) (Objective B7.2.1(1), Policy B7.2.2(1));
- Through the subdivision process, it is proposed to restore a degraded wetland and section of permanent stream on the site (Objectives B7.2.1(2) and B7.3.1(1), Policy B7.3.2(3));
- Water supply, stormwater and wastewater infrastructure are adequately provided for (Policies B7.3.2(1) and B7.4.2(1)(a));
- The proposed change in residential density will have no effects on the coastal waters as there is an existing 20-metre-wide (approx.) coastal esplanade reserve between the site and the Harbour which will act as a buffer. In addition, subdivision conditions will manage any effects from sedimentation (Objective B7.4.1(5), Policy B7.4.2(8));
- Mana Whenua have been consulted on the Plan Change and no cultural concerns have been identified that would not otherwise be addressed (refer Appendix 10) (Objective B7.4.1(6)); and
- There will be no effects from wastewater discharges as the site can be fully serviced by connecting to the existing reticulated wastewater (Policy B7.4.2(10)).

Chapter B8 Coastal environment states that subdivision, use and development within the coastal environment needs to be in an appropriate location and of an appropriate form. The proposed Plan Change is consistent with Chapter B8 Objectives and Policies for the following reasons:

- It is not located in a coastal area identified as having outstanding or high natural character (Objective B8.2.1(1));
- The character of the coastal environment will not be affected as there is a minimum of 5 metre (approx.) difference in elevation between the coastal

marine area and the building platforms on the proposed lots along the coastal edge of the site. In addition, the vegetation along the coastal walkway screens the site from the coastal environment. The elevation and the vegetation combined will reduce any potential effects on the character of the coastal environment (Objective B8.2.1(2), Policy B8.2.2(4));

- The site is considered to be located in an appropriate place as it is a shallow discrete gully, and it is an area already identified for residential use (Objective B8.3.1(1), Policy B8.3.2(2)); and
- Public access to the coastal marine area will be enhanced through linkages provided at the subdivision stage (Objective B8.4.1(1), Policy B8.4.2(1)).

The issues covered by Chapter B10 Environmental risk that are of relevance to this Plan Change are natural hazards and climate change. The other issues under B10 are not relevant because there are no hazardous substances on the site, the Plan Change does not involve genetically modified organism, and a contaminated land assessment has been undertaken, and no risk to human health has been identified (refer Appendix 4).

The proposed Plan Change is consistent with Chapter B10 Objectives and Policies for natural hazards and climate change for the following reasons:

- The subdivision, use and development of this site will not create new risks to people, property or infrastructure because the site is set back from the coastal environment by the Te Whau River walkway. There is a minimum of 5 metre difference in elevation between the Mean High Water Springs (MHWS) and the buildable areas on the proposed lots along the northern boundary of the site (refer Appendix 3, Sheet 1 of LDE Engineering Drawings). This is considered sufficient for sea level rise, given the allowance of 1 metre is used for the purpose of local government planning (MfE publication Coastal Hazard and Climate Change Guide for Local Government, December 2017, Chapter 5, section 5.7). In addition, the subject site is located in the upper reaches of the Mahurangi Harbour, which is a low energy wave environment. Therefore, the potential effects from future sea rise are likely to be less pronounced (Objective B10.2.1(3)).
- The conveyance function of overland flow paths will be maintained (refer Appendix 3) (Objective B10.2.1(6)).

6.3.1.2 Residential – Large Lot Zone

The description for the Residential – Large Lot Zone states that this zone –

... provides for large lot residential development on the periphery of urban areas. Large lot development is managed to address one or more of the following factors:

B&A

- *it is in keeping with the area's landscape qualities; or*
- *the land is not suited to conventional residential subdivision because of the absence of reticulated services or there is limited accessibility to reticulated services; or*
- *there may be physical limitations to more intensive development such as servicing, topography, ground conditions, instability or natural hazards where more intensive development may cause or exacerbate adverse effects on the environment.*

To manage existing or potential adverse effects, larger than standard site sizes are required and building coverage and impervious surface areas are restricted.

The factors describing why Large Lot residential is provided for, rather than conventional residential development, when applied to the subject site supports the re-zoning of the site to Single House zone. The reason this land was zoned Large Lot was due to geotechnical constraints and potential sedimentation effects on the Mahurangi receiving environment arising from more intensive urban development.

Firstly, the proposed re-zoning is in keeping with the landscape qualities of the area as influenced by the existing residential area to the east, as articulated by the Landscape Assessment (Appendix 7):

The circumstances of the Site occupying what is effectively one face of a very shallow valley, with that terrain relating immediately to its partnering flank that has long been established as a residential neighbourhood; the inherent containment of that underlying landform; a fringe defined to the opposite, western side by a form of residential use; the immediate proximity of the built volume of Snells Beach School; and presence of public open space to either end, collectively serve to "ringfence" the Site and draw it into a well-established pattern of residential character.

In landscape terms, the proposal is a predictable and logical fit within that pattern and its wider impact is considerably constrained by the topographic characteristics of the land (as distinct, for example, from the level of landscape impact that may arise if the Site had instead sat across a ridge or spur in a more isolated setting).

In this context, and when compared with the development provided for under the current Residential Large Lot zoning, the magnitude of landscape effects of the proposal is considered to be moderate-low.

Secondly, the site can be fully serviced by reticulated water and wastewater services, as identified in the Engineering Report (Appendix 3). Watercare has completed an

initial high-level assessment of the proposal and they confirmed that “*there are no capacity constraints identified in the current water and wastewater network as at today’s date*” (refer to letter from Watercare dated 11th December 2018 attached in Appendix 8). Also as addressed in the engineering report development will be undertaken in a manner that will ensure any sedimentation effects associated with the development process and subsequent urban development will be less than minor.

Finally, the site contains no physical limitations restricting more intensive development. The Geotechnical Report (Appendix 2) has identified no issues such as topography, ground conditions, instability or natural hazards.

In summary, rezoning of the site to Residential - Single House is supported because it is able to be serviced, it is stable, and the Single House zone is in keeping with the established Snells Beach neighbouring residential areas.

6.3.1.3 Residential – Single House Zone

The description for the Residential – Single House Zone states –

The purpose of the Residential – Single House Zone is to maintain and enhance the amenity values of established residential neighbourhoods in number of locations. The particular amenity values of a neighbourhood may be based on special character informed by the past, spacious sites with some large trees, a coastal setting or other factors such as established neighbourhood character. To provide choice for future residents, Residential – Single House Zone zoning may also be applied in greenfield developments.

To support the purpose of the zone, multi-unit development is not anticipated, with additional housing limited to the conversion of an existing dwelling into two dwellings and minor dwelling units. The zone is generally characterised by one to two storey high buildings consistent with a suburban built character.

Residential – Single House zoning is considered to be more appropriate for the subject site because it will enable an efficient use of the land resource that is in keeping with the established character of the residential area to the east of the site. Therefore, there will be similar amenity and character values between the existing Single House zone and the proposed Single House zone. Applying this zoning to greenfield developments like this application, is provided for.

6.3.2 Auckland Plan 2050

The Auckland Plan is the Council’s key strategic document which sets the Council’s social, economic, environmental and cultural objectives. For this private Plan Change proposal, we have reviewed the Auckland Plan 2050 (adopted by Council 5 June 2018).

A key component of the Auckland Plan is the Development Strategy which sets out how future growth will be accommodated up to 2050. It takes into account the outcomes Council wants to achieve, as well as population growth projections and what the Auckland Unitary Plan allows for. The Auckland Plan 2050 provides a pathway for Auckland's future physical development and a framework to align planning and infrastructure provision. This includes:

- significant redevelopment and intensification in areas that are already developed
- newly established communities in the future urban areas
- enabling business growth by supporting flexible and adaptable business areas
- limiting residential growth in rural areas to ensure that rural production can continue and develop, while maintaining rural values.

The Development Strategy's aim is that Auckland will take a quality compact approach to growth and development. The quality aspect of this approach means that;

- most development will occur in areas that are easily accessible by public transport, walking and cycling;
- most development is within reasonable walking distances of services and facilities including centres, community facilities, employment opportunities and open spaces; and
- future development maximises efficient use of land.

The subject site has an urban zoning and is located directly adjacent to the established urban area of Snells Beach. The proposed Plan Change will enable a more efficient use of the existing urban land resource and infrastructure in this location. The location is close to urban amenities, schools, shops, doctors, open space areas, community facilities and public transport. Bus route 996 serves Snells Beach seven days a week including public holidays. This bus route follows Mahurangi East Road through the centre of Snells Beach, with two bus stops close to the subject site, one on the corner of Dawson Road and the other outside the Snells Beach shopping centre.

The Plan Change proposal will result in a more efficient use of residential land, compared to the existing Residential - Large Lot zoning, in a location that is within the existing urban area. The objectives of the Auckland Plan have informed the development of the proposal, which is further detailed in Sections 9 and 10 of the report.

6.3.3 Future Urban Land Supply Strategy 2017

The Council's Future Urban Land Supply Strategy, refreshed in July 2017, implements the Auckland Plan and gives effect to the NPS on Urban Development Capacity by identifying a programme to sequence future urban land over 30 years. The strategy relates to greenfield land only and ensures there is 20 years of supply of development

capacity at all times and a seven-year average of unconstrained and ready to go land supply. 'Ready to go' land is land with operative zoning and bulk services in place such as the required transport and water infrastructure.

The Future Urban Land Supply Strategy (FULSS) informs the council's infrastructure funding priorities and feeds directly into the council's long-term plans, annual plans and other strategic documents.

The refresh of the Future Urban Land Supply Strategy did not include Snells Beach as an area for consideration because it is not identified as an area where significant new urban growth is to be provided for. However, given that the Plan Change site is completely confined, localised and would only supply a small number of additional lots above the number of lots that could be provided under the current Large Lot zoning, the FULSS is not considered relevant. Notwithstanding this, the proposed re-zoning of the subject site is in line with intent of the FULSS as infrastructure is available to enable the servicing of the proposed density of residential development, reflecting the 2021 completion date for the supporting bulk infrastructure, including the Puhoi to Warkworth motorway extension and the Snells Beach Wastewater Treatment Plant.

6.3.4 Open Space and Community Facilities

The Council has prepared various policies and action plans regarding the provision of community facilities and open space in Auckland, including:

- Open Space Provision Policy 2016;
- Rodney Greenways Paths and Trails Plan: Puhoi to Pakiri 2017; and
- Community Facilities Network and Action Plan.

These policies and plans have been taken into account in preparing the Open Spaces and Community Facilities Report (Appendix 9) for the Plan Change, and determining future community facility needs. This is discussed further in Sections 9 and 10 of this report.

6.3.5 Auckland's Long Term Plan 2018 – 2028

Auckland Council develops a ten year Long Term Plan (LTP) which is reviewed every three years to allocate funding for its various activities. The ability and timeframe to implement any Council project or initiative is dependent on the level of budget allocated in the LTP processes.

A key strategic project is the upgrade of the wastewater treatment plant located at Snells Beach to accommodate wastewater from Warkworth, Snells Beach and Algies Bay. It is intended that the upgrade will be completed in 2022. Watercare have

confirmed that there is capacity to service the subject site as discussed in the Consultation Report and Watercare letter dated 11th December 2018 attached as Appendix 8, however there will need to be upgrades to the local reticulation to service the development. Details of the future upgrade requirements will be provided in the subdivision consent application.

6.4 OTHER PLANS AND REPORTS (NON-STATUTORY)

6.4.1 Sandspit – Snells Beach – Algies Bay Structure Plan (1999)

Under the legacy Operative Rodney District Plan the site was zoned 'Low Intensity Residential'. This zoning was consistent with the adopted Sandspit – Snells Beach – Algies Bay Structure Plan (1999) in which the subject site was identified as 'Low Intensity Urban'. This area was zoned Low Intensity Residential because of potential slope instability and sensitivity of the Mahurangi receiving environment to sedimentation, including sedimentation from intensive urban development (Section 2.3.2 of Decision Report 2298 to the Proposed Rodney District Plan 2000).

These concerns are addressed in this Plan Change. In particular, the Geotechnical Report (Appendix 2) confirms that the ground conditions can support greater density on the site. The potential for sedimentation to enter the Harbour will be avoided through the provision of silt traps and by way of subdivision consent conditions (refer to the Engineering Report attached as Appendix 3).

6.4.2 Rodney Greenways Paths and Trails Plan: Puhoi to Pakiri 2017

The Greenways Plan 2017 is a visionary document which aims to provide cycling and walking connections which are safe and pleasant, while also improving ecology and access to recreational opportunities. The Greenways Plan seeks to create a future network of greenways that will provide safe and enjoyable ways for people to get around, get active, and get engaged with their community and environment.

The Greenways Plan has identified a network of priority routes throughout the Rodney area. There is a network of priority routes identified around the subject site: through Goodall Reserve, connecting with the coastal walkway along to the boat ramp at the end of Dawson Road, looping back along Dawson Road through the school site, along the walkway to Foster Crescent, then back through to Goodall Reserve.

Future greenways infrastructure is provided for by the Plan Change that will complement the existing network. Within the site there is the provision for linkages between the site and the coastal walkway, Goodall Reserve, and the school. This will be through an offer of two reserves, one linking the site to the coastal walkway, another reserve linking to Goodall Reserve. This latter reserve will also be part of the

stormwater drainage network for the subject site, and will include the ecological enhancement of the degraded wetland. Finally, the linkages to the school will be provided via a road to vest. It is considered that this will be a positive addition to the greenways routes for Snells Beach as identified in the Greenways Plan.

6.4.3 Supporting Growth Programme

Supporting Growth is a collaborative document prepared by Auckland Council, Auckland Transport and the New Zealand Transport Agency to provide a coordinated approach to land use and transportation infrastructure delivery necessary to support planned urban growth within Future Urban areas in Auckland. This programme substantiated the strategic need for both new and improved/upgraded road corridors, new and improved public transport corridor and cycle network to support accessibility in the new future urban areas. The 2016 preferred network plan for Warkworth is shown in Figure 14 below.



Figure 14: Preferred network plan for Warkworth, 2016 (Source: Supporting Growth Preferred Transport Network Plans)

Since the release of the preferred networks plans, several Supporting Growth priority projects have already progressed. This include improvements in transport

connectivity between Matakana Road and State Highway 1. This project is known as the Matakana Link Road, and is proposed to be completed by 2021. This aligns with the timeframe for the motorway extension completion date. The Notice of Requirement has been lodged, and the submission period finished in November 2018.

The Matakana Link Road will enable future connectivity with the wider proposed network, which includes a future extension of the Matakana Link Road to Sandspit Road. The Sandspit Link route is not yet confirmed however the location of the Matakana Link Road in relation to this proposed link was a relevant consideration when determining the preferred route for the Matakana Link Road (Section 6.2.2(4) of Assessment of Environmental Effects to the Matakana Link Road Notice of Requirement October 2018). These proposed road linkages will take the pressure off the Hill Street intersection in Warkworth. The future extension of the Matakana Link Road to Sandspit Road will be of benefit for Snells Beach and the traffic associated with the Plan Changes thereby improving transport connectivity.

7.0 STATUTORY CONSIDERATIONS

This report has been prepared in accordance with the requirements of the Resource Management Act 1991 (RMA), including the matters set out in Schedule 1 and Section 32, which detail the requirements for an evaluation report (emphasis added):

32 Requirements for Evaluation Reports

- (1) *An evaluation report required under this Act must—*
 - (a) *Examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act; and*
 - (b) *Examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by—*
 - (i) *identifying other reasonably practicable options for achieving the objectives; and*
 - (ii) *assessing the efficiency and effectiveness of the provisions in achieving the objectives; and*
 - (iii) *summarising the reasons for deciding on the provisions; and*
 - (c) *Contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.*
- (2) *An assessment under subsection (1)(b)(ii) must—*
 - (a) *Identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for—*
 - (i) *economic growth that are anticipated to be provided or reduced; and*

- (ii) employment that are anticipated to be provided or reduced; and*
- (b) If practicable, quantify the benefits and costs referred to in paragraph (a); and*
- (c) Assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.*

The following sections address the matters set out in Schedule 1 and Section 32 of the RMA.

8.0 CONSULTATION AND ENGAGEMENT

8.1 CONSULTATION AND ENGAGEMENT

The Plan Change was subject to extensive consultation and engagement throughout 2018 as detailed in the Consultation Report (Appendix 8).

The following stakeholders and groups have been consulted:

- Mana Whenua;
- Landowners and occupiers of land around the Plan Change area;
- Key stakeholders, including:
 - Auckland Council;
 - Watercare;
 - Auckland Transport;
 - Snells Beach Primary School.
- Local interest groups, including:
 - Friends of the Mahurangi and Mahurangi Action;
 - Snells Beach Ratepayers and Residents Association.

The key outcomes of engagement with these stakeholders is summarised as follows:

- Ngati Manuhiri identified no major cultural concerns in their Cultural Impact Assessment (Appendix 10). Detail is provided in section 8.2 of this report (below).
- Te Whau Lane neighbours have raised concerns, relating to the visual and amenity effects of the increased density. These matters can and will be addressed and dealt with at the time a subdivision consent is lodged for the site, and are not relevant to the consideration of the Plan Change application. A letter of support for the Plan Change has been provided by each of the five

property owners on Te Whau Lane on the basis that the conditions agreed between the parties will be secured at subdivision stage;

- For the neighbours along the eastern boundary of the site, a consultation pack was mailed out, and an invitation to a community meeting about the proposal. A number of these residents attended the public meeting. Burnette O'Connor also conducted a one to one meeting with Rachel Baikie, the owner of 19 Cornel Circle. Requests for further information have been provided, including to Mr and Mrs Wallbank of 2 Foster Crescent regarding their driveway;
- Watercare – Discussions were undertaken with Watercare in 2016, and written confirmation was provided from Watercare stating that the site could be serviced with wastewater provided a number of conditions are met. In addition, they confirmed via email that there is sufficient capacity to service the site with reticulated water. Given the time that has passed, a 'new' request has been made to Watercare for confirmation that the subject site can be serviced with water and wastewater. Watercare have provided that confirmation.
- Auckland Council – Meetings have been held on 14 December 2016 and 2 November 2017. Matters raised have been investigated, and the Plan Change proposal has been amended accordingly;
- Auckland Transport – Feedback from Auckland Transport states that they have no issues with the Plan Change, as the development trip generation is low, and there are no known existing traffic issues at this location.
- Snells Beach Primary School – Consultation package was provided, and meetings were held with the Principal and with the Board of Trustees. The main concern raised by the Board was around traffic issues and safety of children on Foster Crescent and Iris Streets. The Traffic Impact Assessment considers that the additional traffic movements attributed to the proposed residential subdivision will not noticeably affect pedestrian safety or amenity on Foster Crescent and Iris Street;
- Friends of the Mahurangi and Mahurangi Action – The Mahurangi Action Committee advised that they do not see what benefits the proposal for a 52-lot subdivision extension to urban Snells Beach would present socially or environmentally, including landscape and visual impact, over the current Large Lot zoning. Based on their current understanding of the private Plan Change proposal, Mahurangi Action cannot provide support; and
- Snells Beach Ratepayers and Residents Association – Phone and email contact with the Chairman has been undertaken, with the proposal discussed. An invite to the community meeting was emailed. No written feedback has been provided to date.

8.2 CULTURAL VALUES

Mana Whenua have been consulted as part of the development of the Plan Change as detailed in the Consultation Report (Appendix 8). Ten Iwi groups were contacted regarding this proposal whose rohe (area of interest) covered the Snells Beach area.

Manuhiri Kaitiaki Charitable Trust prepared a Cultural Impact Assessment (Appendix 10). There were no major cultural concerns raised in the CIA. A number of recommendations were made, which were agreed to. For example; having a representative present during ground disturbing activities adjacent to waterways; to be able to review the Erosion and Sediment Control Plan; and, that eels are relocated before the pond is de-watered. A recommendation to remove the proposed lots along the coastal edge of the subject site was not agreed to. This is because all the matters raised were adequately addressed. Details of the responses are included in the Consultation Report.

9.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

The following section of the report provides an assessment of the actual and potential effects that the proposed Plan Change may have on the environment. This assessment is based on analysis and reporting undertaken by various experts, which are attached as appendices to this report.

9.1 URBAN FORM

The Landscape Assessment (Attachment 4) has considered the future urban form of the proposed Plan Change when the subdivision is implemented. Key landscape-related matters that will potentially help integrate future development under the proposed Plan Change include:

- Contiguity with the area of well-established residential neighbourhood that adjoins to the east and is served by Foster Crescent, Cornel Circle and Iris Street;
- Containing topography where a spur provides a physical definition to the otherwise least delineated margin to the site;
- Frame of open space, with Goodall Reserve to the North and an unnamed parcel of reserve to the east;
- Close connection with Snells Beach School, in both spatial terms and in relation to the “built presence” established by the schools dynamic, modern buildings;
- Visual separation from the wider expanse of Mahurangi Harbour and limited imposition upon Dawson Creek, which is barely navigable and heavily contained by mangroves; and
- Potential for pedestrian connections to the adjoining esplanade reserve and Goodall Reserve.

In summary, as the urban form of future developments will be able to integrate into the surrounding environment, any effects are considered to be addressed.

9.2 OPEN SPACE AND COMMUNITY FACILITIES

An assessment of the future need for open space and community facilities has been prepared to inform the Plan Change and is included in Appendix 9 to this report.

Snells Beach currently has an extensive and diverse range of community facilities and open spaces, including primary schools, kindergarten, sports fields, walkways, beach front esplanade reserves, healthcare facilities, churches, community centre, and boat ramps. The majority of these facilities are located in close proximity to the Plan Change site.

Due to the small and confined nature of the plan change which will provide approximately 50 – 52 additional dwellings, it is considered that the existing community facility infrastructure in Snells Beach is sufficient to support the proposed population increase resulting from this plan change. Also, the proposed plan change site is in close proximity to existing open space and provides linkages between the site and Goodall Reserve and the coastal walkway. Therefore, additional open spaces are not required to be provided.

For these reasons, it is considered that the Plan Change does not warrant additional community facilities nor additional open spaces or reserves in Snells Beach, and the potential effects in relation to the social well-being of the future community are to be positive.

9.3 LANDSCAPE VALUES AND AMENITY

9.3.1 Landscape Values

The effects of the proposal on landscape values are discussed in the Landscape Assessment (Appendix 7) which states:

In landscape terms, the proposal is a predictable and logical fit within that pattern and its wider impact is considerably constrained by the topographic characteristics of the land (as distinct, for example, from the level of landscape impact that may arise if the Site had instead sat across a ridge or spur in a more isolated setting).

Adverse landscape, visual and natural character effects have been assessed as being largely at the lower end of the scale, and less than moderate-low, with higher (moderate through to high) effects being restricted to those occupying a small number of immediately adjacent properties where the land use change will be most directly experienced.

The proposed zoning pattern responds to key landscape considerations by:

- Retaining the broad topography of the Plan Change area;
- Acknowledging the wetland area by restoring it (refer to section 9.5 Ecology);
- Configuring the proposed subdivision layout to optimise opportunities for quality urban environments, strong landscape identity and high levels of amenity; and
- Integrating, where practicable, the edges of the Plan Change area with adjoining reserve areas so that linkages and open space corridors can continue seamlessly and be strengthened where possible.

Based on the landscape analysis, it is considered that the proposed zoning will appropriately respond to the existing landform in the context of a residential zone, and the effects on landscape values will be acceptable.

9.3.2 Character and Amenity

Consideration of visual amenity effects is framed around the difference between the site being developed into Single House residential use (approximately 50 - 52 lots), rather than Large Lot residential use (approximately 11 lots), which can be undertaken with the current zoning.

In terms of residential amenity and character, the proposed rezoning is considered to address amenity and character effects of the development for the following reasons:

- The density envisaged by Single House zone (600m² average) is generally consistent with the residential density to the east of the subject site, and a consistent character would therefore be achieved. The change for these neighbours is that the neighbouring residential density will change to something similar to their own;
- It is considered that the properties at Te Whau Lane already provide an appropriate transition between the Residential Large Lot zoning on the western boundary of the site and the Rural Coastal zoning beyond, and the Residential Single House zoning on the eastern boundary of the site. Further, it is considered Te Whau Lane provides sufficient separation between the Plan Change site and the low-density zoned properties to the west;
- It is acknowledged that there is going to be a change in anticipated residential character as a result of the proposed rezoning of the site from Residential Large Lot to Residential Single House zone. This Plan Change application is to address the use of the land, and any potential visual and/or amenity effects will be dealt with at subdivision stage.

- The site size of the Single House zone and the development controls that apply, including height in relation to boundary, maximum building coverage and minimum landscaped area for example, will ensure that potential privacy and dominance effects to neighbours will be effectively managed. In addition, there is a private road between the existing Residential - Large Lot houses and the subject site, providing a separation distance.

The Landscape Assessment (Appendix 7) has undertaken an analysis of the visual effects on the surrounding viewing audiences from the site. The visual effects can be considered the main driver of effects on amenity.

The Landscape Assessment considers that those residents whose properties bound the site would be most affected by development resulting from the proposed zoning. The level of exposure of the bounding properties along the wider eastern edge of the site varies considerably. A few properties are oriented to take in views to the west, whereas the balance have chosen to heavily plant their western boundary.

It is considered that introducing Residential Single House development to the site would bring a predictable extension of the existing Foster Crescent suburban neighbourhood into this area. When compared with the visual and character effects of a permitted Residential Large Lot development, Residential Single House use of the site would bring a moderate – low level of adverse visual effect to those properties set back from the site and the related road corridor, and a moderate adverse visual effect to those which bound the site. The Landscape Assessment considers that the owners of those properties which have provided for a view across the site to the west would probably respond to either a Residential Large Lot or Residential Single House scenario with boundary screen fencing or planting in order to maintain privacy to their outdoor spaces.

For residents of Te Whau Lane, the Landscape Assessment considers that the adverse visual effect arising from the proposed rezoning would be moderate to high for these residents. That impact would be primarily experienced from the accessway, rather than within their properties. This is because these homes tend to be oriented to the estuarine and rural views to the northwest with their glazing and living areas, as distinct from the north eastern aspect occupied by the site.

Because of the shared boundary, there is a close relationship between the site and Te Whau Lane. Therefore, it is considered that Te Whau Lane residents using their access will have their primary experience of the future development of the site as they travel to and from their properties, rather than from within their properties.

As stated above, to mitigate these potential visual and amenity effects, it is proposed to have a 5 metre wide landscape buffer; a restriction to single storey dwellings only; a minimum 15 metre setback from that common boundary and a graduation of lot sizes across the site, with larger lots (800m² approx.) along the western boundary.

To conclude, within the context of the Residential zone where urban activities are expected, and where the proposed re-zoning is an extension of the existing neighbouring zoning, it is considered that overall, the potential effects on visual amenity from the proposed rezoning on the environment will be minor.

9.4 TRANSPORT

A Traffic Impact Assessment (TIA) has been prepared for the Plan Change and is included at Appendix 5 to this report. The TIA has based its assessment on the site generating 52 lots. The TIA report has focussed on addressing the following:

- a) Whether any upgrades to the surrounding road network are required to enable development, taking into account the potential trips generated within the Plan Change area;
- b) The appropriateness of the future local road network within the Plan Change area; and
- c) Pedestrian access ways to connect to existing public walkways.

These matters are addressed in turn below.

9.4.1 Existing Road Network

The TIA outlines the expected volume of traffic generated by the Plan Change area and the consequent impact on the existing road network and intersections.

The TIA states that the traffic generation associated with a 52-lot subdivision is predicted to be in the order of 520 vehicle trips per day and 52 trips during commuter peak periods. All vehicle movements to and from the subdivision will be via Foster Crescent with access to Mahurangi East Road via an intersection with Iris Street.

The Assessment considers that the traffic generated by the proposed Plan Change and residential subdivision will not create any tangible safety or operational concerns for the surrounding road network. In addition, the Assessment found that the additional traffic movements attributable to the proposed residential subdivision will not noticeably affect pedestrian safety on Foster Crescent or Iris Street.

9.4.2 Future Local Road Network within the Plan Change Area

All details associated with the future local road network within the Plan Change area will be determined through the subdivision resource consent process.

Vehicle access to the subdivision will be via an existing cul-de-sac head on Foster Crescent. The detailed design of the proposed new roads, including geometric alignment, carriageway formation, footpaths, berms and intersection arrangement will be developed as part of the subdivision consenting process.

The Assessment considers that the shared private access (Te Whau Lane) will have to be adjusted to create a new vehicle crossing off the proposed new road carriageway. Similarly, the existing vehicle crossing for Numbers 1 or 2 Foster Crescent will have to be reconstructed to align with the new road formation for the proposed subdivision. The design and reconstruction of the vehicle crossings for Numbers 1 and 2 Foster Crescent and Te Whau Lane will be subject to consultation with the owners of these properties, and Auckland Transport, as road controlling authority. This will be addressed with at the subdivision stage.

9.4.3 Pedestrian Access ways

The two proposed roads included in the subdivision will have footpaths. The new footpaths will connect with Foster Crescent at the cul-de-sac head. The TIA confirms that changes to the existing turning head on Foster Crescent will consider the safe operation of the existing footpath on Foster Crescent and connection with the off-road path linking with the Snells Beach Primary School.

9.4.4 Auckland Transport Feedback

Auckland Transport (AT) has provided feedback to the proposed Plan Change. Details of their feedback are in the Consultation Report (Appendix 8). They have no issues with the Plan Change, given the development trip generation is low and there are no known existing traffic issues on the wider network, in particular the Iris Street intersection.

9.4.5 Transport Conclusion

The Assessment concludes that the predicted increase in vehicle movements associated with the proposed Plan Change and subsequent subdivision is not expected to generate a notable concern with respect to queuing or delay on Foster Crescent and Iris Street, nor at the intersection of Iris Street with Mahurangi East Road. In addition, the local road network within the Plan Change area can be designed to be well connected and appropriately provide for all modes. Feedback from AT state that they have no issues with the Plan Change proposal (refer Consultation Report, Appendix 8).

9.5 ECOLOGY

An ecological assessment has been undertaken to support the Plan Change and is included as Appendix 6 to this report. This includes an assessment of terrestrial ecology (vegetation, herpetofauna, and avifauna) and freshwater ecology.

B&A

9.5.1 Terrestrial Ecology

As described in section 3 of the Ecological Assessment, the existing environment of the site consists of a variety of vegetation, avifauna and herpetofauna. Of particular relevance, only four small tōtara trees were located on site which are the only native trees of any significance found within the site. Further, no at risk or threatened native birds were recorded during the site visits and no native skinks and geckos were detected on site. Overall, the ecological vegetation and the habitable value for avifauna and herpetofauna within the site are considered very low.

9.5.2 Freshwater Ecology

The site contained three main overland flow paths (Watercourses 1, 2 and 3) that run in a general south-north direction before draining into an inlet of the Mahurangi Harbour (Figure 15).

B&A



Figure 15: Watercourses and their classification within the site (Source: Bioresearches 2018)

The remainder of the overland flow paths within the site contained no flowing water, had no defined channel and contained established terrestrial vegetation across their entire widths. Additionally, no evidence of floodplain debris or substrate sorting was evident throughout the watercourses. Accordingly, these reaches are classified as ephemeral under the AUP. These ephemeral reaches are considered to be of very low aquatic ecological value, due to the lack water flow, shading, aquatic habitat and hydrologic heterogeneity.

9.5.3 Ecology Conclusion and Recommendations

In relation to ecology, the assessment makes the following conclusions and recommendations:

- *The permanent section of Watercourse 1 as well as the wetland and its associated boggy areas and ephemeral reaches is considered to have the highest current ecological value and the highest potential ecological value. Through the design process these areas of highest ecological value should be retained;*
- *The proposed Plan Change provides for the reclamation of: the ephemeral reaches associated Watercourses 1-3; the short permanent section of Watercourse 2 (10m); and the artificial stock pond and the boggy area associated with Watercourse 3. All of these areas are considered to have a low or very low current ecological value. In addition, these areas are also considered to have low ecological potential due to their relatively small catchments, lack of aquatic habitat, and lack of upstream connectivity. Consequently, the adverse aquatic ecological effects of the proposed development are considered minor;*
- *Due to the very low terrestrial ecological value of the site the adverse terrestrial ecological effects of the proposed development are considered minor;*
- *It is recommended that the permanent section of Watercourse 1 (downstream of the culvert) as well as the wetland and its associated boggy areas are enhanced through restoration planting and protected through a covenant. There should also be a requirement for a Weed Management and Planting Plan prior to earthworks commencing; and*
- *The recommended enhancement would entail the restoration of approximately 40m of permanent watercourse and 110m² of wetland habitat, including the retention of the tōtara. Overall the proposed development would constitute a net biodiversity gain.*

The areas recommended for enhancement are all located within an indicative reserve of the subdivision. Based on the ecological assessment, the recommended enhancements to the wetland area and the watercourses can be addressed through the resource consent process.

To facilitate an urban development of the land some filling of ephemeral watercourses, 10m of a permanent watercourse, an artificial stock pond, and a boggy area will be required. The effects of any required filling and the adequacy of the mitigation proposed would be considered as part of the resource consent process under the standard AUP provisions.

The National Policy Statement for Freshwater Management 2011 (NPSFM) sets a national policy framework for managing freshwater quality and quantity. Objective A2 seeks that the overall quality of fresh water is maintained or improved. Given the proposed restoration of the wetland and stream on the site, this proposal is

considered to be consistent with the NPS on Freshwater Management. The wetland and stream restoration will be assessed against the Auckland Unitary Plan provisions through the subdivision application.

On the basis of the above, it is considered that the potential effects of the rezoning Plan Change on the ecological values of the environment related to terrestrial and freshwater ecology will be minor, due to the low ecological values currently on the site. In addition, the proposed development will have a positive ecological effect taking into account the recommended restoration of the wetland and permanent watercourse within indicative reserves.

9.6 FLOODING, STORMWATER MANAGEMENT, WASTEWATER AND WATER SERVICING

An Engineering Report was prepared to inform the Plan Change, which is included at Appendix 3 to this report.

9.6.1 Flooding

The subject site is not within an identified flood plain. The Engineering Report considers that there is no substantial increase in the risk of flooding or inundation of the surrounding properties from the creation of new impervious areas within the site because runoff is discharged directly into the Mahurangi Harbour.

9.6.2 Stormwater Management

Stormwater runoff from the site drains into two flow paths running through the site. Both flow paths discharge into a small degraded wetland at the lowest point on the site. From the wetland, the stormwater runoff drains into the Mahurangi Harbour.

In terms of the management of stormwater quality, the subdivision proposes to apply the standard quality rules in Chapter E8 Stormwater Discharge and Diversion of the AUP. This will ensure that there are rules in place to manage the stormwater runoff quality from new impervious areas that have the potential to adversely affect waterways. The engineering report proposes to use stormfilters for the treatment of runoff from both road areas and residential areas. No additional controls to manage the quality of stormwater runoff are considered necessary.

In terms of managing stormwater flow, the Engineering Report (Appendix 3) considers that attenuation for this site is not required as runoff is discharged directly into the Mahurangi Harbour. As such, there is no substantial increase in the risk of flooding or inundation of the surrounding properties from the creation of new impervious areas within the site. The stormwater network serving the site has been designed for the impermeable areas created as well as the increase in rainfall due to climate change.

In terms of conveyance, it is proposed to convey stormwater through a combination of piped networks and catchpits. The treated stormwater will be discharged to the existing wetland within the Plan Change area, and then into the Mahurangi Harbour.

Overall, it is considered that stormwater can be managed on site, ensuring that the effects of urban development on the Mahurangi Harbour and the Dawson Creek tributary are minor.

9.6.3 Wastewater

There are two wastewater lines currently extending through the property. A gravity line extends through the southeast corner of the site. Due to the location of this pipe above all the proposed lots, it is not practical to discharge wastewater into this line. The other line is a Watercare rising main located along the northern boundary of the site. A pump station is located on the eastern boundary of the subject site from which this rising main extends across to the treatment ponds on the other side of the estuary.

As this line is the main wastewater line for Snells Beach, investigations are ongoing to ensure the proposed subdivision lot layout protects the integrity of the wastewater main. Watercare are being consulted through the investigation process.

The Engineering Report (Appendix 3) sets out a proposed wastewater servicing plan and includes options for the location of the required wastewater infrastructure. The options are being discussed with Watercare, and the final outcome will be included with the subdivision application. In terms of infrastructure capacity, Watercare have confirmed that there is sufficient capacity in the wastewater network to accommodate the proposed increase in dwellings.

In summary, it is proposed to install a new gravity wastewater network within the proposed subdivision, which will connect to the existing manhole located near the pump station. The layout has been designed in accordance with Watercare's Code of Practice. Therefore, there will be no wastewater effects on the environment.

9.6.4 Water Supply

In terms of infrastructure capacity, Watercare have confirmed that there is sufficient capacity in the water supply network to accommodate the proposed increase in dwellings. As the proposed development can be serviced by the existing water supply network, it is consistent with the National Environmental Standard for Sources of Drinking Water.

As the existing water supply network terminates at the end of Foster Crescent, it is proposed to extend the network into the subject site. It is also proposed to extend a link main through from Cornel Circle network to provide a loop connection for the

development. The estimate has been done of the post development water demand. The Engineering Report considers that the estimated demand for water can be satisfied through the extension of the Council water supply network to the subject site. All works will be completed in accordance with Watercare's Code of Practice. The options have been discussed with Watercare.

Regarding water supply for firefighting purposes, it is proposed to install two new fire hydrants within the development which will be able to provide sufficient firefighting water.

9.6.5 Other Utilities

In terms of telecommunications and other service connections, given the close proximity of the subject site to the existing residential areas of Snells Beach, extension of these services is likely to be feasible. Confirmation from these service providers will be included with the subdivision application.

9.6.6 Conclusion

On the basis of the above, it is considered that the potential effects on the environment of the rezoning proposal from flooding, stormwater management, water and wastewater servicing will be minor, taking into account the provisions of the AUP that will apply to the subdivision development.

9.7 COASTAL INUNDATION

Based on Auckland Council's Geomaps, under the 1% Annual Exceedance Probability (AEP) event, a small portion of the site proposed to be a reserve will be affected by coastal inundation. There is a similar coastal inundation extent for the 50- and 100-year Annual Return Interval (ARI) with a 2 metre sea level rise. Based on this, it is considered that the residential use of this site will not be affected by coastal inundation.

9.8 EARTHWORKS

The Engineering Report (Appendix 3) has considered earthworks and this has informed the Plan Change.

As part of seeking consent for the subdivision, consent will be required for the earthworks under Chapters E11 Earthworks Regional and E12 Earthworks District of the Auckland Unitary Plan. The effects of any required cut and fill and the adequacy of the mitigation proposed would be considered as part of the resource consent process under the standard AUP provisions. This includes ensuring compliance with

the National Environmental Standards for Air Quality. In addition, all earthworks activities will be undertaken to ensure that there are no stability or hazard effects.

9.8.1 Erosion and Sediment Control

Earthworks associated with implementing the subdivision consent will be undertaken to minimise any effects on water quality of the surrounding environment including the Mahurangi Harbour.

Effects arising from any earthworks required facilitate the development of the land will be assessed and managed through the resource consent process.

9.8.2 Conclusion

On the basis of the above, it is considered that the potential effects on the environment of the rezoning proposal from earthworks will be minor, taking into account the provisions of the AUP that will apply to the subdivision development.

9.9 ARCHAEOLOGY

Clough and Associates prepared an assessment of the archaeology of the site to inform the Plan Change. The report is included in Appendix 11.

In summary, no archaeological sites have previously been recorded in the Plan Change area and none were identified during site surveys. While there is some potential to expose unidentified subsurface archaeological remains during earthworks, this potential is considered to be low. However, if suspected archaeological sites should be exposed during earthworks the Accidental Discovery Rule in the Unitary Plan will apply.

Because no archaeological sites were identified, the subject site therefore has no known archaeological value or significance.

9.10 LAND CONTAMINATION

A preliminary site investigation (Appendix 4) has been undertaken of the site to determine if any potential sources of contamination from past or present land use activities have been undertaken at the site or surrounding area, to assess compliance with the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) Regulations 2011. The legislation requires that land is appropriately identified and assessed to protect human health, before it is developed.

The results of the investigation indicate that a very low potential for ground contamination exists within the property and that the NES does not apply. For this

reason, a detailed investigation is not required, and that the proposed development of the land is unlikely to pose a risk to human health.

9.11 GEOTECHNICAL

A preliminary geotechnical report has been prepared to inform the Plan Change and a copy is included at Appendix 2 of this report.

The geotechnical report concludes that buildings associated with the subdivision development can be safely located on the site provided that the recommendations given are adhered to. Those recommendations cover matters like development in the swampy areas, settlement after de-watering, flow paths, cuts, fill, site contouring, topsoiling, roads, building setback lines, retaining walls, foundation design and construction, verification checks, and service pipes.

Based on the findings of this analysis, it is considered that the land conditions are generally suitable for more intensive urban development than what is currently enabled; and can be appropriately managed through the resource consent process.

9.12 POSITIVE EFFECTS

The positive effects associated with the Plan Change are demonstrated and explained throughout this report. In summary, the positive effects include:

- The proposal being an efficient residential use of the site which is in close proximity to open space networks, community facilities, shops, public transport, and the Snells Beach Primary School; and
- The restoration of the degraded wetland and permanent stream. The positive effects associated with the Plan Change and subsequent development is the efficient residential use of the site, which is in close proximity to open space networks, community facilities, shops, public transport, and the Snells Beach Primary School. The restoration of the degraded wetland and permanent stream is also a positive effect from this Plan Change proposal.

9.13 SUMMARY OF EFFECTS

The actual and potential effects of the proposed Plan Change have been considered above, based on extensive reporting and analysis undertaken by a wide range of technical experts. On the basis of this analysis, it is considered that the area is suitable for re-zoning to Residential - Single House, and will result in positive effects on the environment in terms of the ecological restoration, and social and economic well-being of the community given the site's close proximity to community facilities

and open spaces. In addition, the development can be serviced by existing infrastructure.

10.0 SECTION 32 ANALYSIS

10.1 APPROPRIATENESS OF THE PROPOSAL TO ACHIEVE THE PURPOSE OF THE ACT

Section 32(1)(a) of the RMA requires an evaluation to examine the extent to which the objectives of the proposed Plan Change are the most appropriate way to achieve the purpose of the RMA.

10.1.1 Objectives of the Plan Change

No site-specific objectives are proposed to apply to the Plan Change site, however the objectives as set out in the Unitary Plan Single House zone are proposed to be applied, as well as the objectives associated with the relevant Auckland-wide rules. In summary, within the Residential - Single House zone, these objectives seek to ensure development is in keeping with the residential amenity values and character values of the area. It is considered that the Plan Change will achieve this objective, as all the rules, standards and controls of the Single House zone will apply to future development on this site.

10.1.2 Assessment of the Objectives against Part 2

Section 5 identifies the purpose of the Resource Management Act (RMA) as being the sustainable management of natural and physical resources. This means managing the use, development and protection of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being and health and safety while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

It is considered that the Plan Change is consistent with Part 2 of the RMA, given that the residential use of the site will remain, and only the density is proposed to change, providing more opportunities for residential development in Snells Beach in an area that is close to community facilities and at a site that can be fully serviced. This will therefore enable the community to provide for their own social and economic well-being.

The natural resources of the site, including access to the Mahurangi Harbour, the Dawson Creek tributary, and the restoration of the existing wetland area, will ensure that these natural resources will be sustained for future generations. The provisions of the AUP that will apply to future development will ensure that any development avoids, remedies or mitigates adverse effects on the environment.

Section 6 of the RMA sets out a number of matters of national importance which need to be recognised and provided for in achieving the purpose of the RMA. This includes:

- The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins;
- The protection of outstanding natural features and landscapes;
- The protection of areas of significance indigenous vegetation and significant habitats of indigenous fauna;
- The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;
- The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;
- The protection of historic heritage;
- The protection of protected customary rights; and
- The management of significant risks from natural hazards.

The proposed Plan Change does not compromise the recognition of, or provision for these matters of national importance for the reasons set out in Section 9 of this report. In particular:

- The proposal provides public access to the coastal marine area;
- The Plan Change proposal responds to the matters of importance to Mana Whenua, as identified in their Cultural Impact Assessment;
- There is no historic heritage on the site; and
- The proposal will not involve significant risks from natural hazards.

Section 7 of the RMA identifies a number of “other matters” to be given particular regard by Council. Specific matters from Section 7 that are relevant to the Plan Change include:

- *b) The efficient use and development of natural and physical resources –*

The Plan Change will support the efficient use of natural and physical resources by applying a land use zone that will result in an efficient, compact residential use of this site.

- *c) The maintenance and enhancement of amenity values; and*
- *f) Maintenance and enhancement of the quality of the environment –*

The proposed zoning will enable the amenity values of the Single House zone to be achieved. The Single House zone provisions that would apply to future development

under the AUP would ensure that a high quality, built environment is achieved that is consistent with the surrounding character and nature of the area.

Section 8 requires Council to take into account the principles of the Treaty of Waitangi. It is considered that this proposal will not offend against the principles of the Treaty of Waitangi as Mana Whenua have been consulted, and no major cultural concerns were raised.

The proposed Plan Change is a more effective means of achieving the sustainable management purpose of the RMA than the current zone or an alternative option (as detailed below). It is considered that the objectives of the Plan Change are the most appropriate way to achieve the purpose of the RMA.

10.2 APPROPRIATENESS OF THE PROVISIONS TO ACHIEVE THE OBJECTIVES

10.2.1 The Objectives

Section 32(1)(b) of the RMA requires an evaluation to examine whether the provisions in the proposed Plan Change are the most appropriate way to achieve its objectives by:

- Identifying other reasonably practicable options for achieving the objectives;
- Assessing the efficiency and effectiveness of the objectives; and
- Summarising the reasons for deciding on the provisions.

The options considered relate to the proposed zone for the Plan Change site. It is considered more appropriate to determine the extent to which the options would give effect to the relevant objectives of the AUP Regional Policy Statement as opposed to the Plan Change itself.

10.2.2 Other Reasonably Practicable Options for Achieving the Objectives

In determining the most appropriate method for achieving the objectives of the Plan Change, consideration has been given to the following other reasonably practicable options:

- Option 1: Do nothing - retain Residential – Large Lot zoning.
- Option 2: Re-zone half the Plan Change site to Residential - Single House zone.
- Option 3: Seek resource consent as a discretionary activity for either freehold sites or a comprehensive form of urban development.
- Option 4: Re-zone all of Plan Change area Residential – Single House zone - Preferred option.

Each of these alternatives is discussed below and a summary of the s32(2) matters for the options are set out in Table 1 below.

10.2.2.1 *Option 1 – Do nothing*

This is the status quo option, to retain the Residential – Large Lot zone. While this is a possible option, it is not considered the most efficient use of this site, given the site is able to be serviced by reticulated infrastructure as confirmed by Watercare, and its close proximity to community facilities and open spaces. In addition, the status quo option does not enhance the ability to create a more compact urban form, consistent with the RPS in comparison to what could be achieved through the other options. It is a discrete site that will not undermine the intent of the Future Urban Zone. For these reasons, this option is not preferred.

10.2.2.2 *Option 2 – Re-Zone half the Plan Change area Residential – Single House zone and leave the other half as Residential – Large Lot zone*

This option involves applying the Residential - Single House zone to only half the subject site, thereby allowing the site to act as a transition between the two zones on its west and east boundary. While this option is technically feasible, it is not considered viable due to the reduced number of lots that will be yielded, while all the services and infrastructure will still largely need to be established, which would result in the lots being unaffordable. Therefore, this option is not considered to be an efficient use of residential land and is not the best planning outcome. In addition, the proposed lot sizes for the subdivision have a graduation across the site from west to east, thereby achieving a transition between the zones which Te Whau Lane also provides. Therefore, option 2 is not preferred.

10.2.2.3 *Option 3 - Seek resource consent as a discretionary activity for either freehold sites or a comprehensive form of urban development*

Under this option, a resource consent could be sought as a discretionary activity for either freehold sites or a comprehensive form of urban development like Integrated Residential Development. This was considered because of the defined site-specific nature of the proposal. However, it was decided that this was not an efficient process. Resource consents would be required for developments on each site, which would be difficult to obtain due to the Residential – Large Lot zoning objectives and policies which apply to the site which are not supportive of a Single House zone type density. A plan change would deliver a more transparent approach as future development of the site will be more consistent with Single House zoning. Therefore, option 3 is not preferred.

10.2.2.4 Option 4 – Re-zone all of Plan Change area Residential – Single House zone - Preferred option

This option involves applying the Residential - Single House zone to the whole site, as proposed by this Plan Change application. The environmental effects, policy rationale and benefits for this option are outlined in the preceding sections of this report.

To summarise, this is the preferred option because it is an efficient use of residential land by delivering a compact urban form through better utilising existing urban zoned land. The subject site is close to social, educational and healthcare facilities, shops, open spaces, and the Mahurangi Harbour. Watercare have confirmed that the site can be serviced by existing reticulated services. It is a relatively small site so additional traffic generated will be able to be accommodated by the existing road network. The proposed residential density is considered compatible and appropriate with the surrounding neighbourhood.

In addition, given the subject site is within the walking catchment of the Snells Beach Primary school, having site sizes that will be more affordable for families with school aged children is considered a positive effect for the school and the social fabric of the wider Snells Beach area. Large Lot residential sites are likely to not be affordable for families with children.

Table 1: Summary of Options Analysis Addressing S32(2) Matters

Benefits	Costs	Efficiency and Effectiveness
Option 1: Do Nothing - Retain Residential Large Lot zone		
<ul style="list-style-type: none"> No community engagement and consultation required to rezone the land. Predictable for supporters of the status quo. 	<ul style="list-style-type: none"> Would result in less dwellings, where there is currently a shortfall in the number of new dwellings being constructed to meet the Council's targets. Site is within easy walking catchment of the school, but families of school aged children are less likely to be able to afford to purchase and develop a Large Lot residential site. 	<ul style="list-style-type: none"> This option is not efficient or effective given the large lots that would result, rather than the compact urban form serviced by existing reticulated infrastructure that the proposed Plan Change will deliver, which is considered consistent with the AUP, RPS and the RMA.
Option 2: Re-Zone half the Plan Change area Residential - Single House zone		
<ul style="list-style-type: none"> Would provide an even transition between the two existing zones on the 	<ul style="list-style-type: none"> Would not provide as many residential sites as if the whole site was re- 	<ul style="list-style-type: none"> This option is not efficient or effective as it would result in land being zoned for an activity that is

Benefits	Costs	Efficiency and Effectiveness
<p>west and east boundary of the subject site.</p>	<p>zoned Single House residential.</p> <ul style="list-style-type: none"> The significant costs associated with planning approval and site establishment may result in the lots being unaffordable, given the lower lot yield. 	<p>unlikely to be taken up by the market given the high costs of the resulting lots due to the consenting and development costs being spread over fewer lots created.</p>
<p>Option 3: Seek resource consent as a discretionary activity for either freehold sites or a comprehensive form of urban development</p>		
<ul style="list-style-type: none"> Less process than including a plan change before the resource consent. The defined site specific nature of the proposal lends itself to a resource consent approach to development. 	<ul style="list-style-type: none"> Less transparent approach to the development of this site. Difficult to obtain resource consents given the relevant objective and policies which do not support a single house density. 	<ul style="list-style-type: none"> Not an efficient option because consents would be required for development on each site, and a Plan Change was determined as the best option given that future development will be more consistent with Single House zoning.
<p>Option 4: Re-zone all of the site Single House zone - Preferred Option</p>		
<ul style="list-style-type: none"> Would provide additional residential sites Ensures land for residential activities is used efficiently, close to community and educational facilities, and linkages to reserves and coastal walkways. 	<ul style="list-style-type: none"> For existing properties surrounding the site this is a change in density from what was expected. 	<ul style="list-style-type: none"> This option is efficient given that the land would be developed in a compact way, and it would be market attractive for future purchasers of the lots. This option would effectively achieve the RPS objectives, particularly in relation to quality, compact urban growth that is able to be serviced by reticulated infrastructure.

10.2.3 Risk of Acting or Not Acting

In this case, there is sufficient information about the subject matter of the proposal to determine the range and nature of environmental effects of the options set out in Table 1 above. For this reason, an assessment of the risk of acting or not acting is not required.

10.2.4 Summary of Reasons for Deciding on the Plan Change

Compared with other potential zoning options for the Plan Change area, it is considered that the proposal is the most efficient and effective option. In addition, the proposed Plan Change gives effect to the AUP Regional Policy Statement, particularly in relation to urban growth (Chapter B2).

The site has linkages to and is within easy walking distance to educational, social, health and commercial facilities, and natural resources, like parks and the coastal walkway. The site is adjacent to existing residential areas of Snells Beach, and a logical extension. Within the proposed site, the potential effects of development are able to be appropriately managed through the application of the standard zone and Auckland-wide rules. Watercare have confirmed that the Plan Change site can be adequately serviced.

11.0 CONCLUSION

This report has been prepared in support of a request from Prime Property Group Ltd for a Plan Change to the provisions of the AUP to rezone 4.6384 hectares of land on the western fringe of Snells Beach for urban activities under the Residential – Single House zone provisions.

The request has been made in accordance with the provisions of Schedule 1; Section 32 of the Resource Management Act 1991, and the preparatory work has been guided by Appendix 1 of the AUP – Structure Plan Guidelines.

Based on an assessment of environmental effects and specialist assessments, it is concluded that the proposed Plan Change will have positive effects on the environment in terms of the social and economic well-being of the community. Other potential effects are able to be managed through the application of the AUP zone and Auckland-wide provisions.

An assessment against the provisions of section 32 of the RMA is provided in section 10 of the report. This includes an analysis with respect to the extent to which the purpose of the proposal is the most appropriate to achieve the purpose of the RMA and an examination of whether the purpose of the proposal is the most appropriate way to achieve the objectives.

For the above reasons, it is considered that the proposed Plan Change accords with the sustainable management principles outlined in Part 2 of the RMA and should be accepted and approved.



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**




R. W. Muir
Registrar-General
of Land

Identifier NA89A/917
Land Registration District North Auckland
Date Issued 27 March 1992

Prior References
NA70A/812

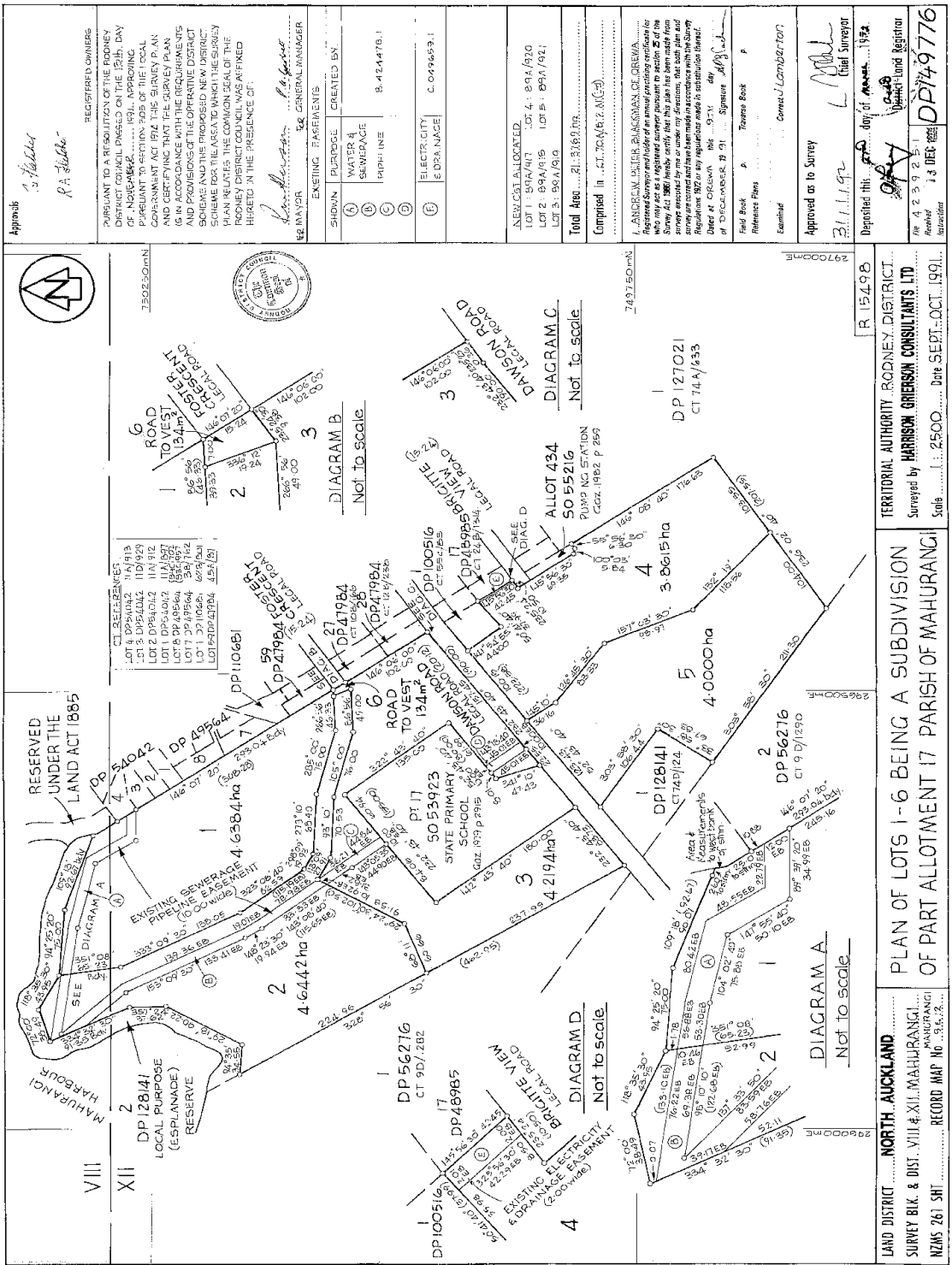
Estate Fee Simple
Area 4.6384 hectares more or less
Legal Description Lot 1 Deposited Plan 149776

Registered Owners
Foster Crescent Property Limited

Interests

Subject to a drainage right (in gross) over part marked A on DP 149776 in favour of The Rodney County Council created by Transfer B424478.1

10788100.1 Mortgage to Bank of New Zealand - 17.5.2017 at 4:21 pm



NEWCASTLE ALLOCATED
 LOT 1: 89A/917 LOT 4: 89A/920
 LOT 2: 89A/918 LOT 5: 89A/921
 LOT 3: 89A/919

Total Area: 21,316.99 m²
 Comprised in CT 70462 (M.C.S.)

1. ANZROCK WATER, BLENKINSOP, COLEMAN, ...
 who may act as a registered surveyor pursuant to section 2 of the
 Survey Act 1986 hereby certify that this plan has been made from
 surveys executed by me or under my direction, that the plan and
 the information contained therein are true and correct and that I am
 a registered surveyor as required by section 2 of the Survey Act 1986.
 Dated at Auckland this 9th day of December 2014
 Signature: *[Signature]*
 of OFFICER NUMBER 19 91

Field Book Reference Files: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P
 Examined: *[Signature]* Coroner J. LOMBARDON

Approved as to Survey: *[Signature]* Chief Surveyor
 Deposited this 9th day of December 2014.
 Registrar: *[Signature]* Registrar
 File No: 42392
 Record No: 13 DECEMBER 2014
 Sub-Identifier: DP149776

Scale: 1:2500 Date SEPT. OCT. 1991

LAND DISTRICT: NORTH AUCKLAND
 SURVEY BLK. & DIST. VIII & XII MAHURANGI
 NZMS 261 SH1 RECORD MAP No. 91.1.2

W.A. OBERHEIM, SURVEYOR GENERAL, DEPARTMENT OF SURVEY AND LAND INFORMATION, NEW ZEALAND



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**




R. W. Muir
Registrar-General
of Land

Identifier **NA89A/917**
Land Registration District **North Auckland**
Date Issued 27 March 1992

Prior References

NA70A/812

Estate Fee Simple
Area 4.6384 hectares more or less
Legal Description Lot 1 Deposited Plan 149776

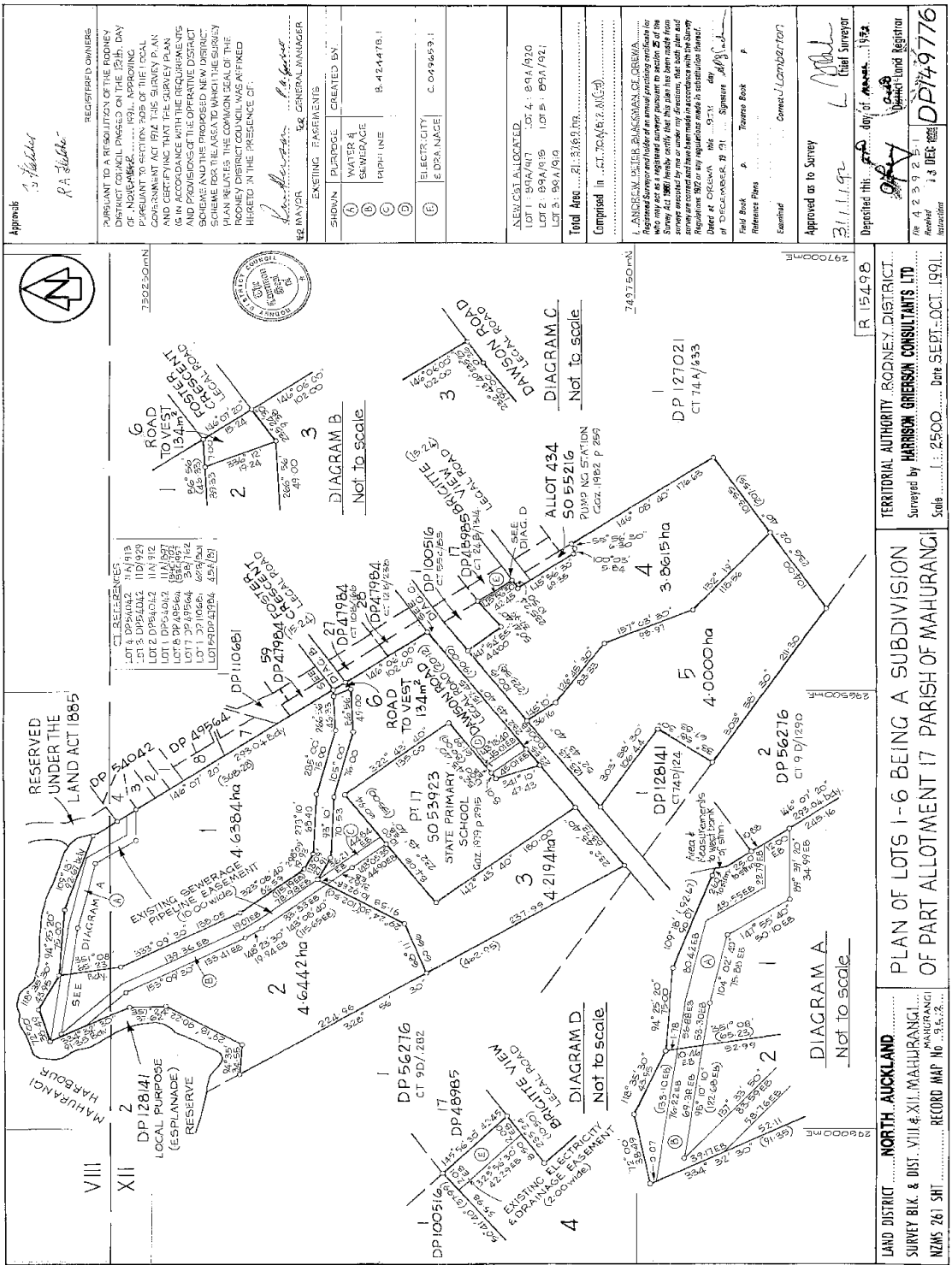
Registered Owners

Foster Crescent Property Limited

Interests

Subject to a drainage right (in gross) over part marked A on DP 149776 in favour of The Rodney County Council created by Transfer B424478.1

10788100.1 Mortgage to Bank of New Zealand - 17.5.2017 at 4:21 pm



LAND DISTRICT NORTH AUCKLAND
 SURVEY BLK. & DIST. VIII & XII MAHURANGI
 NZMS 261 SH1 RECORD MAP No. 91.1.2

PLAN OF LOTS 1-6 BEING A SUBDIVISION OF PART ALLOTMENT 17 PARISH OF MAHURANGI

TERRITORIAL AUTHORITY RODNEY DISTRICT
 Surveyed by HARRISON GRIERSON CONSULTANTS LTD.

Scale: 1:2500 Date: SEPT. 1991

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51

B424478.1 TE

MEMORANDUM OF TRANSFER CREATING
A WATER AND SEWERAGE DRAINAGE EASEMENT

WHEREAS NOEL FLETCHER and ROSLYN ALEXANDER FLETCHER both of Kaukapakapa, Farmers (hereinafter called "the Grantor") is registered as proprietor of an estate in fee simple subject however to such encumbrances, liens and interests as are notified by memoranda underwritten or endorsed hereon in the land described in the First Schedule hereto (such land being hereinafter referred to as "the land"), and

WHEREAS a sewer or drain has been constructed by THE RODNEY COUNTY COUNCIL (hereinafter called "the Council") beneath the surface of those portions of the land as are described in the Second Schedule hereto (such portions of the land being hereinafter referred to as "the servient land"), and

WHEREAS the Grantor has agreed to transfer and grant to the Council a Drainage Easement in gross in over and through the servient land for the conveyance and drainage of sewage, waste-water and water (whether rain, tempest, spring, soakage or seepage water) and the disposal thereof in such manner as the Council shall determine on the terms and conditions hereinafter set out;

NOW THEREFORE in pursuance of the said agreement the Grantor does hereby transfer and grant to the Council as an easement in gross in perpetuity over the servient land, comprising the rights powers and liberties hereinafter outlined as follows:

1. THE full free uninterrupted and unrestricted right liberty and privilege for all times hereafter to convey and drain sewage, waste-water and water in any quantities through under and across the servient land in lines of pipes and to discharge the same beyond the land and for such purposes from time to time to lay place and maintain lines of pipes over in upon and under the servient land, such pipes to be of good quality and construction and of such diameter suitable for the purposes and to be laid in accordance with good workmanship at

(such depth, along such line and in such manner as the Council shall determine necessary for such purposes, AND also full power and authority for the Council and its servants agents workmen or contractors to enter upon the land for the purposes of the easement hereby granted and created to inspect clean repair maintain rebuild relay and replace the lines of pipes and in particular but without limiting the generality of the foregoing rights:-

- (a) To use any line of pipes already or from time to time laid in replacement or in substitution for all or any of those pipes;
- (b) To lay place maintain replace, or, to have laid placed maintained and replaced lines of pipes of sufficient internal diameter and of suitable material for the purposes aforesaid under the surface of the servient land over which the easement is hereby granted;
- (c) in order to lay place maintain or construct any such lines of pipes the full free uninterrupted and unrestricted right liberty and privilege for the Council and its servants, agents, workmen and contractors with or without any tools implements machinery vehicles and animals or equipment of whatsoever nature necessary or appropriate for the purposes to enter upon the land or upon such part thereof and by such route as is reasonable in the circumstances and to remain there for any reasonable for the purpose of laying inspecting cleaning repairing maintaining rebuilding relaying and renewing the lines of pipes and of opening up the soil of the servient land to such extent as may be necessary and reasonable subject to the condition that, as little disturbance as possible is caused to the surface of the land of the Grantor and that the surface is restored as nearly as possible to its original condition and any other damage done by reason of the aforesaid operations is repaired.


AND the Grantor and the Council hereby mutually covenant and agree as follows:-

2. THE rights hereinbefore created and granted are without prejudice to and shall be in addition to any other rights which the Council may have by statute or at common law in connection with the conveyance and drainage of sewage, waste-water and water through and across the servient land AND nothing herein contained or implied shall be deemed to compel the Council to convey or drain sewage waste-water and water through the servient land and the Council may from time to time discontinue and thereafter recommence the conveyance and drainage of sewage, waste-water and water through the same at will. ✓

3. THE Grantor will not place or construct any structure which could hinder the Council's right of access to the lines of pipes or to the servient land and will not at any time hereafter do or permit or suffer to be done any act whereby the rights powers privileges and liberties hereby created and granted to the Council may be interfered with or affected or whereby the free and unimpeded flow of sewage waste-water and water through the lines of pipes may be in any way interrupted or restricted and will do nothing to injure or damage the lines of pipes or any of them as may be laid down constructed or erected in pursuance of the said easement PROVIDED ALWAYS this provision shall not affect any boundary fence between the servient land of the Grantor and any adjoining land. ✓

4. THE Grantor shall be entitled to connect to the lines of pipes laid within the servient land pursuant to this easement for the purpose of disposal of sewage from any subdivision of the land which the Grantor may carry out and for the purpose of disposal of sewage from any motor camp and/or caravan park which the Grantor may establish on the land. ✓

5. THE Council will pay the Grantor's legal costs and disbursements in respect of and incidental to the preparation and registration of this easement.



6. THE easement hereby created and granted shall not be surrendered merged modified or extinguished without the prior consent of the Council.

AND IT IS HEREBY AGREED AND DECLARED by and between the parties hereto that the true intent and meaning of this transfer and grant is that the easements rights obligations and covenants hereby created or expressed shall so far as the rules of law or equity permit enure to the benefit of and shall bind the appropriate parties thereto and their respective executors administrators assigns and successors in title.

IN WITNESS WHEREOF these presents have been executed this 20th day of May 1984/5

FIRST SCHEDULE

All that piece of land containing 22.¹³⁶⁰~~357~~ hectares more or less being parts Allotment 17 Parish of Mahurangi, and being the remainder of the land in Certificate of Title ⁵⁶⁸~~508~~ Folio ⁵³⁶~~288~~ (North Auckland Registry) limited as to parcels and being SUBJECT TO Mortgage 796663.4.

SECOND SCHEDULE

Those portions of the land described in the First Schedule hereto, being more particularly the areas marked P and R on Survey Office Plan 55144.

EXECUTED by the Grantor)
the said NOEL FLETCHER)
and ROSLYN ALEXANDER)
FLETCHER in the)
presence of:-)

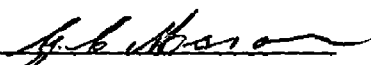
x W Fletcher x
N Fletcher

R. A. Fiddone

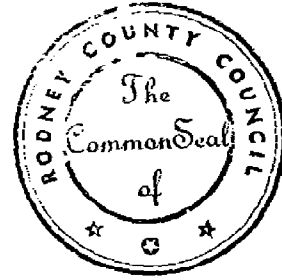
Grantor
W Fletcher
Auckland

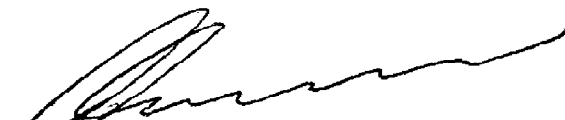
[Signature]

THE COMMON SEAL of THE)
RODNEY COUNTY COUNCIL was))
hereunto affixed in the)
presence of :)



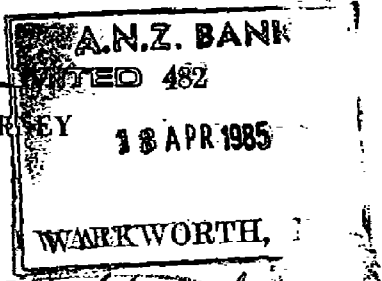
County Chairman





County Manager

CERTIFICATE OF NON-REVOCATION OF POWER OF ATTORNEY



I, JOHN CROZIER HANNA of Auckland

New Zealand AREA MANAGER for ANZ Banking Group (New Zealand) Limited, hereby certify:-

1. THAT by deed dated the 13th day of November, 1979 copies of which are deposited in the Land Transfer Offices at:-

AUCKLAND	AS No.	696757	HOKITIKA	AS No.	057010
BLenheim		96972	INVERCARGILL		052479.1
CHRISTCHURCH		251971.1	NAPIER		372018.1
DUNEDIN		526566	NELSON		200451
GISBORNE		133407.1	NEW PLYMOUTH		263122
HAMILTON		H262523	WELLINGTON		293856.1

I was appointed Area Attorney of ANZ Banking Group (New Zealand) Limited incorporated in New Zealand and having its head office at Wellington, Bankers, on the terms and subject to the conditions set out in the said deed.

2. THAT at the date hereof I have not received any notice or information of the revocation of that appointment by the winding up or dissolution of the said ANZ Banking Group (New Zealand) Limited or otherwise.

SIGNED at Auckland this

17th day of April 19 85 J.C. Hanna

CONSENT OF MORTGAGEE

ANZ BANKING GROUP (NEW ZEALAND) LIMITED being the Mortgagee under and by virtue of Memorandum of Mortgage No. 796663.4 (North Auckland Registry) HEREBY CONSENTS to the registration of the foregoing transfer creating a water and sewerage drainage easement in favour of THE RODNEY COUNTY COUNCIL affecting the land described in the said transfer. ✓

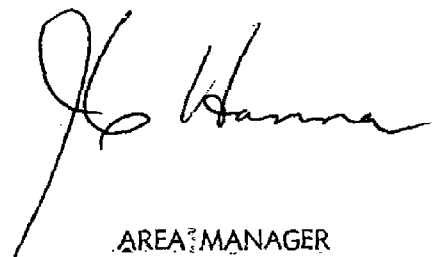
DATED this 17th day of April 1984.85 ✓

Signed by
ANZ BANKING GROUP (NEW ZEALAND) LIMITED
by its Attorney JOHN CROZIER HANNA
in the presence of:



BANK OFFICER
AUCKLAND

ANZ Banking Group (New Zealand) Limited
By its Attorney



AREA MANAGER



G.P. HANNA, LL.M.
E.D. CAMERON
D.G. LEF, LL.B.
B.K.G. SANDERSON, LL.B., NOTARY PUBLIC.
R.W. WORTH, M.JUR.
N.R. CAMERON, LL.B. (HONS), LL.M.
R.J. KATZ, LL.B. (HONS)
J.R. FLAWS, M.JUR.
M.L.S. COOPER, M.JUR.
J.R. GRESSON, LL.B. (HONS)
P.M. GAPES, LL.B. (HONS), B.COM.
T.M. FULLER, LL.B.
S.G. HUTCHINSON, LL.B., B.COM.

BUTLER WHITE & HANNA

BARRISTERS AND SOLICITORS

17 ALBERT STREET
AUCKLAND
NEW ZEALAND

CONSULTANT
B.L. MACEDO, LL.B.

TELEPHONE: (09) 770-989
P.O. BOX 46, AUCKLAND 1.
TELEX: NZ 2678
FAX: (09) 32-533 GIII
DX 11

WHEN REPLYING OR CALLING
PLEASE REFER TO

Ms McPherson
211036

11 June 1985

The District Land Registrar,
Land Transfer Office,
Private Bag,
AUCKLAND.

For: Ms V.M. Dempster

Dear Sir,

Abstract No. B418969 - Transfer Creating Sewage Drainage
Easement - Survey Office Plan 55144

With reference to the rejected registration and our subsequent telephone conversation we now enclose the form fee of \$15.00 and with reference to the requirement for inclusion of a Survey Office Plan would point out the following :-

1. We requested instruction from the Land Transfer Office regarding definition of the easement by Survey Office Plan prior to preparing and having executed these documents. We enclose a copy of our letter and your reply indicating that reference only to the Survey Office Plans would be acceptable and it would not be necessary to attach plans to the documents.
2. It does not seem possible to insert a plan into the document at this stage.
3. We have already registered a number of these easements without a Survey Office Plan included.

Yours faithfully,
BUTLER WHITE & HANNA



M.J. MCPHERSON

C0007X/21



DEPARTMENT OF JUSTICE

Land Registry Office
Private Bag
Auckland
Telephone 771-499

National Insurance Building
Victoria Street
Auckland

**COPY FOR YOUR
INFORMATION**

In reply, please quote

1/15/3

5 October 1984

Messrs Butler White & Hanna
Solicitors
P O Box 46
AUCKLAND 1

Attention: Ms McPherson 211036

Dear Sirs

SURVEY OFFICE PLANS 55137 TO 55144 AND TRANSFER CREATING SEWAGE DRAINAGE
EASEMENT

I refer to your letter dated 3 October 1984.

The Memorandum of Transfer creating a Water and Sewerage Drainage Easement submitted with your letter is approved as to form, subject to the following:

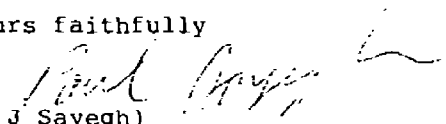
1. Use of paper of approved quality as usual, such as Goatskin Parchment paper.
2. Secure affixing together of the pages by binding or gluing along their length.
3. Pencil notes on the backing page.
4. Satisfactory completion of the missing details, such as the names of the Grantor and the land descriptions.
5. Due execution, witnessing and certification as correct for the purposes of the Land Transfer Act 1952.

Definition of the easement by reference to the Survey Office plans would be acceptable. The appropriate letter (e.g. " A" on S O Plan 55137) on the plan should be referred to.

Your documents are returned herewith.

Please note that if it is proposed to use this form on a repeated basis, this approval is tentative only, and the final form will require to be printed and given final approval.

Yours faithfully


(P J Sayegh)
for District Land Registrar

Encl.

BUTLER, WHITE & HANNA

BARRISTERS AND SOLICITORS

17 ALBERT STREET
AUCKLAND
NEW ZEALAND

TELEPHONE (09) 770-969
P.O. BOX 46, AUCKLAND 1
TELEX NZ 2678
FAX (09) 32-533 GHI
DX 11

WHEN REPLYING OR CALLING
PLEASE REFER TO
Ms McPherson
211036

3 October 1984

J. VA. LL.M.
AMERON
LEE, LL.B.
H.G. SANDERSON, LL.B., NOTARY PUBLIC
A.W. WORTH, M.JUR.
N.R. CAMERON, LL.B. (HONSILL, M.
R.J. KATZ, LL.B. (HONSILL, M.
J.R. FLAWS, M.JUR.
M.L.S. COOPER, M.JUR.
CONSULTANT
B.L. MACEDO, LL.B.

The District Land Registrar
Land & Deeds Registry
Private Bag
AUCKLAND

**COPY FOR YOUR
INFORMATION**

Dear Sir,

SURVEY OFFICE PLANS 55137 TO 55144 & REGISTRATION OF SEWAGE
PIPELINE EASEMENT - RODNEY COUNTY

We wish to create the Easements as shown on Survey Office Plans Nos. 55137 to 55144 (photocopies attached). Because of the nature of the covenant we would rather do it by means of a transfer under the Land Transfer Act than a Declaration under the Public Works Act.

Could you please provide us with written advice as to the two following queries:

1. Are the Survey Office Plans acceptable to define the Easement in the transfers under the Land Transfer Act?
2. If not, will copies of the plans attached to each transfer be acceptable as diagrams?

As this matter has been in progress for some time now and we wish to complete it as soon as possible we would appreciate your early reply.

Yours faithfully
BUTLER WHITE & HANNA

M.J. MCPHERSON

TRANSFER CREATING A WATER
AND SEWERAGE DRAINAGE EASEMENT

N. & R.A. FLETCHER

Grantor

THE RODNEY COUNTY COUNCIL

Council

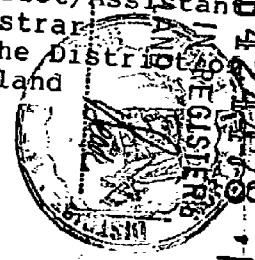
Correct for the purposes
of the Land Transfer Act
1952

.....
Solicitor for the Council

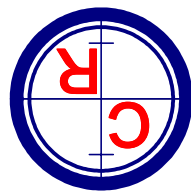
Particulars of the
Register of the
schedule of the
the date and time
stamped by

.....
District/Assistant Land
Registrar of the District of North
Auckland

10.47 AM JUN 85
PARTICULARS ENTERED IN THE
LAND REGISTER AUG 1952
ASSISTANT REGISTRAR
BUTLER WHITE & HANNA
58/58c



BUTLER WHITE & HANNA
SOLICITORS
AUCKLAND

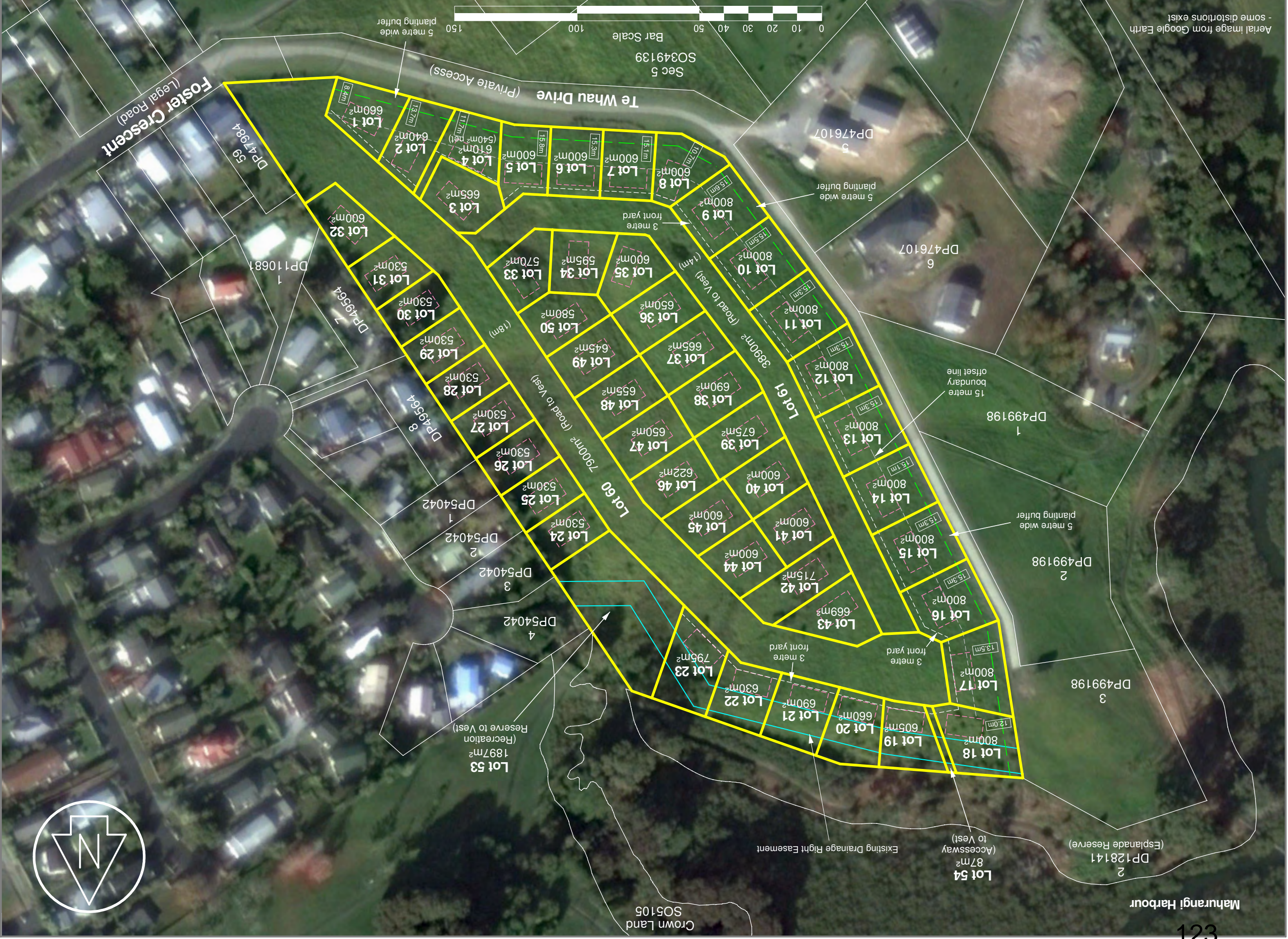


C & R SURVEYORS LTD
 Registered Professional
 Land Surveyors
 Phone (09) 426 4051 Fax (09) 426 9087
 www.crsurveyors.co.nz
 PO Box 564
 Orewa 0946

**Lots 1 to 50, 53 to 54 and 60 to 61
 Being Proposed Subdivision
 of Lot 1 DP149776**

Prime Property Group Ltd
 Client:
**Snells Beach
 Foster Crescent**

Date: 18 September 2018
 Job Number: 5708-7
 Original Scale: 1:1500
 Original Size: A3



Notes:
 1. This plan is prepared for the purpose of obtaining subdivision consent and is not to be used for any other purpose.
 2. All metric measurements and areas are subject to final survey.

Total Area: 4.6384 ha
 Comprised in: NA89A/917

DRAFT

Notes:

- 15.3m - denotes offset measurement from boundary to shape factor corner
- denotes 15 by 8 metre shape factor

North Arrow

Territorial Authority: Auckland Council



PRIME PROPERTY GROUP LTD

GEOTECHNICAL REPORT FOR PROPOSED SUBDIVISION

OF

LOT 1 DP 149776

FOSTER CRESCENT, SNELLS BEACH

Project Reference: 13641
4 April 2018

CONTENTS

1	INTRODUCTION	1
2	INVESTIGATIONS	2
3	SITE CHARACTERISTICS	3
3.1	TOPOGRAPHY	3
3.2	DRAINAGE	5
4	ENGINEERING GEOLOGY	6
4.1	GENERAL	6
4.2	GEOLOGICAL SETTING	7
4.3	SUBSURFACE CONDITIONS	7
4.3.1	Ridge Areas	7
4.3.2	Low-Lying and Swamp Areas	8
4.3.3	Groundwater Conditions	9
5	NATURAL HAZARDS AND GROUND DEFORMATION POTENTIAL	9
5.1	GENERAL	9
5.2	EARTHQUAKE SHAKING	10
5.3	SLOPE INSTABILITY	10
5.3.1	Slope Conditions	10
5.3.2	Stability Analysis	11
5.4	SOIL CREEP	12
5.5	COMPRESSIBLE GROUND AND CONSOLIDATION SETTLEMENT	12
5.6	EROSION AND SUBSIDENCE	12
5.7	GROUND SHRINKAGE AND SWELLING POTENTIAL	13
6	ENGINEERING RECOMMENDATIONS	13
6.1	GENERAL	13
6.2	SITE DEVELOPMENT AND EARTHWORKS	14
6.2.1	Drainage	14
6.2.1.1	Flow Paths	14
6.2.1.2	Swamp Areas	15
6.2.1.3	Settlement from Dewatering	15
6.2.2	Cuts	16
6.2.3	Fills	16
6.2.4	Site Contouring and Topsoiling	18
6.3	ROADS	18
6.4	BUILDING SET BACK LINES	18
6.5	RETAINING WALLS	19
6.6	FOUNDATION DESIGN AND CONSTRUCTION RECOMMENDATIONS	20
6.7	VERIFICATION CHECKS	20
6.8	SERVICE PIPES	21
7	OTHER CONSIDERATIONS	21

APPENDIX A: PROPOSED SCHEME PLAN [C&R SURVEYORS]

APPENDIX B: SITE PLANS AND CROSS SECTIONS

APPENDIX C: SUBSURFACE INVESTIGATION DATA

APPENDIX D: SLOPE STABILITY ANALYSES

APPENDIX E: LABORATORY TEST CERTIFICATES

1 INTRODUCTION

Land Development & Exploration Ltd (LDE) was engaged by Prime Property Group to undertake a geotechnical assessment of the property proposed for subdivision development at Fosters Crescent, Snells Beach. The purpose of the assessment was to determine the suitability of the land for intensive residential development, and to provide engineering recommendations for the overall development

The subject property is legally described as Lot 1 DP 149776. It is located approximately 500m south of the central Snells Beach township, on the western side of the main Mahurangi East ridgeline (Figure 1). The site covers an area of 4.64ha.

The proposed scheme plan is shown in Figure 2 below and attached to this report as Appendix A, provided by C&R Surveyors, ref. 5708 dated 15/01/2017. The development will create 52 residential lots ranging in size from 530m² to 830m², along with several public and utility reserve lots, and two public vested roads.



Figure 1: Location of the subject site [Google Earth].



Figure 2: Proposed subdivision scheme plan [provided by C&R Surveyors, ref. 5701].

2 INVESTIGATIONS

Our investigation of the site included the following work;

- A desktop study of published and unpublished information of the site.
- An analysis of historic aerial photographs to assess key geomorphological features of the site and surrounding area.
- A walkover assessment of the site and surrounding area to assess its geomorphology and any features which may potentially influence the long-term behaviour of the site.
- Inspections of existing exposures of the underlying geology, and areas where a high groundwater table is evident.
- Fifteen 50mm hand augered boreholes put down to 3m to 5m depth or refusal. Measurements of the undrained shear strength were taken at 200mm intervals within cohesive soils encountered down through the boreholes using a calibrated shear vane. The soils encountered were generally logged to NZ Geotechnical Society Logging Guidelines for the field classification of soil and rock for engineering purposes.
- Eleven test pits carried out using a 16-tonne excavator, to a depth of 4.5m or refusal/collapse.
- Two disturbed soil samples retrieved from the site and taken for laboratory testing.

The locations of the subsurface investigations are shown on the appended Geotechnical Investigation Plan (Appendix B). Logs of the boreholes and test pits are also appended (Appendix C).

The bulk of the field work was carried out in spring 2016, with further assessment and the collection of soil samples undertaken in autumn 2018, in response to amendments to the development proposal.

3 SITE CHARACTERISTICS

The main ridgelines in the area are orientated north-south along Mahurangi East Road and east-west along Dawson Road, which are located to the east and the south of the subject site respectively. The site is located on northeast aspect slopes of a spur ridge which extends north from Dawson Road.

The site covers an area of 4.64ha, currently occupied entirely by farmland. The site is free from any existing structures within the property, with the exception of a livestock race near the south-eastern corner. Overhead electricity lines pass through the site from southeast to northwest. Underground sewer lines pass through the northern and of the site and through the south-eastern corner.

The site characteristics are summarised on the appended topographic site plan and detailed in the sections below.

3.1 Topography

The site can be categorised into two areas: the ridge area occupying the western side of the site; and the low-lying areas on the eastern side (delineated by the dashed red line on Figure 3). The low-lying area is then divided into western and eastern catchments by a central spur (Figure 3). These areas are more accurately defined against the topographic survey data in Appendix B.

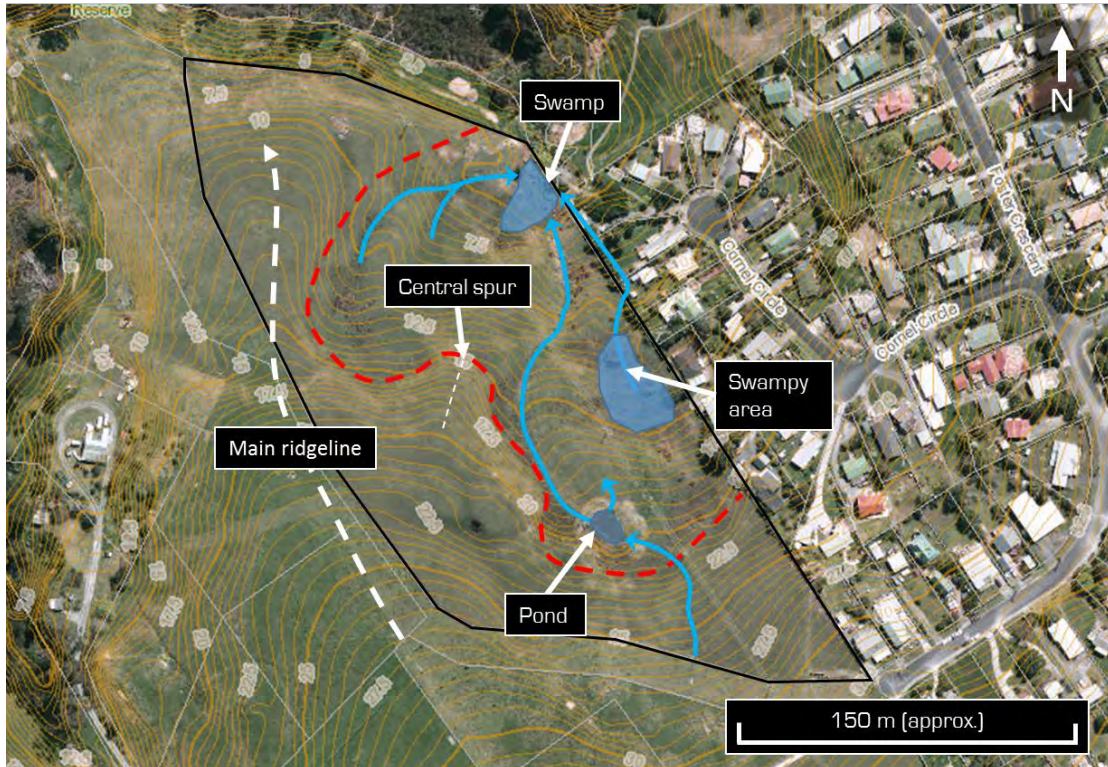


Figure 3: Simplified topographical plan of the site, identifying key features. Main drainage paths through the site are shown in blue. The boundary of the subject site is shown in black. Sourced from Auckland Council GeoMaps.

The ridge area is dominated by low-angled (5-10°) undulating slopes descending from the main ridgeline. The slopes generally appear stable, with no signs of active instability, however the overall topography indicates that the site may have been unstable in the past. In several areas, the land is contoured in such a way the no natural overland drainage is available, creating hydrological “sinks” (Figure 4). This has resulted in large areas of rushes growing in elevated positions.

At the margins between the ridge area and the low-lying area, slopes generally steepen (up to approximately 15°). This is particularly evident to the immediate east and west of the central spur. These sloping areas have a less stable appearance, forming lobe-like features (Figure 4). The ground in these areas is generally stepped, indicating that shallow soil creep is occurring on the steeper slopes.

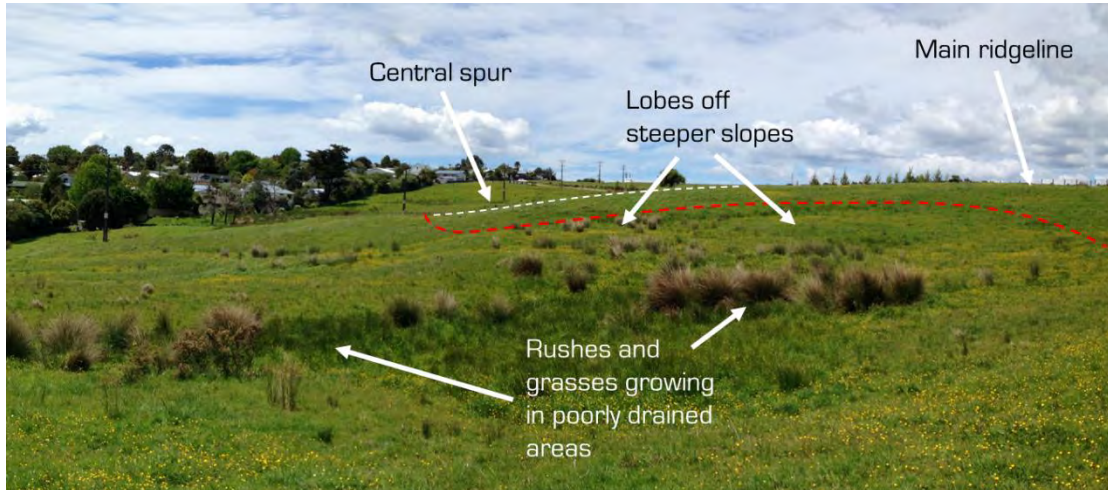


Figure 4: View southeast over the western catchment area, showing examples of steeper slopes coming off the main ridge and central spur, and areas of poor surface drainage.

The low-lying area is dominated by undulating gently sloping ground, interspersed with flow paths and swamp areas. The area is predominantly in pasture; however, a large portion of the area is also covered by rushes, indicating frequent surface saturation. Several trees are present within the low-lying area, generally within and around the fringes of the swamps.

3.2 Drainage

A man-made pond is present at the southern end of the low-lying area, at the base of the slopes descending from the main ridgeline (Figure 4). The pond has been constructed within what appears to have been a natural flow path, possibly over a perennial spring. An earth bund surrounds the pond on the downstream sides. A culvert is built into the bund on the western side, which drains into a natural flow path. A ditch has been scoured through the bund on its northern side, which appears to be the primary outlet for the pond. From here the pond water appears to flow both into the flow path toward the west and toward the swampy area to the east.

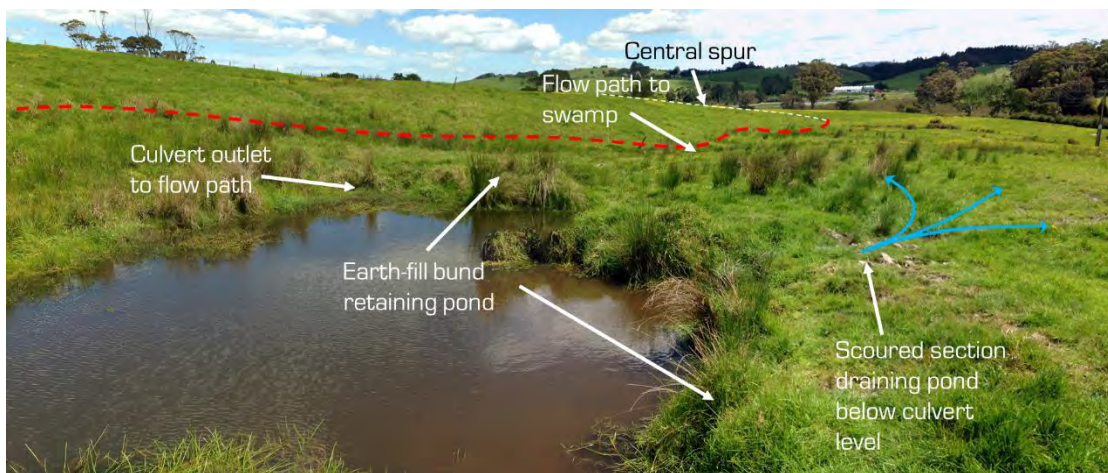


Figure 4: View north over the man-made pond.

Two main watercourses flow through the site, both stemming from the eastern catchment (shown on Figure 2). Of these, the central flow path takes most of the flow from the pond, which in turn is fed by overland flow from the paddocks to the south of the subject property. The flow path follows the base of the steeper slopes from the ridge area, then deviates toward the northeast at the central spur. Towards the lower half of the site the flow path begins to incise quite deeply below the surrounding ground level, reaching a maximum depth of approximately 1m, while remaining less than 0.5m wide. In some areas, shallow instability has resulted in collapse of the banks into the gully. In other areas, the flow path is entirely underground, evidently flowing through a subterranean tunnel. It is likely the deep incision of the flow path has resulted from past tunnel gully erosion, and it is apparent that this continues to occur in the lower areas of the flow path (Figure 5).

The second main watercourse flows out of the swampy area on the eastern side of the property. This swampy area is fed by stormwater discharge from adjacent properties to the east, as well as overland flow from the pond to the west. The flow path flows along the eastern boundary of the property, in an incised gully, eventually discharging into the swamp at the base of the slope.



Figure 5: View along incised overland flow path, toward the swampy area.

4 ENGINEERING GEOLOGY

4.1 General

The engineering geology of the site is summarised below and on the appended cross sections. It is based on an integration of published and unpublished data, the geomorphology of the site, surface exposures of the underlying geology, and subsurface investigations carried out at discrete locations. The nature of the ground between the investigation points

is inferred and may vary from that described. For details of the materials encountered and measurements of their respective strengths please review the appended investigation logs.

4.2 Geological Setting

The 1:250,000 geological map of the region¹ shows the site as being underlain by Mangakahia Complex mudstone of the Northland Allochthon.

This material was encountered at shallow depth (2-3m) through the elevated ridge areas of the site, and generally at greater depth through the low-lying areas (>4m). The mudstone was found to be overlain by soils derived from in situ weathering (residual soil), and organic rich alluvium in the low-lying areas,

4.3 Subsurface Conditions

4.3.1 Ridge Areas

In the elevated areas, a shallow weathering profile was generally encountered. This generally comprised topsoil to a depth of 0.2 to 0.3m, underlain by clay and silt residual soils. These soils were found to be of moderate to high strength (stiff to very stiff), and moderately to highly plastic. Groundwater was often encountered within these soils immediately before the transition into mudstone, however the water level tended to rise up the boreholes over time, suggesting a piezometric pressure head, although due to rain over the investigation period there may be some contribution from surface water inflows.

The residual soils were found to be underlain by mudstone at 1.6m to 3m depth. In most boreholes and test pits a transition zone of soft, extremely weak mudstone was encountered above the underlying harder material. The strength of the mudstone typically increased with depth, generally becoming weak (uniaxial compressive strength of 1-5 MPa) by 4m depth.

¹ Edbrooke, S. W. 2001: "Geology of the Auckland Area". Institute of Geological & Nuclear Sciences, 1:250,000 geological map 3.

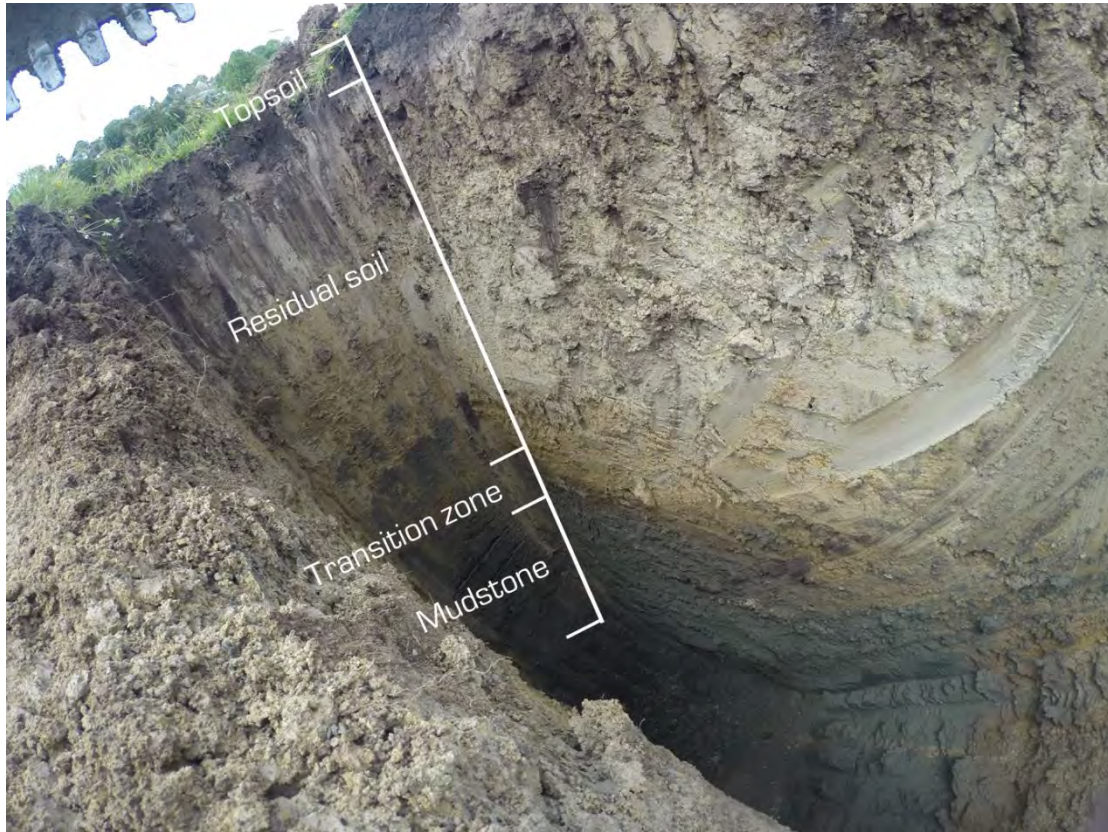


Figure 6: Typical soil profile encountered in the elevated ridge areas (photo from TP6).

4.3.2 Low-Lying and Swamp Areas

Within the swamp areas the soil profile was found to be relatively variable, although it typically included organic rich topsoil to a depth of 0.2m to 0.4m. Underlying the topsoil, either alluvium, residual soil, or residual soil derived colluvium was encountered. These layers were all typically clay dominated with high silt content, often with significant amounts of organic matter. Soil strengths were generally low to moderate (firm to stiff), although pockets of stronger (very stiff) material were sporadically encountered. Test pits carried out in the low-lying areas typically began to cave in at shallow depths.

Beneath the near surface soils, extremely weak mudstone was generally encountered. The extremely weak zone often extended to significant depths, and in many cases, competent mudstone was not encountered within 4-5m of the surface. Testing carried out near the incised flow paths generally encountered rock at a shallower depth, while testing in the swamps found greater depths of alluvium and more deeply weathered mudstone.



Figure 7: Example of test pit carried out in alluvial and colluvial soils. Collapse/slaking often occurred from a very shallow depth, indicating quite poor soil strengths (photo from TP8).

4.3.3 Groundwater Conditions

Groundwater was found to be perched above the mudstone layer in elevated areas. In the low-lying areas, it was found to saturate the near surface soils down to the underlying mudstone. Test pits often encountered groundwater under piezometric pressure, flowing out of soil fissures beyond a certain depth. Within boreholes, water levels typically rose within the hole during drilling, and continued to rise in the following days, which also indicates the presence of an piezometric pressure head. Based on borehole levels the pressure head could be up to 1.5m at the base of the steeper slopes.

We consider that complete saturation of the slopes is likely to occur during extreme rainfall events.

5 NATURAL HAZARDS AND GROUND DEFORMATION POTENTIAL

5.1 General

This section summarises our assessment of the natural hazards within the property as generally defined in the Building Act (2004) and Resource Management Act (1991), and the

potential risk that these present to the proposed building in terms of vertical and lateral ground deformation. This section also includes our assessment of ground beneath the building site which is outside the definition of “Good Ground” as defined by the Compliance Document for the NZ Building Code, NZS3604 (2011) “Timber Framed Buildings” and NZS4229 (2013) “Concrete Masonry Buildings Not Requiring Specific Engineering Design”. This is any ground which could foreseeably experience movement of 25mm or greater for any reason including one or a combination of compressible ground, land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing groundwater level, erosion, dissolution of soil in water, and the effect of tree roots.

5.2 Earthquake Shaking

We consider that the site is a Class C shallow soil site as defined by NZS 1170.5 (2004) “Structural Design Actions: Part 5: Earthquake actions – New Zealand”.

According to the NZS1170.5 calculation method, the site is expected to be subject to a peak ground acceleration of 0.17g during an Ultimate Limit State event (i.e. a large earthquake with a probability of exceedance of 1 in 500 years), and 0.04g during a Serviceability Limit State earthquake event (i.e. a moderate earthquake with a probability of exceedance of 1 in 25 years).

The Auckland Council Code of Practice for Land Development and Subdivision specifies that the 150-year seismic event be used for slope stability analysis. This has been taken as 0.1g, based on the NZS1170.5 calculation method.

5.3 Slope Instability

5.3.1 Slope Conditions

The site has an undulating and in places hummocky topography, giving the impression of underlying instability. The geomorphology of the site suggests that the ground has generally moved from the western elevated area toward the low-lying area. This is demonstrated by the presence of locally steepened areas with the appearance of scarps, and slumped areas creating swampy areas in elevated positions. However, subsurface testing at the site found relatively high soil strengths on the steep slopes, with rock present at shallow depths. No evidence of active slope movement was found during the site walkover or observed in any of the test-pits.

The soils encountered in low lying areas on the eastern side of the site were found to be the most susceptible to slope instability due to their low strengths, however slope angles within these areas are low, removing any substantial risk of movement. The low undrained shear

strength values found in these areas is likely heavily influence by the complete saturation of soils in these areas.

It is therefore considered that the landform has generally developed by steady state long term gully development processes and localised erosion features associated with the elevated groundwater conditions compromising the long-term strength of the natural hillside soils, rather than any significant active near surface or historic deep-seated slope instability movements.

5.3.2 Stability Analysis

Numerical slope stability analysis was carried out on what we assessed to be the most critical slope sections, using an integration of data derived from sub-surface testing and both published and unpublished data from similar sites. Slopes were assessed for minimum Factor of Safety (FoS) criteria as follows:

- ≥ 1.5 for slopes under normal ground water conditions.
- ≥ 1.3 for extreme (worst credible) groundwater condition.
- ≥ 1.2 for seismic condition with 150-year event (see Section 5.2).

The extreme groundwater condition was taken as complete saturation of the ground. We consider this plausible under current conditions, however following development this is likely to be become implausible, due the increase in impervious areas and improved surface drainage controls. Conservative values for material strength parameters were chosen based on the subsurface testing results, factored down to allow for any inaccuracy in measurements and possible weakening during wetter months.

Based on the worst-case slope model analysed (CS1), a FoS of 2.4 was found under normal conditions. Under extreme groundwater conditions this reduces to 1.7. Under the 150-year seismic load and normal groundwater conditions, the FoS was found to be 1.6. The slope therefore satisfies the minimum FoS criteria for all slope cases. Based on these results we consider the site to generally be stable with respect to slope instability.

A long low angled slip targeting the transition materials above the mudstone bedrock was also modelled, which yielded a FoS value of 2.7 for normal groundwater conditions (fully saturated on lower slopes), which is also considered to be satisfactory and indicates that a deep-seated mechanism at the site is unlikely. A sensitivity analysis was run with a very low strength clay layer in the transition zone (cohesion 0kPa, friction angle 10°), which yielded a FoS value of 1.6, which is also considered satisfactory. Although adding a seismic load to the sensitivity analysis yielded a FoS value of 0.8 which suggests that a failure mechanism is

possible, this combination of factors is considered to be implausible given the absence of evidence of any such very low strength clay layer identified during the test pit and hand auger investigation.

The analysis does not account for areas of shallow instability which are present around the incised stream (i.e. where slope toe has been undercut). These features are considered to be localised erosion and slumping features in response to the farm activities on the site and not part of a wider instability issue. They are expected to be able to be remediated by appropriate design and installation of drainage controls and earthworks operations during the subdivision development.

5.4 Soil Creep

In the steeper slope areas, we expect shrink-swell related soil creep to occur. This is supported by the presence of several isolated inclined fence posts across the site. As a result, we consider that all building and construction on the site should assume no lateral support from downward sloping, near surface soils (upper 1m), unless otherwise retained or accounted for during bulk earthworks operations.

5.5 Compressible Ground and Consolidation Settlement

The topsoil encountered across the site is expected to consolidate under loading and should therefore be removed prior to any construction or earthworks.

Within the swampy areas, and all areas where the water table was encountered near the surface, we anticipate that improved drainage will be required to assist with the development. The construction of a road or shared right of way is also expected to be required. Both of these activities may result in the consolidation and settlement of the alluvial clay materials present near the surface. The dewatering may also have a residual effect on the sloping areas and the soils within the upper ridge area of the site, due to the lowering of the moisture content of these soils.

Subdivision staging and earthworks should be carried out with this in mind and should follow the recommendations given in Section 6 below.

5.6 Erosion and Subsidence

Tunnel-gully erosion appears to have occurred and continues to occur along the central flow path of the site. This has resulted in collapse of tunnels and the formation of deep gullies along the flow path. The deep gullies have now induced shallow instability at the base of slopes.

This behaviour, which has occurred within what is likely to be residual soil-derived colluvium, suggests that this material is somewhat dispersive. As a result, extra care will be required when undertaking earthworks and when dealing with stormwater drainage at the site. Recommendations are given in Section 6 below.

5.7 Ground Shrinkage and Swelling Potential

Plastic soils can be subject to shrinkage and swelling due to soil moisture content variations which can result in apparent heaving and settlement of buildings, particularly between seasons.

The two disturbed soil samples taken from the site were tested for liquid limit and linear shrinkage for assessment of compliance with the definition of “Good Ground” in accordance with NZS3604 (2011). Soils with a liquid limit >50% and a linear shrinkage value >15% are considered expansive in terms of NZS3604 (2011) and therefore outside the definition of “Good Ground”. Both samples were found to not meet the above criteria for expansive soils and would ordinarily be considered to be non-expansive soils.

However, based on our understanding of the materials encountered, and the evidence of soil shrinkage and swelling observed on site (soil creep, deep desiccation cracking in test pits), we consider that that site as a whole shall be considered as moderately expansive (Class M in terms of AS2870 (2011)), unless specific testing within the building sites show otherwise.

We consider that shallow foundations may be used but should be deepened to the depth at which significant changes in soil volume do not occur, or otherwise be design to resist heave and suction caused by shrinkage and swelling.

Specific recommendations for foundation design are given in Section 6 below.

6 ENGINEERING RECOMMENDATIONS

6.1 General

From our assessment of the natural hazard and ground deformation risks presented to the proposed development we consider that buildings associated with the subdivision development can be safely located on the site provided that the recommendations given in the following subsections are adhered to.

It should be appreciated that the recommendations given below are based on the surface and subsurface conditions encountered at the time of the investigation. In addition to the

possible variations in the subsurface conditions away from the investigation points within and around the site, changes to the site levels can have a dramatic effect on the recommendations given. Furthermore, cuts into the slopes above and below the site can significantly jeopardise its stability, unless an appropriate measure is put in place to restore the stability of the slope. Accordingly, we should be contacted prior to commencing any earthworks within the slopes to assess how this may affect the subject development. We should also be contacted immediately should the ground conditions encountered vary from that described in this report.

6.2 Site Development and Earthworks

The following recommendations have been given to assist with the overall development of the site, including the formation of the building platforms and access roads. The recommendations have been made based on our current understanding of the development proposal. We should be contacted to re-assess any future development, should it change significantly from what is currently proposed.

6.2.1 Drainage

Residential development is proposed over the swampy areas of the eastern side of the site. We consider that de-watering will be required to make these areas more suitable. Drainage of these swamp areas should be carried out using an integration of stormwater run-off control and sub-soil drainage.

6.2.1.1 Flow Paths

- The existing man-made pond should be de-constructed, and all alluvium infilling the pond should be removed. All fill material surrounding the pond should also be removed from the flow path area.
- The existing flow paths should be dug out and cleared of any soft organic material and mullock. Where scouring or tunnel gully erosion has occurred in the past, the gullies should be excavated to 0.3m below their base and 0.3m around their sides. Where tunnel gully erosion continues to occur, the flow path should be excavated to 1m below the base and 0.5m around the sides.
- The gullies should be backfilled to design levels with engineered fill if required. Subsoil drains should be installed at the base of filled areas along all flow paths.
- If any areas of widespread seepage are encountered in the base of the gullies, a drainage blanket should also be installed extending from the subsoil drain to approximately 1.5m beyond the extent of the seepage.
- Areas where shallow instability has occurred on the edges of the gully should be dug out and backfilled with engineered fill.

Existing overland flow paths should be replaced with either open stormwater drains or piped along their entire length.

Open drains should be lined with geotextile and riprap to accommodate high flow velocities. The sides of shallow open drains should be no steeper than 1v to 3h. For steeper sides or for deep drains (>1m), concrete or boulder lining should be used to support the slopes.

If the flow path is to be replaced with a pipe, it should be underlain by a subsoil drain to prevent the dispersion of soils around the perimeter of the pipe. The should be joined with ductile fittings to allow for ground heave, settlement or slight lateral movements.

6.2.1.2 Swamp Areas

We expect that the swamp areas may be dried significantly by intercepting the overland flow and re-contouring the gently sloping land to provide direct overland flow paths into the gullies. Further drainage can be achieved by installing counterfort or buttress drains in key areas. Such drains should intercept the interface of the surficial residual soil and the underlying mudstone (2-3m). Drains should generally comprise trenches of drainage metal enveloped completely in a suitable geotextile fabric, capped by at least 0.5m of well compacted cohesive fill.

Subsoil drainage is expected to be most effective at the base of slopes, on the uphill side of swamp areas, and where the depth to mudstone is shallowest. Locations of drainage will need to be confirmed in conjunction with the civil design for the site and may need to be finalised on site following initial stripping earthworks.

6.2.1.3 Settlement from Dewatering

Dewatering of the swamp areas is expected to result in a potentially significant amount of settlement of the low strength near surface soils, as the moisture content is reduced. We recommend that settlement is monitored using vertical extensometers or settlement monitoring plates, to ensure that a stable state is reach before any building development occurs. Depending on the amount of drainage measures installed and fill placed, we anticipate that settlement could take up to 3 to 6 months, depending on the time of year the earthworks is carried out.

If the project requires a shorter turn-around to building development, specific investigation and appraisal of the settlement characteristics of the site soils should be undertaken by an experienced geotechnical practitioner to assess the loads imposed by the fill and any surcharge loading.

6.2.2 Cuts

Permanent cut slopes into virgin soil should be left at a slope angle of no greater than 1v to 4h, for heights up to 4m. Steeper cuts may be possible in some areas but should be assessed on a case by case basis by a suitably qualified geotechnical engineer or engineering geologist. Where cut slopes intersect the mudstone boundary specific assessment may also be required. Cut slopes should be covered as soon as possible after excavation to prevent desiccation or rilling during rainfall.

The saturated organic rich alluvium encountered in the swampy areas at the site is considered to be unsuitable for filling and should therefore be removed from the site. Non-organic alluvium is generally expected to be suitable for filling but may require significant drying before placement. Any residual soil cut from the site are expected to be suitable for placement as fill at around their natural moisture content, based on the results of laboratory testing [S1].

During the excavation of the cut there may be defects (e.g. planes of weakness) or materials exposed which were not identified or differ from that described in this report. We should be contacted without delay to assess how these may alter the stability of the slope at the design gradient. A reduction in the slope gradient, or slope support (e.g. soil nailing, retaining walls etc) may be required to maintain the level of stability required.

6.2.3 Fills

The recommendations below are given to assist with the placement of fill where required. Fill should not be placed on sloping ground unless specifically assessed by a suitably qualified person. In the low-lying areas, the placement of fill is likely to induce settlement of the low strength, saturated clay materials. In these areas the near surface organic rich material should be stripped prior to filling, and the depth of fill should be limited to 0.5m above original ground level. Greater fill depths should be carried out with specific assessment and allowance for settlement periods / consolidation time. In the flat elevated areas on the western side of the site, we consider fill depths of up to 3m to be acceptable without specific assessment, provided they are not loading the surrounding slopes.

Fill slopes using non-organic material sourced on site may be graded to a slope of 1v to 3h.

The following specification is recommended for the placement of engineered fill:

1. All topsoil and unsuitable materials, including low strength ground, uncontrolled fill, rubbish etc. shall be stripped from the footprint area of the fill.
2. All slopes greater than 4h to 1v shall be benched.

3. Where shallow groundwater or seepage is evident within the footprint areas, underfill drains should be installed.
4. The fill footprint area shall be inspected by the certifying engineer's representative prior to the placement of fill.
5. The fill shall be placed uniformly in horizontal layers not exceeding 200mm in thickness at the optimum moisture content recommended by the suppliers of the material. Alternatively, the material should be inspected and approved as suitable material by a Suitably Qualified Professional. Material which is wet or saturated shall not be placed unless that is the optimum moisture content for the fill.
6. The fill should be compacted to achieve the strengths given in the following table:

Undrained shear strength for cohesive fill (measured by <i>in situ</i> vane to plasticity corrected shear strength values)		
	Average not less than	140kPa
	Minimum single value	110kPa
Air voids percentage		
	Average value not more than	10%
	Maximum single value	12%
Maximum dry density percentage		
	Average value not less than	95%
	Minimum single value	92%

Preliminary laboratory testing has been carried out on two soil samples representative of the residual soils and alluvium soils encountered near the surface at the site. The residual soils were found to have an optimum moisture content roughly equal to the natural moisture content of the soils, at around 17%, and a maximum dry density of 1.82 t/m³. At depth these soils generally increase in moisture content, so may requiring drying before compaction.

In their natural state, the alluvial soils were found to be well wet of their optimum moisture content, meaning significant drying of these materials would be required for use as fill. Furthermore, in some areas this material contains organic matter, which would make it unsuitable for use as fill.

We consider that more comprehensive testing be carried out on cut materials prior to filling, to provide more accurate specification for compaction.

Provision should be made to ensure that the earthworks are conducted with due respect for the weather, particularly due to the low permeability of the underlying ground. The fill should not be placed on to wet ground, especially if ponded water is present.

6.2.4 Site Contouring and Topsoiling

As soon as possible, all final cut-slopes and fill slopes should be covered with topsoil a minimum of 0.10m thick to prevent the ground from readily drying out and resulting in the development of cracks. This is particularly important for the fill materials that are particular to this site due to their high expansivity (shrink – swell behaviour).

The finished ground level should be graded so that water cannot pond against, beneath or around the building areas. To achieve this, it will be important that the fill surface beneath the topsoil grades away from the site.

Contouring should avoid the potential for concentration and discharge of surface water over point locations which could result in soil erosion or instability.

6.3 Roads

The proposed development will include the construction of two public roads, as shown on the appended scheme plan. The construction of these roads will require significant cutting and filling to achieve steady grades across their length, given that they do not follow the natural topography of the site (as currently proposed).

In general, the materials over which the roads will be construction are not expected to provide favourable subgrade strengths. Based on the in-situ testing carried out across the site and the laboratory testing results, we consider that the roads should be designed for a subgrade CBR of 3% (for both in-situ and fill materials). Where the roads cross the marked swamp areas subgrade improvement by undercutting and backfilling with clean fill materials will be required to achieve this strength.

It is recommended that where the roads pass lower elevation areas, or where they are cut down into natural ground, deepened counterfort drains be constructed along the edges of the formation to aid in keeping the subgrade dry and to prevent groundwater from getting into the pavement courses. In some areas it may be necessary to provide a drainage blanket beneath road formations.

6.4 Building Set Back Lines

As the location and density of the residential subdivision development or the extent of any of the associated earthworks is not yet known, it is recommended that the requirement of any building set-back lines be carried out following the completion of the subdivision design.

6.5 Retaining Walls

The following recommendations are made to assist with the engineering design of any retaining walls:

1. For walls founded in residual soils or mudstone, the effective strength parameters of 27° friction angle, 0kPa cohesion, and unit weight of $18\text{kN}/\text{m}^3$ should be assumed for the wall design. An undrained shear strength of 75kPa can be assumed at a depth of 0.3m below ground level. These values may be revised with specific investigation.
2. Walls within the swamp areas will require specific investigation.
3. Allowances should be made for any sloping ground above and below the walls.
4. Enhanced behind wall drainage is recommended. The excavation for the drainage unit should be lined in a non-woven geotextile (filter cloth) prior to placement of the drainage metal to minimise the potential for siltation. A 100mm diameter slotted drainage coil surrounded with at least 50mm of drainage metal should be placed at the base of the drainage unit. Drainage metal should comprise clean 10mm to 20mm angular durable gravel (drainage metal) which should extend up to 70% of the wall height. The top of the drainage unit should be wrapped in filter cloth.
5. Low permeability soil should be placed into the top of the excavation above the drainage unit. The soil should be compacted in layers not exceeding 200mm using a small compactor (e.g. "wacker packer") to achieve a minimum strength of 1 blow per 50mm using a Scala penetrometer or 80kPa using a hand-held shear vane.
6. The drainage coil should be connected to the stormwater system for the development or should discharge to an area of low gradient well away from any fill.

At the construction stage the post holes or foundations should be checked by a Building Inspector or Suitably Qualified Professional to ensure that the soils encountered are consistent with those described in this report and that the depth of the excavation meets or exceeds the engineering design requirements. The wall designer should be contacted immediately should differing conditions be encountered. Alteration of the design may be required.

It is also important that adequate behind wall drainage is installed, and as such the drainage unit should be inspected by a Building Inspector or Suitably Qualified Professional prior to its backfilling.

The poles should be fully encased with concrete in accordance with the design. This includes ensuring that the poles are centred within the pile hole. All deleterious material should be removed from the excavation. Backfilling with soil shall not be carried out.

6.6 Foundation Design and Construction Recommendations

Given the variability of the ground at the subject site, and the potentially unsuitable materials found in some areas, we consider that specific investigation should be carried out for each building within the subdivision, unless otherwise determined at the earthworks completion stage.

We consider that AS2870 type slab foundations to be most appropriate for the site. These should be constructed assuming Class M moderately expansive soils, unless specific investigation shows otherwise. Soil conditions are expected to generally be suitable for commercially available raft foundations (e.g. Firth RibRaft, Cupolex, etc.). If ground conditions are found to be unsuitable then specific foundation design may be required.

Standard shallow foundations, designed in accordance with NZS3604 (2011) may be suitable in some areas of the property, provided all footings are taken to a minimum depth below which shrink swell does not occur. This should be verified at building consent stage.

At the elevated ridge areas, ground with a geotechnical ultimate bearing capacity of at least 300kPa (allowable bearing capacity of at least 100kPa) and a vertical and lateral movement potential of less than 25mm is expected to exist from below the topsoil based on the undrained shear strength and bearing capacity calculations. Within the underling mudstone unit (2-3m depth) an ultimate bearing capacity of 3MPa is expected to be available (1MPa allowable bearing capacity).

At the low lying swampy areas ground with a geotechnical ultimate bearing capacity of at least 210kPa (allowable bearing capacity of at least 70kPa) is expected to exist from below the topsoil based on the undrained shear strength, however specific design should be undertaken to address potential consolidation settlement issues.

6.7 Verification Checks

As required by NZS3604 (2011) and NZS4229 (2013), the fill beneath buildings will need to be certified by a Chartered Professional Engineer or Professional Engineering Geologist in accordance with NZS4431 (1989). A "Certificate of Suitability of Earthfill for Residential Development" will also be required in accordance with NZS3604 and NZS4229.

In order for the fill to be certified, the excavation will need to be inspected by the certifying Engineer or Engineer's representative to ensure that all compressible materials are removed prior to the placement of the new fill.

Verification strength testing of the backfill by the certifying Engineer or Engineer's representative will also be required to ensure that the minimum fill strengths specified in this report have been achieved.

Verification testing of the ground by a Building Inspector or Suitably Qualified Professional is recommended to ensure that the ground conditions at the base of the foundation excavations are as described in this report, and that all unsuitable and loose materials have been removed as required by NZS3604 (2011) and NZS4229 (2013). We should be contacted immediately if these conditions vary from that described in this report. Deepening of the foundations or a modification to the recommendations or design may be required.

6.8 Service Pipes

All service pipes, stormwater structures, and culverts should be designed and constructed to ensure adequate capacity, strength, and water tightness to prevent leakage into the platform through blockage, running under pressure, or structural failure.

All service pipes installed within fill should be flexible, or flexibly joined, so that they may deflect without breaking if the ground settles.

A record should be kept of the position, type, and size of all subsoil drains, and in particular of their outlets.

7 OTHER CONSIDERATIONS

This report has been prepared exclusively for Prime Property Group, with respect to the particular brief given to us. Information, opinions and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. Land Development & Exploration Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

This report was prepared in general accordance with current standards, codes and practice at the time of this report. These may be subject to change.

Opinions given in this report are based on visual methods, and subsurface investigations at discrete locations. It must be appreciated that the nature and continuity of the subsurface materials between these locations are inferred and that actual conditions could vary from

that described herein. We should be contacted immediately if the conditions are found to differ from that described in this report.

This report should be read in its entirety to understand the context of the opinions and recommendations given.

This report has been prepared for Resource Consent purposes. As such, recommendations given may be conservative to allow for differing ground conditions that may not have been identified in the level of investigation carried out for this purpose. The recommendations given may be able to be refined at the Building Consent Stage with detailed subsurface investigation and analysis that is specifically undertaken for the particular structures proposed for the sites.

For and on behalf of LDE Ltd

Report prepared by:



Finlay Wallen-Halliwel
BSc, PMEG
Engineering Geologist

Report reviewed by:



Dave Dravitzki
BSc, MSc, CMEngNZ (PEngGeol)
Senior Engineering Geologist

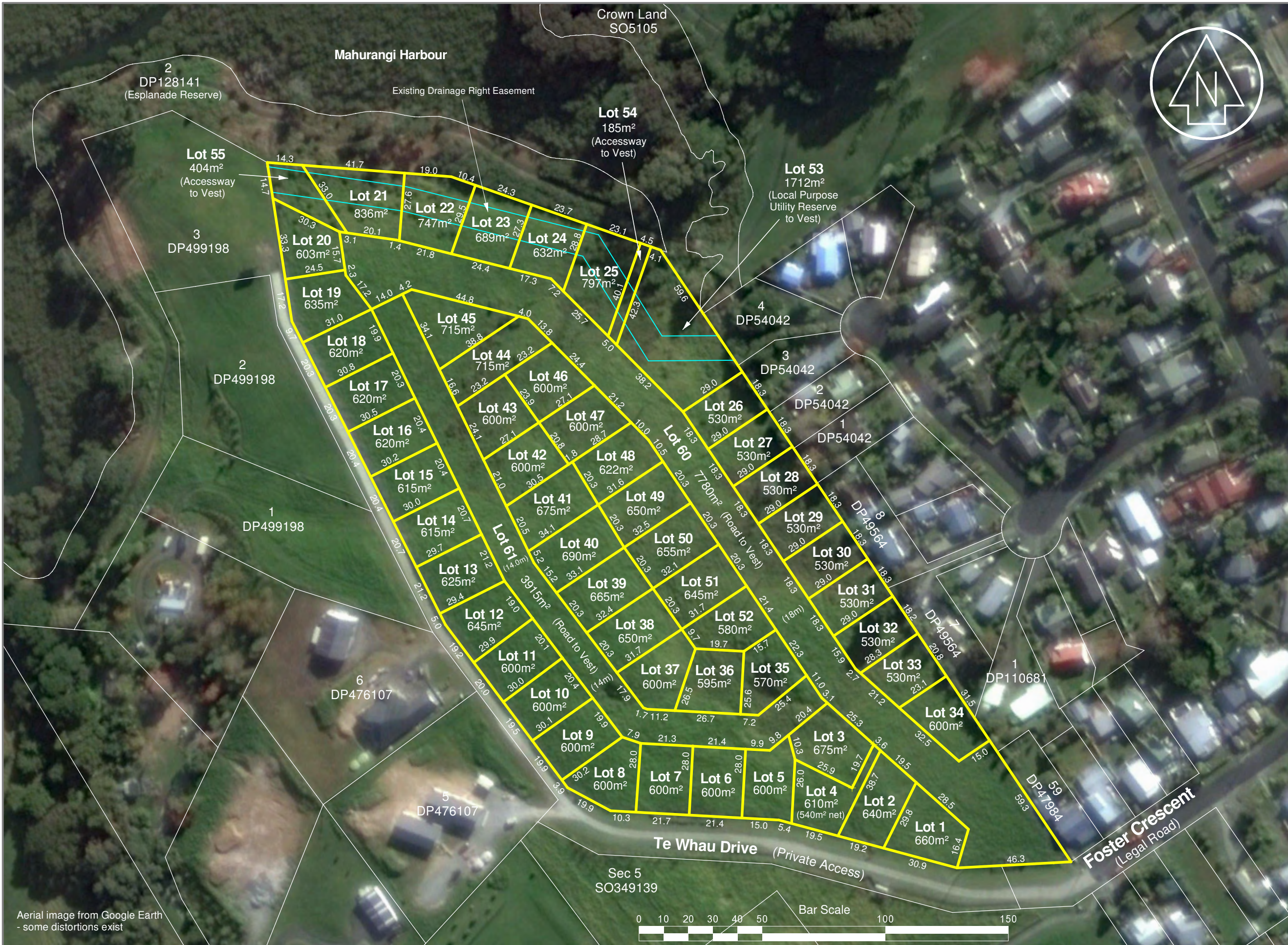
Report authorised by:



Georg Winkler
CMEngNZ, CPEng
Principal Engineering Geologist-Geotechnical Engineer

[Find out more about LDE professionals](#)

APPENDIX A
SUBDIVISION SCHEME PLAN
(C&R SURVEYORS LTD)



DRAFT

Aerial image from Google Earth
- some distortions exist



C & R SURVEYORS LTD

Registered Professional
Land Surveyors

PO Box 564
Orewa 0946

www.crsurveyors.co.nz

Phone (09) 426 4051
Fax (09) 426 9087

Drawing Title:

Lots 1 to 55 and 60 to 61 Being Proposed Subdivision of Lot 1 DP149776

Client:

Prime Property Group Ltd
Foster Crescent
Snells Beach

Total Area: 4.6384 ha
Comprised in: NA89A/917

Notes:

- This plan is prepared for the purpose of obtaining subdivision consent and is not to be used for any other purpose.
- All metric measurements and areas are subject to final survey.

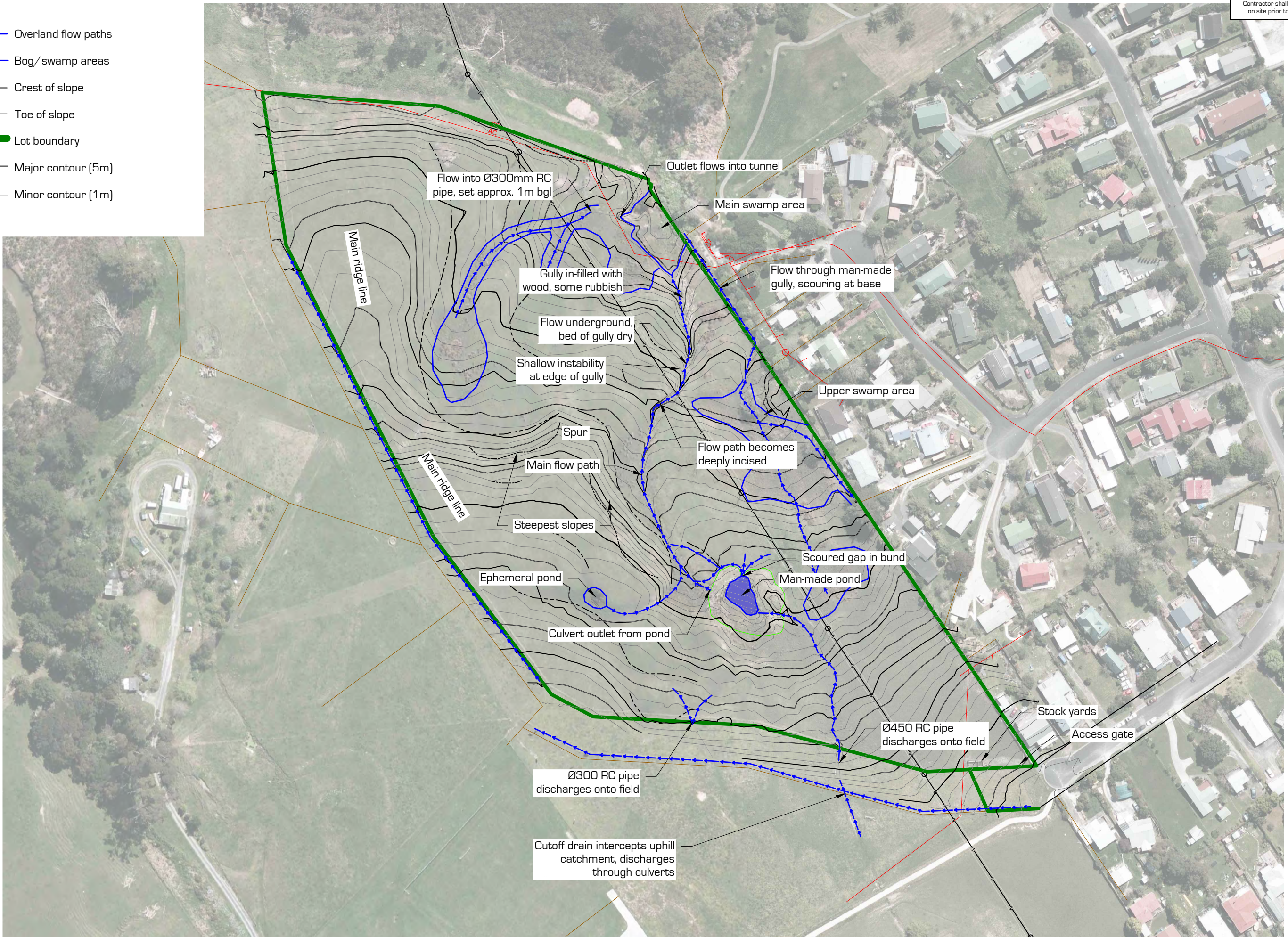
Original Scale: 1:1500	Original Size: A3
Date: 15/01/2017	Job Number: 151 5708

APPENDIX B
SITE PLANS AND CROSS SECTIONS

Contractor shall check all dimensions on site prior to work commencing



- Legend**
- → → Overland flow paths
 - — — Bog/swamp areas
 - — — Crest of slope
 - - - - - Toe of slope
 - — — Lot boundary
 - — — Major contour (5m)
 - — — Minor contour (1m)



CLIENT
 Prime Property Group Ltd
 PO Box 11-785
 Wellington

PROJECT
 Geotechnical Investigation for Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

DRAWING TITLE
 Site Plan



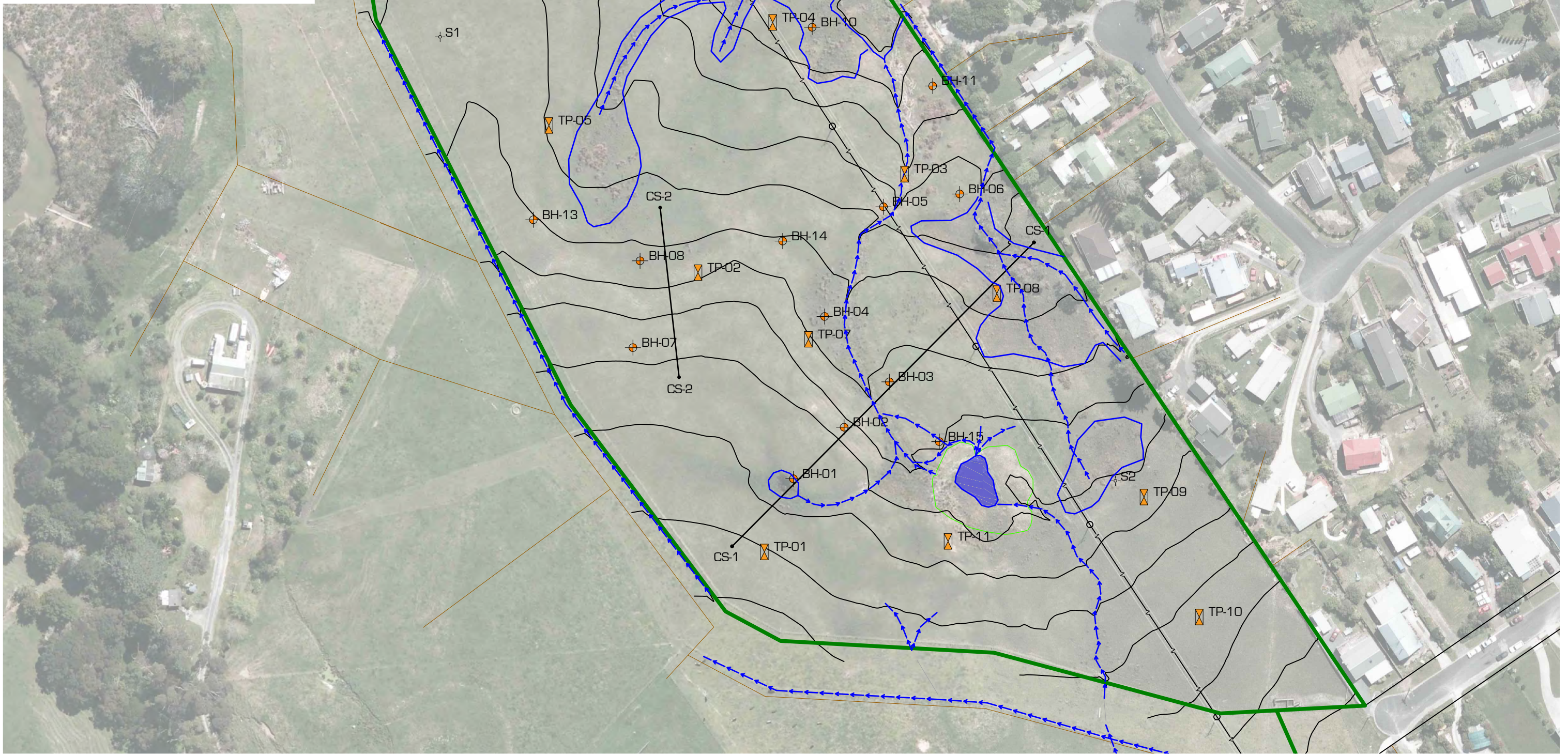
DESIGN:	
DRAWN:	FWH
DATE:	28.03.18
CHECKED:	
SCALE A3:	1:1500

PROJECT STATUS:	CONSENT	
PROJECT:	13641	SHEET: 1 of 3
DRAWING No:	155	REV: 0

Contractor shall check all dimensions on site prior to work commencing



- Legend**
- Overland flow paths
 - Bog/swamp areas
 - Major contour (5m)
 - Lot boundary
 - Cross section line
 - BH-06 Handauger borehole location
 - TP-03 Test pit location
 - S1 Disturbed soil sample location



CLIENT
 Prime Property Group Ltd
 PO Box 11-785
 Wellington

PROJECT
 Geotechnical Investigation for Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

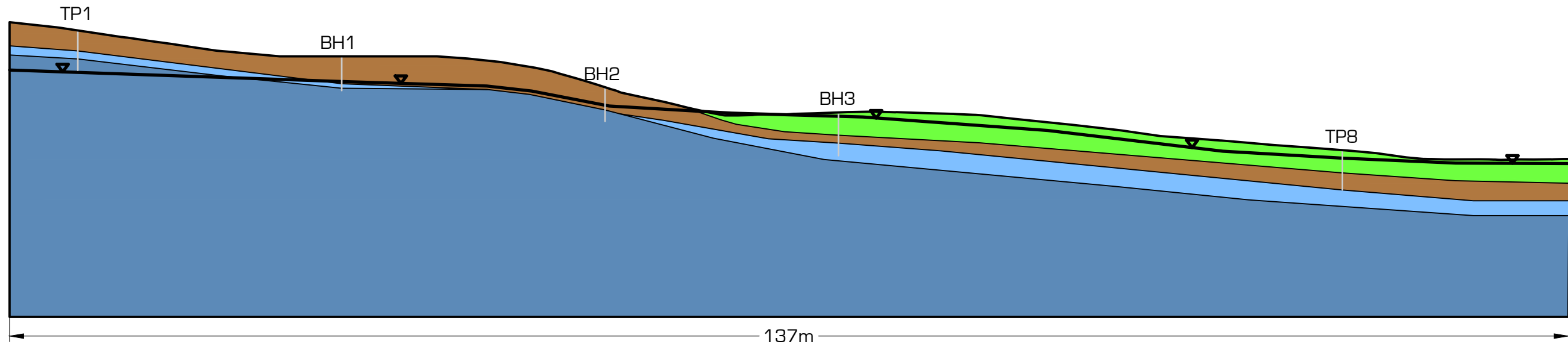
DRAWING TITLE
 Geotechnical Investigation Plan



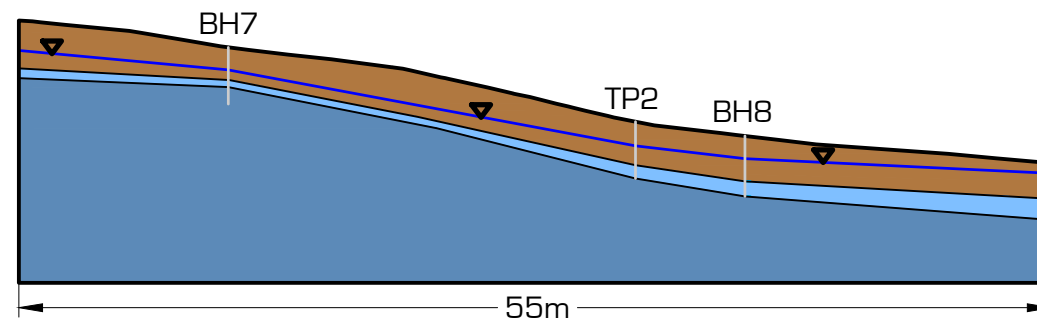
No.	REVISION	BY	DATE

DESIGN:
 DRAWN: FWH
 DATE: 28.03.18
 CHECKED:
 SCALE A3: 1:1250

PROJECT STATUS: **CONSENT**
 PROJECT: 13641 SHEET: 2 of 3
 DRAWING No: **156** REV: 0



Geological Cross Section
 CS-1
 CS-1
 2
 SCALE A3 1:400



Geological Cross Section
 CS-2
 CS-2
 2
 SCALE A3 1:400

Symbol	Unit name	Generalised description	ϕ (°)	C (kPa)
	Alluvium/Colluvium derived from Residual Soil	CLAY/silty CLAY with organic zones, grey/greyish brown, firm to very stiff, saturated, moderately to highly plastic	27	3
	Residual Soil	CLAY/Clayey SILT, grey to orange-grey, stiff to very stiff, moist to wet, moderately to highly plastic	28	5
	Completely Weathered Mudstone	Extremely weak MUDSTONE [silty clay], dark grey/blue/brown, pervasively fractured or sheared, saturated, friable	20	0
	Mangakahia Complex Mudstone	MUDSTONE, highly weathered to slightly weathered, dark green/blue/brown, massive, very weak to weak	35	15

Notes:
 1/ The cross sections shown an interpretation of the geology beneath the site based on borehole and test data at the points shown.
 2/ The materials encountered have been described in accordance with "NZGS Field Description of Soil and Rock".
 3/ The friction angle and cohesion parameters given are derived from correlations with undrained shear strength measurements, as taken in the field.
 4/ Surface profiles have been taken from topographic survey data.
 5/ Investigation points are based on surveyed locations, projected perpendicular to the cross section line.

APPENDIX C
SUBSURFACE INVESTIGATION DATA

Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

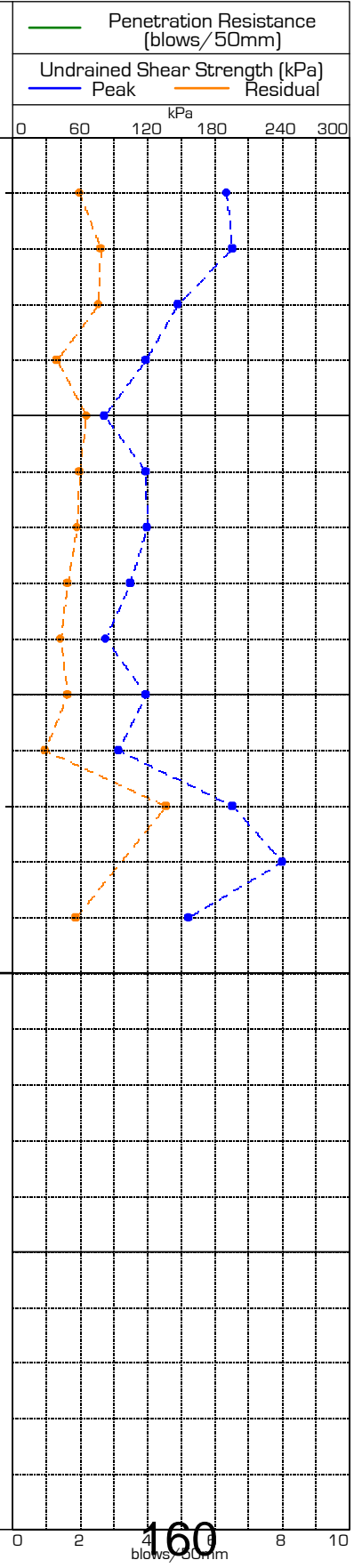
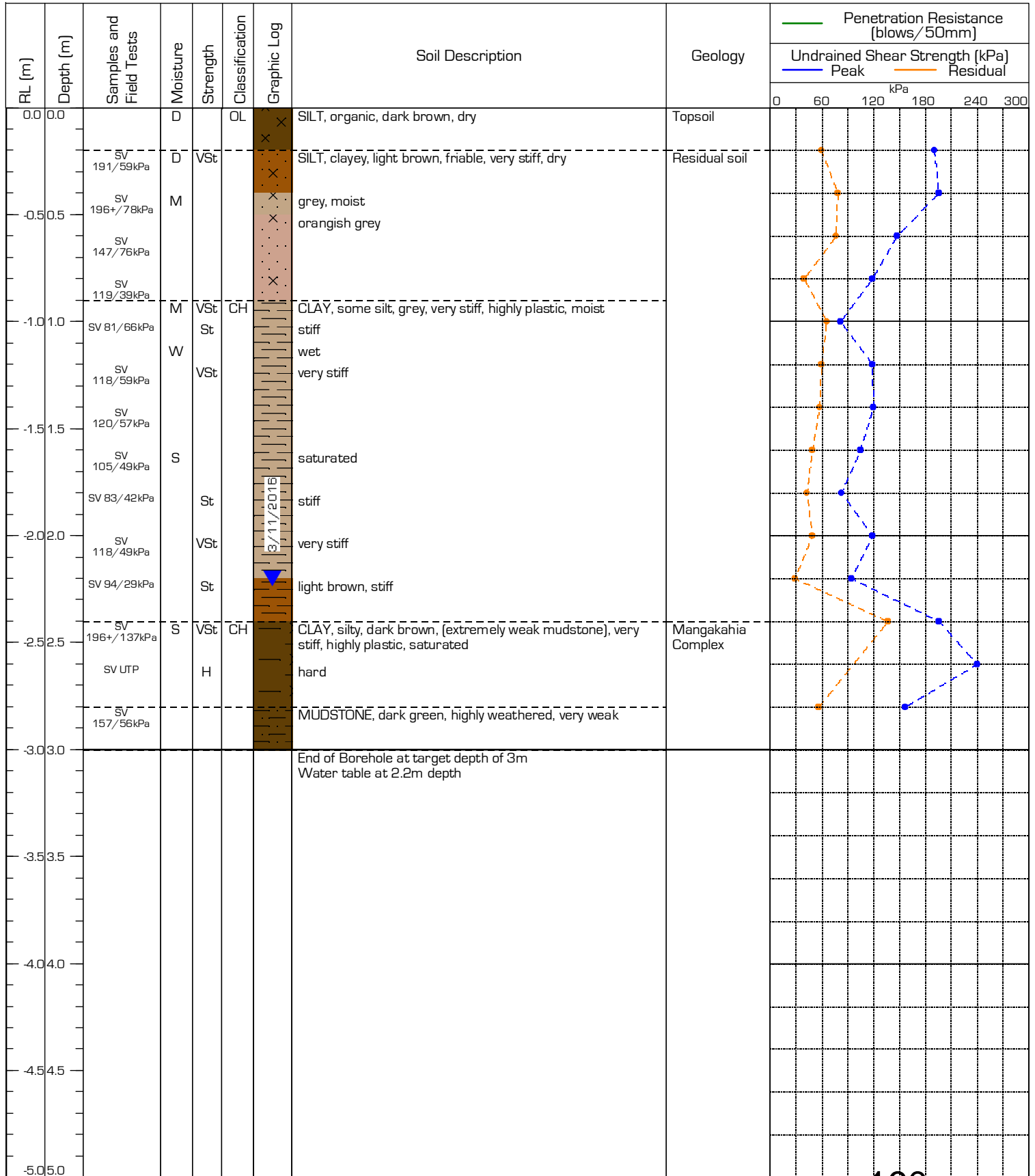
Vane ID: 713

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

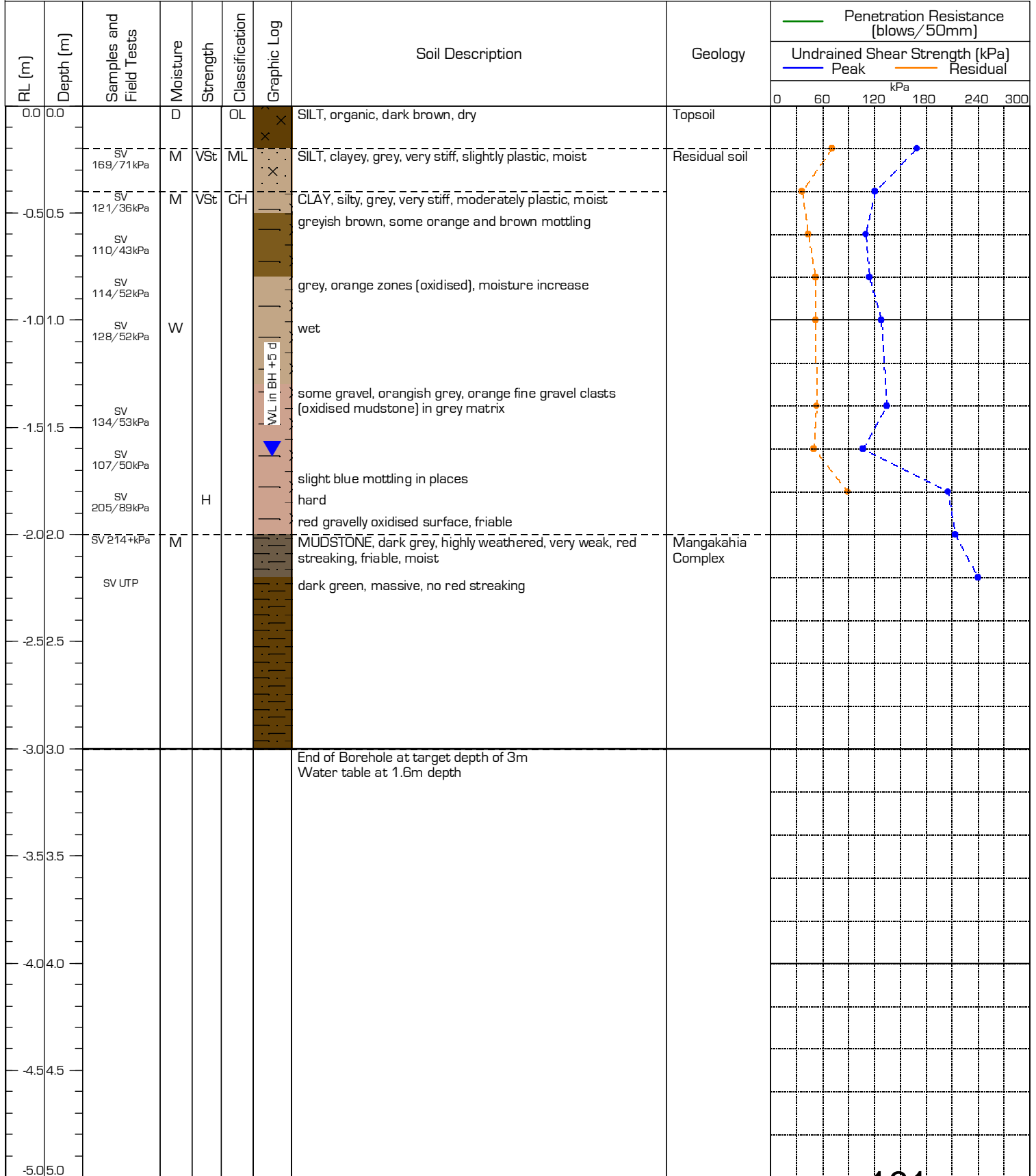
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

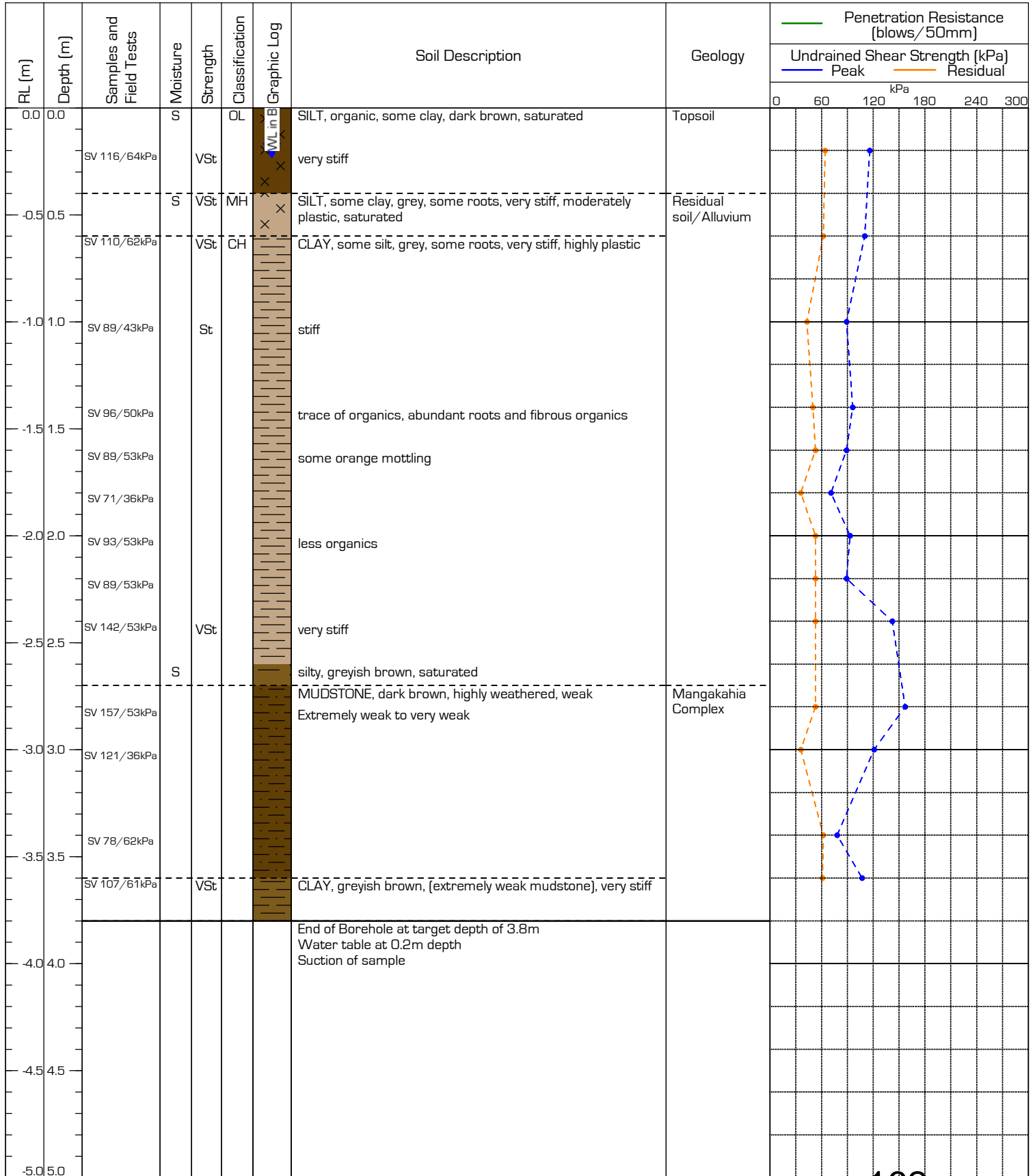
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m


 0 2 4 6 8 10
blows/50mm


Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

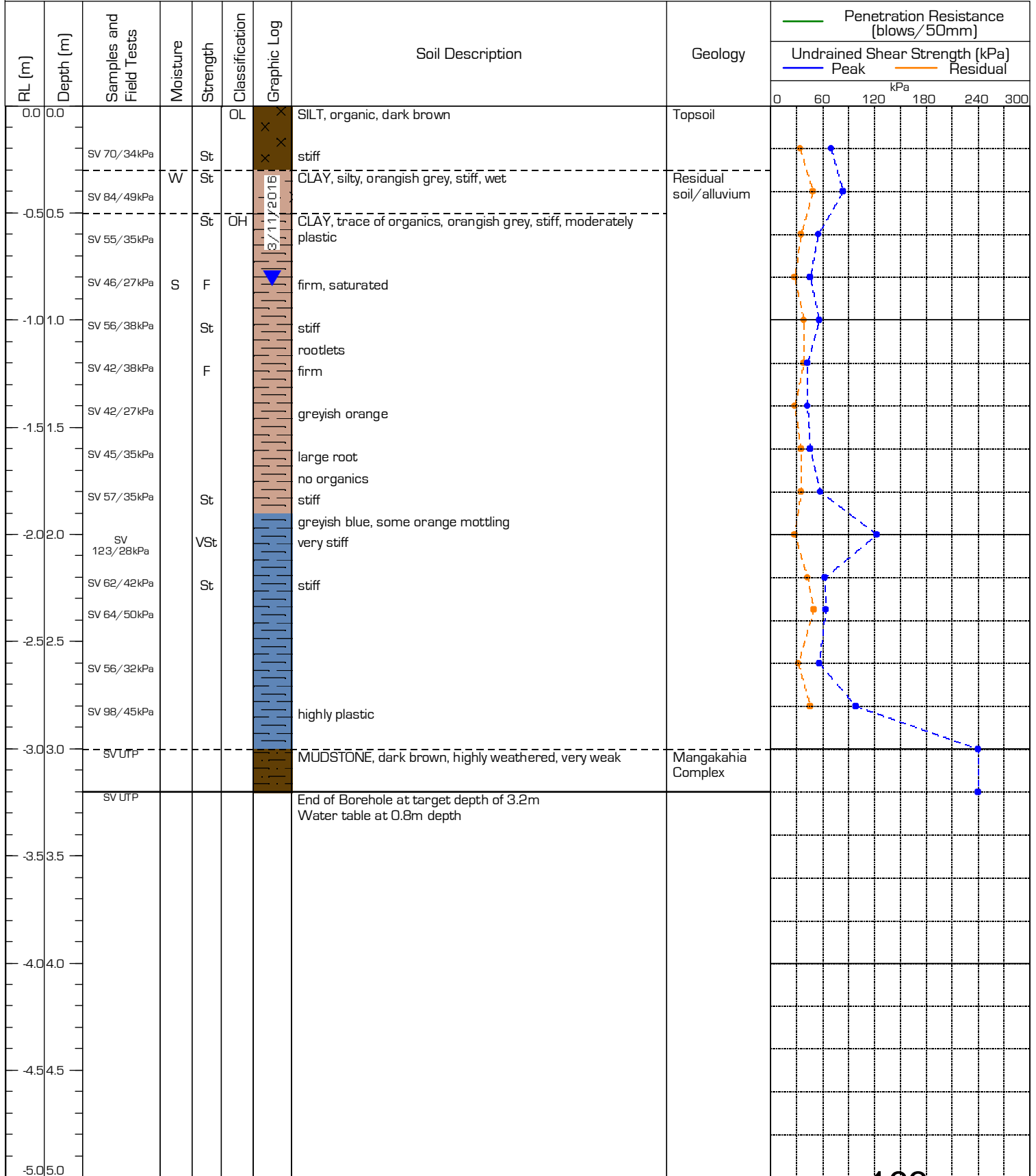
Vane ID: 713

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Northern Investors Trust

Project number: 12928

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

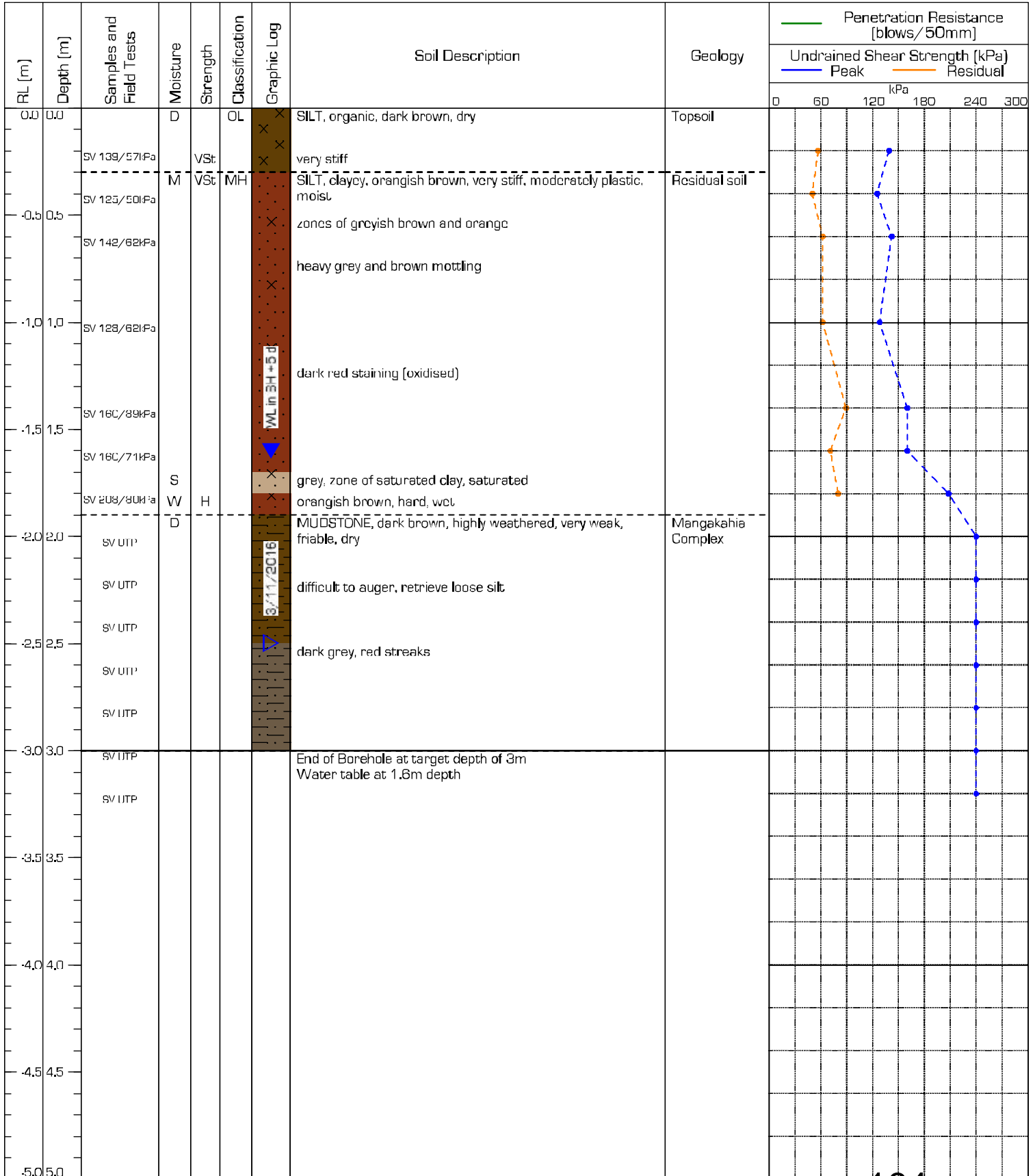
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: Hand Augered Borehole

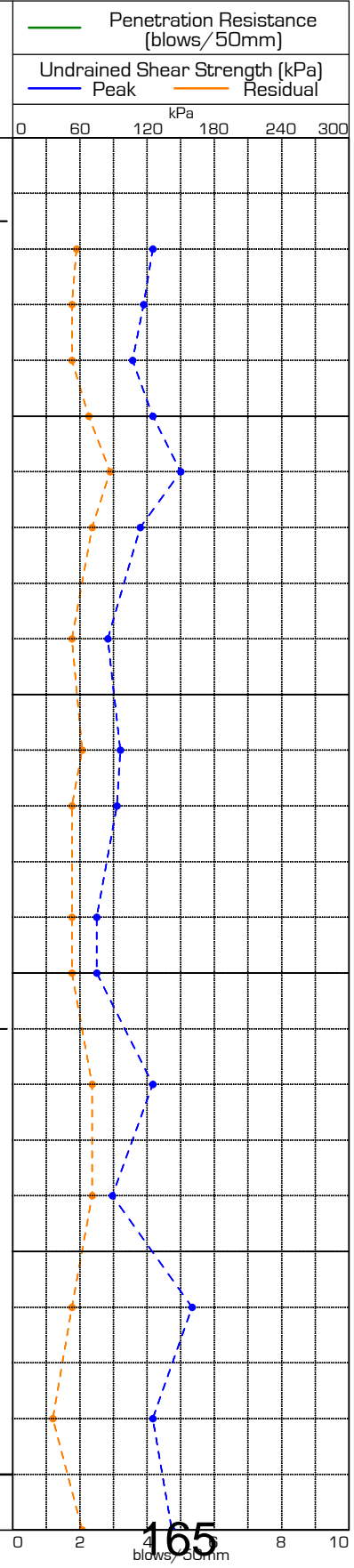
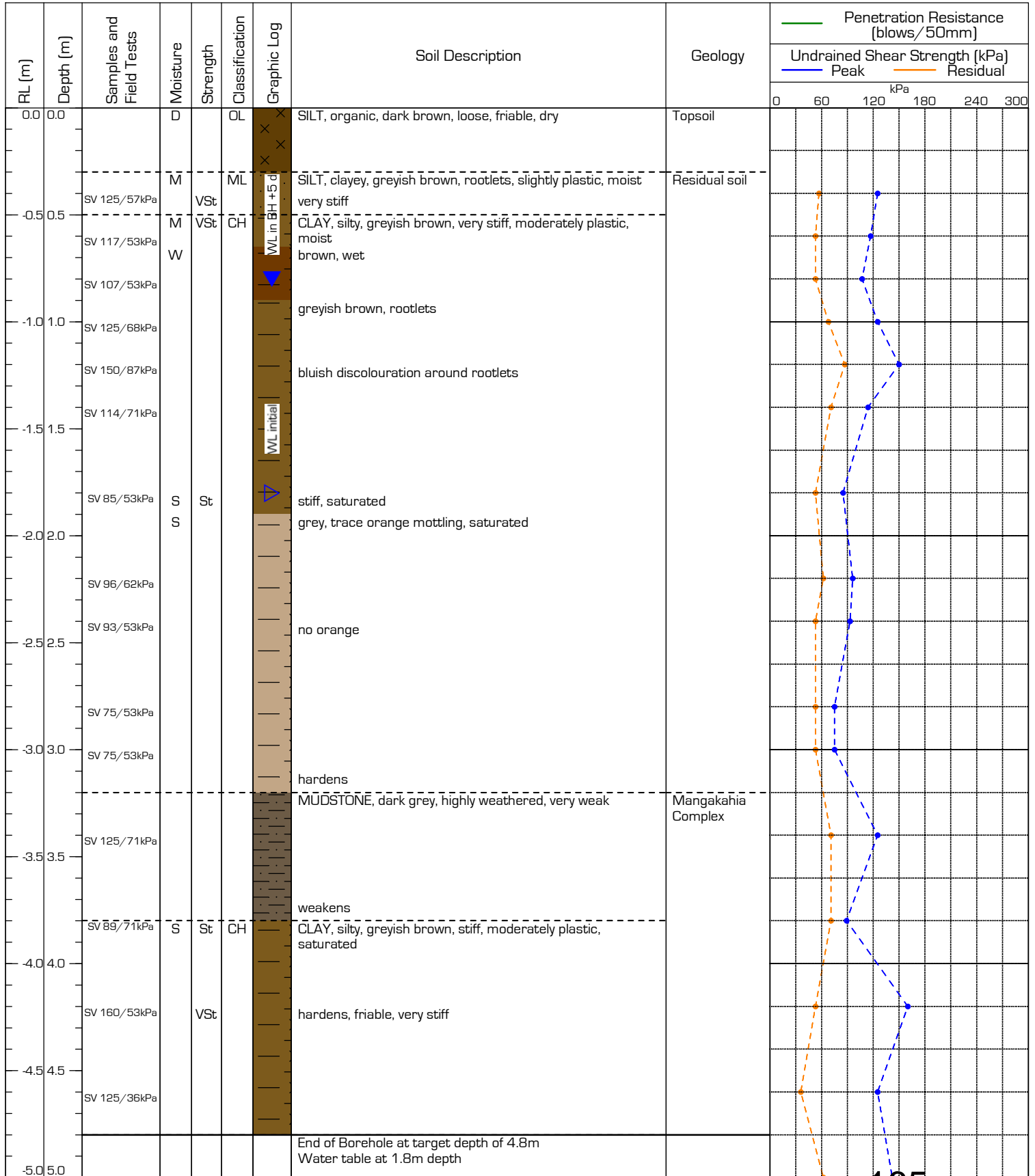
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

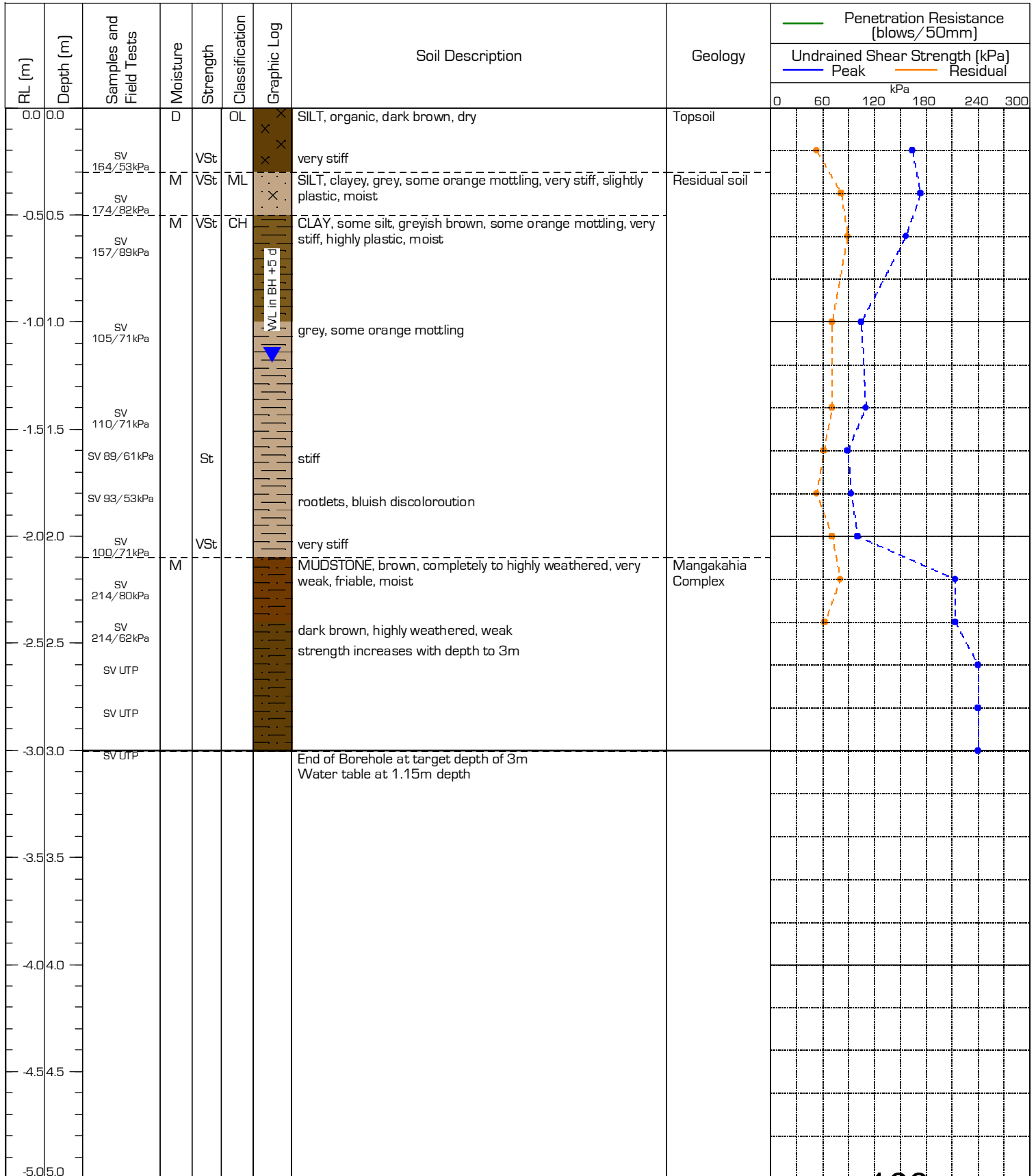
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

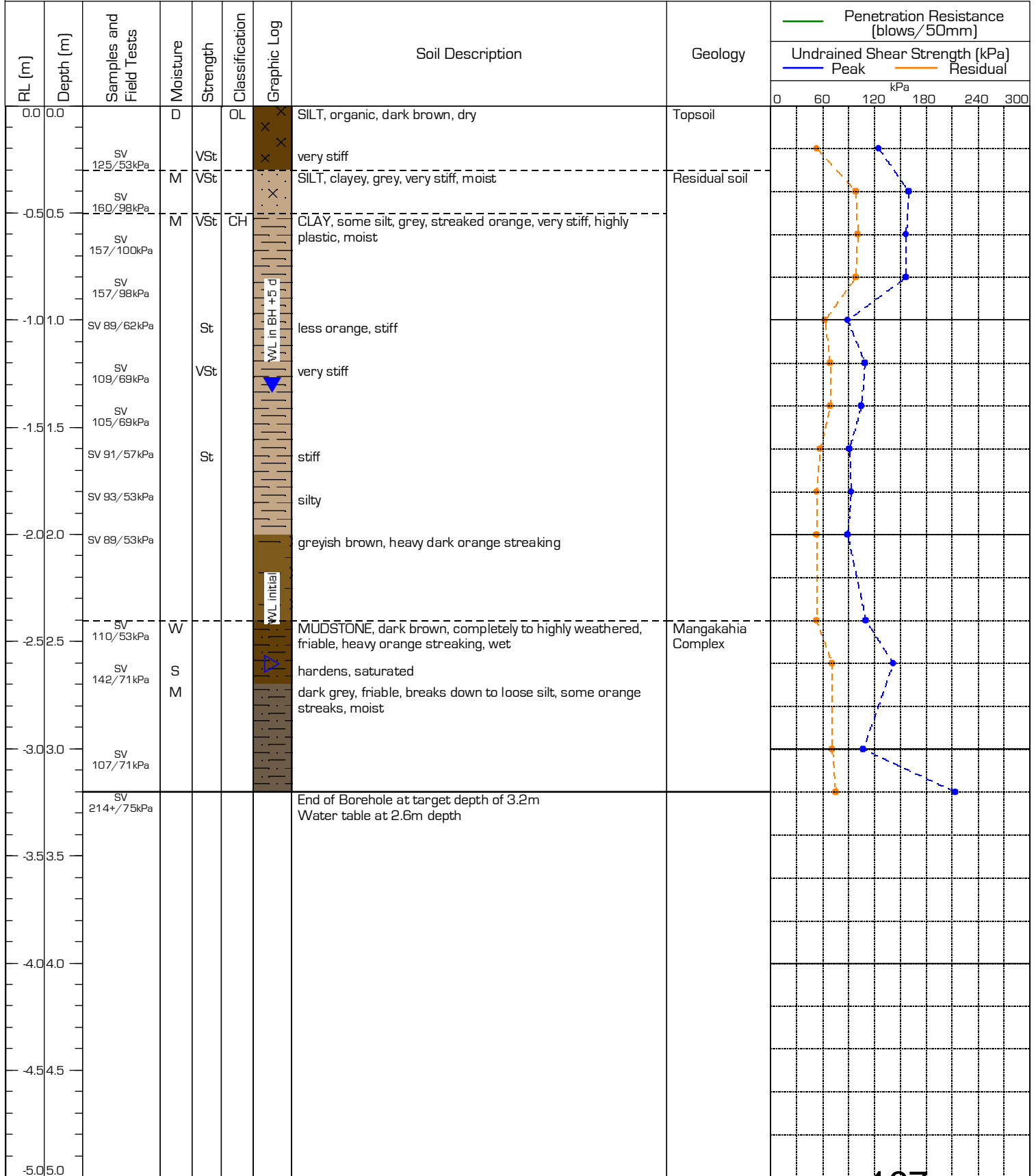
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13461

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m

RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Penetration Resistance (blows/50mm)						
									Undrained Shear Strength (kPa)						
									Peak			Residual			
										kPa					
										0	60	120	180	240	300
0.0	0.0		S		OH		CLAY, silty, trace of organics, grey, moderately plastic, saturated	Alluvium							
-0.5	0.5		S				MUDSTONE, dark brown, extremely weak hardens, unweathered, strong	Mangakahia Complex							
							End of Borehole at 0.55m depth Refusal due to impenetrable material No watertable encountered								
-1.0	1.0														
-1.5	1.5														
-2.0	2.0														
-2.5	2.5														
-3.0	3.0														
-3.5	3.5														
-4.0	4.0														
-4.5	4.5														
-5.0	5.0														



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

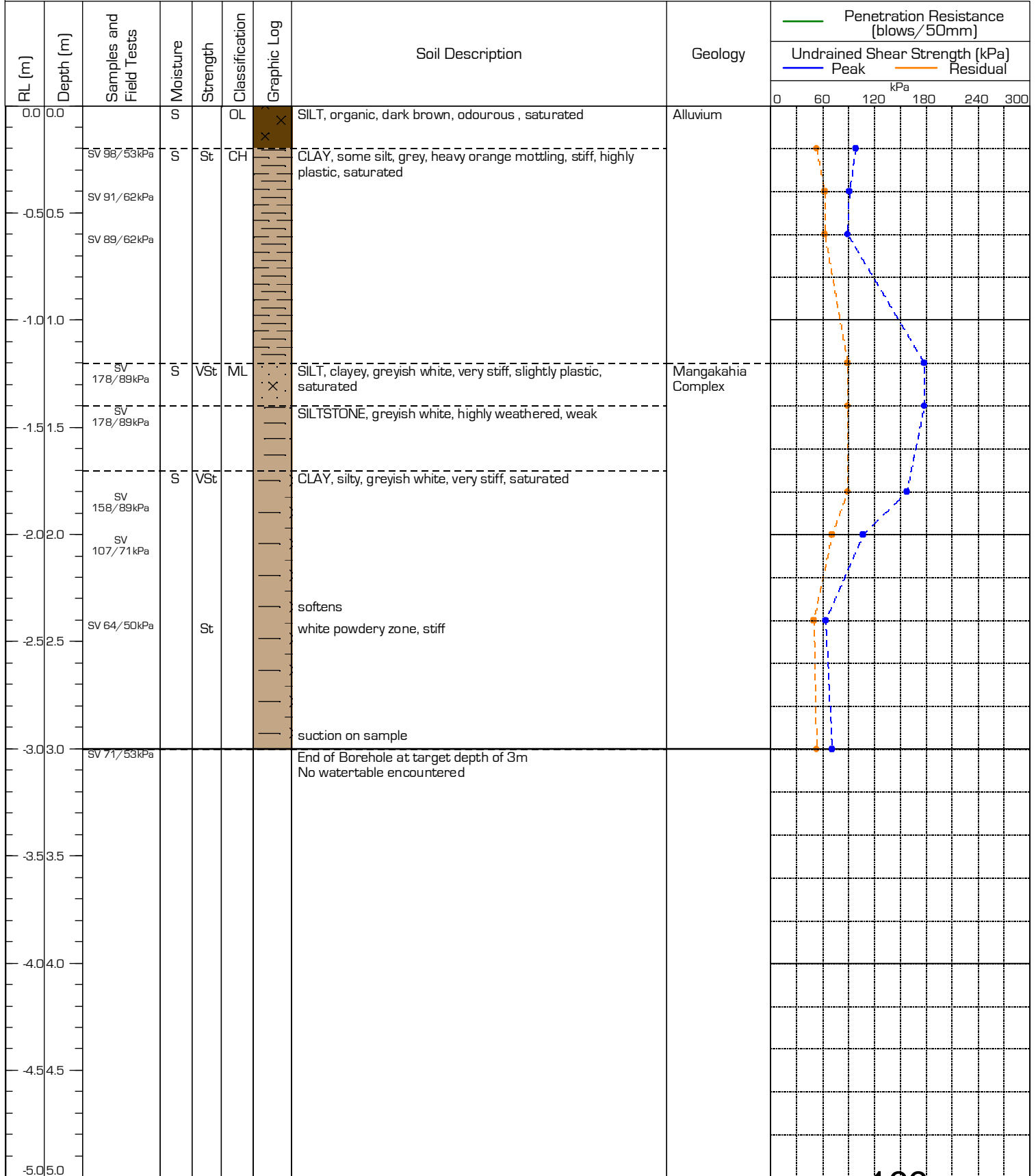
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

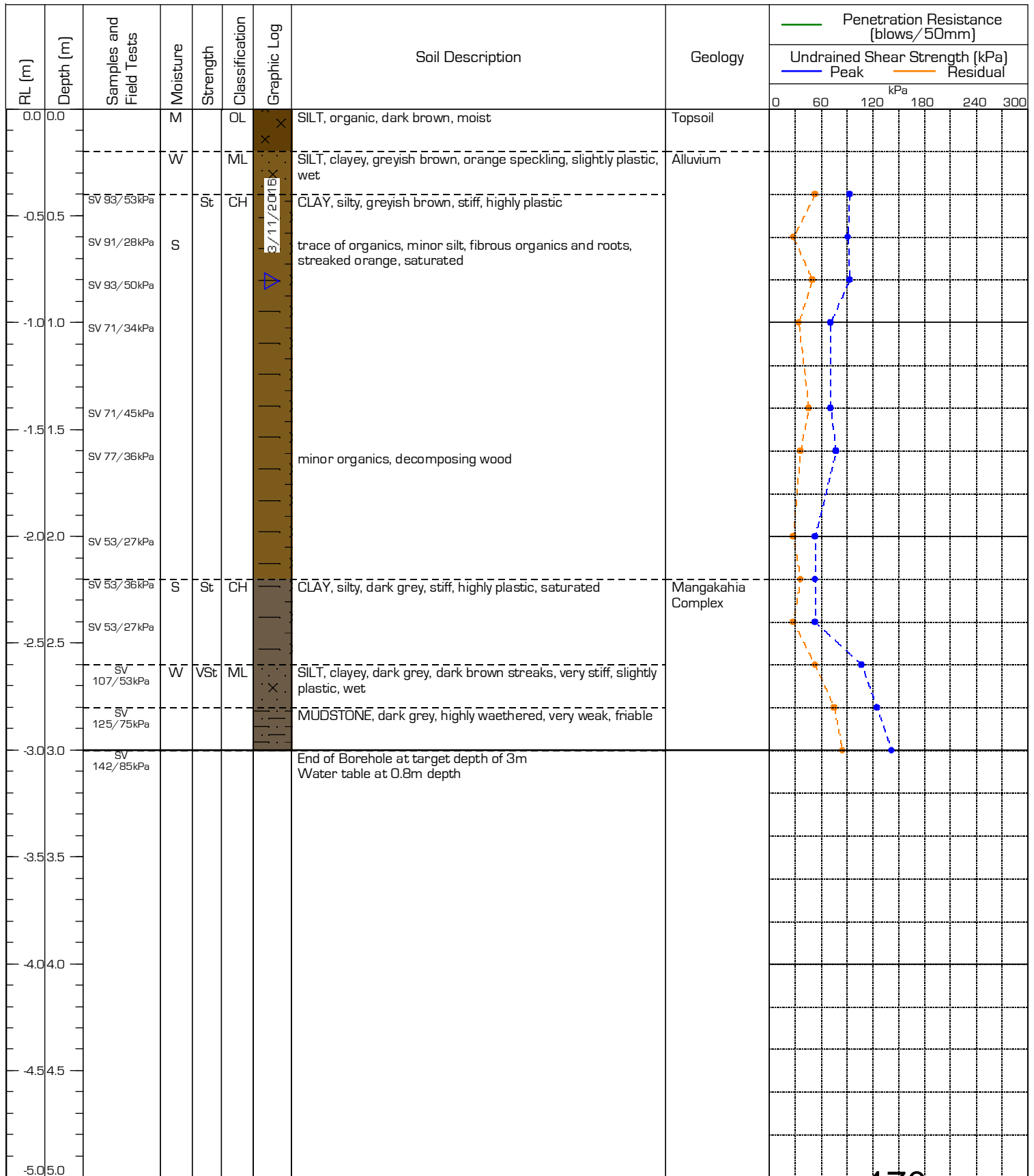
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

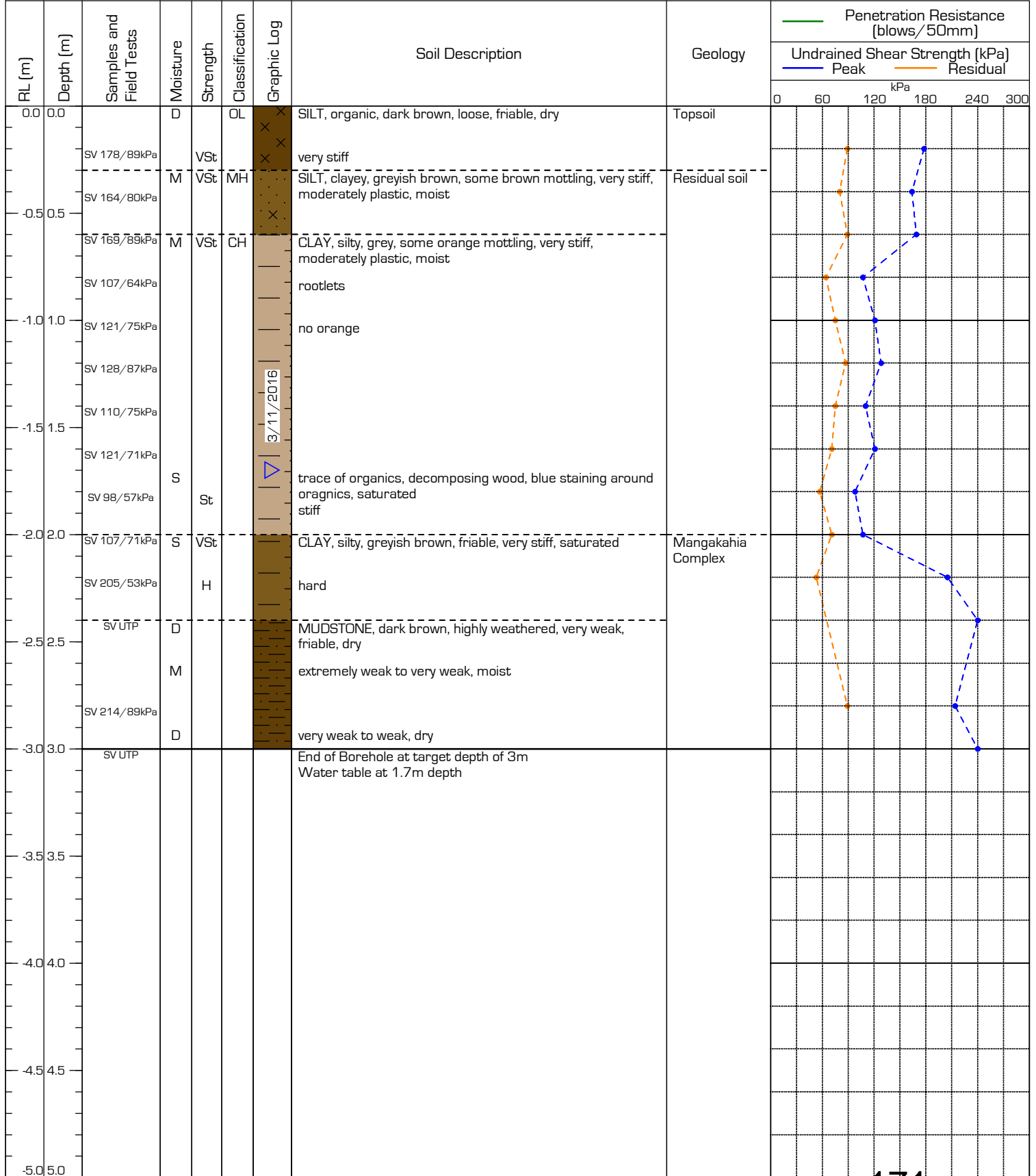
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

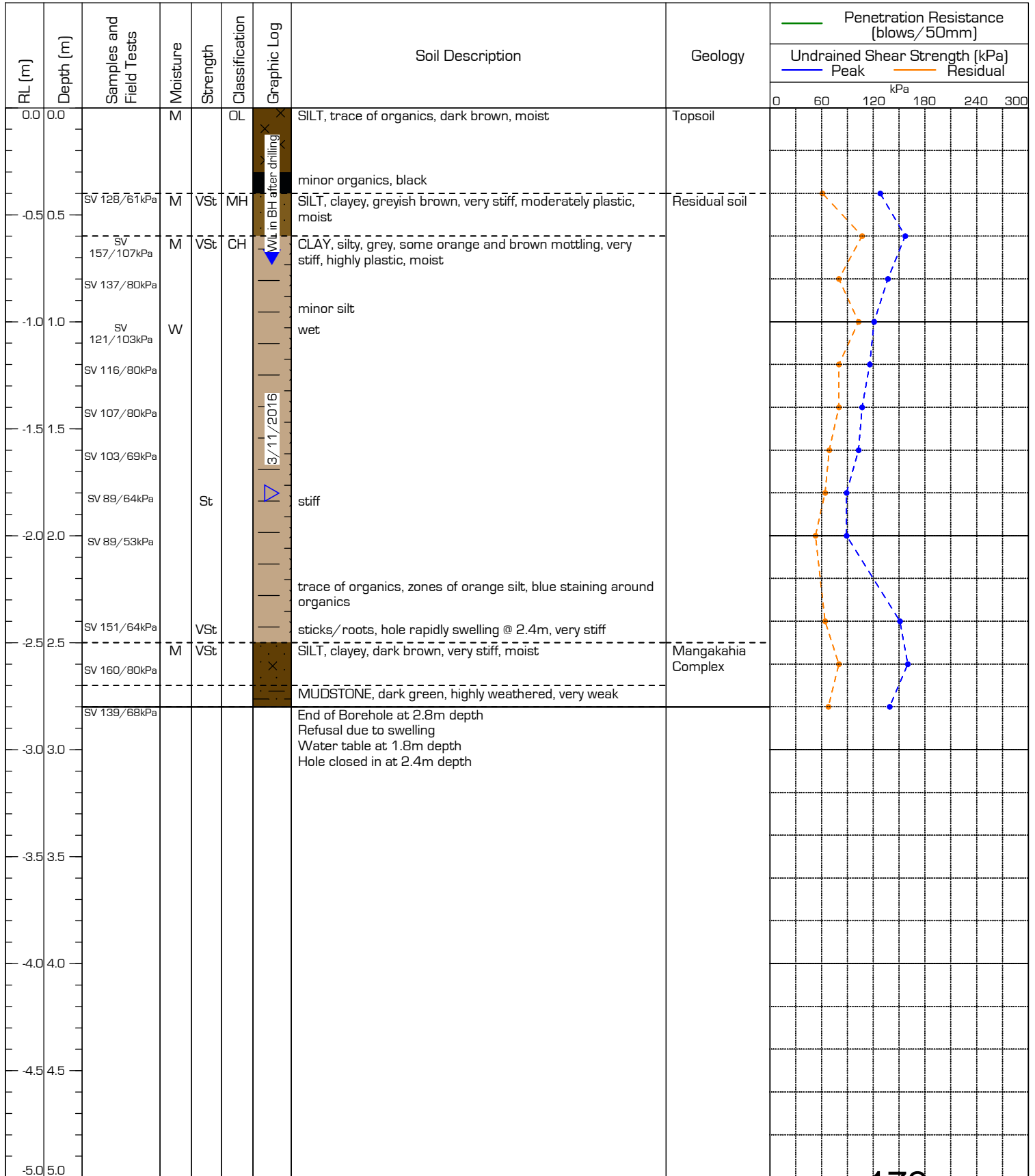
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

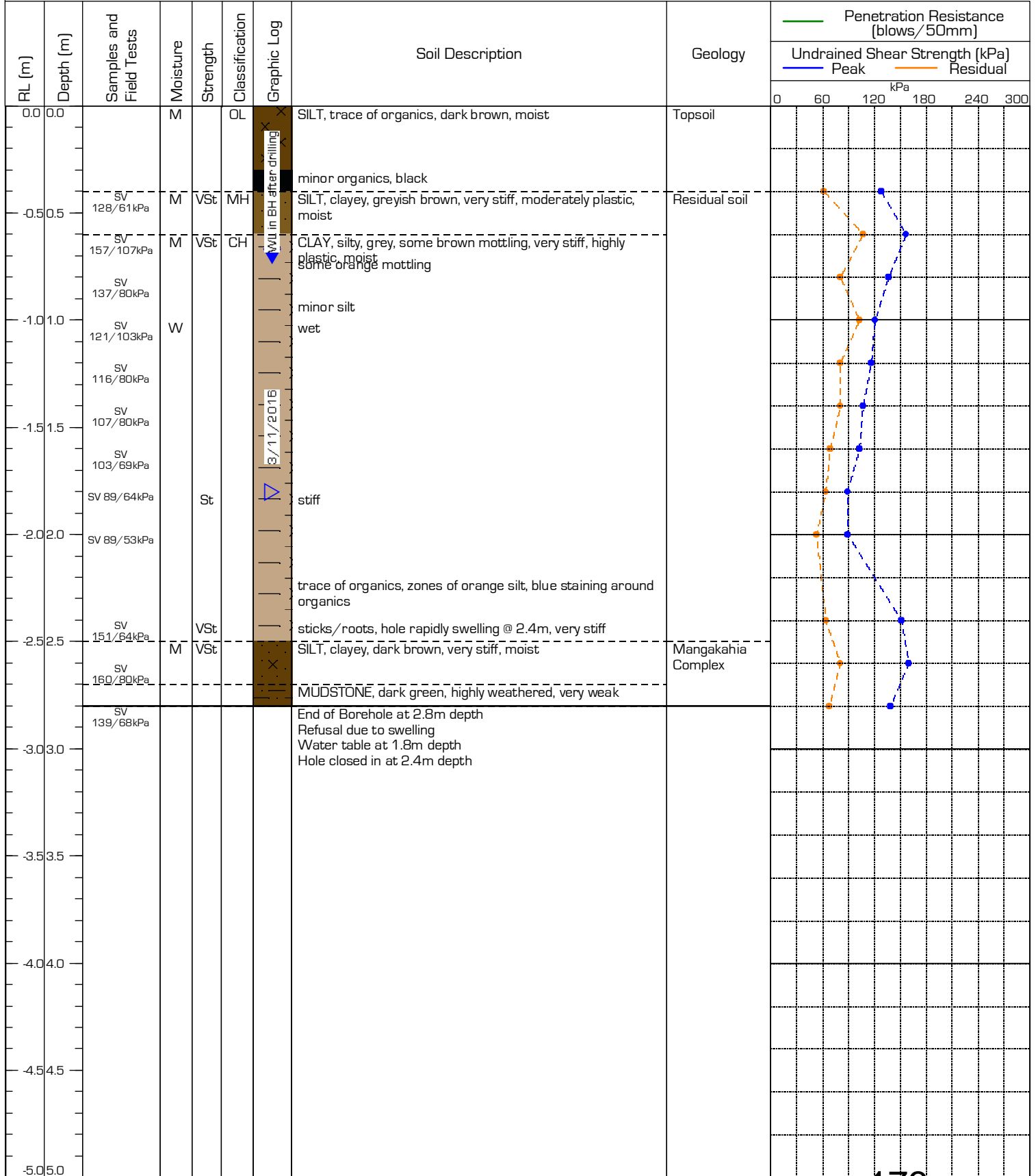
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



0 2 4 8 10
blows/50mm



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

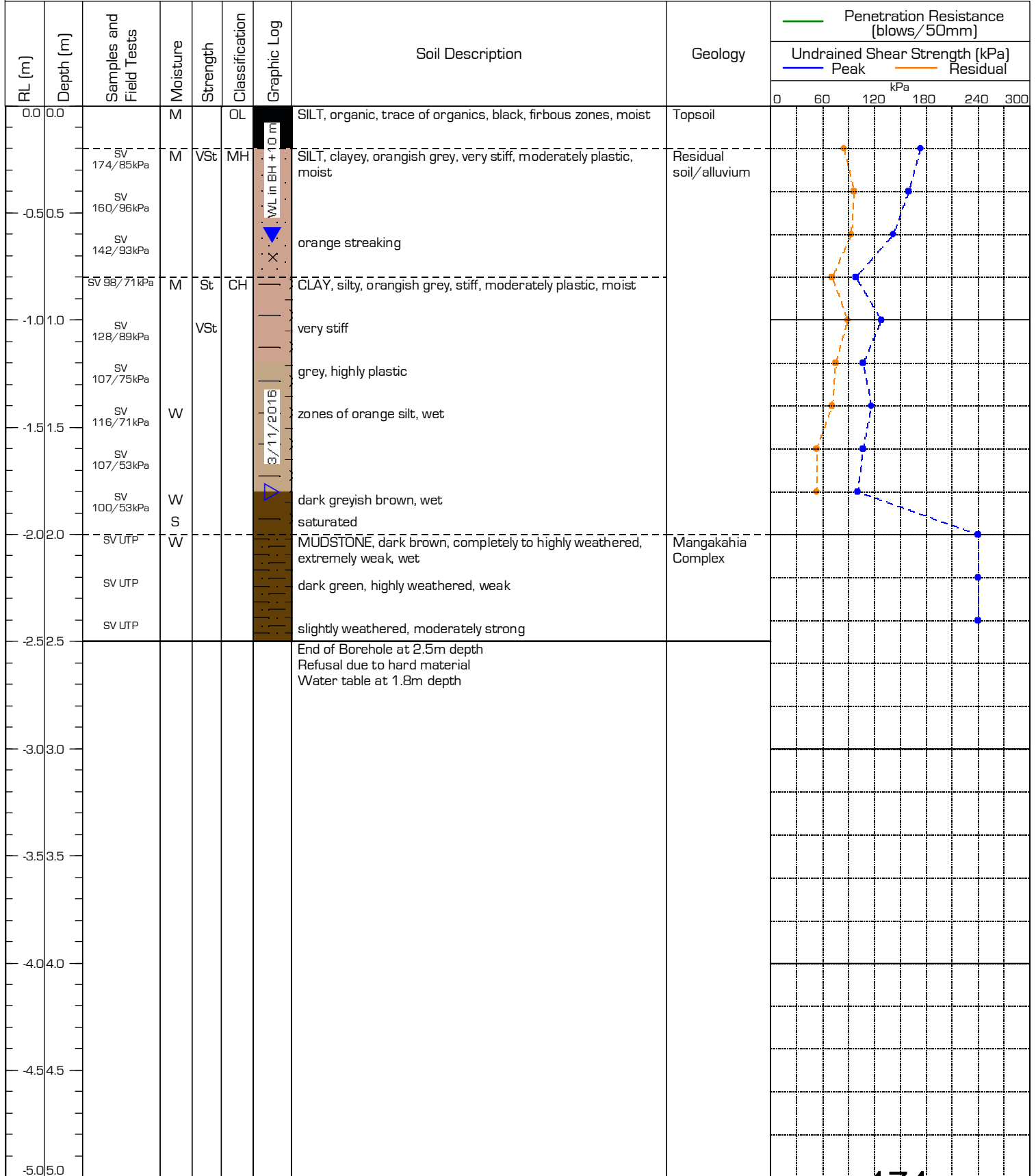
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 50mm Hand Auger

Vane ID: C342

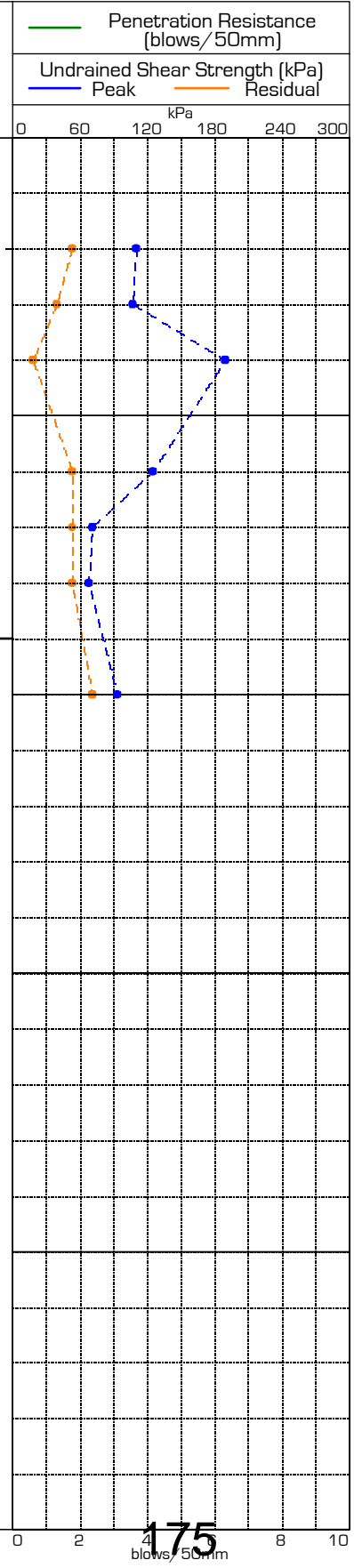
Checked by: DD

Position: E: - m

N: - m

Elevation: - m

RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Penetration Resistance (blows/50mm)		
									Peak	Residual	
0.0	0.0		S		OL		SILT, organic, black, peaty, saturated wet	Topsoil			
-0.5	0.5	SV 110/53kPa	W	VSt	OL		SILT, some clay, trace of organics, dark grey, spongy, very stiff, slightly plastic, wet	Alluvium			
		SV 107/39kPa	S				saturated, rapidly swelling				
-1.0	1.0	SV 189/18kPa	W	VSt			some organics, dark brown, roots, decomposing wood				
		SV 125/53kPa	S	VSt	OH		SILT, clayey, grey, hard layer, very stiff, wet	CLAY, silty, trace of organics, trace of sand, grey, softens, black specs and roots, very stiff, highly plastic, saturated			
-1.5	1.5	SV 71/53kPa		St			stiff				
-2.0	2.0	SV 68/53kPa									
-2.0	2.0	SV 93/71kPa					End of Borehole at 1.8m depth Refusal due to swelling Water table at 0.8m depth Hole closed in at 0.8m depth				



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 16 Tonne Excavator

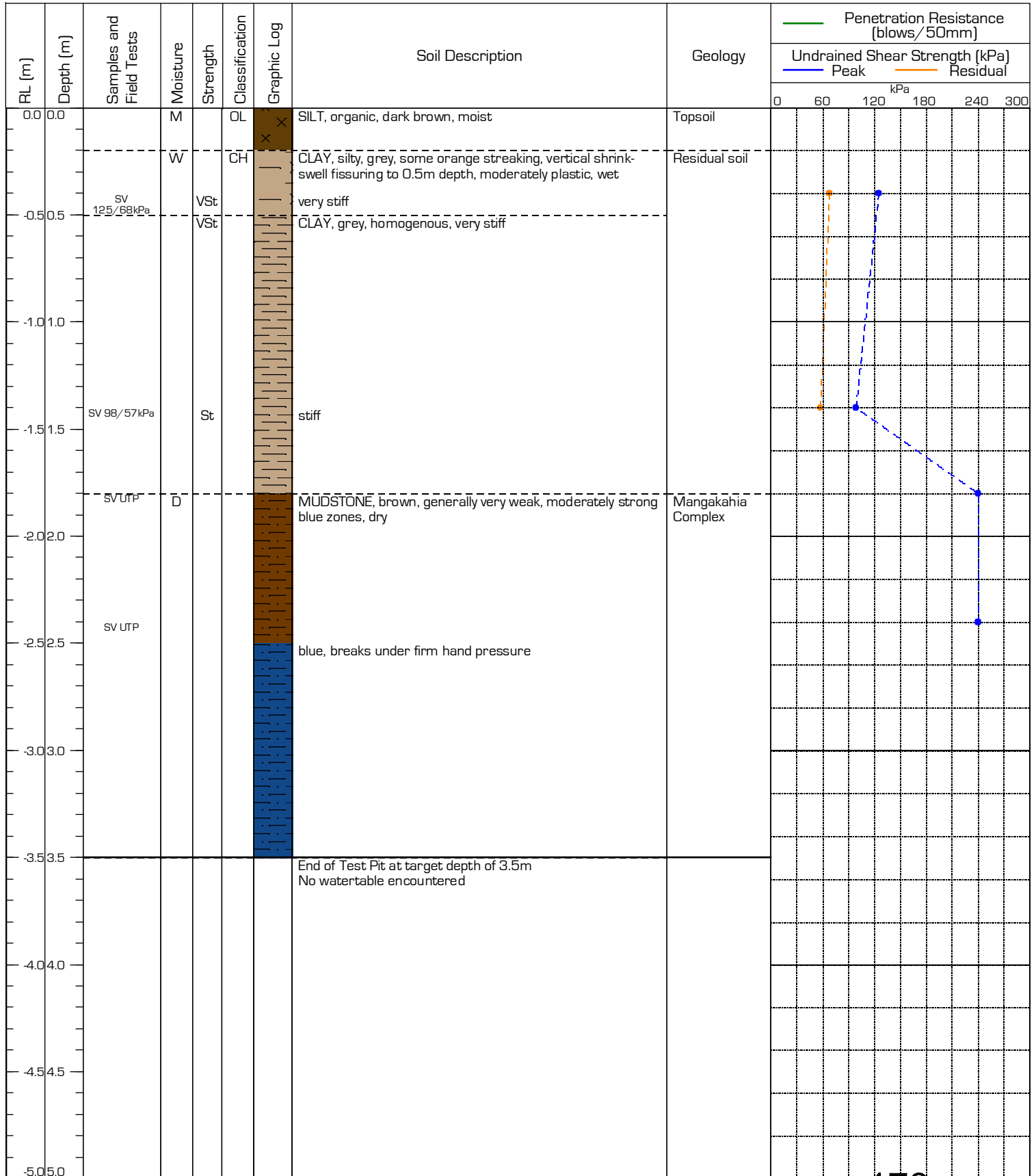
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



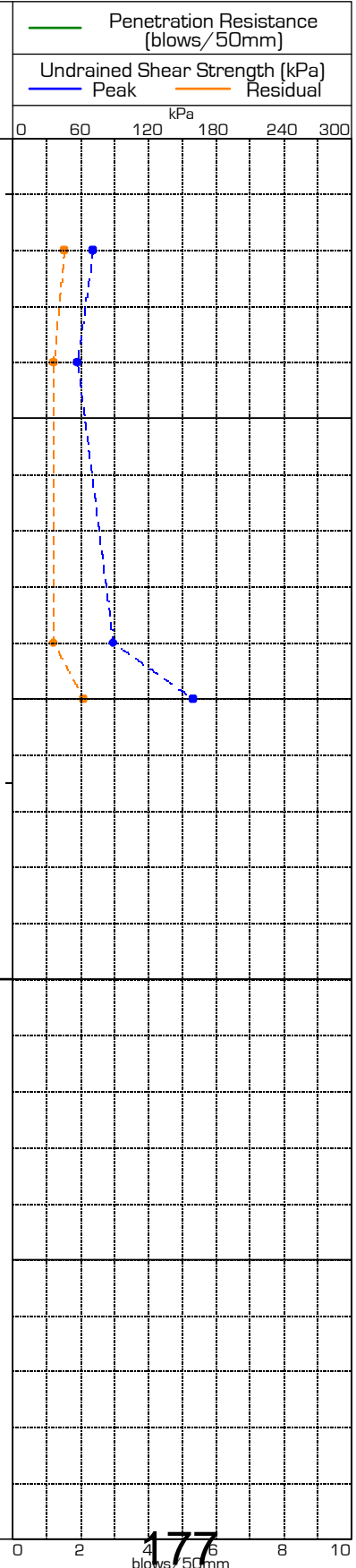
Client: 13641
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Project number: 13641
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m

RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Undrained Shear Strength (kPa)	
									Peak	Residual
0.0	0.0		M		OL		SILT, organic, dark brown, moist	Topsoil		
-0.5	0.5	SV 71/45kPa	W	St	CH		CLAY, some silt, grey, shrink swell fissuring visible to 0.8m depth, moderately plastic, wet pit walls unstable, slakes in as pit deepens, stiff	Residual soil	~60	~40
-1.0	1.0	SV 57/36kPa	W				orangish grey, moderately plastic, wet		~60	~40
-2.0	2.0	SV 89/36kPa SV 160/62kPa	S	VSt			groundwater flows into pit, very stiff, saturated		~160	~100
-2.5	2.5		W				MUDSTONE, dark brown, extremely weak, sheared/highly fractured hard material in soft matrix, wet	Mangakahia complex		
-3.0	3.0		D				hardens, weak, dry			
-3.0	3.0						End of Test Pit at target depth of 3m Water table at 2m depth			



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 16 Tonne Excavator

Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m

RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Penetration Resistance (blows/50mm)						
									Undrained Shear Strength (kPa)						
									Peak			Residual			
										kPa					
										0	60	120	180	240	300
0.0	0.0		W		OL		SILT, organic, dark brown, wet	Topsoil							
			W		OH		CLAY, some silt, trace of organics, brown, wet	Alluvium							
-0.5	0.5		SW				buried stream flowing in ~15cm tunnel infilled with organics, flow of approximately 0.5l/s, saturated wet								
-1.0	1.0		S		OH		CLAY, bluish grey, brown organic zones with wood fragments, moderately plastic, saturated	Residual soil							
-2.0	2.0		M				MUDSTONE, dark grey, very weak, highly fractured, moist	Mangakahia Complex							
-2.5	2.5		D				hardens, moderately strong, highly fractured, slick surfaces on fractures, dry								
-3.0	3.0														
-3.5	3.5						End of Test Pit at 3.5m depth Refusal due to Water table at 0.6m depth								
-4.0	4.0														
-4.5	4.5														
-5.0	5.0														

 0 2 4 6 8 10
blows/50mm

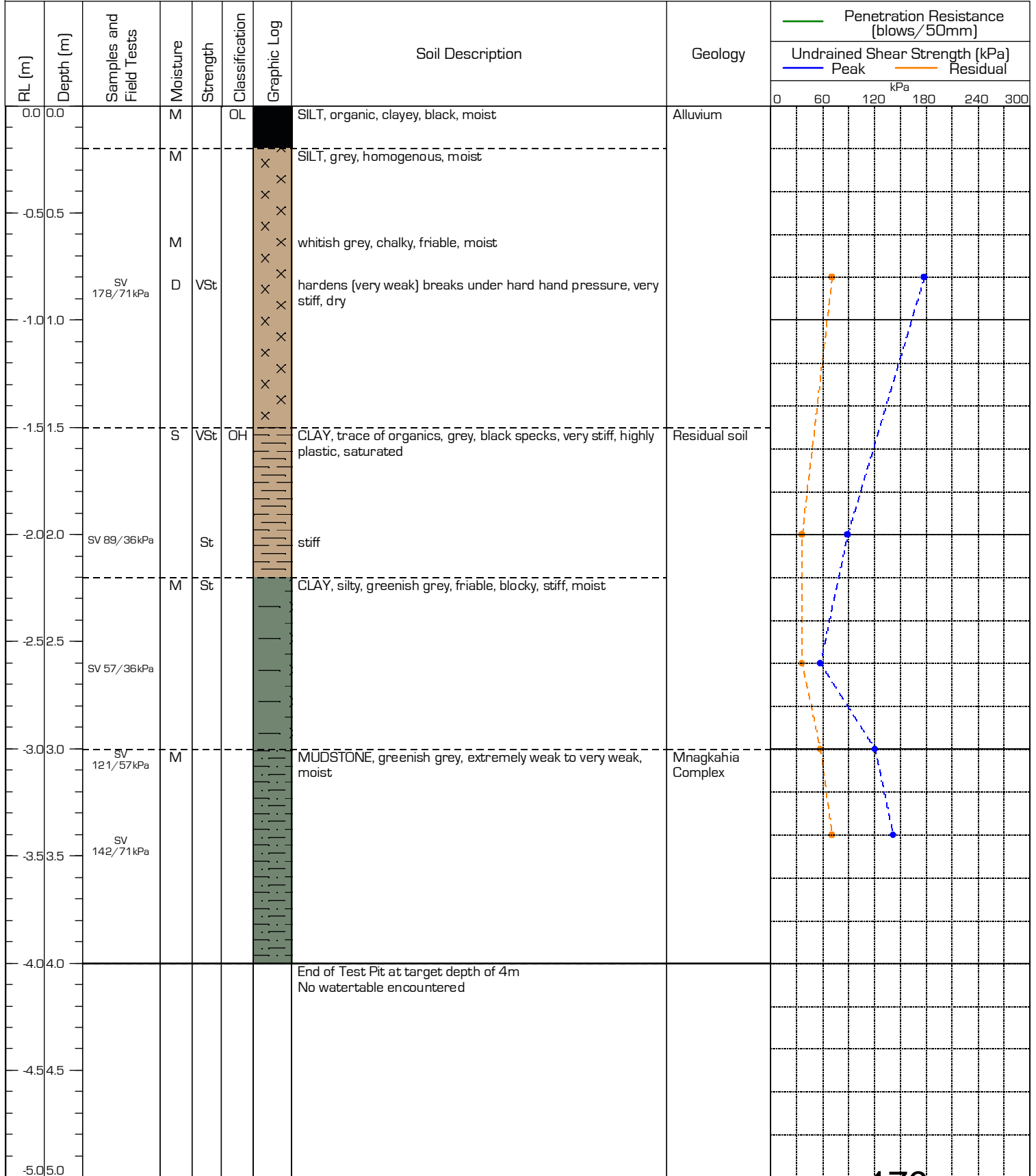
178


Client: Prime Property Group
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Project number: 13641
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m



Client: Prime Property Group
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Vane ID: C342

Project number: 12928
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m

RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Penetration Resistance (blows/50mm)	
									Undrained Shear Strength (kPa)	
									Peak	Residual
0.0	0.0		W		OL		SILT, organic, dark brown, wet	Topsoil		
			W				CLAY, silty, grey, wet orangish grey	Residual soil		
	-0.5									
	-1.0	SV 89/53kPa		St			grey, some orange streaks, stiff		180	180
	-1.5		S				some roots, saturated			
	-2.0									
	-2.5									
	-3.0		W				MUDSTONE, dark brown, extremely weak, clay matrix with weak gravel zones, wet	Mangakahia Complex		
	-3.5						MUDSTONE, dark brown, very weak			
	-4.0			D			dark greenish brown, hardens, weak to moderately strong, retrieve large blocks, dry			
	-4.5						End of Test Pit at target depth of 4m Water table at 1.5m depth			
	-5.0									



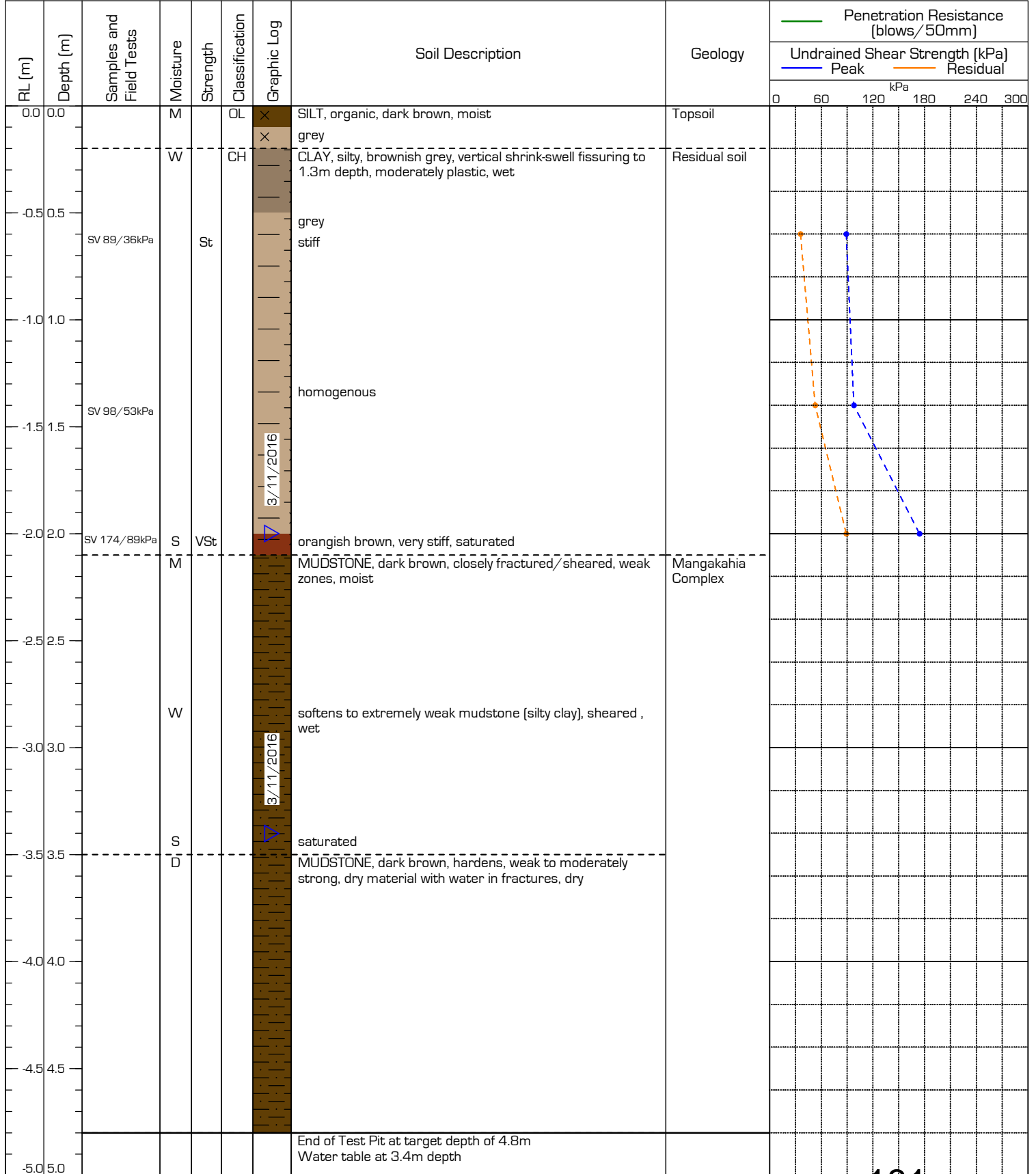
Client: Prime Property Group
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Vane ID: C342

Project number: 13641
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 16 Tonne Excavator

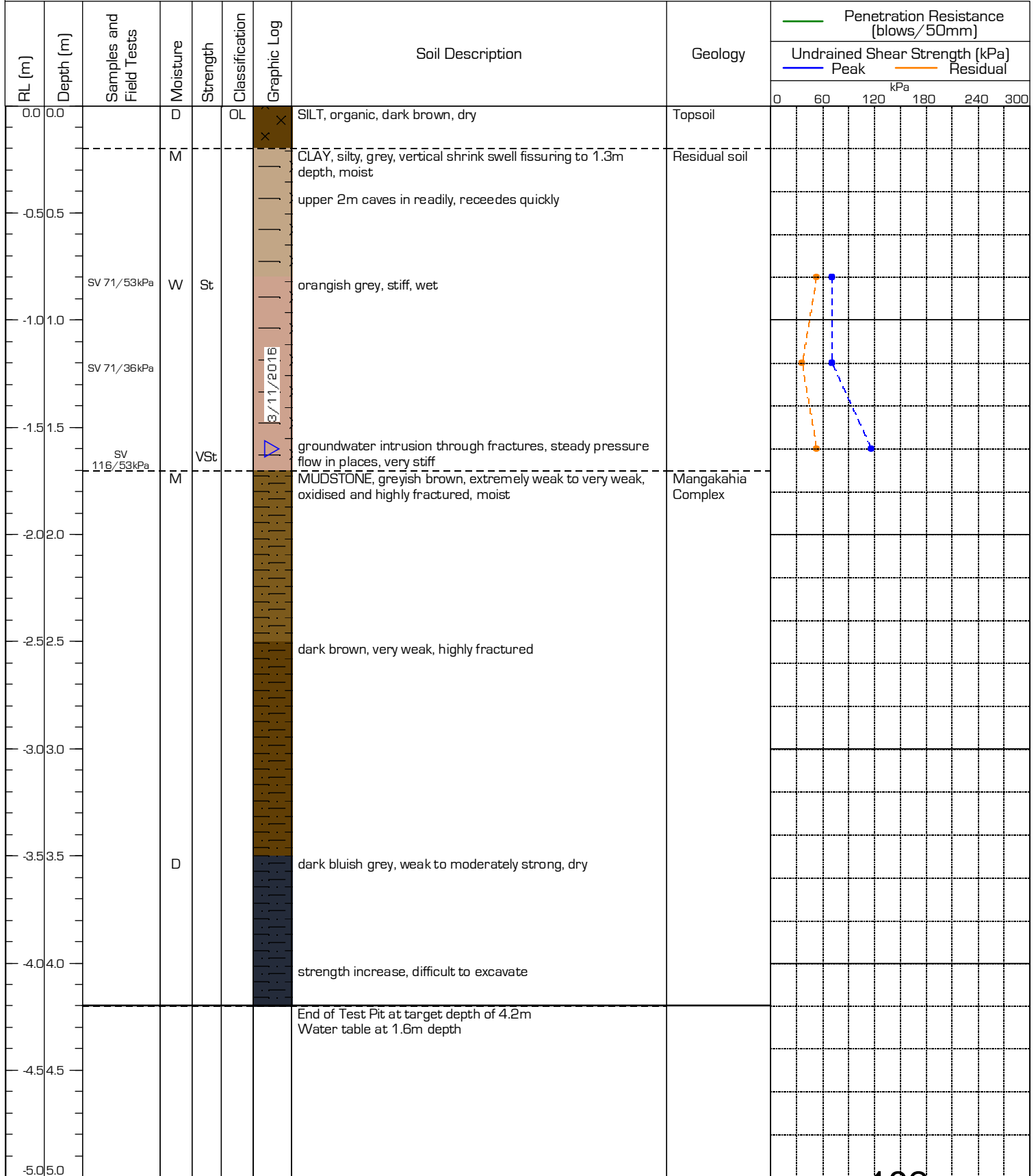
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 16 Tonne Excavator

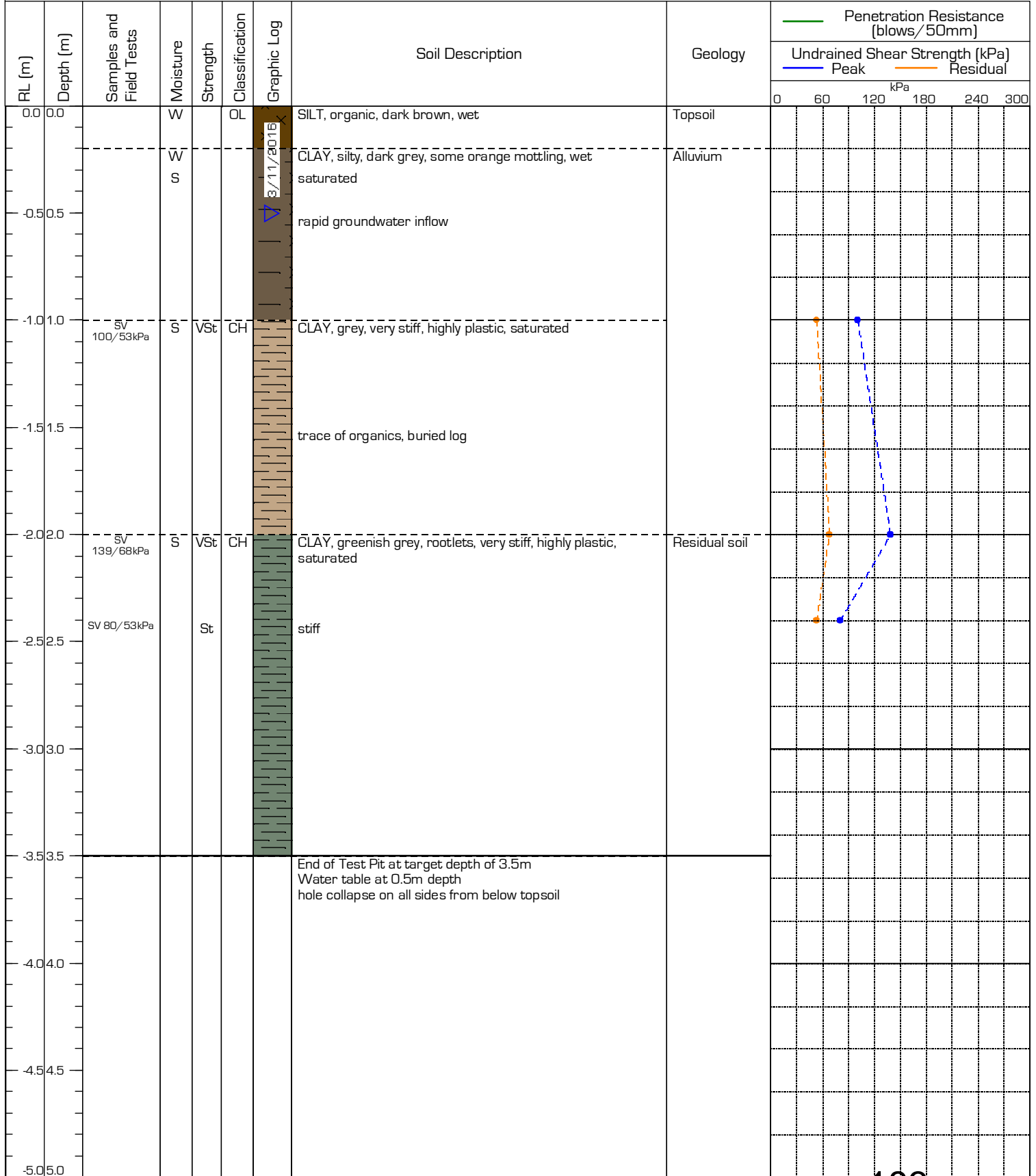
Vane ID: C342

Checked by: DD

Position: E: - m

N: - m

Elevation: - m



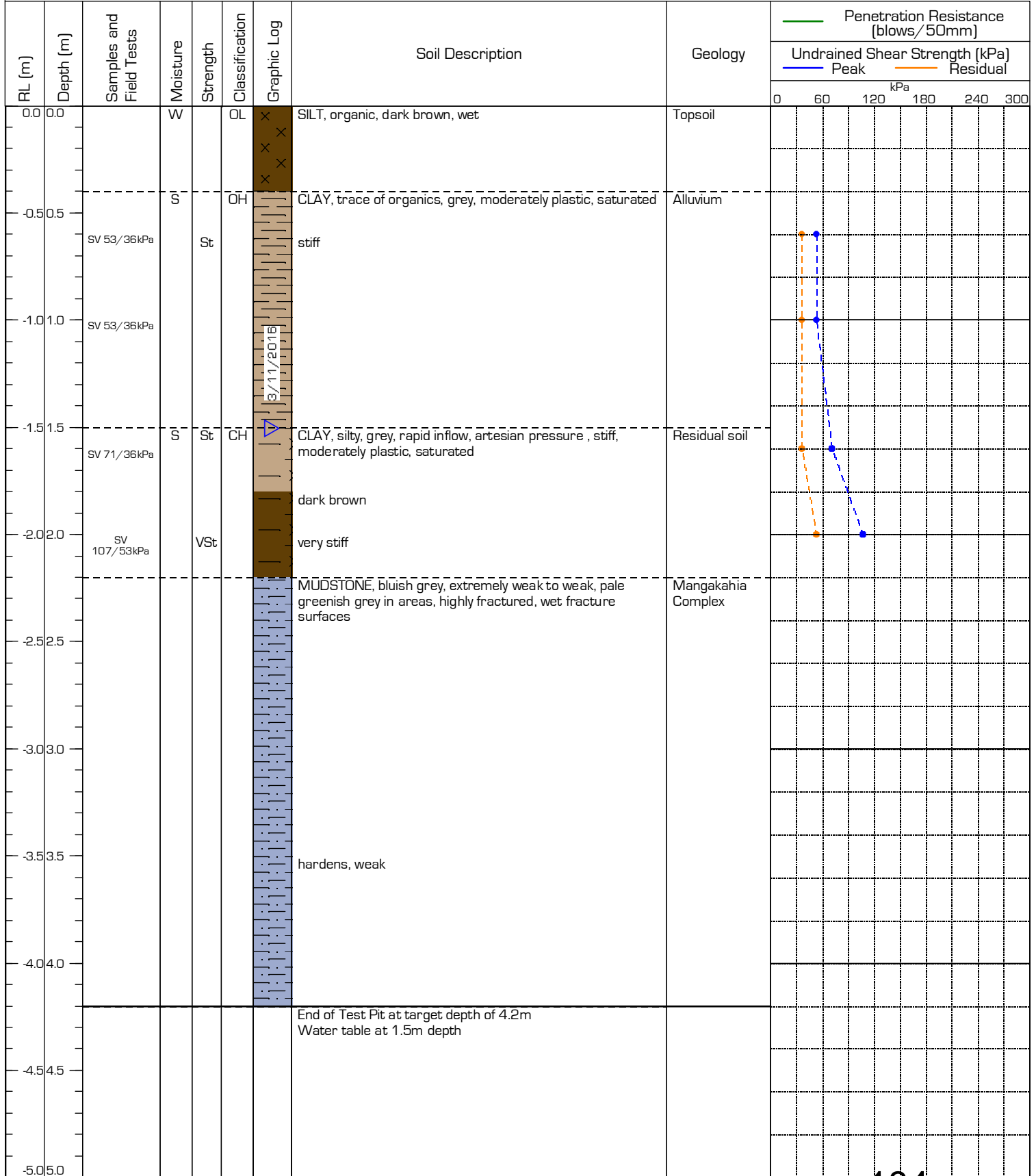
Client: Prime Property Group
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Vane ID: C342

Project number: 13641
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m



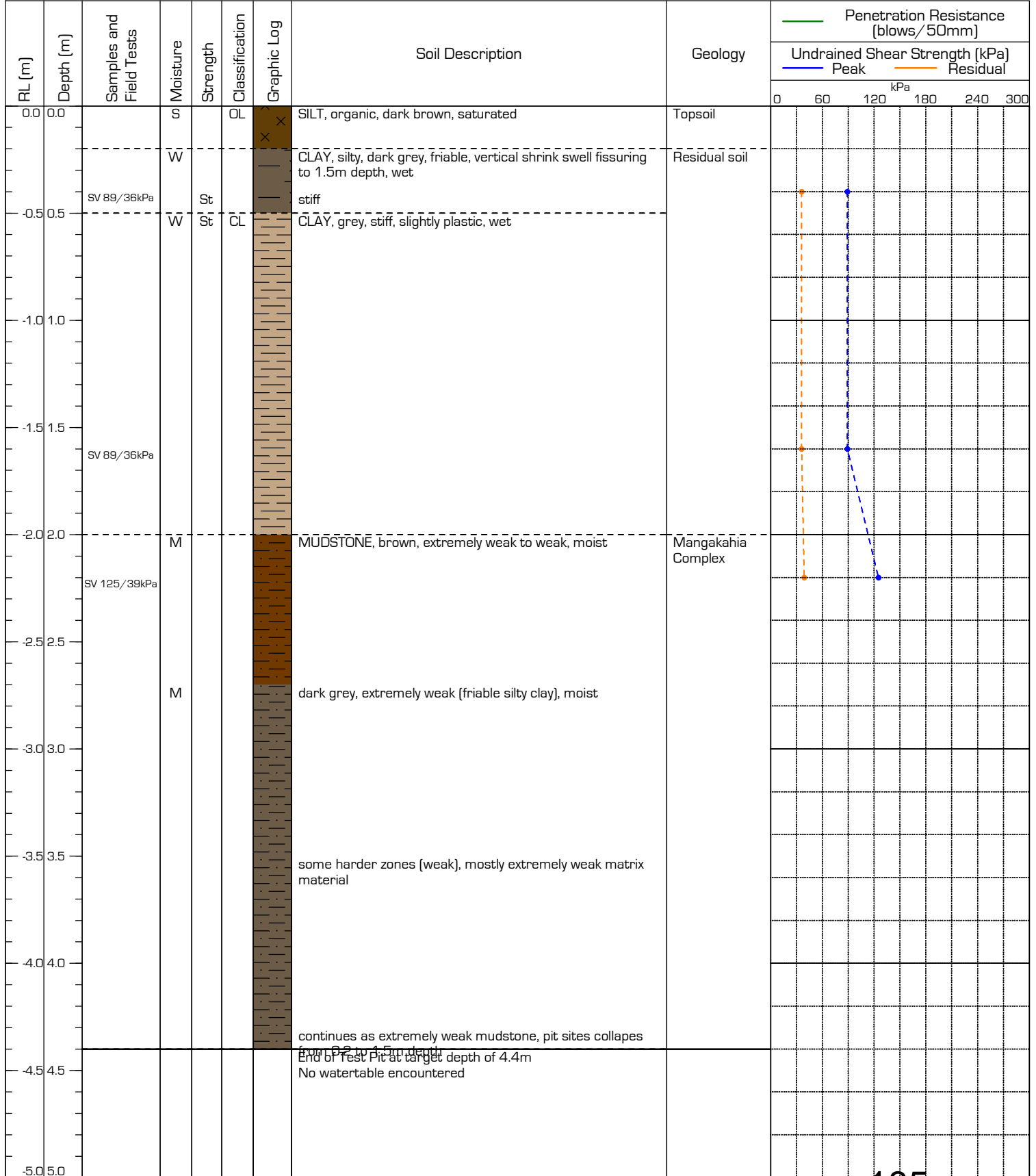
Client: Prime Property Group
 Project: Geotechnical Investigation for Subdivision
 Address: Lot 1 DP 149776, Foster Crescent, Snells Beach
 Test Method: 16 Tonne Excavator

Vane ID: C342

Project number: 13641
 Date: 3/11/2016
 Logged by: FWH
 Checked by: DD

Position: E: - m N: - m

Elevation: - m



Client: Prime Property Group

Project number: 13641

Project: Geotechnical Investigation for Subdivision

Date: 3/11/2016

Address: Lot 1 DP 149776, Foster Crescent, Snells Beach

Logged by: FWH

Test Method: 16 Tonne Excavator

Vane ID: C342

Checked by: DD

Position: E: - m

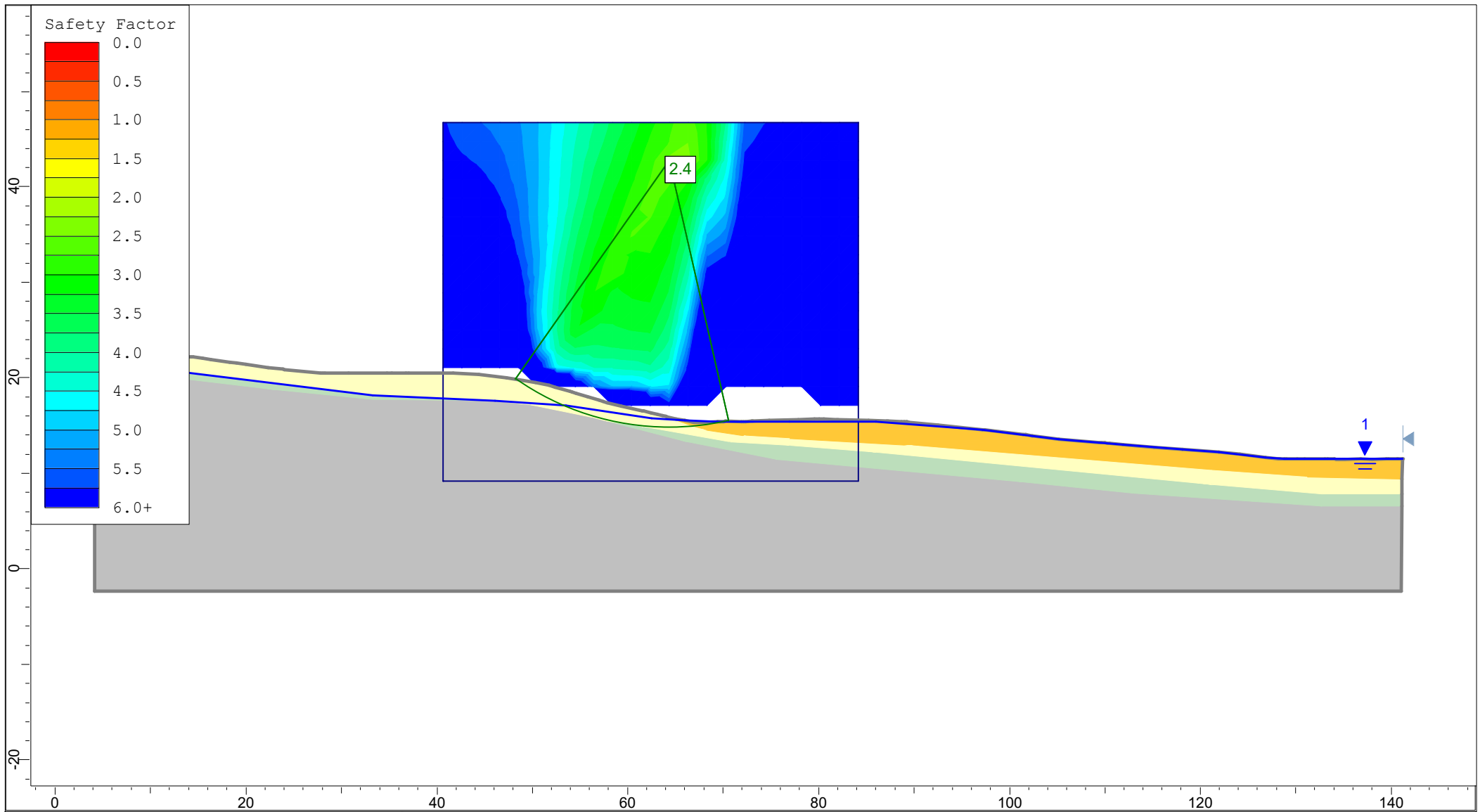
N: - m

Elevation: - m

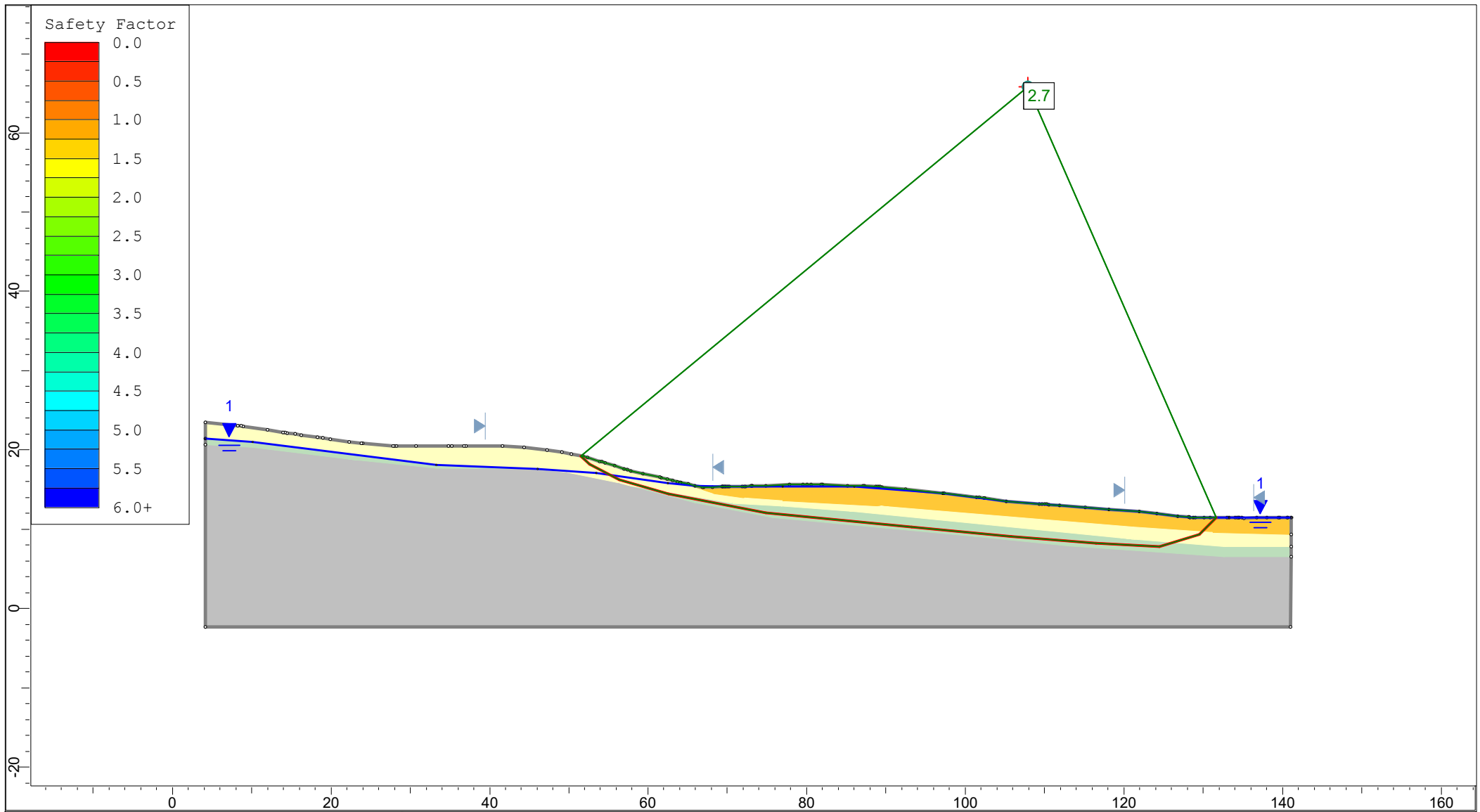
RL (m)	Depth (m)	Samples and Field Tests	Moisture	Strength	Classification	Graphic Log	Soil Description	Geology	Penetration Resistance (blows/50mm)						
									Undrained Shear Strength (kPa)						
									Peak			Residual			
										kPa					
										0	60	120	180	240	300
0.0	0.0		W		OL		SILT, organic, dark brown, topsoil buried toward pond, overlain by grey cohesive fill material, wet	Topsoil							
			W				SILT, clayey, orangish grey, speckled, loose, wet	Residual soil							
-0.5	0.5														
-1.0	1.0														
-1.5	1.5														
-2.0	2.0														
			S				saturated								
-2.5	2.5		M				MUDSTONE, bluish grey, extremely weak to very weak, moist	Mangakahia Complex							
-3.0	3.0														
			M				weak, breaks under hard hand pressure, moist								
-3.5	3.5														
-4.0	4.0						End of Test Pit at target depth of 4m Water table at 2.1m depth								
-4.5	4.5														
-5.0	5.0														




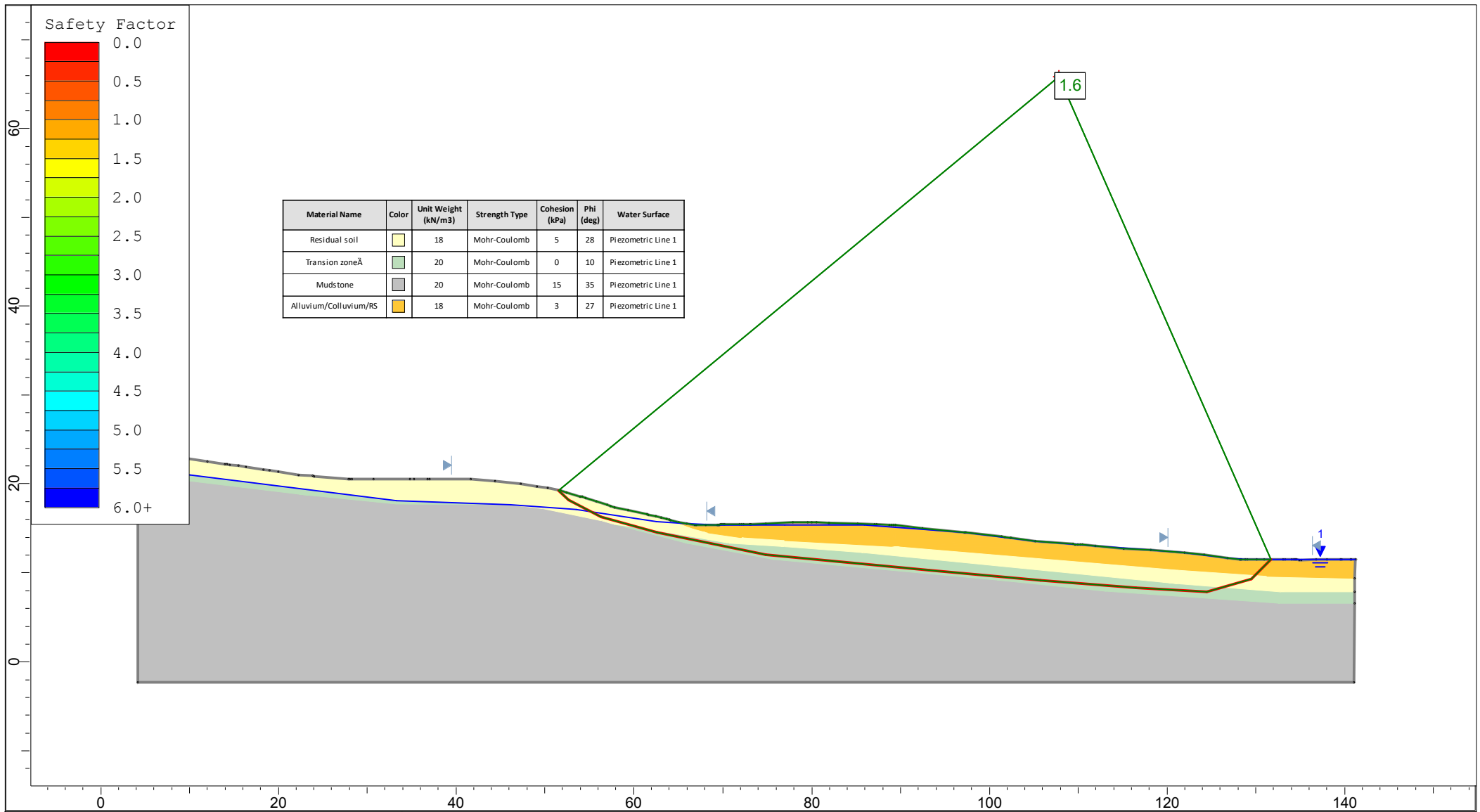
APPENDIX D
SLOPE STABILITY ANALYSES



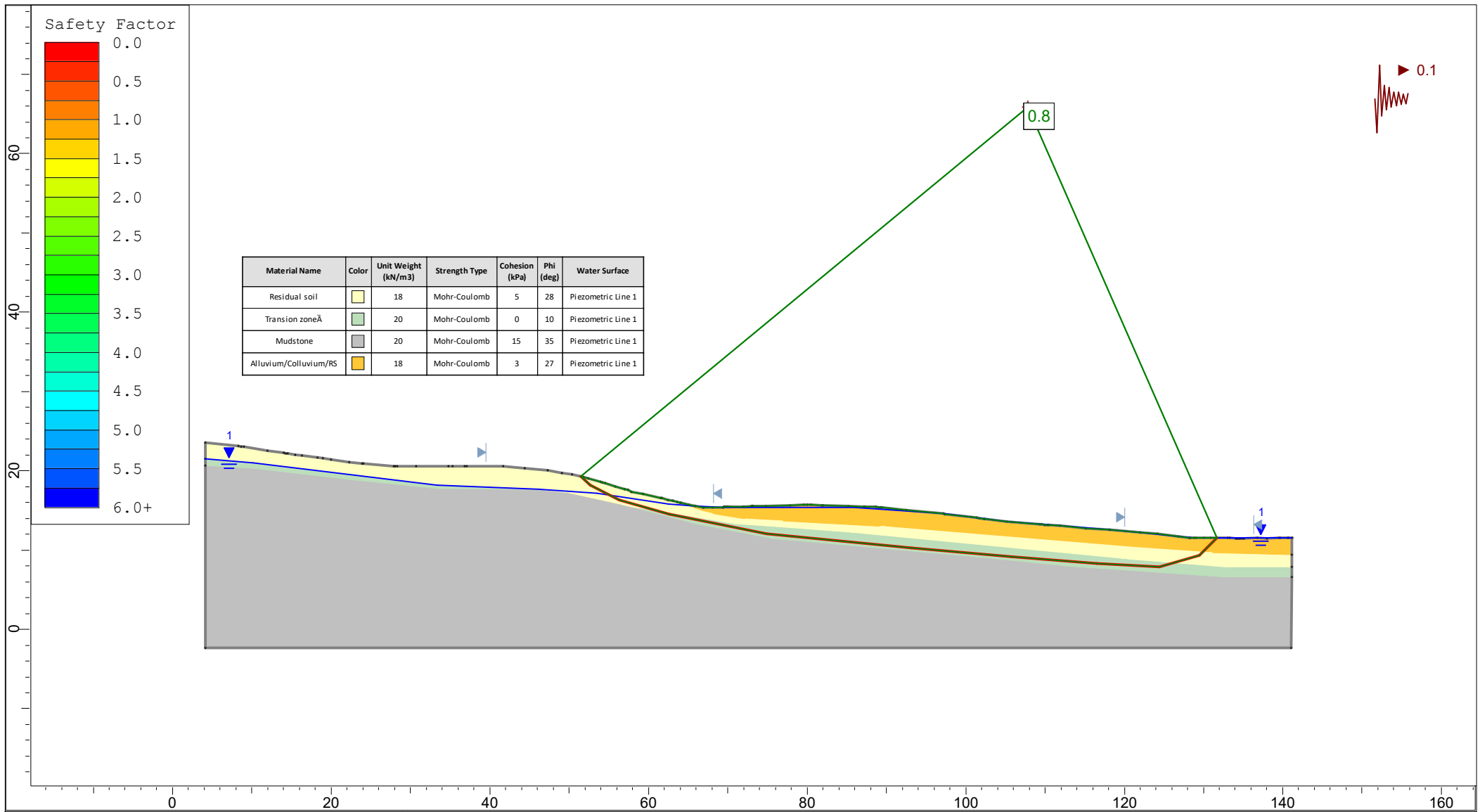
<i>Project</i>		Stability Assessment CS-1 - Foster Cres Snells Beach	
<i>Analysis Description</i>		Design Groundwater	
<i>Drawn By</i>	FWH	<i>Company</i>	LDE
<i>Date</i>	29/11/2016	<i>Project Number</i>	12928



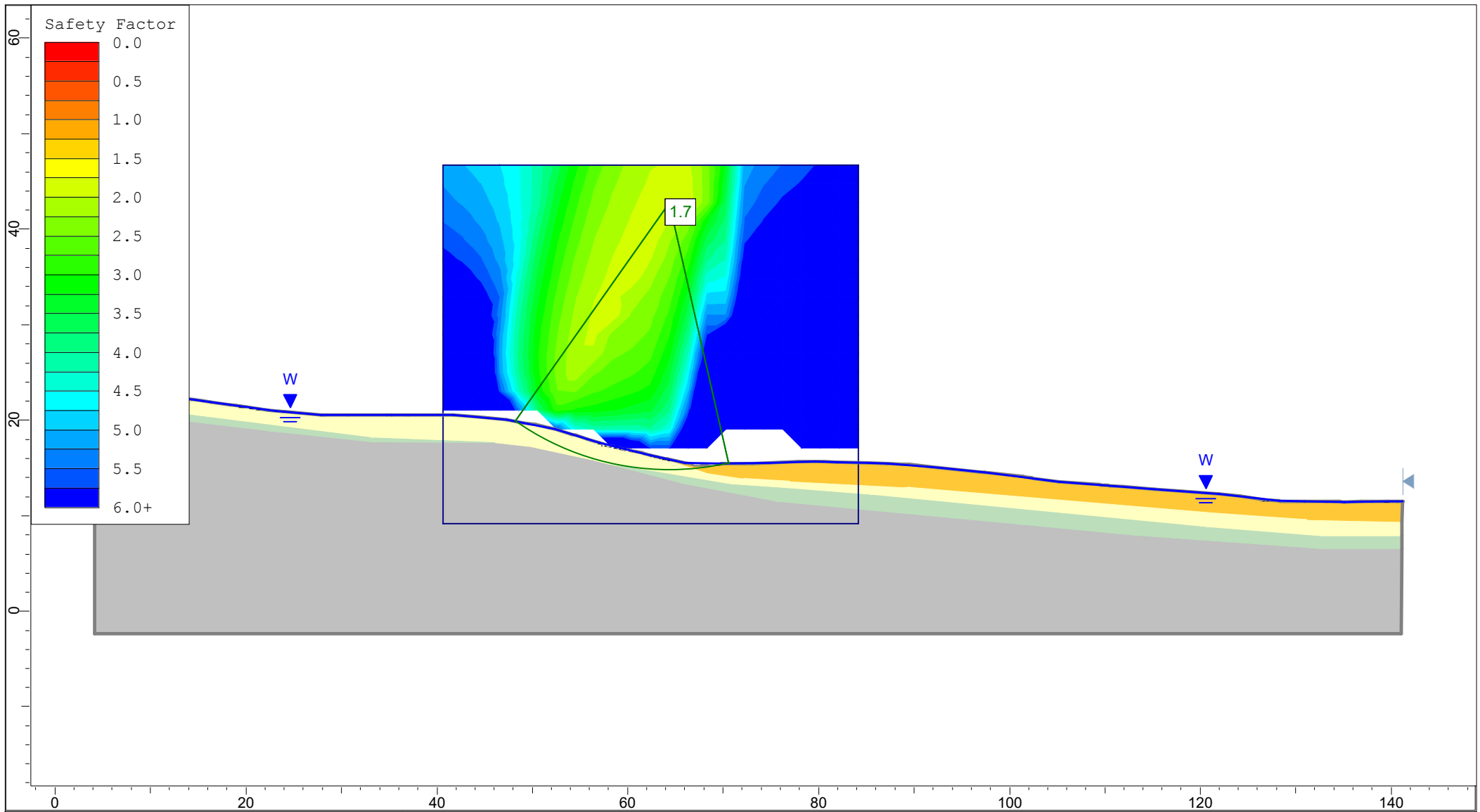
	<i>Project</i>		Stability Assessment CS-1 - Foster Cres Snells Beach	
	<i>Analysis Description</i>		Design Groundwater - Long Failure	
	<i>Drawn By</i>		<i>Company</i>	
	<i>Date</i>		<i>Project Number</i>	
	29/11/2016		12928	



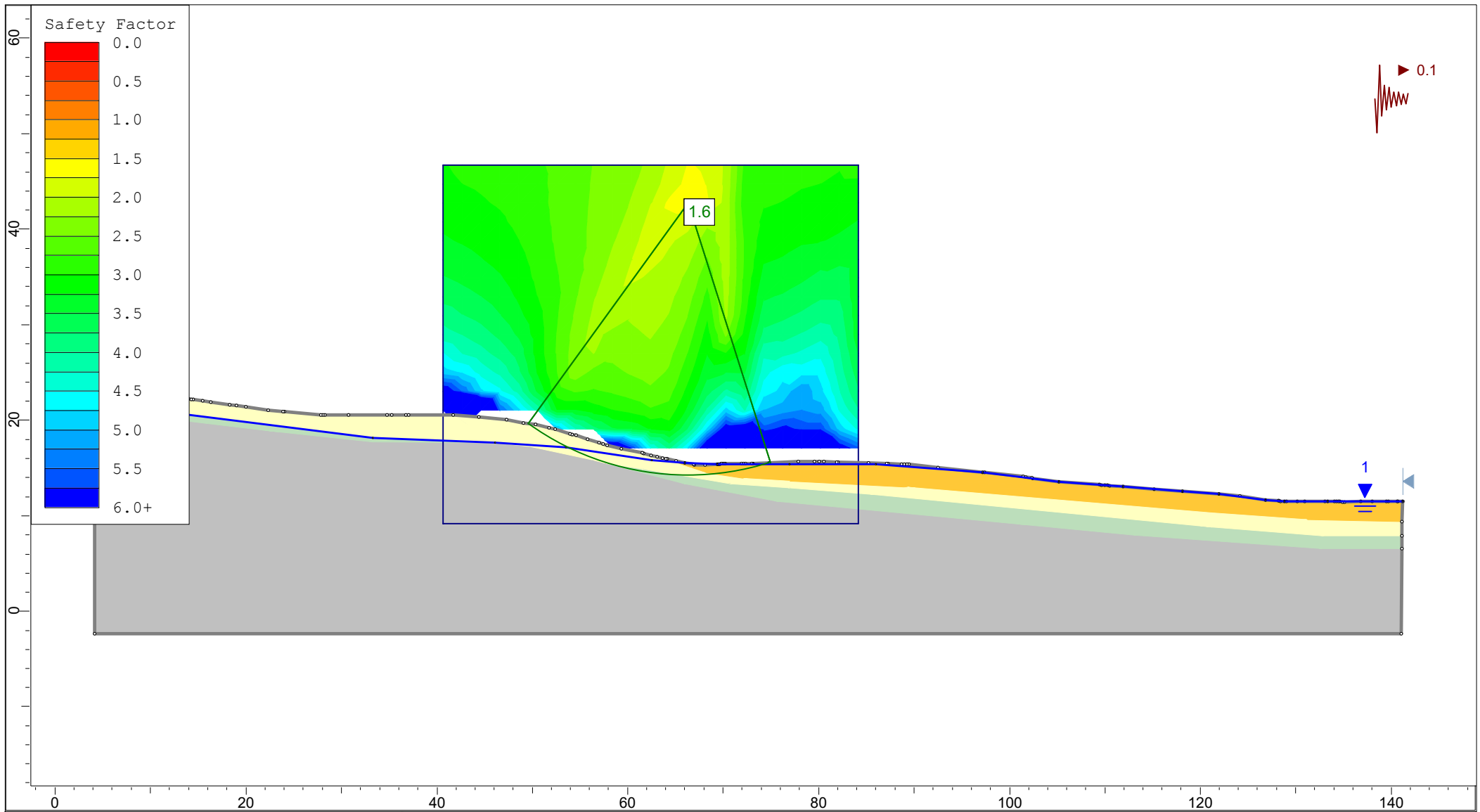
<i>Project</i>		Stability Assessment CS-1 - Foster Cres Snells Beach	
<i>Analysis Description</i>		Long Slip - Sensitivity Analysis	
<i>Drawn By</i>	DD	<i>Company</i>	LDE
<i>Date</i>	29/11/2016	<i>Project Number</i>	12928



	Project		Stability Assessment CS-1 - Foster Cres Snells Beach	
	Analysis Description		Long Slip - Sensitivity Analysis - Seismic	
	Drawn By	DD	Company	LDE
	Date	29/11/2016	Project Number	12928



<i>Project</i>		Stability Assessment CS-1 - Foster Cres Snells Beach	
<i>Analysis Description</i>		Extreme Groundwater	
<i>Drawn By</i>	FWH	<i>Company</i>	LDE
<i>Date</i>	29/11/2016	<i>Project Number</i>	12928



	Project			Stability Assessment CS-1 - Foster Cres Snells Beach		
	Analysis Description			Seismic - Design Groundwater		
	Drawn By			Company		
	Date			Project Number		
	FWH			LDE		
	29/11/2016			12928		

APPENDIX E
LABORATORY TEST CERTIFICATES



TEST RIGHT • BUILD RIGHT

577 Hills Road
Marshland, Christchurch
E: info@geocivil.co.nz
M: 027 6565 226

TEST REPORT

Lab Job No: 8334-005
Your ref.: -
Date of Issue: 23/03/2018
Date of Re-Issue: -
Page: 1 of 3

Test Report.

No. C18-141

PROJECT: Snells Beach Subdivision – NZ Standard Compaction
CLIENT: LDE
127 Bank Street
Whangarei
ATTENTION: Finlay Wallen-Haliwell
INSTRUCTIONS: Determination of the dry density/water content relationship - New Zealand standard compaction
TEST METHOD: NZS 4402:1986 Test 4.1.1
SAMPLING METHOD: N/A
TEST RESULTS: As Per Laboratory Sheets attached

B. Lucas

Laboratory Technician

N. Warmerdam

Approved Signatory



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

-CPT – Aggregates – Soil – Roding-

This report shall not be reproduced except in full, without written approval of the laboratory

TEST RIGHT • BUILD RIGHT

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP
 NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8334-005	Sample No.:	C18-009
Client:	LDE	Tested By:	J.V
Project:	Snells Beach Subdivision	Date:	14/03/2018
Location:	Snells Beach Subdivision S-1	Checked By:	B-L
		Date:	26/3/18
Date Received:	9/03/2018	Page:	2 of 3
Report No:	C18-141		
REF:	18-124		

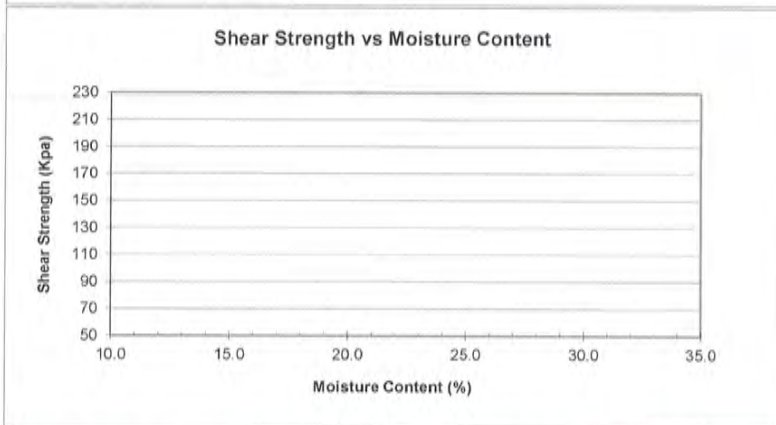
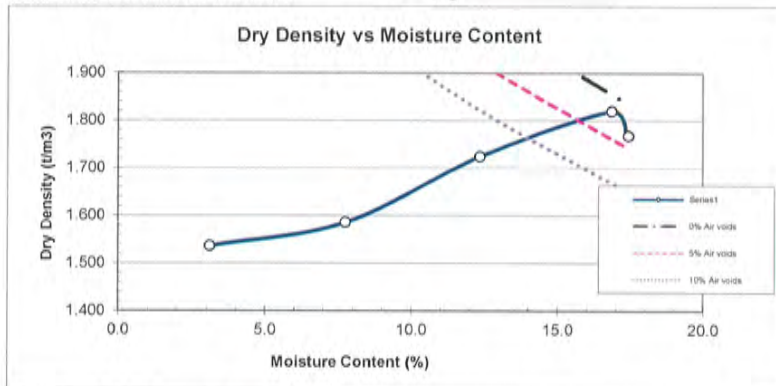
Sample Description: Silty Clay, traces of fine sand, traces of organics(rootlets), brown-orange, moist

Compaction used: New Zealand Standard Compaction Test performed on fraction passing 9.5 mm BS test sieve

History: Natural

Total mass of sample: 14857.6 g

Mass retained on 19mm BS test sieve: 0 g



Test Results		
Water Content (%)	Dry Density (t/m³)	Shear Vane (kPa)
3.1	1.536	N/A
7.7	1.586	N/A
12.3	1.724	N/A
16.9	1.820	N/A
17.4	1.768	N/A

Solid Density (t/m³) = 2.70
 Optimum Water Content (%) = 17
 Max Dry Density (t/m³) = 1.82
 Natural Water Content (%) = 17

TEST RIGHT • BUILD RIGHT

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP
 NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8334-005	Sample No.:	C18-010
Client:	LDE	Tested By:	S.P.S/J.V
Project:	Snells Beach Subdivision	Date:	16/03/2018
Location:	Snells Beach Subdivision S-2	Checked By:	BL
Date Received:	9/03/2018	Date:	26/3/18
Report No:	C18-141	Page:	3 of 3
REF:	18-125		

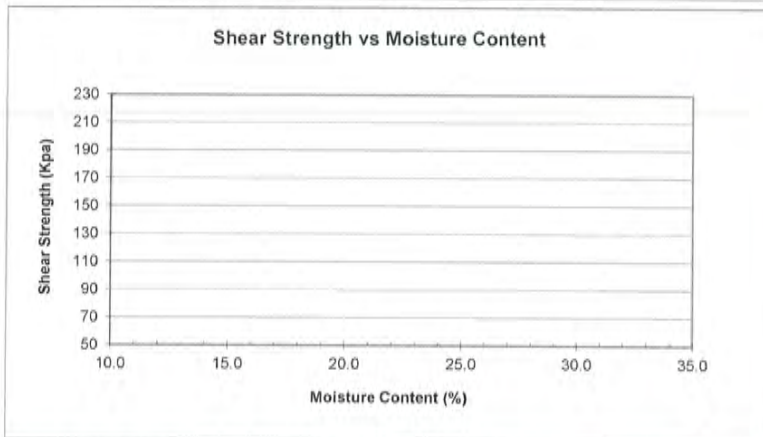
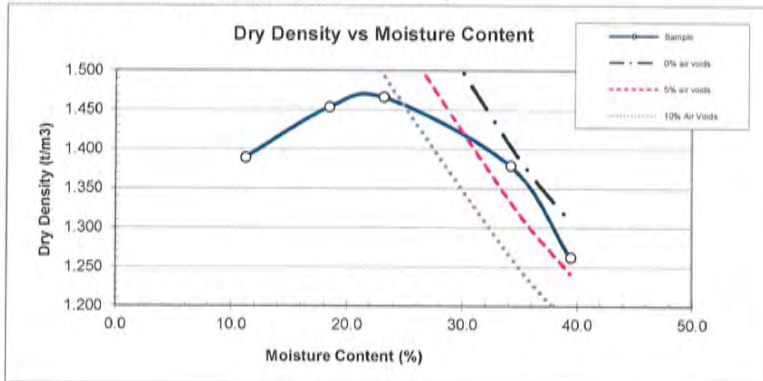
Sample Description: Silty Clay, minor organics (amorphous and rootlets), traces of fine sand, dark brown, mottled grey, moist-wet

Compaction used: New Zealand Standard Compaction Test performed on fraction passing 9.5 mm BS test sieve

History: Natural

Total mass of sample: 17224.5 g

Mass retained on 19mm BS test sieve: 0 g



Test Results		
Water Content (%)	Dry Density (t/m³)	Shear Vane (kPa)
11.2	1.389	N/A
18.5	1.453	N/A
23.2	1.466	N/A
34.2	1.379	N/A
39.5	1.263	N/A

Solid Density (t/m³) = 2.70
 Optimum Water Content (%) = 23
 Max Dry Density (t/m³) = 1.47
 Natural Water Content (%) = 34



TEST RIGHT • BUILD RIGHT

166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz
M: 027 6565 226

TEST REPORT

Lab Job No: 8334-005
Your ref.:
Date of Issue: 19-03-2018
Date of Re-Issue: -
Page: 1 of 8

Test Report.

No. W18-110

PROJECT: Snells Beach Subdivision

CLIENT: LDE
127 Bank St
Whangarei

ATTENTION: Finlay Wallen-Allen

INSTRUCTIONS: Determination of the Water Content
Determination of the liquid & plastic limits, Plasticity index and water content
Determination of the Linear Shrinkage
Determination of the California Bearing Ratio (CBR)
(remoulded samples) (not accredited)

TEST METHOD: NZS 4402:1986 Test 2.1
NZS 4402:1986 Tests 2.2,2.3,2.4
NZS 4402:1986 Test 2.6
NZS 4407:2015 Test 3.15 (not accredited)

SAMPLING METHOD: Sampled by client – sampling not accredited

TEST RESULTS: As Per Laboratory Sheets attached


G. Breckon

Laboratory Technician


D. Krissansen

Approved Signatory



Tests indicated as
not accredited are outside
the scope of the
laboratory's accreditation

-CPT – Aggregates – Soil – Roading-

This report shall not be reproduced except in full, without written approval of the laboratory



TEST RIGHT • BUILD RIGHT

166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF WATER CONTENT

NZS 4402:1986 Test 2.1

Lab Job No: 8334-005
Client: LDE
Project: Snells Beach Subdivision
Location: S 1 and S2
Date Received: 28/02/2018
Report No: W18-110
REF: 13641

Tested by: D.K.
Date: 5/03/2018
Checked By: *Brecker*
Date: 21/3/18
Page: 2 of 8

Sampled By: Client
Date Sampled: unknown
Sample method: Unknown

Sample Description: 18-124 Silty CLAY, traces of fine sand, traces of organics (rootlets), brown-orange, moist.
18-125 Silty CLAY, minor organics, (amorphous and rootlets), traces fine sand, dark brown mottled grey, moist-wet.

Sample Number	18-124	18-125
Location	S1	S2
Water Content (%)	25.1	33.7
Depth of Sample (m)	-	-

MC,
8334-005, Snells beach Sub, Lab tests
21/03/2018

Issue 3

[Signature]
D. Krissansen
Approved Signatory

**DETERMINATION OF THE LIQUID & PLASTIC LIMITS,
PLASTICITY INDEX & WATER CONTENT**

NZS 4402:1986 Test 2.2,2.3,2.4

Lab Job No: 8334-005
Client: LDE
Location: Snells Beach Subdivision
S 1
Date Received: 28/02/2018
Report No: W8-110
REF: 13641

Sample No.: 18-124
Tested By: N.K
Date Tested: 9/03/2018
Checked By: *Breckon*
Date Checked: *21/3/18*
Page: 3 of 8

Sampling Method: Unknown
Date Sampled: Unknown

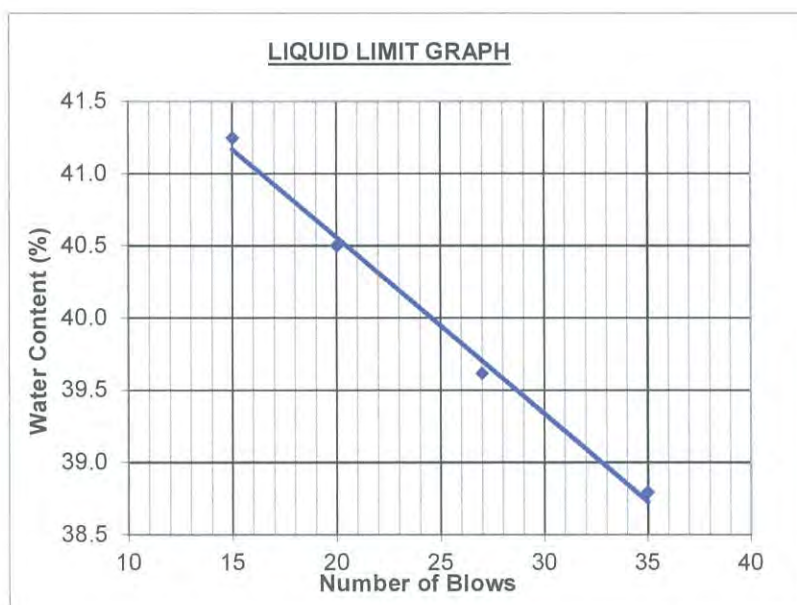
Sampled By: Client

Test Details:

Test performed on: Fraction passing 425µm sieve
Sample history: Natural state

Description of Sample: Silty CLAY, traces of fine sand, traces of organics (rootlets), brown-orange, moist.

No. of blows	Liquid Limit				Plastic Limit		NWC	
	15	20	27	35				
Water content (%)	41.2	40.5	39.6	38.8	21.2	21.1		
							Liquid Limit	40
							Plastic Limit	21
							Plasticity Index	19



DETERMINATION OF THE LINEAR SHRINKAGE

NZS 4402:1986 Test 2.6

Lab Job No:	8334-005	Sample No:	18-124
Client:	LDE	Tested By:	N.K
Location:	Snells Beach Subdivision	Date:	12/03/2018
	S 1	Checked By:	<i>Breckon</i>
Date Received:	28/02/2018	Date:	<i>21/3/18</i>
Report No:	W8-110	Page:	4 of 8
REF:	13641		
Test performed on:	Fraction passing 425mm sieve		
History:	Natural state		

Description of Sample: Silty CLAY, traces of fine sand, traces of organics (rootlets), brown-orange, moist.

Linear shrinkage	10
------------------	----

Determination of the California Bearing Ratio

Lab Job No: 8334-005
Client: LDE
Job: Snells Beach Subdivision
Location: S 1
REF: 13641
Report No: W8-110

Checked By: *Becker*
Date: 21/3/18
Page: 5 of 8
Sampled By: Client
Sampling Method: Unknown
Date received: 28/02/2018

Sample No	Sample Location / Description	Treatment	Bulk Density (t/m ³)	Dry Density (t/m ³)	Water Content		CBR (%)	Penetration (mm)	Swell (%)	% Over size material	Operator	Date tested	Comments
					As Compacted (%)	Under plunger (%)							
18-124	Silty CLAY, traces of fine sand, traces of organics (rootlets), brown-orange, moist.	nil	1.83	1.54	18.9	27.9	1	2.5 & 5.0	3.3	0	S.K	15/03/2018	-

Note:

- 1 All samples compacted in accordance with NZ Standard Compaction NZS 4402:1986 Test 4.1.1
- 2 A surcharge mass of 4kg was used for all samples.
- 3 All samples were soaked for 4 days prior to testing.
- 4 Lime treated samples were cured for 3 days prior to soaking.
- 5 Plunger penetration rate was 1mm/min for all samples.
- 6 Tests performed on material passing 19mm test sieve.
- 7 All results obtained in accordance with the above test method.

DETERMINATION OF THE LINEAR SHRINKAGE

NZS 4402:1986 Test 2.6

Lab Job No:	8334-005	Sample No:	18-125
Client:	LDE	Tested By:	N.K
Location:	Snells Beach Subdivision	Date:	12/03/2018
	S 2	Checked By:	<i>Breckon</i>
Date Received:	28/02/2018	Date:	<i>21/3/18</i>
Report No:	W8-110	Page:	6 of 8
REF:	13641		
Test performed on:	Fraction passing 425mm sieve		
History:	Natural state		

Description of Sample: Silty CLAY, minor organics, (amorphous and rootlets), traces fine sand, dark brown mottled grey, moist-wet.

Linear shrinkage	7
------------------	---

**DETERMINATION OF THE LIQUID & PLASTIC LIMITS,
PLASTICITY INDEX & WATER CONTENT**

NZS 4402:1986 Test 2.2,2.3,2.4

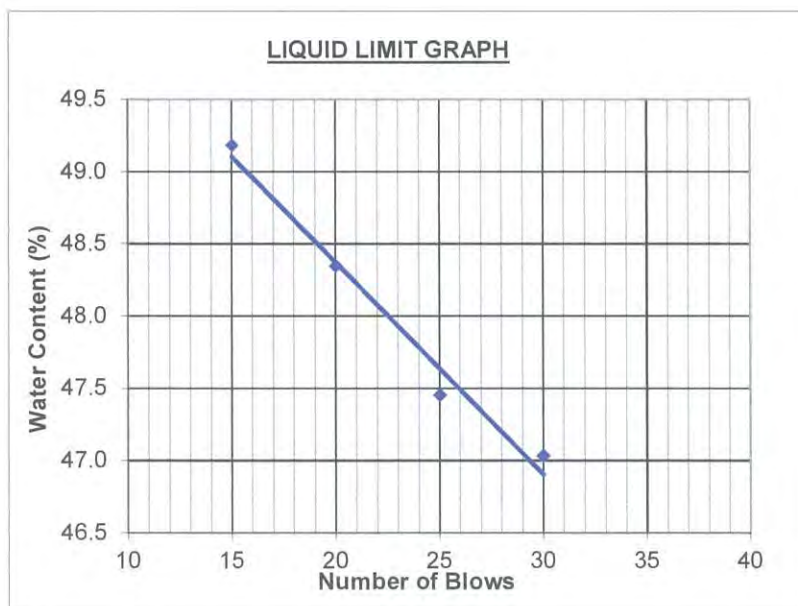
Lab Job No:	8334-005	Sample No.:	18-125
Client:	LDE	Tested By:	N.K
Location:	Snells Beach Subdivision S 2	Date Tested:	9/03/2018
Date Received:	28/02/2018	Checked By:	<i>Breton</i>
Report No:	W8-110	Date Checked:	21/3/18
REF:	13641	Page:	7 of 8

Sampling Method:	Unknown	Sampled By:	Client
Date Sampled:	Unknown		

Test Details:
 Test performed on: Fraction passing 425µm sieve
 Sample history: Natural state

Description of Sample: Silty CLAY, minor organics, (amorphous and rootlets), traces fine sand, dark brown mottled grey, moist-wet.

	Liquid Limit				Plastic Limit		NWC
No. of blows	15	20	25	30			-
Water content (%)	49.2	48.3	47.5	47.0	29.0	28.9	
							Liquid Limit 48
							Plastic Limit 29
							Plasticity Index 19



Determination of the California Bearing Ratio

Lab Job No: 8334-005
Client: LDE
Job: Snells Beach Subdivision
Location: S2
REF: 13641
Report No: W8-110

Checked By: *Beckon*
Date: 21/3/18
Page: 8 of 8
Sampled By: Client
Sampling Method: Unknown
Date received: 28/02/2018

Sample No	Sample Location / Description	Treatment	Bulk Density (t/m ³)	Dry Density (t/m ³)	Water Content		CBR (%)	Penetration (mm)	Swell (%)	% Over size material	Operator	Date tested	Comments
					As Compacted (%)	Under plunger (%)							
18-125	Silty CLAY, minor organics, (amorphous and rootlets), traces fine sand, dark brown mottled grey, moist-wet.	nil	1.83	1.44	27.2	28.1	3.5	5.0	0.5	0	S.K	16/03/2018	-

- Note:
- 1 All samples compacted in accordance with NZ Standard Compaction NZS 4402:1986 Test 4.1.1
 - 2 A surcharge mass of 4kg was used for all samples.
 - 3 All samples were soaked for 4 days prior to testing.
 - 4 Lime treated samples were cured for 3 days prior to soaking.
 - 5 Plunger penetration rate was 1mm/min for all samples.
 - 6 Tests performed on material passing 19mm test sieve.
 - 7 All results obtained in accordance with the above test method.



**PROPOSED 52 LOT RESIDENTIAL SUBDIVISION
LOT 1 DP 149776, FOSTER CRESCENT, SNELLS BEACH**

ENGINEERING REPORT

Project Reference: 13641
Date: 21 March 2018

1 PROJECT DESCRIPTION

LDE Ltd were engaged by Prime Property Group Limited to undertake the civil infrastructure design for a proposed residential development at Lot 1 DP 149776, Foster Crescent, Snells Beach. The subject site is located to the southwest of Snells Beach extending down to the Mahurangi River Estuary to the north. Figure 1 shows the sites location in relation to Snells Beach township.



Figure 1 - Site location (Google Maps).

The proposed development involves a subdivision creating 52 new residential lots with areas between 530m² and 830m². The balance of the property is to be utilised for access to the residential lots, treatment of stormwater runoff and providing water and wastewater connection for the development. The proposed scheme plan is shown in Figure 2.



Figure 2 - Proposed scheme plan provided by C&R Surveyors Ltd.

This report presents the proposed design for the civil infrastructure servicing the development including access, proposed earthworks, stormwater management systems, wastewater management and water supply.

2 ACCESS

Access to the development will be from the end of Foster Crescent. The road currently ends in a cul-de-sac near the southeast corner of the site. It is proposed to extend the road (Road A) into the subject development to service the new residential lots. A link road (Road B) is proposed from the cul-de-sac head joining back onto the main alignment which will provide access to the lots on the western side of the development. All lots will have individual vehicle crossings from one of the proposed roads.

A footpath is proposed to be installed along both sides of Road A through to the cul-de-sac. Road B will have a footpath on one side only. The proposed footpath will have connections to the walking track along the esplanade reserve as well as the footpath to the school on Dawson Road.

3 STORMWATER MANAGEMENT

3.1 Site Description

The subject site is 4.638ha located on a north facing ridge to the west of Snells Beach. The ridge has a moderate slope down to the Mahurangi Harbour to the north. The site is currently grassed with no existing impermeable areas. A topographical survey of the site is shown in Figure 3 below.

Stormwater runoff from the site drains into two flow paths running through the site. Both flow paths extend northeast and discharge into a small degraded wetland at the lowest point of the site. From the wetland stormwater runoff drains into the Mahurangi Harbour. A small manmade pond some 10m in diameter is located on the upper slopes of the site and is used for watering stock.

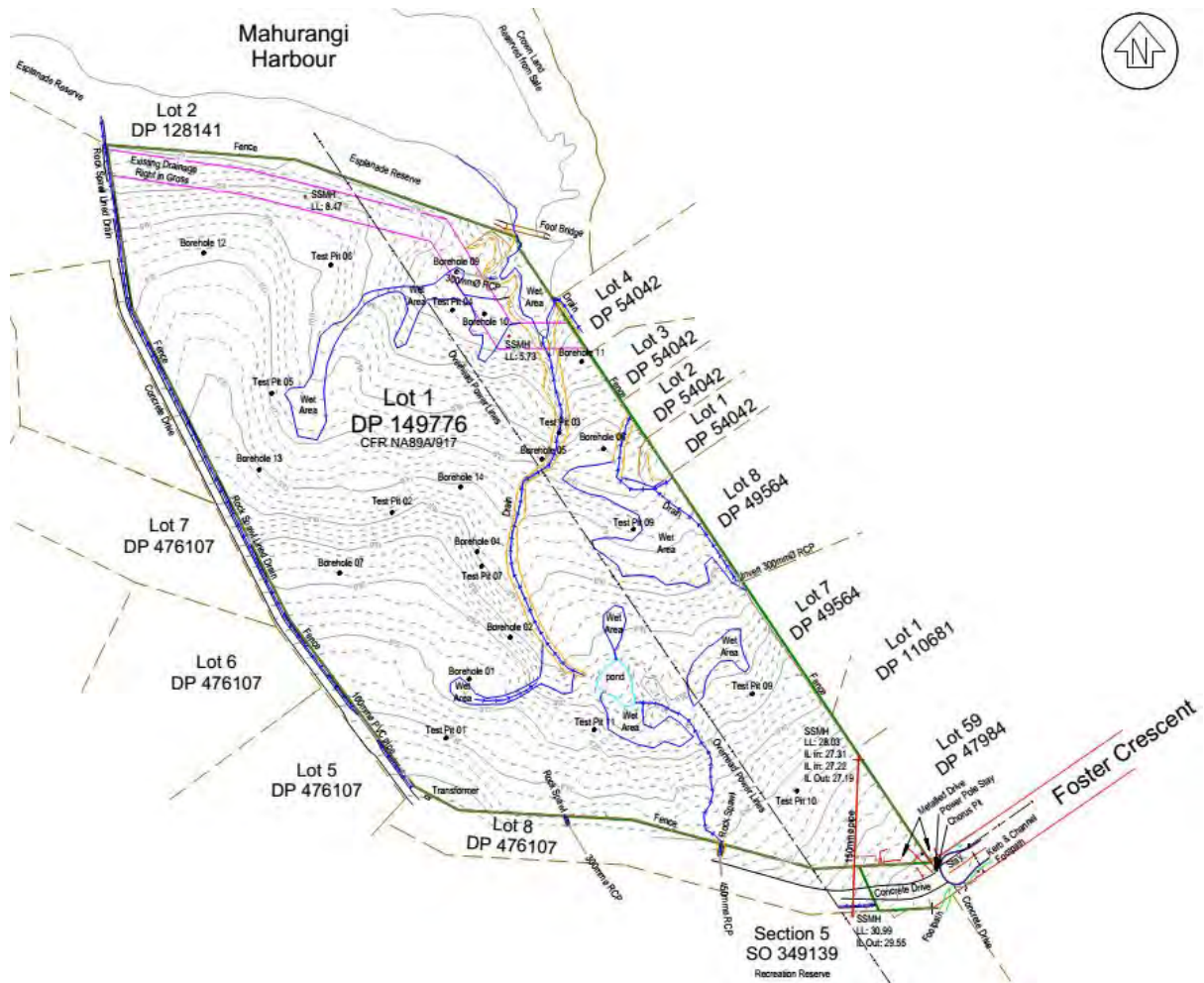


Figure 3 - Topographical survey plan of the site.

An accessway servicing the adjacent properties runs along the southern and western boundaries of the site. An open drain extends along this accessway collecting runoff from the accessway and the upstream catchment. Two culverts pass under this accessway which currently discharge into the two flow paths through the site. The existing culvert diameters and associated catchment area are shown in Table 1. Flows from these upper catchments shall be considered in the stormwater network design within the site.

Table 1 - Existing culvert summary.

Culvert ID	Pipe Diameter	Catchment Area
Culvert UA	450 mm	27,335 m ²
Culvert UB	300 mm	17,175 m ²

We consider that stormwater attenuation on this site is not required as runoff from the site is discharged directly into the Mahurangi Harbour. As such, there is no substantial increase in the risk of flooding or inundation of the surrounding properties from the creation of new impervious areas within the site. The entire stormwater network servicing the site will be constructed during the development of the site and has been designed allowing for the impermeable areas created as well as the increase in rainfall due to climate change.

Stormwater treatment will be provided for runoff from impermeable surfaces within the road reserve in accordance with Council requirements. Details of this are provided in Section 3.3 below.

3.2 Design Considerations

Accordingly, the stormwater network has been designed generally in accordance with the guidance provided in Auckland Council's Technical Publication 10 "Stormwater management devices: Design guidelines manual". Specifically, design principles from TP10 used in this design are:

- Overland flow disposal shall mimic as far as possible the natural drainage process of the area.
- Modification to any existing drainage patterns shall be kept to a minimum.
- Overland flows shall not be discharged directly into streams from a piped system.
- Impervious areas shall be kept to a minimum.

The design presented in the following subsections of this report for the proposed development complies with the Auckland Council requirements described above.

Due to the small catchment size, a concentration time of 10 minutes has been used in this design.

3.2.1 Rainfall Data

HIRDS V3 rainfall data for the site was used in the design. In accordance with Auckland Councils Stormwater Code of Practice Clause 4.2.10 the rainfall data has been factored to allow for increases in intensity and frequency of rainfall events due to climate change. The factors applied are shown in Table 2.

Table 2 - Increase in rainfall data for climate change.

Design Storm	Increase for Climate Change
10-year ARI Rainfall	13.2 %
100-year ARI Rainfall	16.8 %

3.2.2 Geotechnical Assessment

The geotechnical investigation and report for the site undertaken by LDE Ltd indicates that the site is underlain by stiff to very stiff clay and silt residual soils over mudstone. At the time of investigation, groundwater was generally found at this residual soil/mudstone interface at some 1.6m to 3.0m depth.

The underlying soils have been assessed as SCS Group C soils as defined in Table 3.2 of Auckland Councils Technical Publication 108. As such, the soakage rate of these soils is considered poor and for this reason infiltration is not considered suitable for this site.

The runoff coefficients used in this design are shown in Table 3 below. They are generally in accordance with those outlined in the NZ Building Code E1.

Table 3 - Runoff Coefficients

Surface Type	Runoff Coefficient
Grassed or landscaped areas	0.40
Impermeable areas	0.95
Road pavement	0.85

3.3 Stormwater Treatment

3.3.1 Design Considerations

To meet stormwater quality control requirements, stormwater treatment devices were sized using Water Quality Flow (WQF) calculations as outlined in TR2013:035 "Auckland Unitary Plan stormwater management provisions: Technical basis of containment and volume management requirements" Appendix C. This provides a tested methodology for reliably sizing treatment devices

that are sized on water flow rates rather than a Water Quality Volume (WQV) basis and overcomes shortcomings recognised in TP10 guidance.

Swales are the only standard stormwater treatment practice in TP10 that are sized based on a WQF rather than a WQV. In this regard TP10 requires calculating the WQF from the peak flow from 1/3 of the 24 hour 2 year ARI rainfall event using TP108 methodology. Substantial anecdotal evidence exists that swales and other such devices (such as proprietary filters) which are sized according to this flow rate are substantially oversized and treat considerably more of the annual runoff than devices sized to capture the WQV.

TP35 Appendix C undertakes an analysis designed to determine the percent of annual rainfall captured by treatment devices sized according to the TP10 WQV and the WQF that correlates with the same percent of annual rainfall as the WQV. The analysis and data can be reviewed in the TP35 document however the conclusions are as follows.

1. Volume based devices sized to capture a WQV based on the depth of 1/3 of the 24 hour 2 year ARI rainfall event can be expected to capture the runoff from 90% of the annual rainfall volume.
2. Flow based devices sized to match a WQF based on the peak intensity from the 1/3 of the 24 hour 2 year ARI rainfall event capture nearly 100% of the annual rainfall volume.
3. Flow based devices sized to match a WQF based on 10mm/hr rainfall intensity can be expected to capture the runoff from 90% of the annual rainfall volume.

The above analysis demonstrates using a 10mm/hr water quality flow calculation for flow-based devices provides the equivalent to 90% of the annual rainfall capture required by TP10. Therefore, the rainfall intensity of 10mm/hr has been adopted to determine the WQF from the new impermeable areas in this development.

3.3.2 Treatment Devices

It is proposed to install two Stormwater360 Stormfilters to provide treatment for runoff from the development. The development has been divided into two catchments (A and B) which generally follow the alignment of each road.

The stormwater filters were sized assuming the upstream catchment was not treated. Although the upstream catchment is collected into the same pipe network, the concentration time is larger therefore we consider that the rainfall that falls on the road areas within the site will be treated before the flows from the upstream catchment reach the filters.

Due to site constraints it is impractical to split flows from the road areas and residential areas. Therefore, the filters have been sized for flows from both areas even though treatment is only required for impermeable surfaces in the road reserve.

From a design rainfall intensity of 10mm/hr, the design water quality flows for catchment A and B are 28.9 L/s and 41 L/s respectively. From design guidance available from Stormwater360, Stormfilter A requires 21 cartridges to treat the design flow, and Stormfilter B requires 29 cartridges to treat the design flow.

Both stormfilters are to be located at the base of the site and discharge to a common outlet. They are located in a utility reserve such that access will be readily available for maintenance. Their layout and subject catchments can be seen in the civil drawings for the site.

3.4 Network Design

The stormwater network within the site has been designed in accordance with Auckland Council's Stormwater Code of Practice.

Design flows have been determined using the rational method. A catchment plan is provided in the construction drawings for the site.

It is proposed to collect and pipe the upstream flows coming from the two culverts extending under the neighbouring accessway. Stormwater from road reserve areas will be collected in a series of catchpits. Each lot will be provided with a connection for discharge of collected impermeable surfaces within each lot.

It is proposed to discharge treated stormwater into the existing wetland at the base of the site. Two outlets are proposed, one for Stormwater Line G and one for the rest of the site. Stormwater Line G only receives water from the residential lots located below the road on the northern boundary of the site.

The secondary flow path for the site follows the road alignment through the site to the low point in the road at CH305. Flows are then discharged into the wetland at the base of the site and into the Mahurangi Harbour. A shallow secondary flow path shall be constructed from the upstream culverts through the lots to the road corridor to provide passage for the 100 year peak flows from the upstream catchment.

4 WASTEWATER MANAGEMENT

This section details the existing and proposed wastewater demands for the site and provides recommendations for infrastructure extensions for servicing the proposed development.

There are two wastewater lines currently extending through the property. A gravity line extends through the southeast corner of the site. Due to the location of this pipe above all the proposed lots it is not practical to discharge wastewater into this line. The other line is a Watercare rising main located along the northern boundary of the site. It is some 12m from the boundary in places. A pump station is located on the eastern boundary of the subject site from which this rising main extends across to the treatment ponds on the other side of the estuary.

As the line is the main wastewater line from Snells Beach it is not proposed to relocate it into the road reserve. Its location has been considered in the scheme plan such that a building can be located on those lots and not infringe on the rising main.

4.1 Wastewater Demand

The existing and post development wastewater demands are outlined in Table 4 below. These demands have been calculated using the method outlined in the Watercare Code of Practice for Land Development and Subdivision. Specifically, the following values were used.

- Average demand = 225 L/day/person
- Peak wet weather flow = 1500 L/day/person
- Assumed population = 3 persons/dwelling

Table 4 - Wastewater post development demand summary.

Wastewater Summary	Dwellings	Persons	Average Residential Demand		Peak Residential Demand	
			(L/day)	(L/s)	(L/day)	(L/s)
Post Development Demand	52	3	35,100	0.406	234,000	2.708

4.2 Engineering Recommendations

It is proposed to install a new gravity wastewater network within the proposed development. The network will connect to an existing manhole located near the pump station on the eastern boundary of the site. 150mm PVC pipes are proposed throughout the development.

The layout of the proposed network can be seen in the civil drawings for the development. It has been designed in accordance with Watercare's Code of Practice.

5 POTABLE WATER SUPPLY

This section details the existing and proposed water supply demands for the site and provides recommendations for infrastructure extensions for servicing the proposed development.

From Auckland Council GIS there does not appear to be any existing water supply connections for the site. The existing water supply network terminates at the end of Foster Crescent. This network will be extended into the development. It is also proposed to extend a link main through from Cornel Circle network to provide a loop connection for the development. This link main will extend through the lot where the wastewater pump station is located.

A fire hydrant is located at both these connection locations on which flow testing was undertaken. The results of the flow testing are appended to this report.

5.1 Water Supply Demand

The post development demand is outlined in the table below. This demand has been calculated using the method outlined in Watercare Code of Practice for Land Development and Subdivision. Specifically, the following values were used.

- Average demand = 250 L/day/person
- Peak residential demand factor = 1.5
- Assumed population = 3 persons/dwelling

Table 5- Water supply post development summary.

Water Supply Summary	Dwellings	Persons	Average Residential Demand		Peak Residential Demand	
			(L/day)	(L/s)	(L/day)	(L/s)
Post Development Demand	52	156	39,000	0.451	58,500	0.677

5.2 Engineering Recommendations

This demand can be satisfied through an extension of the council water supply network through the proposed development. A 100mm main shall extend along each of the proposed roads, with a 50mm rider main located on the opposite side of the road to reduce the number of lot connections extending under pavement areas. The proposed network alignment can be seen in the civil drawings for the development. All works are to be completed in accordance with Watercare's Code of Practice.

6 FIREFIGHTING WATER SUPPLY

We consider that the subject property has a firefighting water supply classification of FW2 from PAS 4509:2008 Table 1. Accordingly, one fire hydrant is required within 135m of each property with a secondary fire hydrant located within 270m of the property.

It is proposed to install two new fire hydrants within the development to provide sufficient firefighting water supply. The location of these hydrants are shown in the civil drawings for the development.

7 EARTHWORKS

The proposed earthworks are to be undertaken within Auckland Council's earthwork season and during periods of fine weather. The subject earthworks include installation of erosion and sediment control devices, bulk site grading, topsoil spreading with grass seeding and mulching.

The earthworks areas and volumes are calculated using AutoCAD Civil 3D and are based on the finished surface levels. The earthworks are estimated to disturb some 19,000m² with total volumes as shown in Table 6 below. Cuts and fills of up to 3.0m are proposed for the site.

Table 6: Summary of earthworks volumes.

Earthworks Summary	Proposed Cut	Proposed Fill	Balance
Total Volume	7,100m ³	6,050m ³	1,050m ³ (CUT)

The earthworks volume given is solid measure that includes any potentially unsuitable material that cannot be reused as fill on the site.

The material within the swampy land extents is not considered to be suitable for reuse on site therefore the balance of 1,050m³ excess cut has been allowed for disposal of this unsuitable material off site.

8 EROSION AND SEDIMENT CONTROL

8.1 General

In accordance with industry best practice and resource consent requirements, implementation of erosion and sediment controls for the earthworks operation will be undertaken during the construction works.

Erosion and sediment control and site stabilisation during the earthworks will be undertaken in accordance with the methodologies of Auckland Council's GDO05. Earthworks undertaken in

accordance with these guidelines will act to minimise and/or mitigate any adverse environmental effects of sediment discharge during the works through appropriate use and design of erosion and sediment control technique and measures.

The proposed erosion and sediment control methodology is detailed in the following section and on the construction drawings. It is noted that the methodology may be subject to change depending on the Contractor's construction operation and phasing, which will be discussed with Council at the time of works.

A qualified and experienced engineer will be appointed to monitor the sediment control measures on a regular basis (weekly) and after every significant rainfall event to ensure that the measures are being maintained to the correct standard and are in accordance with the erosion and sediment control plan.

8.2 Proposed Controls

The proposed erosion and sediment control measures are as follows:

- **Sediment Retention Pond**

A sediment retention pond will be installed as per the erosion and sediment control plan in the construction drawings. The sediment pond has been designed for a maximum catchment of 33,200m² and will have a total volume of 680m³. The sediment pond will discharge into the existing discharge point at the base of the site.

- **Decant Earth Bund**

A decant earth bund will be installed as per the erosion and sediment control plan in the construction drawings. The decant earth bund has been designed for a maximum catchment of 3,000m² and will have a total volume of 32m³. The decant earth bund will discharge treated water into the clean water bypass channel extending through the site.

- **Clean Water Diversion Channels and Bunds**

The upper catchment shall be collected and bypass the sediment control devices. The channel shall extend from the culverts under the neighbouring accessway to the eastern boundary of the site and along this boundary to the discharge point at the base of the site. A bund shall be constructed along the upstream side of the channel to prevent dirty water entering the channel. The channel shall be lined with a suitable geotextile lining to reduce the risk of erosion and scour of the channel throughout construction. The diversion channel has been sized for the 20 year rainfall event.

- **Contour Drains**

Contour drains shall be installed at 30m intervals across the earthworks site as shown on the erosion and sediment control plan in the construction drawings.

- **Temporary Culvert Crossing**

A temporary culvert crossing shall be installed in the clean water diversion channel such that construction vehicles from Foster Crescent can enter the site without disturbing flows in the clean water bypass channel. Any flows in the channel are to be pumped past the culvert during installation and removal of the culvert. The temporary culvert has been sized for the 20 year rainfall event and is to be installed as shown in the erosion and sediment control plan in the construction drawings.

- **Dirty Water Diversion Bunds**

Each earthworks catchment will have a dirty water diversion bund constructed around its extents to collect and direct stormwater runoff from the earthworks area to the sediment control devices. These diversion bunds are shown on the erosion and sediment control plan in the construction drawings and have been sized for the 20 year rainfall event.

- **Stabilised Construction Access**

A stabilised construction access shall be installed at the entrance to the site from Fosters Crescent. The position of the construction access will be confirmed onsite with the contractor at the time of works.

- **Retention of existing vegetated areas**

Only those areas beneath proposed earthworks shall be stripped of vegetation and topsoil to minimise the amount of earth exposed at any one time.

- **Site Stabilisation**

Site stabilisation will reduce the time that bare earth is exposed to erosive forces and ability for generation of sediment laden runoff. Perimeter controls will remain in place until sufficient stabilisation is achieved over the site. Once subgrade levels are achieved, progressive site stabilisation will be undertaken and shall include the following:

- Placement of topsoil, grass seeding and mulching to establish grass cover over development lots and berms.
- Placement of roading aggregate over the accessway as soon as practicable.

9 OTHER CONSIDERATIONS

This report has been prepared exclusively for Prime Property Group Limited with respect to the particular brief given to us. Information, opinions and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. LDE Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

This report was prepared in general accordance with current standards, codes and practice at the time of preparation. These may be subject to change. This report should be read in its entirety to understand the context of the opinions and recommendations given.

For and on behalf of LDE Ltd

Report prepared by:



Jamie Simson

BE(Hons)

Civil Engineer

Client:	Prime Property Group Ltd		
Project:	52 Lot Residential Subdivision	Calculation:	SW 01
Address:	Foster Crescent, Snells Beach	Project No.:	13641
By:	JS	Date:	21/03/2018
		By:	AH
		Date:	21/03/2018

Assumptions

- Lot impermeable areas are collected and discharge to primary network through lot connections.
- Lot permeable areas drain to road reserve and are collected by catchpits.

Rainfall Intensities

From HIRDS V3 data - 10 minute time of concentration assumed

Water Treatment Flows	10 mm/hr	Apply climate change factor of	0%	i_{2ARI}	=	10 mm/hr
HIRDS 10 Year ARI Storm	94.8 mm/hr	Apply climate change factor of	13.2%	i_{10ARI}	=	107.3 mm/hr
HIRDS 100 Year ARI Storm	148.8 mm/hr	Apply climate change factor of	16.8%	i_{100ARI}	=	173.8 mm/hr

Catchment	Area Description	Area (m ²)	Runoff Coefficient	Slope %	Slope Factor	Corrected Coefficient	Design Flow (L/s)
U1	Reserve Area (grass)	18500	0.4	10	0	0.4	$Q_2 = 20.6$
							$Q_{10} = 220.6$
							$Q_{100} = 357.3$
	Total Area =	18500 m ²	Average Coefficient =		0.40	$Q^* = 220.6$	
U2	Reserve Area (grass)	17150	0.4	10	0	0.4	$Q_2 = 19.1$
							$Q_{10} = 204.5$
							$Q_{100} = 331.2$
	Total Area =	17150 m ²	Average Coefficient =		0.40	$Q^* = 204.5$	
1	Lot permeable	4346	0.4	10	0	0.4	$Q_2 = 7.7$
	Reserve Area (grass)	2620	0.4	10	0	0.4	$Q_{10} = 83.1$
							$Q_{100} = 134.5$
	Total Area =	6966 m ²	Average Coefficient =		0.40	$Q^* = 83.1$	
2	Road pavement	600	0.85	10	0	0.85	$Q_2 = 1.4$
							$Q_{10} = 15.2$
							$Q_{100} = 24.6$
	Total Area =	600 m ²	Average Coefficient =		0.85	$Q^* = 15.2$	
3	Road pavement	450	0.85	10	0	0.85	$Q_2 = 1.3$
	Lot permeable	215.6	0.4	10	0	0.4	$Q_{10} = 14.0$
							$Q_{100} = 22.6$
	Total Area =	665.6 m ²	Average Coefficient =		0.70	$Q^* = 14.0$	
4	Road pavement	630	0.85	10	0	0.85	$Q_2 = 2.5$
	Lot permeable	948	0.4	10	0	0.4	$Q_{10} = 27.3$
							$Q_{100} = 44.2$
	Total Area =	1578 m ²	Average Coefficient =		0.58	$Q^* = 27.3$	
5	Road pavement	280	0.85	10	0	0.85	$Q_2 = 0.7$
							$Q_{10} = 7.1$
							$Q_{100} = 11.5$
	Total Area =	280 m ²	Average Coefficient =		0.85	$Q^* = 7.1$	
6	Road pavement	450	0.85	10	0	0.85	$Q_2 = 4.3$
	Lot permeable	2880	0.4	10	0	0.4	$Q_{10} = 45.7$
							$Q_{100} = 74.1$
	Total Area =	3330 m ²	Average Coefficient =		0.46	$Q^* = 45.7$	
7	Road pavement	865	0.85	10	0	0.85	$Q_2 = 2.0$
							$Q_{10} = 21.9$
							$Q_{100} = 35.5$
	Total Area =	865 m ²	Average Coefficient =		0.85	$Q^* = 21.9$	
8	Road pavement	815	0.85	10	0	0.85	$Q_2 = 2.7$
	Lot permeable	706	0.4	10	0	0.4	$Q_{10} = 29.1$
							$Q_{100} = 47.1$
	Total Area =	1521 m ²	Average Coefficient =		0.64	$Q^* = 29.1$	
9	Road pavement	290	0.85	10	0	0.85	$Q_2 = 0.7$
							$Q_{10} = 7.3$
							$Q_{100} = 11.9$
	Total Area =	290 m ²	Average Coefficient =		0.85	$Q^* = 7.3$	
10	Road pavement	480	0.85	10	0	0.85	$Q_2 = 1.9$
	Lot permeable	698	0.4	10	0	0.4	$Q_{10} = 20.5$
							$Q_{100} = 33.2$
	Total Area =	1178 m ²	Average Coefficient =		0.58	$Q^* = 20.5$	
11	Road pavement	270	0.85	10	0	0.85	$Q_2 = 0.6$
							$Q_{10} = 6.8$
							$Q_{100} = 11.1$
	Total Area =	270 m ²	Average Coefficient =		0.85	$Q^* = 6.8$	



Client:	Prime Property Group Ltd		
Project:	52 Lot Residential Subdivision	Calculation:	SW 01
Address:	Foster Crescent, Snells Beach	Project No.:	13641
By:	JS	Date:	21/03/2018
		By:	AH
		Date:	21/03/2018

12	Road pavement	505	0.85	10	0	0.85	Q ₂ =	2.8
	Lot permeable	1458	0.4	10	0	0.4	Q ₁₀ =	30.2
							Q ₁₀₀ =	48.9
Total Area =		1963	m ²	Average Coefficient =		0.52	Q* =	30.2
13	Road pavement	505	0.85	10	0	0.85	Q ₂ =	1.2
							Q ₁₀ =	12.8
							Q ₁₀₀ =	20.7
Total Area =		505	m ²	Average Coefficient =		0.85	Q* =	12.8
14	Road pavement	320	0.85	10	0	0.85	Q ₂ =	0.8
							Q ₁₀ =	8.1
							Q ₁₀₀ =	13.1
Total Area =		320	m ²	Average Coefficient =		0.85	Q* =	8.1
15	Road pavement	400	0.85	10	0	0.85	Q ₂ =	1.4
	Lot permeable	388	0.4	10	0	0.4	Q ₁₀ =	14.8
							Q ₁₀₀ =	23.9
Total Area =		788	m ²	Average Coefficient =		0.63	Q* =	14.8
16	Road pavement	495	0.85	10	0	0.85	Q ₂ =	1.2
							Q ₁₀ =	12.5
							Q ₁₀₀ =	20.3
Total Area =		495	m ²	Average Coefficient =		0.85	Q* =	12.5
17	Road pavement	685	0.85	10	0	0.85	Q ₂ =	4.2
	Lot permeable	2344	0.4	10	0	0.4	Q ₁₀ =	45.3
							Q ₁₀₀ =	73.4
Total Area =		3029	m ²	Average Coefficient =		0.50	Q* =	45.3
18	Road pavement	500	0.85	10	0	0.85	Q ₂ =	1.5
	Lot permeable	300	0.4	10	0	0.4	Q ₁₀ =	16.2
							Q ₁₀₀ =	26.3
Total Area =		800	m ²	Average Coefficient =		0.68	Q* =	16.2
19	Road pavement	500	0.85	10	0	0.85	Q ₂ =	1.2
							Q ₁₀ =	12.7
							Q ₁₀₀ =	20.5
Total Area =		500	m ²	Average Coefficient =		0.85	Q* =	12.7
20	Road pavement	480	0.85	10	0	0.85	Q ₂ =	1.3
	Reserve Area (grass)	160	0.4	10	0	0.4	Q ₁₀ =	14.1
							Q ₁₀₀ =	22.8
Total Area =		640	m ²	Average Coefficient =		0.74	Q* =	14.1
21	Road pavement	430	0.85	10	0	0.85	Q ₂ =	1.0
							Q ₁₀ =	10.9
							Q ₁₀₀ =	17.6
Total Area =		430	m ²	Average Coefficient =		0.85	Q* =	10.9
Lot Impermeable	Impermeable roof & paving	360	0.95	10	0	0.95	Q ₂ =	1.0
							Q ₁₀ =	10.2
							Q ₁₀₀ =	16.5
Total Area =		360	m ²	Average Coefficient =		0.95	Q* =	10.2

Client:	Prime Property Group Ltd			
Project:	52 Lot Residential Subdivision	Calculation:	SW 02	
Address:	Foster Crescent, Snells Beach		Project No.:	13641
By:	JS	Date:	21/03/2018	By: AH Date: 21/03/2018

Pipe Design

Line A

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
A9	A8	2 Lots, 20, 21	45.4	45.4	225	11.0%	0.013	0.040	3.75	148.9	30.5	OK
A8	A7	LINE E	230.8	276.2	450	10.0%	0.013	0.159	5.67	901.6	30.6	OK
A7	A6	1 Lot, 18, 19	39.1	315.3	450	10.0%	0.013	0.159	5.67	901.6	35	OK
A6	A5	LINE D, 14, 17	288.5	603.8	450	9.0%	0.013	0.159	5.38	855.3	70.6	OK
A5	A4	2 Lot	20.4	624.2	450	9.0%	0.013	0.159	5.38	855.3	73	OK
A4	A3	3 Lots, 15, 16	57.9	682.1	450	9.0%	0.013	0.159	5.38	855.3	79.7	OK
A3	A2	1 Lot, 12, 13	53.2	735.3	525	6.0%	0.013	0.216	4.87	1053.4	69.8	OK
A2	TA			735.3	525	3.3%	0.013	0.216	3.61	781.2	94.1	OK
TA	A1			735.3	525	3.6%	0.013	0.216	3.77	816.0	90.1	OK
A1	Outlet	LINE B, LINE F	593.9	1329.2	900	0.6%	0.013	0.636	2.20	1402.3	94.8	OK

Line B

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
B9	B8	4 Lots	40.8	40.8	225	4.9%	0.013	0.040	2.50	99.4	41	OK
B8	B7	1 Lot, 10, 11	37.5	78.3	225	8.3%	0.013	0.040	3.25	129.4	60.5	OK
B7	B6	3 Lots	30.6	108.9	225	8.0%	0.013	0.040	3.19	127.0	85.7	OK
B6	B5	3 Lots, 8, 9	67	175.9	300	4.2%	0.013	0.071	2.80	198.2	89.8	OK
B5	B4	1 Lot, 4, 5	44.6	220.5	375	3.7%	0.013	0.110	3.05	337.3	85.4	OK
B4	B3	1 lot	10.2	230.7	375	3.7%	0.013	0.110	3.05	337.3	69.4	OK
B3	B2	2, 3	29.2	259.9	375	3.7%	0.013	0.110	3.05	337.3	77.1	OK
B2	B1	1 Lot	10.2	270.1	450	2.4%	0.013	0.159	2.78	441.7	61.2	OK
B1	TB	LINE C	102	372.1	525	1.0%	0.013	0.216	1.99	430.1	86.5	OK
TB	A1			372.1	525	1.0%	0.013	0.216	1.99	430.1	86.5	OK

Line C

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
C3	C2	4 Lots	40.8	40.8	225	2.7%	0.013	0.040	1.86	73.8	55.3	OK
C2	C1	4 Lots	40.8	81.6	225	9.7%	0.013	0.040	3.52	139.8	58.4	OK
C1	B1	2 Lots	20.4	102	225	10.0%	0.013	0.040	3.57	142.0	71.8	OK

Line D

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
D4	D3	U2	204.5	204.5	300	8.0%	0.013	0.071	3.87	273.5	74.8	OK
D3	D2	2 Lots	20.4	224.9	300	10.0%	0.013	0.071	4.33	305.8	73.5	OK
D2	D1			224.9	375	6.1%	0.013	0.110	3.92	433.0	51.9	OK
D1	A6	1 Lot	10.2	235.1	375	5.4%	0.013	0.110	3.69	407.4	57.7	OK

Line E

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
E2	E1	U1	220.6	220.6	450	9.0%	0.013	0.159	5.38	855.3	25.8	OK
E1	A8	1 Lot	10.2	230.8	450	6.3%	0.013	0.159	4.50	715.6	32.3	OK

Line F

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To												
F4	F3	3 Lots	30.6	30.6	225	13.8%	0.013	0.040	4.20	166.8	18.3	OK	
F3	F2	300 PIPE, 3 Lots	160.6	191.2	300	9.6%	0.013	0.071	4.24	299.6	63.8	OK	
F2	F1	3 Lots	30.6	221.8	300	8.4%	0.013	0.071	3.96	280.3	79.1	OK	
F1	A1			221.8	375	3.8%	0.013	0.110	3.09	341.8	64.9	OK	

Line D

Assumed Full Pipe

SW MH		Catchments	Q* L/s	Q*accum. L/s	Pipe Size	Pipe Slope	n	Pipe Area	V m/s	Q _{capacity} L/s	%	Check
From	To											
G3	G2	1 Lot	10.2	10.2	225	1.0%	0.013	0.040	1.13	44.9	22.7	OK
G2	G1	4 Lots	40.8	51	225	1.9%	0.013	0.040	1.56	61.9	82.4	OK
G1	Outlet			51	225	2.0%	0.013	0.040	1.60	63.5	80.3	OK

Client: PRIME PROPERTY GROUP

Project: 52 LOT SUBDIVISION

Address: FOSTER CRESCENT, SNELLS BEACH

Project No: 13641

By: JS

Date: 21/03/18

Checked:

Date:

DIVIDE CATCHMENT INTO TWO STORMFILTERS.

$$A = 28.9 \text{ L/s}$$

$$B = 41.0 \text{ L/s}$$

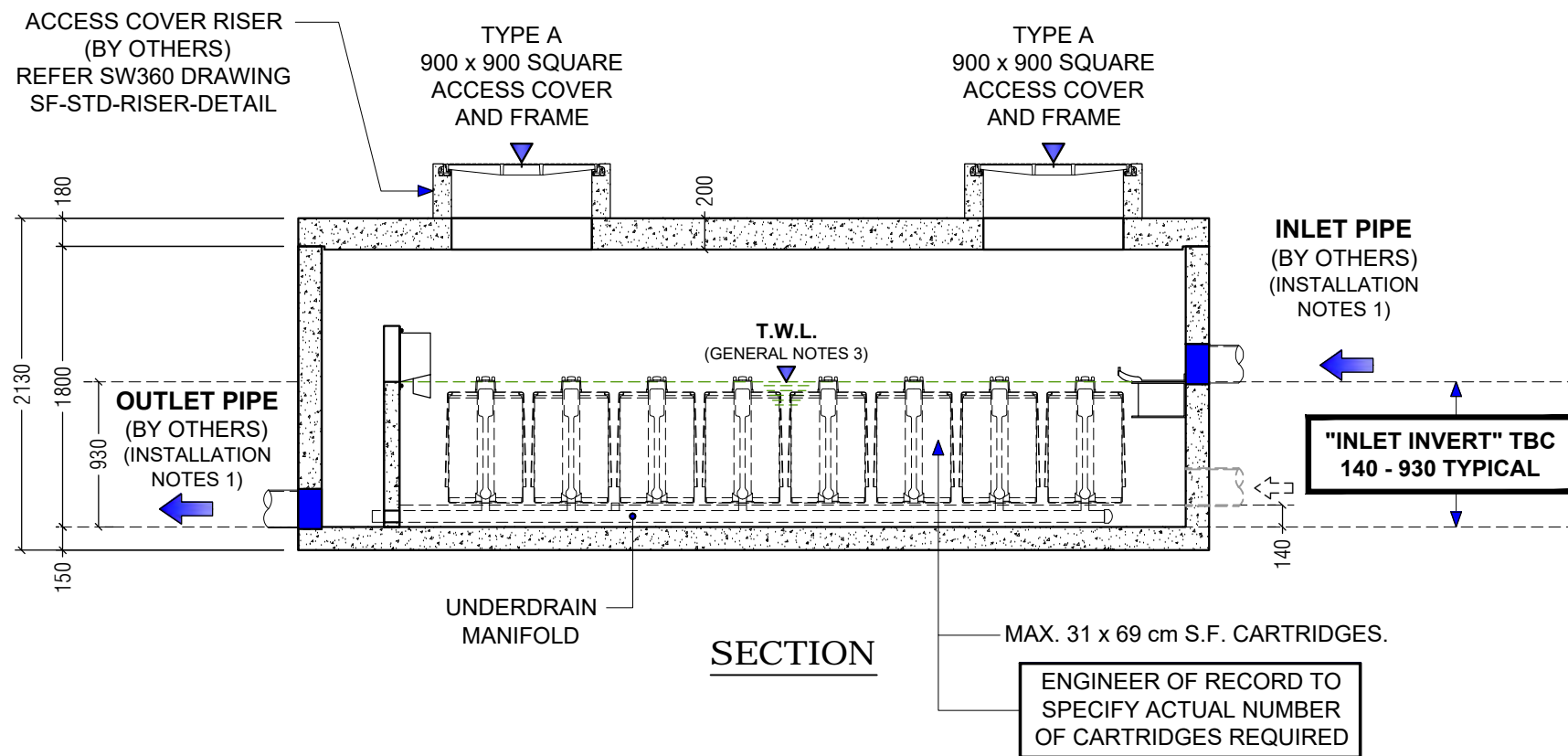
STORMFILTER UNIT CAPABLE OF TREATING 1.42 L/s

THEREFORE:

$$A = 28.9 / 1.42 = 21 \text{ CARTRIDGES}$$

$$B = 41.0 / 1.42 = 29 \text{ CARTRIDGES}$$

ADOPT SUITABLE SIZED CHAMBER FOR NUMBER OF CARTRIDGES
TO BE LOCATED IN UTILITY RESERVE AT BASE OF SITE.



STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (31). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 31 CARTRIDGE. STORMFILTER PEAK TREATMENT CAPACITY IS 44.02 L/s. IF THE SITE CONDITIONS EXCEED THIS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

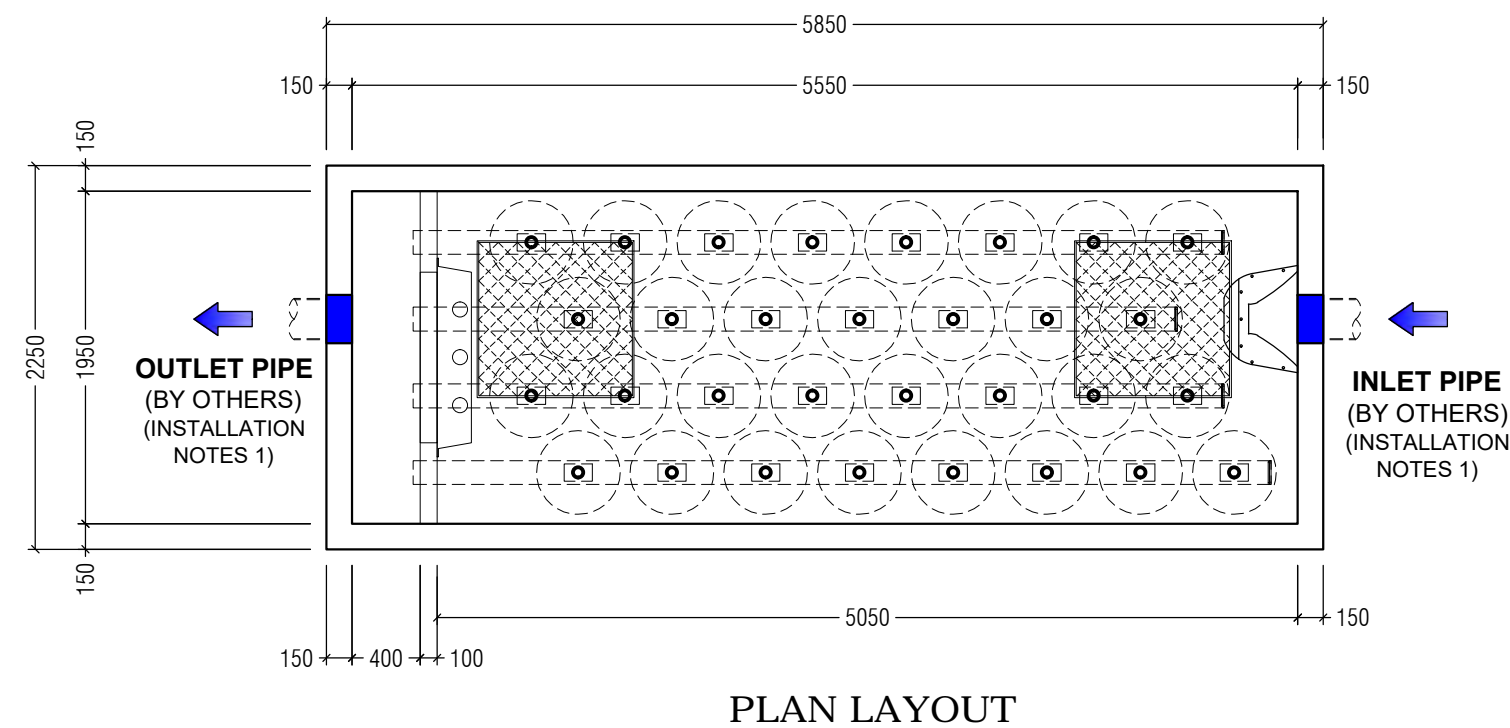
CARTRIDGE SELECTION					
CARTRIDGE HEIGHT (cm)	69		46		30 (LOW DROP)
RECOMMENDED HYDRAULIC DROP (mm)	930		700		540
SPECIFIC FLOW RATE (L/s/m ²)	1.40	0.70	1.40	0.70	1.40 0.70
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.475	0.63 0.315

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
CATCHMENT AREA	
WATER QUALITY FLOW RATE (L/s)	
PEAK FLOW RATE (L/s)	
RETURN PERIOD OF PEAK FLOW (yrs)	
# OF CARTRIDGES REQUIRED	
CARTRIDGE FLOW RATE	
MEDIA TYPE (ZEO, PER, ZPG, PHS)	
ACCESS COVER TYPE (GRATED, SOLID, OTHER)	

PIPE DATA:	R.L.	MATERIAL	DIAMETER
INLET PIPE #1			
INLET PIPE #2			
OUTLET PIPE			
LID LEVEL		N/A	N/A

AS PER ENGINEER OF RECORD



GENERAL NOTES :

1. STORMWATER360 TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR SW360 STORMWATER CONSULTANT VIA www.stormwater360.co.nz, OR 0800 STORMWATER, OR sales@stormwater360.co.nz.
3. T.W.L. = TREATMENT WATER LEVEL
4. STRUCTURE SHALL MEET NZTA'S HN-HO-72 OR PER APPROVING JURISDICTION TRAFFICKED LOAD REQUIREMENTS, WHICHEVER IS MORE STRINGENT. COVER AND FRAME ARE TO BE RATED TO EITHER CLASS B (FOR PEDESTRIAN AREAS) OR CLASS D (TRAFFICKED ROADS) IN ACCORDANCE WITH AS 3996 : 2006.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO NZS 3109 : 1997 AND NZS 3114 : 1987.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 178 mm. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 39 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (L/s) DIVIDED BY THE FILTER CONTACT SURFACE AREA (m²).
8. MINIMUM INVERT DIFFERENCE BETWEEN INLET PIPE AND OUTLET PIPE IS 140 mm.
9. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES :

- A. SIZE AND CLASS OF PIPE OR SQUARE KNOCKOUT SIZE TO BE SPECIFIED ON DRAWING BY CLIENT / CONTRACTOR.
- B. ADDITIONAL RISERS TO BE FORMED ON SITE BY CONTRACTOR (IF REQUIRED).
- C. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- D. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
- E. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- F. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPES.
- G. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

- MAXIMUM CHAMBER WEIGHT = 19500 Kg (APPROX)
 - LID WEIGHT = 6600 Kg (APPROX)
 - CONCRETE WEIGHT TOTAL = 26100 Kg (APPROX)

Client: Prime Property Ltd

Project: Foster Crescent Subdivision

Address: Foster Crescent, Snells Beach

Project No.: 13641

By: JS

Date:

15/03/2018

Checked: AH

Date:

15/03/2018

1 Objective

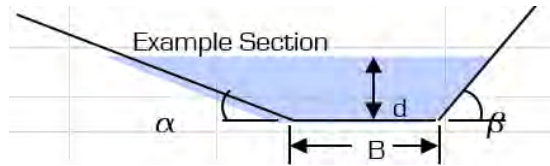
The objective of this calculation report is to determine the required open drain dimensions (including longitudinal gradient) in order to transmit a flow of water Q for a specific storm event return period.

2 Methodology

This objective is achieved with use of the Manning's Formula by iteration by calculation of velocity and cross-sectional area for an entered depth. The flow is then calculated as the product of cross-sectional area and velocity. A suitable freeboard is considered.

3 Analysis

The following analysis shall be carried out using a trial and error method in order to determine the provisional flows that a specific set of dimensions will provide.



Label	Design Overland Flow Estimated	B	α	β	Manning's n	S	d	A	P	R	Provisional Flows Q	v	v.d	Comment
	Q (m ³ /s)	(m)	(°)	(°)		(%)	(m)	(m ²)	(m)	(m)	(m ³ /s)	(m/s)	(m ² /s)	
U1	0.357	1.8	14	14	0.030	5.00	0.11	0.247	2.71	0.091	0.372	1.51	0.17	OK
U2	0.357	0.8	14	14	0.030	10.00	0.13	0.172	1.87	0.092	0.368	2.14	0.28	OK

4 Conclusion

Check Calculated Q Capacity > Designed Q Requirement

OK

Client: Prime Property Group Ltd

Project: 52 Lot Residential Subdivision

Address: Foster Crescent, Snells Beach

Project No.: 13641

By: HD

Date: 21/03/2018 Checked: JS

Date: 21/03/2018

1 Site Characteristics

Catchment Size

33200

 m² *SRP catchment should be limited to 5ha*

Catchment Length

<200m

Catchment Length

<18%

Greater of the immediate 20m from sediment pond or or average catchment slope for both pre and post development

2 Pond Sizing

Required Pond Volume

2%

 =

664

 m³ *Length to width ratio must be no less than 3:1*

Pond Length

25

 m *and no greater than 5:1*

Pond Width

8

 m *No deeper than 2m*

Pond Depth

2

 m

Length to Width Ratio

OK

Inlet batter

3

 :1

Perimeter batter

2

 :1

Pond Volume

680

 m³

Adopt a 25m long x 8m wide x 2m deep Sediment Retention Pond with a total of 680m³ volume

3 Decants

Recommended SRP Decant Flow Rate (3L/sec/ha)

9.96

 L/sec

Standard T-Bar decant flow rate

4.5

 L/sec *6 rows of 10mm holes at 60mm spacings (200 holes over 2m)*

Required number of T-bar decants

3

Adopt 3 T-bar decants in SRP for the recommended 9.96L/sec flow rate

Iterate Dead Storage Level (First T-Bar)

0.9

 m

237

 m³ *Initial decant must be able to raise to full extent of the sediment ponds live storage (70%)*

Required Dead Storage (30%)

204

 m³

Install first T-bar decant system 0.9m above SRP base

Second Decanting T-bar range upper

66%

 of live storage

Third Decanting T-bar range upper

33%

 of live storage

Install Second T-bar decant system to operate in upper 66% of live storage

Client:	Prime Property Group Ltd		
Project:	52 Lot Residential Subdivision		
Address:	Foster Crescent, Snells Beach	Project No.:	13641
By:	HD	Date:	21/03/2018
Checked:	JS	Date:	21/03/2018

1 Site Characteristics

Catchment Size	3100 m ²	DEB catchment should be limited to 0.3ha
Catchment Length	<200m	Greater of the immediate 20m from DEB or or average catchment slope for both pre and post development
Catchment Length	<18%	

2 DEB Sizing

Required DEB Volume	1%	=	31 m ³	Length to width ratio must be no less than 3:1 and no greater than 5:1
DEB Length			8 m	
DEB Width			2 m	Base of DEB minimum of 2m
DEB Depth			2 m	
Length to Width Ratio			OK	Excluding Batters
DEB Volume			32 m ³	

Adopt a 8m long x 2m wide x 2m deep Decanting Earth Bund with a total of 32m³ volume

3 Decant

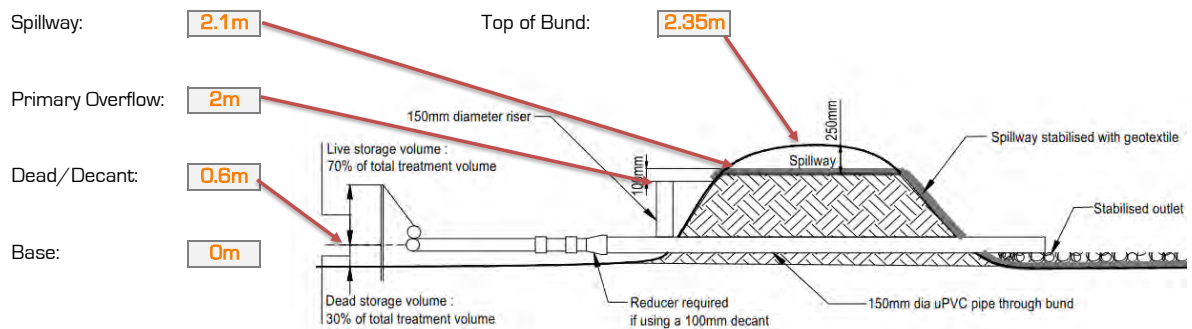
Recommended Decant Flow Rate	0.93 L/sec	3L/sec/ha
Required 10mm T-Bar decant holes for flow rate	42 holes	133 holes (10mm) per 1ha catchment

Adopt 42 holes (10mm diameter) evenly spaced across the 100mm diameter T-bar decant to achieve the recommended 0.93L/sec flow rate.

Dead Storage Level (T-Bar Level)	0.6 m	T-Bar required to be able to float at full storage level
Dead Storage	9.6 m ³	Permanent Storage (30% DEB storage)

Install T-bar decant 0.6m above Decanting Earth Bund base for a permanent storage of 9.6m³.

4 Decanting Earth Bund Levels



Client:	Prime Property Group Ltd		
Project:	52 Lot Residential Subdivision		
Address:	Foster Crescent, Snells Beach	Project No.:	13641
By:	HD	Date:	21/03/2018
Checked:	JS	Date:	21/03/2018

1 Clean Water Diversion Catchment Characteristics

20yr Storm Rainfall Intensity	109.2 mm/hr		HIRDS V3
Catchment Area	Surface 1: 40000 m ²	Surface 2: 0.000 m ²	Total: 40000 m ²
Catchment Surface Coefficient	0.4		0.40
Catchment Run-off Total	0.486 m ³ /s	0.000 m ³ /s	0.486 m ³ /s

2 Clean Water Diversion Characteristics

Average Catchment Slope	1 : 8	
Average Diversion Grade	4 %	Longitudinal Grade
Internal Diversion Slope	1 : 3	No steeper than 1:3
External Diversion Slope	1 : 2	No steeper than 1:2
Manning's n	0.03	

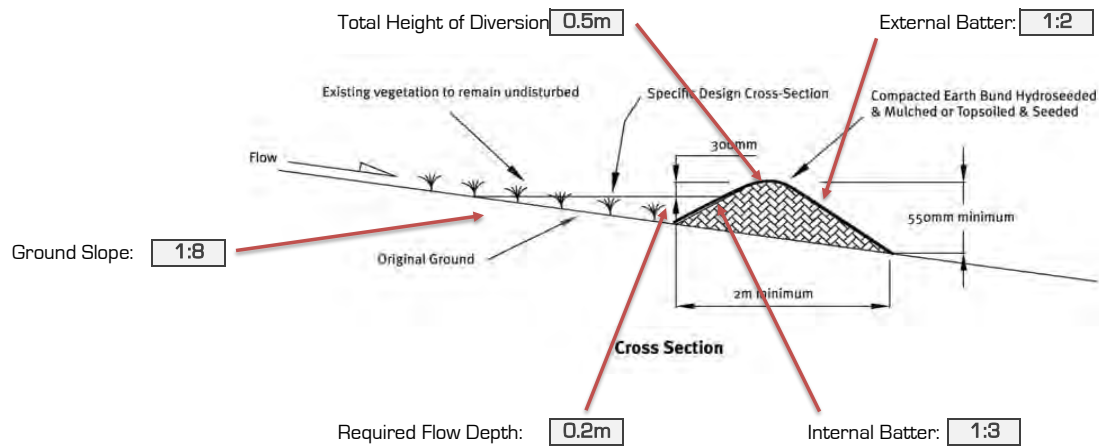
3 Clean Water Diversion Capacity

Trial Depth	0.2 m
Clean Water Diversion Velocity	2.43 m/s
Clean Water Diversion Flow Rate	0.53 m ³ /s

Adopt a Clean Water Diversion Depth of 0.2m to accommodate the required 20yr storm flow rate of 0.486m³/s.

Additional 300mm required for GD005 specified freeboard.

4 Clean Water Diversion Details



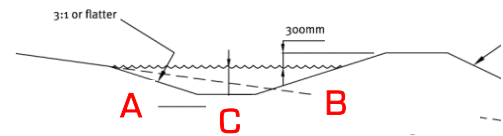
Client:	Prime Property Group Ltd		
Project:	52 Lot Residential Subdivision		
Address:	Foster Crescent, Snells Beach	Project No.:	13641
By:	HD	Date:	21/03/2018
Checked:	JS	Date:	21/03/2018

1 Dirty Water Diversion Catchment Characteristics

20yr Storm Rainfall Intensity	109.2 mm/hr		HIRDS V3
Catchment Area	Surface 1	Surface 2	Total
Catchment Surface Coefficient	28000 m ²		28000 m ²
Catchment Run-off Total	0.7	0.000	0.70
	0.595 m ³ /s		0.595 m ³ /s

2 Dirty Water Diversion Characteristics

Average Diversion Grade	10 %
Diversion Drain Batter (A)	1 : 3
Diversion Drain Batter (B)	1 : 3
Diversion Drain Base (C)	0.5 m
External Diversion Slope	1 : 2
Manning's n	0.03



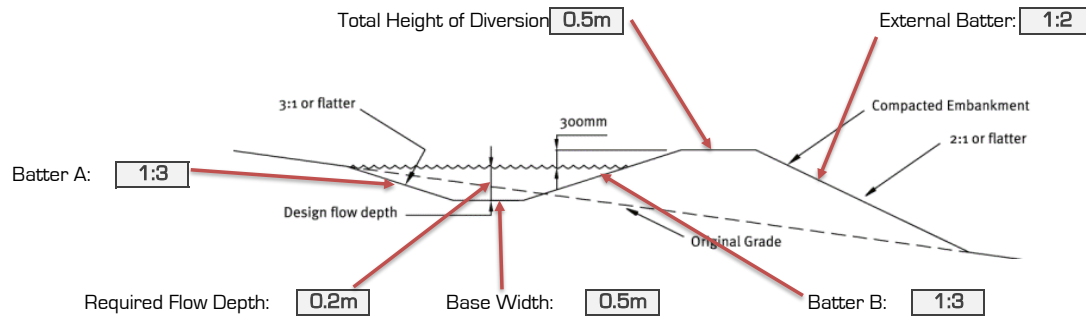
3 Dirty Water Diversion Capacity

Trial Depth	0.2 m
Dirty Water Diversion Velocity	5.91 m/s
Dirty Water Diversion Flow Rate	0.71 m ³ /s

Adopt a Clean Water Diversion Depth of 0.2m to accommodate the required 20yr storm flow rate of 0.595m³/s.

Additional 300mm required for G0005 specified freeboard.

4 Dirty Water Diversion Details





Prime Property Group Ltd.

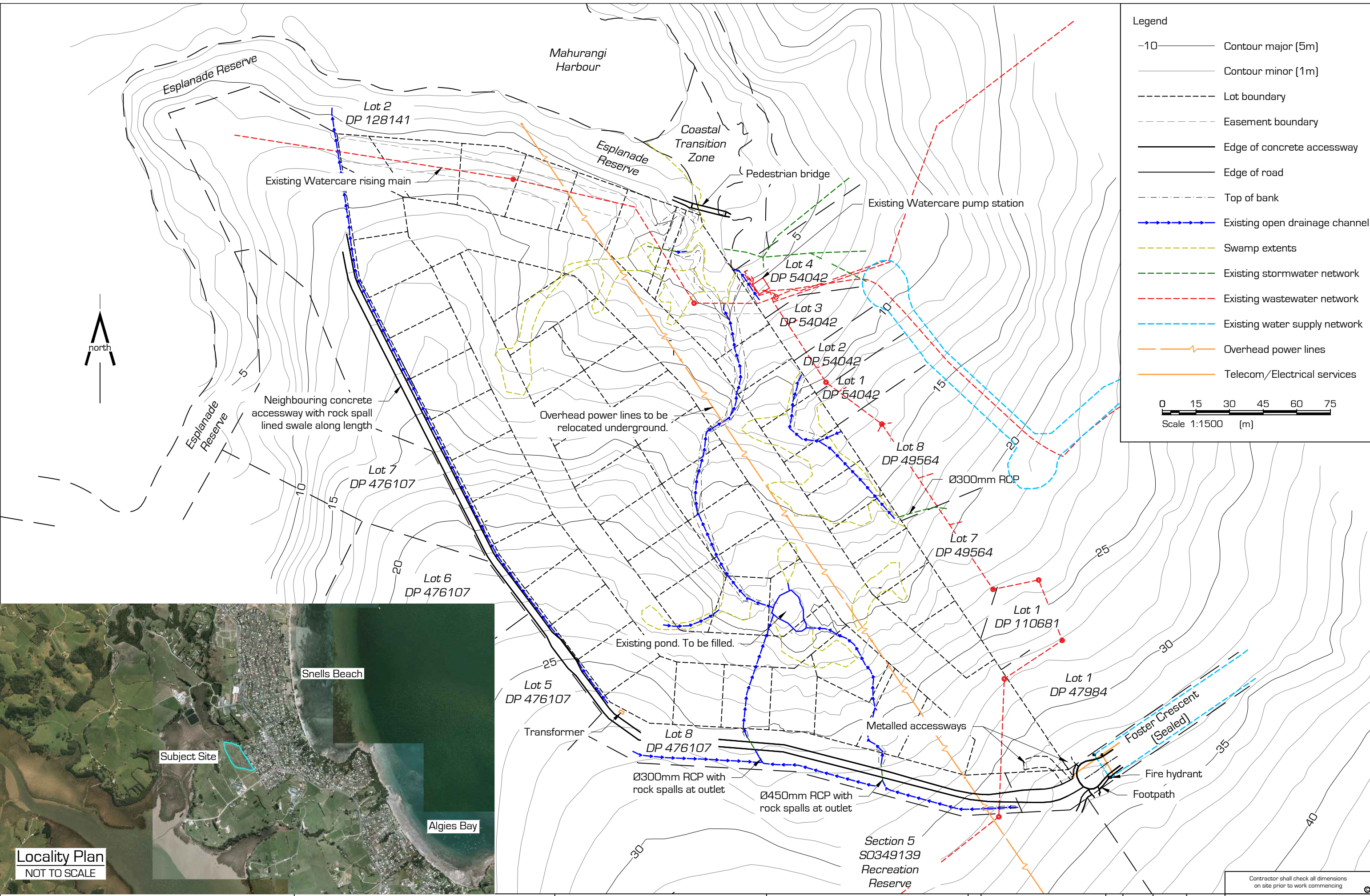
Construction Drawings and Specification for

52 Lot Residential Subdivision

Lot 1 DP149776, Foster Crescent, Snells Beach

CONTENTS				
SHEET	DESCRIPTION	ISSUE DATE	STATUS	REVISION
1	Existing Topographical Survey and Locality Plan	20/03/2018	Resource Consent	0
2	Design Site Plan	20/03/2018	Resource Consent	0
3	Services Network Layout	20/03/2018	Resource Consent	0
4	Stormwater Design Site Plan	20/03/2018	Resource Consent	0
5	Wastewater Design Site Plan	20/03/2018	Resource Consent	0
6	Water Supply Design Site Plan	20/03/2018	Resource Consent	0
7	Design Site Plan Sheet 1	20/03/2018	Resource Consent	0
8	Design Site Plan Sheet 2	20/03/2018	Resource Consent	0
9	Design Site Plan Sheet 3	20/03/2018	Resource Consent	0
10	Design Site Plan Sheet 4	20/03/2018	Resource Consent	0
11	Design Site Plan Sheet 5	20/03/2018	Resource Consent	0
12	Design Site Plan Sheet 6	20/03/2018	Resource Consent	0
13	Road A Longitudinal Section CH0 to CH160	20/03/2018	Resource Consent	0
14	Road A Longitudinal Section CH160 to CH320	20/03/2018	Resource Consent	0
15	Road A Longitudinal Section CH320 to CH415	20/03/2018	Resource Consent	0
16	Road B Longitudinal Section CH0 to CH160	20/03/2018	Resource Consent	0
17	Road B Longitudinal Section CH160 to CH300	20/03/2018	Resource Consent	0
18	Construction Details	20/03/2018	Resource Consent	0
19	Earthworks Cut/Fill Isopach	20/03/2018	Resource Consent	0
20	Sediment Control Plan	20/03/2018	Resource Consent	0
21	Construction Details	20/03/2018	Resource Consent	0
22	Construction Details	20/03/2018	Resource Consent	0

CONTENTS				
SHEET	DESCRIPTION	ISSUE DATE	STATUS	REVISION
23	Catchment Plan	20/03/2018	Resource Consent	0
24	Stormwater Long Section Line A MHA9 to MHA5	20/03/2018	Resource Consent	0
25	Stormwater Long Section Line A MHA5 to MHA3	20/03/2018	Resource Consent	0
26	Stormwater Long Section Line A MHA3 to Outlet	20/03/2018	Resource Consent	0
27	Stormwater Long Section Line B MHB10 to MHB7	20/03/2018	Resource Consent	0
28	Stormwater Long Section Line B MHB7 to MHB4	20/03/2018	Resource Consent	0
29	Stormwater Long Section Line B MHB4 to MHA1	20/03/2018	Resource Consent	0
30	Stormwater Longitudinal Section Line C	20/03/2018	Resource Consent	0
31	Stormwater Longitudinal Section Line D	20/03/2018	Resource Consent	0
32	Stormwater Longitudinal Section Line E	20/03/2018	Resource Consent	0
33	Stormwater Long Section Line F MHF4 to MHF2	20/03/2018	Resource Consent	0
34	Stormwater Long Section Line F MHF2 to MHA1	20/03/2018	Resource Consent	0
35	Stormwater Longitudinal Section Line G	20/03/2018	Resource Consent	0
36	Wastewater Long Section Line A MHA4 to MHA2	20/03/2018	Resource Consent	0
37	Wastewater Long Section Line A MHA2 to MH Existing	20/03/2018	Resource Consent	0
38	Wastewater Long Section Line B MHB7 to MHB5	20/03/2018	Resource Consent	0
39	Wastewater Long Section Line B MHB5 to MHB2	20/03/2018	Resource Consent	0
40	Wastewater Long Section Line B MHB2 to MHA1	20/03/2018	Resource Consent	0
41	Wastewater Longitudinal Section Line C	20/03/2018	Resource Consent	0
42	Wastewater Longitudinal Section Line D	20/03/2018	Resource Consent	0
43	Wastewater Longitudinal Section Line B3 and A3	20/03/2018	Resource Consent	0



Legend

- 10- Contour major (5m)
- Contour minor (1m)
- Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - - - Top of bank
- Existing open drainage channel
- Swamp extents
- Existing stormwater network
- Existing wastewater network
- Existing water supply network
- Overhead power lines
- Telecom/Electrical services

0 15 30 45 60 75
Scale 1:1500 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

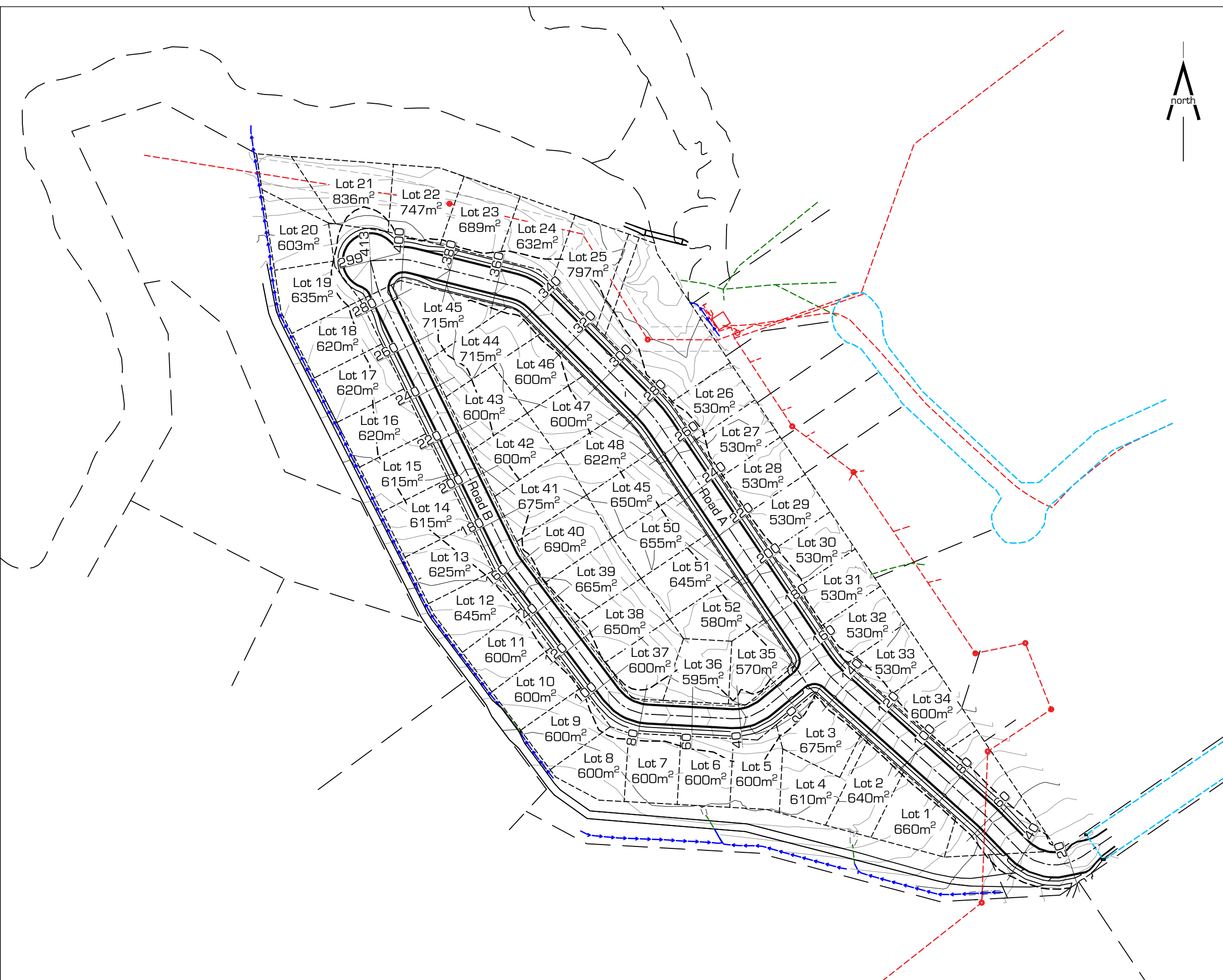
DRAWING TITLE
Existing Topographical Survey
and Locality Plan



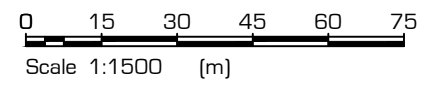
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS: For Consent	
PROJECT:	13641
SHEET:	1 of 43
DRAWING No:	1364101
REV:	0

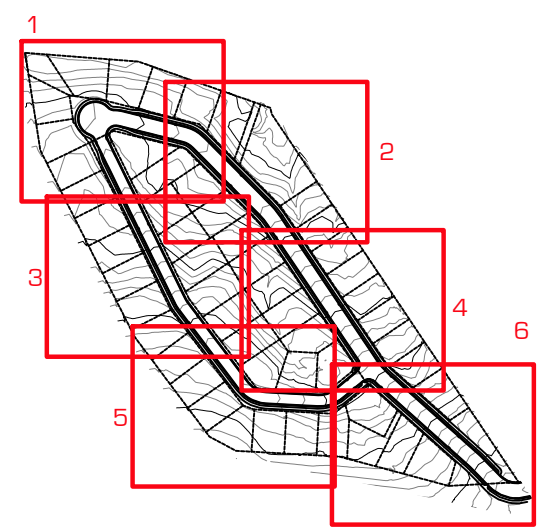
Contractor shall check all dimensions on site prior to work commencing



- Legend**
- 10 ——— Contour major (5m)
 - Contour minor (1m)
 - - - - - Lot boundary
 - - - - - Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - → → → → Open drainage channel
 - - - - - Existing stormwater network
 - - - - - Existing wastewater network
 - - - - - Existing water supply network
 - - - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

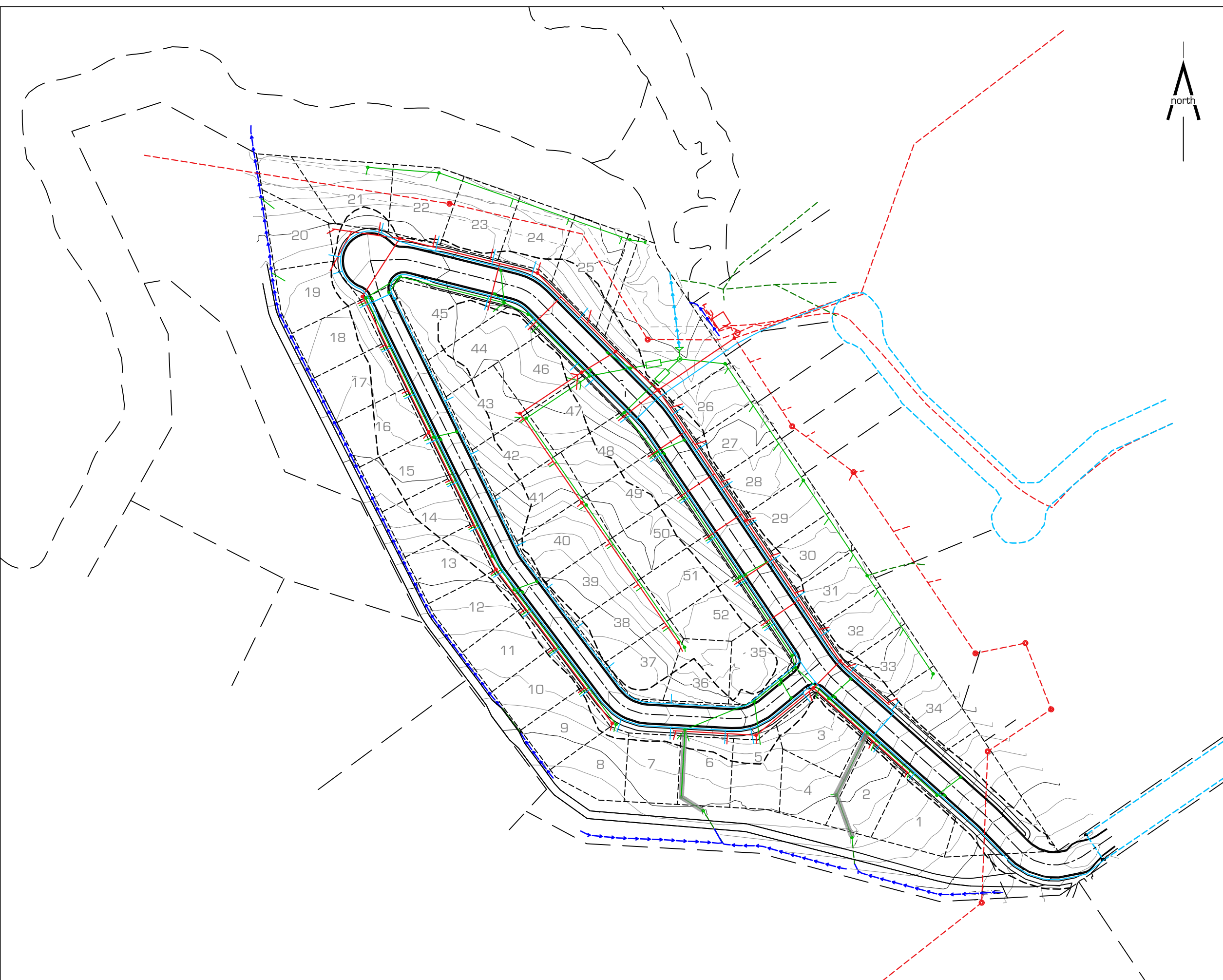
DRAWING TITLE
Design Site Plan



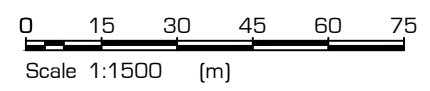
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 2 of 43
DRAWING No.:	13641-23501	REV: 0

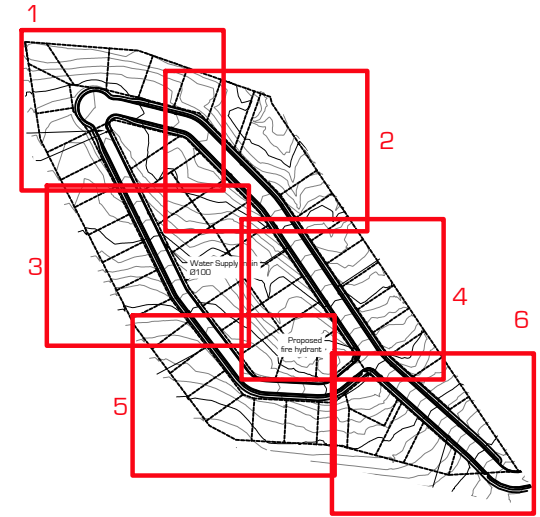
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



- Legend**
- 10- Contour major (5m)
 - Contour minor (1m)
 - Lot boundary
 - Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - Open drainage channel
 - Existing stormwater network
 - Proposed stormwater network
 - Existing wastewater network
 - Proposed wastewater network
 - Existing water supply network
 - Proposed water supply network
 - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

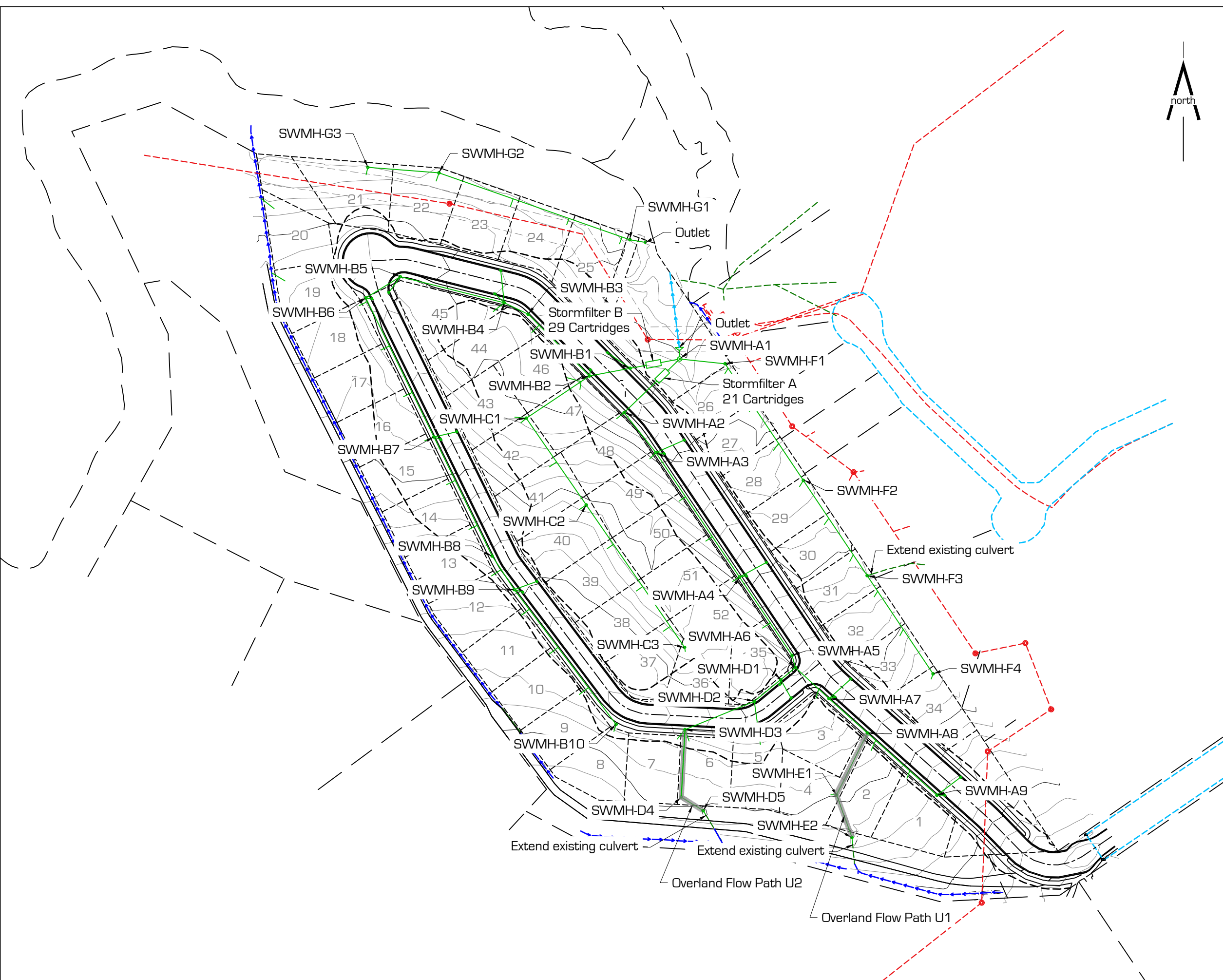
DRAWING TITLE
Services Network Layout



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 3 of 43
DRAWING No:	13641	REV: 0

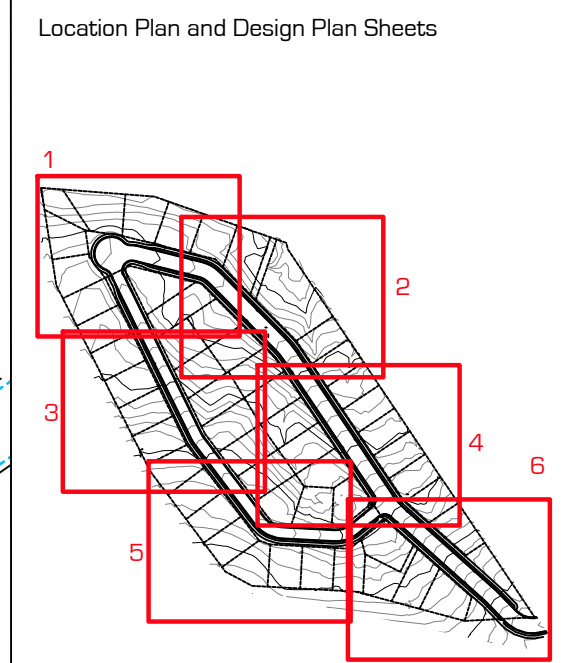
No.	REVISION	BY	DATE
0	Issued for consent	JS	20.03.18



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- Open drainage channel
- Existing stormwater network
- Proposed stormwater network
- Proposed overland flow path
- - - - - Existing wastewater network
- Existing water supply network
- - - - - Proposed earthwork extents

0 15 30 45 60 75
Scale 1:1500 (m)



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

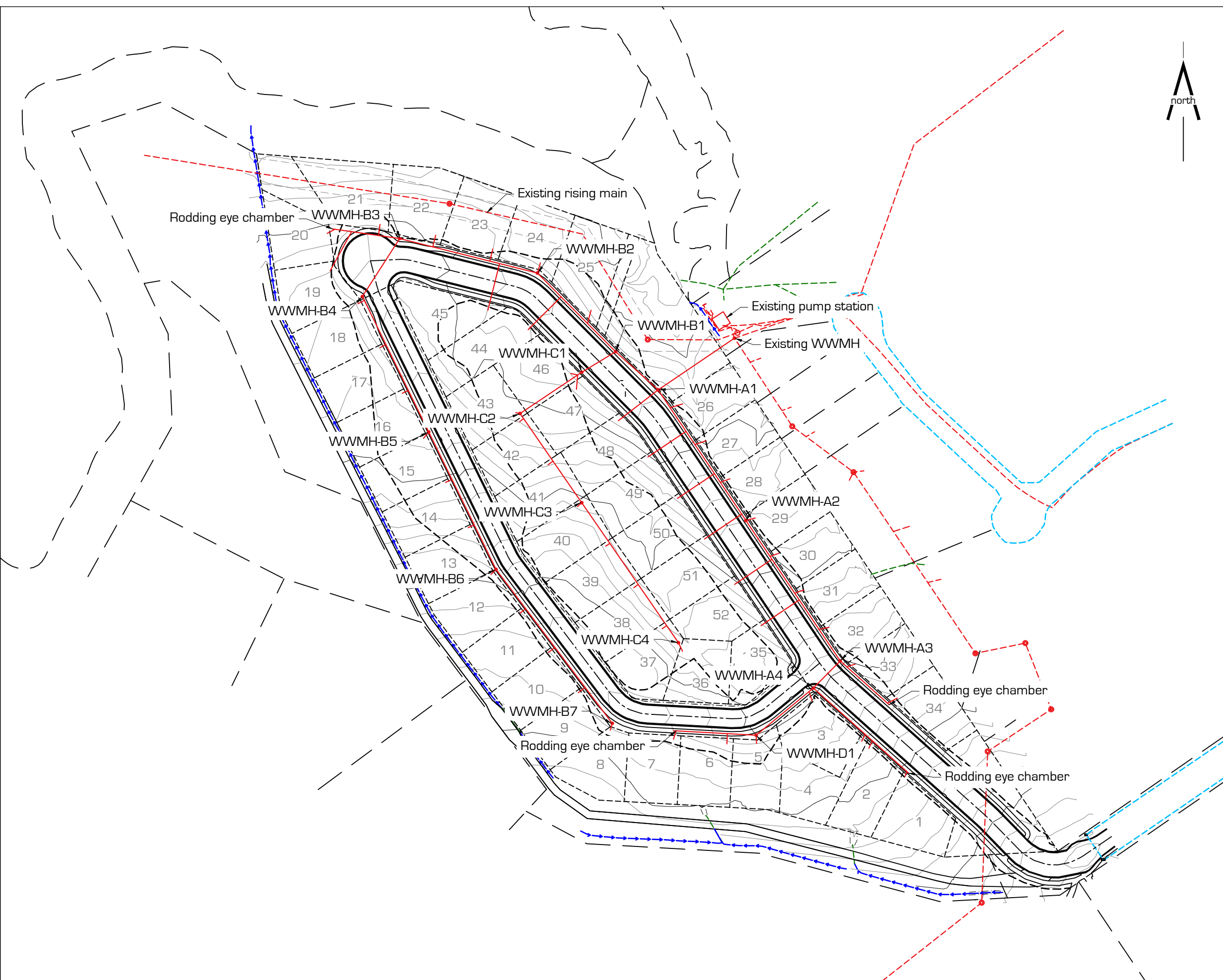
DRAWING TITLE
Stormwater Design Site Plan



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 4 of 43
DRAWING No:	13641-01	REV: 0

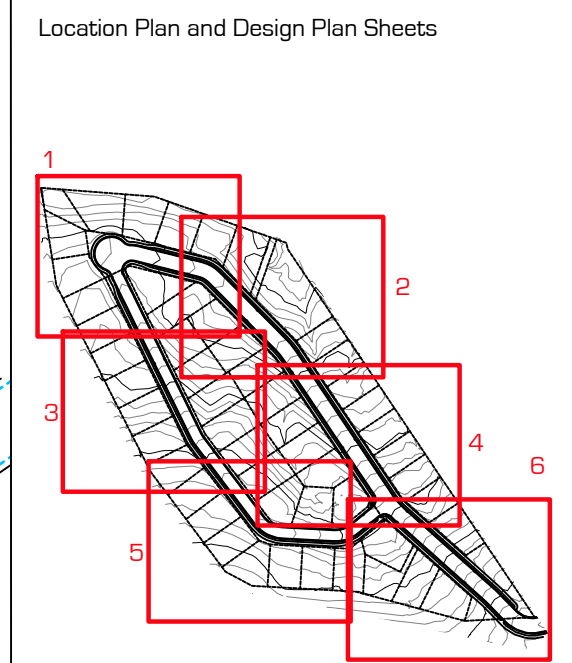
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- +—+—+— Open drainage channel
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 15 30 45 60 75
Scale 1:1500 (m)



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

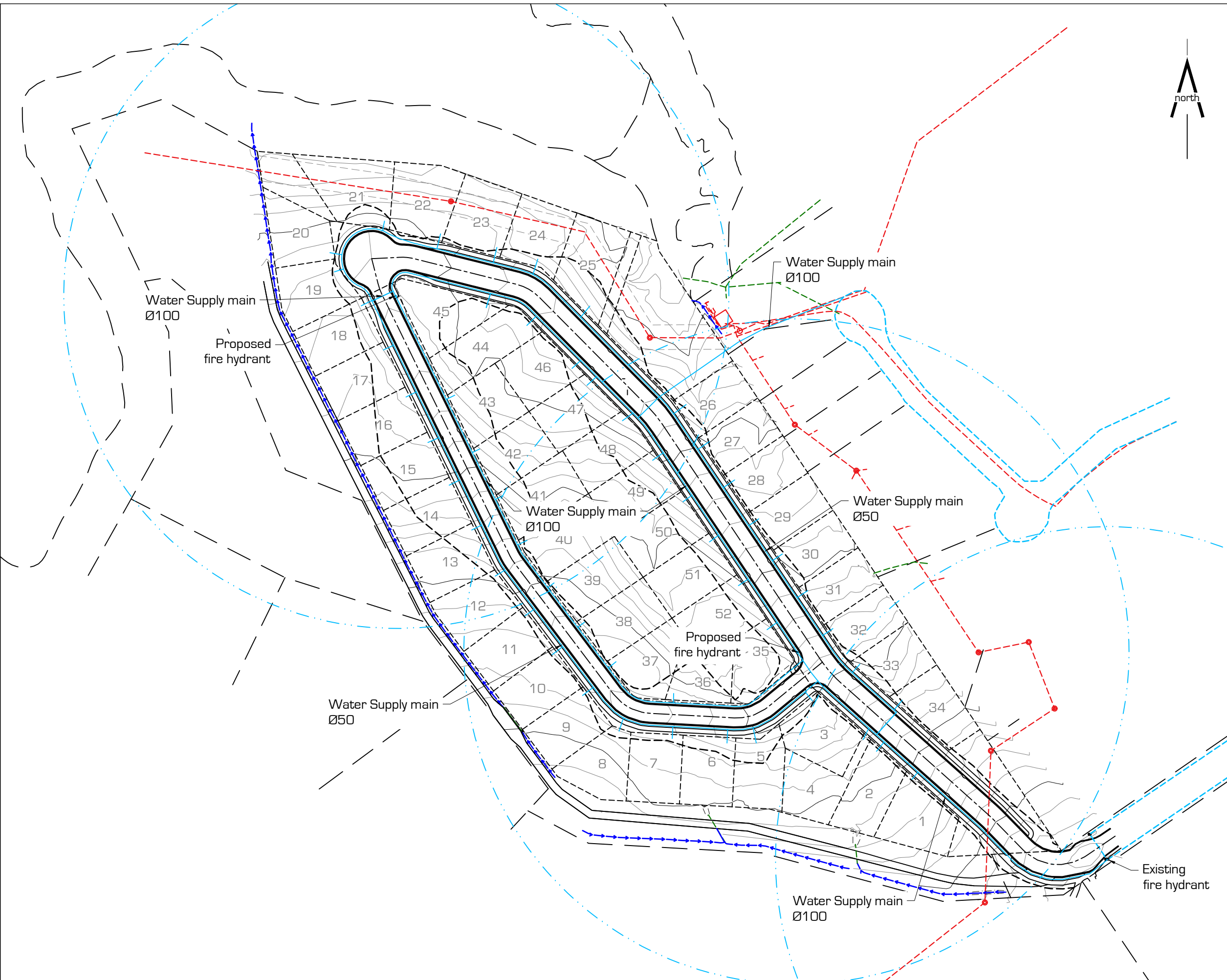
DRAWING TITLE
Wastewater Design Site Plan



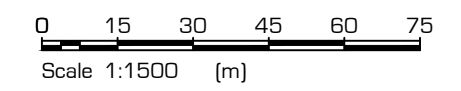
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 5 of 43
DRAWING No:	13641-01	REV: 0

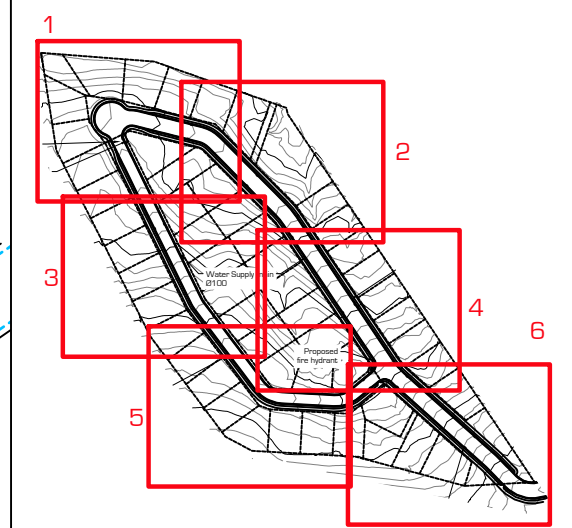
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



- Legend**
- 10 ——— Contour major (5m)
 - Contour minor (1m)
 - - - - - Lot boundary
 - · · · · Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - Open drainage channel
 - - - - - Existing stormwater network
 - - - - - Existing wastewater network
 - Proposed wastewater network
 - - - - - Existing water supply network
 - Proposed fire hydrant
 - Fire hydrant radius
 - - - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

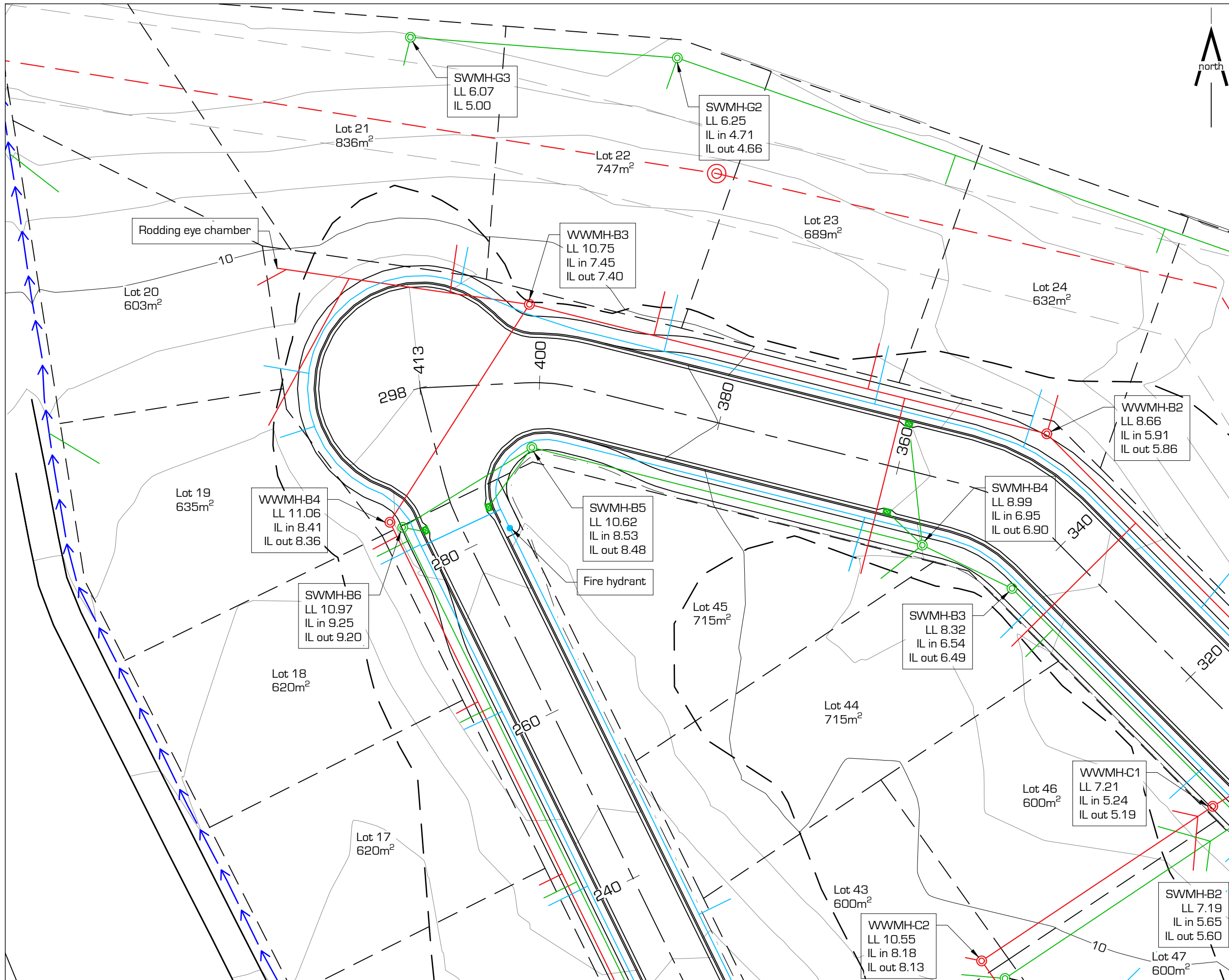
DRAWING TITLE
Water Supply Design Site Plan



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 6 of 43
DRAWING No:	13641-01	REV: 0

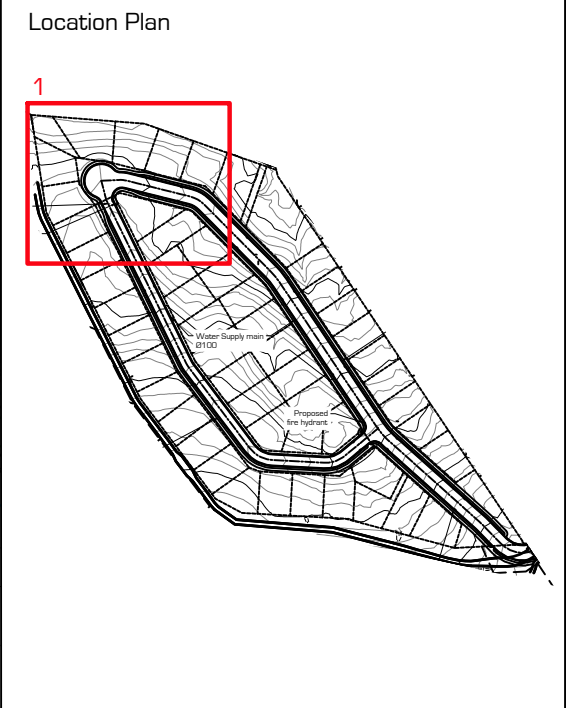
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- ⊙ Wastewater manhole
- ⊙ Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- Existing stormwater network
- Proposed wastewater network
- Existing wastewater network
- Proposed water supply network
- Existing water supply network
- - - - - Proposed earthwork extents

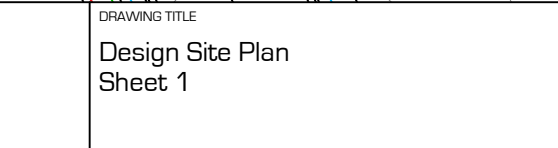
0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

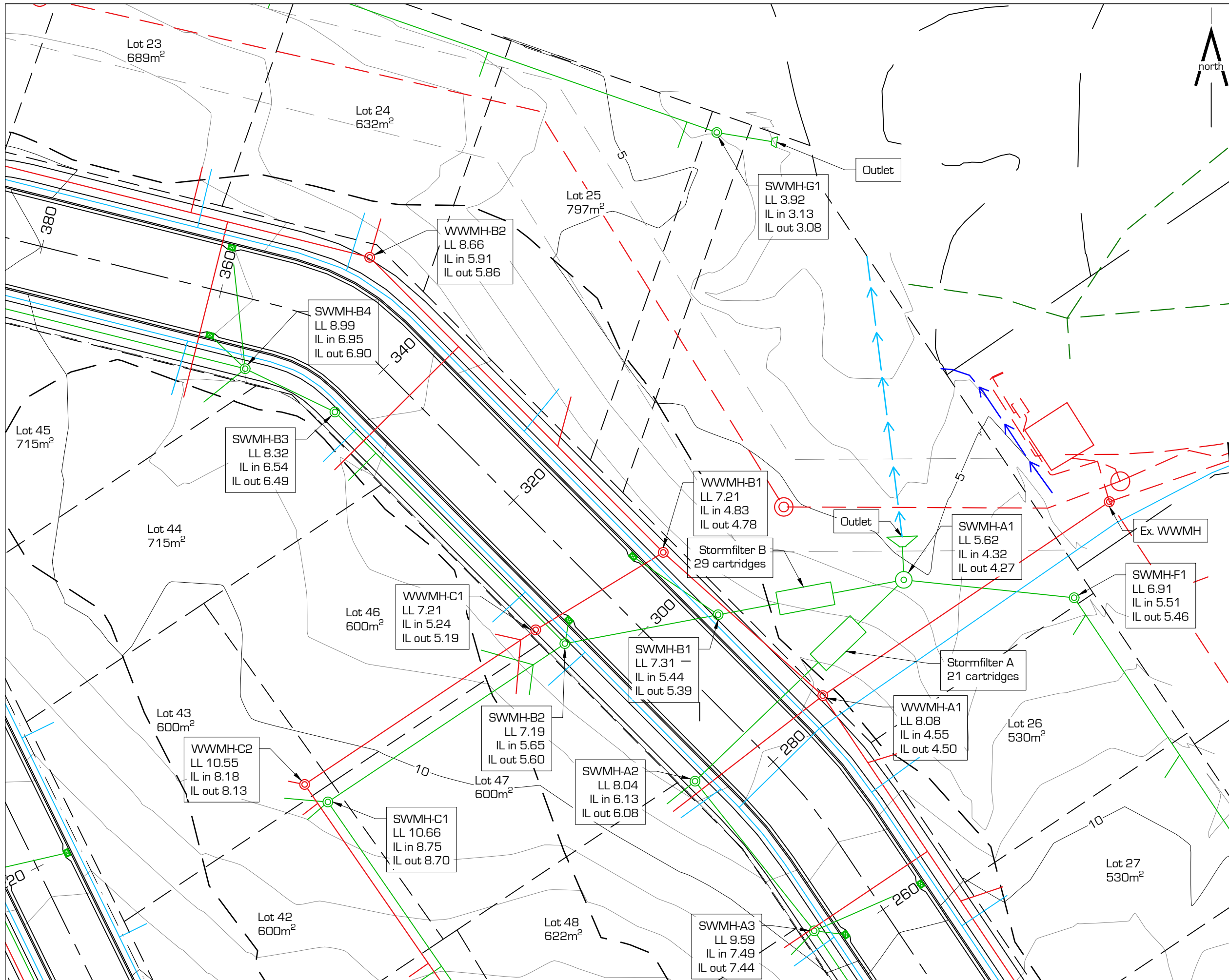
DRAWING TITLE
Design Site Plan
Sheet 1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 7 of 43
DRAWING No:	13240	REV: 0

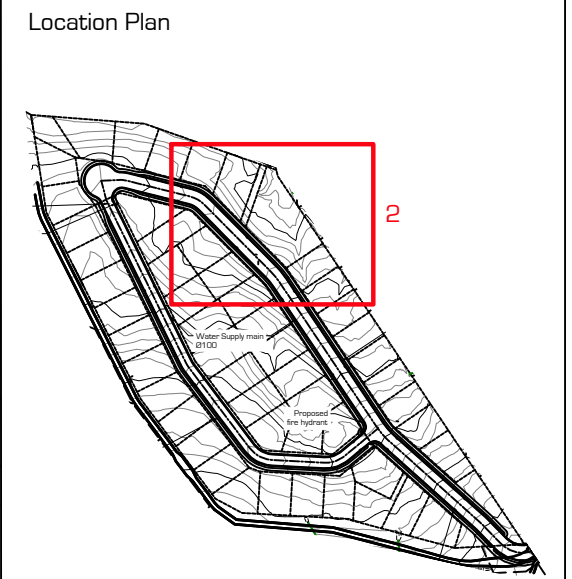
Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)

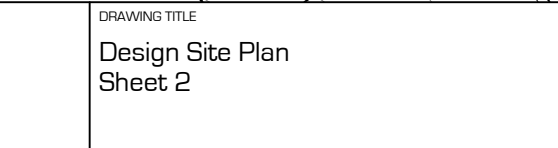


Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

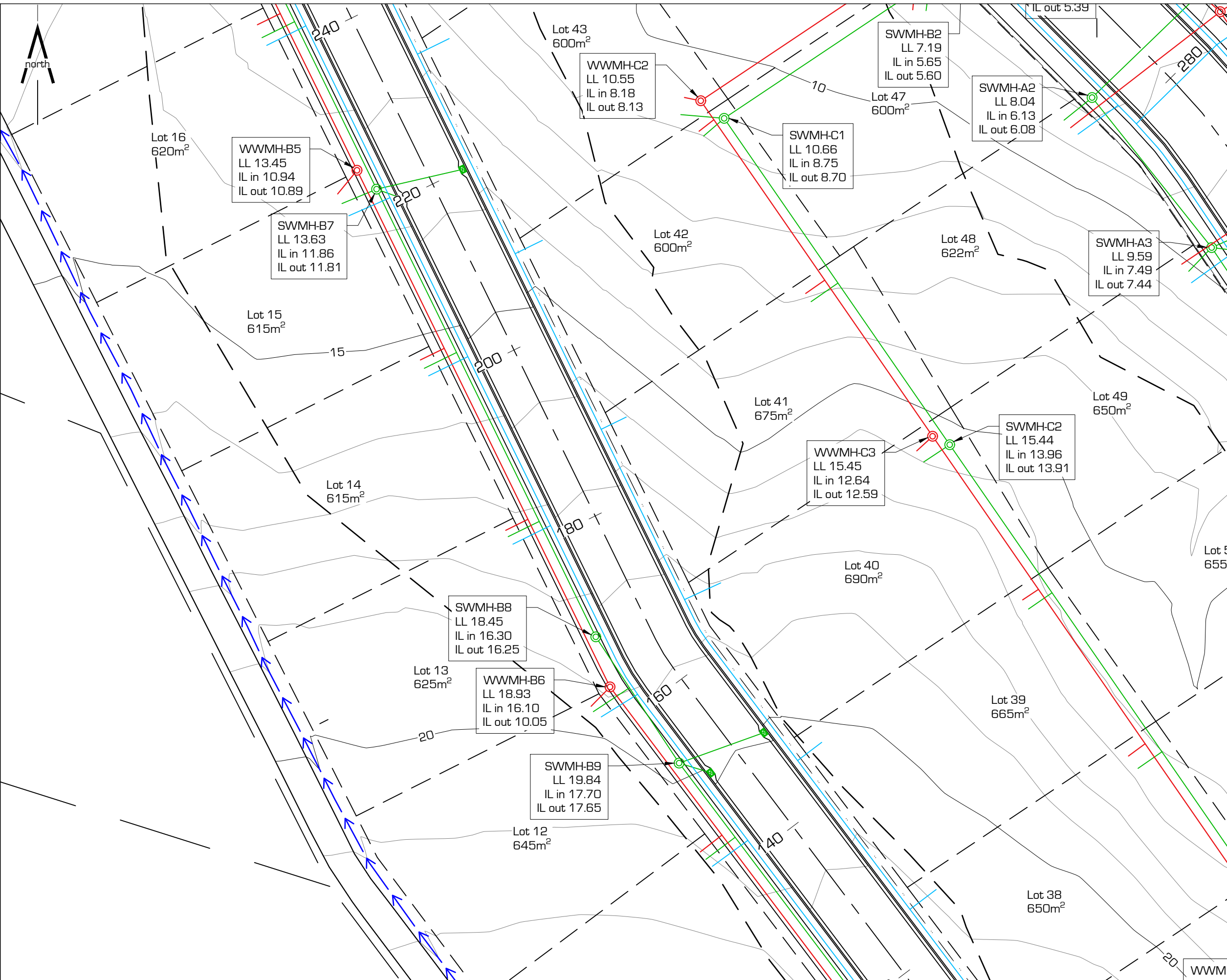
DRAWING TITLE
Design Site Plan
Sheet 2



NO.	REVISION	BY	DATE
0	Issued for consent	JS	20.03.18

DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

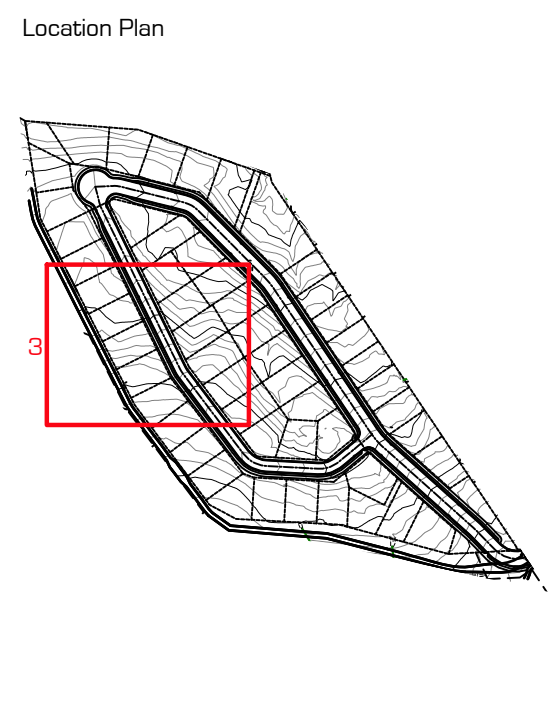
PROJECT STATUS:	For Consent	
PROJECT:	13641	8 of 43
DRAWING No:	13241	001
REV:		0



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- - - Existing stormwater network
- Proposed wastewater network
- - - Existing wastewater network
- Proposed water supply network
- - - Existing water supply network
- - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Design Site Plan
Sheet 3

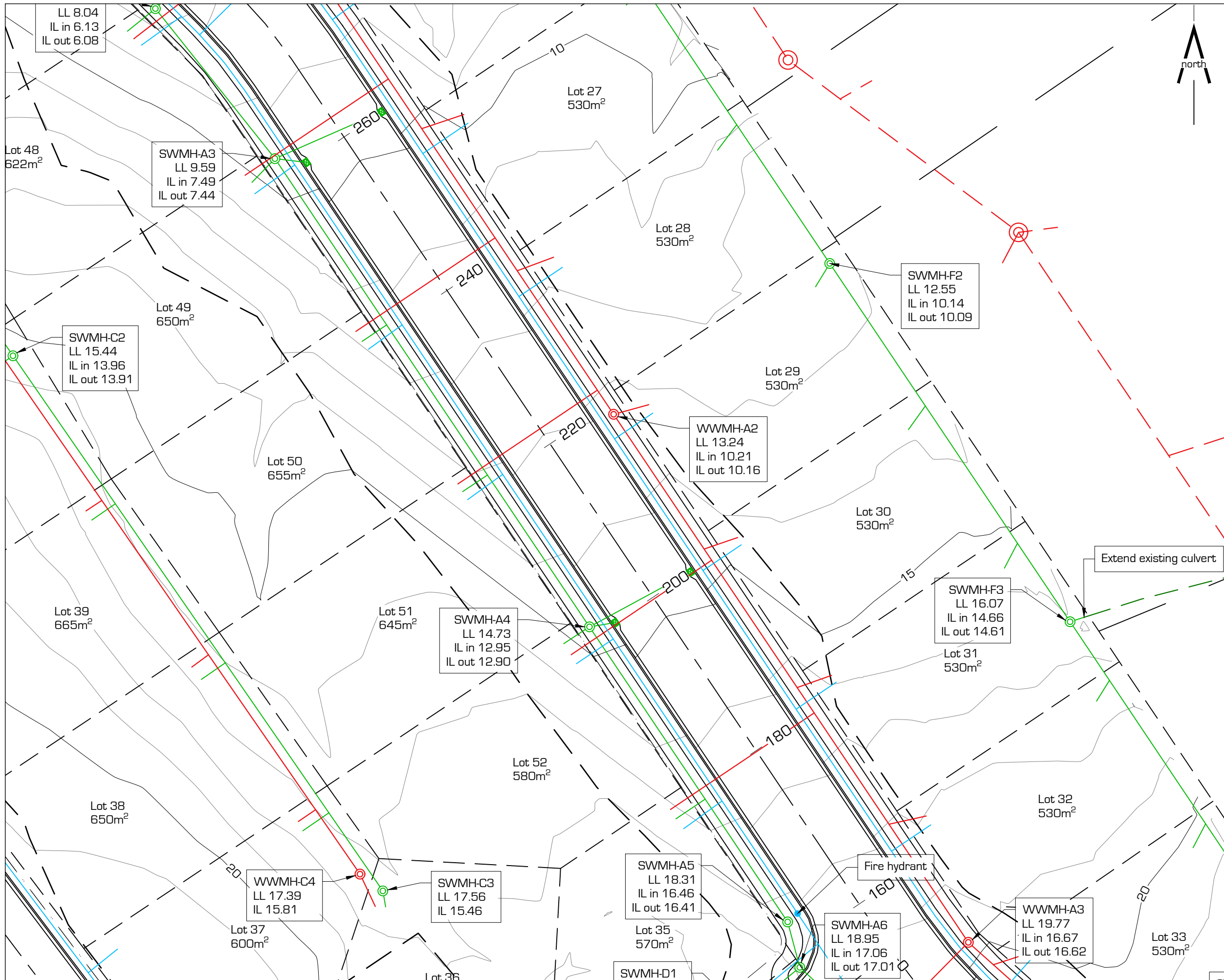


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

Contractor shall check all dimensions on site prior to work commencing

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 9 of 43
DRAWING No:	13641-01	REV: 0

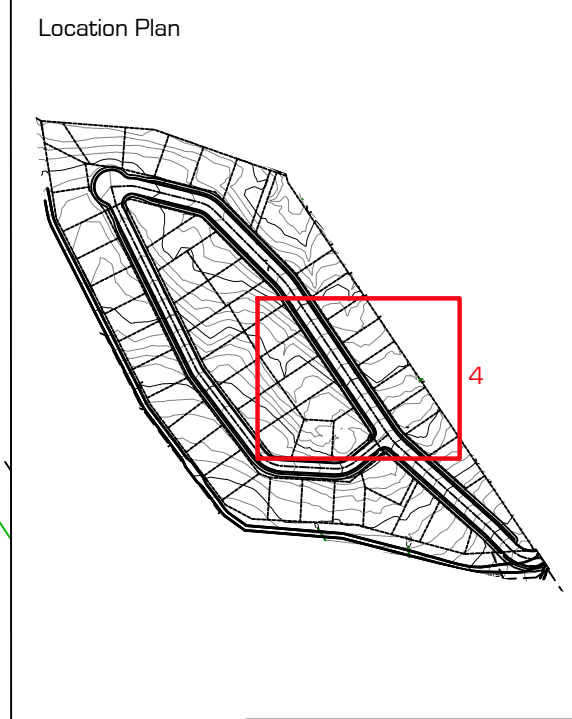
0 Issued for consent No. REVISION JS 20.03.18 BY DATE



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊠ Proposed stormwater catchpit
- Proposed stormwater network
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

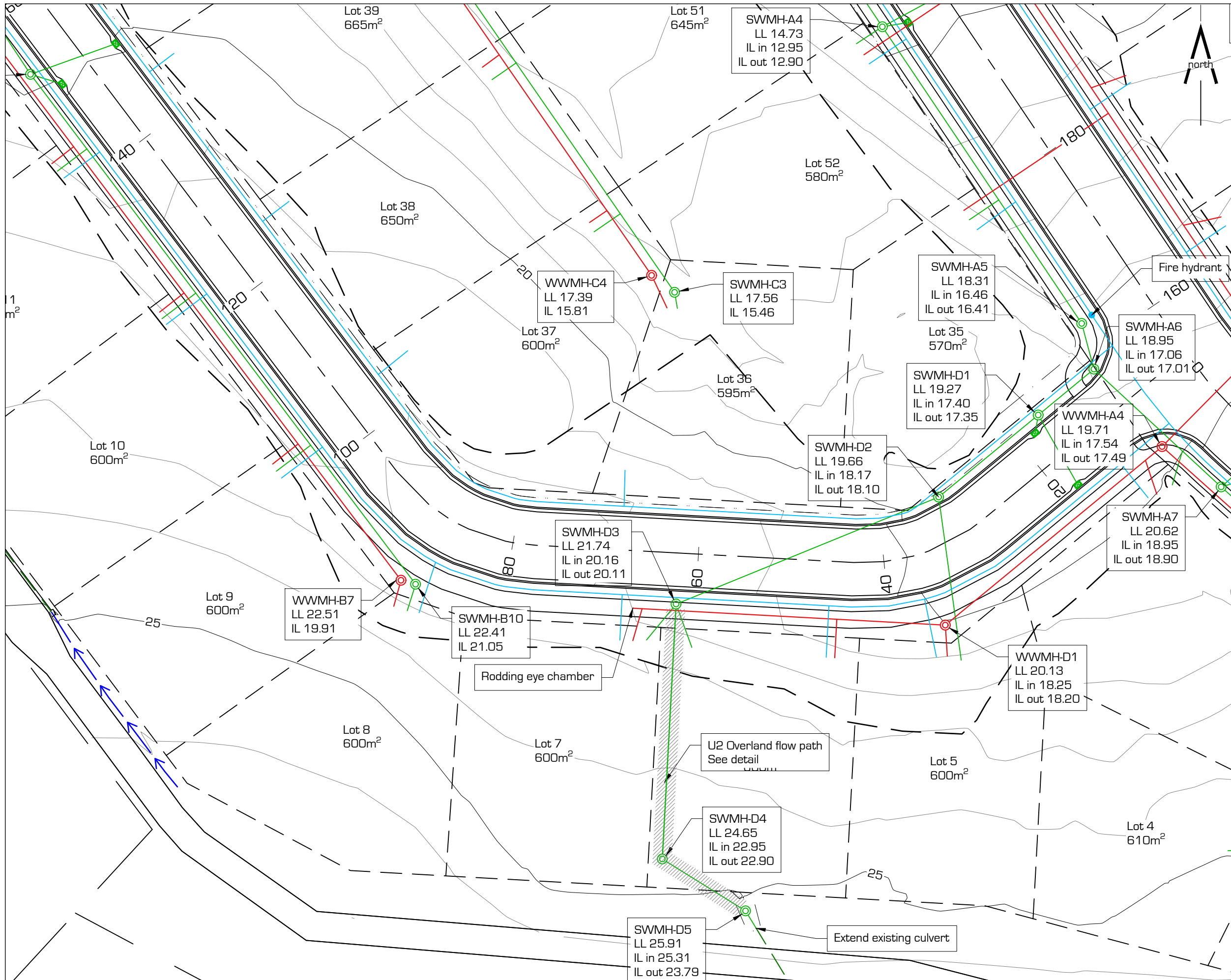
DRAWING TITLE
Design Site Plan
Sheet 4



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	
For Consent	
PROJECT:	13641
SHEET:	10 of 43
DRAWING No:	1324301
REV:	0

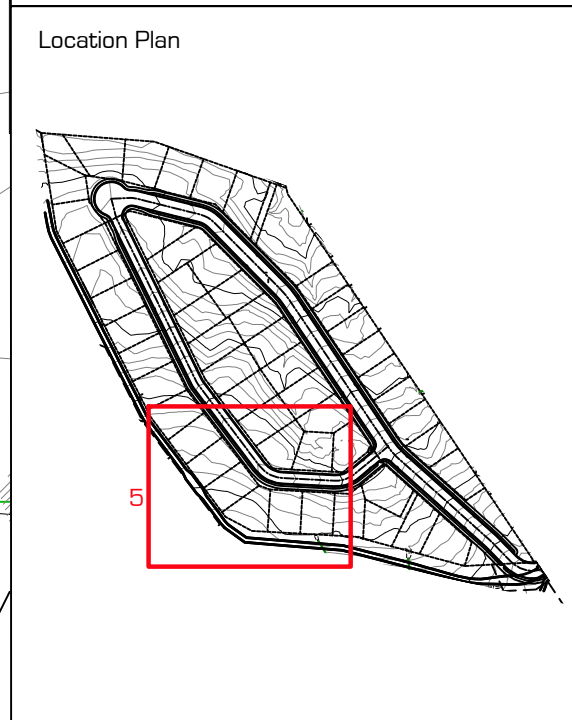
Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊠ Proposed stormwater catchpit
- Proposed stormwater network
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

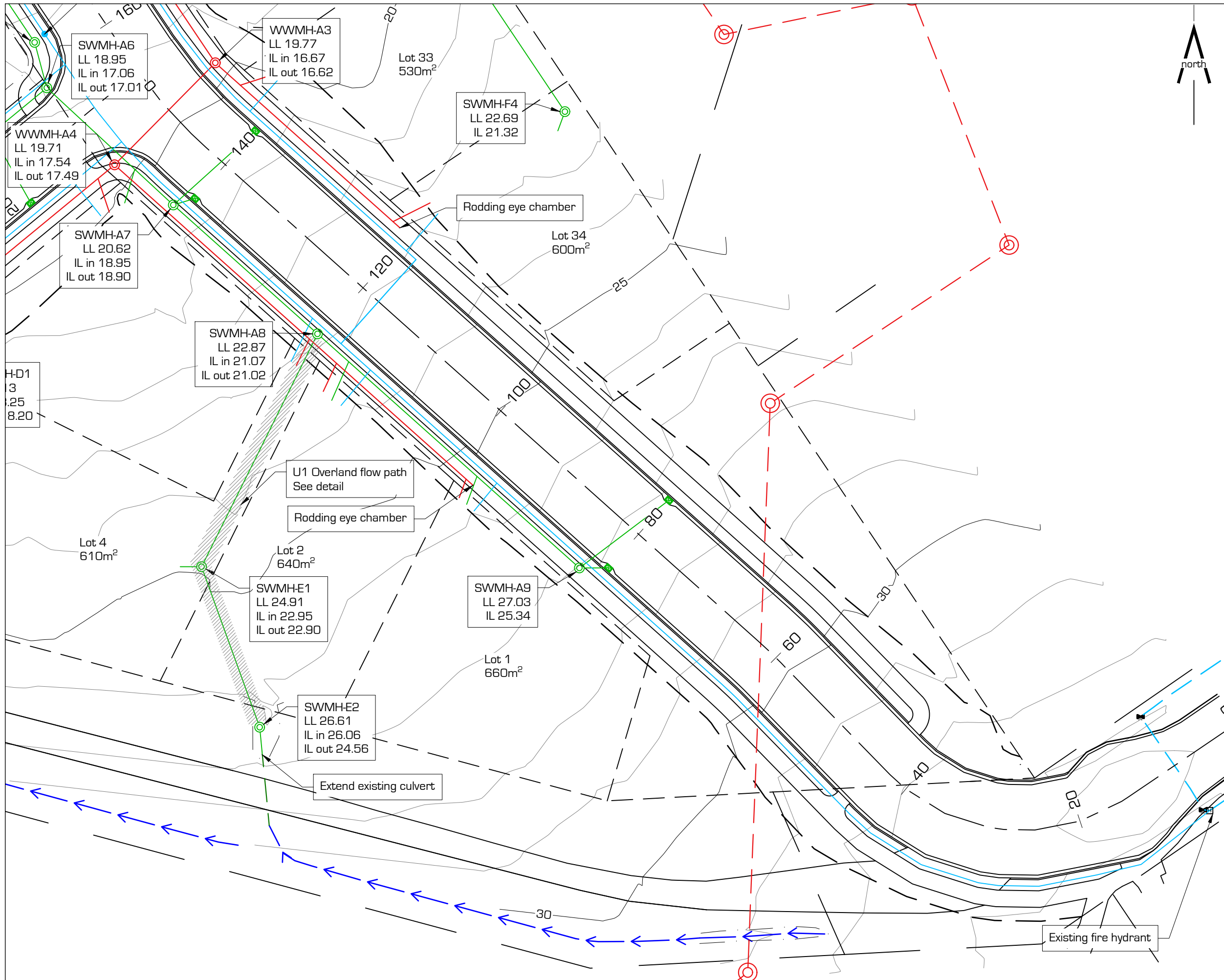
DRAWING TITLE
Design Site Plan
Sheet 5



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT:	13641
SHEET:	11 of 43
DRAWING No:	1324401
REV:	0

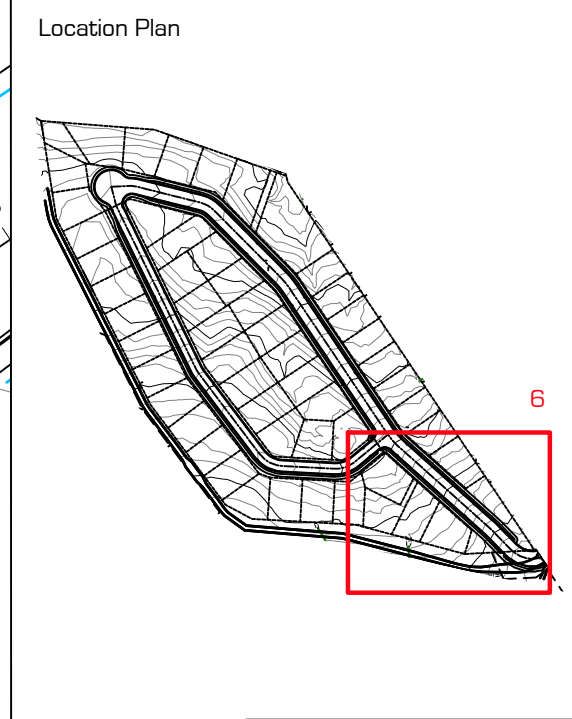
Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- ⊙ Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊙ Proposed stormwater catchpit
- Proposed stormwater network
- Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Design Site Plan
Sheet 6



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

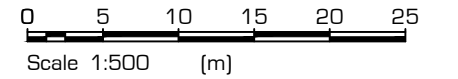
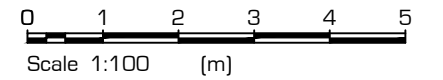
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 12 of 43
DRAWING No:	1324501	REV: 0

Contractor shall check all dimensions on site prior to work commencing

Legend

— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 18.0

Design Levels	32.87	33.04	33.09	33.12	33.07	32.71	32.02	31.82	31.00	30.78	29.86	29.76	29.43	28.50	27.87	27.27	26.11	25.85	25.03	23.95	22.87	21.80	20.72	20.42	19.64	19.07	18.56
Existing Levels			33.11	33.204	33.17	32.87	31.57	31.296	30.61		29.831	29.74	29.468	28.71		27.61	26.52		25.47	24.21	22.60	21.42	20.32	20.024	19.17	18.927	18.80
Cut/Fill Depth	0.00	-0.01	-0.01	-0.08	-0.10	-0.16	0.46	0.52	0.39	0.36	0.03	0.01	-0.04	-0.21	-0.28	-0.35	-0.41	-0.42	-0.44	-0.25	0.27	0.38	0.40	0.39	0.47	0.14	-0.24
Vertical Geometry	L = 7.19 2.4%		L = 44.65 K = 3.00							L = 23.27 -12.5%			L = 17.29 K = 10.00		L = 75.96 -10.8%												
Horizontal Geometry	L = 14.43			L = 27.88 R = 20.00						L = 16.87		L = 3.41 R = 50.00		L = 80.22										L = 12.49 R = 50.00		L = 114.82	
Chainage	0.00	7.19	10.00	14.43	20.00	30.00	40.00	42.31	50.00	51.84	59.18	60.00	62.59	70.00	75.11	80.00	90.00	92.40	100.00	110.00	120.00	130.00	140.00	142.81	150.00	155.30	160.00

Road A Long Section - CHO to CH160

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CHO to CH160



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

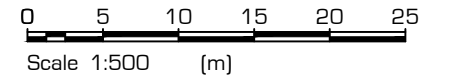
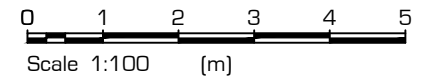
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 13 of 43
DRAWING No:	13246	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

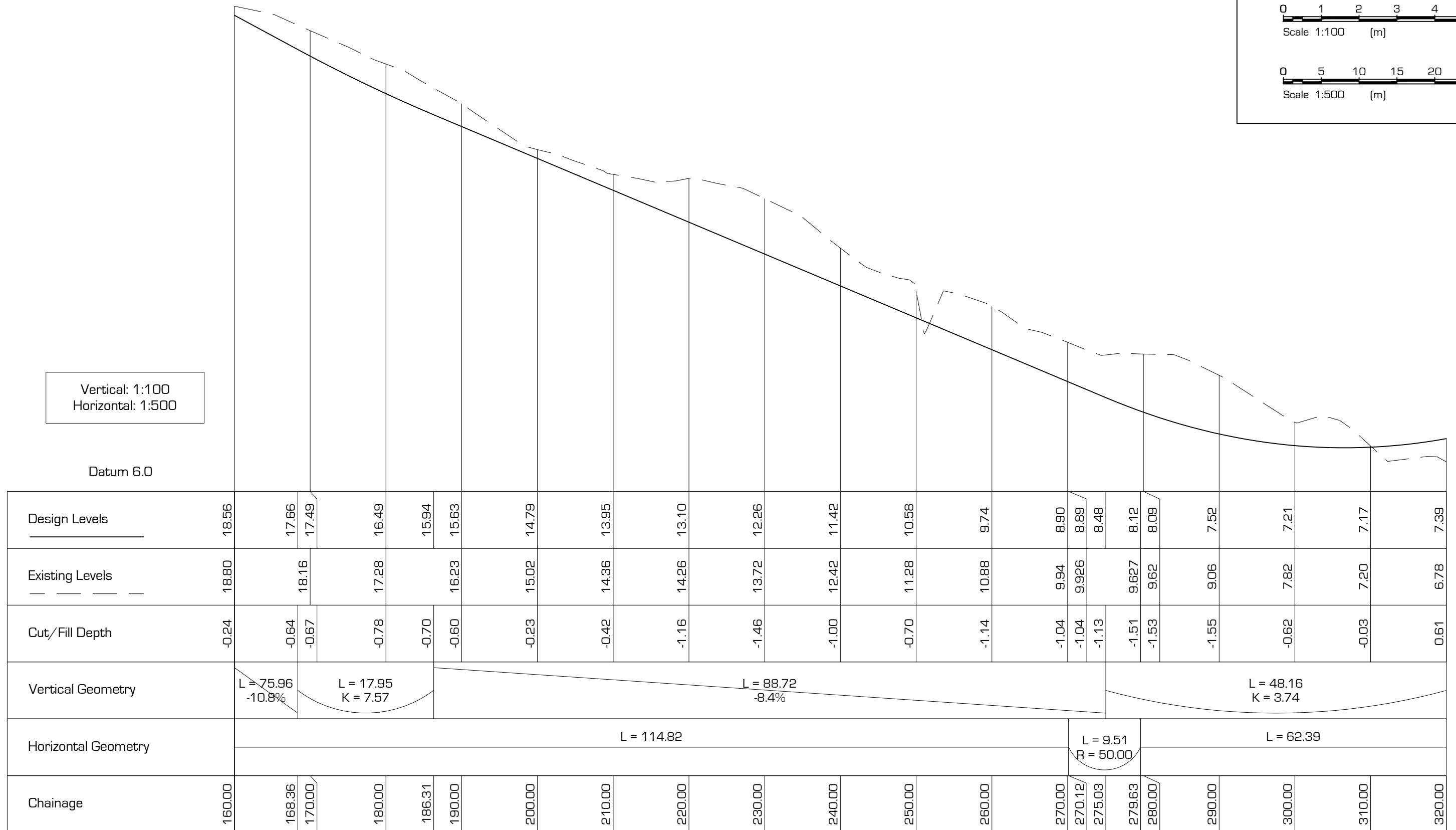
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 6.0



Road A Long Section - CH160 to CH320

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CH160 to CH320



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

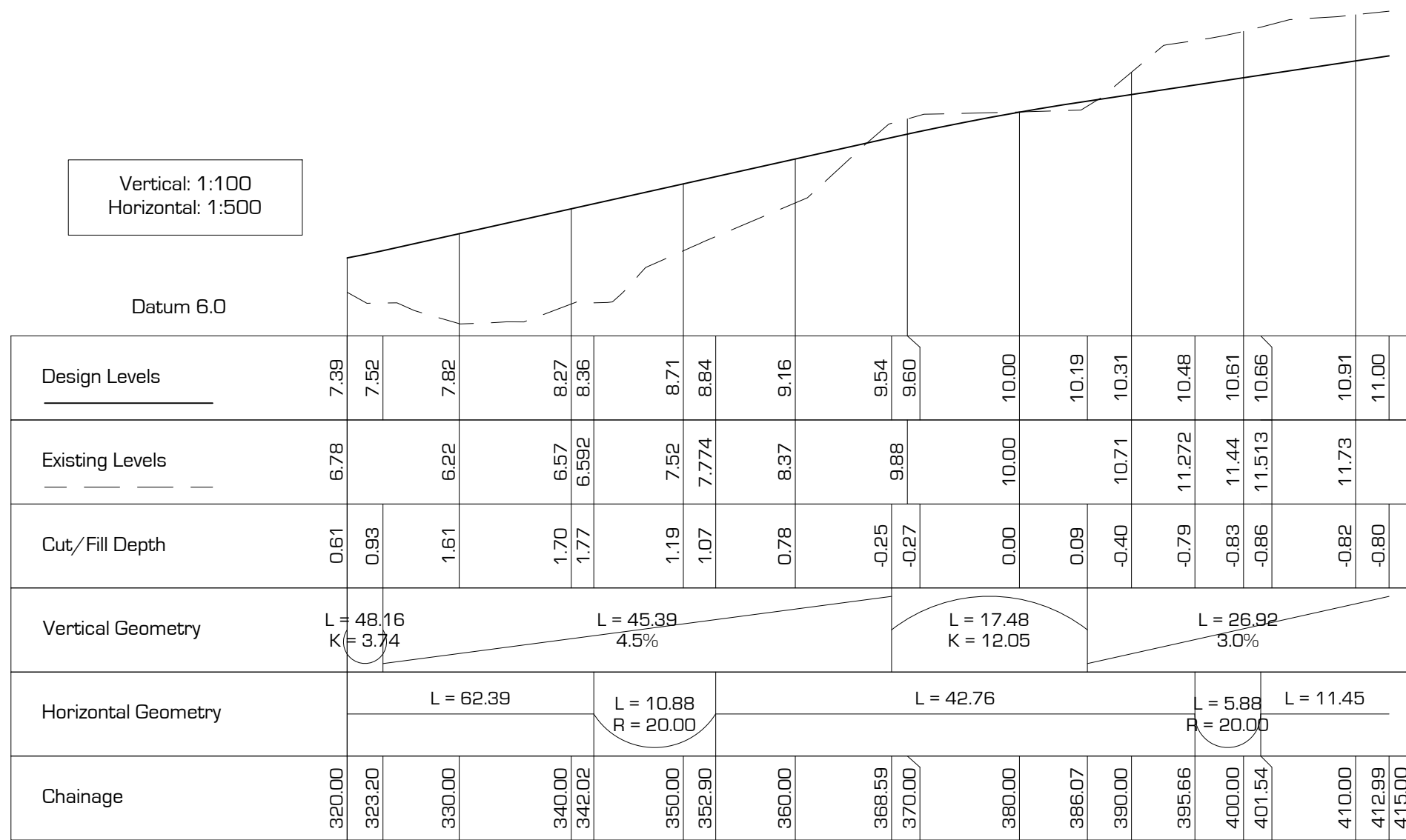
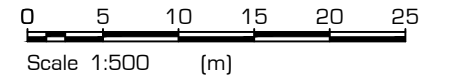
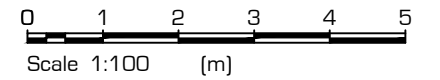
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 14 of 43
DRAWING No:	13247	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

— — — Existing ground level

————— Finished ground level



Road A Long Section - CH360 to CH415

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CH320 to CH415



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

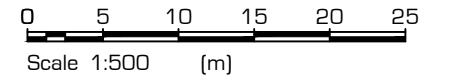
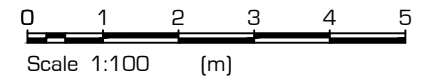
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 15 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

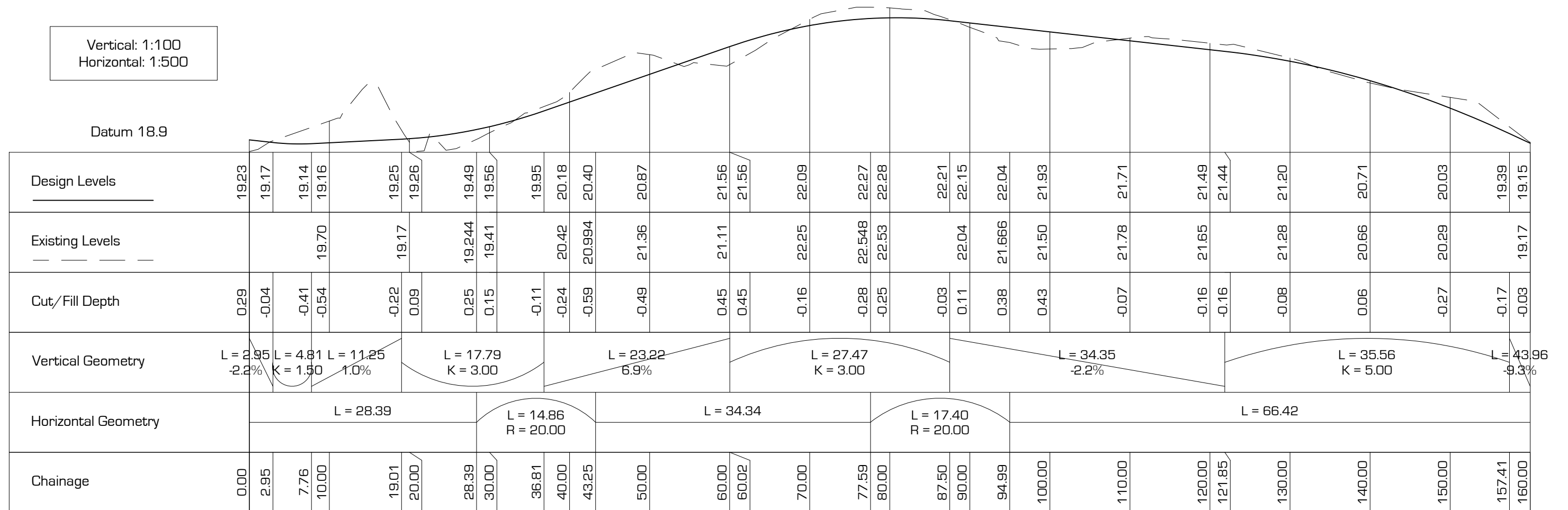
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 18.9



Road B Long Section - CHO to CH160

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road B Long Section
CHO to CH160



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

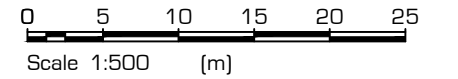
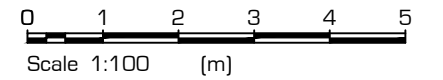
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 16 of 43
DRAWING No:	13249	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

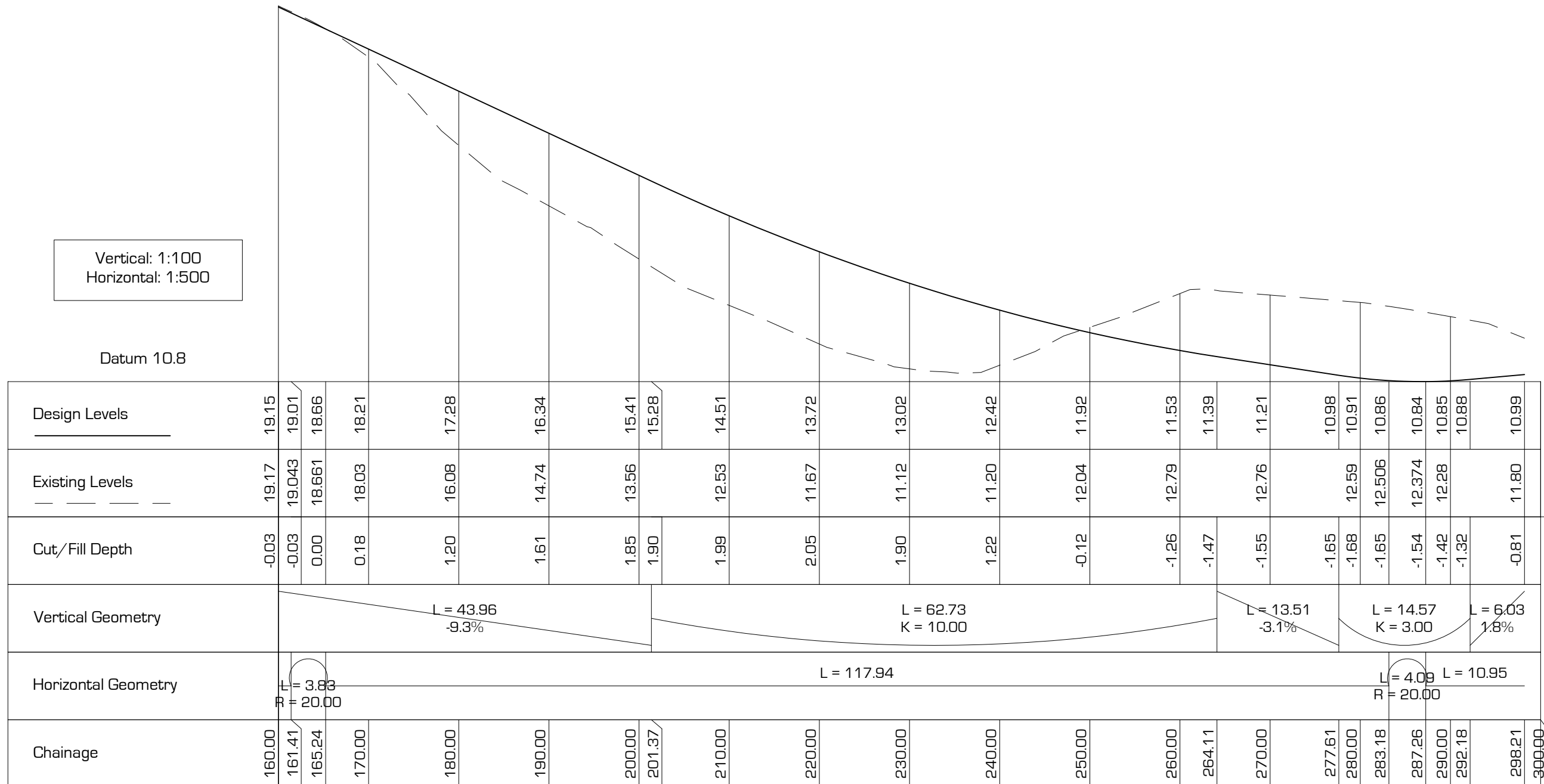
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 10.8



Road B Long Section - CH160 to CH300

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road B Long Section
CH160 to CH300

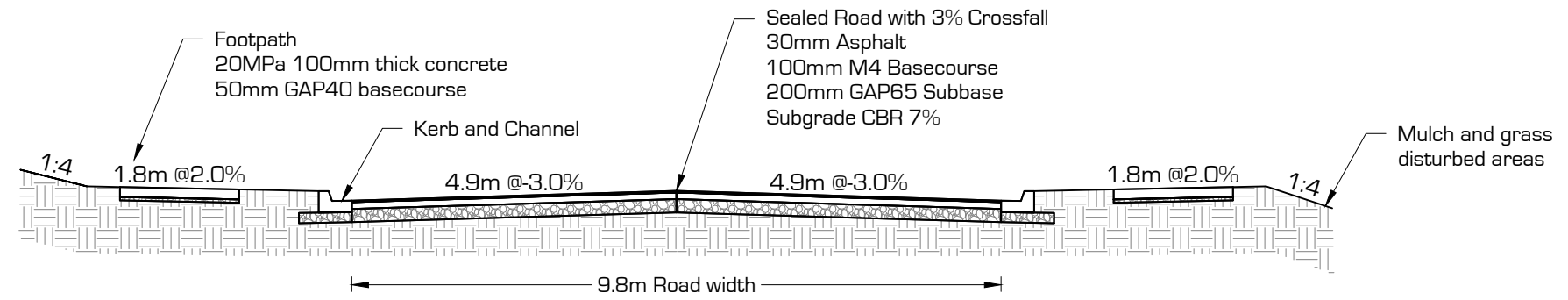


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

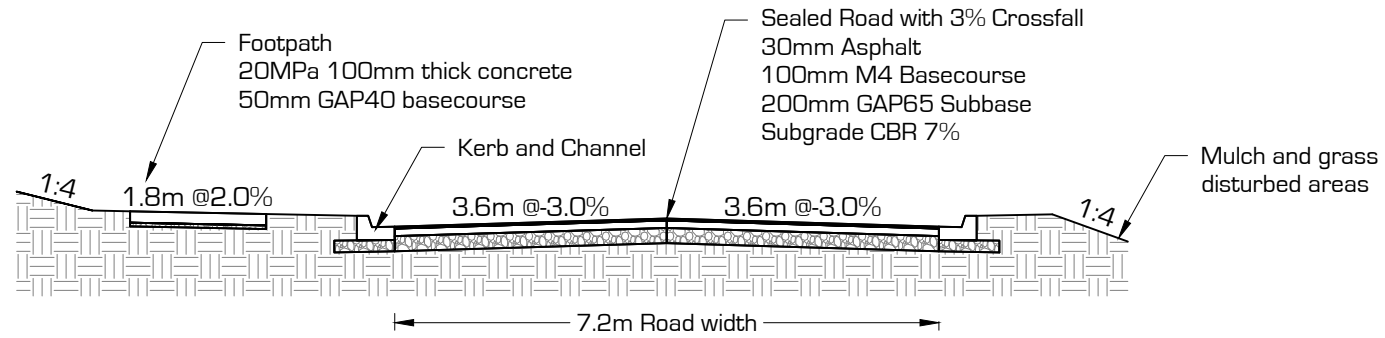
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 17 of 43
DRAWING No:	1325001	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

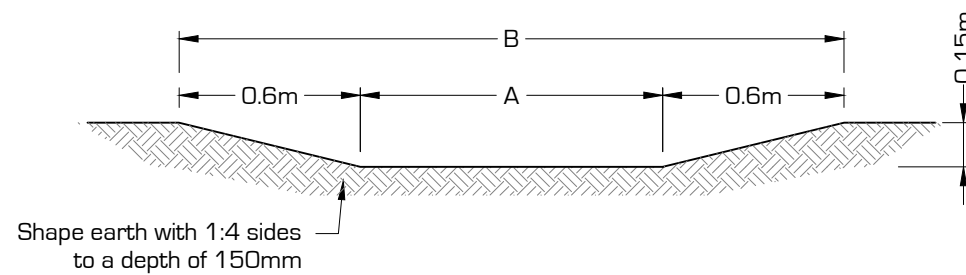
CS-A
Road A Design Cross Section
 SCALE A3 1:100



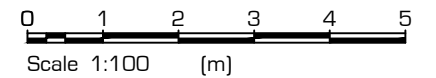
CS-B
Road B Design Cross Section
 SCALE A3 1:100



CS-D
Overland Flow Path Cross Section
 SCALE A3 1:25



CHANNEL	Side Slope	Width between sides [A]	Total Width [B]	Depth of Flow	Fall Slope [%]
U1	1:4	1.8m	3.0m	0.11m	5 %
U2	1:4	0.8m	2.0m	0.13m	10 %



Contractor shall check all dimensions on site prior to work commencing

CLIENT
 Prime Property Group Ltd.
 PO Box 11-785
 Wellington

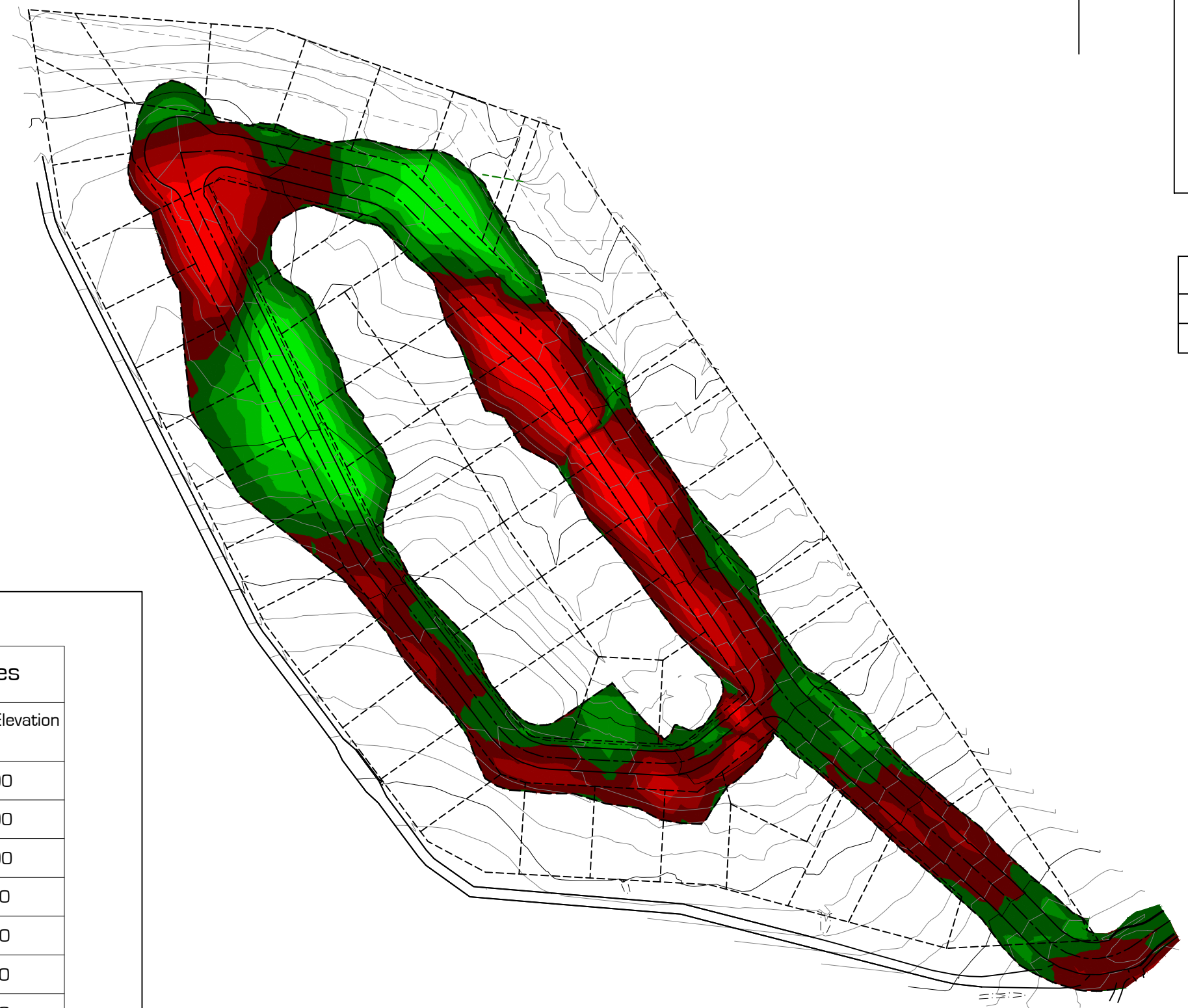
PROJECT
 52 Lot Residential Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

DRAWING TITLE
 Construction Details



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 18 of 43
DRAWING No: 1324-101	REV: 0



Legend

- 10——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Edge of concrete accessway
- Edge of road
- - - - - Proposed earthworks extents

0 4 8 12 16 20
Scale 1:400 (m)

Earthwork Volumes	
Cut	7100m ³
Fill	6050 m ³

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1	Red	-3.000	-1.500
2	Red	-1.500	-1.000
3	Dark Red	-1.000	-0.500
4	Dark Red	-0.500	0.000
5	Dark Green	0.000	0.500
6	Green	0.500	1.000
7	Light Green	1.000	1.500
8	Bright Green	1.500	3.000

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

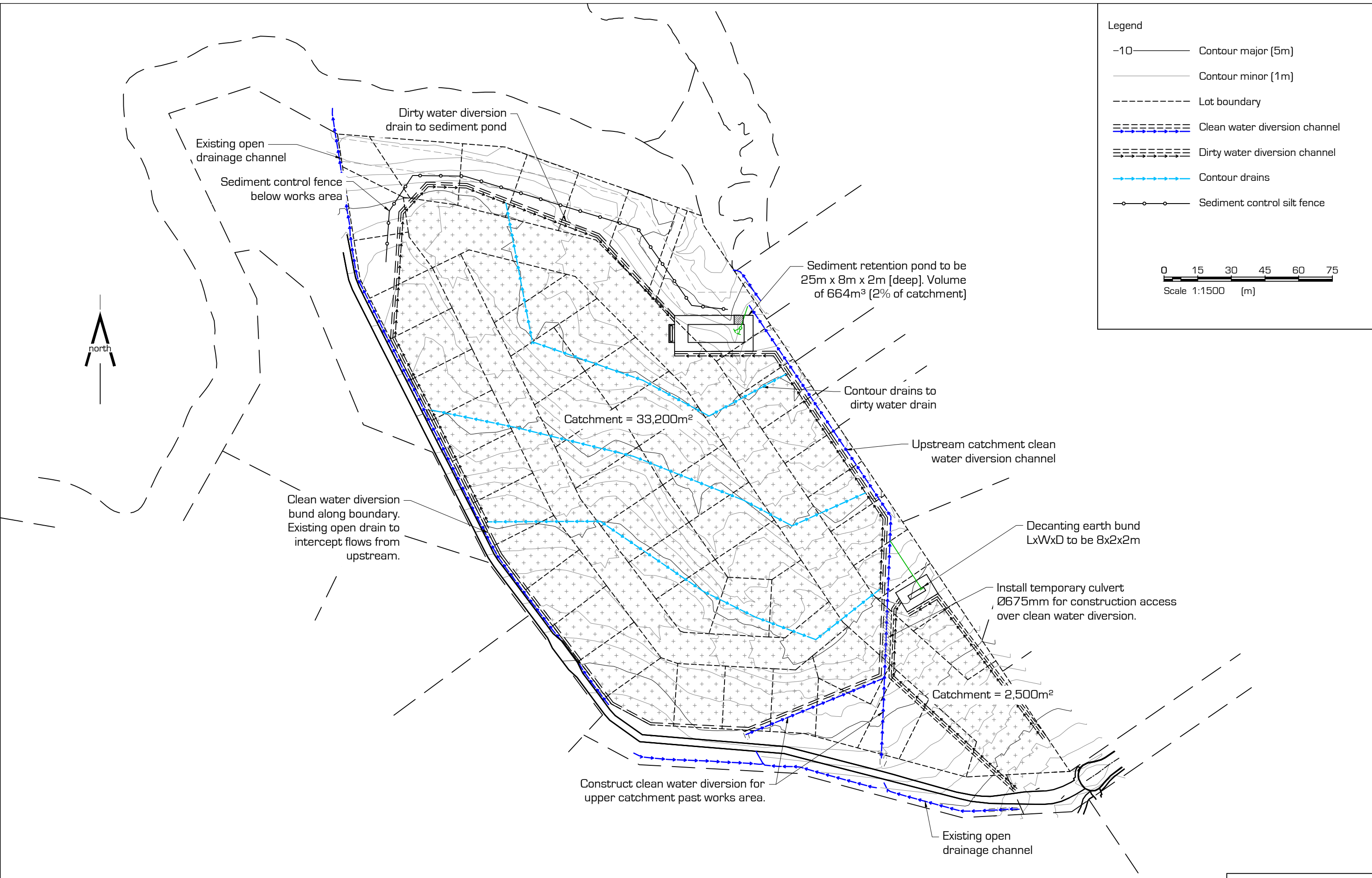
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Earthworks Cut/Fill Isopach



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 19 of 43
DRAWING No: 13641-25201	REV: 0



Legend

- 10- Contour major (5m)
- Contour minor (1m)
- - - Lot boundary
- =====> Clean water diversion channel
- =====> Dirty water diversion channel
- > Contour drains
- Sediment control silt fence

0 15 30 45 60 75
Scale 1:1500 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

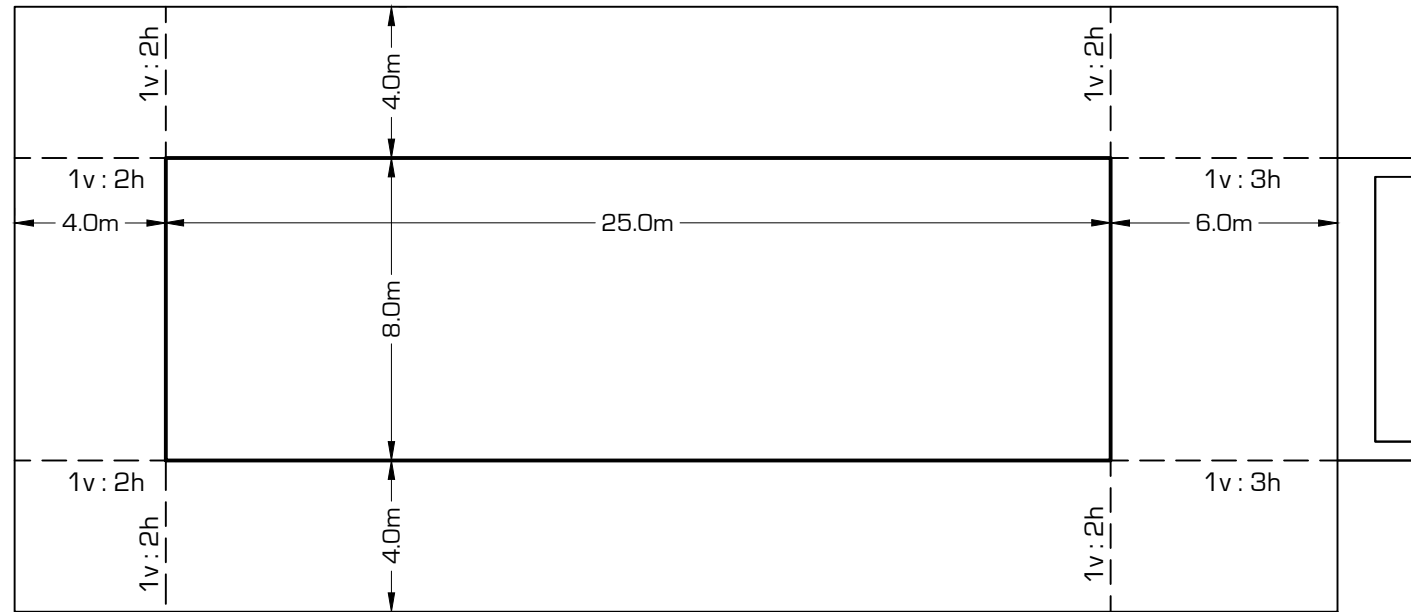
DRAWING TITLE
Sediment Control Plan



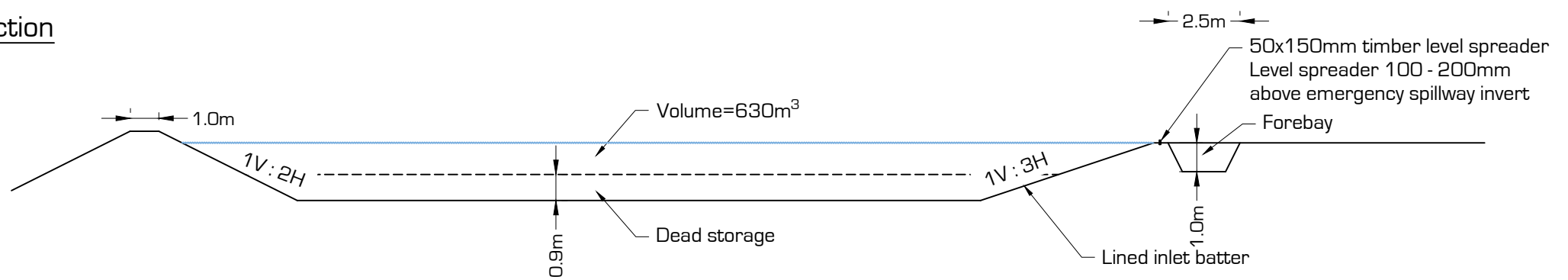
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

Contractor shall check all dimensions on site prior to work commencing

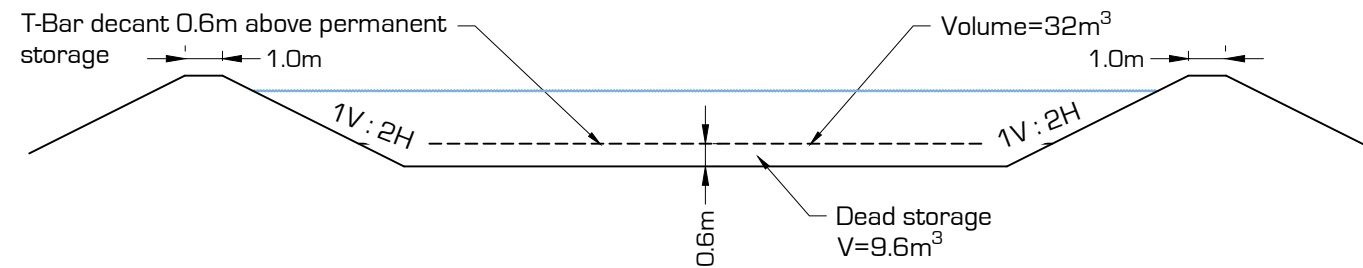
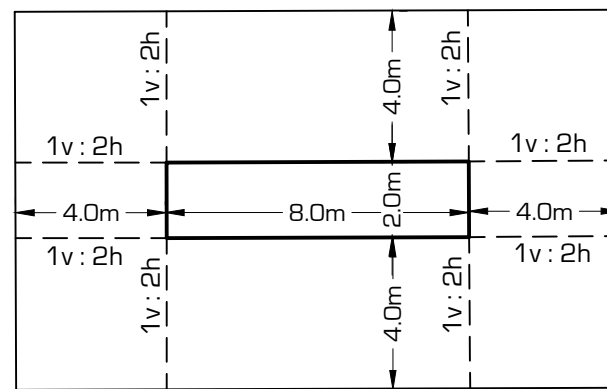
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 20 of 43
DRAWING No:	13641-01	REV: 0



Detention Pond
Plan and Cross Section
SCALE A3 1:200



Decanting Earth Bund
Plan and Cross Section
SCALE A3 1:200



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

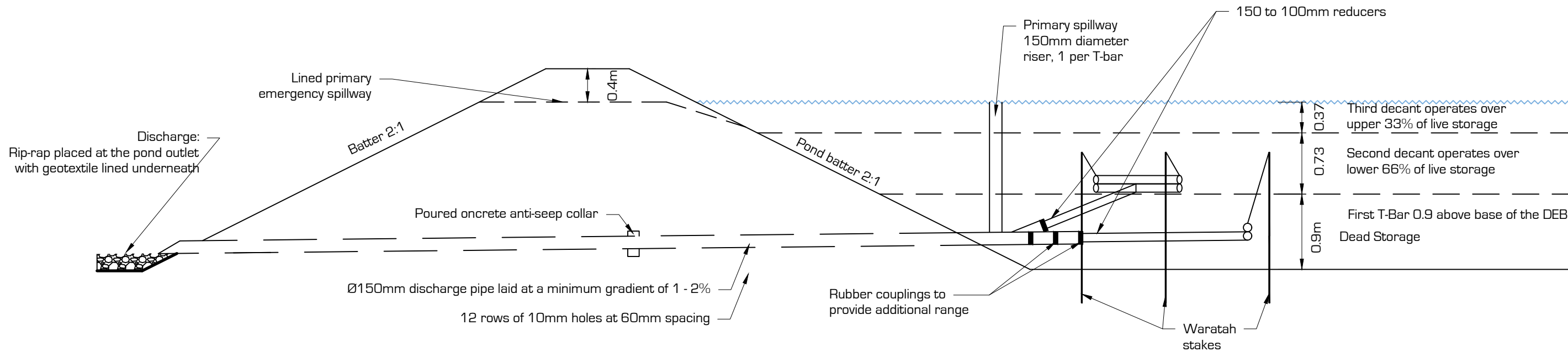
DRAWING TITLE
Sediment Control Plan
Construction Details



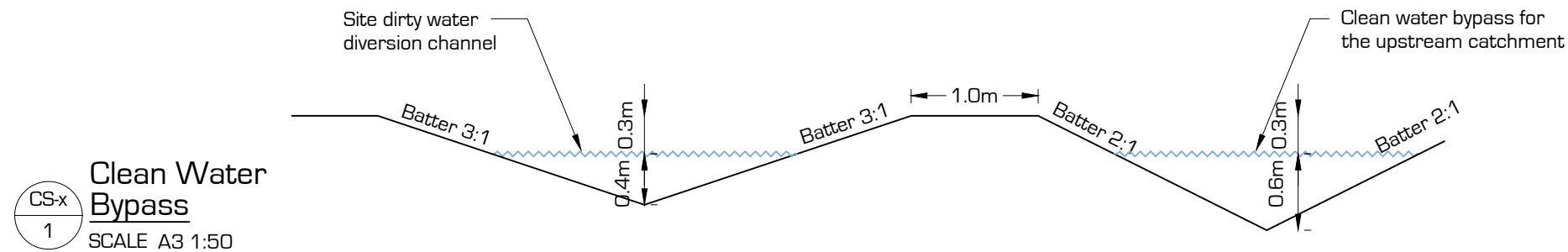
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:200

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 21 of 43
DRAWING No:	13641-01	REV: 0

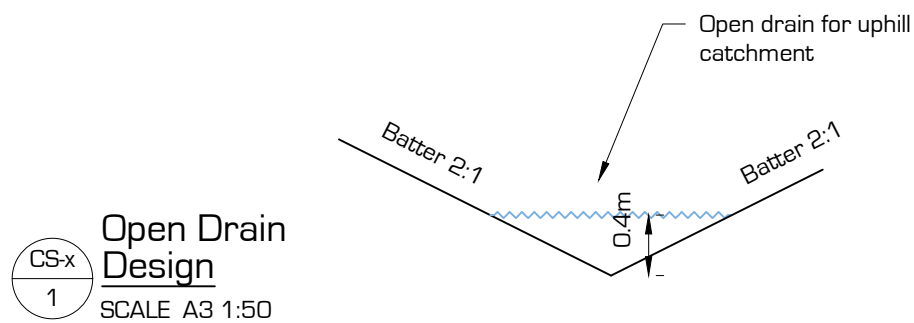
0 Issued for consent
No. REVISION BY DATE



CS-P
1
Detention Pond Outlet Detail
SCALE A3 1:50



CS-x
1
Clean Water Bypass
SCALE A3 1:50



CS-x
1
Open Drain Design
SCALE A3 1:50

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Sediment Control Plan
Construction Details

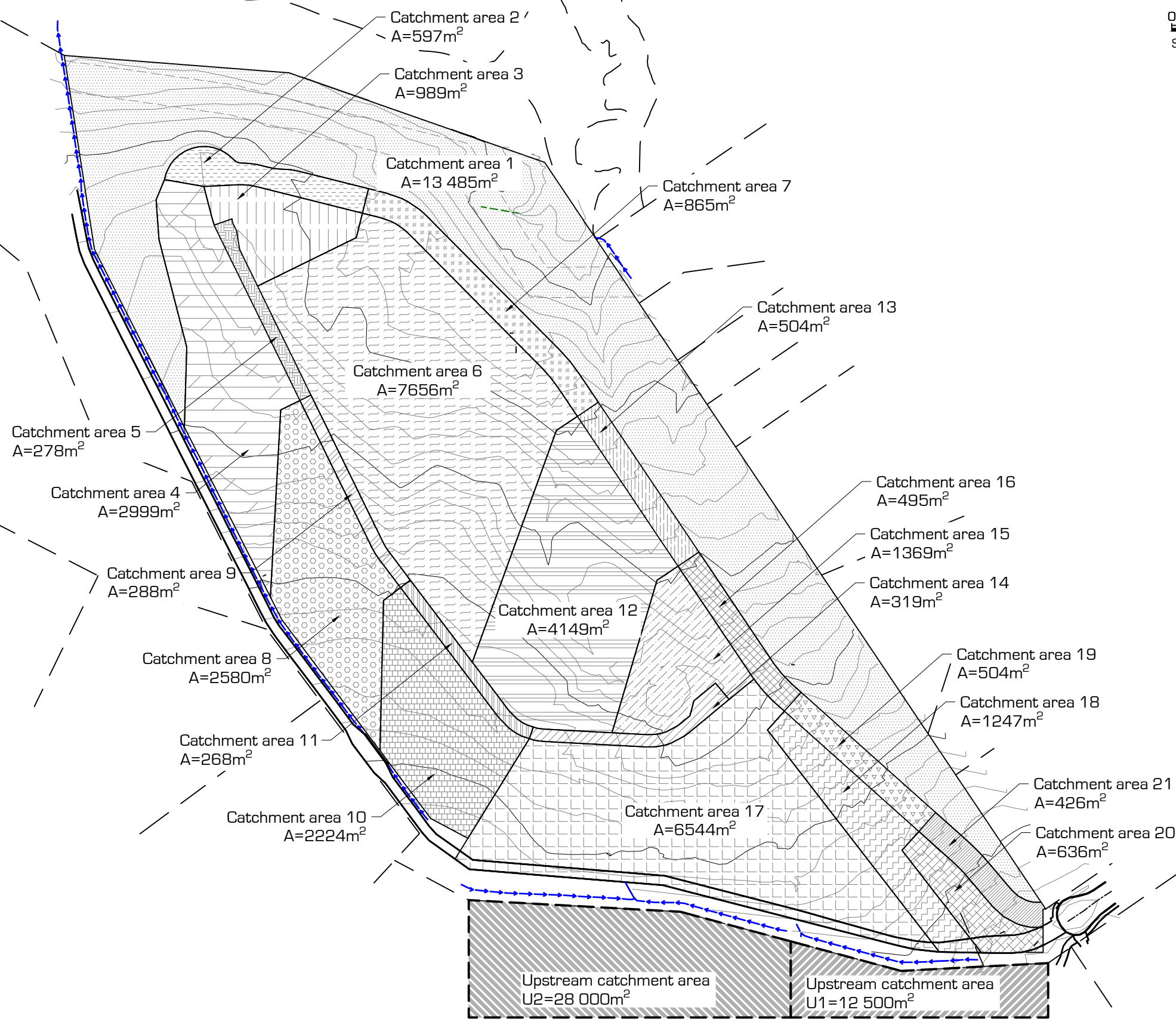
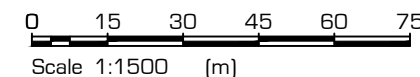


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 22 of 43
DRAWING No: 13241501	REV: 0

0 Issued for consent
No. REVISION BY DATE

Legend
 -10- Contour major (5m)
 - - - Contour minor (1m)



CLIENT
 Prime Property Group Ltd.
 PO Box 11-785
 Wellington

PROJECT
 52 Lot Residential Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

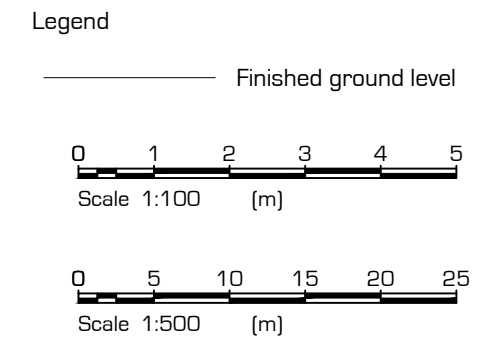
DRAWING TITLE
 Catchment Plan



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

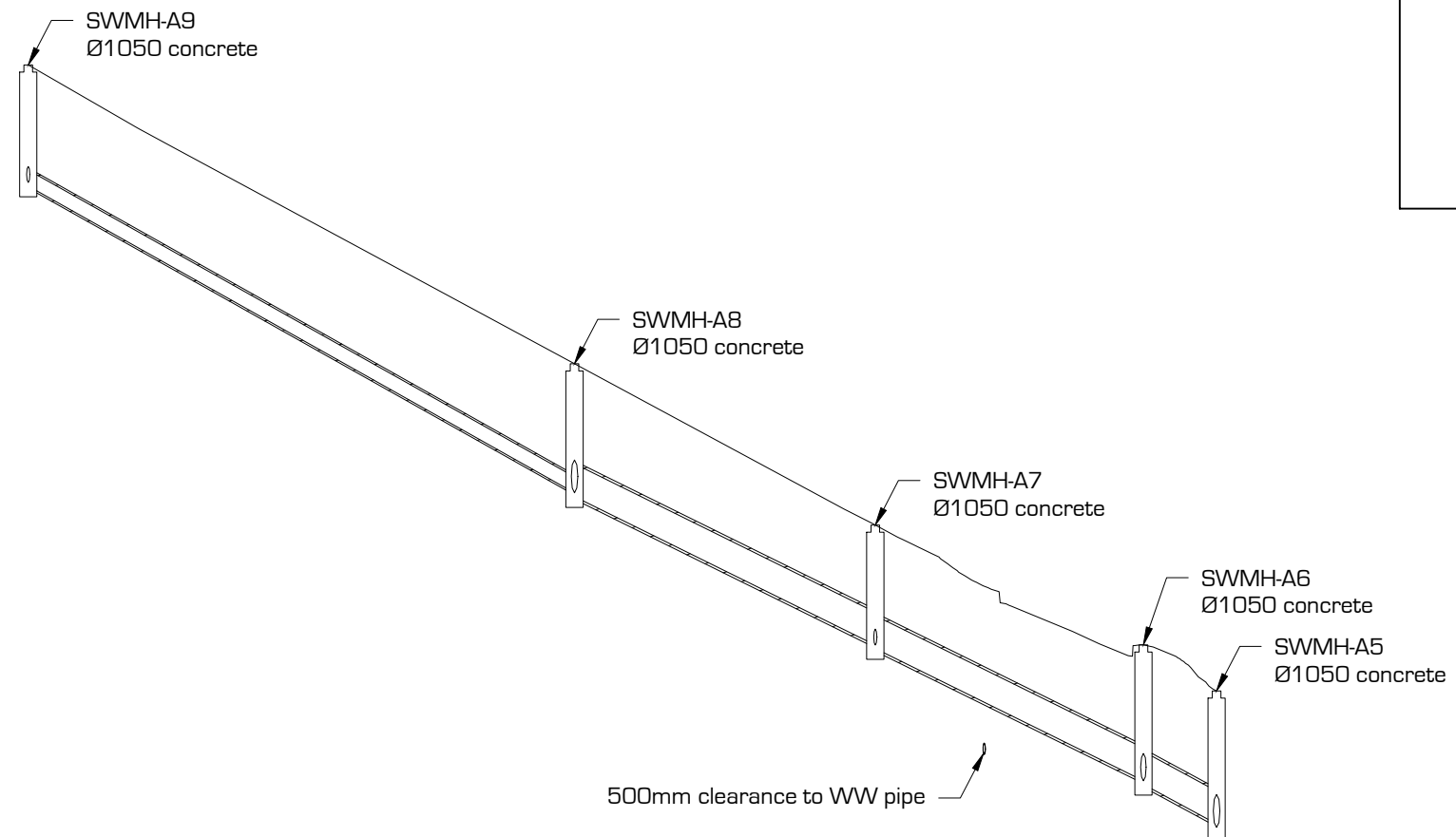
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 23 of 43
DRAWING No:	1325601	REV: 0

Contractor shall check all dimensions on site prior to work commencing



Vertical 1:100
Horizontal 1:500

Datum 15.0m



Invert Levels	27.03	25.34	21.07	21.02	18.95	18.90	17.06	17.01	16.46
Depth to Invert		1.68	1.80	1.85	1.67	1.72	1.89	1.94	1.85
Ground Level		22.87	20.62	18.95	18.31				
Pipe Details		Ø225 RCRRJ CLASS 2	Ø450 RCRRJ CLASS 2	Ø450 RCRRJ CLASS 2	Ø450 RCRRJ CLASS 2				
Distance		L= 38.02	L= 20.93	L= 18.66	L= 5.09				
Grade		11.2%	9.9%	9.9%	10.9%				

SW Line A Long Section - MHA9 to MHA5

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line A
MHA9 to MHA5



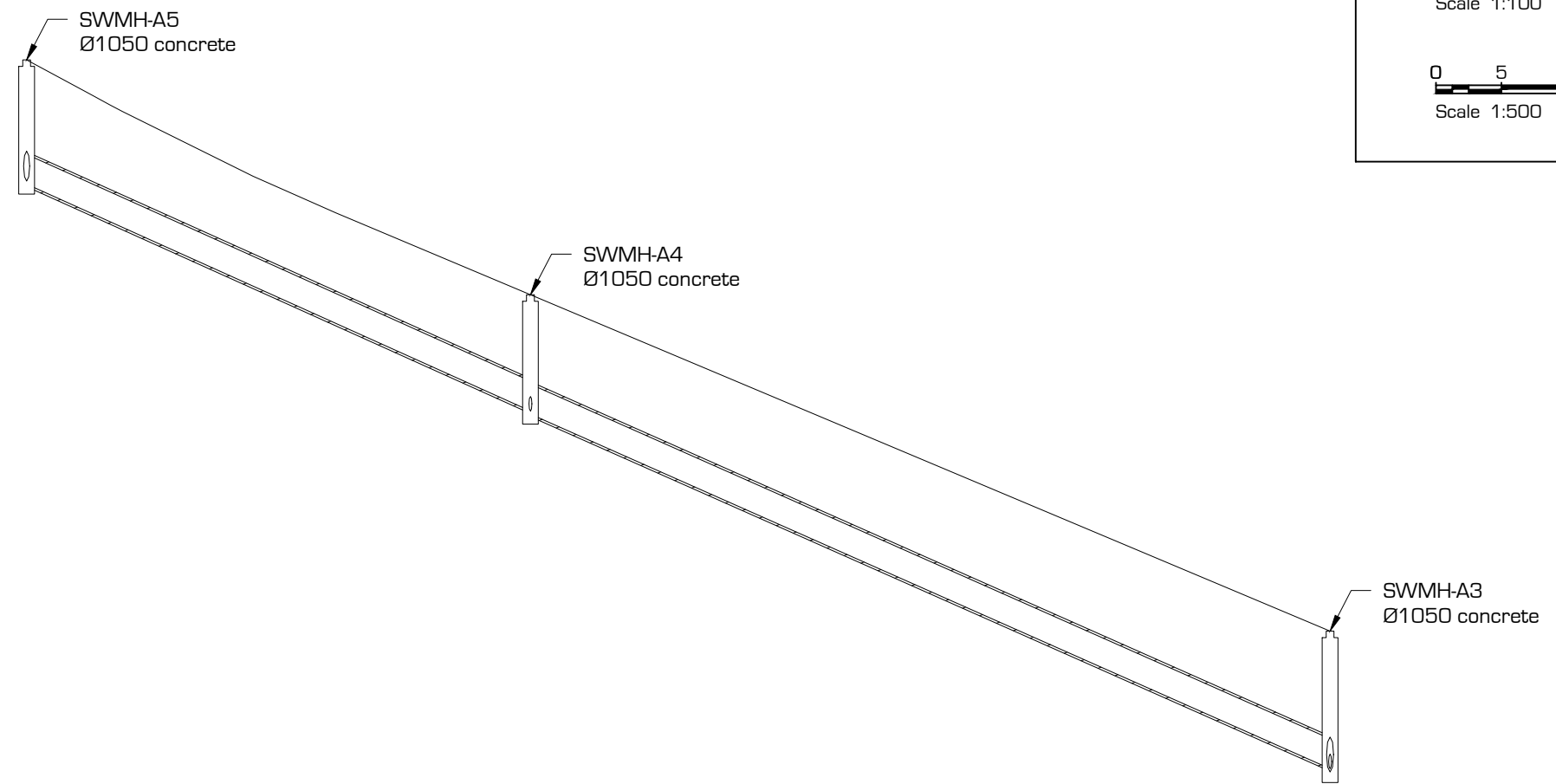
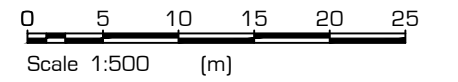
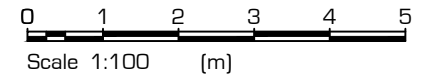
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 24 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	16.41	12.95	7.49
Depth to Invert	1.90	1.78	2.10
Ground Level	18.31	14.73	9.59
Pipe Details	Ø450 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2
Distance	L= 38.47		L= 61.05
Grade	9.0%		8.9%

SW Line A Long Section - MHA5 to MHA3

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line A
MHA5 to MHA3

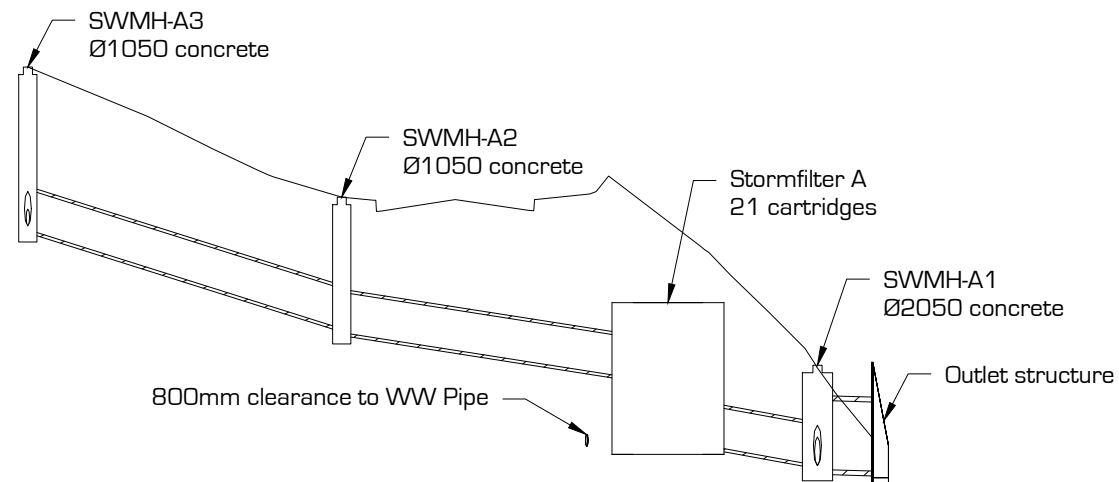
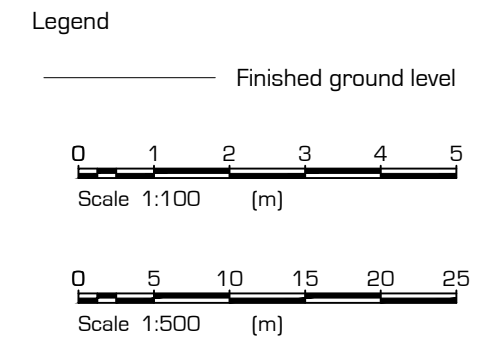


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 25 of 43
DRAWING No: 132401	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

258



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	7.44	6.13 6.08	5.50 4.57	4.57	4.32 4.27	4.25
Depth to Invert	2.15	1.74 1.79	2.51 3.44	2.51	1.29 1.34	0.44
Ground Level	9.59	7.87	8.01	7.08	5.65	5.68
Pipe Details	Ø525 RCRRJ CLASS 2	Ø525 RCRRJ CLASS 2	Ø525 RCRRJ CLASS 2	Ø900 RCRRJ CLASS 2		
Distance	L= 20.76	L= 18.57	L= 6.01	L= 6.88	L= 3.63	
Grade	6.3%		3.1%	0.0%	3.6%	0.6%

SW Line A Long Section
MHA3 to Outlet

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

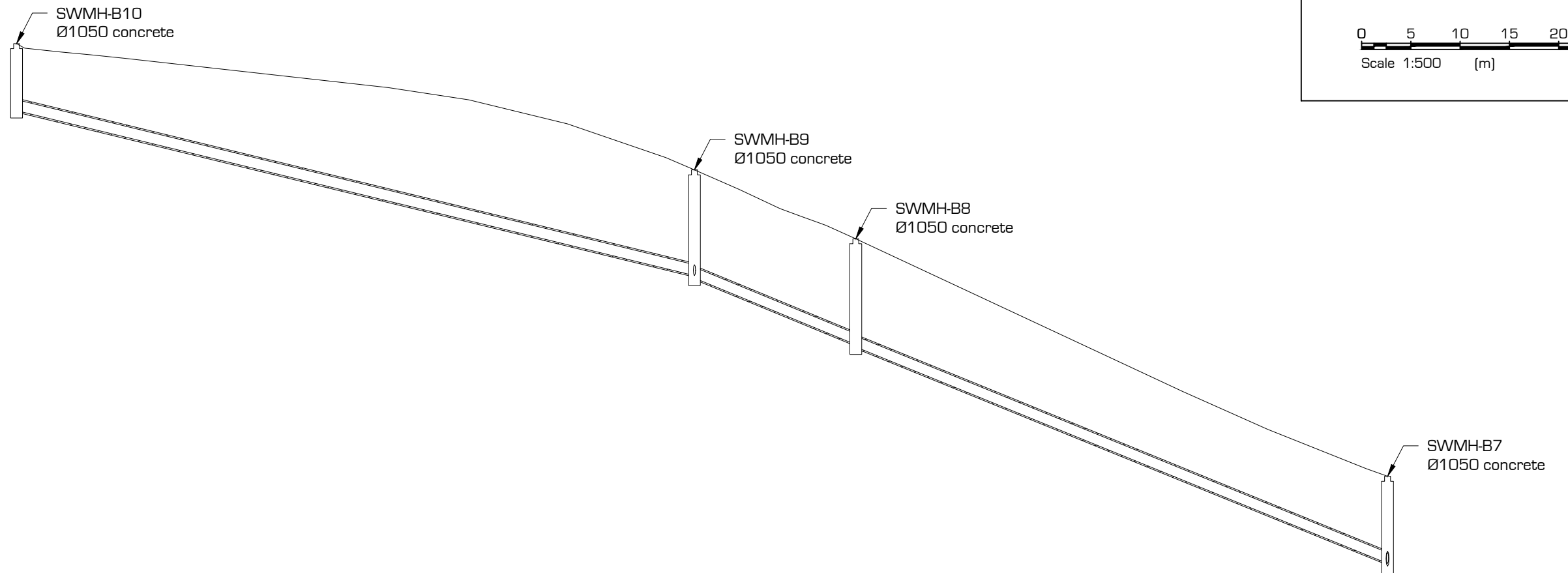
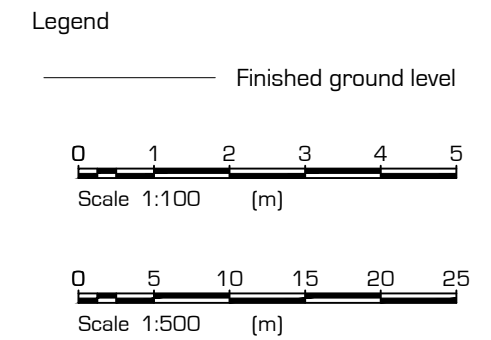
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line A
MHA3 to Outlet



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 26 of 43
DRAWING No:	13641-01	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	21.05	17.70 17.65	16.30 16.25	11.86
Depth to Invert	1.36	2.14 2.19	2.15 2.20	1.77
Ground Level	22.41	19.84	18.45	13.63
Pipe Details	Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2	Ø225 RCRRJ CLASS 2
Distance	L= 68.78		L= 16.37	L= 53.95
Grade	4.9%		8.2%	8.1%

SW Line B Long Section - MHB10 to MHB7

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

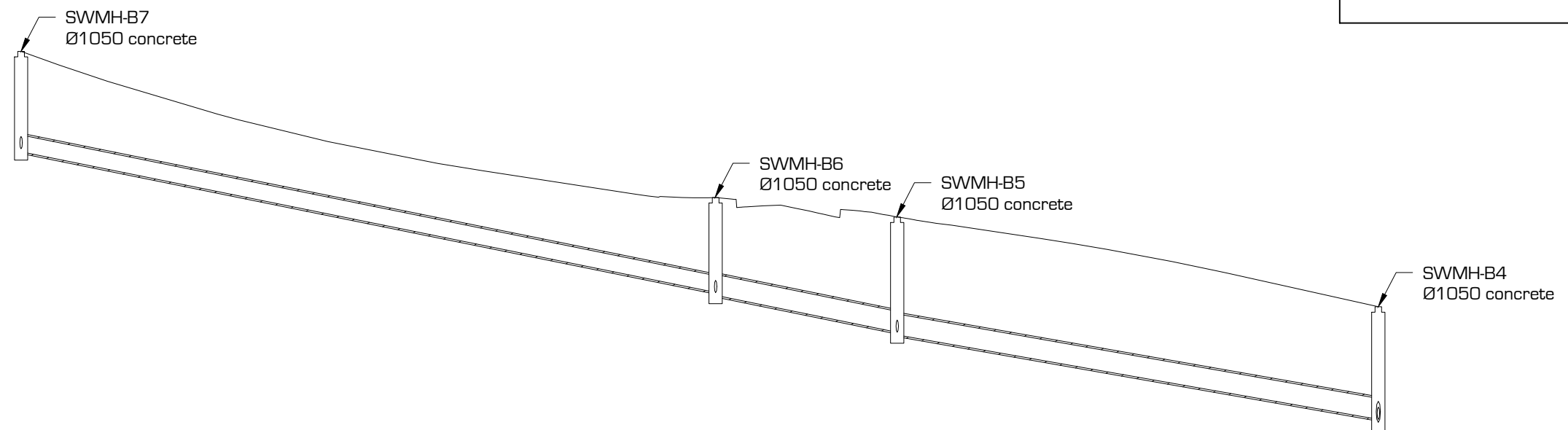
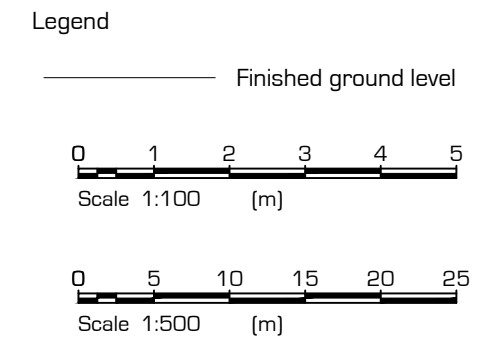
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line B
MHB10 to MHB7



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 27 of 43
DRAWING No:	1326001	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	11.81	9.25 9.20	8.53 8.48	6.95
Depth to Invert	1.82	1.72 1.77	2.09 2.14	2.04
Ground Level	13.63	10.97	10.62	8.99
Pipe Details	Ø300 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2	
Distance	L= 63.02		L= 16.48	
Grade	4.0%		4.1%	
			3.5%	

SW Line B Long Section - MHB7 to MHB4

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

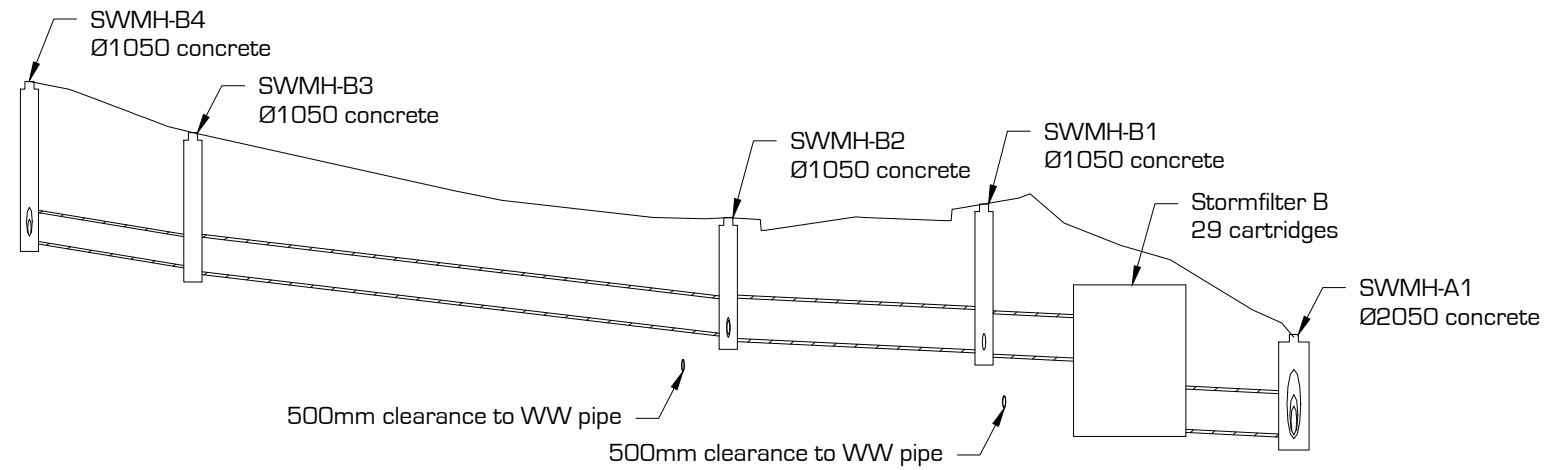
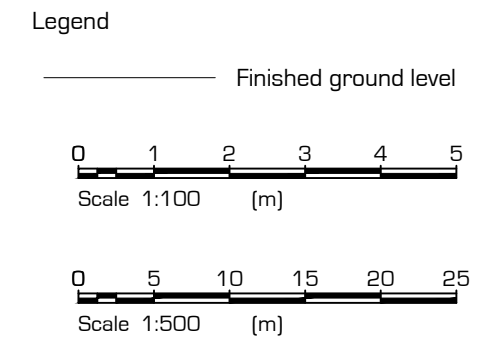
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line B
MHB7 TO MHB4



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 28 of 43
DRAWING No:	13641-01	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	6.90	6.54	6.49	5.65	5.60	5.44	5.39	5.33	4.40	4.40	4.40	4.32
Depth to Invert	2.10	1.78	1.83	1.54	1.59	1.93	1.98	1.69	2.62	2.20	2.20	1.29
Ground Level	8.99	8.32		7.19		7.37		7.02		6.60		5.65
Pipe Details	Ø375 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2			Ø525 RCRRJ CLASS 2		Ø525 RCRRJ CLASS 2		Ø525 RCRRJ CLASS 2		
Distance	L= 10.81		L= 35.41			L= 16.91		L= 6.62	L= 6.04	L= 7.84		
Grade	3.3%		2.4%			0.9%		1.0%	0.0%	1.0%		

SW Line B Long Section
MHB4 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

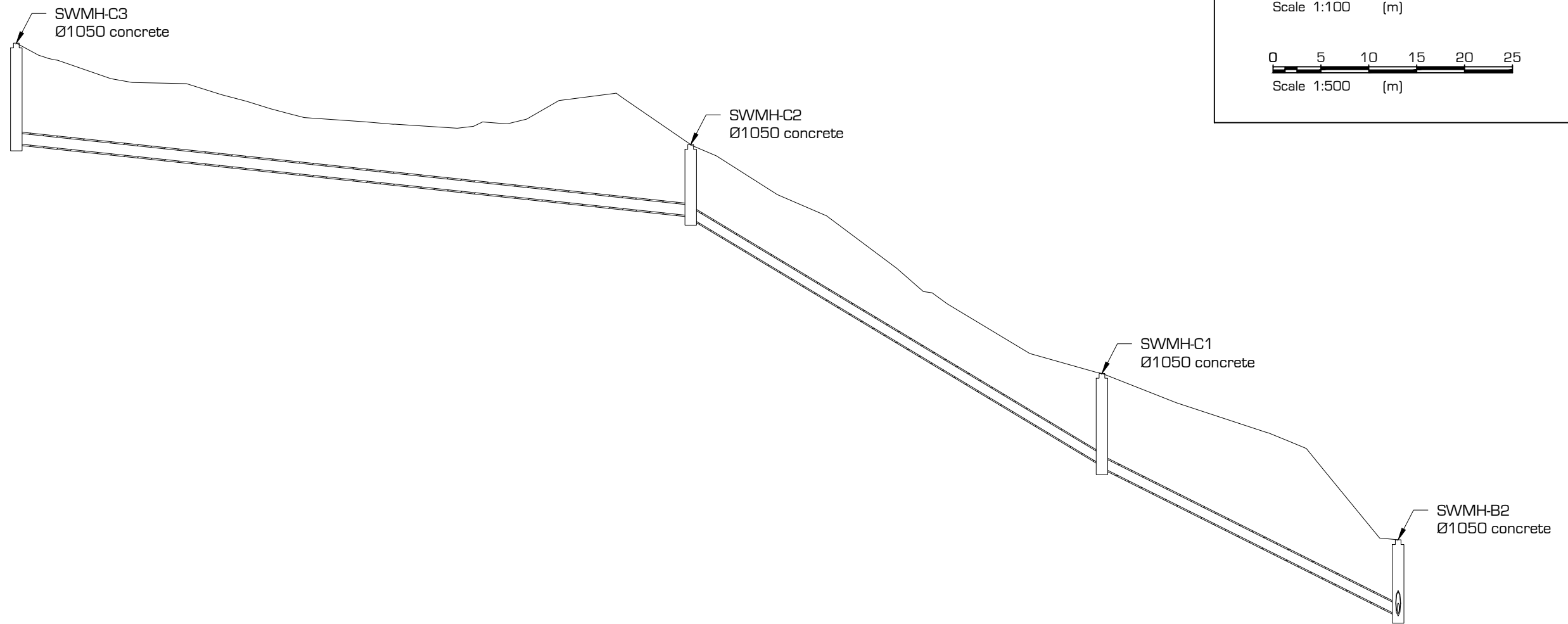
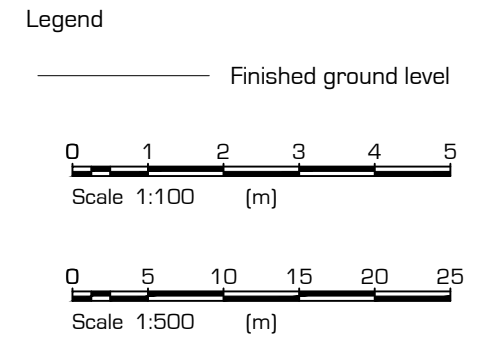
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line B
MHB4 to MHA1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 29 of 43
DRAWING No:	13641-201	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	17.56	15.46	13.96	13.91	8.75	8.70	5.61
Depth to Invert		2.10	1.49	1.53	1.91	1.96	1.58
Ground Level	17.56		15.44		10.66		7.19
Pipe Details		Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2	
Distance		L= 70.41		L= 42.94		L= 30.93	
Grade		2.1%		12.0%		10.0%	

SW Line C Long Section - MHC3 to MHB2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

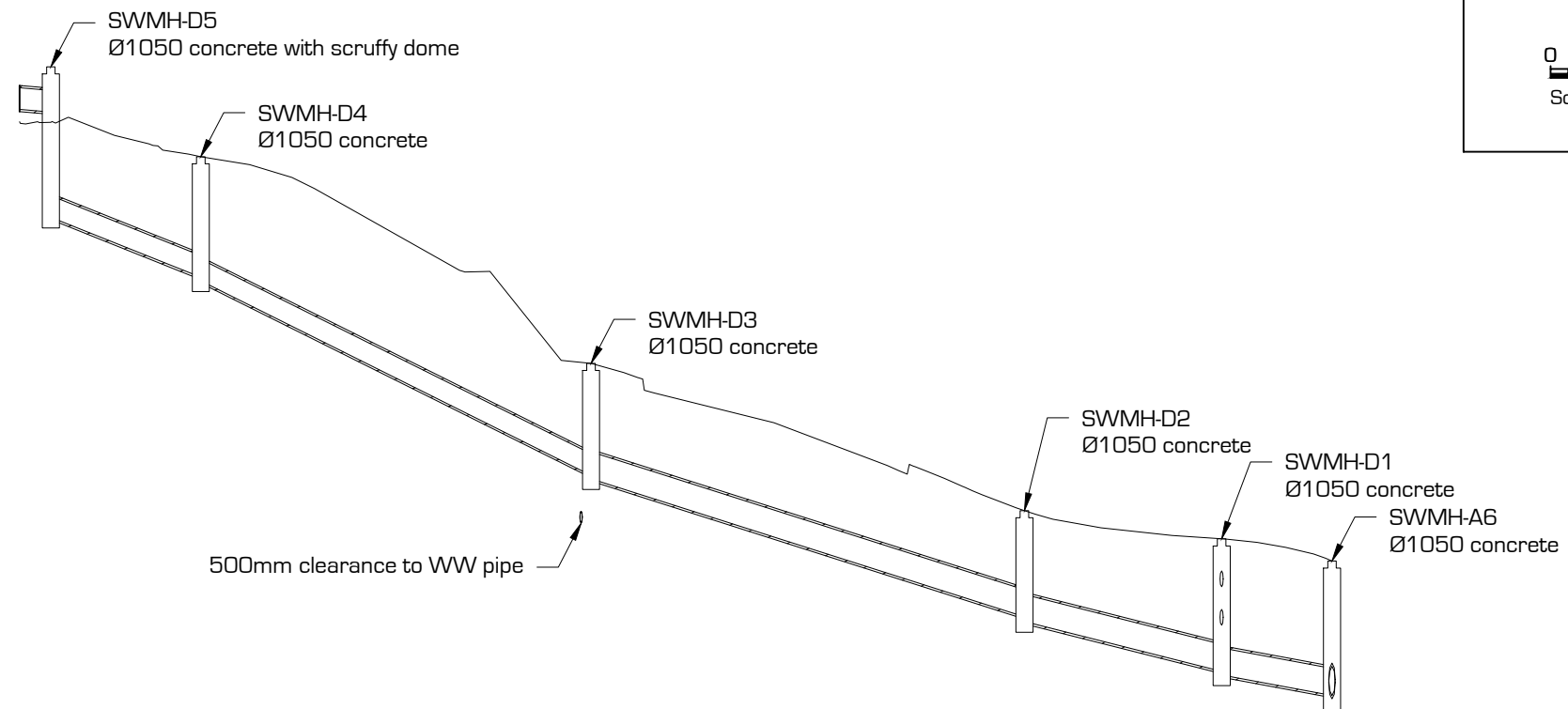
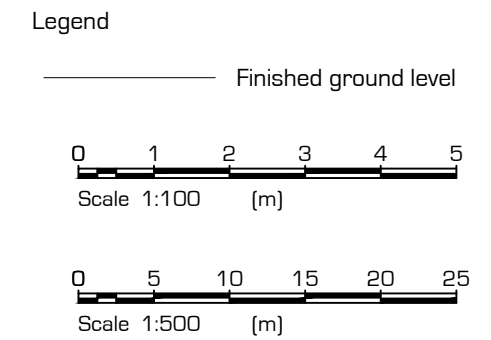
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line C



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 30 of 43
DRAWING No:	1326301	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 15.0m

Invert Levels	25.28	25.31	23.79	22.95	22.90	20.16	20.11	18.17	18.10	17.40	17.35	17.06
Depth to Invert			1.34	1.70	1.75	1.58	1.63	1.49	1.56	1.87		
Ground Level	25.91			24.65		21.74		19.66		19.27		18.95
Pipe Details	Ø300 RCRRJ CLASS 2		Ø300 RCRRJ CLASS 2			Ø375 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2		
Distance	L= 2.20	L= 10.56	L= 27.48			L= 30.52		L= 13.89		L= 7.77		
Grade	1.7%	8.0%	10.0%			6.4%		5.0%		3.7%		

SW Line D Long Section - MHD5 to MHA6

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

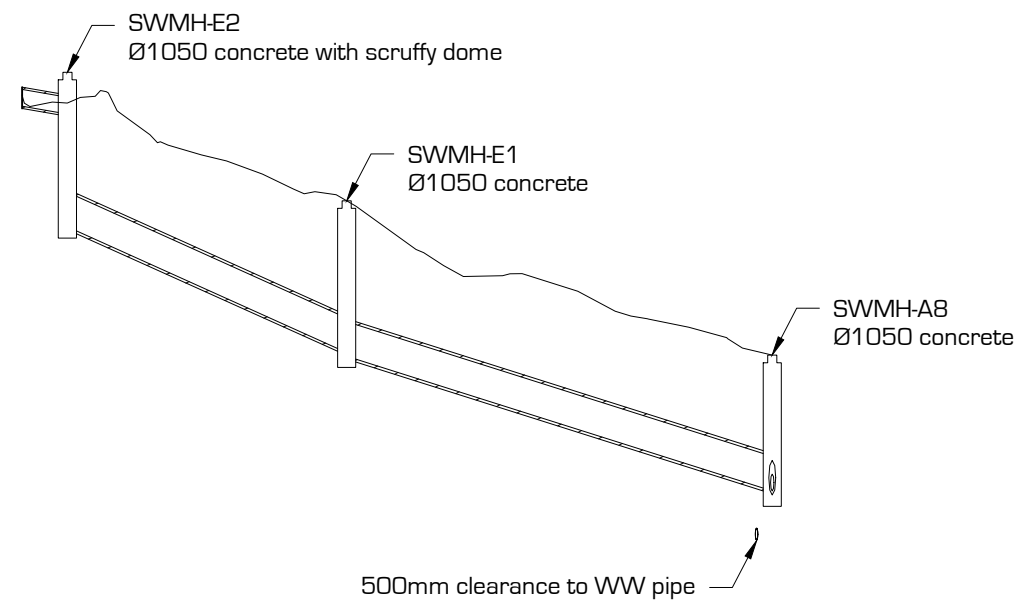
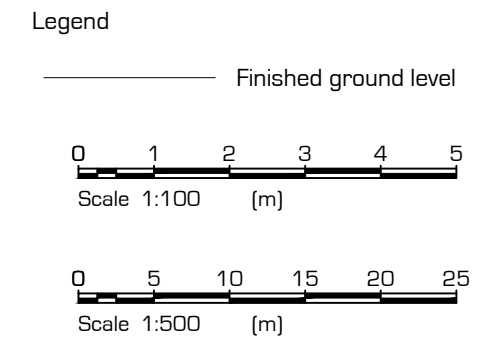
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line D



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 31 of 43
DRAWING No:	13641-01	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 15.0m

Invert Levels	26.16	26.06 24.56	22.90 22.85	21.07
Depth to Invert		1.64	2.01 2.05	1.80
Ground Level	26.61		24.91	22.87
Pipe Details		Ø450 RCRRJ CLASS 2	Ø450 RCRRJ CLASS 2	
Distance	L= 3.00	L= 18.47	L= 28.15	
Grade	3.4%	9.0%	6.3%	

SW Line E Long Section - MHE2 to MHA8

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

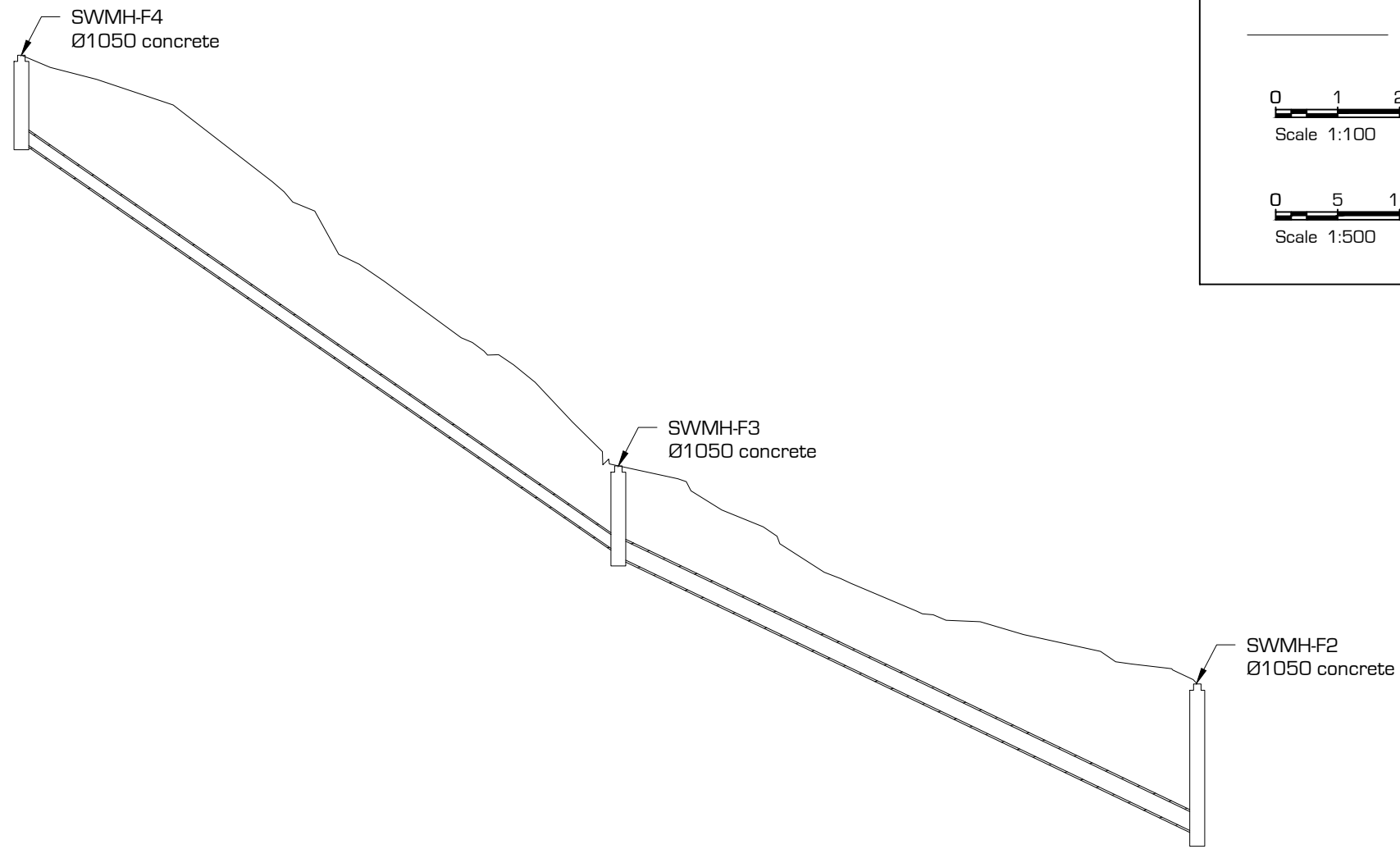
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line E



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 32 of 43
DRAWING No:	13641-501	REV: 0



Legend

————— Finished ground level

0 1 2 3 4 5
Scale 1:100 (m)

0 5 10 15 20 25
Scale 1:500 (m)

Vertical 1:100
Horizontal 1:500

Datum 7.0m

Invert Levels	22.69	21.32	14.66	14.61	10.14
Depth to Invert		1.37	1.41	1.46	2.42
Ground Level	22.69		16.07		12.55
Pipe Details		Ø225 RCRRJ CLASS 2		Ø300 RCRRJ CLASS 2	
Distance		L= 48.15		L= 46.69	
Grade		13.8%		9.6%	

SW Line F Long Section - MHF4 to MHF2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line F
MHF4 to MHF2



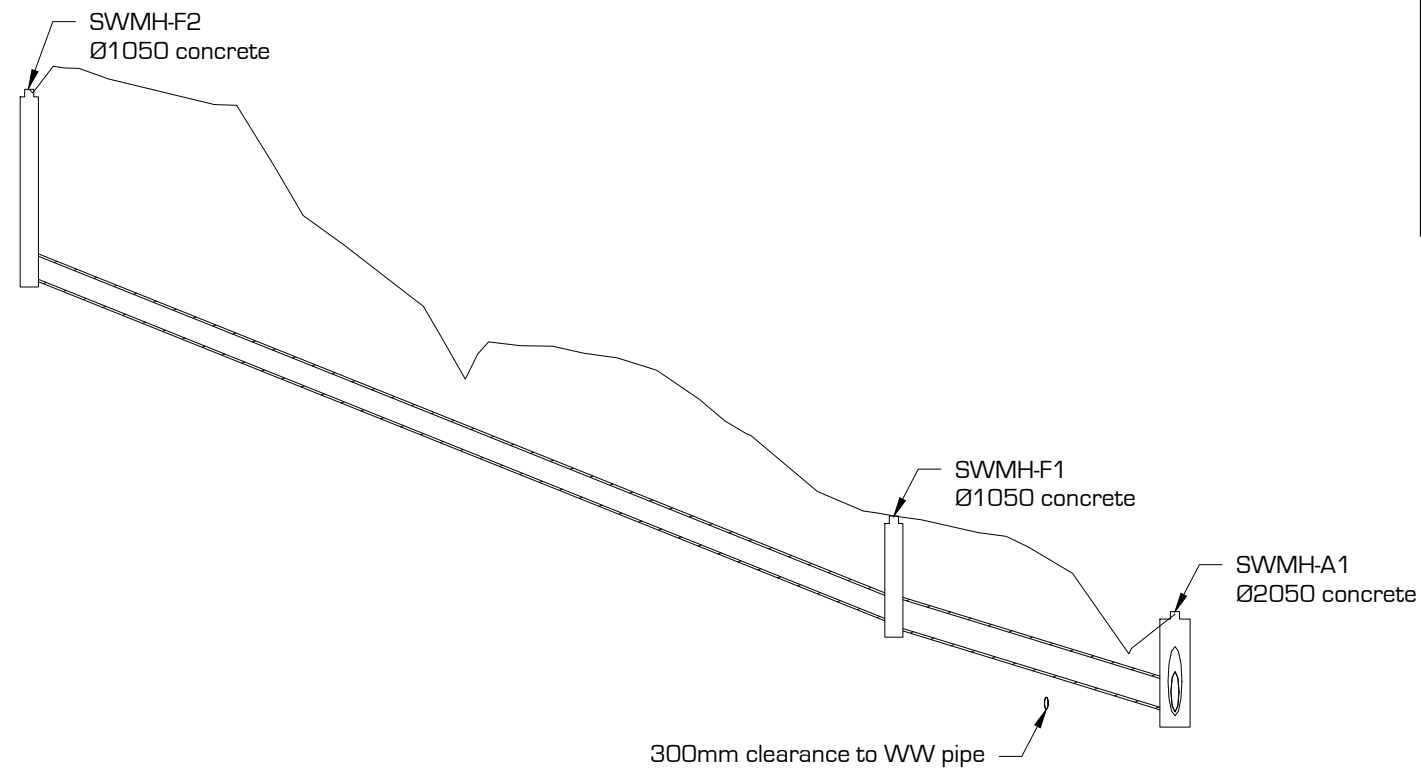
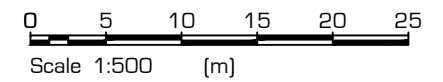
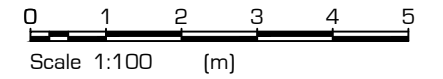
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 33 of 43
DRAWING No: 1326601	REV: 0

0 Issued for consent No. REVISION BY DATE

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	10.09	5.51	4.32
Depth to Invert	2.42	1.45	1.29
Ground Level	12.55	6.91	5.65
Pipe Details	Ø300 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2
Distance	L= 57.19		L= 18.59
Grade	8.0%		6.1%

SW Line F Long Section - MHF2 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

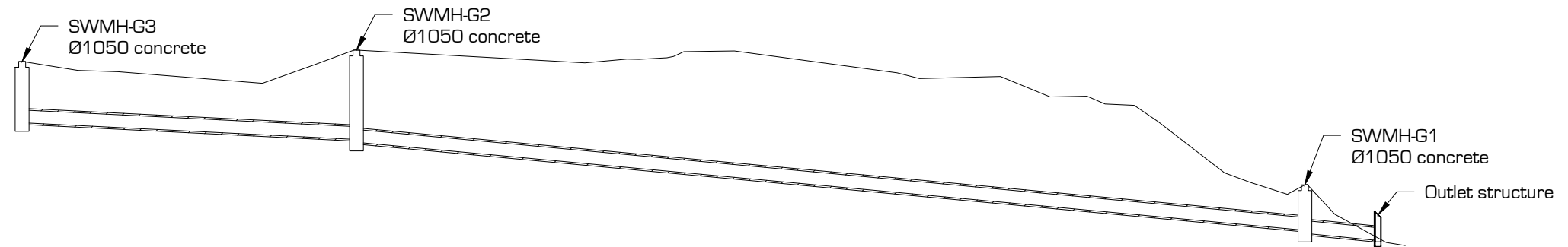
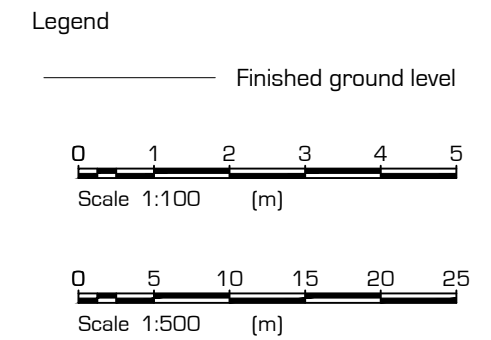
DRAWING TITLE
Stormwater Long Section - Line F
MHF2 to MHA1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 34 of 43
DRAWING No:	13641-01	REV: 0

0 Issued for consent
No. REVISION BY DATE



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	5.00	4.71	4.66	3.13	3.08	2.96
Depth to Invert	1.07	1.55	1.60	0.79	0.84	0.07
Ground Level	6.07	6.26		3.92	3.66	
Pipe Details	Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2			Ø225 RCRRJ CLASS 2
Distance	L= 29.05		L= 82.38			L= 6.06
Grade	1.0%		1.9%			2.0%

SW Line G Long Section - MHG3 to Outlet

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line G



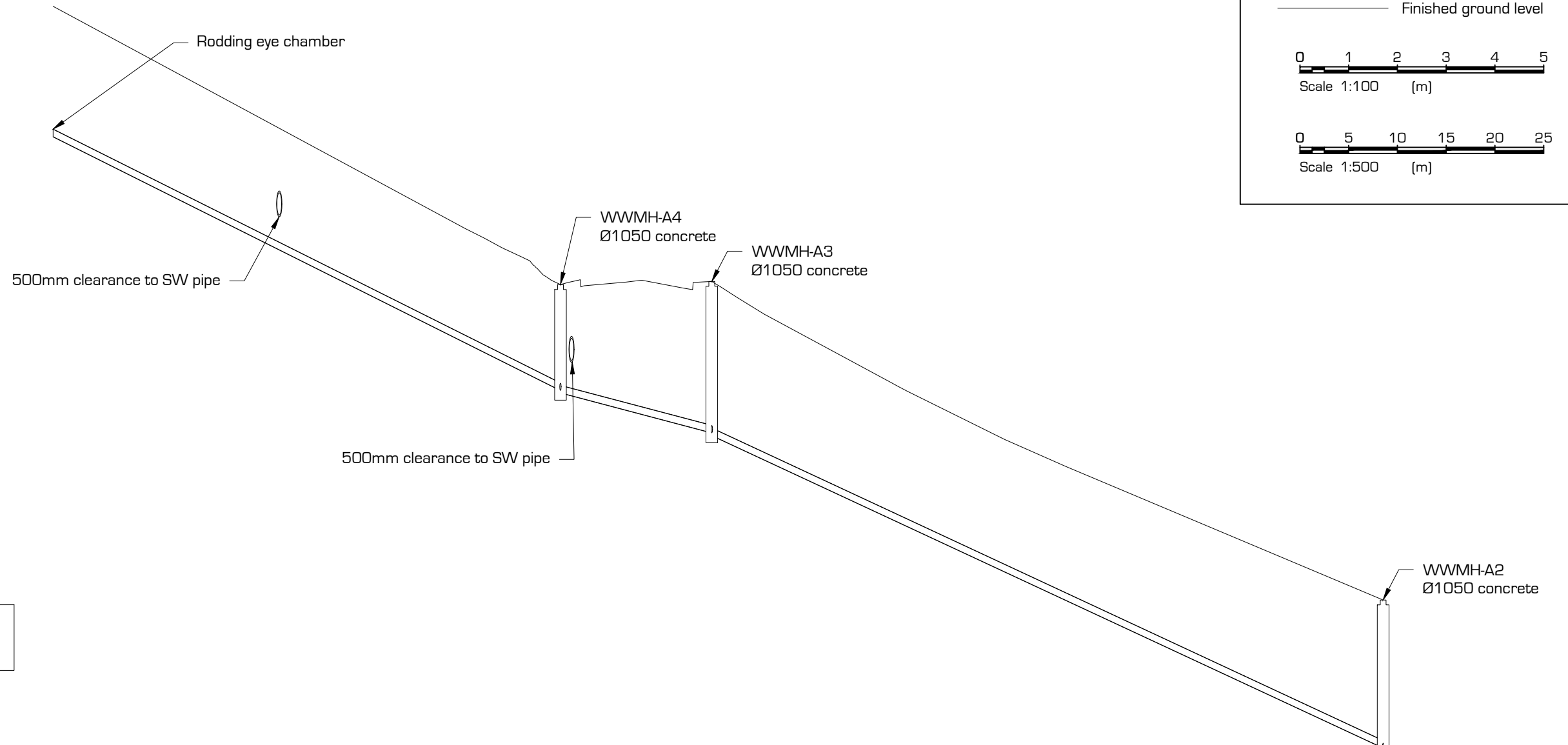
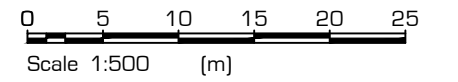
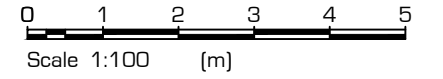
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 35 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	22.74	17.54 17.49	16.67 16.62	10.21
Depth to Invert	2.67	2.17 2.22	3.10 3.16	3.03
Ground Level		19.71	19.77	13.24
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	Ø150 UPVC PN 6
Distance	L= 52.03		L= 15.52	L= 68.85
Grade	10.0%		5.3%	9.3%

WW Line A Long Section - MHA4 to MHA2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line A
MHA4 to MHA2



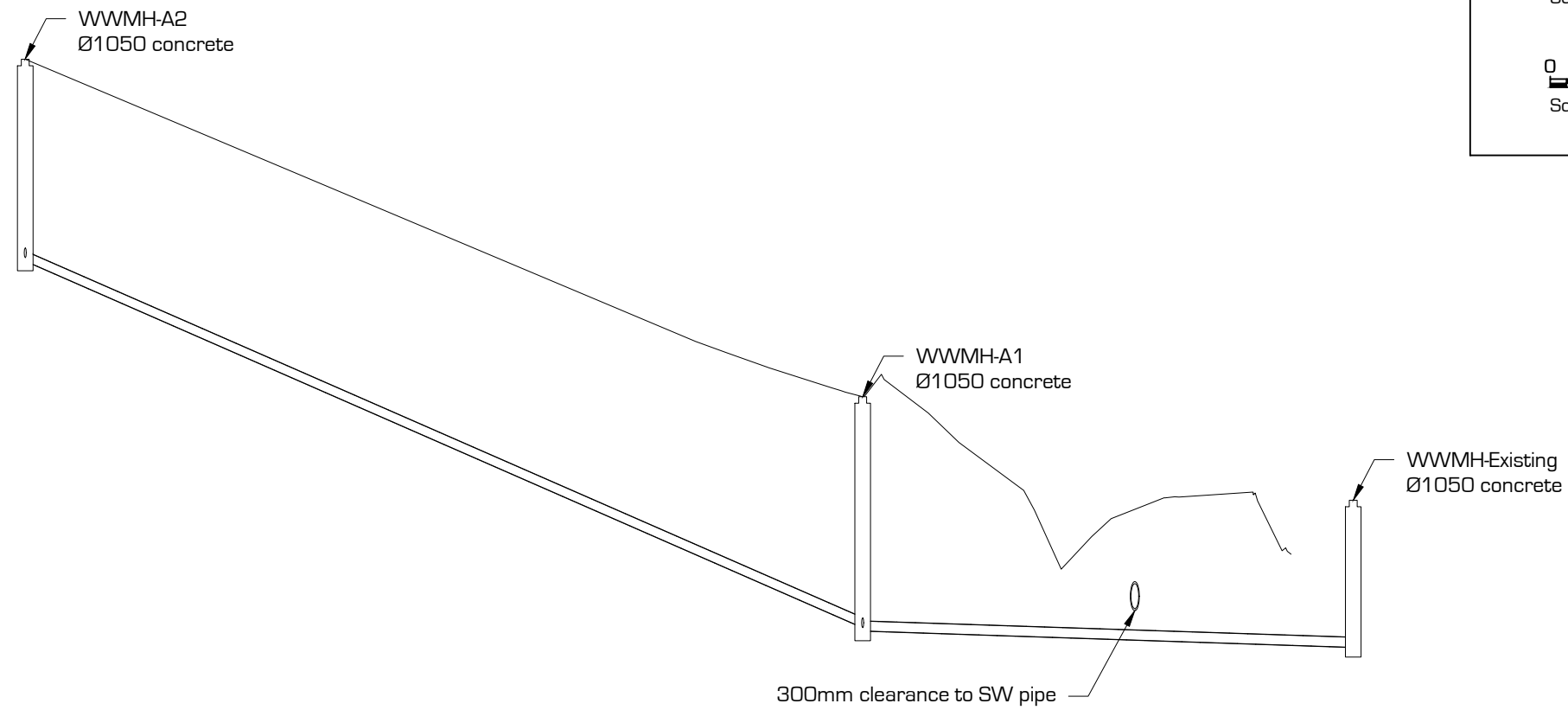
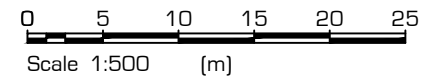
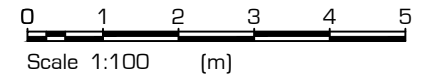
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 36 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	10.16	4.55	4.50	4.25
Depth to Invert	3.08	3.53	3.58	0.08
Ground Level	13.24	8.08		6.50
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	
Distance	L= 64.08		L= 37.54	
Grade	8.8%		0.7%	

WW Line A Long Section - MHA3 to MH Existing

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

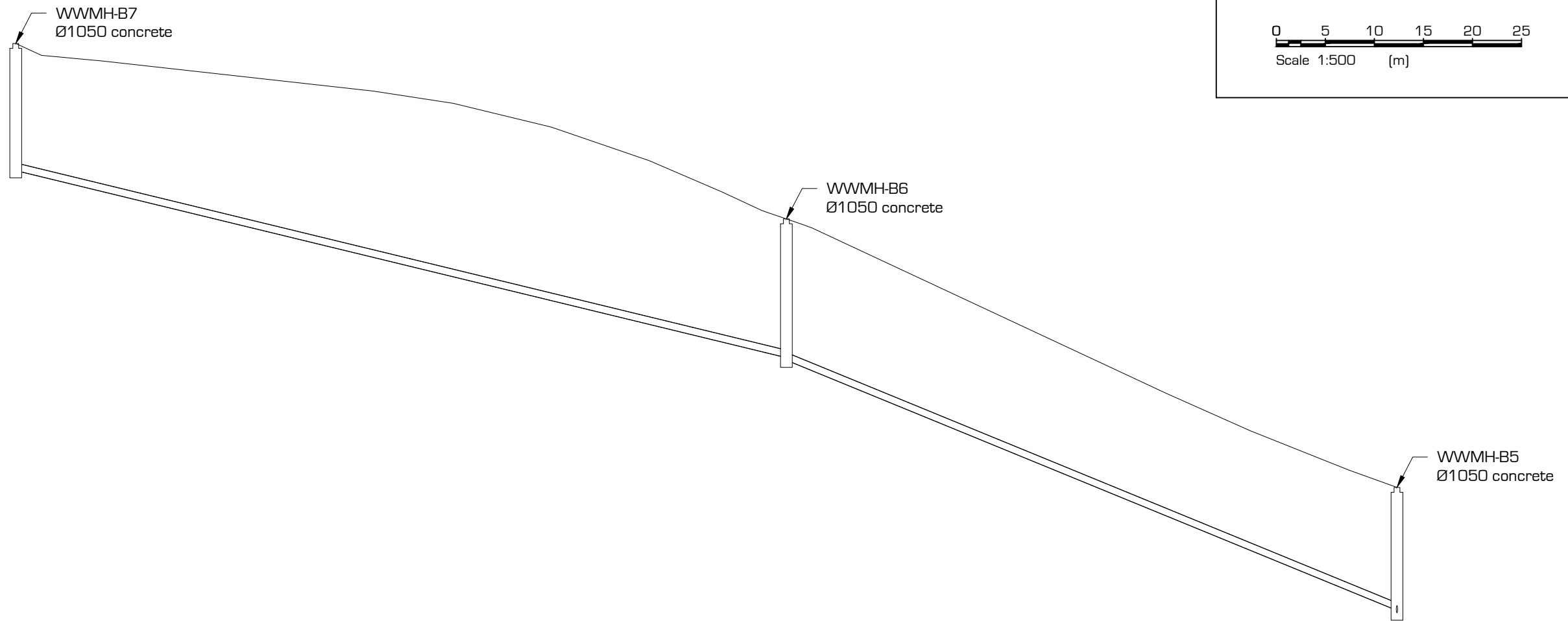
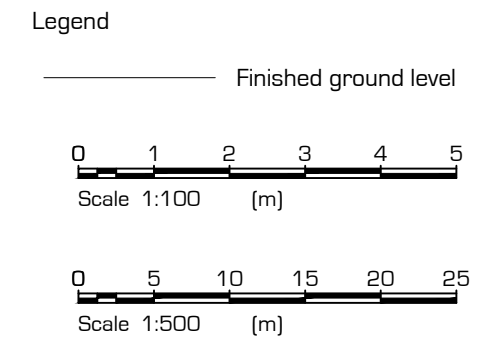
DRAWING TITLE
Wastewater Long Section - Line A
MHA3 to MH Existing



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 37 of 43
DRAWING No: 1324101	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	19.91	16.10	10.94
Depth to Invert	2.59	2.83	2.51
Ground Level	22.51	18.93	13.45
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6
Distance	L= 78.58		L= 62.26
Grade	4.9%		8.2%

WW Line B Long Section - MHB7 to MHB5

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB7 to MHB5

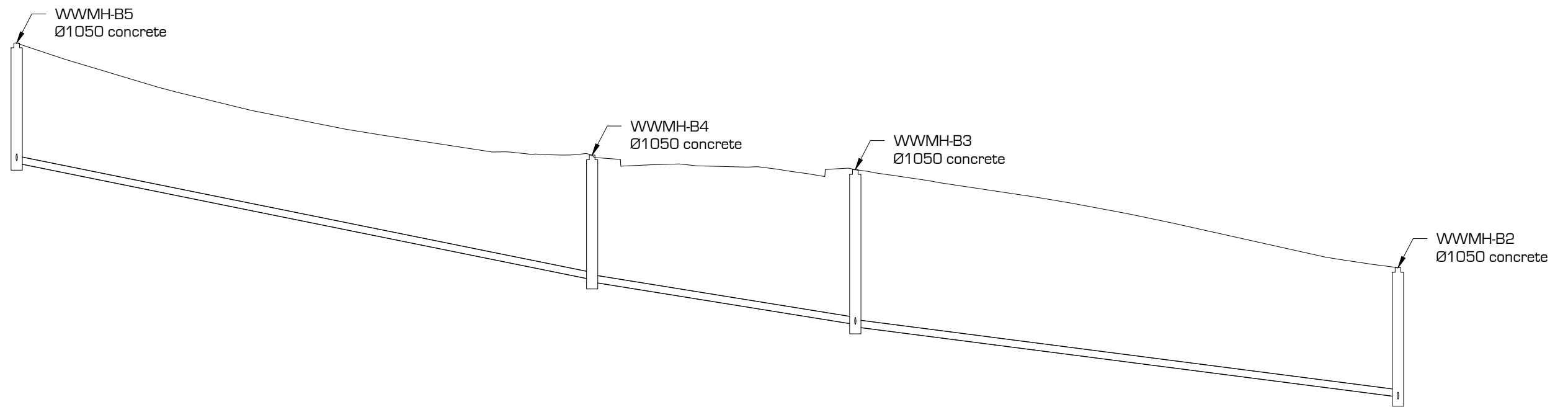
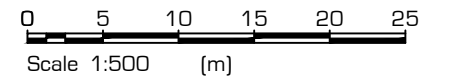
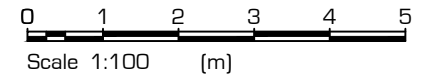


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 38 of 43
DRAWING No:	13271-01	REV: 0

Legend

————— Finished ground level



Invert Levels	10.89	8.41 8.36	7.45 7.40	5.91
Depth to Invert	2.56	2.65 2.70	3.30 3.35	2.75
Ground Level	13.45	11.06	10.75	8.66
Pipe Details	Ø150 UPVC PN 6			
Distance	L= 61.37		L= 28.06	L= 57.88
Grade	4.0%		3.2%	2.6%

WW Line B Long Section - MHB5 to MHB2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB5 to MHB2



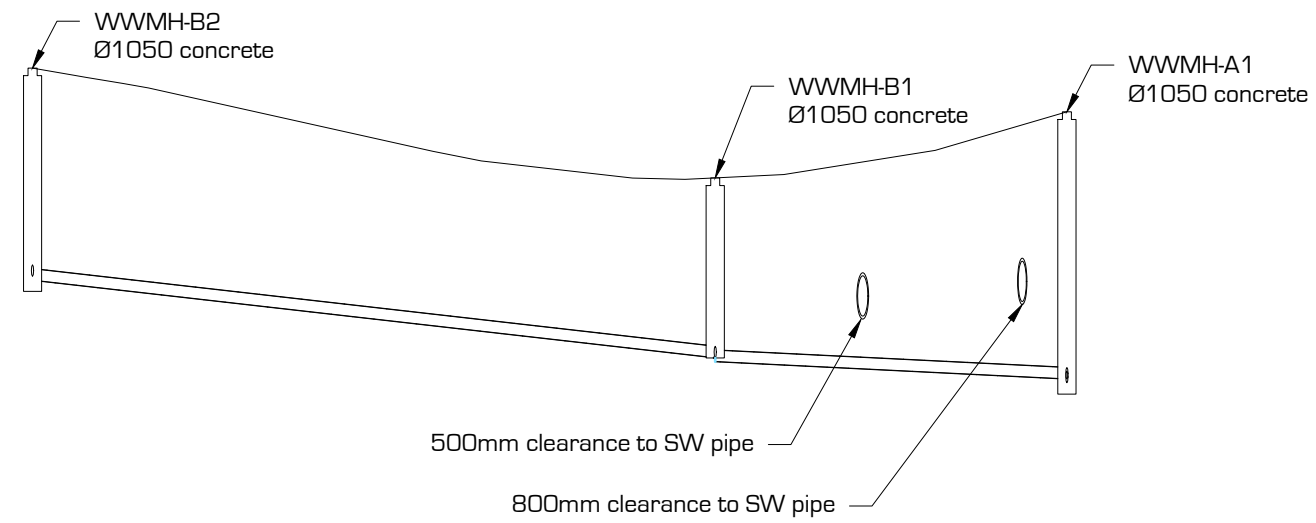
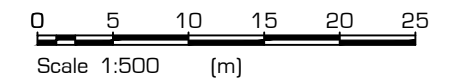
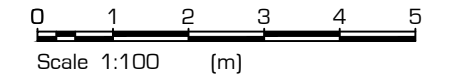
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 39 of 43
DRAWING No:	13272	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	5.86	4.83 4.78	4.55
Depth to Invert	2.80	2.38 2.43	3.53
Ground Level	8.66	7.21	8.08
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6
Distance	L= 45.16		L= 23.26
Grade	2.3%		1.0%

WW Line B Long Section - MHB2 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

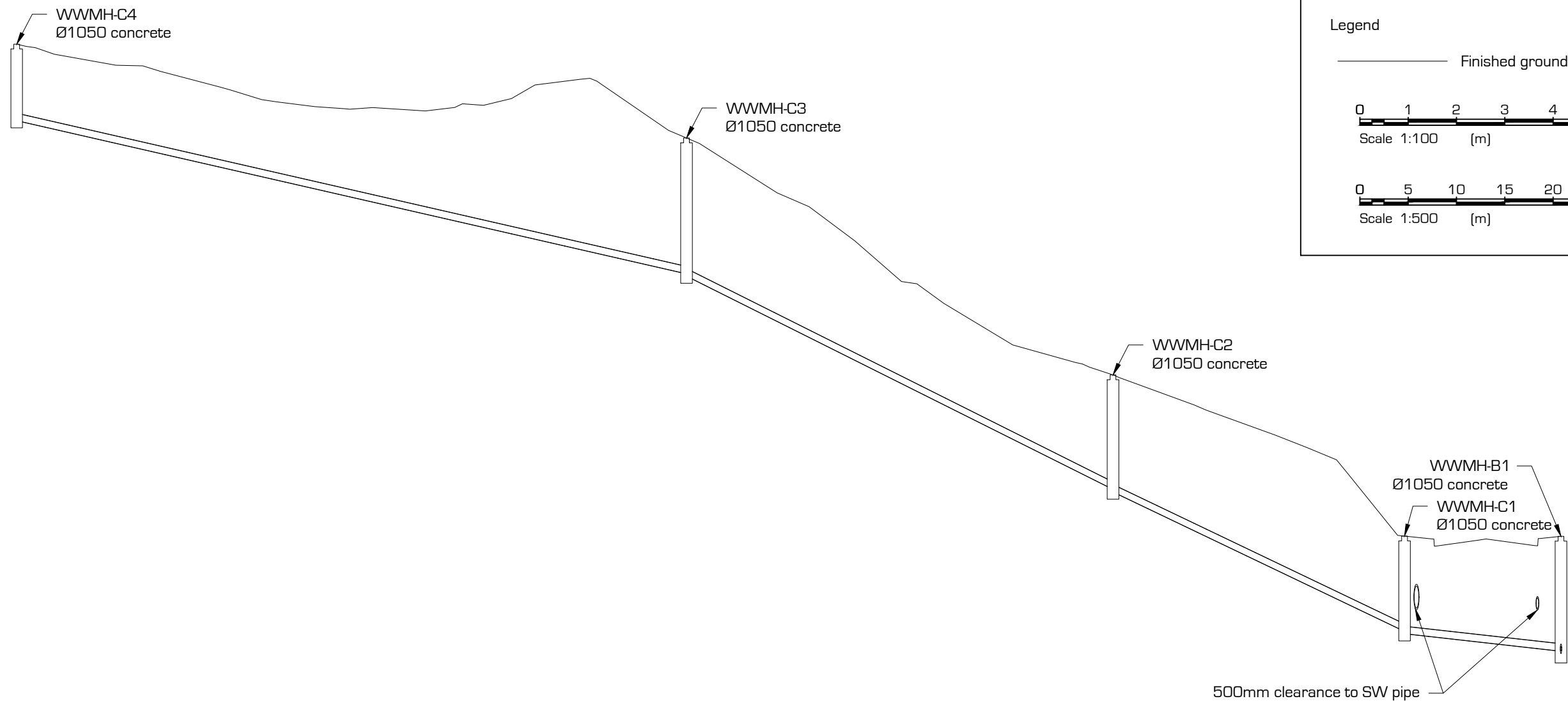
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB2 to MHA1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 40 of 43
DRAWING No:	1327301	REV: 0



Legend

————— Finished ground level

0 1 2 3 4 5
Scale 1:100 (m)

0 5 10 15 20 25
Scale 1:500 (m)

Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	17.39	15.81	12.64	8.18	5.24	4.83
Depth to Invert	1.58	2.81	2.37	1.97	2.02	2.38
Ground Level	17.39	15.45	10.55	7.21	7.21	7.21
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6		Ø150 UPVC PN 6	
Distance	L = 69.31		L = 44.14		L = 30.17	
Grade	4.6%		10.0%		2.2%	

WWM Line C Long Section - MHC4 to MHB1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line C

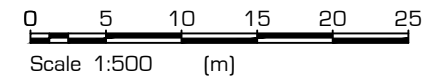
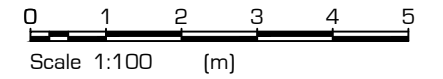


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

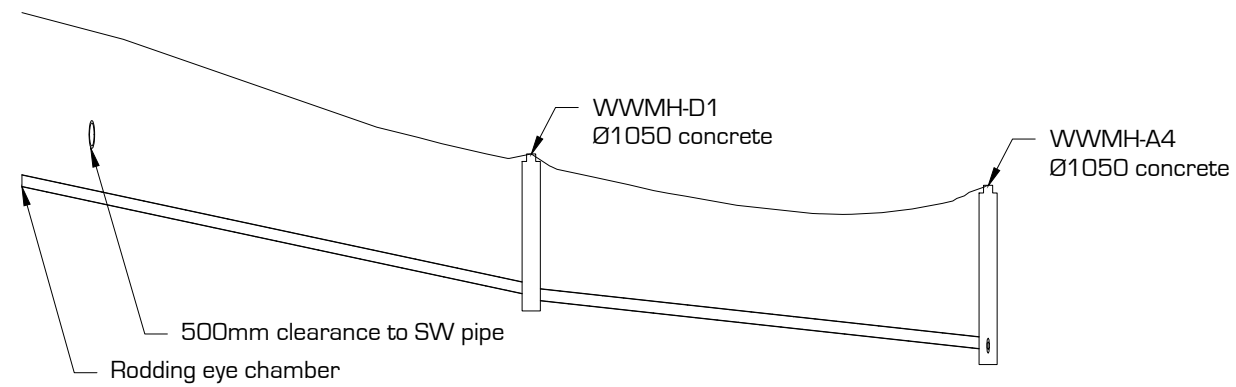
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 41 of 43
DRAWING No:	1327401	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500



Datum 15.0m

Invert Levels	19.69	18.25 18.20	17.54
Depth to Invert	2.30	1.87 1.93	2.17
Ground Level		20.13	19.71
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6
Distance	L= 33.69		L= 30.22
Grade	4.3%		2.2%

WW Line D Long Section - MHD1 to MHA4

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line D



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 42 of 43
DRAWING No: 1327501	REV: 0

0 Issued for consent

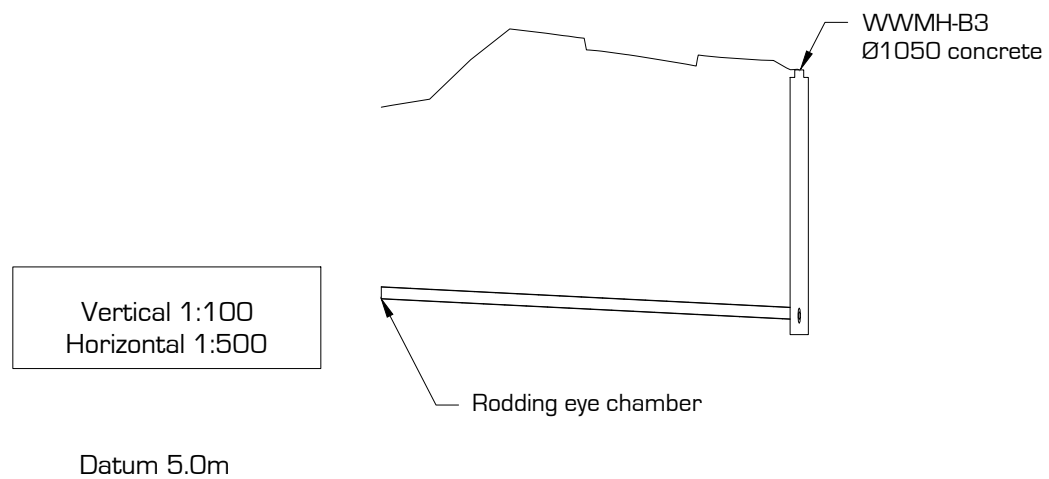
REVISION
BY: JS DATE: 20.03.18

Legend

————— Finished ground level

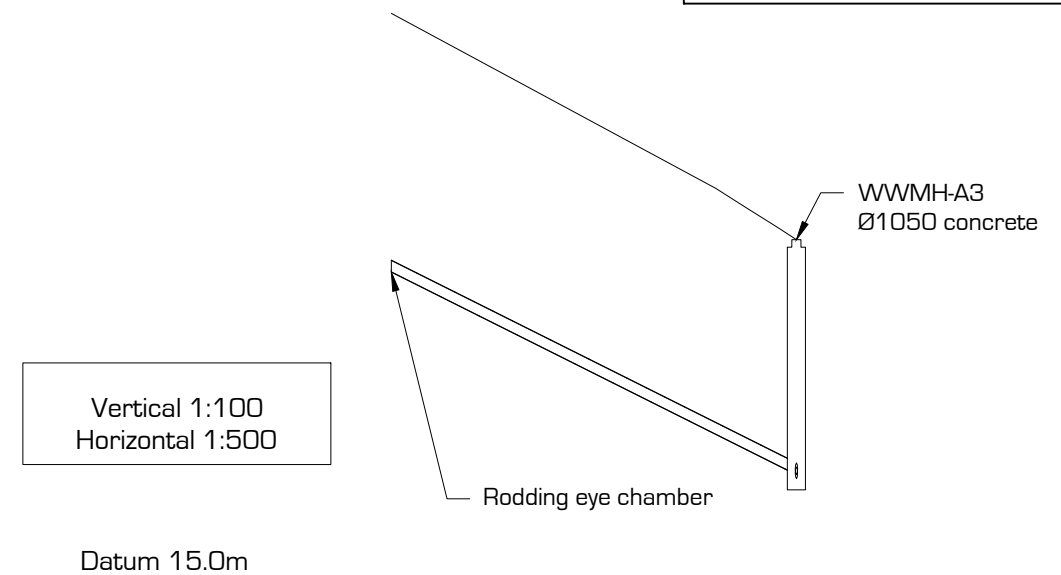
0 1 2 3 4 5
Scale 1:100 (m)

0 5 10 15 20 25
Scale 1:500 (m)



Invert Levels	7.73	7.45
Depth to Invert	2.53	3.30
Ground Level		10.75
Pipe Details	Ø150 UPVC PN 6	
Distance	L = 27.64	
Grade	1.0%	

WW Line B3 Extension Long Section



Invert Levels	19.35	16.67
Depth to Invert	3.42	3.10
Ground Level		19.77
Pipe Details	Ø150 UPVC PN 6	
Distance	L = 26.79	
Grade	10.0%	

WW Line A3 Extension Long Section

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section
Line B3 and Line A3



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 43 of 43
DRAWING No:	13241601	REV: 0



Prime Property Group Ltd.

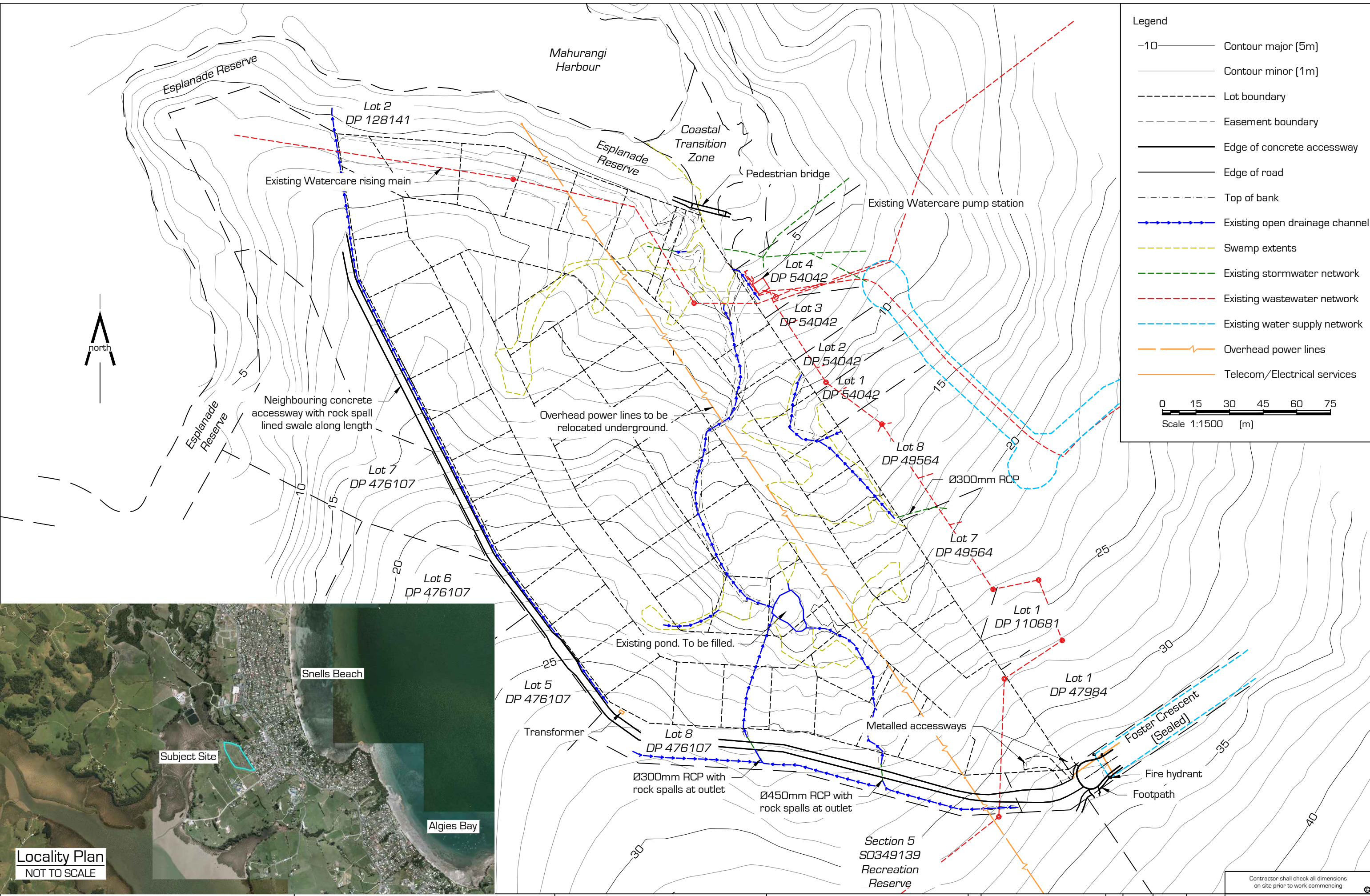
Construction Drawings and Specification for

52 Lot Residential Subdivision

Lot 1 DP149776, Foster Crescent, Snells Beach

CONTENTS				
SHEET	DESCRIPTION	ISSUE DATE	STATUS	REVISION
1	Existing Topographical Survey and Locality Plan	20/03/2018	Resource Consent	0
2	Design Site Plan	20/03/2018	Resource Consent	0
3	Services Network Layout	20/03/2018	Resource Consent	0
4	Stormwater Design Site Plan	20/03/2018	Resource Consent	0
5	Wastewater Design Site Plan	20/03/2018	Resource Consent	0
6	Water Supply Design Site Plan	20/03/2018	Resource Consent	0
7	Design Site Plan Sheet 1	20/03/2018	Resource Consent	0
8	Design Site Plan Sheet 2	20/03/2018	Resource Consent	0
9	Design Site Plan Sheet 3	20/03/2018	Resource Consent	0
10	Design Site Plan Sheet 4	20/03/2018	Resource Consent	0
11	Design Site Plan Sheet 5	20/03/2018	Resource Consent	0
12	Design Site Plan Sheet 6	20/03/2018	Resource Consent	0
13	Road A Longitudinal Section CH0 to CH160	20/03/2018	Resource Consent	0
14	Road A Longitudinal Section CH160 to CH320	20/03/2018	Resource Consent	0
15	Road A Longitudinal Section CH320 to CH415	20/03/2018	Resource Consent	0
16	Road B Longitudinal Section CH0 to CH160	20/03/2018	Resource Consent	0
17	Road B Longitudinal Section CH160 to CH300	20/03/2018	Resource Consent	0
18	Construction Details	20/03/2018	Resource Consent	0
19	Earthworks Cut/Fill Isopach	20/03/2018	Resource Consent	0
20	Sediment Control Plan	20/03/2018	Resource Consent	0
21	Construction Details	20/03/2018	Resource Consent	0
22	Construction Details	20/03/2018	Resource Consent	0

CONTENTS				
SHEET	DESCRIPTION	ISSUE DATE	STATUS	REVISION
23	Catchment Plan	20/03/2018	Resource Consent	0
24	Stormwater Long Section Line A MHA9 to MHA5	20/03/2018	Resource Consent	0
25	Stormwater Long Section Line A MHA5 to MHA3	20/03/2018	Resource Consent	0
26	Stormwater Long Section Line A MHA3 to Outlet	20/03/2018	Resource Consent	0
27	Stormwater Long Section Line B MHB10 to MHB7	20/03/2018	Resource Consent	0
28	Stormwater Long Section Line B MHB7 to MHB4	20/03/2018	Resource Consent	0
29	Stormwater Long Section Line B MHB4 to MHA1	20/03/2018	Resource Consent	0
30	Stormwater Longitudinal Section Line C	20/03/2018	Resource Consent	0
31	Stormwater Longitudinal Section Line D	20/03/2018	Resource Consent	0
32	Stormwater Longitudinal Section Line E	20/03/2018	Resource Consent	0
33	Stormwater Long Section Line F MHF4 to MHF2	20/03/2018	Resource Consent	0
34	Stormwater Long Section Line F MHF2 to MHA1	20/03/2018	Resource Consent	0
35	Stormwater Longitudinal Section Line G	20/03/2018	Resource Consent	0
36	Wastewater Long Section Line A MHA4 to MHA2	20/03/2018	Resource Consent	0
37	Wastewater Long Section Line A MHA2 to MH Existing	20/03/2018	Resource Consent	0
38	Wastewater Long Section Line B MHB7 to MHB5	20/03/2018	Resource Consent	0
39	Wastewater Long Section Line B MHB5 to MHB2	20/03/2018	Resource Consent	0
40	Wastewater Long Section Line B MHB2 to MHA1	20/03/2018	Resource Consent	0
41	Wastewater Longitudinal Section Line C	20/03/2018	Resource Consent	0
42	Wastewater Longitudinal Section Line D	20/03/2018	Resource Consent	0
43	Wastewater Longitudinal Section Line B3 and A3	20/03/2018	Resource Consent	0



Legend

- 10- Contour major (5m)
- Contour minor (1m)
- - - Lot boundary
- - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - Top of bank
- Existing open drainage channel
- Swamp extents
- Existing stormwater network
- Existing wastewater network
- Existing water supply network
- Overhead power lines
- Telecom/Electrical services

0 15 30 45 60 75
Scale 1:1500 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

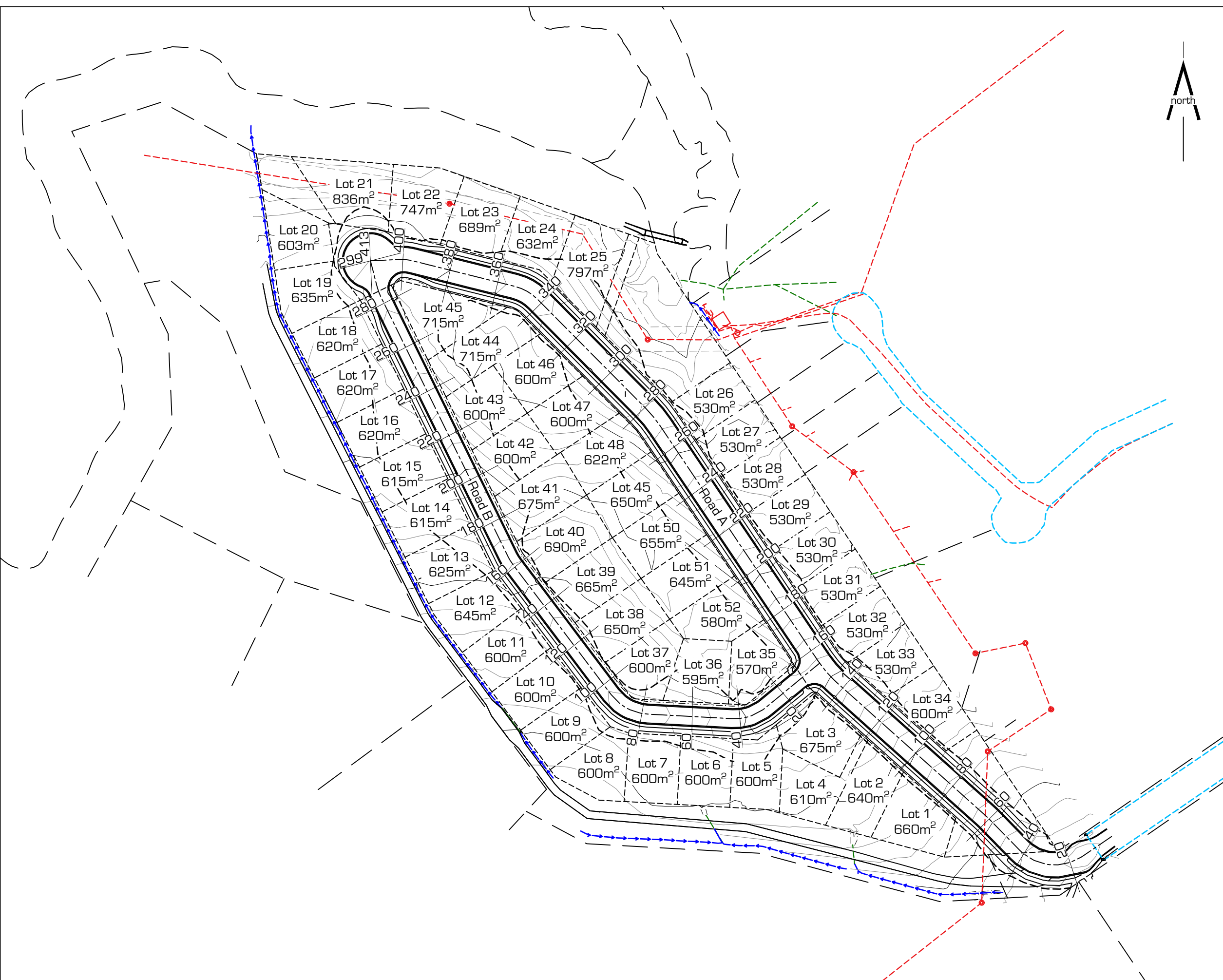
DRAWING TITLE
Existing Topographical Survey
and Locality Plan



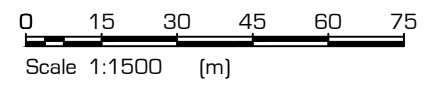
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 1 of 43
DRAWING No: 1327801	REV: 0

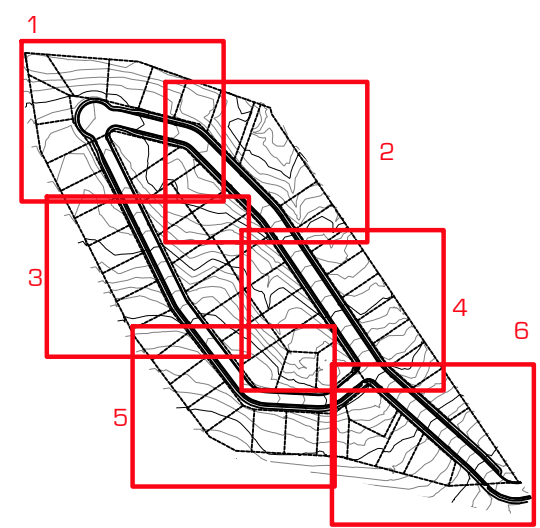
Contractor shall check all dimensions on site prior to work commencing



- Legend**
- 10 ——— Contour major (5m)
 - Contour minor (1m)
 - - - - - Lot boundary
 - - - - - Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - Open drainage channel
 - - - - - Existing stormwater network
 - - - - - Existing wastewater network
 - - - - - Existing water supply network
 - - - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

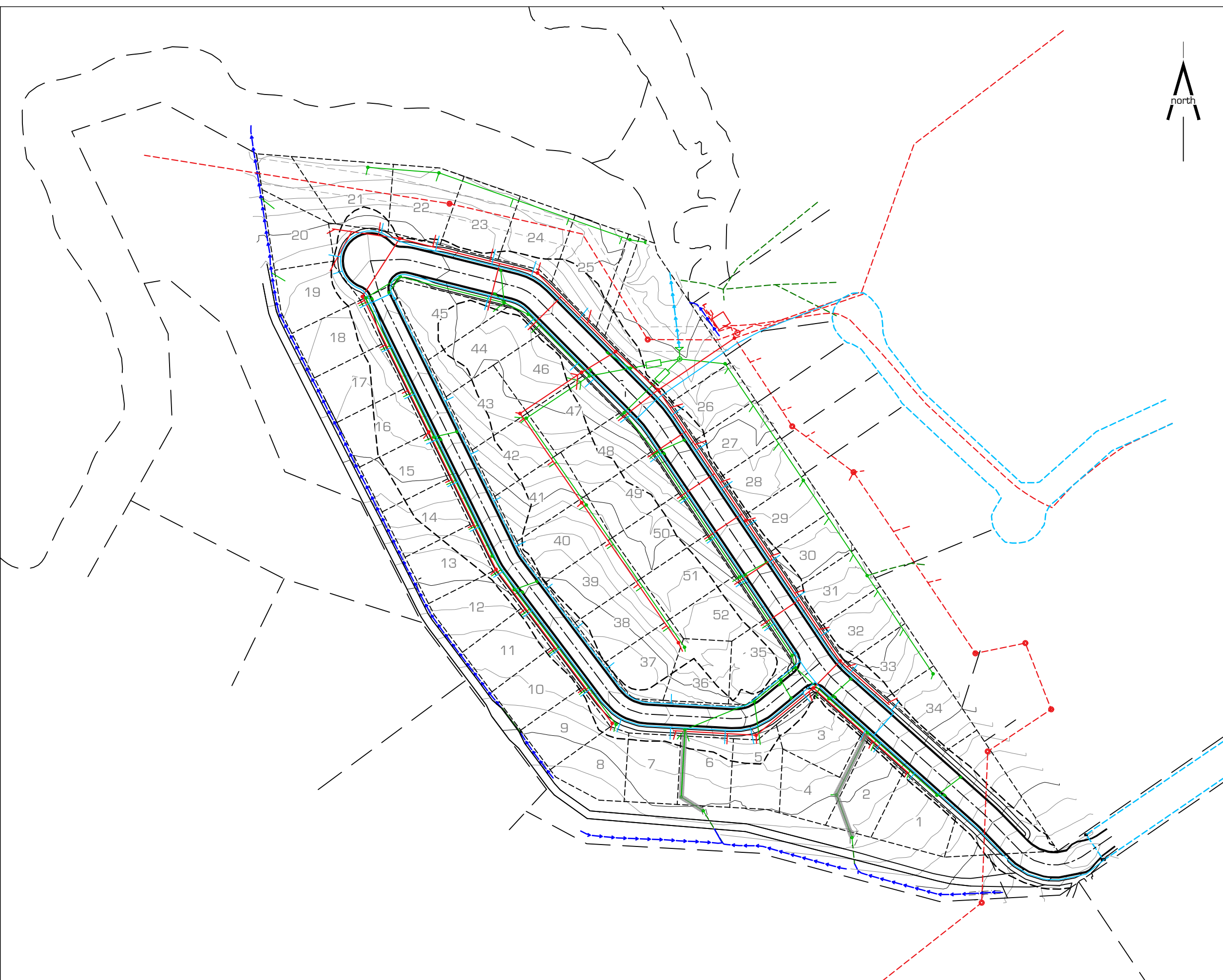
DRAWING TITLE
Design Site Plan



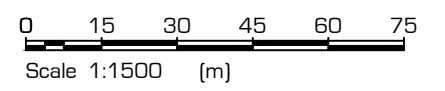
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 2 of 43
DRAWING No:	1327901	REV: 0

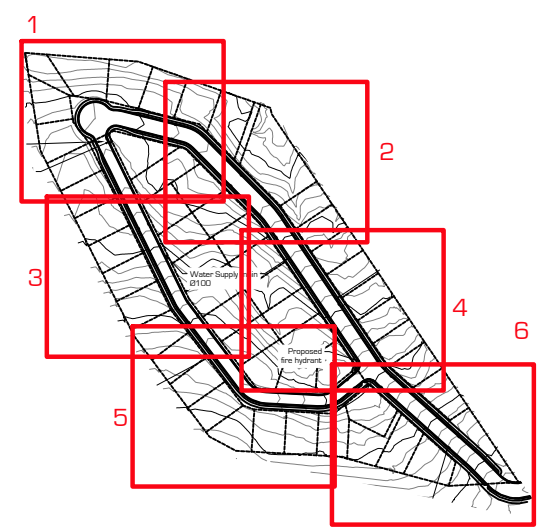
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



- Legend**
- 10- Contour major (5m)
 - Contour minor (1m)
 - - - Lot boundary
 - - - Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - > Open drainage channel
 - - - Existing stormwater network
 - - - Proposed stormwater network
 - - - Existing wastewater network
 - - - Proposed wastewater network
 - - - Existing water supply network
 - - - Proposed water supply network
 - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

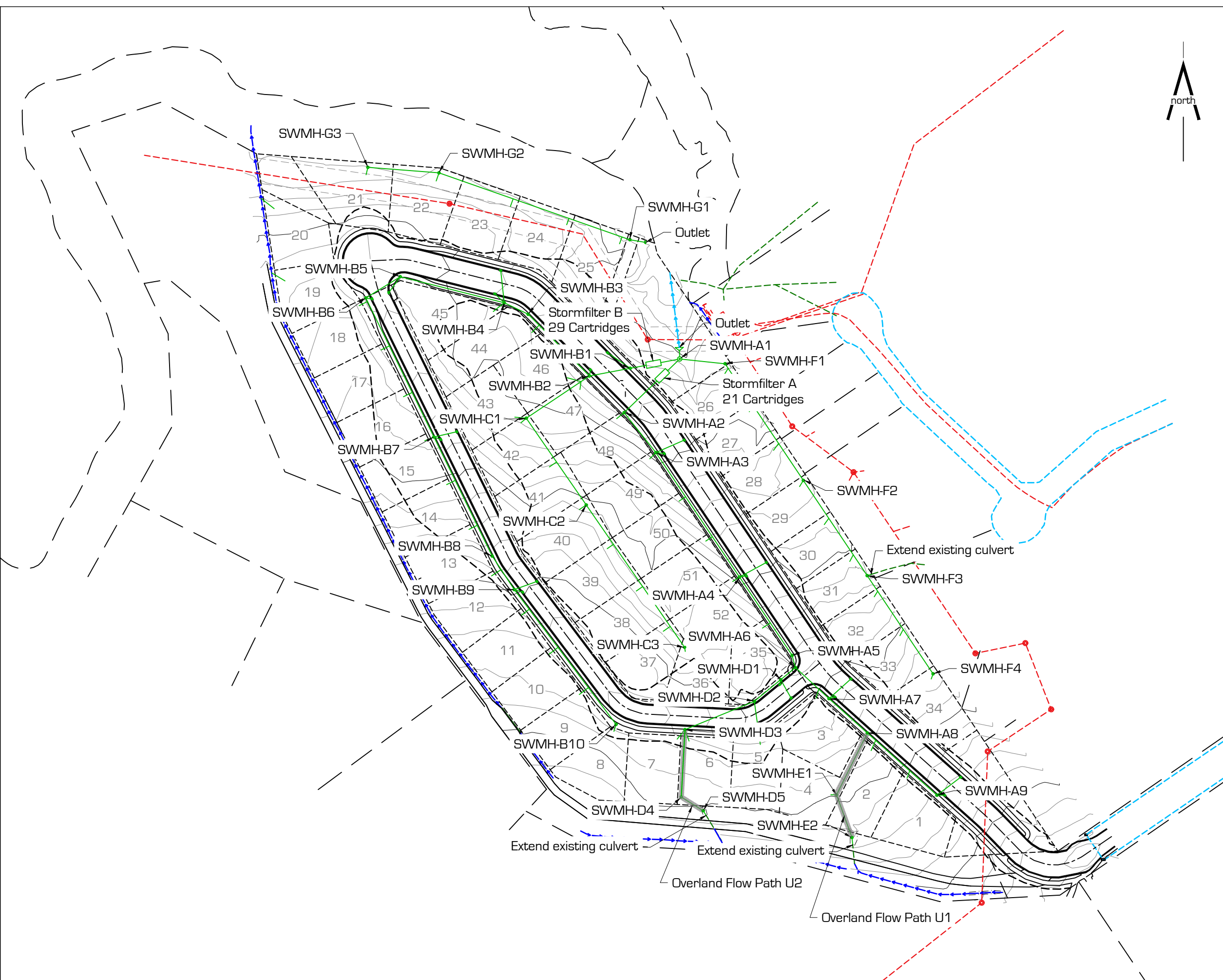
DRAWING TITLE
Services Network Layout



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 3 of 43
DRAWING No:	1328001	REV: 0

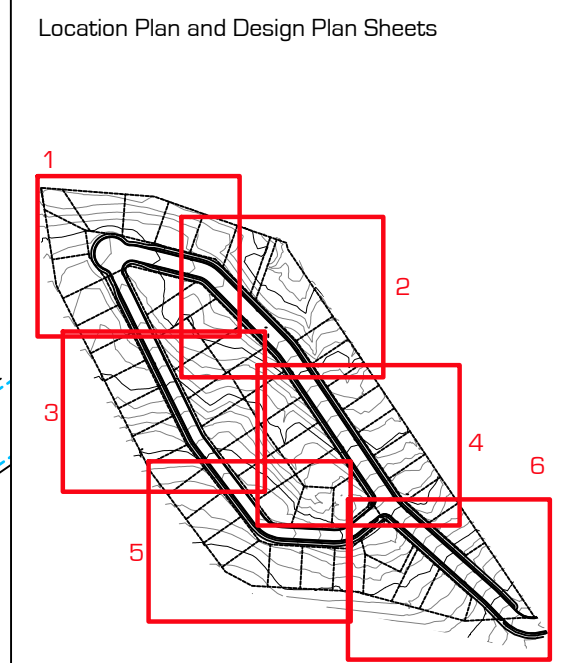
No.	REVISION	BY	DATE
0	Issued for consent	JS	20.03.18



Legend

- 10- Contour major (5m)
- Contour minor (1m)
- - - Lot boundary
- - - Easement boundary
- Edge of concrete accessway
- Edge of road
- Open drainage channel
- - - Existing stormwater network
- Proposed stormwater network
- █ Proposed overland flow path
- - - Existing wastewater network
- - - Existing water supply network
- - - Proposed earthwork extents

0 15 30 45 60 75
Scale 1:1500 (m)



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

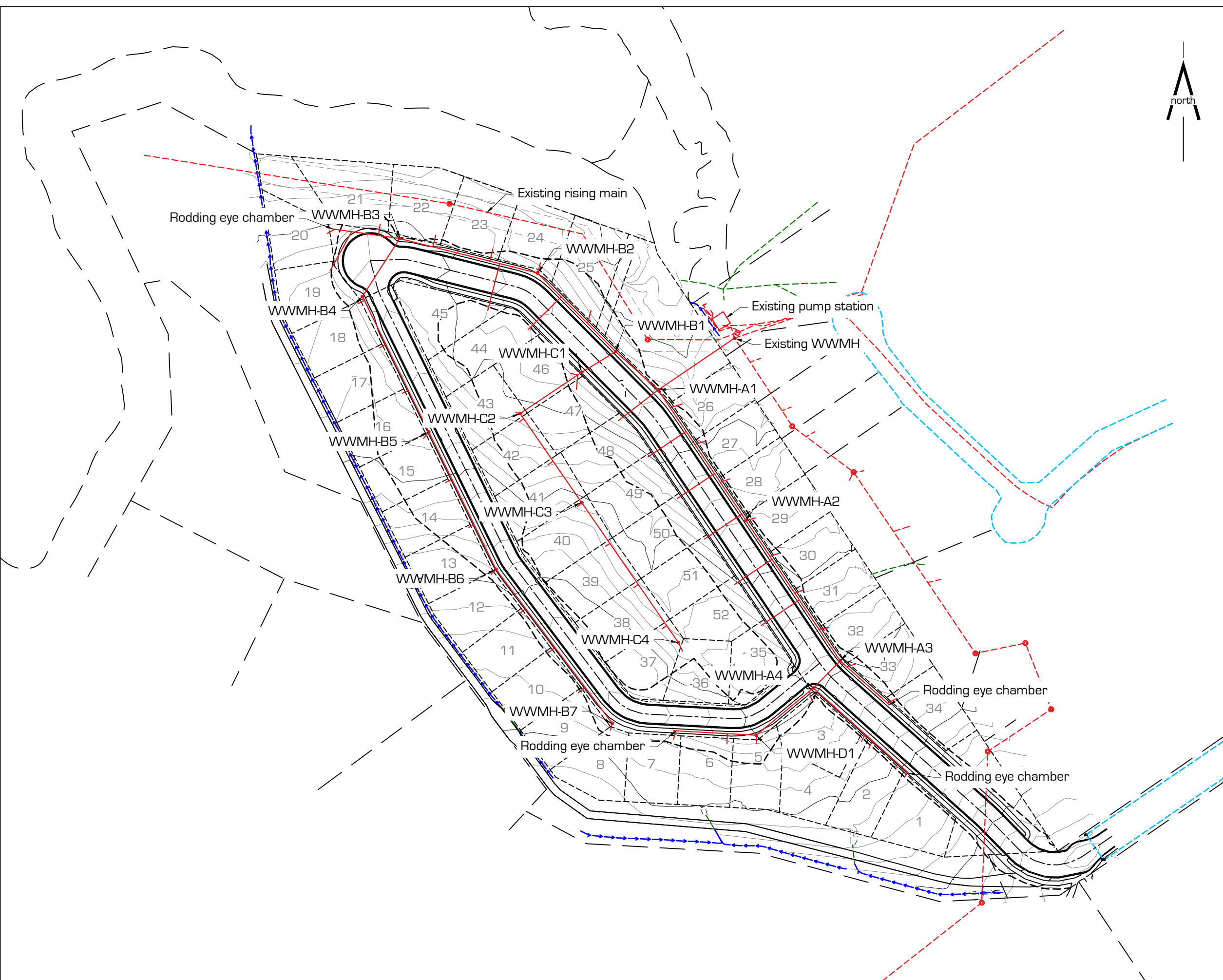
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Design Site Plan

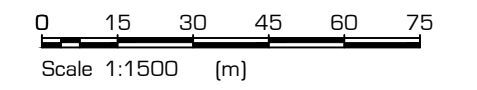


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

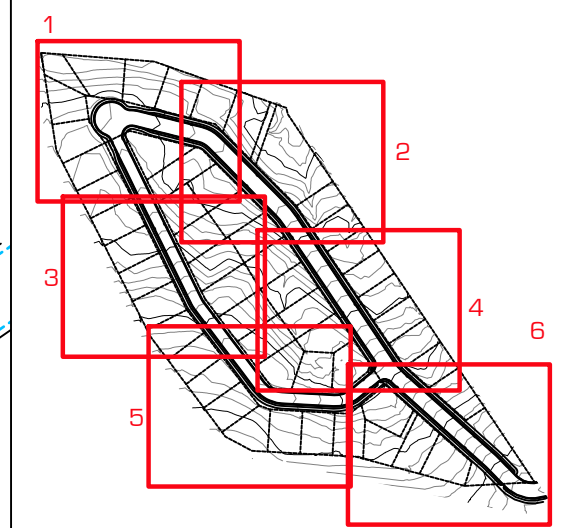
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 4 of 43
DRAWING No:	13641-01	REV: 0



- Legend**
- 10 ——— Contour major (5m)
 - Contour minor (1m)
 - - - - - Lot boundary
 - - - - - Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - Open drainage channel
 - - - - - Existing stormwater network
 - Proposed wastewater network
 - - - - - Existing wastewater network
 - - - - - Existing water supply network
 - - - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

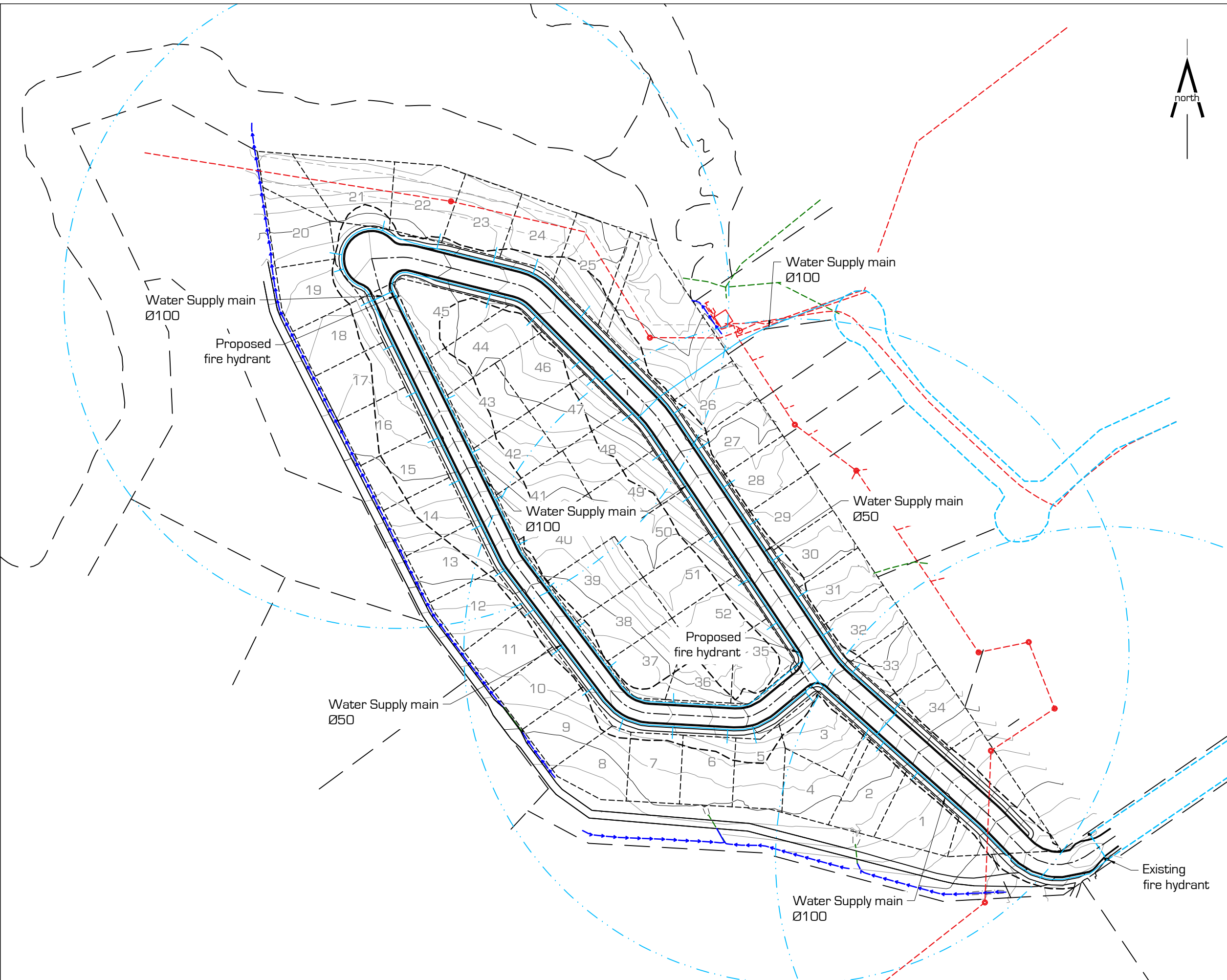
DRAWING TITLE
Wastewater Design Site Plan



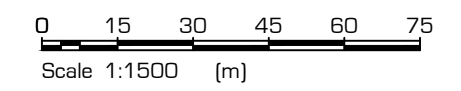
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 5 of 43
DRAWING No:	1328201	REV: 0

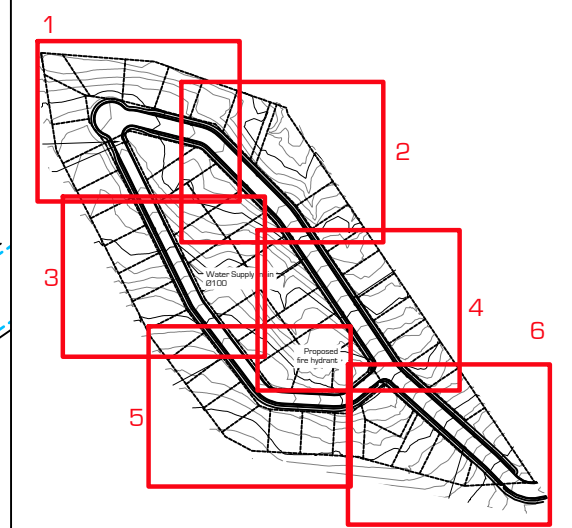
No.	REVISION	BY	DATE
0	Issued for consent	JS	20.03.18



- Legend**
- 10 ——— Contour major (5m)
 - Contour minor (1m)
 - - - - - Lot boundary
 - · · · · Easement boundary
 - Edge of concrete accessway
 - Edge of road
 - → → → → Open drainage channel
 - - - - - Existing stormwater network
 - - - - - Existing wastewater network
 - Proposed wastewater network
 - - - - - Existing water supply network
 - Proposed fire hydrant
 - · · · · Fire hydrant radius
 - - - - - Proposed earthwork extents



Location Plan and Design Plan Sheets



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

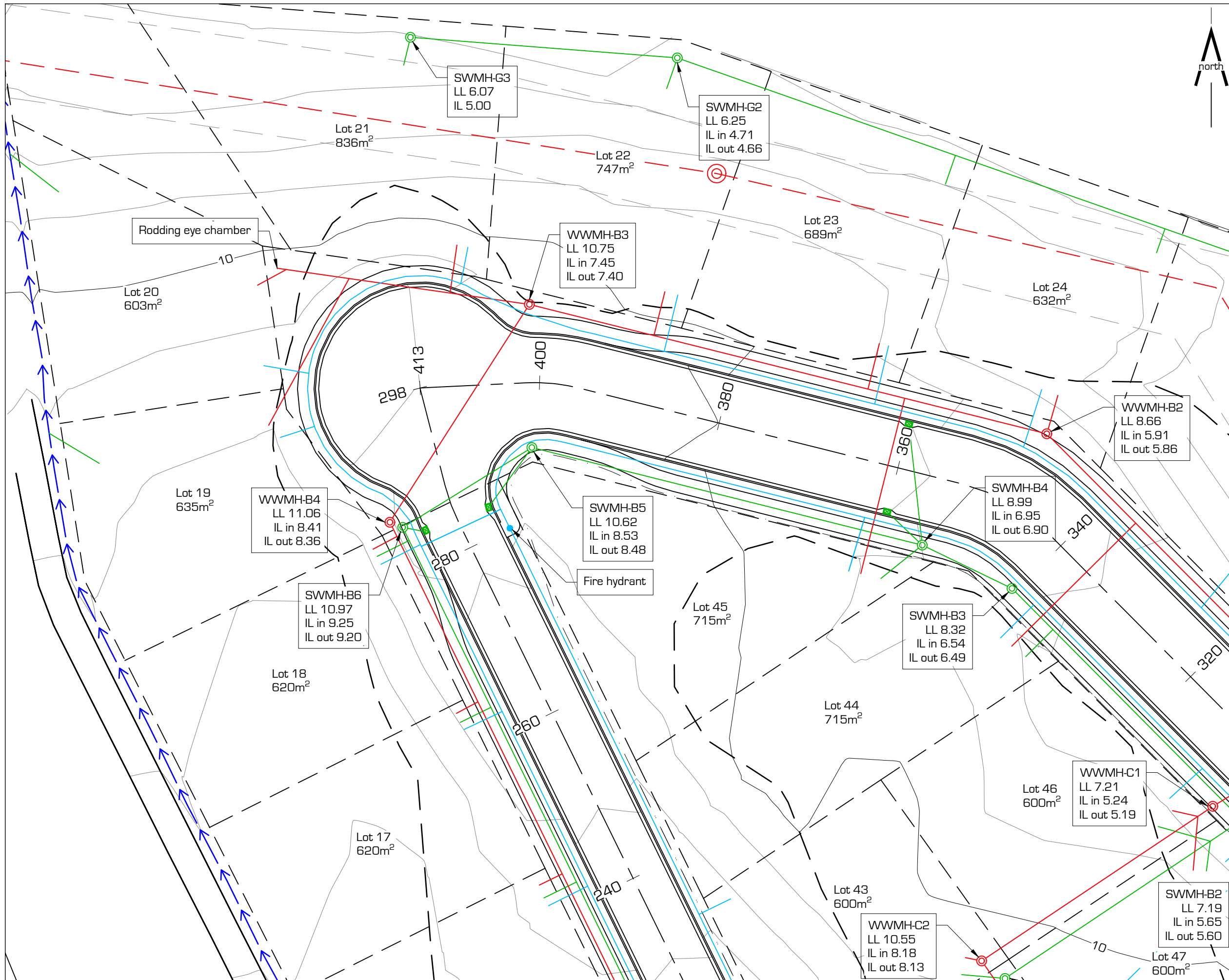
DRAWING TITLE
Water Supply Design Site Plan



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 6 of 43
DRAWING No:	1328301	REV: 0

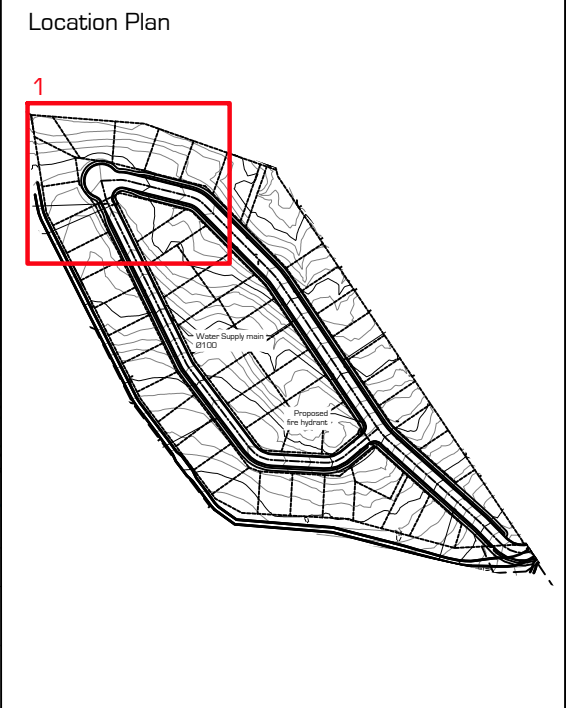
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Legend

- 10 — Contour major (5m)
- Contour minor (1m)
- - - Lot boundary
- - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - Top of bank
- Open drainage channel
- ⊙ Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊙ Proposed stormwater catchpit
- Proposed stormwater network
- - - Existing stormwater network
- Proposed wastewater network
- - - Existing wastewater network
- Proposed water supply network
- - - Existing water supply network
- - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

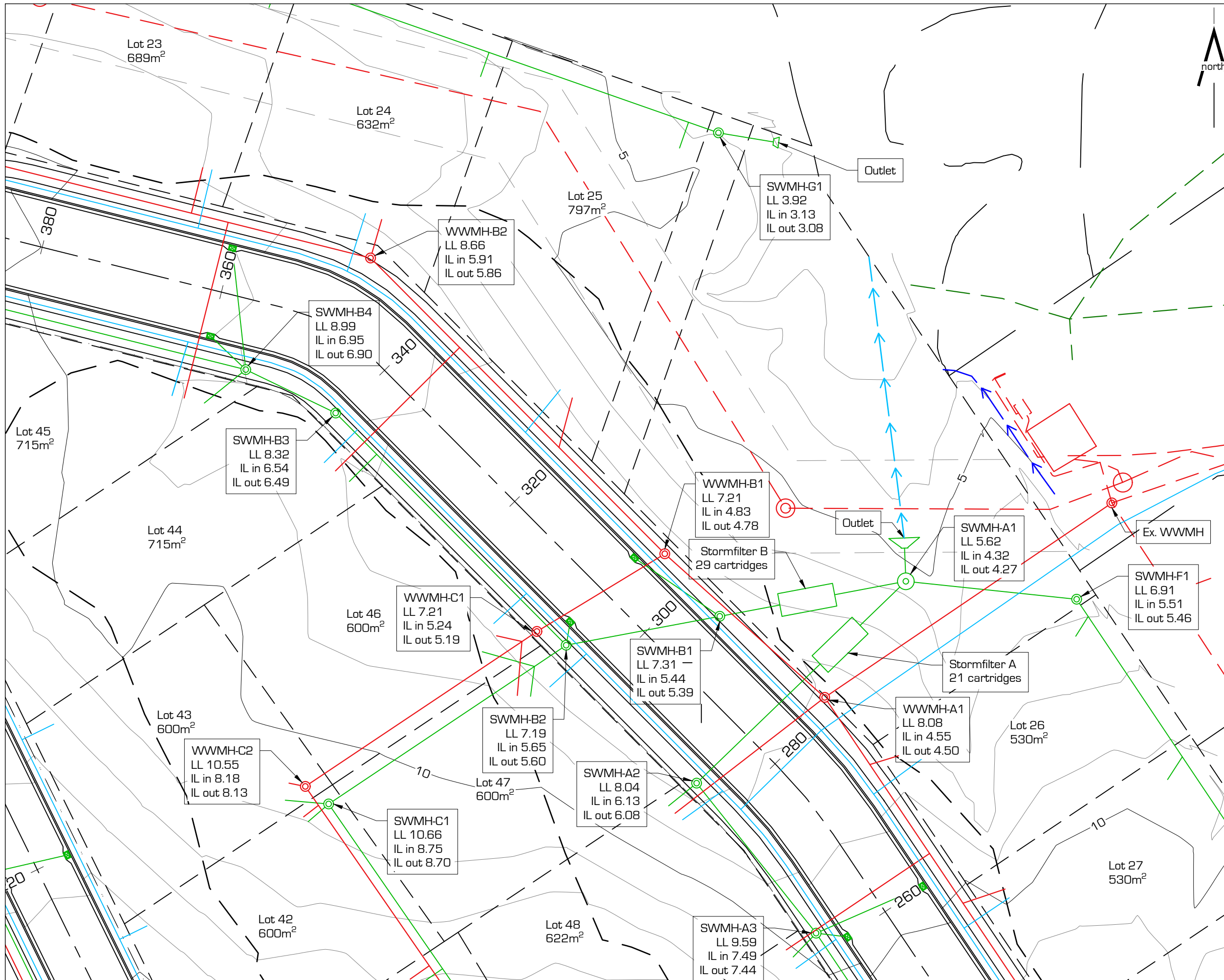
DRAWING TITLE
Design Site Plan
Sheet 1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:		For Consent	
PROJECT:	13641	SHEET:	7 of 43
DRAWING No:	13641	REV:	0

Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - - - Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)

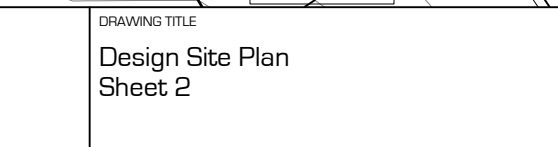


Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

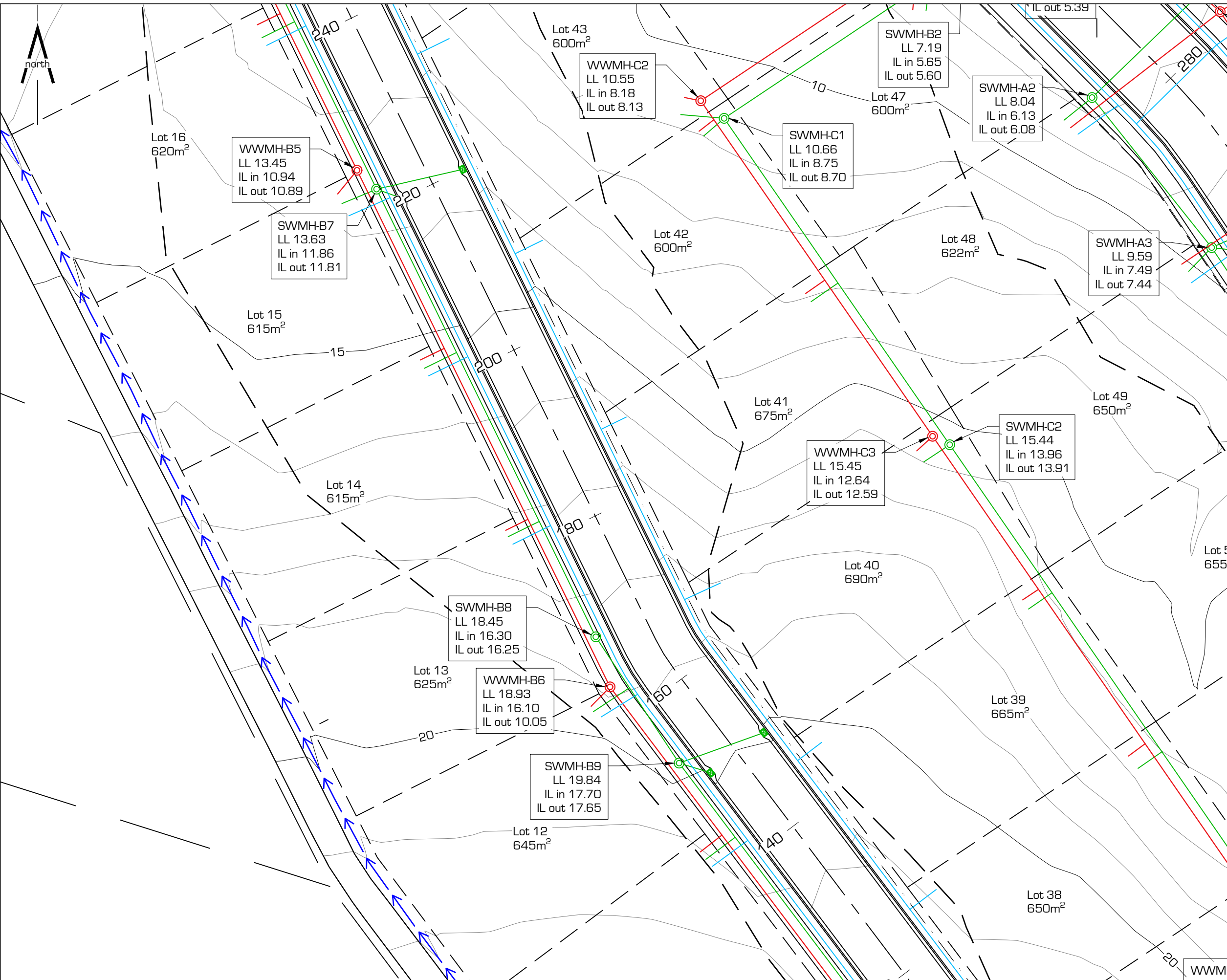
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Design Site Plan
Sheet 2



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

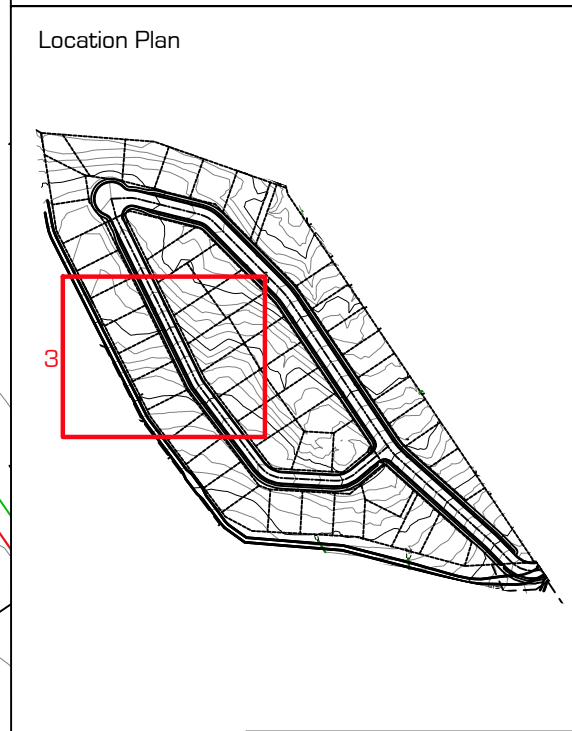
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 8 of 43
DRAWING No:	1328501	REV: 0



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- - Existing stormwater network
- Proposed wastewater network
- - Existing wastewater network
- Proposed water supply network
- - Existing water supply network
- - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

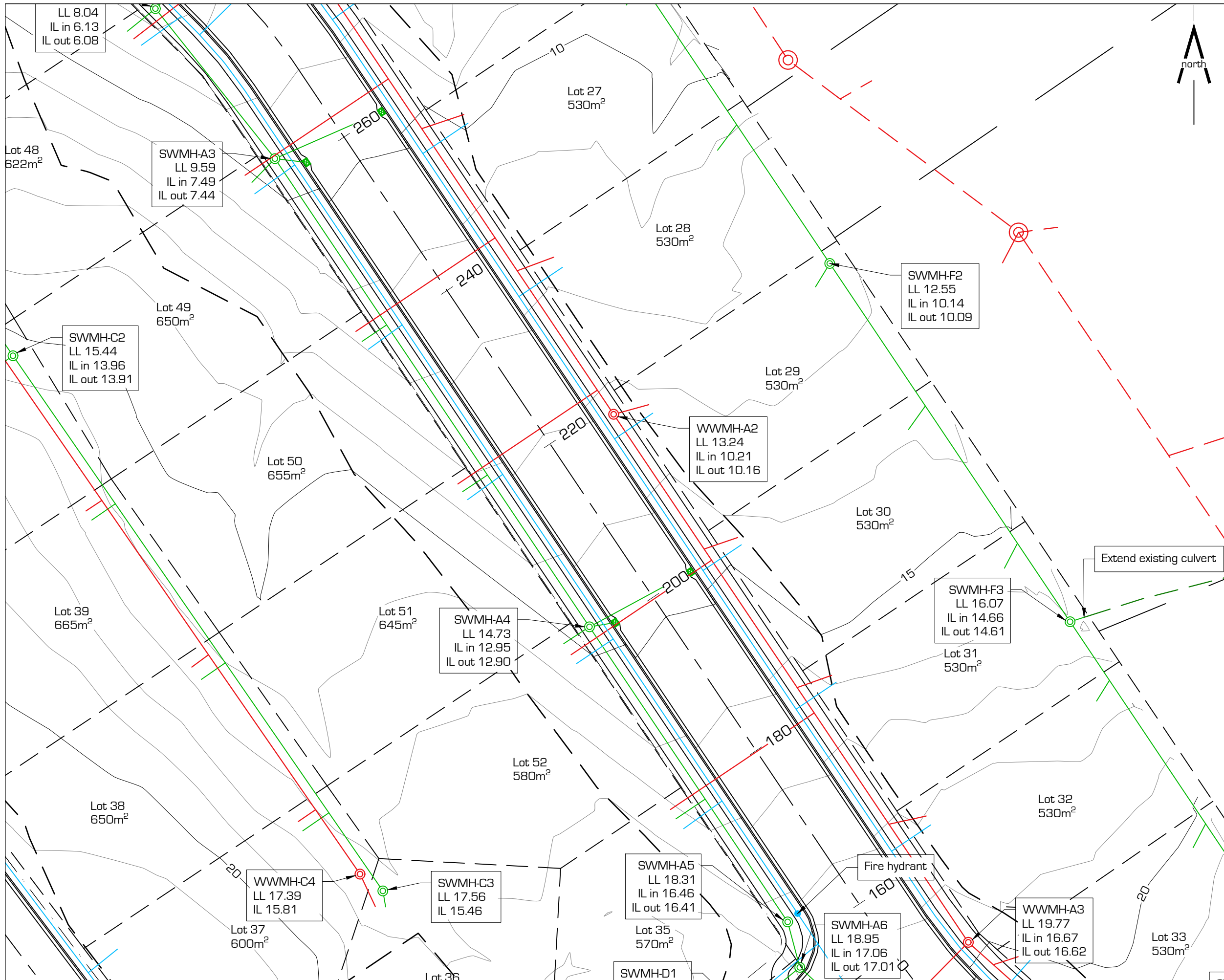
DRAWING TITLE
Design Site Plan
Sheet 3



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:		For Consent	
PROJECT:	13641	SHEET:	9 of 43
DRAWING No:	1328601	REV:	0

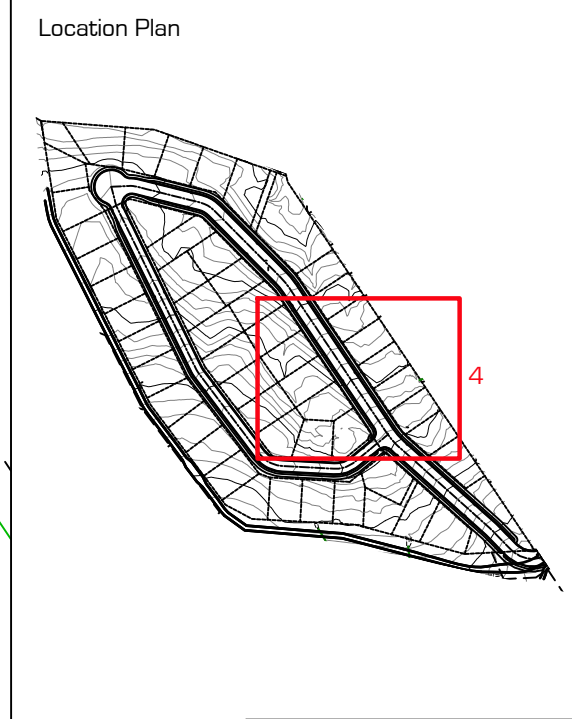
Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - - - Top of bank
- Open drainage channel
- Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊠ Proposed stormwater catchpit
- Proposed stormwater network
- - - Existing stormwater network
- Proposed wastewater network
- - - Existing wastewater network
- Proposed water supply network
- - - Existing water supply network
- - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

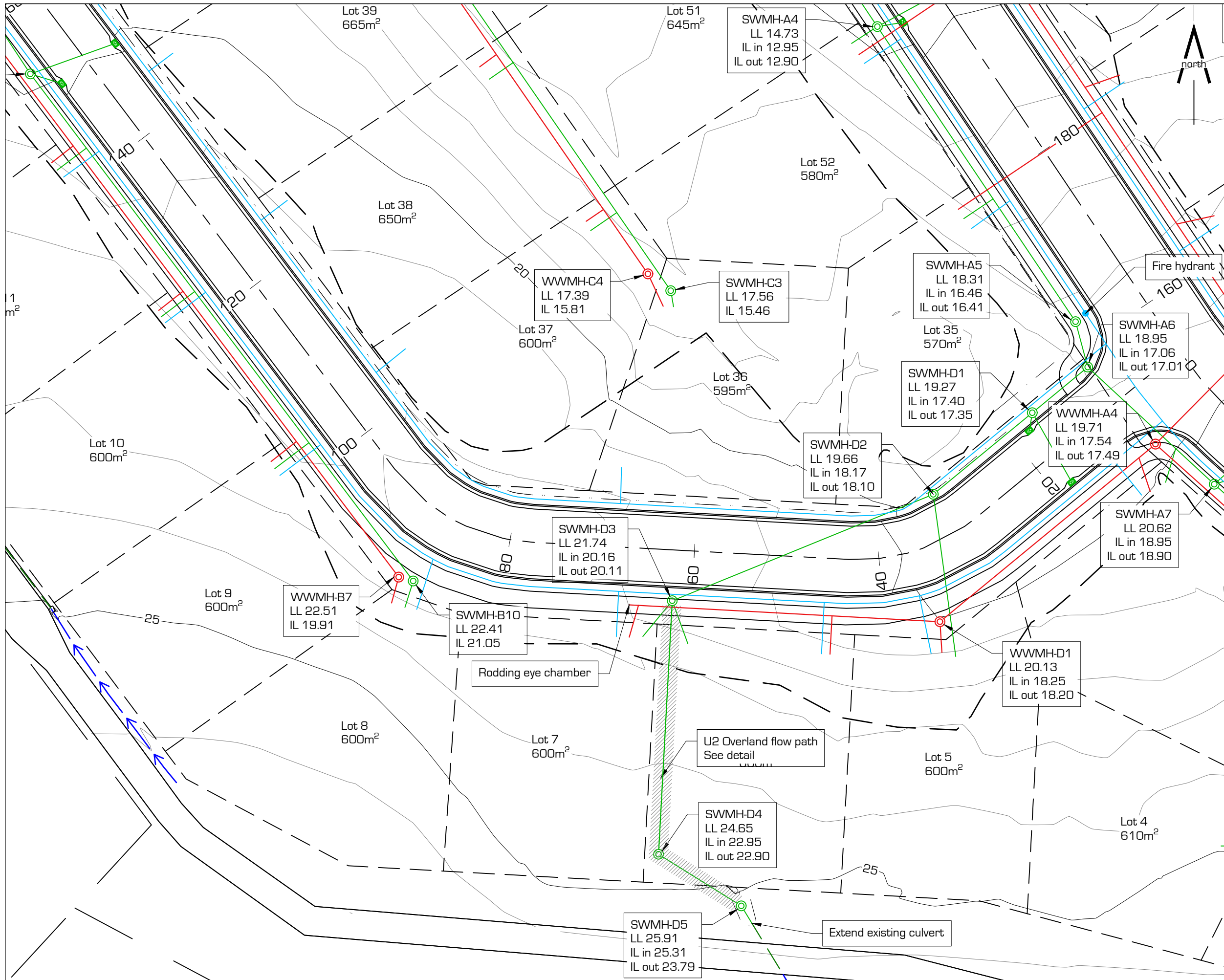
DRAWING TITLE
Design Site Plan
Sheet 4



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

Contractor shall check all dimensions on site prior to work commencing

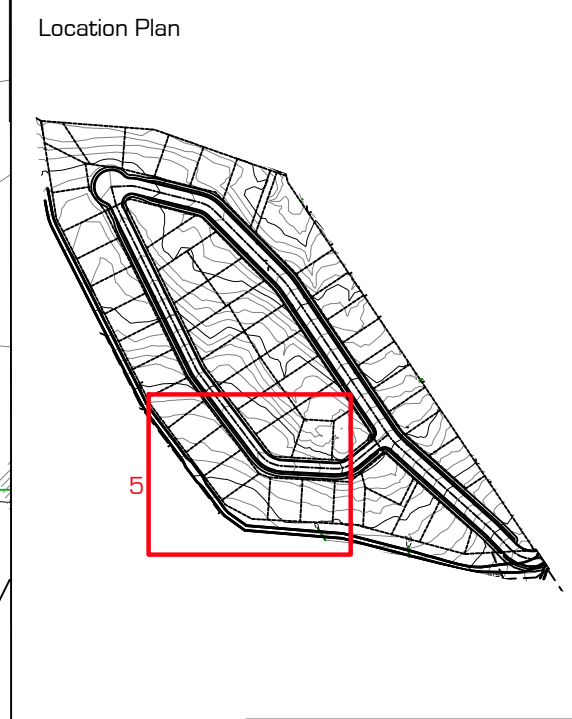
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 10 of 43
DRAWING No:	13287	REV: 0



Legend

- 10 Contour major (5m)
- Contour minor (1m)
- Lot boundary
- Easement boundary
- Edge of concrete accessway
- Edge of road
- Top of bank
- Open drainage channel
- Wastewater manhole
- Proposed stormwater manhole
- Proposed stormwater catchpit
- Proposed stormwater network
- Existing stormwater network
- Proposed wastewater network
- Existing wastewater network
- Proposed water supply network
- Existing water supply network
- Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

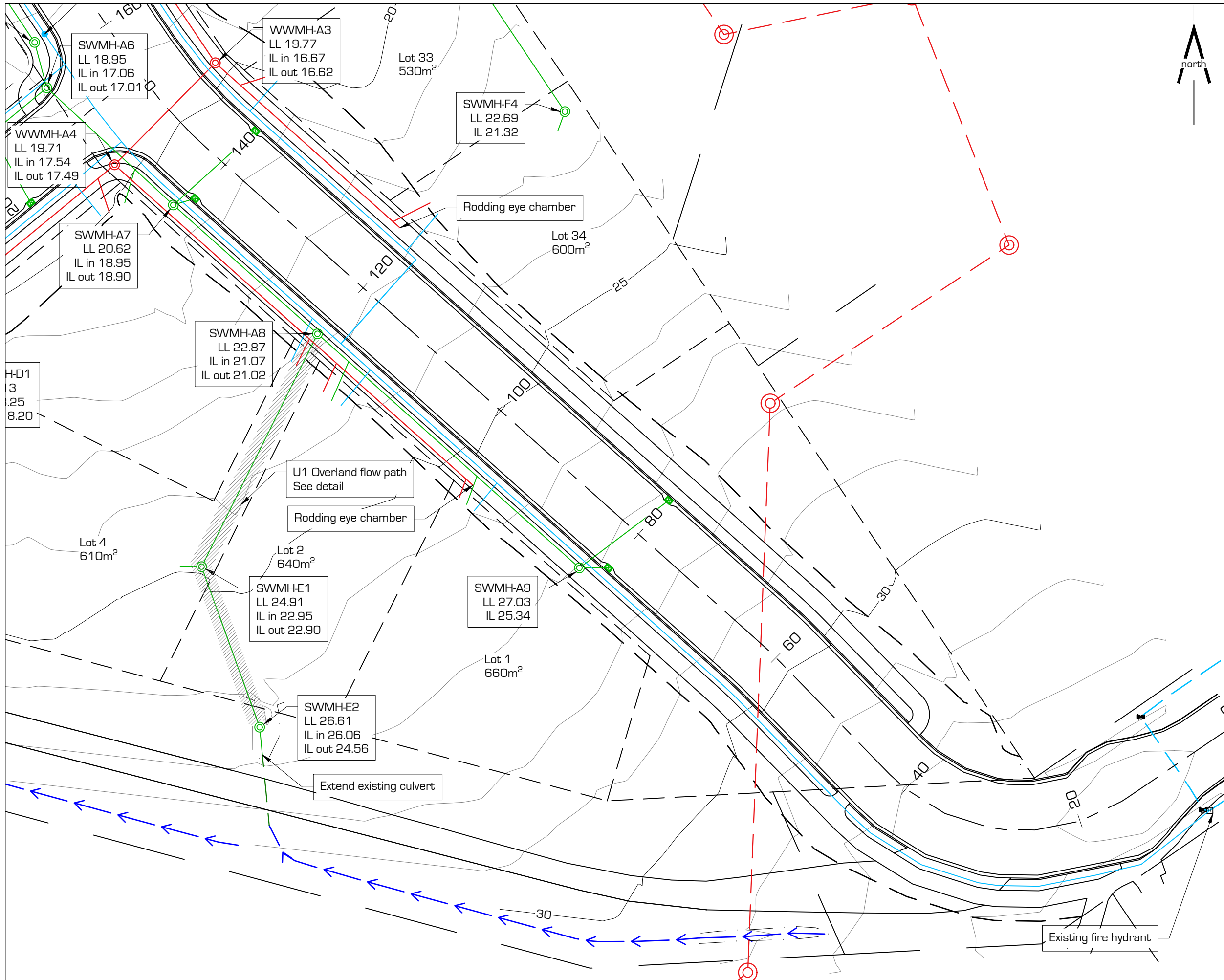
DRAWING TITLE
Design Site Plan
Sheet 5



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT:	13641
SHEET:	11 of 43
DRAWING No:	13641-01
REV:	0

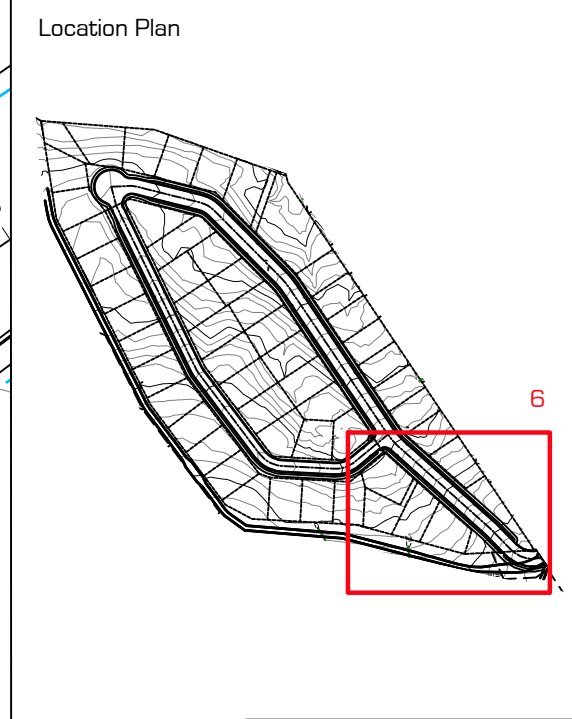
Contractor shall check all dimensions on site prior to work commencing



Legend

- 10 ——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- - - - - Easement boundary
- Edge of concrete accessway
- Edge of road
- - - - - Top of bank
- ➔ Open drainage channel
- ⊙ Wastewater manhole
- ⊙ Proposed stormwater manhole
- ⊠ Proposed stormwater catchpit
- Proposed stormwater network
- - - - - Existing stormwater network
- Proposed wastewater network
- - - - - Existing wastewater network
- Proposed water supply network
- - - - - Existing water supply network
- - - - - Proposed earthwork extents

0 4 8 12 16 20
Scale 1:400 (m)



CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Design Site Plan
Sheet 6



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 12 of 43
DRAWING No:	1328901	REV: 0

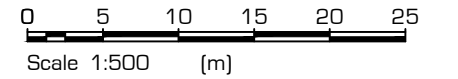
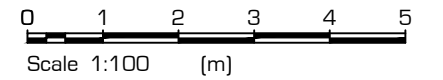
Contractor shall check all dimensions on site prior to work commencing

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 18.0

Design Levels	32.87	33.04	33.09	33.12	33.07	32.71	32.02	31.82	31.00	30.78	29.86	29.76	29.43	28.50	27.87	27.27	26.11	25.85	25.03	23.95	22.87	21.80	20.72	20.42	19.64	19.07	18.56
Existing Levels			33.11	33.204	33.17	32.87	31.57	31.296	30.61		29.831	29.74	29.468	28.71		27.61	26.52		25.47	24.21	22.60	21.42	20.32	20.024	19.17	18.927	18.80
Cut/Fill Depth	0.00	-0.01	-0.01	-0.08	-0.10	-0.16	0.46	0.52	0.39	0.36	0.03	0.01	-0.04	-0.21	-0.28	-0.35	-0.41	-0.42	-0.44	-0.25	0.27	0.38	0.40	0.39	0.47	0.14	-0.24
Vertical Geometry	L = 7.19 2.4%		L = 44.65 K = 3.00							L = 23.27 -12.5%			L = 17.29 K = 10.00		L = 75.96 -10.8%												
Horizontal Geometry	L = 14.43			L = 27.88 R = 20.00					L = 16.87		L = 3.41 R = 50.00		L = 80.22							L = 12.49 R = 50.00		L = 114.82					
Chainage	0.00	7.19	10.00	14.43	20.00	30.00	40.00	42.31	50.00	51.84	59.18	60.00	62.59	70.00	75.11	80.00	90.00	92.40	100.00	110.00	120.00	130.00	140.00	142.81	150.00	155.30	160.00

Road A Long Section - CHO to CH160

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CHO to CH160



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

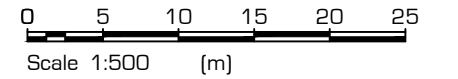
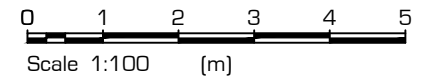
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 13 of 43
DRAWING No:	1329001	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

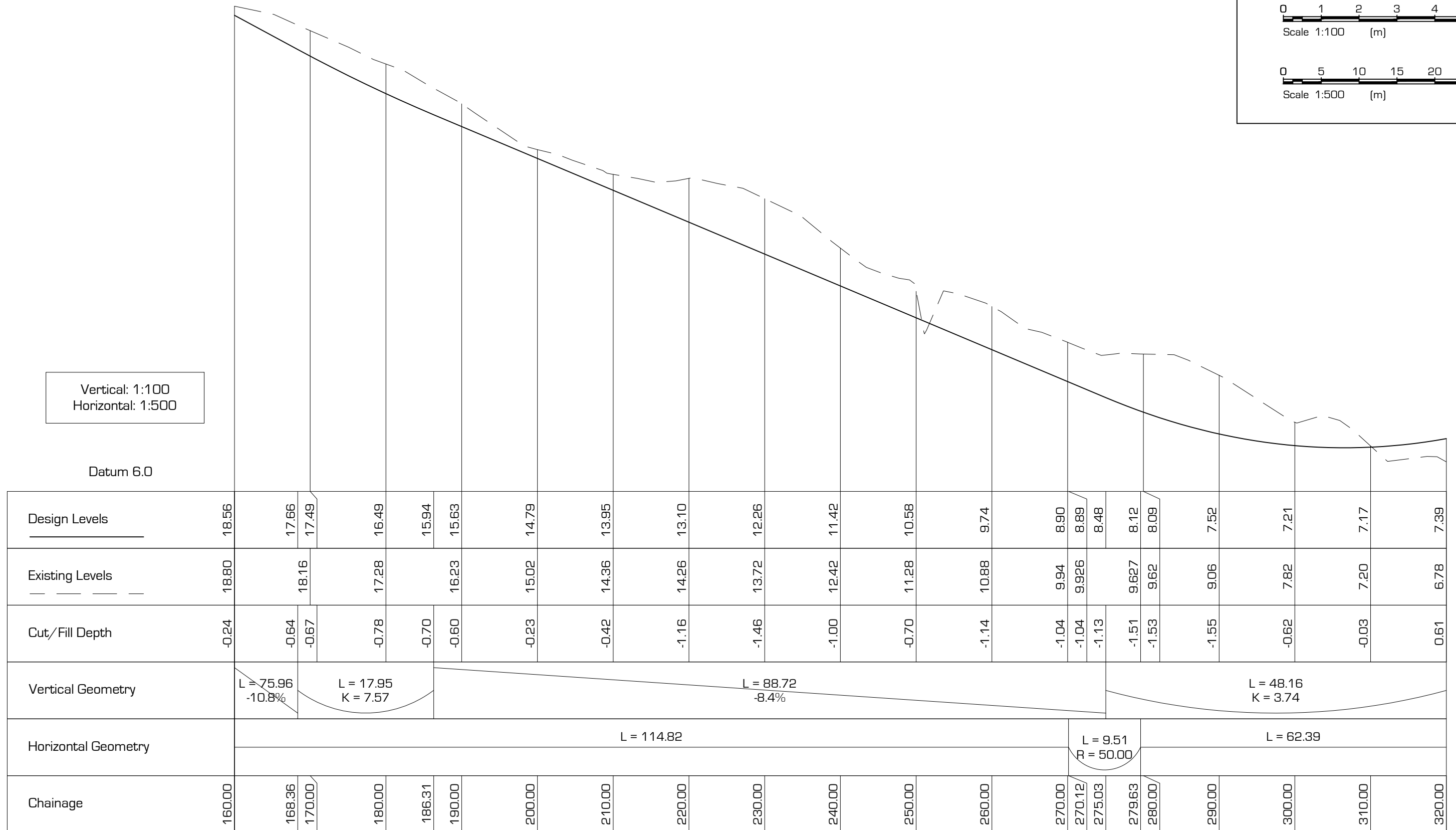
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 6.0



Road A Long Section - CH160 to CH320

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CH160 to CH320



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

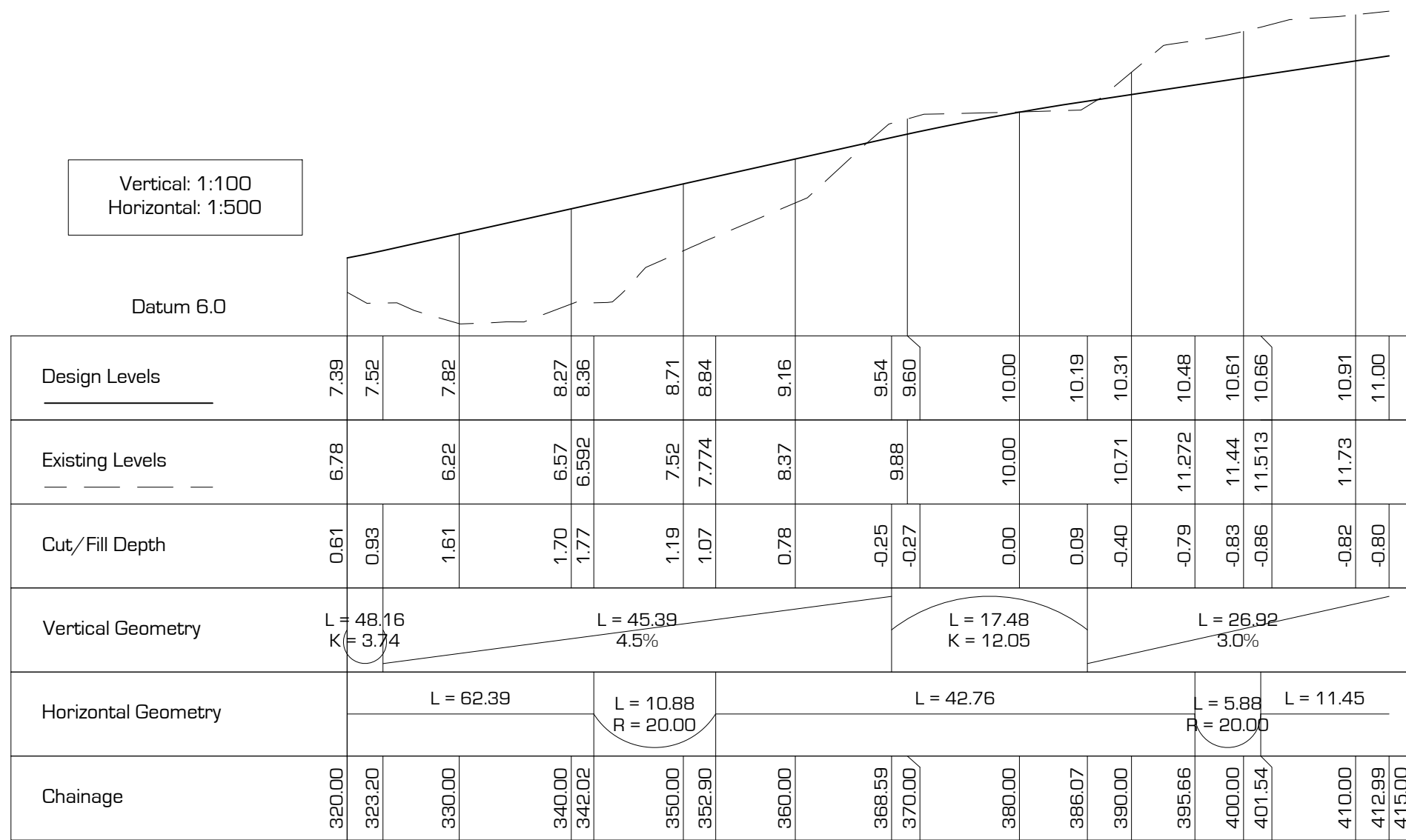
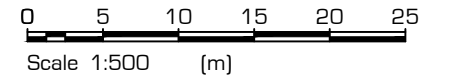
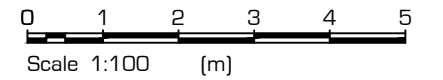
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 14 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

— — — Existing ground level

————— Finished ground level



Road A Long Section - CH360 to CH415

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road A Long Section
CH320 to CH415



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

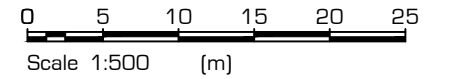
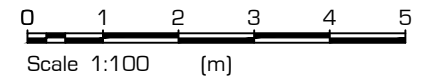
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 15 of 43
DRAWING No:	13641-20201	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

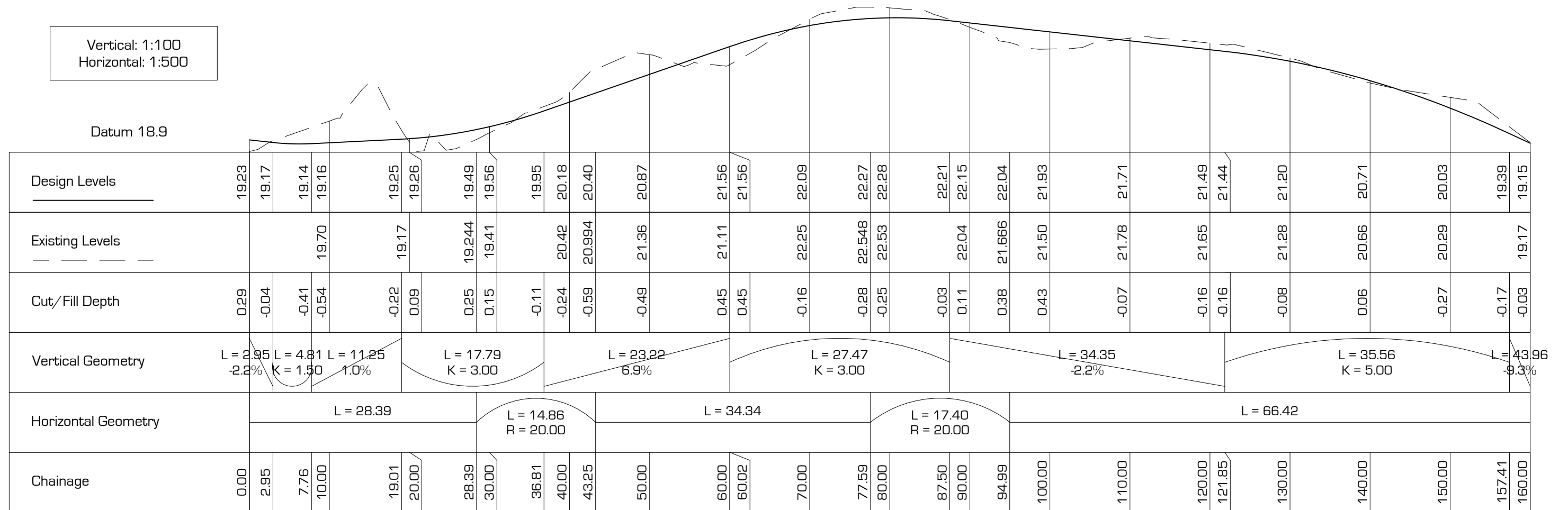
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 18.9



Road B Long Section - CHO to CH160

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road B Long Section
CHO to CH160



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

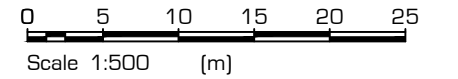
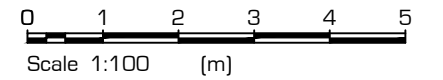
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 16 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

Legend

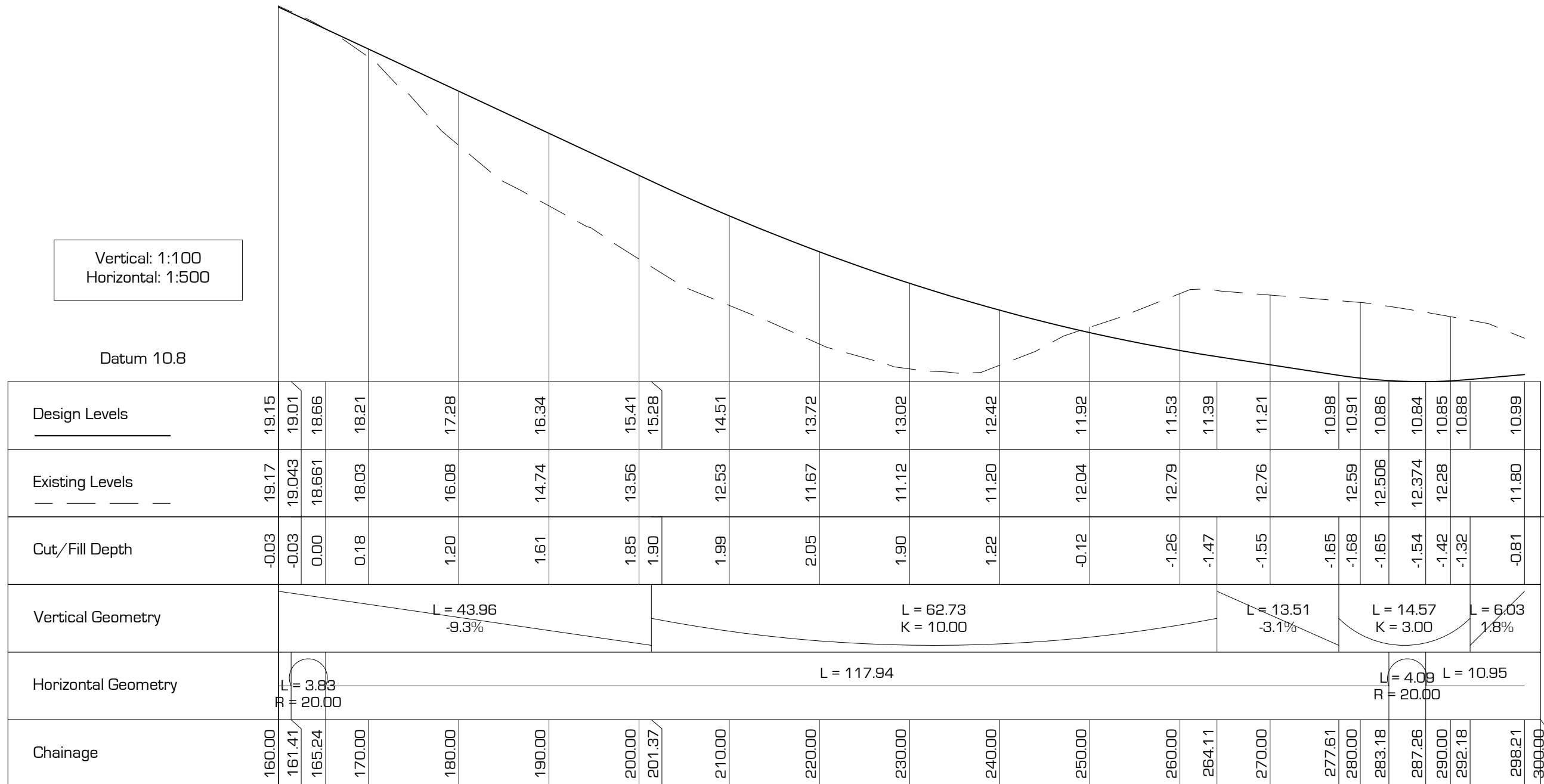
— — — Existing ground level

————— Finished ground level



Vertical: 1:100
Horizontal: 1:500

Datum 10.8



Road B Long Section - CH160 to CH300

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Road B Long Section
CH160 to CH300

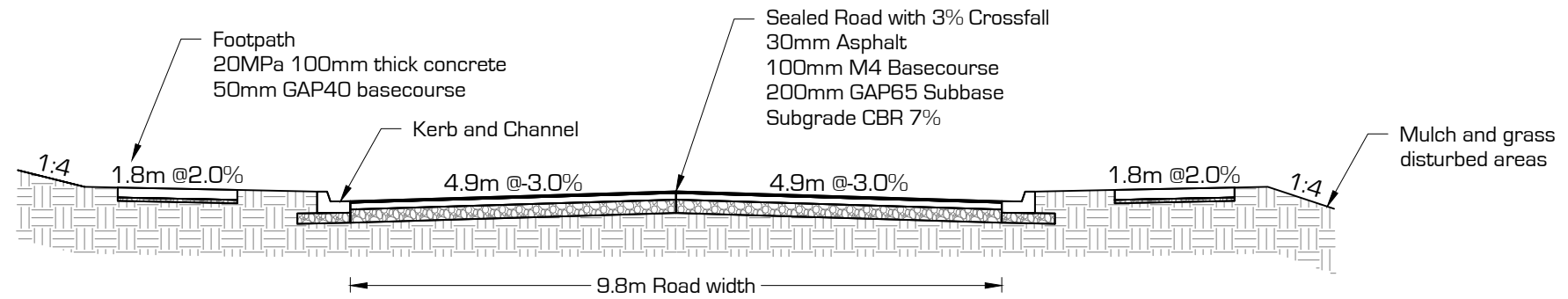


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

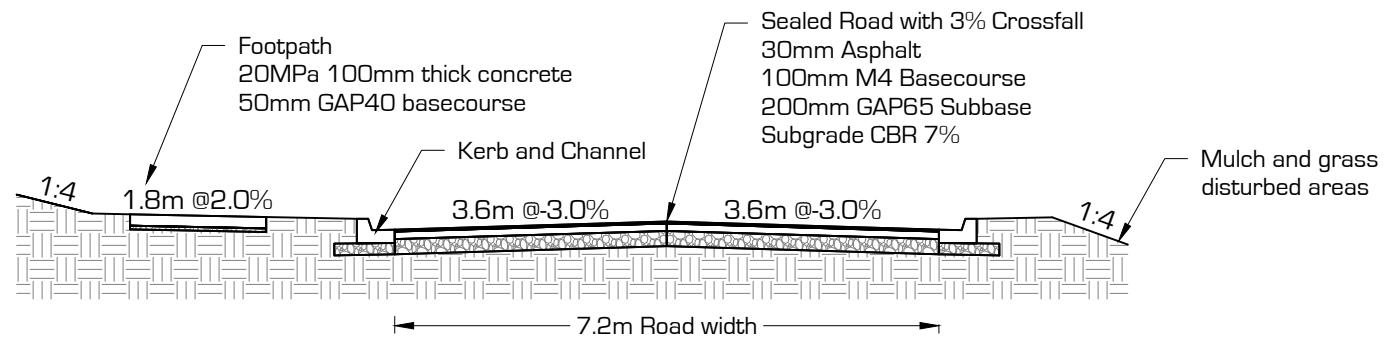
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 17 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE

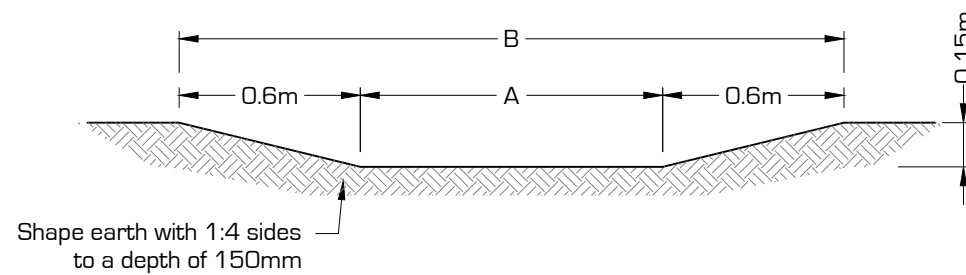
CS-A
Road A Design Cross Section
 SCALE A3 1:100



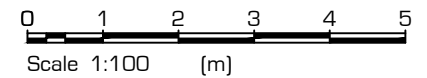
CS-B
Road B Design Cross Section
 SCALE A3 1:100



CS-D
Overland Flow Path Cross Section
 SCALE A3 1:25



CHANNEL	Side Slope	Width between sides [A]	Total Width [B]	Depth of Flow	Fall Slope [%]
U1	1:4	1.8m	3.0m	0.11m	5 %
U2	1:4	0.8m	2.0m	0.13m	10 %



Contractor shall check all dimensions on site prior to work commencing

CLIENT
 Prime Property Group Ltd.
 PO Box 11-785
 Wellington

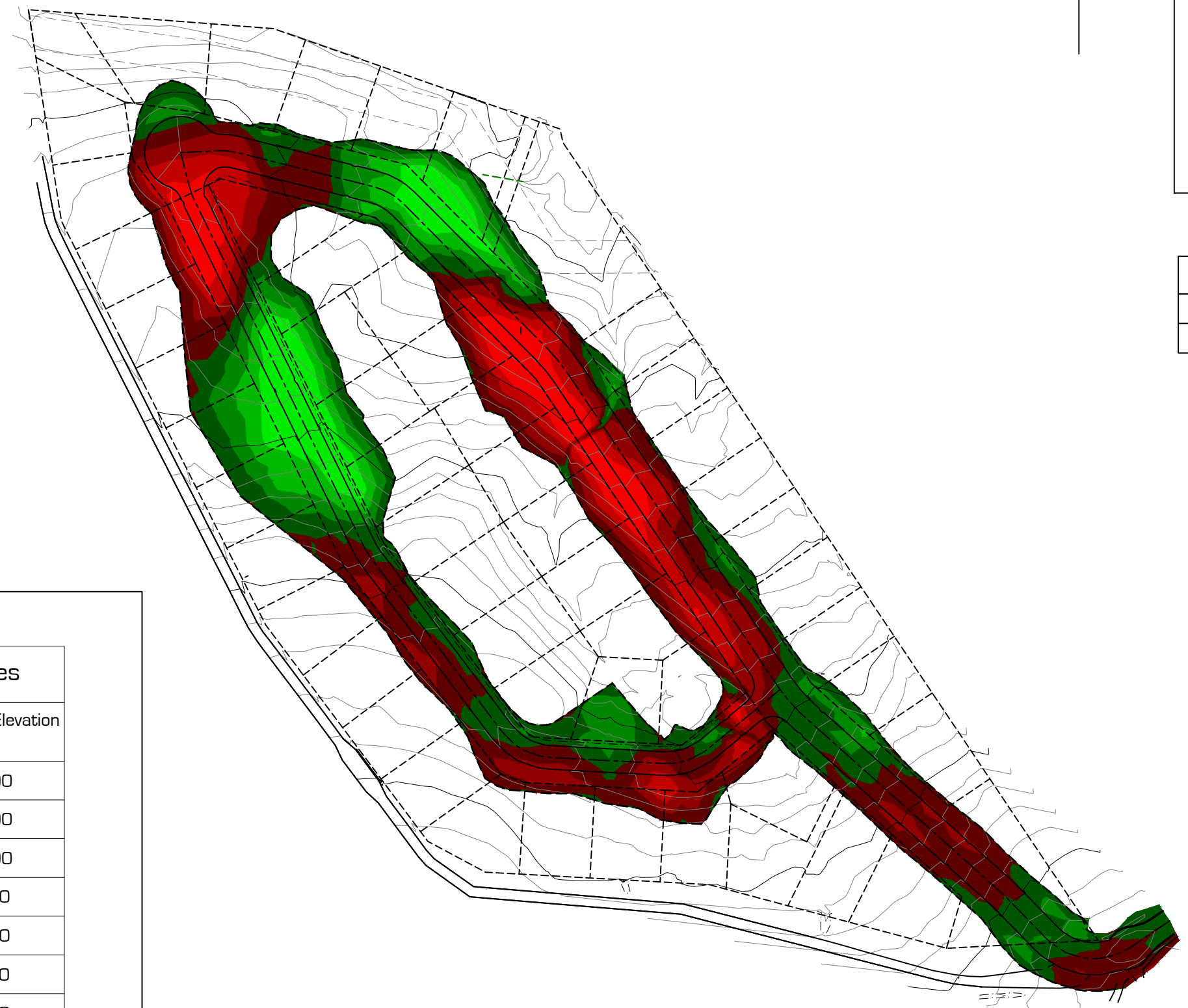
PROJECT
 52 Lot Residential Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

DRAWING TITLE
 Construction Details



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 18 of 43
DRAWING No: 1329501	REV: 0



Legend

- 10——— Contour major (5m)
- Contour minor (1m)
- - - - - Lot boundary
- Edge of concrete accessway
- Edge of road
- - - - - Proposed earthworks extents

0 4 8 12 16 20
Scale 1:400 (m)

Earthwork Volumes	
Cut	7100m ³
Fill	6050 m ³

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1	Red	-3.000	-1.500
2	Red	-1.500	-1.000
3	Dark Red	-1.000	-0.500
4	Dark Red	-0.500	0.000
5	Dark Green	0.000	0.500
6	Green	0.500	1.000
7	Light Green	1.000	1.500
8	Bright Green	1.500	3.000

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

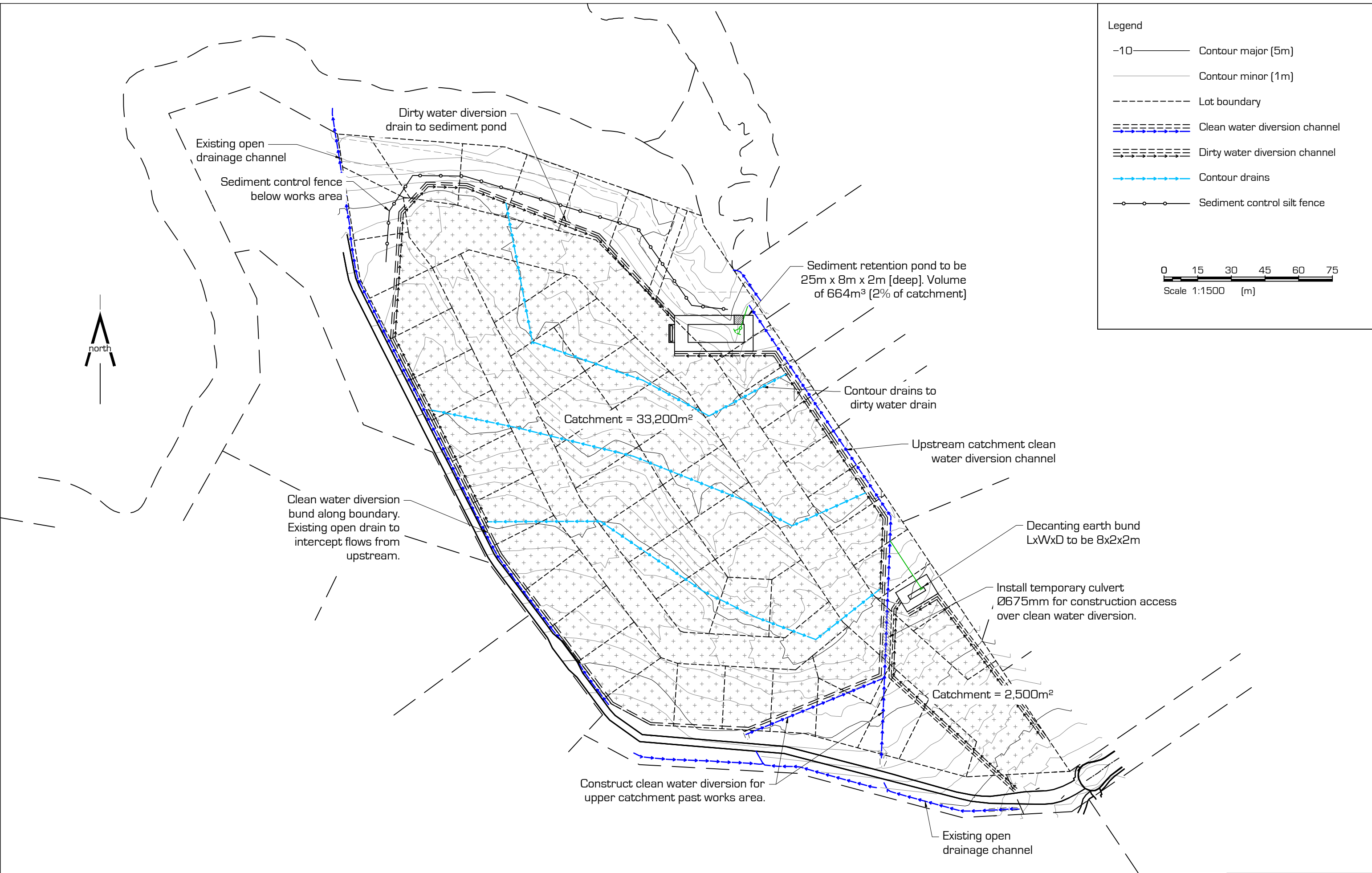
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Earthworks Cut/Fill Isopach



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 19 of 43
DRAWING No: 13641-29601	REV: 0



CLIENT
 Prime Property Group Ltd.
 PO Box 11-785
 Wellington

PROJECT
 52 Lot Residential Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

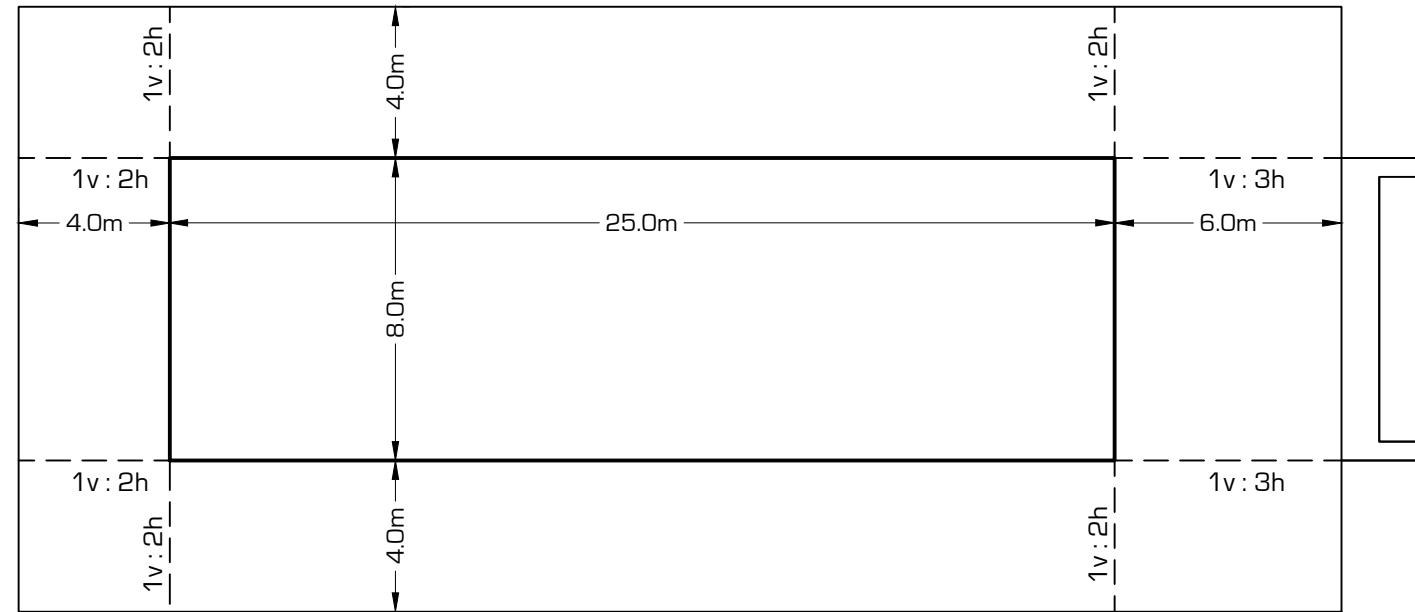
DRAWING TITLE
 Sediment Control Plan



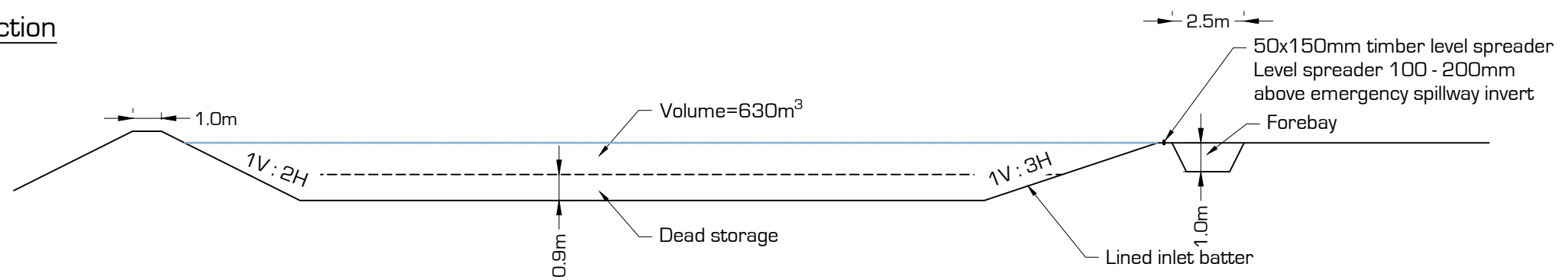
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:1500

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 20 of 43
DRAWING No: 13641-01	REV: 0

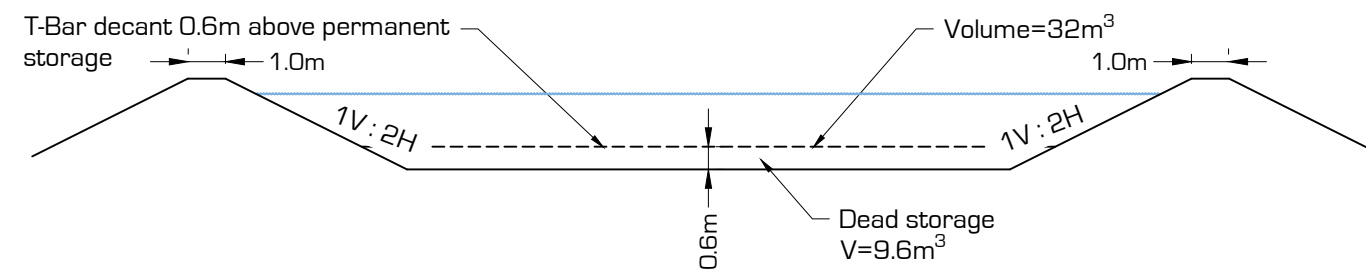
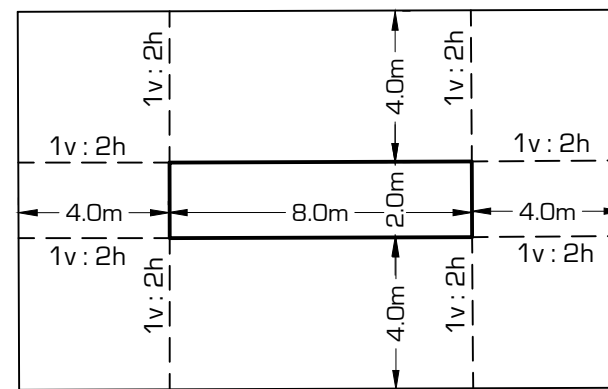
Contractor shall check all dimensions on site prior to work commencing



Detention Pond
Plan and Cross Section
SCALE A3 1:200



Decanting Earth Bund
Plan and Cross Section
SCALE A3 1:200



Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

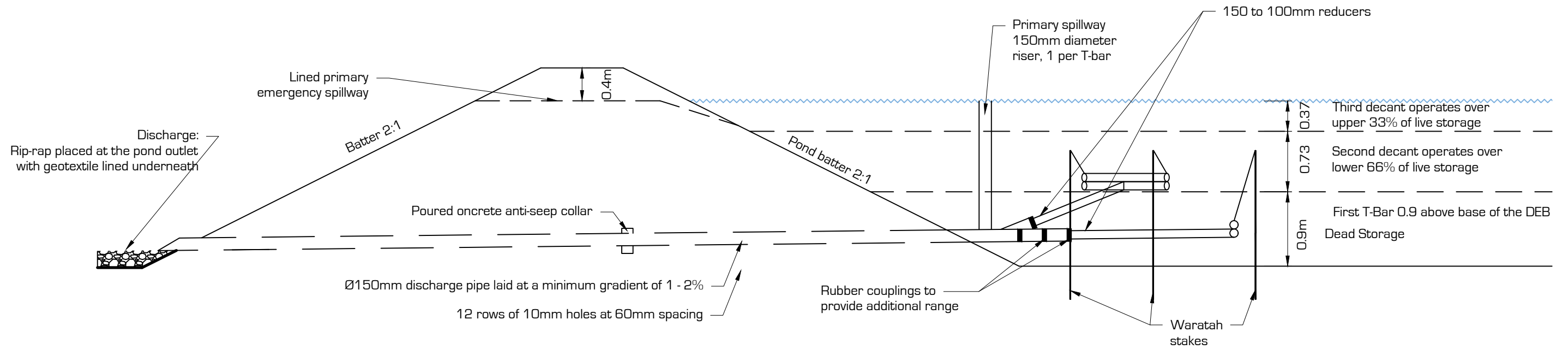
DRAWING TITLE
Sediment Control Plan
Construction Details



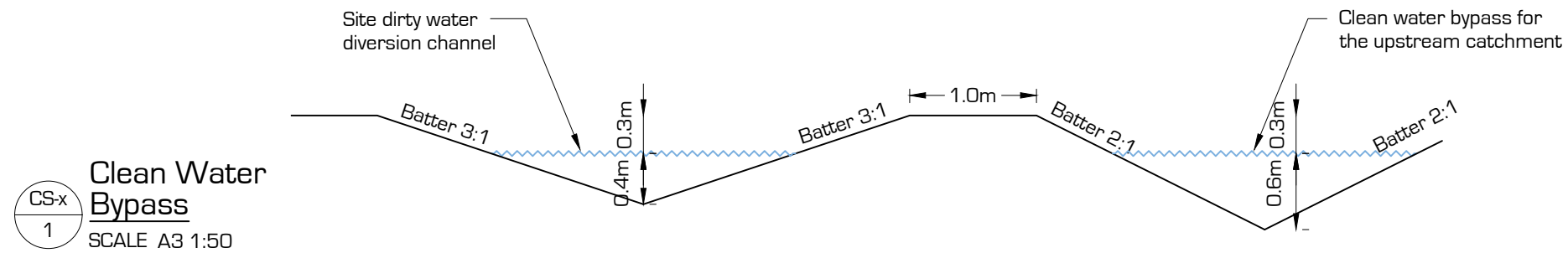
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	1:200

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 21 of 43
DRAWING No:	13641-21	REV: 0

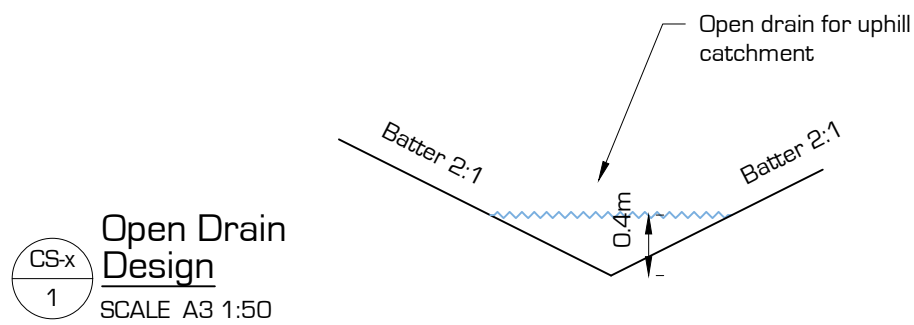
0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



CS-P
1
Detention Pond Outlet Detail
SCALE A3 1:50



CS-x
1
Clean Water Bypass
SCALE A3 1:50



CS-x
1
Open Drain Design
SCALE A3 1:50

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

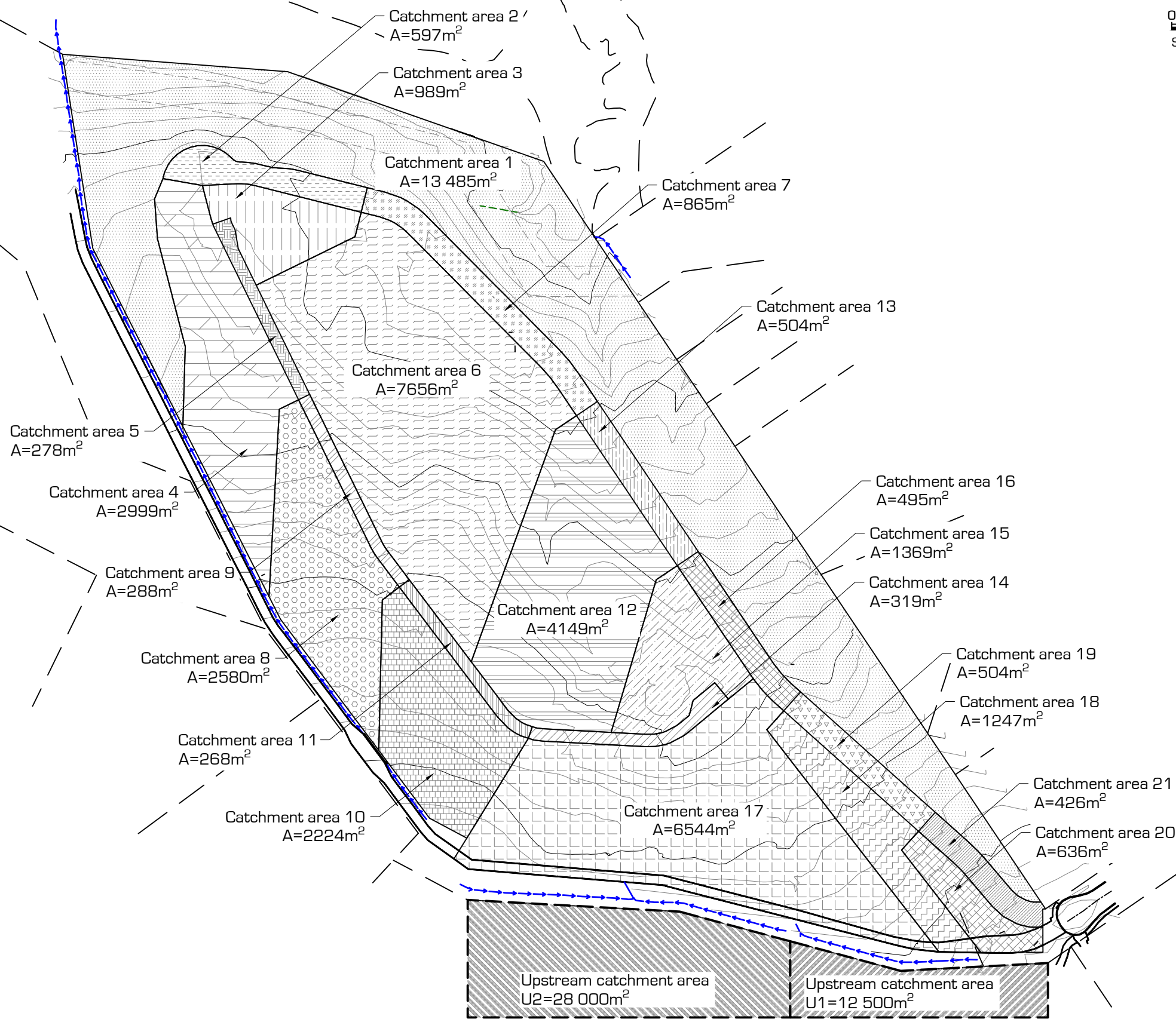
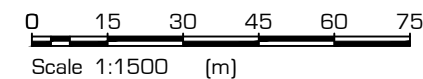
DRAWING TITLE
Sediment Control Plan
Construction Details



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 22 of 43
DRAWING No:	13641	REV: 0

Legend
 -10- Contour major (5m)
 - - - Contour minor (1m)



Contractor shall check all dimensions on site prior to work commencing

CLIENT
 Prime Property Group Ltd.
 PO Box 11-785
 Wellington

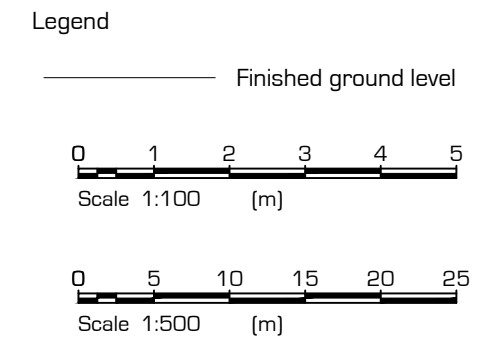
PROJECT
 52 Lot Residential Subdivision
 Lot 1 DP 149776
 Foster Crescent, Snells Beach

DRAWING TITLE
 Catchment Plan



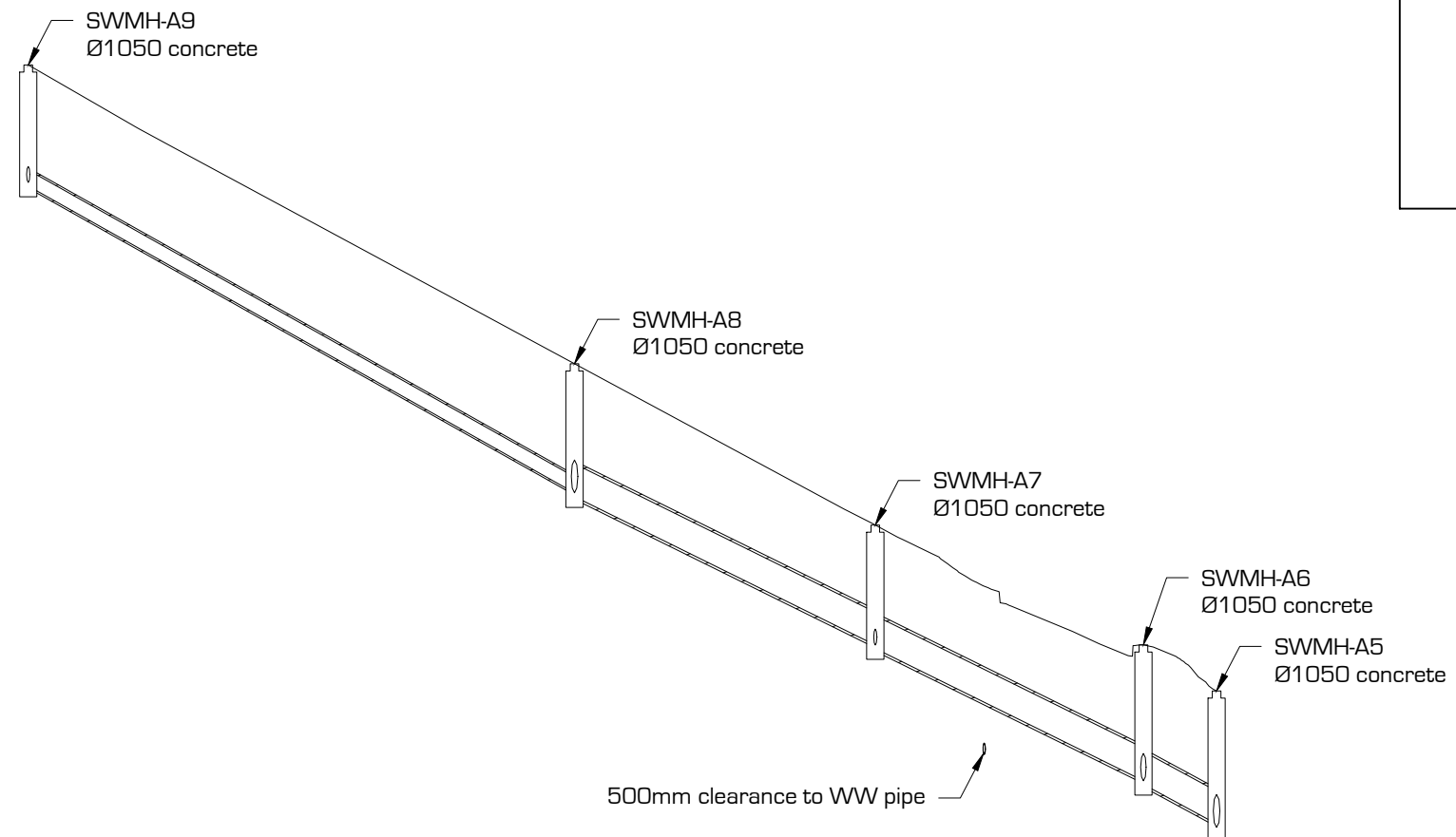
DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
ISSUED FOR:	Consent
REVISION:	

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 23 of 43
DRAWING No:	13641001	REV: 0
SCALE A3:	1:1500	



Vertical 1:100
Horizontal 1:500

Datum 15.0m



Invert Levels	27.03	25.34	21.07	21.02	18.95	18.90	17.06	17.01	16.46
Depth to Invert		1.68	1.80	1.85	1.67	1.72	1.89	1.94	1.85
Ground Level	27.03		22.87		20.62		18.95		18.31
Pipe Details		Ø225 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2	
Distance		L= 38.02		L= 20.93		L= 18.66		L= 5.09	
Grade		11.2%		9.9%		9.9%		10.9%	

SW Line A Long Section - MHA9 to MHA5

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line A
MHA9 to MHA5

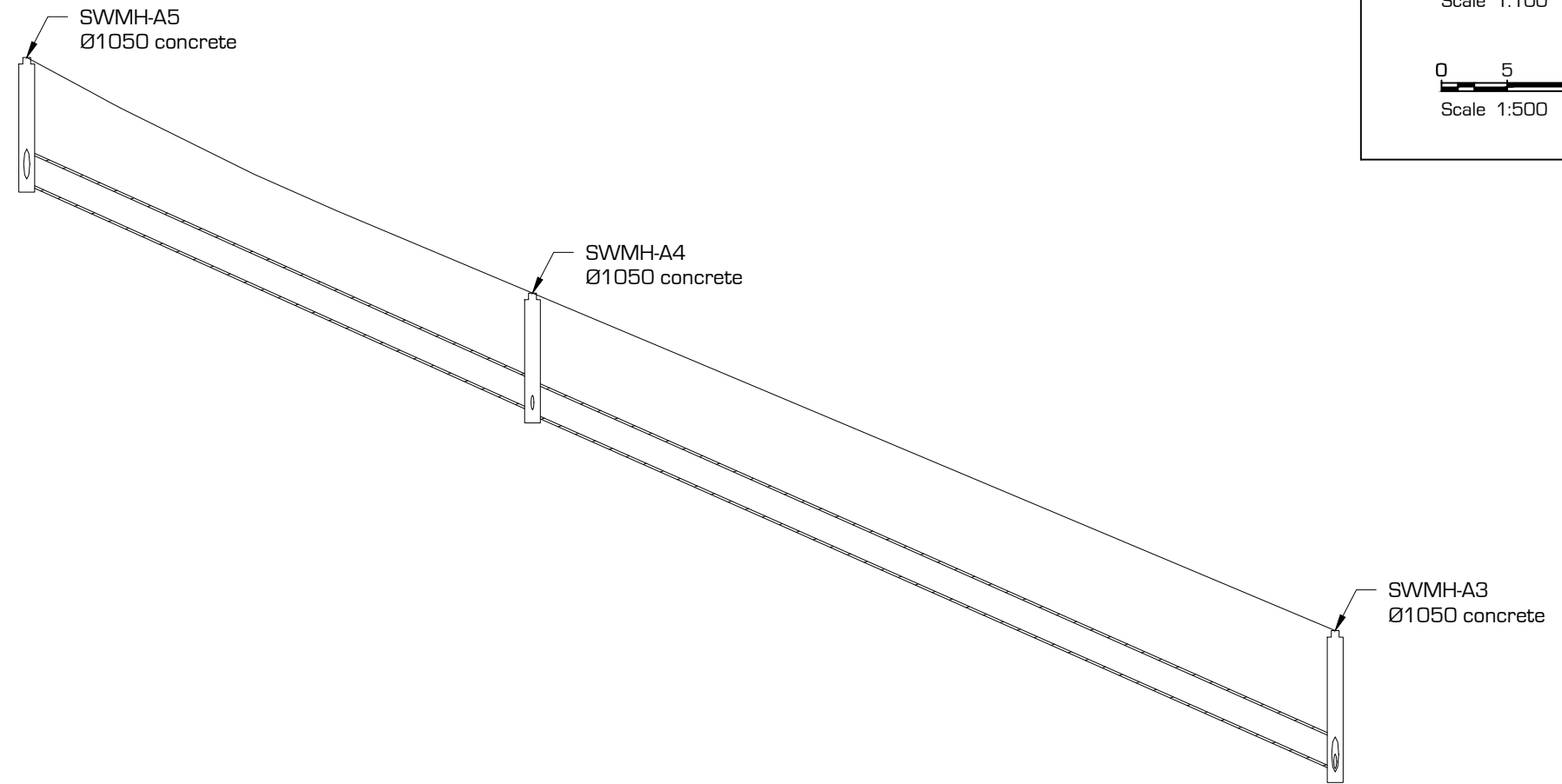
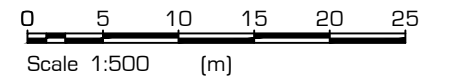
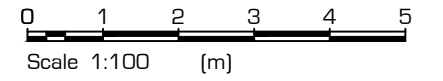


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 24 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	16.41	12.95	7.49
Depth to Invert	1.90	1.78	2.10
Ground Level	18.31	14.73	9.59
Pipe Details	Ø450 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2
Distance	L= 38.47		L= 61.05
Grade	9.0%		8.9%

SW Line A Long Section - MHA5 to MHA3

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

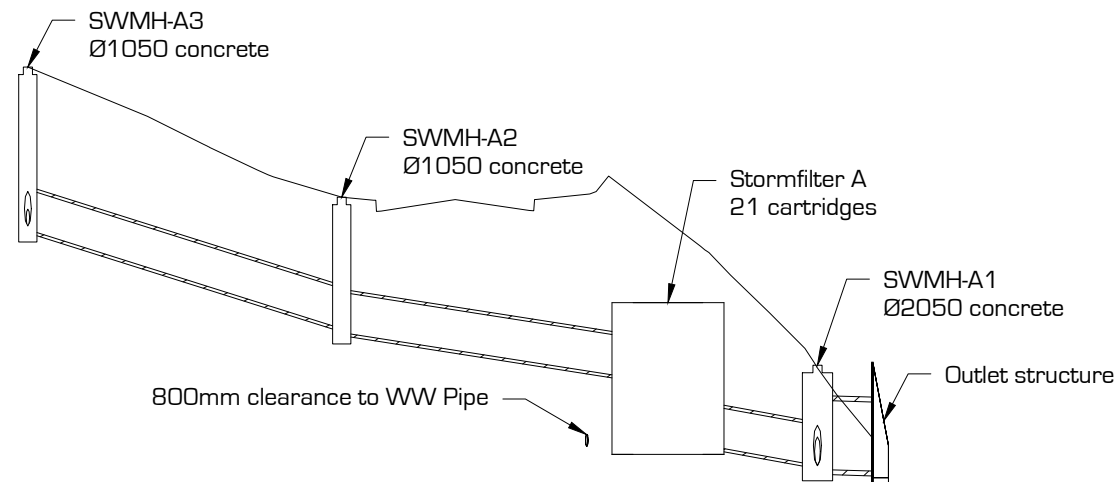
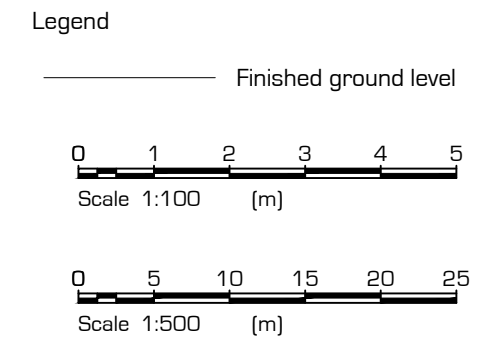
DRAWING TITLE
Stormwater Long Section - Line A
MHA5 to MHA3



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 25 of 43
DRAWING No:	13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	7.44	6.13 6.08	5.50 4.57	4.57	4.32 4.27	4.25
Depth to Invert	2.15	1.74 1.79	2.51 3.44	2.51	1.29 1.34	0.44
Ground Level	9.59	7.87	8.01	7.08	5.65	5.68
Pipe Details	Ø525 RCRRJ CLASS 2	Ø525 RCRRJ CLASS 2	Ø525 RCRRJ CLASS 2	Ø900 RCRRJ CLASS 2		
Distance	L= 20.76	L= 18.57	L= 6.01	L= 6.88	L= 3.63	
Grade	6.3%		3.1%	0.0%	3.6%	0.6%

SW Line A Long Section
MHA3 to Outlet

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

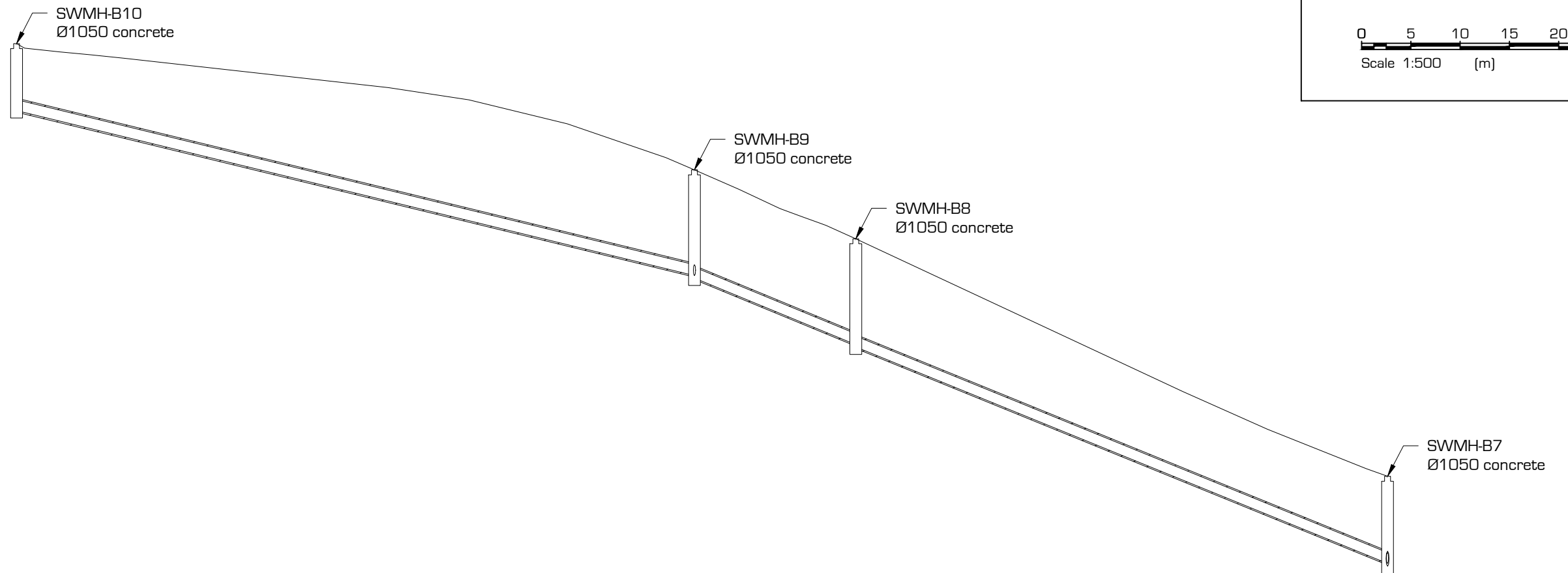
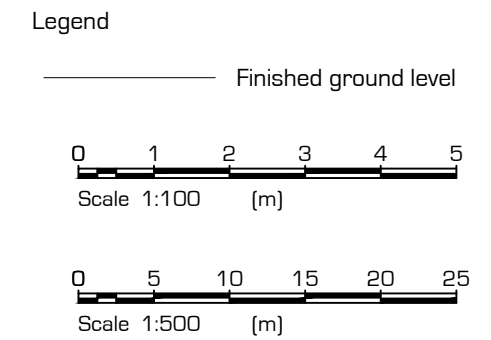
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line A
MHA3 to Outlet



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 26 of 43
DRAWING No:	13641-01	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	21.05	17.70 17.65	16.30 16.25	11.86
Depth to Invert	1.36	2.14 2.19	2.15 2.20	1.77
Ground Level	22.41	19.84	18.45	13.63
Pipe Details	Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2	Ø225 RCRRJ CLASS 2
Distance	L= 68.78		L= 16.37	L= 53.95
Grade	4.9%		8.2%	8.1%

SW Line B Long Section - MHB10 to MHB7

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

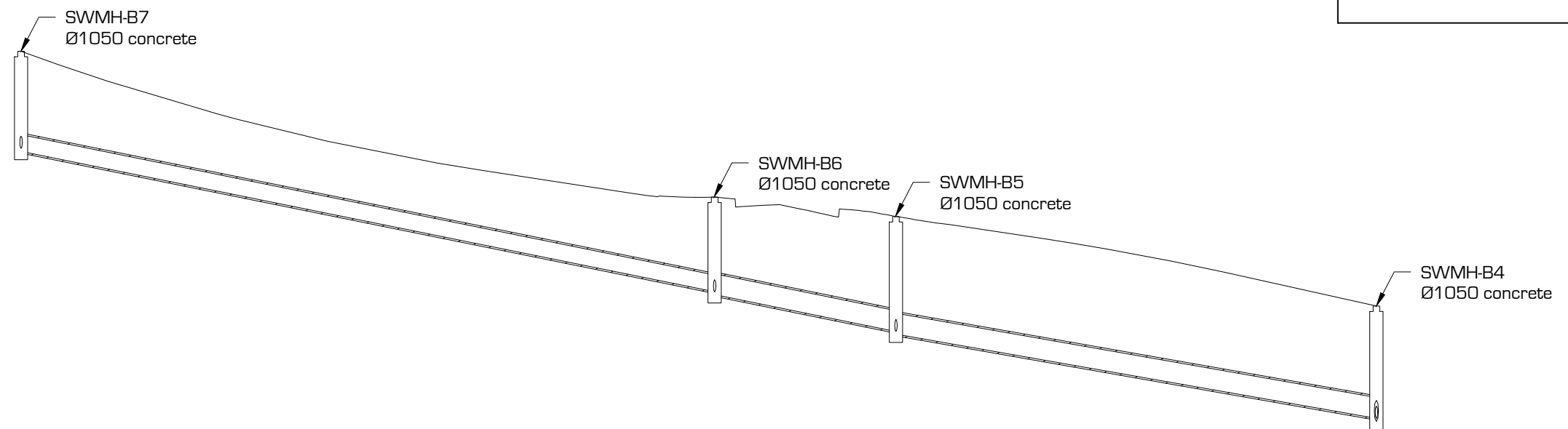
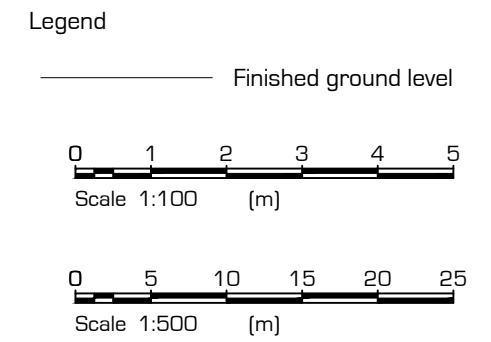
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line B
MHB10 to MHB7



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 27 of 43
DRAWING No:	1364101	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	11.81	9.25 9.20	8.53 8.48	6.95
Depth to Invert	1.82	1.72 1.77	2.09 2.14	2.04
Ground Level	13.63	10.97	10.62	8.99
Pipe Details	Ø300 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2	
Distance	L= 63.02		L= 16.48	
Grade	4.0%		4.1%	
			3.5%	

SW Line B Long Section - MHB7 to MHB4

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line B
MHB7 TO MHB4

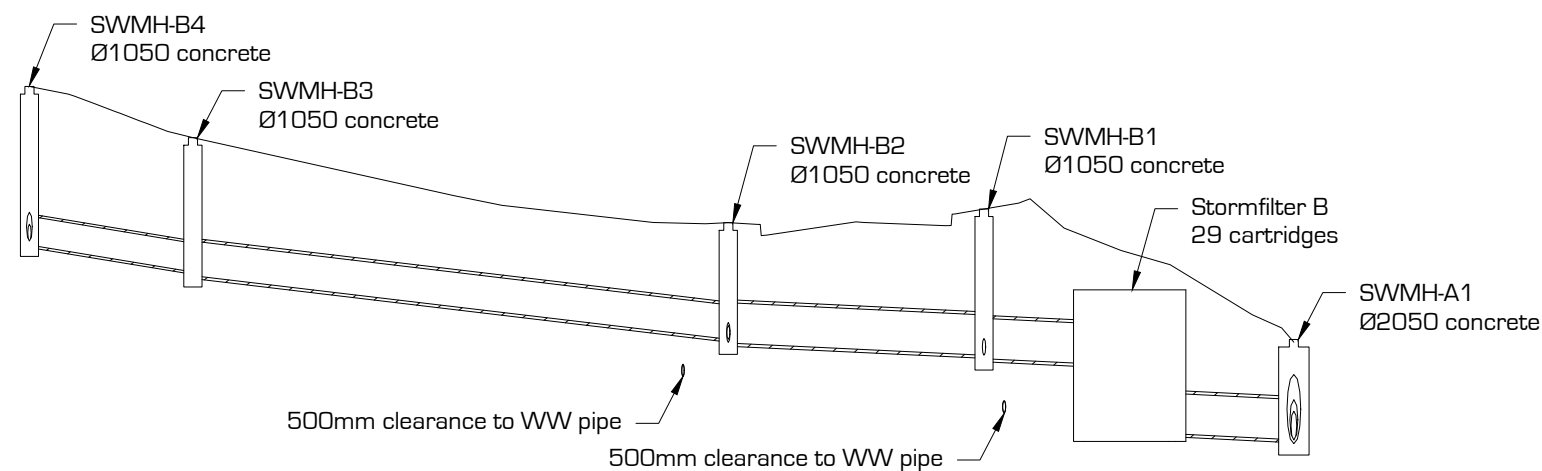
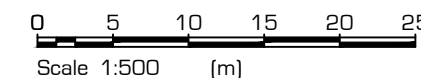
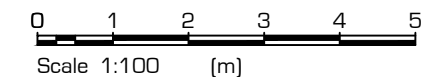


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 28 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	6.90	6.54	6.49	5.65	5.60	5.44	5.39	5.33	4.40	4.40	4.40	4.32
Depth to Invert	2.10	1.78	1.83	1.54	1.59	1.93	1.98	1.69	2.62	2.20	2.20	1.29
Ground Level	8.99	8.32		7.19		7.37		7.02		6.60		5.65
Pipe Details	Ø375 RCRRJ CLASS 2		Ø450 RCRRJ CLASS 2			Ø525 RCRRJ CLASS 2		Ø525 RCRRJ CLASS 2		Ø525 RCRRJ CLASS 2		
Distance	L= 10.81		L= 35.41			L= 16.91		L= 6.62	L= 6.04	L= 7.84		
Grade	3.3%		2.4%			0.9%		1.0%	0.0%	1.0%		

SW Line B Long Section
MHB4 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

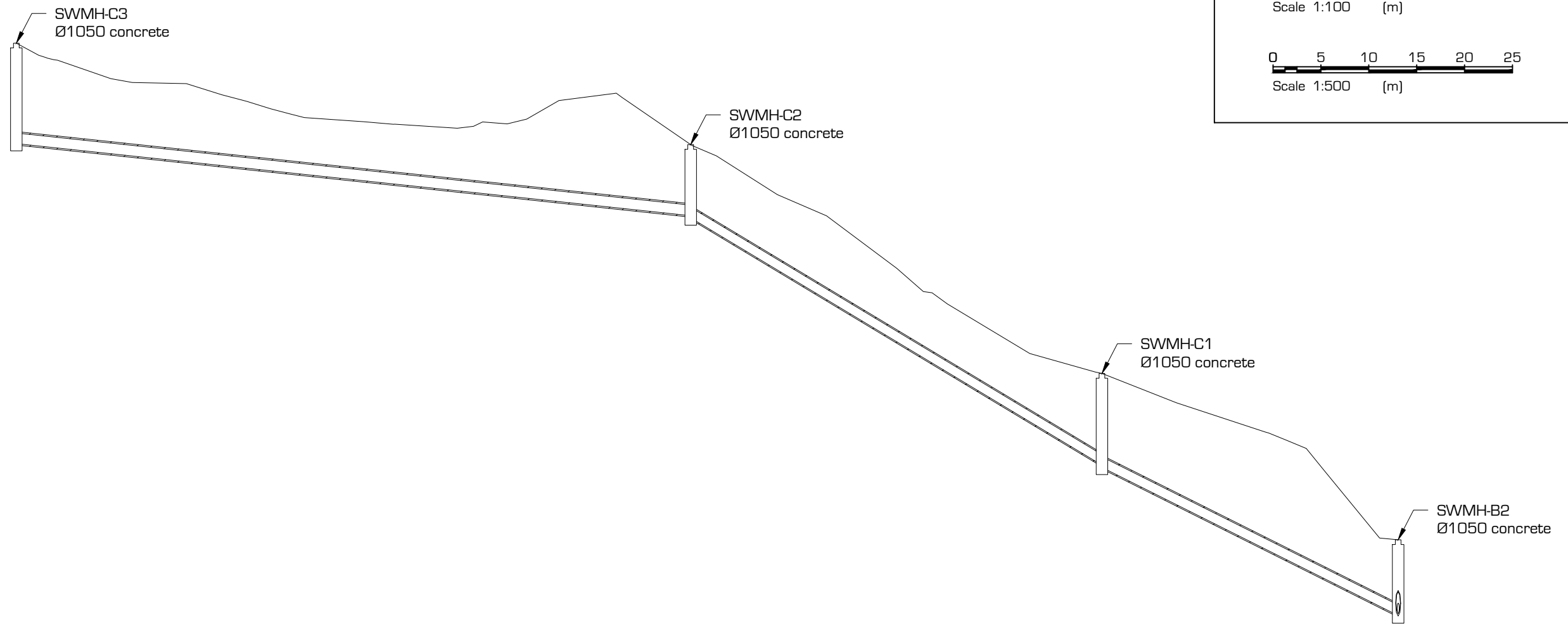
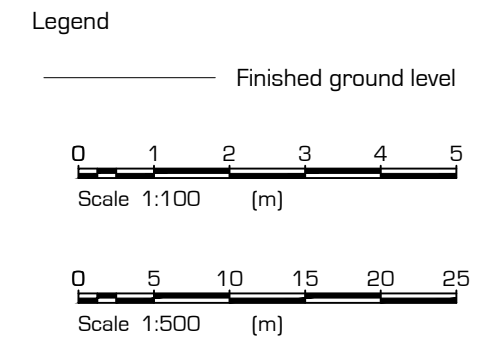
DRAWING TITLE
Stormwater Long Section - Line B
MHB4 to MHA1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 29 of 43
DRAWING No: 13641-01	REV: 0

0	Issued for consent	JS	20.03.18
No.	REVISION	BY	DATE



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	17.56	15.46	13.96	13.91	8.75	8.70	5.61
Depth to Invert		2.10	1.49	1.53	1.91	1.96	1.58
Ground Level	17.56		15.44		10.66		7.19
Pipe Details		Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2	
Distance		L= 70.41		L= 42.94		L= 30.93	
Grade		2.1%		12.0%		10.0%	

SW Line C Long Section - MHC3 to MHB2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

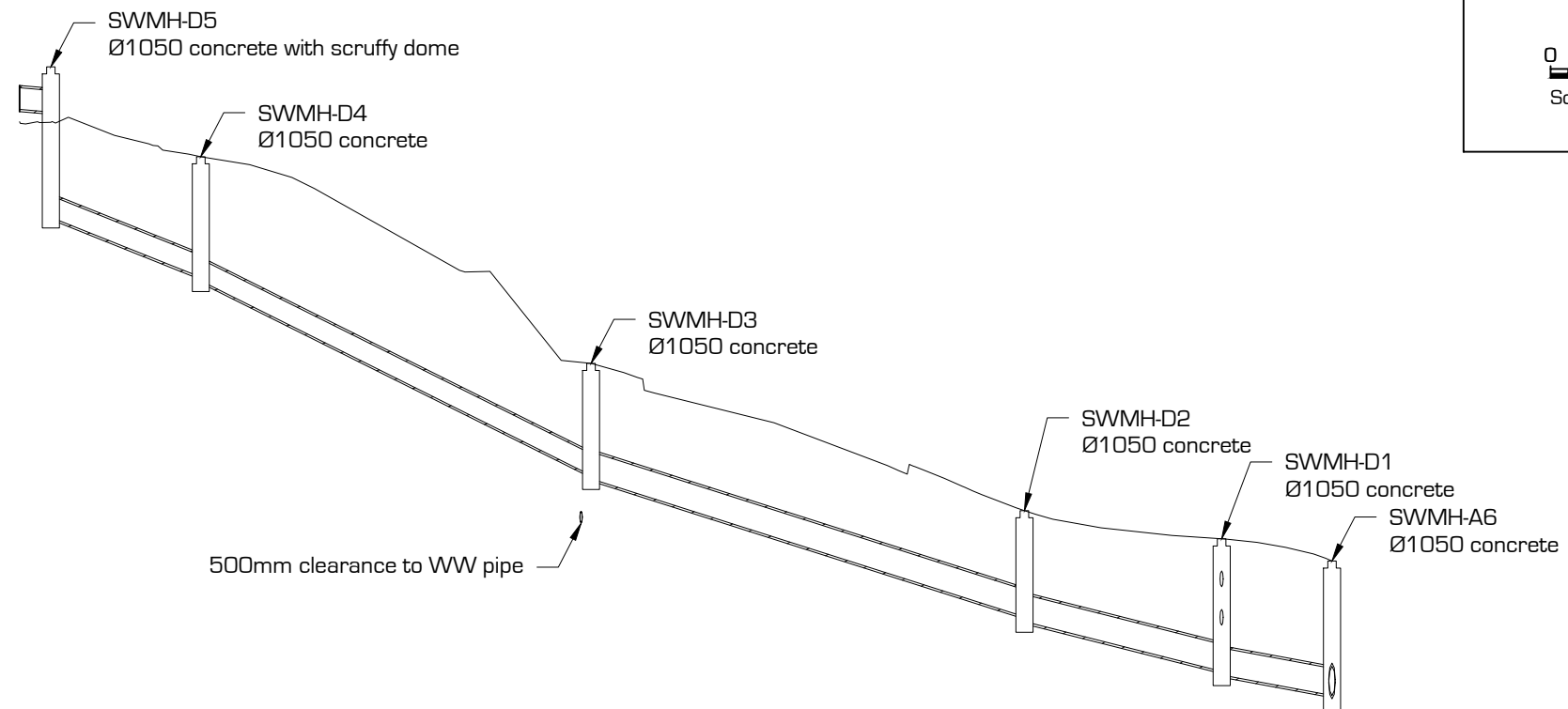
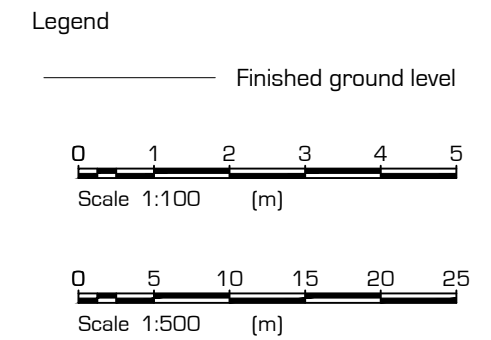
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line C



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 30 of 43
DRAWING No:	13641-01	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 15.0m

Invert Levels	25.28	25.31	23.79	22.95	22.90	20.16	20.11	18.17	18.10	17.40	17.35	17.06
Depth to Invert			1.34	1.70	1.75	1.58	1.63	1.49	1.56	1.87		
Ground Level	25.91			24.65		21.74		19.66		19.27		18.95
Pipe Details	Ø300 RCRRJ CLASS 2		Ø300 RCRRJ CLASS 2			Ø375 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2		
Distance	L= 2.20 L= 10.56		L= 27.48			L= 30.52		L= 13.89		L= 7.77		
Grade	1.7% 8.0%		10.0%			6.4%		5.0%		3.7%		

SW Line D Long Section - MHD5 to MHA6

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line D

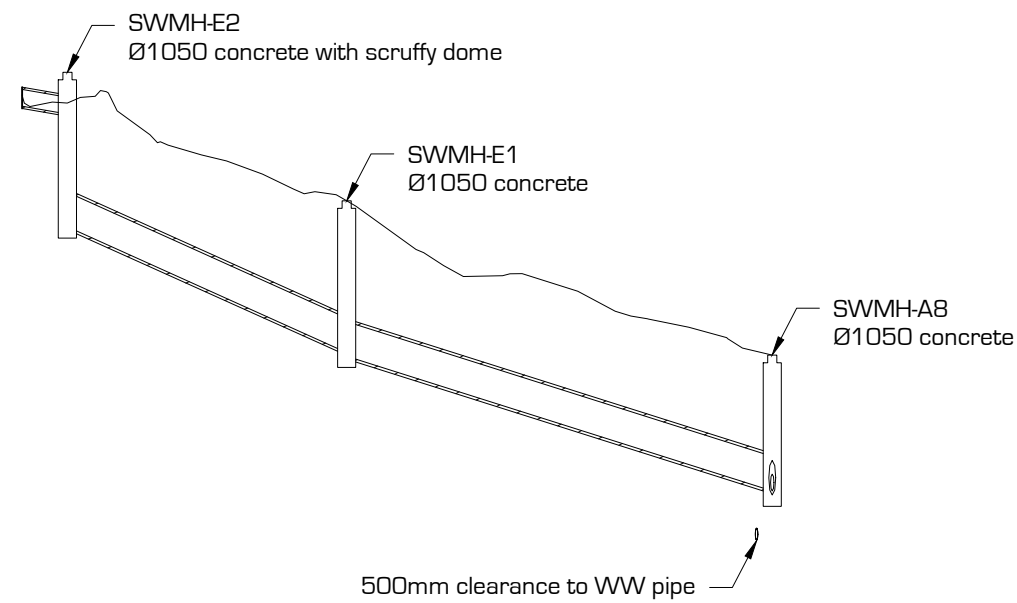
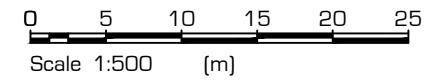
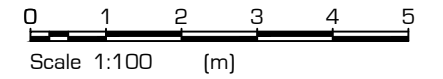


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 31 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 15.0m

Invert Levels	26.16	26.06 24.56	22.90 22.85	21.07
Depth to Invert		1.64	2.01 2.05	1.80
Ground Level	26.61		24.91	22.87
Pipe Details		Ø450 RCRRJ CLASS 2	Ø450 RCRRJ CLASS 2	
Distance	L= 3.00	L= 18.47	L= 28.15	
Grade	3.4%	9.0%	6.3%	

SW Line E Long Section - MHE2 to MHA8

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

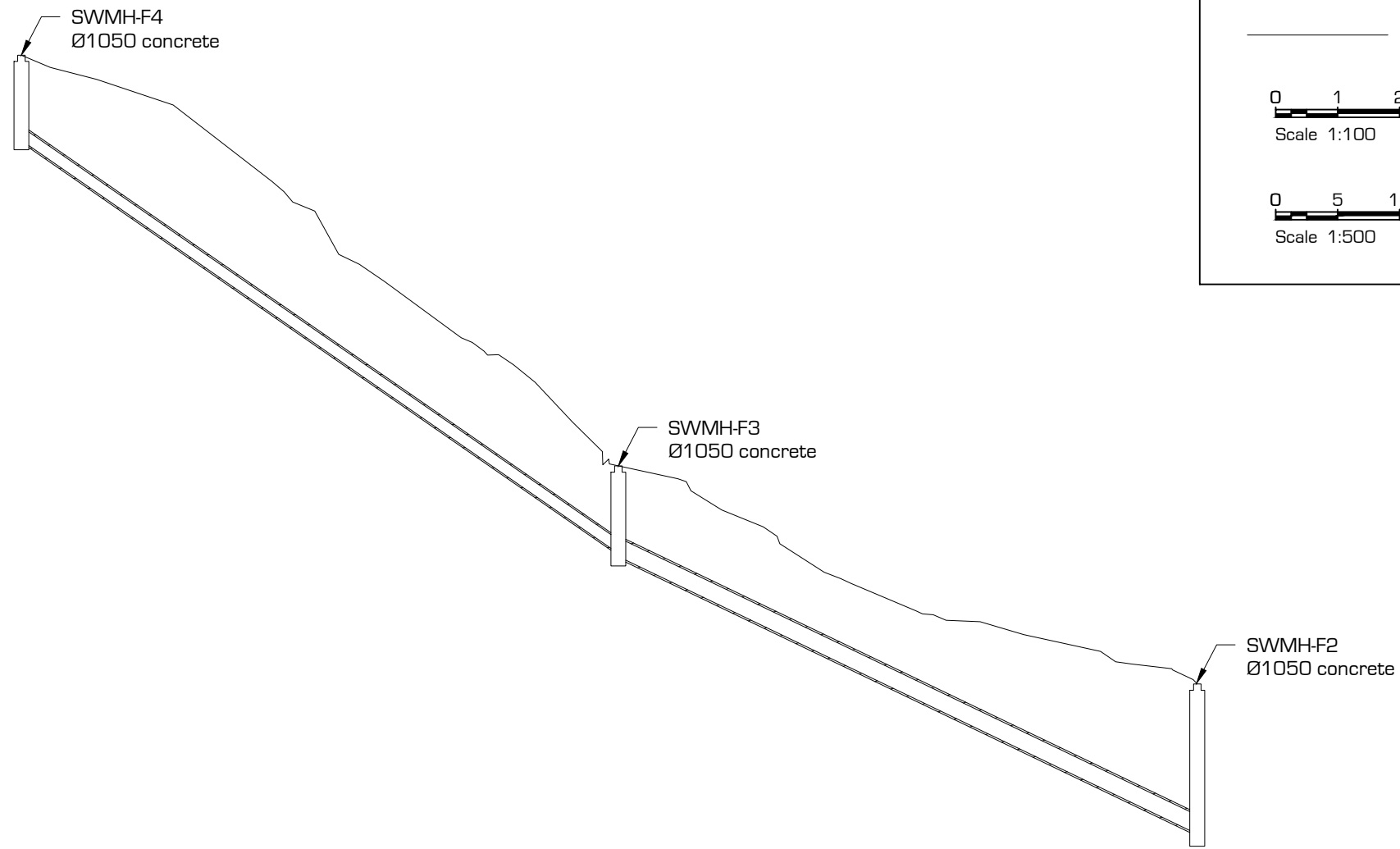
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line E



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 32 of 43
DRAWING No:	13641-01	REV: 0



Legend

————— Finished ground level

0 1 2 3 4 5
Scale 1:100 (m)

0 5 10 15 20 25
Scale 1:500 (m)

Vertical 1:100
Horizontal 1:500

Datum 7.0m

Invert Levels	21.32	14.66 14.61	10.14
Depth to Invert	1.37	1.41 1.46	2.42
Ground Level	22.69	16.07	12.55
Pipe Details	Ø225 RCRRJ CLASS 2		Ø300 RCRRJ CLASS 2
Distance	L= 48.15		L= 46.69
Grade	13.8%		9.6%

SW Line F Long Section - MHF4 to MHF2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

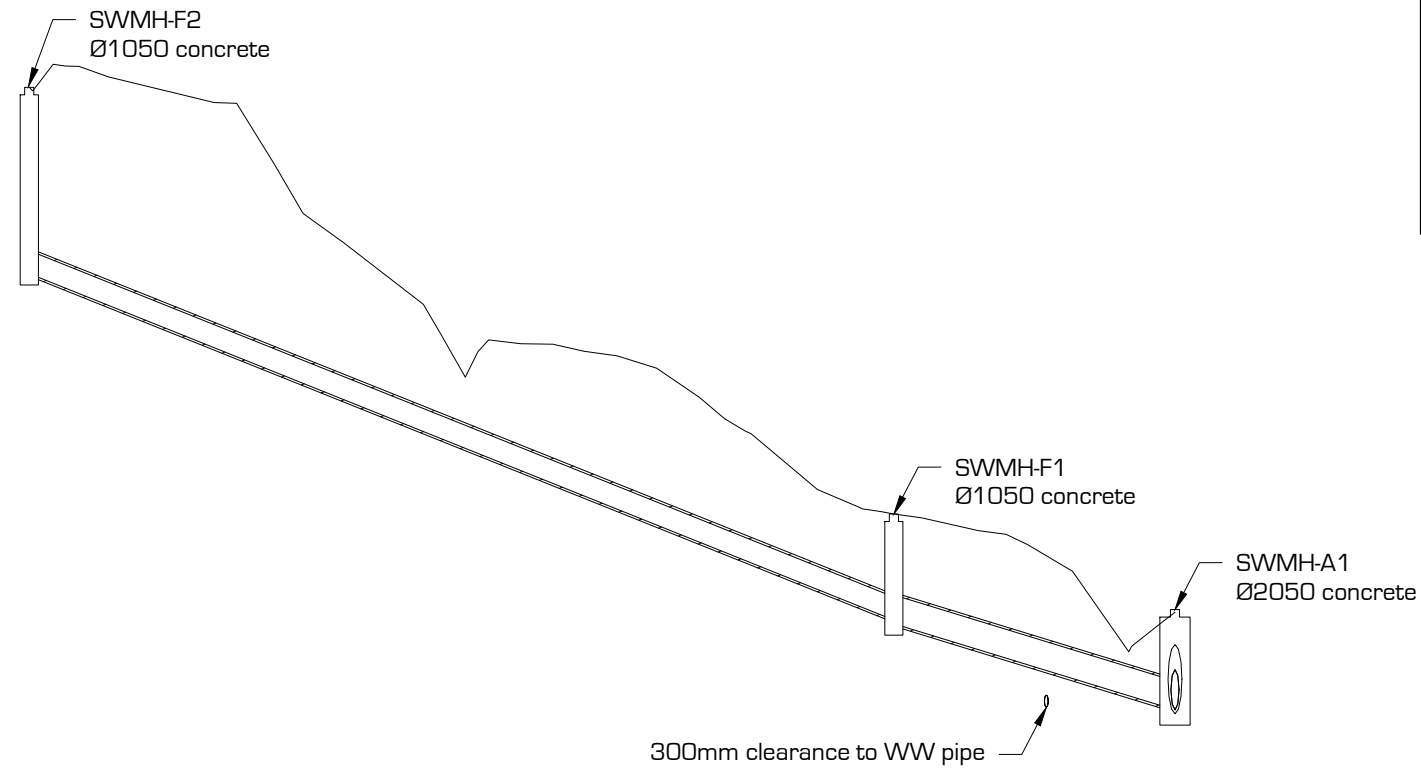
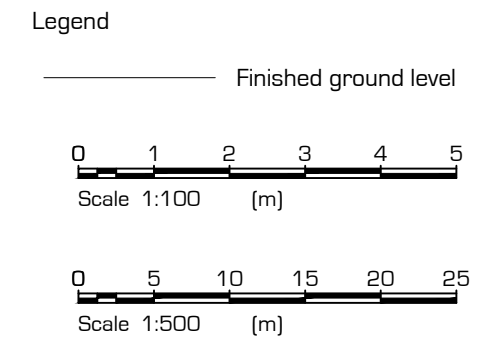
DRAWING TITLE
Stormwater Long Section - Line F
MHF4 to MHF2



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 33 of 43
DRAWING No:	13641001	REV: 0

0 Issued for consent No. REVISION BY DATE JS 20.03.18



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	10.09	5.51	4.32
Depth to Invert	2.42	1.45	1.29
Ground Level	12.55	6.91	5.65
Pipe Details	Ø300 RCRRJ CLASS 2		Ø375 RCRRJ CLASS 2
Distance	L= 57.19		L= 18.59
Grade	8.0%		6.1%

SW Line F Long Section - MHF2 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line F
MHF2 to MHA1

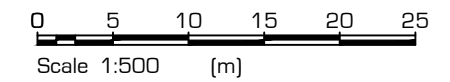
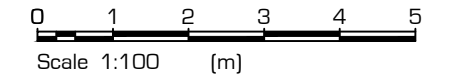


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

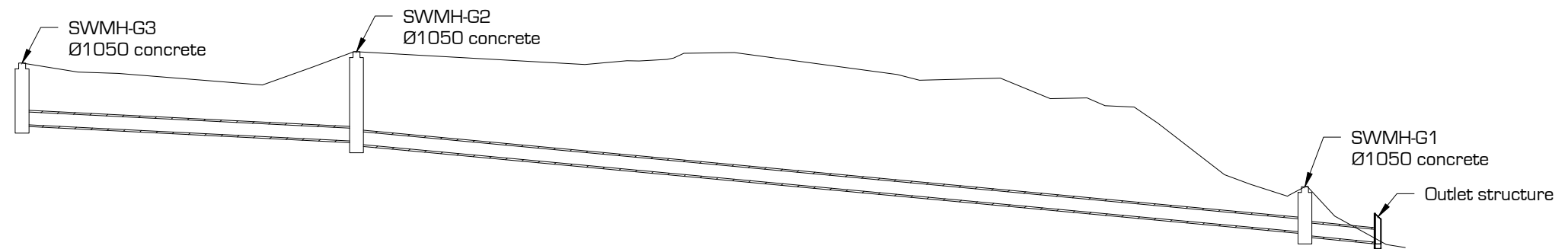
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 34 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500



Datum 0.0m

Invert Levels	5.00	4.71	4.66	3.13	3.08	2.96
Depth to Invert	1.07	1.55	1.60	0.79	0.84	0.07
Ground Level	6.07	6.26		3.92	3.66	
Pipe Details	Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2		Ø225 RCRRJ CLASS 2	
Distance	L= 29.05		L= 82.38		L= 6.06	
Grade	1.0%		1.9%		2.0%	

SW Line G Long Section - MHG3 to Outlet

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

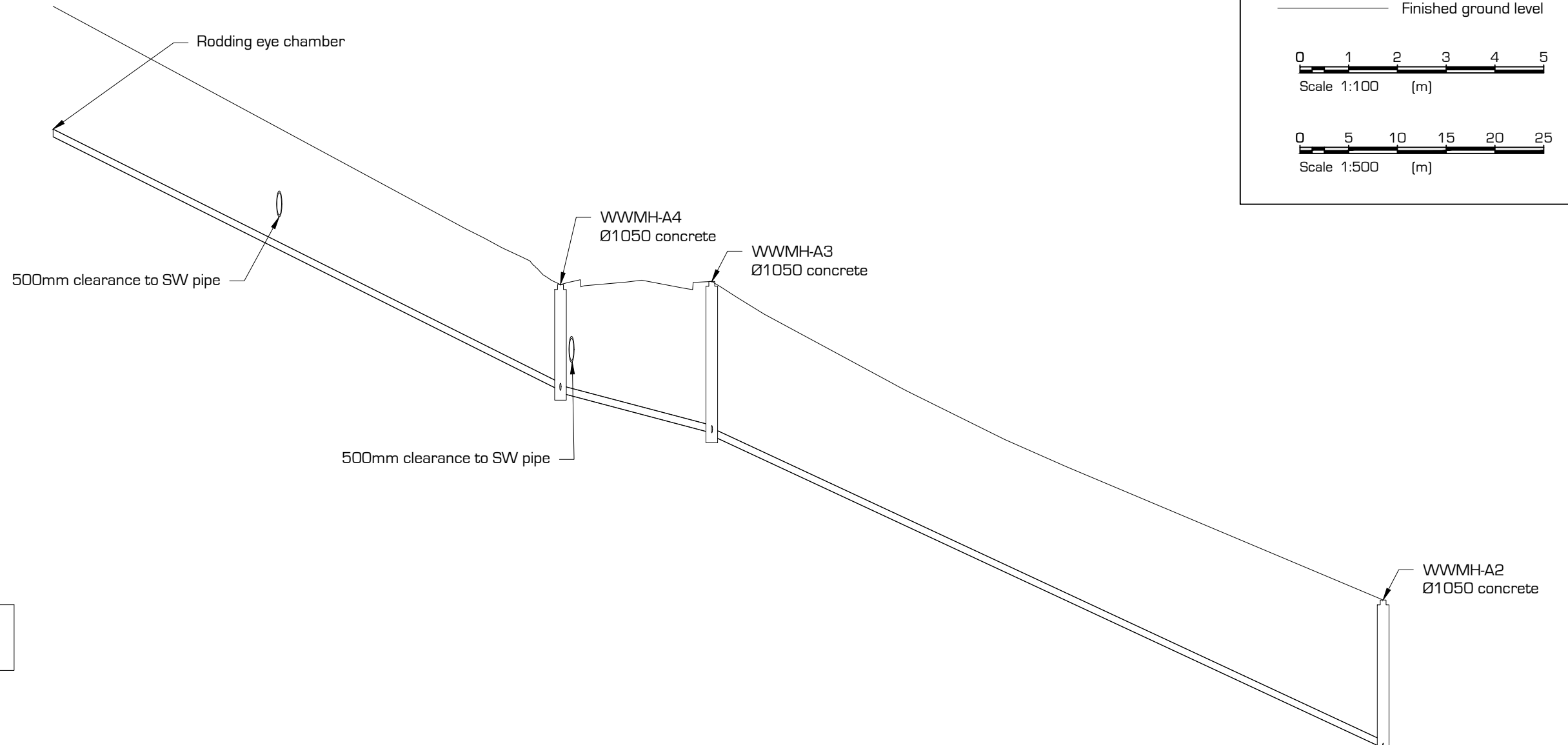
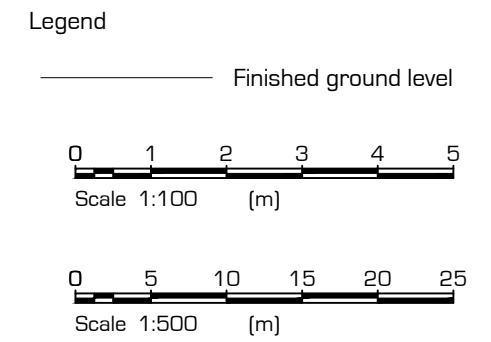
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Stormwater Long Section - Line G



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 35 of 43
DRAWING No:	13641-201	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	22.74	17.54 17.49	16.67 16.62	10.21
Depth to Invert	2.67	2.17 2.22	3.10 3.16	3.03
Ground Level		19.71	19.77	13.24
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	Ø150 UPVC PN 6
Distance	L= 52.03		L= 15.52	L= 68.85
Grade	10.0%		5.3%	9.3%

WW Line A Long Section - MHA4 to MHA2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line A
MHA4 to MHA2

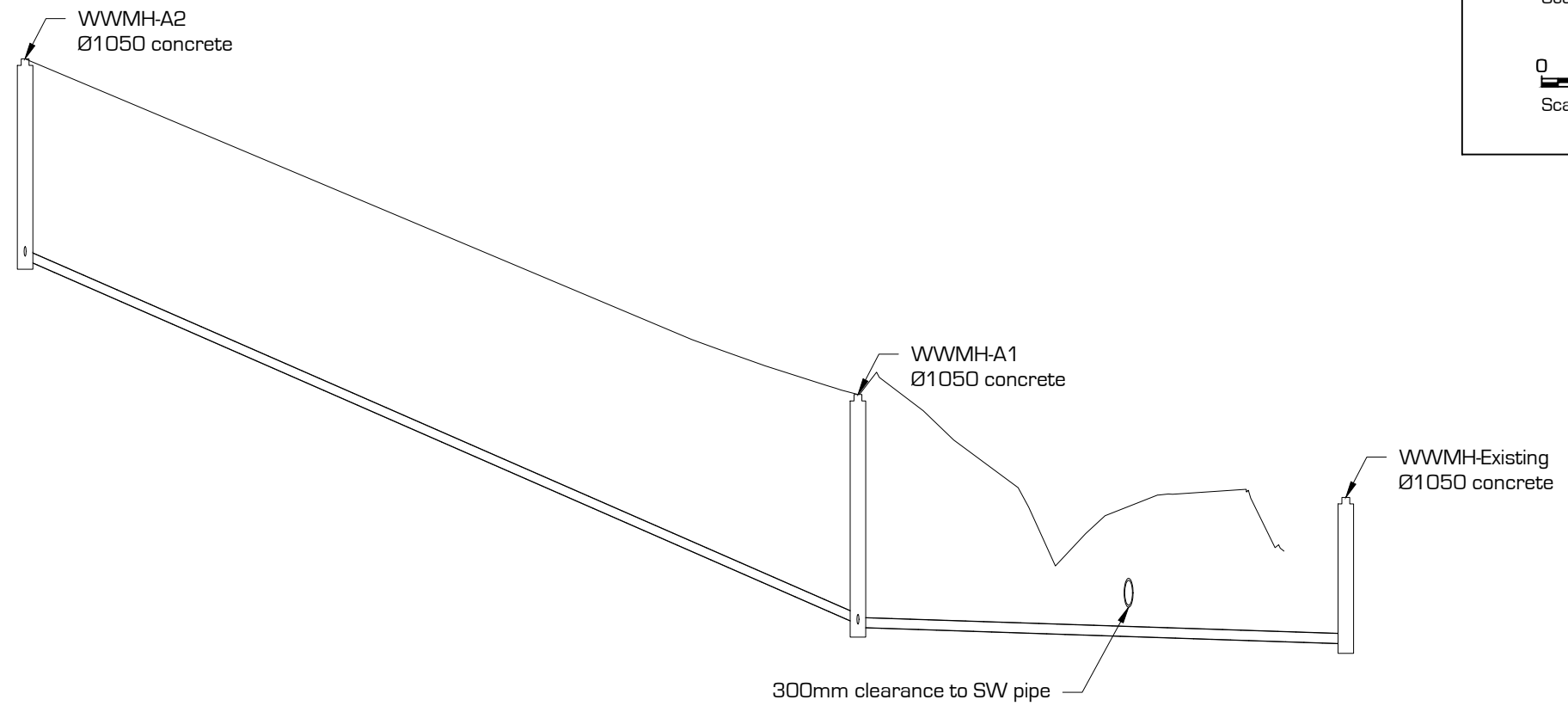
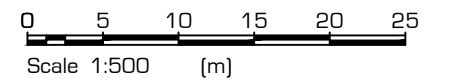
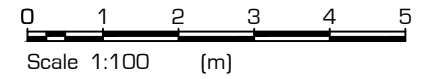


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 36 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	10.16	4.55	4.50	4.25
Depth to Invert	3.08	3.53	3.58	0.08
Ground Level	13.24	8.08		6.50
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	
Distance	L= 64.08		L= 37.54	
Grade	8.8%		0.7%	

WW Line A Long Section - MHA3 to MH Existing

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line A
MHA3 to MH Existing

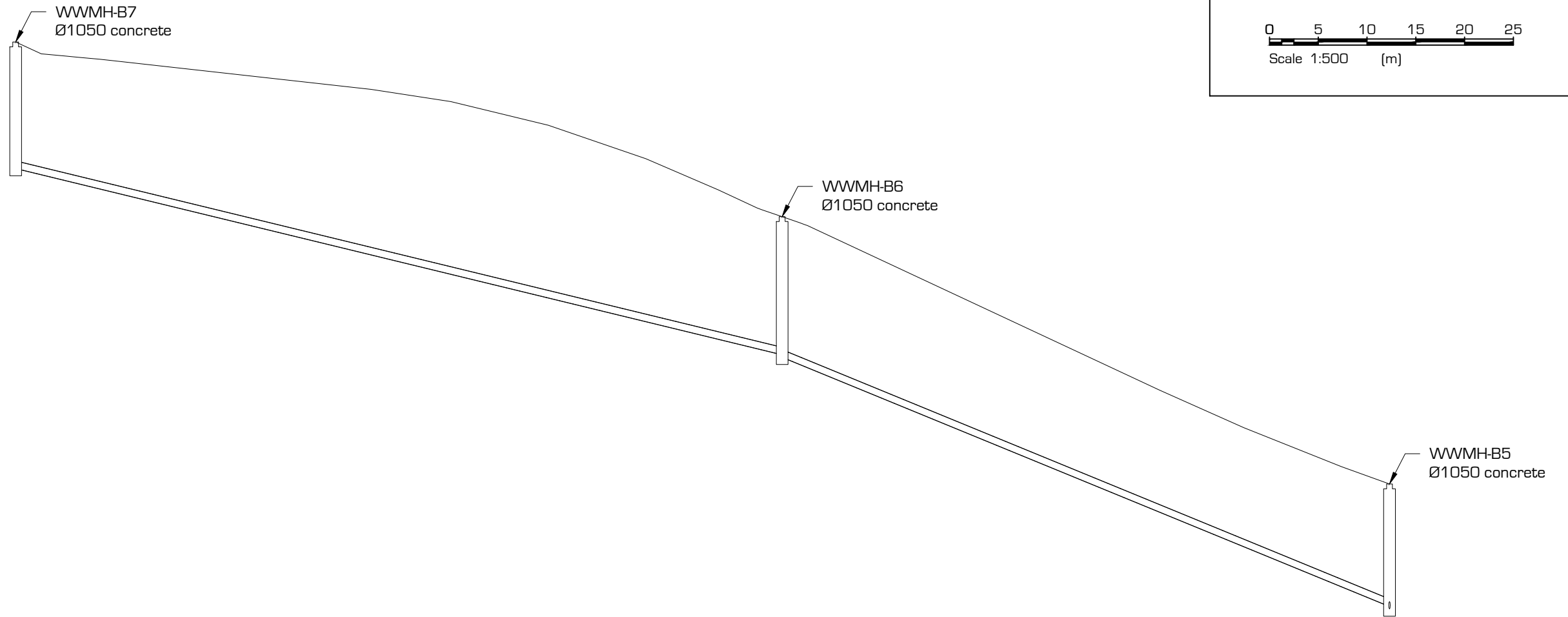
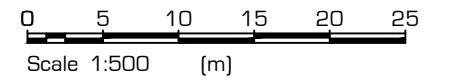
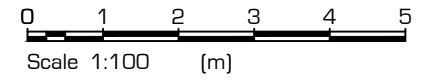


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 37 of 43
DRAWING No: 13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 10.0m

Invert Levels	19.91	16.10	16.05	10.94
Depth to Invert	2.59	2.83	2.88	2.51
Ground Level	22.51	18.93		13.45
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	
Distance	L= 78.58		L= 62.26	
Grade	4.9%		8.2%	

WW Line B Long Section - MHB7 to MHB5

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

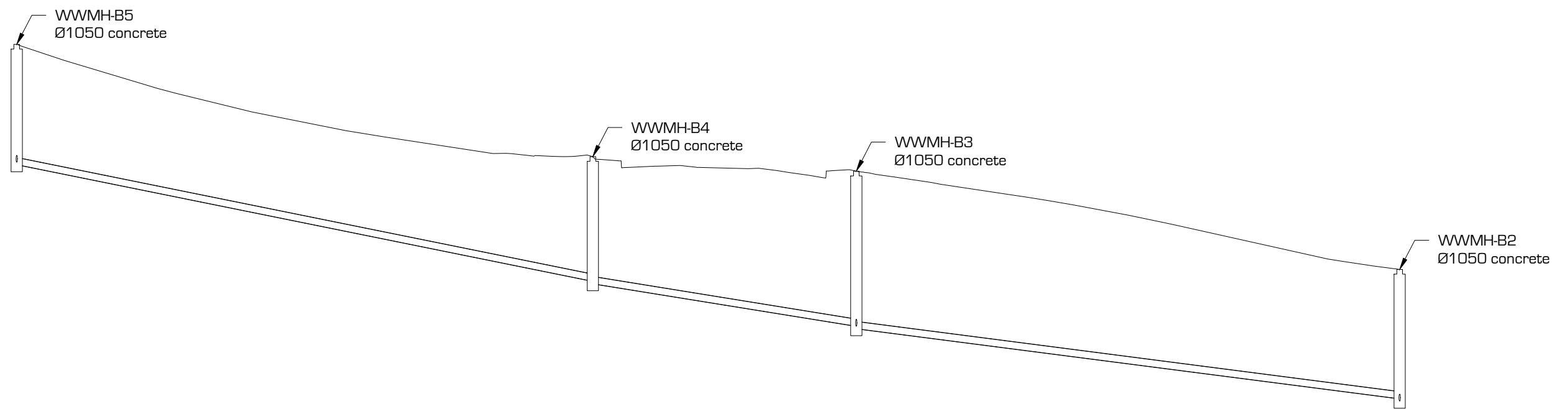
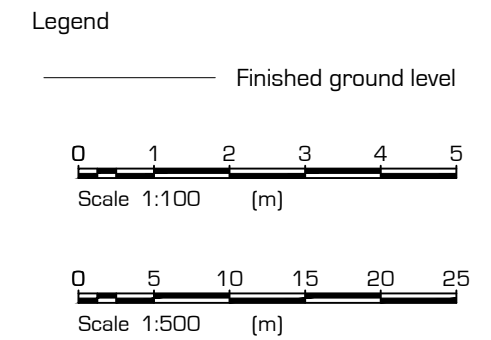
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB7 to MHB5



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 38 of 43
DRAWING No:	13641501	REV: 0



Vertical 1:100
Horizontal 1:500

Datum 5.0m

Invert Levels	10.89	8.41 8.36	7.45 7.40	5.91
Depth to Invert	2.56	2.65 2.70	3.30 3.35	2.75
Ground Level	13.45	11.06	10.75	8.66
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6	Ø150 UPVC PN 6
Distance	L= 61.37		L= 28.06	L= 57.88
Grade	4.0%		3.2%	2.6%

WW Line B Long Section - MHB5 to MHB2

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB5 to MHB2

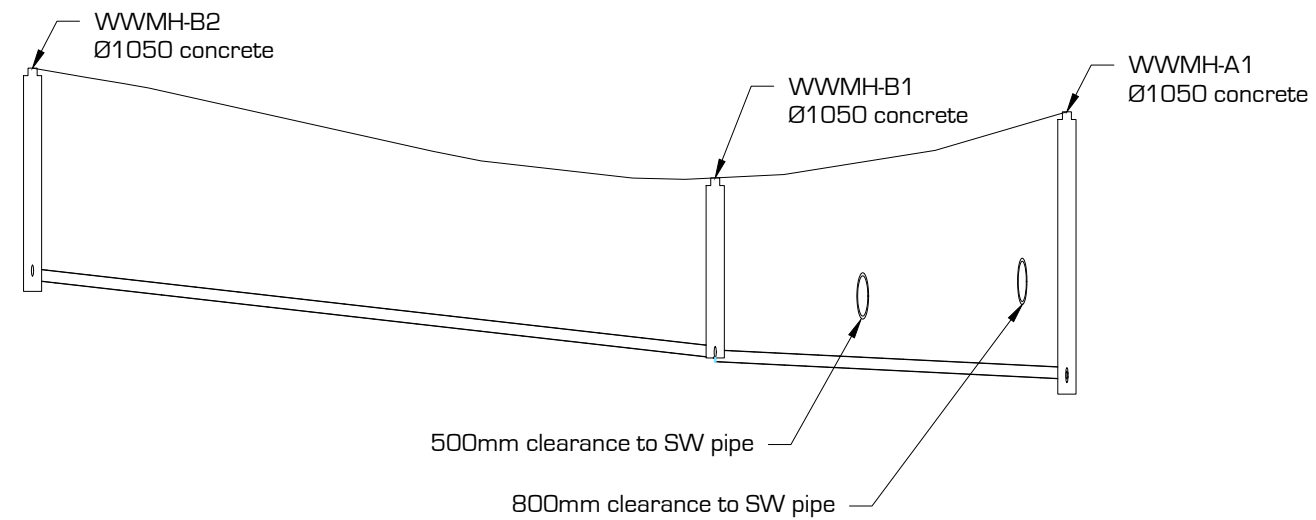
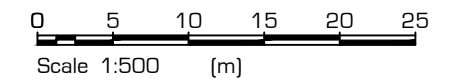
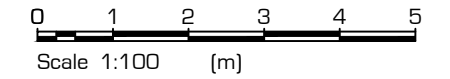


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 39 of 43
DRAWING No:	1364101	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	5.86	4.83 4.78	4.55
Depth to Invert	2.80	2.38 2.43	3.53
Ground Level	8.66	7.21	8.08
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6
Distance	L= 45.16		L= 23.26
Grade	2.3%		1.0%

WW Line B Long Section - MHB2 to MHA1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

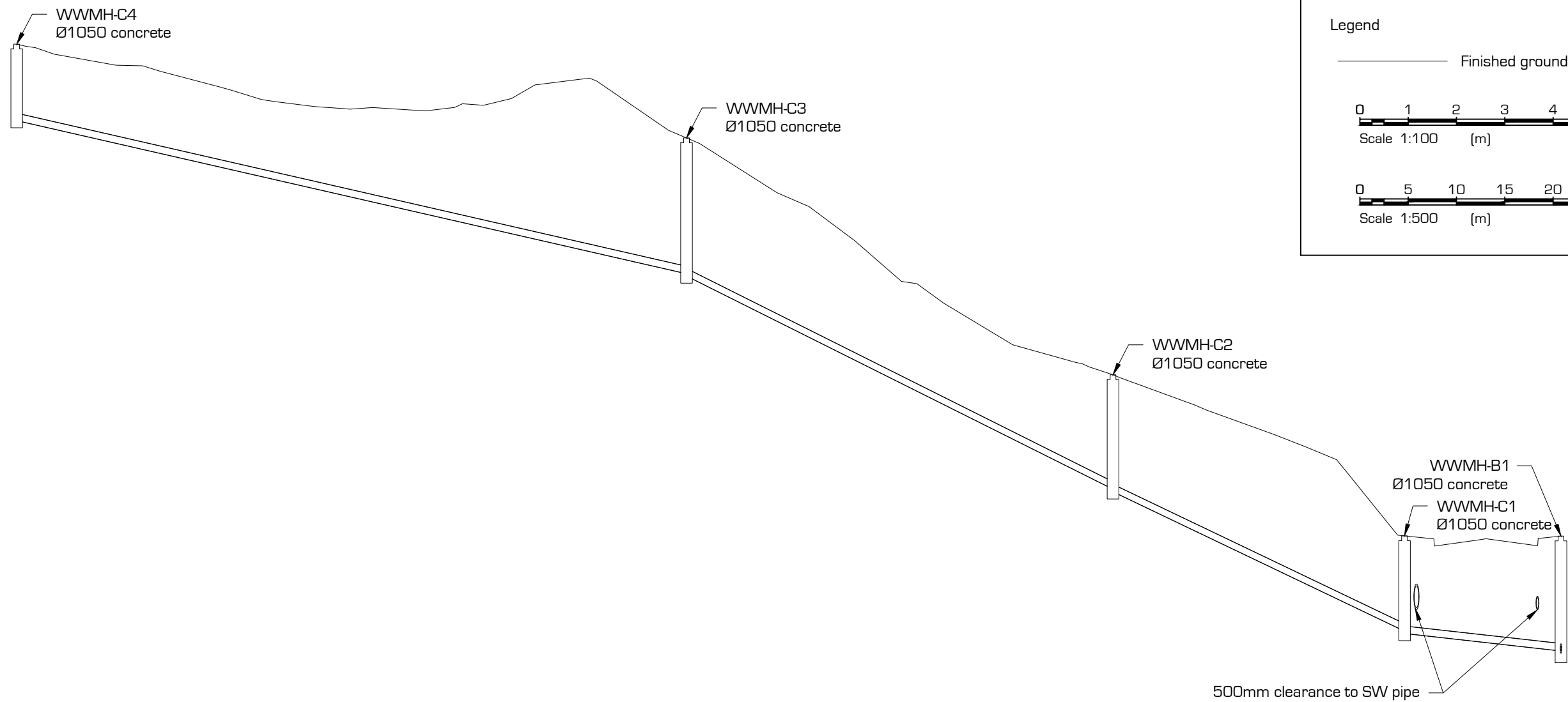
PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line B
MHB2 to MHA1



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 40 of 43
DRAWING No:	13641-01	REV: 0



Legend

————— Finished ground level

0 1 2 3 4 5
Scale 1:100 (m)

0 5 10 15 20 25
Scale 1:500 (m)

Vertical 1:100
Horizontal 1:500

Datum 0.0m

Invert Levels	17.39	15.81	12.64	8.18	5.24	4.83
Depth to Invert	1.58	2.81	2.37	1.97	2.02	2.38
Ground Level	17.39	15.45	10.55	7.21	7.21	7.21
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6		Ø150 UPVC PN 6	
Distance	L = 69.31		L = 44.14		L = 16.19	
Grade	4.6%		10.0%		2.2%	

WWM Line C Long Section - MHC4 to MHB1

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line C

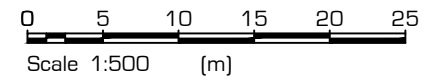
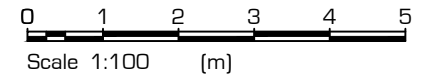


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

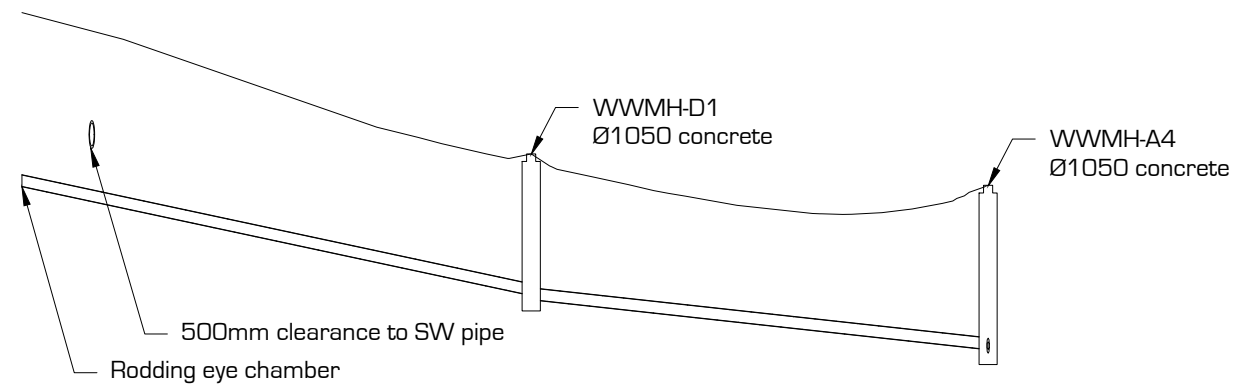
PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 41 of 43
DRAWING No:	13641-01	REV: 0

Legend

————— Finished ground level



Vertical 1:100
Horizontal 1:500



Datum 15.0m

Invert Levels	19.69	18.25 18.20	17.54
Depth to Invert	2.30	1.87 1.93	2.17
Ground Level		20.13	19.71
Pipe Details	Ø150 UPVC PN 6		Ø150 UPVC PN 6
Distance	L= 33.69		L= 30.22
Grade	4.3%		2.2%

WW Line D Long Section - MHD1 to MHA4

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section - Line D

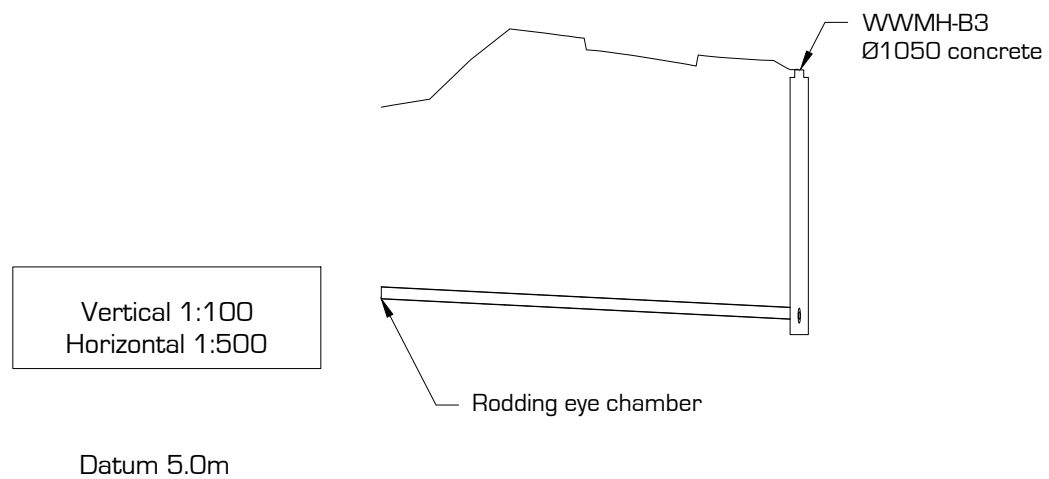
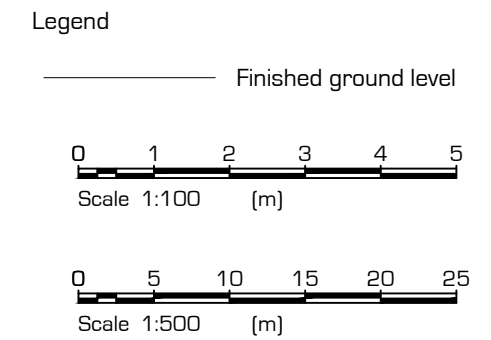


DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS: For Consent	
PROJECT: 13641	SHEET: 42 of 43
DRAWING No: 13641-01	REV: 0

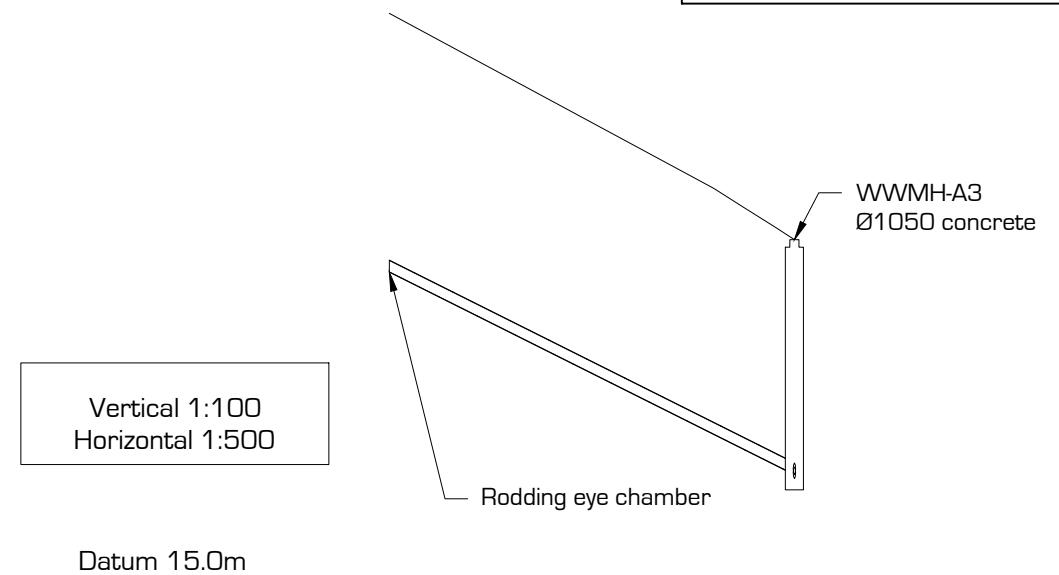
0 Issued for consent

REVISION
BY: JS DATE: 20.03.18



Invert Levels	7.73	7.45
Depth to Invert	2.53	3.30
Ground Level		10.75
Pipe Details	Ø150 UPVC PN 6	
Distance	L = 27.64	
Grade	1.0%	

WW Line B3 Extension Long Section



Invert Levels	19.35	16.67
Depth to Invert	3.42	3.10
Ground Level		19.77
Pipe Details	Ø150 UPVC PN 6	
Distance	L = 26.79	
Grade	10.0%	

WW Line A3 Extension Long Section

Contractor shall check all dimensions on site prior to work commencing

CLIENT
Prime Property Group Ltd.
PO Box 11-785
Wellington

PROJECT
52 Lot Residential Subdivision
Lot 1 DP 149776
Foster Crescent, Snells Beach

DRAWING TITLE
Wastewater Long Section
Line B3 and Line A3



DESIGN:	JS
DRAWN:	HD
DATE:	20.03.18
CHECKED:	AH
SCALE A3:	Shown

PROJECT STATUS:	For Consent	
PROJECT:	13641	SHEET: 43 of 43
DRAWING No:	1362001	REV: 0



BARKER & ASSOCIATES

SOIL CONTAMINATION PRELIMINARY SITE INVESTIGATION REPORT

**FOR THE PROPOSED SUBDIVISION AT FOSTER CRESCENT, SNELLS BEACH,
WARKWORTH**

Project Reference: 13641:Contam
16 October 2018

TABLE OF CONTENTS

Executive Summary	3
Introduction	4
Site Details & Setting	4
1.1 Proposed Site Development	4
1.2 Site Description	5
1.3 Hydrology.....	7
1.4 Geology.....	8
Preliminary Site Investigation.....	8
1.5 Search of Council Records	9
1.6 Historic Aerial Imagery.....	9
1.7 Certificates of Title	12
1.8 Review of Recent LDE Geotechnical Investigation.....	12
Site Walkover Inspections	13
Conceptual Site Model.....	14
1.9 Hazardous Substances and Potential Contaminants of Concern	14
PSI Conclusions and Recommendations	15
Report Limitations	15
Appendix A: Subdivision Scheme Plan	
Appendix B: Search of Council Records	
Appendix C: Historical Aerial Photographs	
Appendix D: Certificates of Title	
Appendix E: Site Assessment Photographs	
Appendix F: Site Walkover Assessment Form	

EXECUTIVE SUMMARY

A contamination preliminary site investigation (PSI) has been conducted for the site located at Foster Crescent, Snells Beach, Warkworth, legally described as Lot 1 DP 149776.

The objectives of the investigation was to identify any potential sources of contamination from past and present land use activities at the site and surrounding area to determine the contamination status of soils at the site, and to subsequently assess compliance with the NES in regards to the proposed subdivision.

The work completed as part of the investigation included a desktop review of site ownership and district and regional council records, review of historic aerial imagery showing the property, a walkover inspection, and review of geotechnical data specific to the site.

The results of the investigation indicate that a very low potential for ground contamination exists within the property and that the NES does not apply. We consider that a detailed investigation of soil contamination at this property is not required and that the proposed development of the land is unlikely to pose a risk to human health.

INTRODUCTION

Land Development & Exploration Ltd has been engaged by Barker & Associates to undertake a contamination PSI of the land parcels legally described as Lots 1 DP 149776, currently zoned for large lots, located at Foster Crescent, Snells Beach, Warkworth.

Our client is proposing to rearrange and subdivide the existing legal lot boundaries of Lot 1 DP 149776, creating 57 lots (including the 2 access lots) in total at the site. LDE considers that the proposed subdivision and change of use of the land are relative to Regulation 5(5) and (5)6 respectively, of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) Regulations 2011.

This investigation has been carried out in general accordance with the *Contaminated Land Management Guidelines No.1- Reporting on Contaminated Sites in New Zealand* (Revised 2011) and *Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils* (revised 2011).

The scope of the investigation is consistent with the LDE letter of engagement for the PSI to Barker and Associates, Reference 13641, dated 11 September 2018. The PSI includes the review of available historic aerial photographs showing the site, site specific council records, and a walkover/inspection of the site.

The objectives of the investigation were to:

- Identify any potential sources of contamination from past and present land use activities at the site which are listed on the Ministry for the Environment's (MfE) Hazardous Activities and Industries List (HAIL) (MfE, 2011)
- Assess compliance with the soil contaminant standards (SCS) for a 'Residential 10% produce' land use.

SITE DETAILS & SETTING

1.1 Proposed Site Development

Our client is proposing to subdivide the legal lot boundaries of Lot 1 DP 149776, creating 58 lots (including the access lots) at the site.

Residential dwellings are intended for proposed Lots 1 to 53, whilst proposed Lot 60 and 61 will comprise the access way, proposed Lots 54 and 54 will comprise accessways to vests, and proposed Lot 53 will comprise a local purpose utility reserve to vest. Excluding proposed non-residential Lots, the Lot sizes range from 530m² at proposed Lots 26 to 33, to 836m² at proposed Lot 21.

Refer to Figure 1 and Appendix A for the proposed subdivision scheme plan.



Figure 1: Proposed scheme plan supplied by C&R Surveyors Ltd.

1.2 Site Description

The site is located approximately 500m south of the central Snells Beach township, on the western side of the main Mahurangi East ridgeline (Figure 2). The site covers an area of 4.64ha, and is accessed by Foster Crescent to the east, at the southern corner of the site. Auckland Councils zones the site as Residential – Large Lot Zone, in both operative and unitary plans.

The site comprises generally undulating, rolling ground, and has a gentle rolling contour down to the northwest, at the lowest point of the site it bounds the upper estuary (Figure 4). The vegetation covering is consistent with grassland and light wetland areas.



Figure 2: Annotated location map showing the site. Source: LINZ Data Service.



Figure 3: Annotated site plan. Source: Google Maps. Approximate area of investigation shown by red boundary.



Figure 4: Topographic map with contours. Source: LINZ. Red site boundary line approximate indicator only. Contour interval of 20 meters.

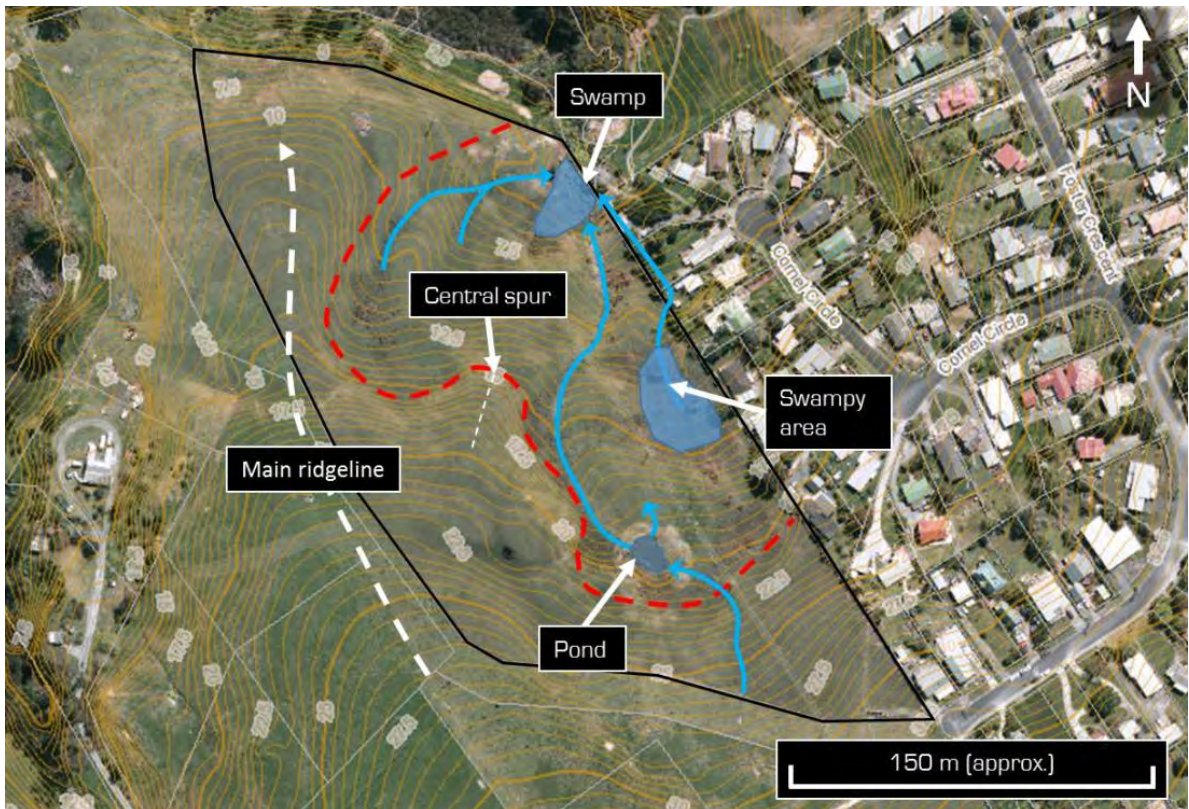


Figure 5: Topographic map with Key areas. Source: Auckland Council GeoMaps

1.3 Hydrology

The northern portion of the site is bound by Mahurangi Harbour estuary, with Auckland GeoMaps (GIS) indicating overland flow paths overlaying the site (Figure 5).

A man-made pond is present in the mid-southern portion of the site, shown in figure 3. The Auckland GIS shows there are no other mapped water courses within 500m of the site.

LDE's previous geotechnical report with eleven test pits of the site indicated watertable was encountered from 0.2m to 3.4m depth.



Figure 6: Map of site showing overland flow paths in dark blue. Site outlined in pale blue. Source: Auckland Council GeoMaps Public [GIS].

1.4 Geology

The New Zealand Geology Web Map by GNS' science identifies the site as being underlain by '*Mangakahia Complex*', described as 'Structurally complex units of tectonically intercalated micaceous sandstone and mudstone, siliceous mudstone and minor micritic limestone'.

PRELIMINARY SITE INVESTIGATION

An assessment was undertaken to provide an overview of any potential contaminants of concern that may be present at the site as a result of any documented past and present activities. The following information was reviewed in order to establish the history of the site:

- '*Search of Council Record Contaminated Sites Enquiry Report*' provided by the Auckland Council (AC).

¹GNS Science New Zealand Geology Web Map: <http://data.gns.cri.nz/geology/>. Retrieved 3 October 2018.

- Certificate of title.
- Historical aerial photographs.
- Review of geotechnical investigation undertaken by LDE across parts of the site.
- Site walkover/visual assessment

1.5 Search of Council Records

The Auckland Council's (AC) '*Contaminated Sites Enquiry Report*' dated 28th September 2018 has been reviewed.

Contamination, Air and Noise Technical Office states there is no contamination information help by the Auckland Council.

Refer to Appendix B for a copy of the AC provided document.

1.6 Historic Aerial Imagery

Aerial images from 1966 to 2017 have been reviewed. Copies of these photographs are presented in Appendix C. A summary of our review of these images is as follows:

1966 Photograph:



Figure 7, Source: Retrolens, taken 14th October, 1966. Retrieved 21st September, 2018.

The site has a generally uniform vegetative cover, with some darker shading along the eastern portion indicating wetter areas. These marking are consistent with the overland

flowpaths established by Auckland Council Geomaps (Figure 6), with allowance for some path change over five decades.

1973 Photograph:



Figure 8, Source: Retrolens, taken 4th December, 1973. Retrieved 21st September, 2018.

Southern area of site shaded darker, likely due to paddock boundaries with different grass length. Does not indicate horticultural activity.

1982 Photograph:



Figure 9, Source: Retrolens, taken 2nd September, 1982. Retrieved 21st September, 2018.

Small areas near centre of site likely to be ponding water because of low lying area and shade consistent with other water bodies pictured; could possibly be soil disturbance. Residential land east of the site becoming more built up.

2011 Photograph:

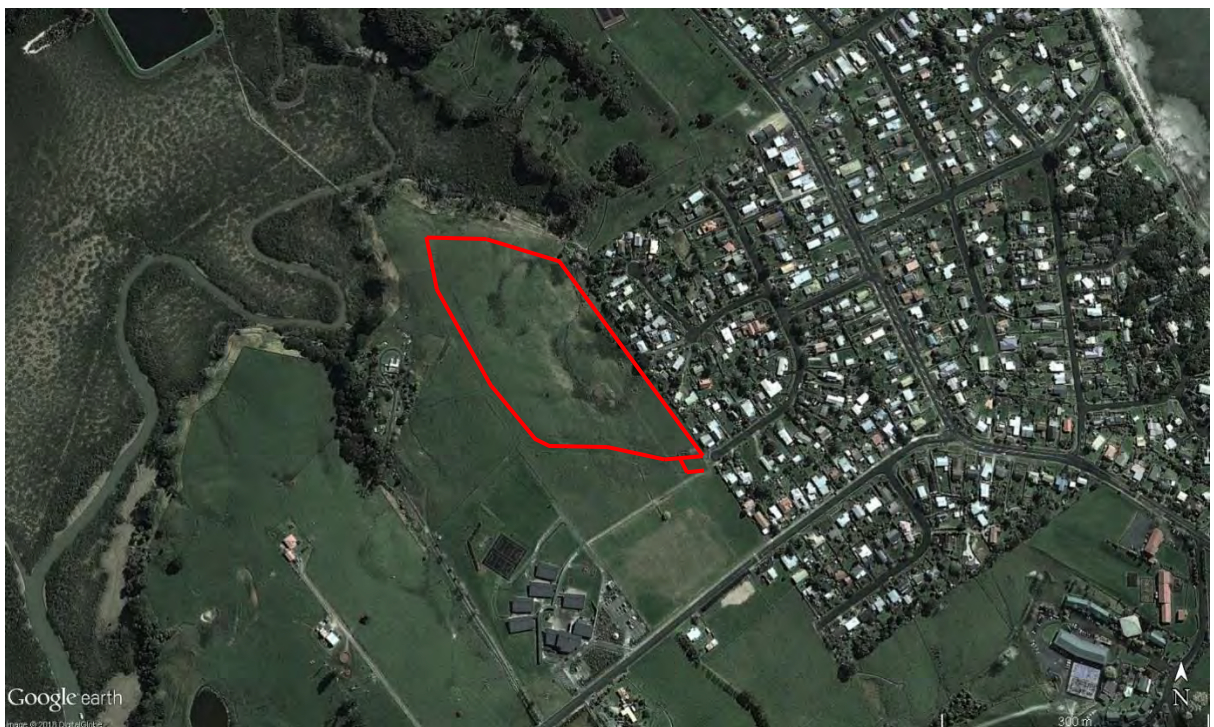


Figure 10, Source: Google Earth, taken 12th September, 2011. Retrieved 21st September, 2018.

Site topography and vegetation variance more prominent. Vegetation along overland flow paths consistent with estuarine vegetation north of site. Paler patches alongside overland flow paths could be dryer grass on water banks. School established south of site.

2017 Photograph:



Figure 11, Source: Google Earth, taken 4th January, 2017. Retrieved 21st September, 2018.

Manmade pond evident near centre of site. Potential soil disturbances noted on a minor scale.

1.7 Certificates of Title

The Certificates of Title (CoT) for Lot 1 DP 149776 were included in the NES search of council records provided to LDE. The CoT for each lot was issued on 4th October 2018 and shows Foster Crescent Property Limited as the proprietors.

Refer to Appendix D for a copy of the CoT for Lot 1 DP 149776.

1.8 Review of Recent LDE Geotechnical Investigation

Geotechnical testing was undertaken by LDE in November 2016. This included the soil logging of fifteen hand augered boreholes to the depth of 3m to 5m, and eleven test pits to a depth of 4.5m, distributed evenly throughout the site (Figure 12).

Test Pit 3 encountered a buried stream flowing in a 15cm tunnel infilled with organics, approximately 0.65m below ground. Test Pit 11 encountered grey cohesive fill material overlaying topsoil in the top 0.2m of ground.

The test logs recorded topsoil extending from 0.0 to 0.4 meters overlaying residual soil, before reaching Mangakahia Complex. Two test pits (9 and 10) have no topsoil, instead alluvium from 0.0 to at least 0.4m to 1.2m below ground level. Test pit 11 includes both topsoil to 0.2m and alluvium to 2.2m. No uncontrolled fill was encountered during the investigation.

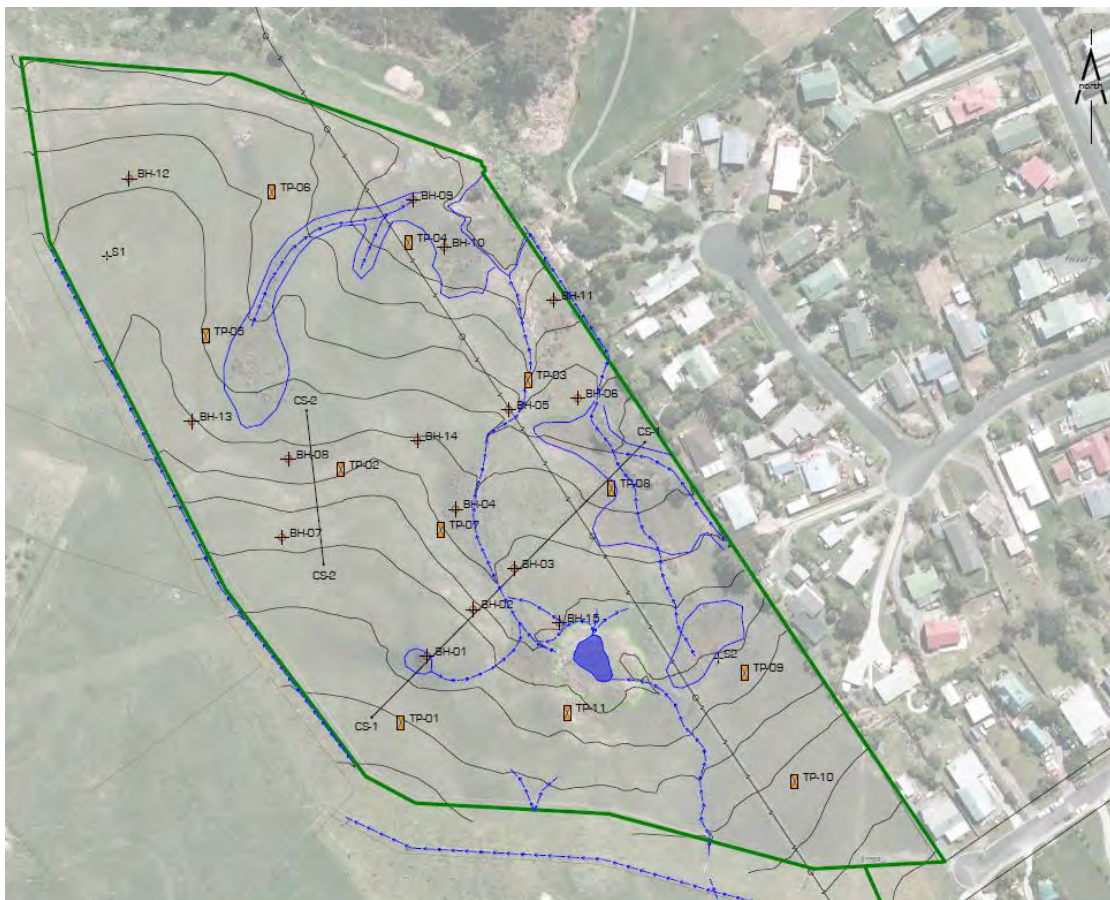


Figure 12: Extract from LDE geotechnical report showing layout of geotechnical test pits/boreholes. The test pits are generally laid out evenly over the site.

SITE WALKOVER INSPECTIONS

A site walkover inspection was undertaken on 10th October 2018 by LDE. No HAIL activities were identified during the site walkover assessment.

The site was covered by pasture and some gorse (Figure 13), with stock grazing on the site. A small dam was identified as well as surface flows of water. The surrounding land was used for grazing and residential land use. No further notable features were present.



Figure 13, Photo of site taken from northern end of site facing east, showing gorse, only present on the edge of the site.

Photographs taken during the site walkover inspections are shown in Figures 14 to 15 of Appendix E.

Refer to Appendix F for the Site Walkover Assessment Form.

CONCEPTUAL SITE MODEL

1.9 Hazardous Substances and Potential Contaminants of Concern

Our PSI investigation did not identify any hazardous substances associated with the former or current land use at the site that we consider a potential risk to human health.

A human health risk can only occur where there is a complete pathway between contaminant sources and a receptor, as there is no HAIL identified, a conceptual site model is not relevant to this investigation.

PSI CONCLUSIONS AND RECOMMENDATIONS

Our PSI has found that the site has been used for stock grazing as early as 1966 until 2018.

The proposed development will include subdivision whereby changing the land use.

We consider that a HAIL activity is less than likely to have occurred on the site and therefore the NES does not apply to this land. As such, a further detailed site investigation (DSI) is not considered necessary and we consider it is highly unlikely that there will be a risk to human health if the proposed development occurs at the site.

Therefore we recommend that Auckland Council approve the subdivision at the site.

REPORT LIMITATIONS

This investigation presents a preliminary site assessment of the potential for ground contamination prepared exclusively for Barker and Associates with respect to the particular brief given to us.

Information, opinions and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. Land Development & Exploration Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

Opinions given in this report are based on a review of existing data, evidence gathered during the site walkover and anecdotal information. .

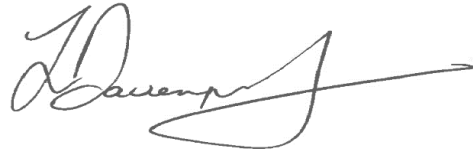
There is still some possibility that contaminating activities have taken place or contamination at the site is in excess of that described in this report and we should be contacted immediately if the conditions are suspected to differ from that described.

Report prepared by:



Anastasia Zaleta
Environmental Scientist

Report reviewed by:



Jeff Davenport
Senior Environmental Scientist

Report authorised by:



Georg Winkler
MIPENZ, CPEng
Principal Engineering Geologist-Geotechnical
Engineer

L:\LDE Contam Land Admin\SOPs_work guides\Report templates\PSI\Subdivision -further investigaiton required.docx

APPENDIX A: SUBDIVISION SCHEME PLAN



C & R SURVEYORS LTD
 Registered Professional
 Land Surveyors

P.O. Box 566
 Oruwa 0946
 www.crsurveyors.co.nz
 Phone (09) 426 4051
 Fax (09) 426 9087

**Lots 1 to 53 and 60 to 61
 Being Proposed Subdivision
 of Lot 1 DP149776**

Client: **Prime Property Group Ltd**
Foster Crescent
Snells Beach

APPENDIX B: SEARCH OF COUNCIL RECORDS



Fri 28/09/2018 2:26 p.m.

Claire Lacina <claire.lacina@aucklandcouncil.govt.nz> on behalf of RECContamination <recontamination@aklc.govt.nz>

RE: Contamination land records for Lot 1 DP 149776 Foster crescent, Warkworth. and Lot 2 DP 410269 90 foundry rd Silverdale.

To Jeff Davenport

Cc RECContamination

 You replied to this message on 28/09/2018 2:54 p.m..

[Click here to download pictures.](#) To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Hi Jeff,

Thanks for the call earlier. This email is in response to your recent enquiry requesting available site contamination information held within the Environmental Health Unit of the Licensing and Compliance Services Department (LCS).

Council's regulatory records indicate that there could be the potential for historic, and/or current, land use activities on or adjacent to this site that falls within the Hazardous Activities and Industries List (HAIL) published by the Ministry for the Environment.

Lot 1 DP 149776 Foster Crescent, Warkworth: There is no contamination information held within our records for this site.

Please note that only council's soil contamination records within the LCS department and GIS map have been checked. There may be other soil contamination information held within:

1. Contaminated Site Enquiry team: ContaminatedSites@aucklandcouncil.govt.nz
2. Property File for viewing reports or all relevant information relating to the property -Requested from the local service centre, by phone, 09 3010101.

Kind regards,

Claire

Claire Lacina | Technical Officer – Contamination, Air & Noise

Specialist Input | Resource Consents

Ph 09 3522621 (Int 465621) | Mob 021 718 038

Auckland Council, Level 2, 35 Graham Street, Auckland

Visit our website: www.aucklandcouncil.govt.nz

APPENDIX C: HISTORIC AERIAL PHOTOGRAPHS



Source: Retrolens, taken 3rd December, 1995. Retrieved 21st September, 2018.



Source: Retrolens, taken 2nd May, 1996. Retrieved 21st September, 2018.



Source: Google Earth, taken 18th May, 2004. Retrieved 21st September, 2018.



Source: Google Earth, taken 28th July, 2006. Retrieved 21st September, 2018.



Source: Google Earth, taken 11th July, 2015. Retrieved 21st September, 2018.

APPENDIX D: CERTIFICATE OF TITLE



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952

Search Copy



R. W. Muir
Registrar-General
of Land

Identifier NA89A/917
Land Registration District North Auckland
Date Issued 27 March 1992

Prior References

NA70A/812

Estate Fee Simple
Area 4.6384 hectares more or less
Legal Description Lot 1 Deposited Plan 149776

Proprietors

Foster Crescent Property Limited

Interests

Subject to a drainage right (in gross) over part marked A on DP 149776 in favour of The Rodney County Council created by Transfer B424478.1

10788100.1 Mortgage to Bank of New Zealand - 17.5.2017 at 4:21 pm

APPENDIX E: SITE ASSESSMENT PHOTOGRAPHS



Figure 14, Photo of site taken facing east.



Figure 15, Photo of site taken from the southern road entrance facing north. Wooden stock loading ramp visible in left of photo.

APPENDIX F: SITE WALKOVER ASSESSMENT FORM

PSI/DSI SITE WALKOVER INSPECTION FORM



Name <u>JEFF DAVENPORT</u>		Date <u>10/10/18</u>
Client <u>BARICERS</u>		Job Number <u>13641</u>
Site <u>FOSTERS CRES</u>	Others on Site <u>—</u>	
Any Hazards Identified <u>Large stack</u>	PPE Used <u>Boots/Sunhat</u>	

Site Information

General Site Condition <u>grazing rolling topography some gause</u>	Location & Condition of: Watercourses <u>Small dam</u>
Current Use & Layout <u>grazing.</u>	Drainage Systems <u>Surface flows Small dam</u>
Surrounding Land Use <u>grazing / Resendustrial.</u>	Groundwater Wells <u>Nil</u>
Local Topography <u>Rolling</u>	
Surrounding Environmental Setting <u>nothing of concern.</u>	
Visible Signs of Contamination or Potential Contamination (e.g. spills, leaks, surface staining, absent or stressed vegetation, odours). <u>Nil</u>	
Visible signs of areas of fill, stockpiled material, waste, ground disturbance, burnt areas, and former building foundations. <u>N.I</u>	
Presence and location of chemical storage, transfer and waste storage areas. <u>N.I</u>	

[Signature]



PROPOSED PLAN CHANGE AND RESIDENTIAL SUBDIVISION

FOSTER CRESCENT, SNELLS BEACH

TRAFFIC IMPACT ASSESSMENT

Address FOSTER CRESCENT, SNELLS BEACH
Project: PROPOSED PLAN CHANGE AND RESIDENTIAL SUBDIVISION
File Path: Z:\2017_PROJECTS\17211 - FOSTERS CRESCENT SUBDIVISION\FOSTER CRESCENT TIAR3.DOCX
Prepared By: David Philip
Reviewed by: Amit Arthanari



Revisions:

Date	Revision Number	Reviewed By	Initials
27 March 2018	01-Draft		
15 June 2018	02-Final	A Arthanari	AA
24 September 2018	03-Revised Final	D Philip	DP
27 November 2018	Rev 04	D Philip	DP

TABLE OF CONTENTS

1	INTRODUCTION	1
2	EXISTING TRANSPORT ENVIRONMENT	2
2.1	The Adjacent Transport Network.....	2
2.1.1	Intersection of Mahurangi East Road and Iris Street	4
2.2	Road Safety	6
2.3	Non-car Based Travel	7
3	THE PROPOSAL.....	8
3.1	General Description	8
3.2	Lot 60 – Road to Vest	9
3.3	Lot 61 – Road to Vest	10
3.4	Vehicle Tracking for New Roads	10
4	TRAFFIC GENERATION AND DISTRIBUTION	13
5	FURTHER CONSIDERATION OF ADDITIONAL TRAFFIC.....	15
5.1	Pedestrian Activity	15
5.2	Traffic Operation on Foster Crescent and Iris Street	17
6	CONCLUSION.....	18

LIST OF FIGURES

<i>Figure 1: General Site Location</i>	1
<i>Figure 2: Site Location</i>	2
<i>Figure 3: Site Location and Adjoining Road Layout</i>	3
<i>Figure 4: Driver Visibility Looking North along Mahurangi Road from Iris Street</i>	4
<i>Figure 5: Driver Visibility Looking South along Mahurangi Road from Iris Street</i>	5
<i>Figure 6: Proposed Subdivision Lot Plan</i>	8
<i>Figure 7: Car Tracking – Connection to Foster Crescent</i>	11
<i>Figure 8: Car Tracking – Intersection of Lot 60 & Lot 61</i>	11
<i>Figure 9: Truck Tracking – Intersection of Lot 60 & Lot 61</i>	12
<i>Figure 10: Truck Tracking – Northern Connection of Lot 60 & Lot 61</i>	13
<i>Figure 11: Key Pedestrian Movements on Iris Street</i>	16

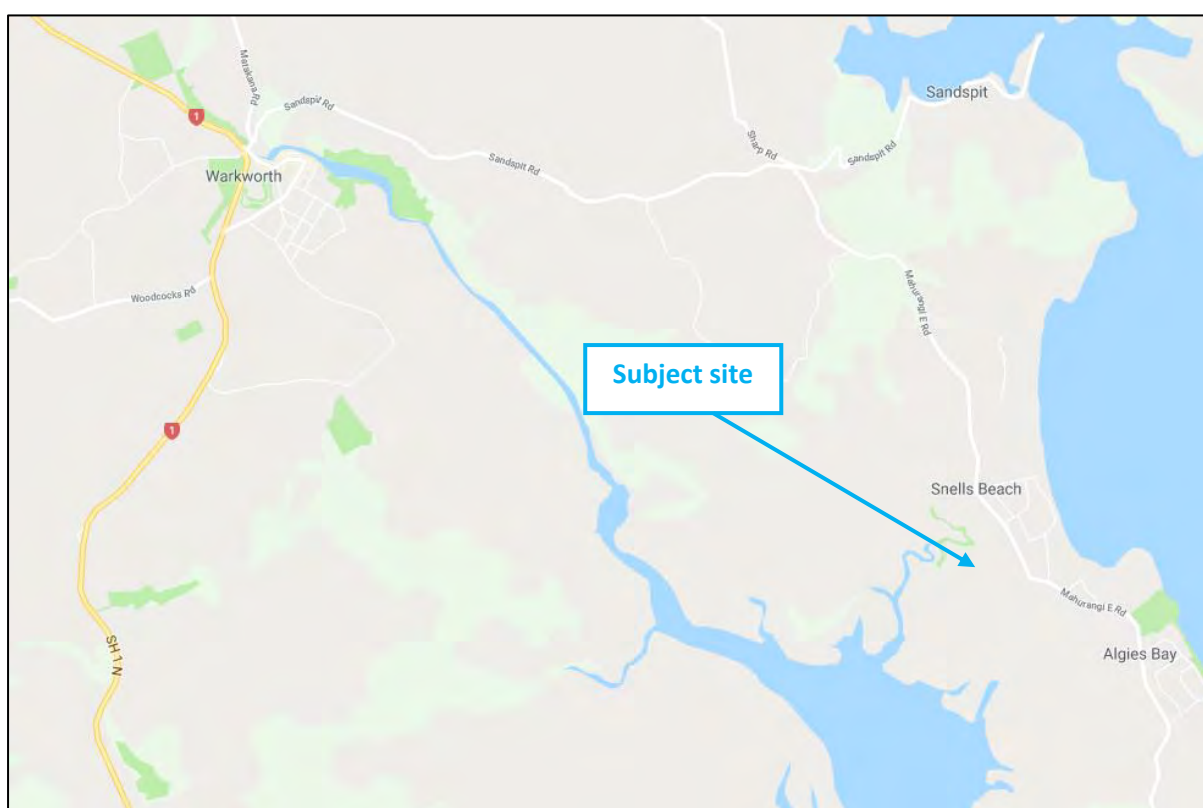
LIST OF TABLES

Table 1: Mahurangi East Road/Iris Street Intersection – AM Peak	5
Table 2: Mahurangi East Road/Iris Street Intersection – PM Peak	6
Table 3: Mahurangi East Road/Iris Street Intersection – AM Existing and Predicted Distribution	14
Table 4: Mahurangi East Road/Iris Street Intersection – PM Existing and Predicted Distribution	14
Table 5: Current and Predicted Vehicle Movements on Iris Street	16

1 INTRODUCTION

This report addresses traffic related matters associated with a combined Plan Change and resource consent application for a residential subdivision at Lot 1 DP 149776 west of Foster Crescent in Snells Beach. The Plan Change is seeking to rezone the site to Single House zone from Large Lot zone. The proposed subdivision will establish 52 residential lots with two new roads formed to provide access to each lot. It is intended that the new roads will be vested to Auckland Council. Additional access lots are proposed to provide pedestrian connection with adjoining walkways and reserve areas.

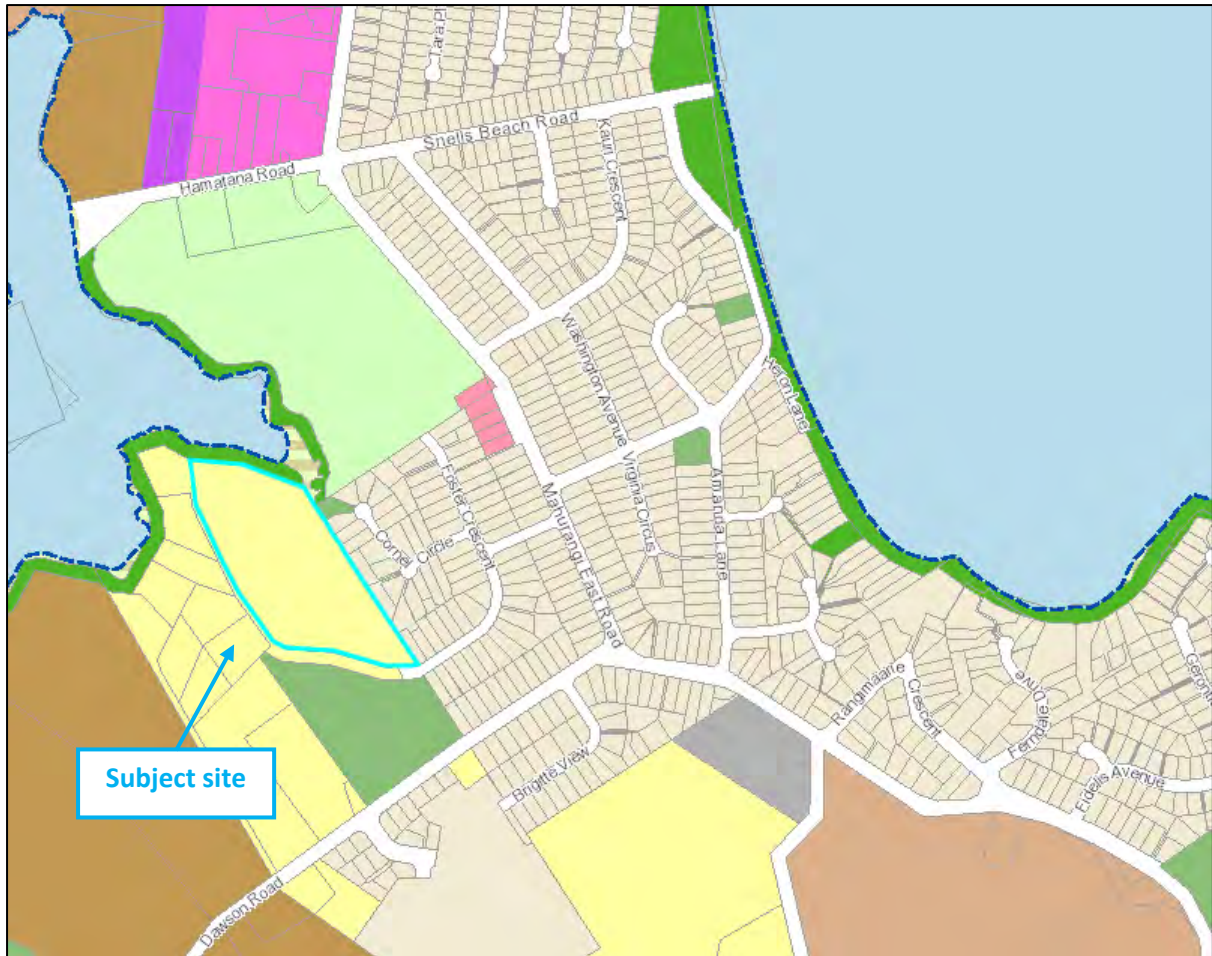
The site is located to the south of the Snells Beach retail area and to the west of Mahurangi East Road. Figure 1 shows the general location of the site.



Source: Google Maps

Figure 1: General Site Location

The site is located at the western end of Foster Crescent. Vehicle access for the site will be via Foster Crescent with connection to Mahurangi East Road via Iris Street. The existing cul-de-sac turning head on Foster Crescent will be removed with new road carriageway continuing through the proposed subdivision. The legal description of the site is Lot 1 DP149776 and current zoning is Residential – Large Lot as defined in the Auckland Unitary Plan – Operative in part (AUP). The total site area is 4.6384 hectares. Figure 2 shows the site location, surrounding zoning and adjacent road network.



Source: Auckland Council Geo Maps

Figure 2: Site Location

2 EXISTING TRANSPORT ENVIRONMENT

2.1 The Adjacent Transport Network

As noted, the site is located at the western end of Foster Crescent which is a short residential street. Connection between Foster Crescent and Mahurangi East Road is via Iris Street which is also a short residential street. The AUP does not currently provide consistent road hierarchy classification. Mahurangi East Road, to the south of Snells Beach Road was previously classified as Collector road in the Auckland Council District Plan – Rodney Section. Mahurangi East Road to the north of Snells Beach Road was previously classified as a District Arterial road in the District Plan. Current traffic volumes and observed operation would suggest that the previous District Plan road classifications on Mahurangi East Road remain valid.

All vehicle movements to and from the Plan Change and proposed subdivision site will travel via Foster Crescent, Iris Street and Mahurangi East Road. The intersection of Mahurangi East Road and Iris Street is subject to priority Stop control on Iris Street. Figure 3 shows the site location in relation to the adjoining road network.



Source: Auckland Council Geo Maps

Figure 3: Site Location and Adjoining Road Layout

Foster Crescent has a carriageway width of around 7.8 metres and provides for two-way operation with no marked centre line. A footpath is provided on the southern side of the road and there is kerb and channel on both sides of the road. There are no formal parking controls on Foster Crescent with unrestricted parking available between vehicle crossings. The carriageway is generally level at the southern end with a slight downhill grade to the north of the horizontal curve part way along the road. Traffic volumes on Foster Crescent, to the south of Iris Street are estimated to be in the order of 250 vehicles per day.

Iris Street is approximately 7.8 metres wide between kerbs with a footpath on the northern side of the road. There is a short section of no-stopping markings on both sides of the road at the intersection with Mahurangi East Road with unrestricted parking available elsewhere. Iris Street provides the sole access to and from Mahurangi East Road for properties on Foster Crescent and Cornel Circle. Based on the number of dwellings on these roads traffic volumes on Iris Street are estimated to in the order of 800 to 900 vehicle per day.

As noted above Mahurangi East Road is considered to function as a Collector road to the south of Snells Beach Road, changing to a District Arterial road to the north of the roundabout. In the vicinity of the intersection with Iris Street the carriageway width is in the order of 10.8

metres with provision for one traffic lane in each direction and a painted flush median. The flush median provides an effective turn bay for right turning vehicles into Iris Street. There is a pedestrian refuge island within the flush median approximately mid-point between Iris Street and Dalton Road. There are no-stopping markings in place along both sides of Mahurangi East Road in the vicinity of intersections with Iris Street and Dalton Road. The Mahurangi East Road carriageway is on a moderate downhill grade from south to north.

Recorded traffic volumes for Mahurangi East Road are available from the Auckland Transport website. A 2013 traffic count in the vicinity of the intersection with Iris Street recorded an average weekday two-way volume of 5,200 vehicles per day with peak volumes of around 480 vehicles per hour. A more recent traffic count was undertaken in June 2015 at a site to the north of Iris Street. This count was undertaken during a Queen's Birthday holiday weekend and would not normally be representative of normal traffic demand patterns. Recorded traffic volumes for the June 2015 count were around 5,800 vehicles per weekday and peak volumes of 520 to 570 per hour.

2.1.1 Intersection of Mahurangi East Road and Iris Street

It can be expected that almost all vehicle trips generated by the proposed residential subdivision will pass through the intersection of Mahurangi East Road and Iris Street. The side road of Iris Street is subject to Stop control. Figures 4 and 5 below show driver visibility in both directions from the limit line on Iris Street.



Figure 4: Driver Visibility Looking North along Mahurangi Road from Iris Street



Figure 5: Driver Visibility Looking South along Mahurangi Road from Iris Street

Available sight lines at the intersection are considered sufficient for safe intersection operation (refer Section 2.2 for recent crash history).

A traffic survey was undertaken as part of this assessment to gain an understanding of current turning movements at the intersection of Mahurangi East Road and Iris Street. A turning count survey was undertaken on Thursday 11 November 2017. Recorded turning movements for the morning and afternoon peak periods are presented in Tables 1 and 2 below.

Time	Mahurangi East Road (North)		Mahurangi East Road (South)		Iris Street	
	Southbound	Right In	Northbound	Left In	Left Out	Right Out
0700-0715	18	3	59	0	10	0
0715-0730	20	4	42	0	9	1
0730-0745	21	1	45	1	5	0
0745-0800	32	5	66	0	6	3
0800-0815	39	2	74	1	15	0
0815-0830	47	5	57	0	8	3
0830-0845	64	2	67	2	7	1
0845-0900	73	5	89	2	7	1
0900-0915	44	2	87	1	5	1
0915-0930	34	6	49	2	5	3
0930-0945	32	5	44	1	3	4
0945-1000	27	4	44	1	1	4
Peak Hour 0815-0915	228	14	300	5	27	6

Table 1: Mahurangi East Road/Iris Street Intersection – AM Peak

There is a slight tidal pattern during the morning peak period with the predominant movement being northbound through the intersection. Turning movements to and from Iris Street are mainly left turn out and right turn into the side street. The peak turning demand

recorded was 15 left turn movements from Iris Street or an average of one movement per minute.

Time	Mahurangi East Road (North)		Mahurangi East Road (South)		Iris Street	
	Southbound	Right In	Northbound	Left In	Left Out	Right Out
1430-1445	69	2	38	0	4	0
1445-1500	88	5	48	0	5	2
1500-1515	68	6	122	0	6	1
1515-1530	61	4	52	1	5	3
1530-1545	59	11	55	1	2	0
1545-1600	58	7	47	1	2	2
1600-1615	57	7	46	3	9	0
1615-1630	56	6	54	1	4	2
1630-1645	68	13	39	3	4	1
1645-1700	70	5	39	2	5	0
1700-1715	62	9	51	1	5	2
1715-1730	84	11	50	1	5	0
1730-1745	87	14	47	2	7	1
1745-1800	62	11	37	1	3	1
Peak Hour 1445-1545	276	26	277	2	18	6

Table 2: Mahurangi East Road/Iris Street Intersection – PM Peak

The afternoon peak hour occurs during the school pick-up period. The highest single count (15-minute) is between 3.00pm and 3.15pm for the northbound movement through the intersection. The Snells Beach Primary School is located on Dawson Road a short distance to the north of the subject site. While the peak hour for the intersection is around the end of school period (2.45 pm to 3.45pm) the peak turning movements to and from Iris Street occur during a more conventional commuter peak period of 5.00pm to 6.00pm (52 movements to/from Iris Street during school peak, and 74 movements to/from Iris Street during evening commuter peak).

Recorded peak hour volumes from the traffic surveys undertaken align well with summary values taken from the Auckland Transport website for periods in 2013 and 2015. Traffic volumes on Mahurangi East Road are slightly high to the south of Iris Road with peak hour counts of 540 to 560 vehicles per hour to the south and 570 to 600 vehicles per hour to the north.

2.2 Road Safety

A study has been made of the crash records maintained by NZTA for the five-year period 2012 to 2016 inclusive. Also included in the search were the crashes that have been processed and were on file for 2017.

The crash search area covered Foster Crescent, Iris Street and Mahurangi East Road including intersections with Iris Street and Dalton Road. Two crashes were identified as occurring within the defined period and search area. Both crashes were classified as non-injury. The collision diagram and crash listing obtained from this search are attached as Appendix A.

A crash occurred at the intersection of Foster Crescent and Iris Street in 2012 with a vehicle losing control at the intersection and hitting a fence. The crash occurred at around 1.15pm on a Saturday and alcohol was a reported factor in the crash.

The second reported crash involved an eastbound car on Iris Street colliding with a parked vehicle. The crash occurred in on a Wednesday morning in May 2014 with sunstrike noted as a causal factor.

The reported crash history in the vicinity of the site does not represent a current road safety concern.

2.3 Non-car Based Travel

There are currently limited public passenger transport services available to and from Snells Beach. The Kowhai Connection operated under licence to Auckland Transport provides roughly 2-hourly services linking Snells Beach with nearby settlements and townships including Warkworth, Matakana and Point Wells. There is a privately operated commuter bus service that runs between Snells Beach and Auckland CBD via Warkworth during weekdays. There are currently three morning and three evening services each weekday offered by the operator.

There are no formal on-road cycling facilities in the vicinity of the site and cyclists have to share road space with other road users.

The proposed subdivision includes two new roads which will include footpaths. The new footpaths will connect with Foster Crescent at the cul-de-sac head and there will be footpath connections with the adjacent reserve to the north.

The traffic survey undertaken at the intersection of Mahurangi East Road and Iris Street recorded pedestrian activity at the intersection in addition to vehicle movements. The survey information was collected by video camera over the course of a day and highlighted peak pedestrian activity associated with the start and end of the nearby Snells Beach Primary School on Dawson Road. A summary of observed movement of school children at the intersection is provided below.

- Morning walk to school (8.20 to 9.00am observed activity) – 9 children unaccompanied and 13 children accompanied by an adult
- Afternoon walk from school (3.00 to 3.25pm observed activity) – 8 children unaccompanied and 12 children accompanied by an adult

The observed movement of school related pedestrians at the intersection identified a higher proportion of pedestrians walking along Iris Street rather than crossing Iris Street at the intersection with Mahurangi East Road. Pedestrians walking along Iris Street to and from the school will typically follow available footpaths walking along the northern side of Iris Street and crossing to the footpath on the south/east side of Foster Crescent.

3 THE PROPOSAL

3.1 General Description

A full description of the proposal is included in the application material. The key traffic related aspects of the proposal are outlined below.

- Plan Change to Single House zone with capacity for 52 residential lots
- Two new roads to vest with access to the proposed subdivision via existing cul-de-sac head on Foster Crescent
- Separate pedestrian accessways to vest to connect to existing public walkways
- Connection to existing private accessway (Te Whau Drive) to be retained from proposed new road

Residential lots will generally have direct access to one of the two proposed new roads. One residential will be formed as a rear lot. An excerpt from the proposed subdivision lot plan prepared by C & R Surveyors Ltd is shown in Figure 6 below. The following sections provide a description of the proposed new roads and vehicle access for individual residential lots.



Figure 6: Indicative Subdivision Lot Plan

3.2 Lot 60 – Road to Vest

Proposed Lot 60 will form the primary access link for the subdivision. The new road formed by Lot 60 will provide direct vehicle access for 26 to 30 residential lots including one rear lot, each with one vehicle crossing serving the lot. Figure 6 shows the relative alignment of the existing Foster Crescent carriageway and the proposed new road. The connection between existing and proposed road sections will form a horizontal curve with a relative angle of around 105-degrees. The existing shared private access (Te Whau Drive) will have to be adjusted to create a new vehicle crossing off of the new road carriageway. Similarly, existing vehicle crossings for Nos. 1 and 2 Foster Crescent will have to be reconstructed to align with the new road formation continuing into the proposed subdivision.

The design and reconstruction of vehicle crossings for Nos. 1 and 2 Foster Crescent and Te Whau Drive will be subject to consultation with affected property owners and Auckland Transport as road controlling authority. The design of the proposed road to vest, including edge features and carriageway markings and formation will consider the safe and functional operation of the amended vehicle crossings. The design of the new section of road and changes to the existing turning head on Foster Crescent will consider the safe operation of the existing footpath on Foster Crescent and connection with the off-road path linking with the Snells Beach Primary School.

The road reserve created by Lot 60 will be 18 metres wide which is sufficient to provide for traffic lanes, kerbside or indented parking bays, berm strips and footpaths on both sides of the road. Auckland Transport Code of Practice (ATCOP) Drawing Sheet GD004 presents an example cross section for a local road with an overall width of 17 metres.

The proposed road reserve cross section is not defined at this time and development of the new road arrangement including connection with Foster Crescent and internal connections with proposed Lot 61 will be progressed with consideration of AUP and ATCOP requirements and also the Transport Design Manual once operational.

With regard to the development of the proposed new road the following design criteria are noted.

- The general alignment of the new road will support nominal 3.0 metre wide traffic lanes with localised curve widening to accommodate vehicle tracking as necessary, including truck movements associated with servicing and deliveries for the proposed subdivision
- The vertical alignment of the proposed road is still to be developed but the site topography will support a maximum longitudinal grade of 1 in 8 or 12.5% and allow suitable vertical transitions to flatter profiles at driver decision areas at both ends of the road and at the proposed intersection with a second new road (Lot 61)
- The proposed road reserve provides sufficient width to support the development of vehicle crossings within berm and footpath areas for access to individual residential lots
- The proposed road reserve will support on-street parking either within indented bays or at kerbside of a wider formed carriageway

- As noted, the design of the new road and transition to the existing Foster Crescent carriageway will accommodate reconstructed vehicle crossings for nos. 1 and 2 Foster Crescent and Te Whau Drive
- The design of the new road and connection with Foster Crescent will make provision for a transition between a footpath on both sides of the new road and the single footpath on the southern side of Foster Crescent

3.3 Lot 61 – Road to Vest

Proposed Lot 61 will form a secondary access link for the subdivision. The new road formed by Lot 61 will provide vehicle access for 22 to 26 residential lots. The proposed road reserve width for Lot 61 is 14 metres which meets the Auckland Transport minimum requirement for a standard local road cross section.

The proposed road reserve cross section is not defined at this time and development of the new road arrangement including connection with proposed Lot 60 will be progressed with consideration of AUP and ATCOP/TDM requirements.

With regard to the development of the proposed new road the following design criteria are noted.

- The general alignment of the new road will support nominal 3.0 metre wide traffic lanes with localised curve widening to accommodate vehicle tracking as necessary
- Design of the carriageway form and associated on-street parking provision will have to consider unobstructed access for delivery and service vehicles including refuse trucks
- The vertical alignment of the proposed road is still to be developed but the site topography will support a maximum longitudinal grade of 1 in 8 or 12.5% and allow suitable vertical transitions to flatter profiles at driver decision areas at both ends of the road including the proposed intersection with the Lot 60 road
- The proposed road reserve provides sufficient width to support the development of vehicle crossings for access to individual residential lots
- The proposed road reserve will support on-street parking either within indented bays or at the kerbside of a wider formed carriageway

3.4 Vehicle Tracking for New Roads

A review of vehicle tracking has been undertaken for the proposed new roads including connection with the existing Foster Crescent carriageway. As noted, road formation has not yet been developed and the vehicle tracking check has adopted a 6.0 metre wide usable carriageway (two 3.0 metre wide traffic lanes) located centrally within the proposed access lot. The following series of tracking diagrams demonstrate that acceptable vehicle access can be accommodated within the proposed new access lots. It is noted the form and layout of proposed new roads including connections and intersections, once developed will be subject to approval from Auckland Transport.

Figure 7 below presents car tracking to and from the proposed subdivision with connection to the existing Foster Crescent carriageway. As noted previously the relative angle between the existing and proposed new road (Lot 60) will be around 105-degrees. The form of the new road will have to transition between an existing carriageway width of approximately 7.8 metres wide on Foster Crescent to the proposed new road width with allowance for vehicle tracking through the horizontal curve.



Figure 7: Car Tracking – Connection to Foster Crescent

An intersection will be formed between the two proposed new roads as shown in Figure 8 below. Proposed Lot 61 will form the minor leg of a 'T' intersection formation and accordingly turns to and from the side road will typically involve low vehicle speeds. Figure 8 shows that car tracking at the intersection can be accommodated within nominal 6.0 metres wide carriageways with provision for low-radii kerb lines. Turning movements at the intersection will typically involve travel to and from Foster Crescent rather than circulation within the subdivision. The intersection location on the outside of a slight horizontal curve assists with driver visibility to and from vehicles waiting to turn from the side road.

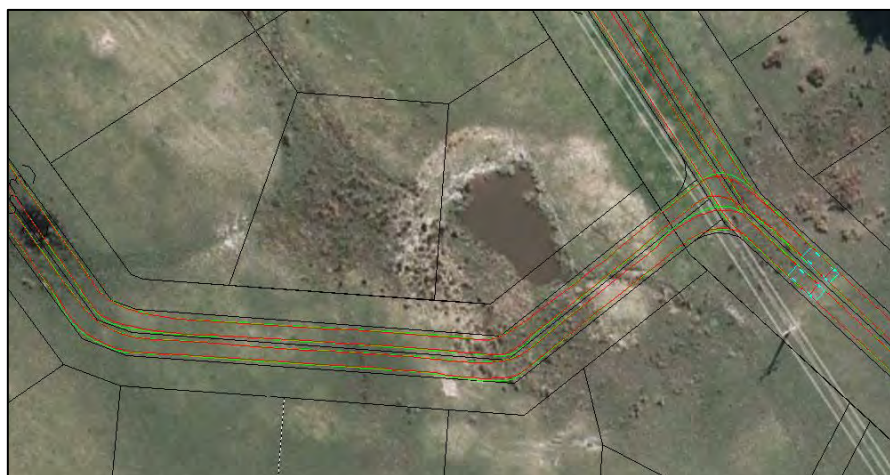


Figure 8: Car Tracking – Intersection of Lot 60 & Lot 61

Figure 9 shows the tracking paths of a truck turning to and from proposed Lot 61. The design vehicle adopted for this assessment is a 10.3 metre rigid truck for representation of a refuse collection truck. Turns between the two proposed new roads cannot be fully accommodated within marked 3.0 metre wide traffic lanes and an element of driver courtesy may be necessary when large trucks, including refuse collection vehicles access the proposed subdivision. The proposed intersection can be designed to better accommodate trucks however it is considered preferable to limit the scale of the intersection to acceptable daily use by cars and other light vehicles and accept minor driver inconvenience when trucks infrequently access the proposed subdivision.

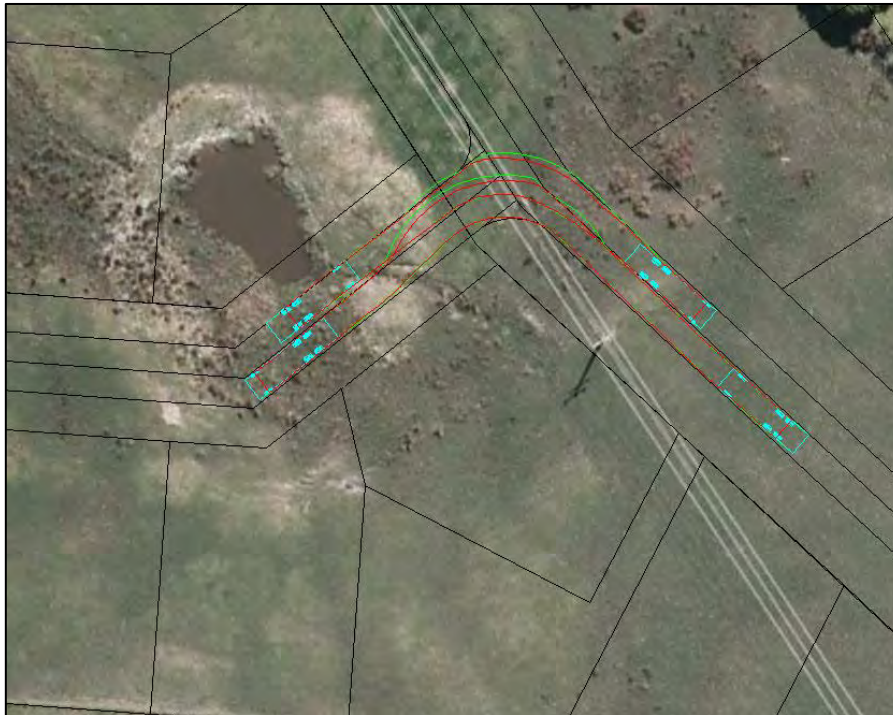


Figure 9: Truck Tracking – Intersection of Lot 60 & Lot 61

The two proposed new roads meet at a relative angle of around 55-degrees at the northwest of the subdivision. As noted previously, the primary access road (Lot 6) will have a road reserve width of 18 metres and the secondary access road will have a reserve width of 14 metres. A nominal 6.0 metre wide carriageway has been adopted for the purpose of assessing vehicle manoeuvring. Figure 10 shows the modelled tracking paths of 10.3 metre long trucks traversing between the two proposed roads. The tracking paths partly overlap to achieve a narrower effective carriageway width through the curve. Truck movements through the proposed subdivision will be infrequent and the modelling tracking overlap is considered acceptable.

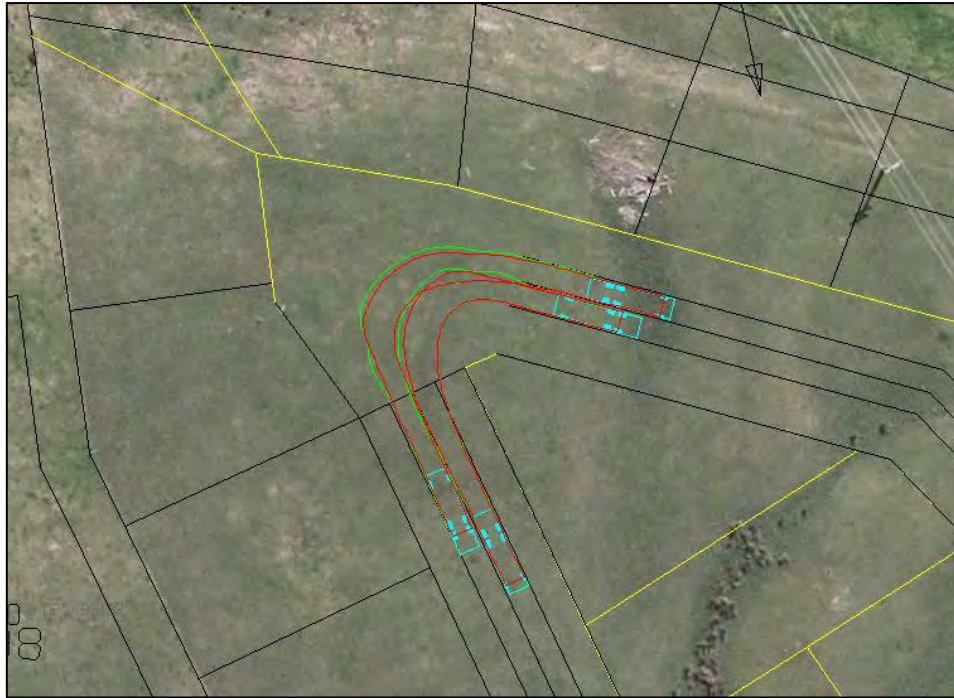


Figure 10: Truck Tracking – Northern Connection of Lot 60 & Lot 61

4 TRAFFIC GENERATION AND DISTRIBUTION

Traffic generation associated with the proposed residential subdivision can be estimated from typical generation rates established by relevant research documents and traffic surveys undertaken by Traffic Engineering and Management Ltd (TEAM). Two relevant research documents are the Roads and Traffic Authority (RTA), New South Wales – ‘Guide to Traffic Generating Developments’, and the Transfund New Zealand Research Report 210 – ‘Trips and Parking Related to Land Use’.

Typical traffic generation rates for residential dwellings are well defined from research and summary survey data. For stand-alone dwellings and potential provision for minor dwellings¹ on the proposed development site, the upper range traffic generation rate of 10 vehicle trips per day is considered appropriate. A peak hour generation rate of one trip per hour is adopted in light of the general location of the site. The proposed 52-lot residential subdivision is accordingly predicted to generate in the order of 520 vehicle trips per day and 52 trips during the peak hour.

Consideration has been given to the traffic survey undertaken for this assessment and briefly summarised in Section 2.1.1 above. The turning count survey undertaken at the intersection of Mahurangi East Road and Iris Street recorded all vehicle movements to and from Iris Street, which as previously noted is the sole vehicle access point for existing dwellings on Foster

¹ Minor dwellings up to 65m² are permitted under the Single House zone (minimum 600m²)

Crescent and connecting residential streets. At present there are approximately 85 dwellings that access Mahurangi East Road via Iris Street. Recorded movements at the intersection resulted in peak turning movements to and from Iris Street of 61 trips in the morning peak hour period (8.00am to 9.00am) and 74 trips in the evening peak hour (5.00pm to 6.00pm). In considering the recorded traffic movements at the intersection the resultant peak hour generation rates for the 85 existing dwellings accessed via Iris Street are around 0.71 trips per dwelling in the morning peak period and 0.87 trips per dwelling in the evening peak.

The adopted peak hour generation rate of one trip per dwelling is considered to present a robust estimate of potential generation for the purpose of this assessment. Tables 3 and 4 below present a summary of existing and predicted movements at the intersection of Mahurangi East Road and Iris Street for both commuter peak periods². The directional distribution of turning movements associated with the proposed subdivision has been derived from observed movements to and from Iris Street.

Time	Mahurangi East Road (North)		Mahurangi East Road (South)		Iris Street	
0800 - 0900	Southbound	Right In	Northbound	Left In	Left Out	Right Out
Existing	223	14	287	5	37	5
Development	nil	12	nil	4	32	4
Total	223	26	287	9	68	9

Table 3: Mahurangi East Road/Iris Street Intersection – AM Existing and Predicted Distribution

Time	Mahurangi East Road (North)		Mahurangi East Road (South)		Iris Street	
1700 - 1800	Southbound	Right In	Northbound	Left In	Left Out	Right Out
Existing	295	45	185	5	20	4
Development	nil	32	nil	3	14	3
Total	295	76	185	8	34	7

Table 4: Mahurangi East Road/Iris Street Intersection – PM Existing and Predicted Distribution

The predicted traffic generation for the proposed subdivision can comfortably be accommodated on Foster Crescent and Iris Street. Observations at the intersection of Iris Street with Mahurangi East Road indicate very low levels of delay for movements to and from Iris Street. The predicted volumes of additional vehicle turning movements associated with the proposed subdivision are generally very low by direction of travel. The highest value for additional turning movement (32 trips) equates to approximately one vehicle every two minutes for the left turn from Iris Street in the morning peak period and right turn into Iris Street in the evening peak. The left turn from Iris Street in the morning is opposed by only 287 vehicles per hour northbound along Mahurangi East Road. The right turn into Iris Street in the evening is opposed by a combined movement of 193 vehicles per hour or an average of one vehicle every 18 seconds.

The above assessment of predicted traffic generation considers the total yield of the proposed Plan Change and associated residential subdivision. It is noted that the current

² The values in Table 3 and 4 are based on the timing of peak hour turning movements recorded at the intersection rather than the peak hour movements passing through the intersection

zoning of the subject site is Residential – Large Lot. The site area of over 4.6 hectares could be expected to yield up to 11 lots under the current zoning. The proposed Plan Change to Single House zoning, and subdivision plan as currently presented results in a net increase of 41 residential lots for the site. The corresponding increase in traffic generation potential for the site is 410 vehicle trips per day and 41 trips during the peak hour of generation.

Traffic volumes on Mahurangi East Road, including past the Iris Street intersection will increase in line with current and future development in the surrounding area. One known development at the time of writing is a residential subdivision opposite the Snells Beach School (Primary) on Dawson Road to the south of the subject site. The potential yield is understood to be in the order of 85 residential lots which would be expected to generate around 800 vehicle trips per day and 80 trips during the peak hour of generation.

Given the nature of the surrounding road network and land uses it is anticipated that a large proportion of the additional vehicle trips on Dawson Road would pass the Iris Street intersection. These trips would be split by direction in a similar pattern to existing traffic volumes on Mahurangi East Road. Currently, through movements past the Iris Street intersection are around 510 trips in the weekday morning peak hour and 480 trips in the evening peak hour. The addition of around 70 trips (combined northbound and southbound from the Dawson Road subdivision) during peak hour periods will not noticeably affect vehicle queuing or delays experienced at the Iris Street intersection.

5 FURTHER CONSIDERATION OF ADDITIONAL TRAFFIC

As noted previously the predicted increase in vehicle movements associate with the proposed plan change and subsequent subdivision is not expected to generate a notable concern with respect to queuing or delay on Foster Crescent and Iris Street, nor at the intersection of Iris Street with Mahurangi East Road. Notwithstanding this consideration has been given to potential effects associated with additional vehicle movements on Foster Crescent and Iris Street in relation to the safe and efficient movement of pedestrians and general traffic on these links.

5.1 Pedestrian Activity

Section 2.3 above outlined a summary of observed movement of school children at the intersection with Mahurangi East Road. Observed pedestrian activity associated with the school was split between crossing Iris Street at the intersection with Mahurangi East Road or walking along the footpath on the northern side of Iris Street which would typically involve crossing Iris Street at the intersection with Foster Crescent. Figure 11 highlights key pedestrian movements on Iris Street in relation to connections with the Snells Beach Primary School.

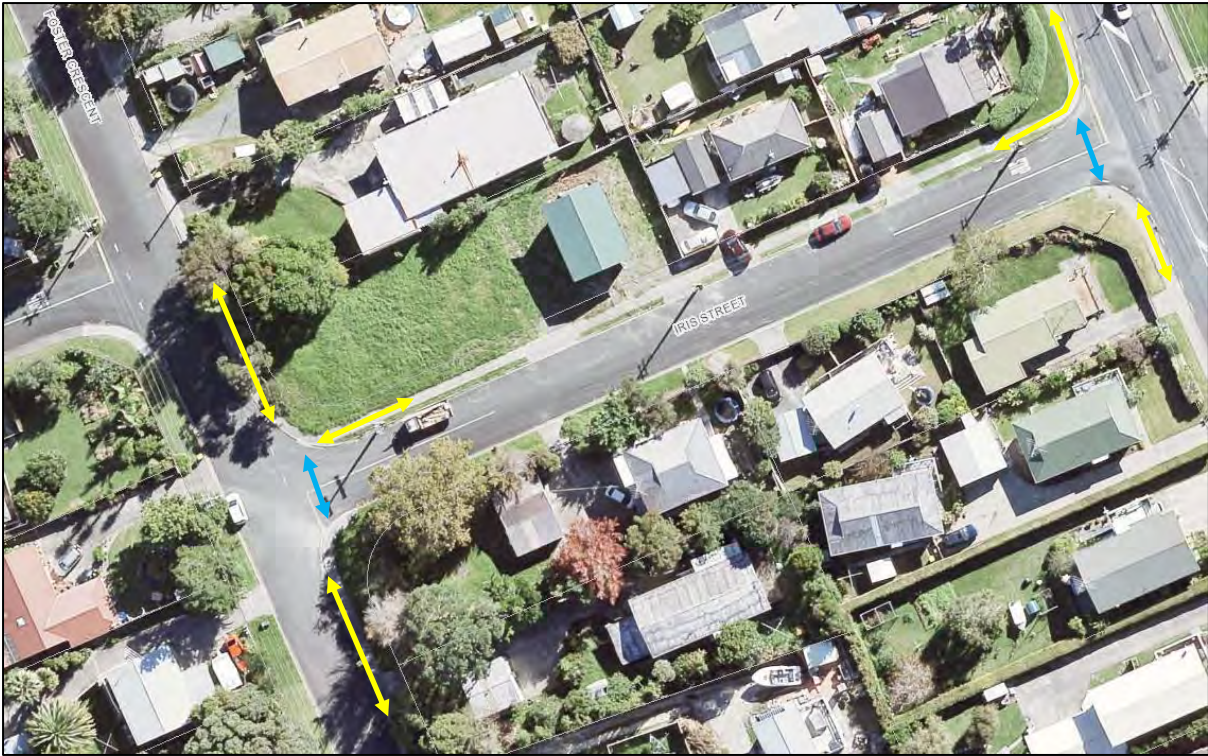


Figure 11: Key Pedestrian Movements on Iris Street

Observed and predicted vehicle movements to and from Iris Street at the intersection with Mahurangi East Road can be taken to be similar to combined turning movements at the intersection of Iris Street and Foster Crescent. A summary of current and predicted traffic movements on Iris Street is provided in Table 5 below.

Period	Iris Street (current traffic)		Iris Street (predicted traffic)	
	Eastbound	Westbound	Eastbound	Westbound
AM Peak (8.15 – 9.15am)	33	19	69	35
School Peak ³ (2.45 – 3.45pm)	24	28	42	46
PM Peak (4.45 – 5.45pm)	25	45	42	80

Table 5: Current and Predicted Vehicle Movements on Iris Street

When considering the start and end periods for the primary school the predicted number of turning movements that conflict with identified pedestrian crossing locations on Iris Street are 104 and 88 respectively for the morning and afternoon periods. In a practical sense this relates to on average one turning movement at each intersection (in any direction) roughly every 30 seconds in the morning period and every 40 seconds in the afternoon period. It is noted that sightlines between pedestrians and approaching vehicles are acceptable for

³ Traffic generation for proposed 52-lot subdivision assessed as 0.7 trips per dwelling during school-end period, split evenly for arrival and departure

crossing at both ends of Iris Street and the nature of the intersection control (Stop control at both ends of Iris Street) and layout dictates generally lower vehicle speeds.

It is considered that the additional traffic movements attributable to the proposed residential subdivision will not noticeably affect pedestrian safety or amenity on Foster Crescent and Iris Street.

5.2 Traffic Operation on Foster Crescent and Iris Street

The predicted traffic volumes on Foster Crescent and Iris Street, with the proposed residential subdivision in place are considered to be comfortably below the operating capacity of the two residential streets. The highest volumes will be on Iris Street with up to around 125 vehicle movements (two-way) during the weekday evening peak hour. Traffic volumes along Foster Crescent will typically be significantly lower than on Iris Street as the traffic movements are essentially split between north and south sections of Foster Crescent.

Traffic volumes on the southern section of Foster Crescent, including the proposed subdivision will be in the order of;

- 72 vehicle movements in the morning peak, primarily eastbound towards Mahurangi East Road;
- 60 vehicle movements at the afternoon end of school period, roughly even directional split; and
- 77 vehicle movements in the evening commuter peak, primarily westbound towards the proposed subdivision.

The existing carriageway width on Foster Crescent to the south of Iris Street is typically around 7.8 metres. The carriageway does not readily accommodate two-way operation if there is kerbside parking on both sides of the road. The predicted two-way hourly vehicle movements listed above generally represent one vehicle movement (in either direction) every 45 to 60 seconds. The likelihood of two opposing vehicles meeting on the southern section of Foster Crescent is low and the likelihood of two opposing vehicles meeting a location where there are vehicles parked on both sides of the road is lower still. Notwithstanding this, drivers will occasionally be required to slow or stop while giving priority to an on-coming vehicle due to the road carriageway being effectively reduced to a single lane.

This outcome is common on many residential streets and typically drivers having to give way are presented with no worse than a minor irritation to their journey. It is expected that the need to slow or give way to on-coming vehicles will be close to non-existent outside of the evening peak period both in terms of predicted vehicle movements and also typical low demand for on-street parking during normal working hours. It is noted that the majority of vehicle movements on Iris Street and Foster Crescent will involve regular users of the

residential streets and accordingly drivers will typically be aware of the possible need to slow or stop as necessary if there is an on-coming vehicle.

It is considered that the traffic generated by the proposed Plan Change and residential subdivision will not create any tangible safety or operational concerns for the surrounding road network.

6 CONCLUSION

The proposed rezoning of the subject site and subsequent residential subdivision will establish a total of 52 residential lots with access provided via two new roads to vest. Vehicle access to the subdivision will be via an existing cul-de-sac head on Foster Crescent and additional pedestrian connections are proposed to existing walkways.

The proposed access lots are 14 metres and 18 metres wide and are considered adequate to provide for future public roads. The design of the proposed new roads, including geometric alignment, carriageway formation, footpaths, berms and intersection arrangement is yet to be developed. The proposed new roads will accommodate vehicle crossings serving individual lots in addition to on-street parking.

Traffic generation associated with the proposed subdivision is predicted to be in the order of 520 vehicle trips per day and 52 trips during commuter peak periods. With respect to the proposed Plan Change, additional vehicle movements associated with the proposed rezoning (Large Lot to Single House zones) are 410 trips per day and 41 trips during the peak hour.

All vehicle movements to and from the subdivision will be via Foster Crescent with access to Mahurangi East Road via an intersection with Iris Street. In considering current traffic operation at the Iris Street intersection and predicted additional vehicle trips generated by the development it is considered that there will be no discernible increase to queuing or delay at the intersection.

Effects on road users including pedestrians on Foster Crescent and Iris Street are considered acceptable when considering predicted increases in vehicle movements associated with the proposed residential subdivision.

Appendix A: Crash Listing and Diagram

Plain English report, run on 31-Oct-2017 Page 1

First Street	(D) Second street (I) or landmark Distance (R)	Crash Number	Date	Day Time	Description of Events	Crash Factors	Road	Natural Light	Weather	Junction	Control	Tot Inj F S M A E I I R N
FOSTER CRESCENT	I IRIS ST	201237299	12/05/2012	Sat 1315	CAR1 NED on FOSTER CRESCENT lost control turning right, CAR1 hit fence on right hand bend	CAR1 alcohol test above limit or test refused, lost control when turning (ENV = Environmental factors)	Dry	Bright	Fine	I Type Junction Sign	Stop	
IRIS ST	30W MAHURANGI EAST ROAD	201436102	14/05/2014	Wed 0900	CAR1 EBD on IRIS ST hit parked veh, CAR1 hit Parked Vehicle	CAR1 too far left/right ENV: dazzling sun	Dry	Bright	Fine	Unknown	N/A	

31 October 2017

KEY

- + Fatal
- Dark
- Wet
- Icy
- Peds
- Cyclist

ECOLOGICAL ASSESSMENT:

LOT 1 DP 149776, FOSTER CRESCENT, SNELLS BEACH

July 2018

ECOLOGICAL ASSESSMENT:

LOT 1 DP 149776,

PREPARED BY: MARK DELANEY
BIORESEARCHES GROUP LTD
68 BEACH ROAD, AUCKLAND
MARKDELANEY@BIORESEARCHES.CO.NZ

FOR: PRIME PROPERTY GROUP LIMITED

DATE: 17 JULY 2018

REFERENCE: BIORESEARCHES (2018). ECOLOGICAL ASSESSMENT: LOT 1 DP 149776, FOSTER CRESCENT, SNELLS BEACH

COVER PHOTO:

LOT 1 DP 149776, SNELLS BEACH

CONTENTS

Page

- 1. Introduction1
- 2. Methodology.....2
- 3. Existing Environment3
 - 3.1 Terrestrial Ecology.....3
 - 3.1.1 Vegetation.....3
 - 3.1.2 Avifauna3
 - 3.1.3 Herpetofauna3
 - 3.1.4 Long-tailed bats4
 - 3.2 Freshwater Ecology4
 - 3.3 Marine Ecology11
- 4. Assessment of Effects and Recommendations12
- 5. References13

1. INTRODUCTION

Prime Property Group Limited is seeking to rezone the site, at Lot 1 DP 149776, Foster Crescent, Snells Beach, from 'Large Lot' to 'Single House' zone and to develop the site into residential lots. The development would involve earthworks to contour the site and to form building platforms.

Prime Property Group Limited engaged Biosearches Group Limited, to undertake a watercourse classification and freshwater environmental assessment of the site and to address the effects of the proposed rezoning and potential development of Lot 1 DP 149776 in relation to the Auckland Unitary Plan Operative in Part (AUP OP).

Within this report the existing ecological values of the site are described, the scale and severity of potential effects of the project on these values are assessed, and measures to avoid, minimise or mitigate adverse effects on the aquatic ecology of the site are identified where required.

2. METHODOLOGY

Prior to a field survey, a map of the site was created using the overland flow paths and contours from the Auckland Council GIS viewer to determine where potential watercourses may exist and to preliminary classify the ephemeral, intermittent, or permanent nature of the watercourses. A walkover of all the aquatic habitats and potential watercourses was originally undertaken on 29 November 2016 by an experienced freshwater ecologist. A follow up site assessment was undertaken on 8 February 2018.

During the site assessment the presence and extent of water was noted, measurements and reference photos were taken and notes were made on the quality of the instream habitats. Riparian and catchment information was also noted. Habitat characteristics, including the size of any pools, as well as the presence of continuously flowing water were recorded. The watercourses were classified under the AUP OP, to determine, in accordance with the definitions in this plan, the ephemeral, intermittent, or permanent status of these watercourses.

A qualitative assessment of the MHWS for the junction of the Te Whau Esplanade Reserve and the Hamatana Marginal Strip was undertaken using a range of natural indicators, including edge fauna and flora of the coastal zone, highest line of driftwood and tide marks.

Additionally, during the site visits a botanical assessment recorded native and exotic vascular vegetation present. An opportunistic bird survey took note of birds seen or heard within the duration of the visit. A hand-searching method was used to survey lizard fauna under any debris.

3. EXISTING ENVIRONMENT

3.1 TERRESTRIAL ECOLOGY

3.1.1 Vegetation

In regards to vegetation, the site consisted primarily of pasture grasses with a few pockets of gorse (*Ulex europaeus*) and Edgar's rush (*Juncus edgariae*). A wetland formed within the north-east corner of the site and consisted predominately of Arum lily (*Zantedeschia aethiopica*), starwort (*Callitriche stagnalis*), weak rush (*Juncus effusus*) and Edgars' rush. Additionally, four small tōtara (*Podocarpus totara*) were found located around the edge of the wetland. These tōtara were the only native trees or trees of any significance found within the site.

The overall ecological vegetation value within the site was considered very low.

3.1.2 Avifauna

For native birdlife, it is important to have a healthy, dense, and diverse range of vegetation present to provide year-round sources of food and habitat. The avifauna that occurred on the property was of very low diversity, consisting of two common introduced species; house sparrow (*Passer domesticus*) and blackbird (*Turdus m. merula*). Non-threatened native species that were not recorded, but may visit the property intermittently, include silver eye (*Zosterops lateralis*), fantail (*Rhipidura fuliginosa placabilis*) and tui (*Prothemadera novaeseelandiae*). No "At Risk" or "Threatened" species were recorded, or are likely to utilize the property, even on an intermittent basis.

The overall habitat value for avifauna within the site was considered very low.

3.1.3 Herpetofauna

Herpetofauna (reptiles and amphibians) comprise a significant component of New Zealand's terrestrial fauna. More than 80% of the 104 endemic taxa are considered 'Threatened' or 'At Risk' of extinction (Hitchmough et al. 2016). All indigenous reptiles and amphibians are legally protected under the Wildlife Act 1953, and vegetation and landscape features that provide significant habitat for native herpetofauna are protected by the Resource Management Act 1991. Statutory obligations require management of resident reptile and amphibian populations where they or their habitats are threatened by disturbance or land development.

Leaf litter, undergrowth and wooden debris suitable for skink habitat was very sparse throughout the property. A hand search within the site, did not result in the detection of any skinks, indicating native skinks are absent or if present, skink abundance is likely to be very low. Furthermore, the few native trees within the property was not considered suitable habitat for native geckos. Consequently, the habitat assessment indicated that the area would not likely support any native lizard species.

The overall habitat value for herpetofauna within the site was considered very low.

3.1.4 Long-tailed bats

A targeted bat survey was not undertaken as the vegetation within site and the surrounding environment was considered insufficient to provide roosting or foraging habitat for bats.

3.2 FRESHWATER ECOLOGY

Rainfall within close proximity of the site in the preceding four weeks before the initial site assessment (29/11/2016) site assessment was at a moderate to high level, with two high rainfall events (>25mm) occurring within that time (Auckland Council Environmental Monitoring Site: Mahurangi @ Satellite Dish) (Figure 1). The rainfall in the preceding week before the initial site survey was at a low to moderate level. Approximately 3mm of rain had fallen in the previous 48 hours prior to the initial site survey.

Rainfall within close proximity of the site in the preceding four weeks before the follow up site assessment (8/2/2018) site assessment was at a moderate level, with four high rainfall events (>25mm) occurring within that time (Figure 2). The rainfall in the preceding week before the follow up site survey was at a high level with three high rainfall events (>25mm) and one 24mm rain event occurring within that time. Approximately 1mm of rain had fallen in the previous 48 hours prior to the follow up survey.

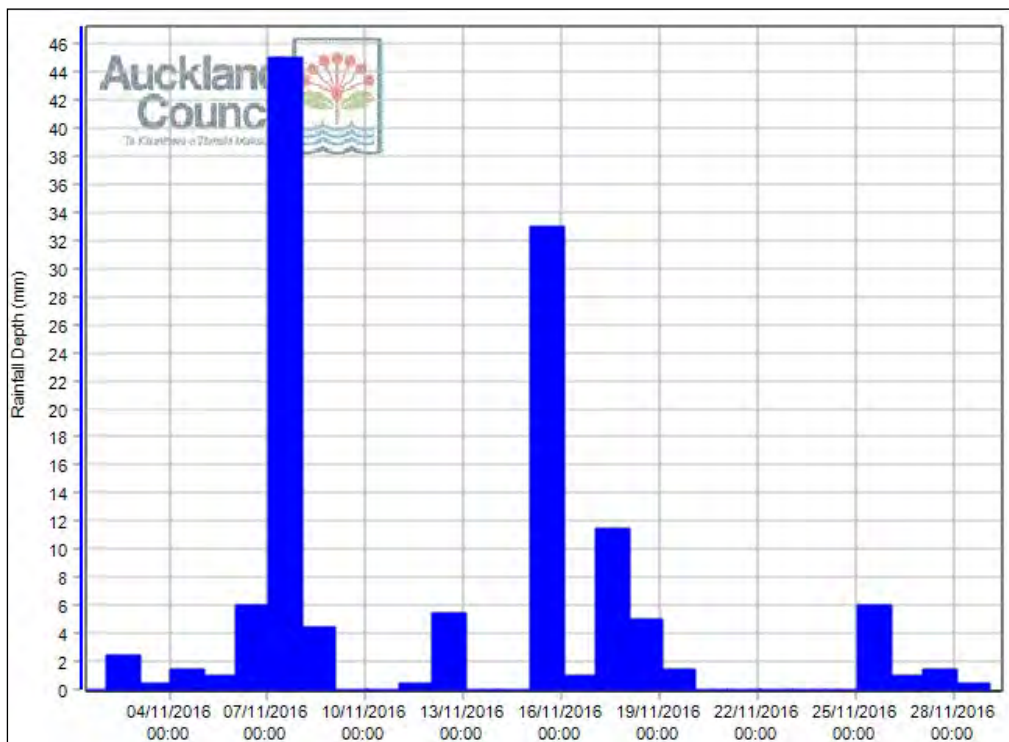


Figure 1. Totalled daily rainfall depth (mm) from the Mahurangi satellite dish monitoring site between 01/11/16 – 29/11/16.

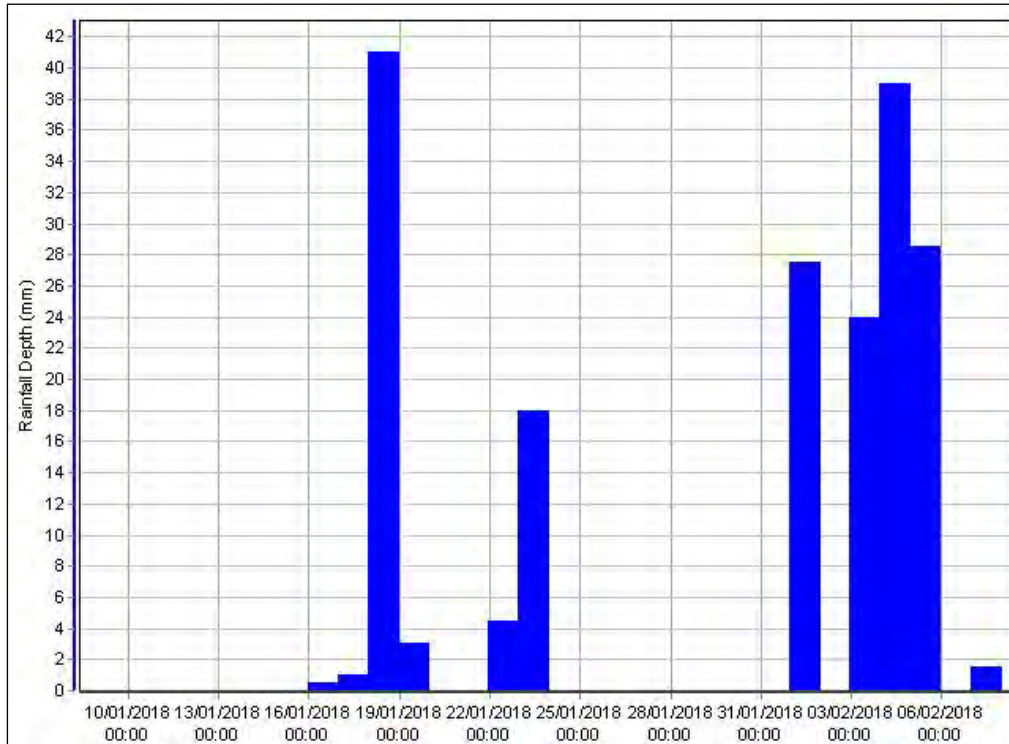


Figure 2. Totalled daily rainfall depth (mm) from the Mahurangi satellite dish monitoring site between 08/01/18–08/02/18.

The site contained three main overland flow paths (Watercourses 1, 2 and 3) that ran in a general south-north direction before draining into an inlet of the Mahurangi Harbour (Figure 3).

Watercourse 1 ran for approximately 125m before joining at the confluence of the other watercourses on site. The upper reach (c. 110m) of Watercourse 1 contained no flowing water, had no defined channel and contained established terrestrial vegetation across the entire width (Photo 1). Clumps of Edgar’s rush are scattered along the watercourse. Edgar’s rush is not considered an obligate wetland flora (Clarkson 2013). A small sinkhole or ‘tomo’ was observed along the lower reach of Watercourse 1. The upper reach was classified as ephemeral and was considered to have a very low aquatic ecological value due to the lack of water flow, shading, aquatic habitat and hydrologic heterogeneity.

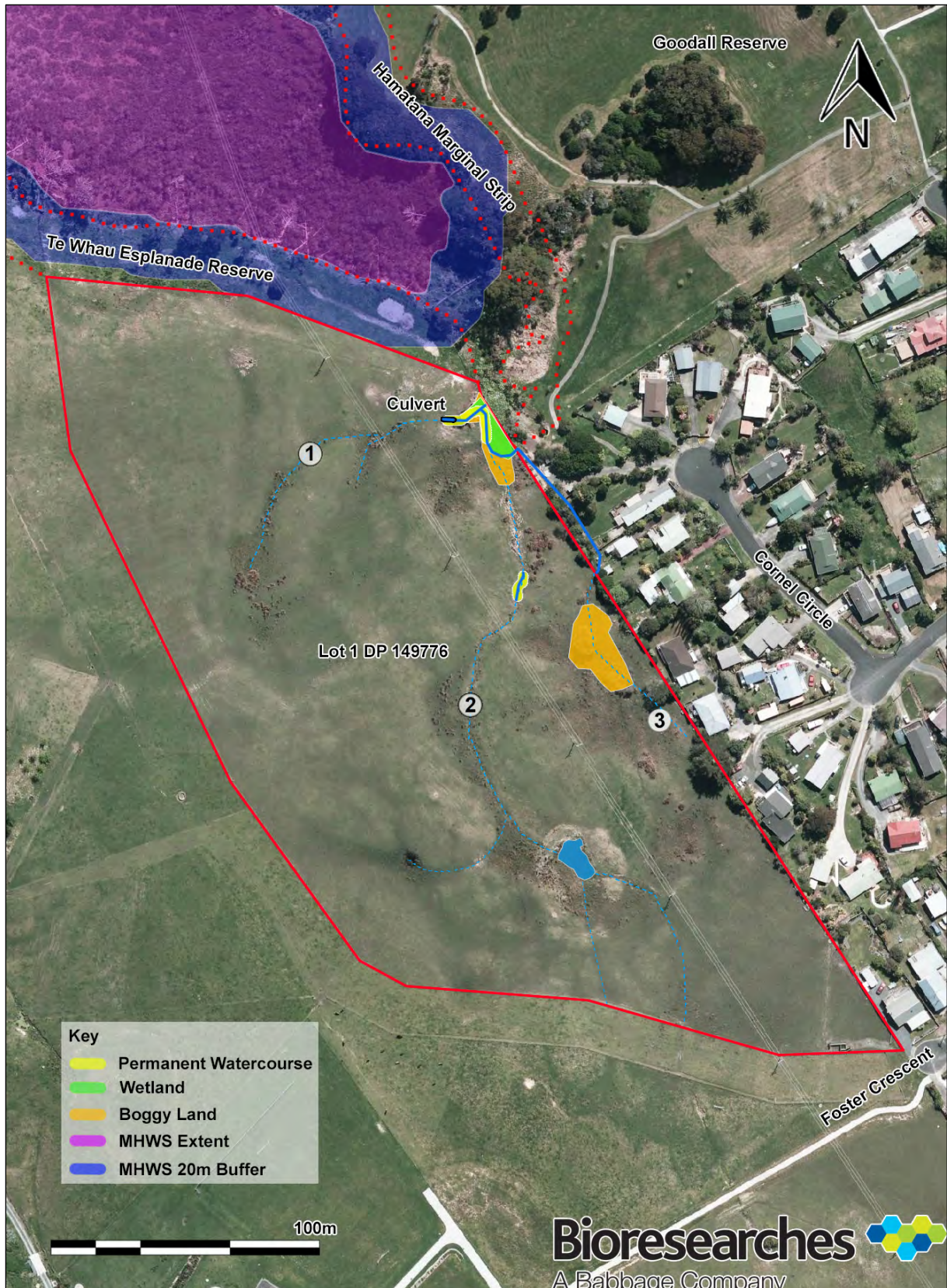


Figure 3. Watercourses and their classification within the site extent.

A hanging culvert was located approximately 10m upstream from the confluence. The inlet of the culvert was buried. From the culvert outlet to the confluence (lower reach, Photo 2) flowing water was present. The lower reach was classified as permanent (Figure 3) and was considered to have a low aquatic ecological value due to low amount of shading, aquatic habitat and hydrologic heterogeneity.



Photo 1. Upper reach of Watercourse 1.



Photo 2. Confluence of Watercourses 1, 2 and 3.

Watercourse 2 ran for approximately 250m from the southern boundary of the site to the confluence. The upper reach (c. 50m) was fed by a diverted roadside drain (Photo 3) and contained no flowing water, had no defined channel and contained established terrestrial vegetation across the entire width (Photo 4). The upper reach was classified as ephemeral and was considered to have a very low aquatic ecological value due to the lack of water flow, shading, aquatic habitat and hydrologic heterogeneity.



Photo 3. Drain running parallel to a driveway which is being diverted into Watercourse 2



Photo 4. Upper reach of Watercourse 2.

The upper reach of Watercourse 2 drains into an artificial stock pond approximately 10m in diameter (Photo 5). From the pond to the confluence (lower reach, c. 150m) the watercourse had a defined, scoured channel (Photo 6). No evidence of floodplain debris was evident and the watercourse contained established terrestrial vegetation within the channel. During both site visits no flowing water was evident. The only exception was a very short reach (approximately 10m), between the pond and the confluence (Figure 3), where a small trickle flow emerged from the ground before

flowing back underground (Photo 7). The average stream width of the exposed section was 0.18m. This exposed area seems to have been used as a vehicle access point which has caused the ground to subside exposing the underground watercourse.



Photo 5. Artificial stock pond within Watercourse 2.



Photo 6. Lower reach of Watercourse 2.



Photo 7. Exposed reach of Watercourse 2.

Although there was a clearly defined channel, the majority of the lower reach of Watercourse 2, with the exception of the 10m exposed reach, was classified as ephemeral due to the absence of flowing water or natural pools, no evidence of floodplain debris and the presence of established terrestrial vegetation. It should be noted that given the amount of rain prior to the surveys, it is expected to observe flowing or pooling water within the channel if the channel bed was below the groundwater level. Consequently, it is believed that the watercourse is subterranean and a continuous/permanent flow of water would be present underground. It is expected that water flow would be present within the overland flow path during and shortly after (<48hrs) heavy or persistent rain.

The defined channel of Watercourse 2 is thought to be from cattle walking over the subterranean watercourse and creating connecting tomo, this would explain why the channel is highly incised/steep and narrow.

The assumption that Watercourse 2 is predominately subterranean and the highly incised channel is product of farming practices, seems to be corroborated by historical aerial images (Figure 4) where it appears no watercourses are evident within the site.



Figure 4. Aerial photograph from 1973 showing approximate site boundary.

The short exposed reach of Watercourse 2 was classified as permanent but may have historically been subterranean prior to the subsidence. Watercourse 2 was considered to have a low aquatic ecological value due to the lack water flow, shading, aquatic habitat and hydrologic heterogeneity.

Watercourse 3 run for approximately 90m from the southern boundary to the eastern boundary of the site. The watercourse contained no flowing water, had no defined channel and contained established terrestrial vegetation across the entire width. The lower approximately 30m of the watercourse was located within a boggy area (Photo 8, Figure 3), and was not considered at wetland due to the lack of aquatic habitat and the fact that ‘obligate’, ‘facultative wetland’ or ‘facultative’ plants did not constitute 50% of the total density (Clarkson 2013). The dominant vegetation within the boggy area was pasture grasses.

The channel within Watercourse 3 became more defined for the last approximately 5m, before it drained into the neighbouring property, 27 Cornel Circle (Photo 9). Watercourse 3 was classified as ephemeral due to the absence of flowing water or natural pools, no evidence of floodplain debris and the presence of established terrestrial vegetation and was considered to have a very low aquatic

ecological value due to the lack of; water flow, shading, aquatic habitat and hydrologic heterogeneity.



Photo 8. Boggy area within Watercourse 3.



Photo 9. Lower reach of Watercourse 3.

At the confluence of where the three watercourses meet, a small degraded wetland formed, approximately 110m² (Figure 3). In addition there was approximately 30m of permanent watercourse associated with the wetland, with an average width of 0.4m. Arum lily, starwort, weak rush and Edgars' rush (Photo 10) were present within the wetland area. Of these species only starwort is considered an obligate wetland species (Clarkson 2013). Edgars' rush was the only native species within the wetland and the arum lily is considered a 'Surveillance Pest Plant' by Auckland Council. The wetland was considered to have a low aquatic ecological value due to small area, low amount of water and lack of native species diversity.



Photo 10. Wetland area at confluence of the watercourses.



Photo 11. Delineation of plant species showing the extent of the MHS.

The remainder of the overland flow paths within site contained no flowing water, had no defined channel and contained established terrestrial vegetation across their entire widths. Additionally, no evidence of floodplain debris or substrate sorting was evident throughout the watercourses. Accordingly these reaches were classified as ephemeral under the AUP OP. These ephemeral reaches were considered to be of very low aquatic ecological value, due to the lack water flow, shading, aquatic habitat and hydrologic heterogeneity.

3.3 MARINE ECOLOGY

A qualitative assessment to determine the mean high water spring (MHWS) mark for the Te Whau Esplanade Reserve and the Hamatana Marginal Strip was undertaken. A clear delineation of plant species was evident indicating the extent of the MHWS mark (Photo 11). Starting from upstream, the dominant bands of plant species present were flax (*Phormium tenax*), Edgars' rush, umbrella sedge (*Cyperus ustulatus*), and then oioi (*Apodasmia similis*). Downstream of the band of oioi, salt tolerant plants, such as remuremu (*Selliera radicans*), slender clubrush (*Isolepis cernua*) and mangroves (*Avicennia marina*), became established. The MHWS mark was at the interface between the oioi and the salt tolerant plants (Figure 3).

4. ASSESSMENT OF EFFECTS AND RECOMMENDATIONS

The permanent section of Watercourse 1 as well as the wetland and its associated boggy areas and ephemeral reaches was considered to have the highest current ecological value and the highest potential ecological value. Through the design process these areas of highest ecological value should be retained.

The proposed Plan Change provides for the reclamation of; the ephemeral reaches associated Watercourses 1-3, the short permanent section of Watercourse 2 (10m), the artificial stock pond and the boggy area associated with Watercourse 3. All of these areas were considered to have a low or very low current ecological value. In addition these areas were also considered to have low ecological potential due to their relatively small catchments, lack of aquatic habitat, and lack of upstream connectivity. Consequently, the adverse aquatic ecological effects of the proposed development were considered minor.

Due to the very low terrestrial ecological value of the site the adverse terrestrial ecological effects of the proposed development were considered minor.

It is recommended, that the Plan Change ensures that the permanent section of Watercourse 1 (downstream of the culvert) as well as the wetland and its associated boggy areas are enhanced through restoration planting and protected through a covenant. There should also be a requirement for a Weed Management and Planting Plan prior to earthworks commencing.

The recommended enhancement would entail the restoration of approximately 40m of permanent watercourse and 110m² of wetland habitat, including the retention of the tōtara. Overall the proposed development would constitute a net biodiversity gain.

5. REFERENCES

- Biggs, B. J. F., C. Kilroy, C. M. Mulcock, M. R. Scarsbrook and S. C. Ogilvie. 2002.** New Zealand Stream Health Monitoring & Assessment Kit. Stream Monitoring Manual - Version 2k – a Tool for Kaitiaki. Christchurch, *NIWA*.
- Bioresearches, 2015.** Waikumete Cemetery Baseline Stream Ecology Assessment. *For Auckland Council*, November 2015.
- Joy, M. and I. Henderson. 2004.** A Fish Index of Biotic Integrity (Ibi) for the Auckland Region. Report and User Guide for Use with the Auckland_Fish_Ibi Software., *Centre for Freshwater Ecosystem Modeling and Management for Auckland Regional Council*: 6.
- Stark, J. D., I. K. G. Boothroyd, J. S. Harding, J. R. Maxted and M. R. Scarsbrook. 2001.** Protocols for Sampling Macroinvertebrates in Wadeable Streams, *Ministry for the Environment*.
- Stark, J. D. and J. R. Maxted. 2007a.** A Biotic Index for New Zealand's Soft-Bottomed Streams *A Biotic Index for New Zealand's Soft-Bottomed Streams New Zealand Journal of Marine and Freshwater Research* 41: 43-61.
- Stark, J. D. and J. R. Maxted. 2007b.** A User Guide for the Macroinvertebrate Community Index, *Cawthron Institute*.
- Storey, R. G., M. W. Neale, D. K. Rowe, K. J. Collier, C. Hatton, M. K. Joy, J. R. Maxted, S. Moore, S. M. Parkyn, N. Phillips and J. M. Quinn. 2011.** Stream Ecological Valuation (S.E.V.): A Method for Assessing the Ecological Function of Auckland Streams, *Auckland Council*.



**FOSTER CRESCENT, SNELLS BEACH
PROPOSED PRIVATE PLAN CHANGE AND RESOURCE CONSENT APPLICATION**

LANDSCAPE ASSESSMENT



1 INTRODUCTION AND METHODOLOGY

This report has been commissioned by Prime Property Limited to inform a private plan change and resource consent application for subdivision proposed for the terrain bordering Snells Beach settlement's western margin.

The Applicant seeks to rezone a 4.64ha title described as Lot 1 DP149776 (the Site) from its current Residential Large Lot status under the Auckland Unitary Plan - Operative in Part (UPOP) to being Residential Single House Zone. As such, the plan change proposal and related resource consent application applies to that single title.

A comprehensive Plan Change Application report which has been prepared by Barker and Associates contains a full description of the proposal and includes detailed analysis against the UPOP provisions.

The disciplines of ecology, planning, civil engineering, survey and landscape architecture have been involved in developing the plan change proposal.

This landscape-related assessment has been undertaken on the basis of the following methodology:

- Review background documents that inform an understanding of the Site and wider setting in terms of both physical characteristics and the regulatory framework.

- Undertake a detailed walkover of the Site and visit immediately adjacent, publicly accessible places, including Snells Beach School, Te Whau Esplanade Reserve, Goodall Reserve and nearby public road corridors.
- Photograph the Site – where visible – from these various locations and assemble the resulting images into accompanying attachments. Vantage-points were selected to capture the greatest exposure or “worst case” view from each locale.
- Describe and analyse the biophysical and land use characteristics of the Site.
- Broadly categorise the Site context based upon areas of contiguous landscape/urban character, with these areas being frequently determined by land use as the primary determinant.
- Assess the relationship between the Site and the various viewing audience groupings that are potentially affected by the proposal in order to report upon visual effects.
- Assess landscape effects in relation to the form of the proposal and its compatibility or otherwise with established characteristics, patterns and general structure of both the Site and its wider context.
- Identify and quantify natural character effects that may be imposed upon adjacent areas of coast.
- Relate the proposal to the key built environment outcomes sought by section B2.3 of the Regional Policy Statement for Auckland.
- Provide some summarising conclusions that draw together the main body of findings.

SECTION A: DESCRIPTION OF THE SITE

The boundaries for the title underlying the Site are shown in Attachments One and Four to this report. Figure 1, below, illustrates the Site in relation to surrounding landmarks. These images highlight the way that a combination of existing, residentially-focussed land uses and a parcel of Open Space define the Site. Attachment One also illustrates how landform then further reinforces those activity delineations.

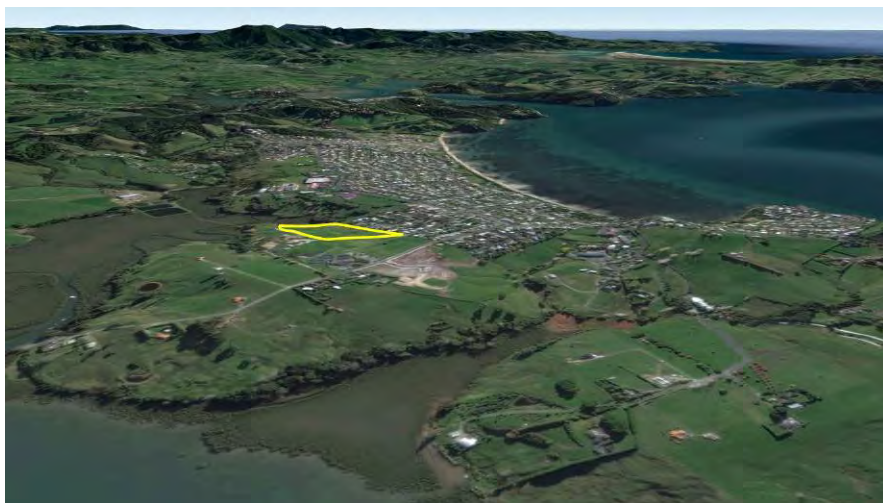


Figure 1: High oblique view with the Site indicatively highlighted. Snells Beach can be seen in the background and Mahurangi Harbour to lower left, with Dawsons Creek cutting up to the left of the Site.

The Site has not been identified as having elevated landscape or natural character values or sensitivity by the UPOP; a circumstance that is unsurprising in light of its modified state and the prevailing influence of neighbouring urban development.

2 EXISTING PHYSICAL CHARACTERISTICS

2.1 *Geology and soils*

The neck of peninsula associated with Snells Beach stretching from the open beach to the shore of Mahurangi Harbour and Dawsons Creek lies across terrain founded upon geology derived from the Mangakahia Complex. This material is described as being closely fractured to sheared siliceous and lightly calcareous mudstone, green and brown shale, and some muddy limestone.

An isolated pocket of Albic ultic class soils, which are common throughout northern New Zealand, dominates across the Snells Beach area generally, including the Site. These soils, which are found immediately under the organic or topsoil horizon, are strongly weathered, with a well-structured, clay enriched subsoil horizon. They tend to be acidic and strongly leached.

2.2 *Landform*

Close inspection of Attachment One reveals a tier of 1m interval contours that illustrate the almost basin-like form of the Site and closely related residential area traversed by Foster Crescent to the east.

A gentle spur that drops from the Dawson Road ridge runs down the eastern margin of Snells Beach School and then tracks near the private Te Whau Drive on the western edge of the Site. This gentle brow can be seen in Panorama VP08 of Attachment Three, and more clearly still on the left margin of Panorama VP09. Panorama VP10 looks in the opposite direction, up the Site, so the slight spur can be distinguished on the right side of that image, where it is closely associated with the houses in the neighbouring Residential Large Lot Zone.

A slight depression ascending the core of the Site contributes to the mildly hollowed, basin form mentioned. The base of that focussing terrain carries the minor watercourse seen highlighted as a blue line Attachment One.

2.3 Hydrology

The watercourse just referred to is a minor, unchanneled ephemeral seep that results from the gentle focussing of overland flow by the underlying landform. As such, the watercourse barely expresses itself to casual observation and is not a physical feature amidst the wider nature of the Site.

A minor pond, apparently formed alongside the flow path just described, appears to have been installed to provide stock water. It too fails to register as any more than a minor element within the broader form of the Site. A second, even more subtle flow path alongside the lower portion of the eastern boundary of the Site as it conveys water shed from the base of the Foster Crescent enclave. This passes through a damp depression en route to its discharge in the north eastern corner of

the Site. The third flow path sweeps around the northern core of the Site, its route marked by rushes, but once again not forming a conspicuous feature of the land.

The confluence of these three minor watercourses occurs on the north eastern edge of the Site and its more emphatic presence reflects the combined deliveries of the flows just described. An ecological assessment¹ describes the detail of this most sensitive environment and recommends that it be enhanced with supplementary planting and protected through a covenant. Spatial provision is made for this to occur within Lot 54 of the concept scheme plan found in Attachment Four.

2.4 Vegetation and Land use

The fencing of the Site indicates its past devotion to agricultural grazing, but stock was withdrawn from the property some time ago, allowing the poor-quality pasture to evolve into the rank growth dominated by kikuyu (*Pennisetum clandestinum*), Yorkshire fog (*Holcus lanatus*) and broad-leaved dock (*Rumex obtusifolius*), that currently exists. A scattering of young gorse (*Ulex europeaus*).

An overhead power service currently traverses the midst of the Site in a northerly direction, as seen on the cover of this report, and would be removed or undergrounded as part of the proposal.

¹ Ecological Assessment: Lot 1 DP 149776, April 2018. Bioreserches

SECTION B: CHARACTERISATION OF SETTING

3 DEFINING ELEMENTS / LANDSCAPE CHARACTER AREAS

The wider structure of Snells Beach's existing urban area and immediate hinterland can be categorised into a series of defining elements and landscape character areas. These express themselves in Attachment One, which highlights the context of the Site within an aerial photograph, and even more graphically in the UPOP zoning map found in the reporting of Barker and Associates. In general, the land uses that are established in this relatively developed area are the prevailing drivers for the character areas, rather the topographic and biogeographic components that tend to determine the character of less populated areas of landscape.

3.1 Urban Centre and Commercial / Industrial pockets

Snells Beach's primary commercial centre is closely associated with the Mahurangi East Road corridor and therefore occupies a prominent location on the ridge. The main core lies to immediate north of Hamatana Road, and incorporates a service station, liquor store, large format Warehouse store and a range of other, smaller commercial premises typical of those found in comparably scaled shopping areas. The setting for this shopping area is well-established, with roadside trees defining the perimeter of the area. Whilst most of the buildings are of modest scale, the large format building has a more commanding presence that is felt in the immediate vicinity and further afield, standing as something of a landmark.



Photograph 1: Mahurangi East Road seen looking north from near the fire station, with Goodall Reserve's road frontage defined by the low barrier evident to the left and the Warehouse building's red roof is visible to right of the road.

A smaller pocket of commercial activity lies alongside Mahurangi East Road on the opposite, southern edge of Goodall Reserve, where the fire station is the first of the buildings. A pharmacy and marine shop are amongst the other occupants.

As a general observation, the commercial portions of Snells Beach are relatively unobtrusive – with the exception of the large format building – and do not unduly impinge upon the informal, coastal settlement urban atmosphere to prevail across Snells Beach.

3.2 Conventional residential areas

A consistent belt of housing runs from the Mahurangi East Ridge down the shore of Snells Beach, as partially seen in Attachment One and more comprehensively (but distantly) in Figure 1 preceding.



Photograph 2: a view along Foster Crescent, showing scale of street and contribution of associated vegetation in creating amenity.

Travelling through the network of streets on this flank reveals that most of the housing stock dates from the 1970's and the two subsequent decades, confirming a period of intense development through that period. The extension of settlement over the Mahurangi East Ridge to Iris Street, Foster Crescent and Carmel Circle is of a similar era, but with housing more modest and compact. Photograph 2 opposite illustrates the well-established public road corridor of Foster Crescent,

with a developed framework of trees that has not been so fully realised on the eastern side of the main ridge, where competition with sea views sees vegetation more intensively managed. It is this area of mature residential enclave that forms the immediate eastern context to the Site.



Photograph 3: A newer portion of Snells Beach settlement at Hewson Drive, to the west of the Mahurangi East Road. A tiny portion of the Site can be seen amidst mature trees associated with Goodall Reserve.

Most of the recent development in the settlement has occurred on its northern edges, both on the gentle coastal flank associated with Aurora Avenue and, to the west of the Mahurangi East Ridge in the pocket accessed by Riverleigh Drive, as seen above. These more modern neighbourhoods bring a greater sense of urbanity, due largely to a combination of smaller titles and larger house footprints.

This arrangement means that the scale of vegetation associated with the mature streets and sections of the Foster Crescent area is unlikely to so fully develop in these newer areas.



Photograph 4: Looking across part of Snells Beach School, with its bold, modern architecture and general sense of "newness".

3.3 Residential Large Lot

This zoning currently applies across the Site, the block of titles that are served by the private Te Whau Drive to its west, and Snells Beach School (seen in Photograph 4 above) extending up to Dawson Road ridge. In this location, the

zone sits in its declared position on the margin of the presently established suburban extent that is related to Foster Crescent.



Photograph 5: Housing under construction on Te Whau Drive to the south west of the Site, as seen from within the lower, northern part of the Site.

Relatively recent housing development sees buildings strung along the modest spur outlined earlier to capitalise upon views over the mid Dawson's Creek reach to rolling rural land beyond. The youthfulness of this housing area means that there is little vegetation currently established, but the size of the titles involved suggests that there is adequate space to encourage planting of species that will ultimately frame and buffer the present domination of built elements, as seen in Photograph 5 above.

It should be noted that three further, vacant titles exist to the north of the developing lots seen in Photograph 5 above and the aerial photographs found in the Attachments.

3.4 Western farmed headlands

Lying a short distance to the west of the Site, this landscape character area coincides neatly with the Rural Coastal Zone. It is defined by a rolling landform that projects out into the Mahurangi Harbour as it runs up to Warkworth from its mouth in Kawau Bay.



Photograph 6: Looking out over the inner portion of the western farmed headland associated with Dawson Road from the knoll on Mahurangi East Road near Rangimaire Crescent junction.

When placed within this area, there is a sense of being in a broad scale intermediary between the Harbour and western margin of residential settlement, with recent subdivisions such as that at on the opposite side of Dawson Road from Snells Beach School.

3.5 Estuarine Mahurangi Harbour and Dawsons Creek

This landscape character area covers the tidal Mahurangi Harbour as it rapidly narrows to run north west to run up to Warkworth from its mouth in Kawau Bay.

As can be seen in Attachment One, the coastal depression carved by Dawson's Creek, which forms a minor arm to the Harbour, has infilled with sediment to become predominantly colonised by mangrove. The tidal Creek meanders in lazy sweeps along the eastern margin as the only water of any depth amongst this intertidal flat and in doing so relates quite closely to the Site. Despite that proximity, the visual connection between Creek and Site is almost non-existent due to the scale of the mangroves alongside the channel and a steadily developing belt of indigenous planting that has been installed or naturally established within the related esplanade reserve.

The body of water that *can* be seen from the most elevated fringe of the Site – as witnessed to the left of Panorama VP09 – are the pair of rectilinear ponds associated with the waste water treatment plant situated on the north western margin of the Creek. These can be readily distinguished in Attachment One.

SECTION C: OPEN SPACE NETWORK

Attachment One highlights the open space context that the Site is located within, with those areas highlighted with a pale green outline and with a brighter green coloured fill that they share on that plan with the Site itself.

Goodall Reserve to the north east is a generous Open Space - Sport and Active Recreation Zone focus for the wider settlement, catering for a range of team sports, tennis, lawn bowls, skate-boarding, library and informal pursuits.



Photograph 7: The path entrance to Goodall Reserve from the northern end of Foster Crescent, with the green mesh surrounding the reserve's tennis courts seen in the background. Note rolling contour and belts of trees that frame spaces within the park.

A network of predominantly concrete paths, which are highlighted in Attachment One and seen in Photograph 7 above, provide a range of walking route options through the reserve. Parking areas are provided in the south east corner of the park,

Collectively, these amenities define the reserve as a Suburb Park under the Auckland Council Open Space Provision Policy².

A belt of specimen trees established alongside Mahurangi East Road, comprising predominantly pohutukawa (*Metrosideros excelsa*), set the theme for much more extensive, informal patterns of specimen planting that structure the south western half of the Reserve. This eclectic assemblage includes deciduous *Albizzia* (seen in Photograph 7 above) and poplar (*Populus sp.*), Norfolk Island pine (*Araucaria heterophylla*), *Eucalyptus sp.*, pohutukawa, young kauri (*Agathis australis*) and totara (*Podocarpus totara*). Panoramas VP01-03 inclusive provide an impression of this vegetated portion of the park and how the scale of that tree structuring serves to largely separate the Reserve from surrounding areas, including the Site. Despite its immediate proximity, there are few parts of the Reserve where views to the Site can be gained.

A second body of parkland exists as the Te Whau Esplanade Reserve; a narrow riparian strip defined as Open Space – Conservation Zone that hugs the coastal margin of Dawsons Creek from the western end of Dawson Road through to

² *Open Space Provision Policy 2016*. Auckland Council

Goodall Reserve, where it then continues on to the termination of Hamatana Road. Whilst it retains an informal, natural identity, the Esplanade Reserve contains extensive native planting, as is evident in Photograph 8 below, pockets of mature pine (*Pinus sp.*) and a measure of naturally occurring colonisation by species like mapou/matipo (*Myrsine australis*).



Photograph 8: looking east along the Te Whau Esplanade walkway as it passes below the northern edge of the Site.

A well-formed gravel path capitalises upon the linear form of the reserve to provide an easy, well graded route to connect with the network of trails within Goodall Reserve.

A third area of related parkland lies to the uphill, southern edge of the Site, where an apparently unnamed reserve fills a semi-triangular void created by Dawson Road, Snells Beach School, the private Te Whau Drive corridor and the western margin of the existing urban neighbourhood associated with Foster Crescent. This open, largely undeveloped pocket of reserve is punctuated at its centre by a lone willow (*Salix sp.*). It is bisected by a concrete footpath that connects the end of Foster Crescent with Snells Beach to serve the Iris Street enclave and provide a short cut that largely avoids the primary ridgeline roads for children moving across from the north eastern flank of the wider settlement.



Photograph 9: Looking along the Dawson Road verge, with the undeveloped Open Space immediately to right and Snells Beach School seen beyond.

This concrete walkway rather unimaginatively cuts a direct line from its origin to its destination, oblivious to the gentle topography that it crosses, as can be seen in Photograph 10 opposite. The path currently serves as the boundary between the portion of the reserve that is associated with the Dawson Road that is mown and that nearer the Site which exists in a rank, overgrown state.



Photograph 10: A path that bisects the undeveloped reserve to link the end of Foster Crescent with Snells Beach School. The willow to centre lies near the head of an overland depression that forms into an ephemeral stream as it passes through the Site.

SECTION D: LANDSCAPE / SPATIAL OPPORTUNITIES AND CONSTRAINTS

The preceding analysis of the characteristics of the Site and its wider context imply a range of opportunities and constraints for the future development. Key landscape-related imperatives that underpin the potential for effectively integrating future development under the proposed plan change include a:

- contiguity with the area of well-established residential neighbourhood that adjoins to the east and is served by Foster Crescent, Cornel Circ and Iris Street;
- containing topography where a spur provides a physical definition to the otherwise least delineated margin to the Site;
- powerful frame of open space, with Goodall Reserve to the North and an unnamed parcel of reserve to the east;
- close connection with Snells Beach School, in both spatial terms and in relation to the “built presence” established by the schools dynamic, modern buildings;
- visual separation from the wider expanse of Mahurangi Harbour and limited imposition upon Dawsons Creek, which is barely navigable and heavily contained by a mass of mangrove (*Avicennia marina* subsp. *australasica*) that cluster in to the channel margins;
- potential for pedestrian connections to the adjoining esplanade reserve and Goodall Reserve; and

- extremely limited options for a road access, determined by private property defining the majority of the perimeter boundary and the northern margin being bordered by public Open Space. This leaves the narrow throat provided by a stub off of the western end of Foster Crescent as the only option for extending a street into the Site.

SECTION E: SPATIAL PLANNING APPROACH

Prior segments have analysed the Site and its context as a setting for the proposed plan change. Attachment Four contains an indicative subdivision scheme plan to create 52 Residential Single House Zone titles that have a lot size ranging from 530m² to 836m².

A primary constraint to the format of development is the sole road access point on offer at the south eastern head of the Site. From this relatively tight, triangular entrance point, a primary road corridor is proposed to run parallel to, and one lot removed from, the eastern boundary to the site.

A narrower lane is anticipated to traverse the western side of the Site to serve a rank of titles backing onto (but without access to) Te Whau Drive and another in the midst of the Site. This combination of the primary road and secondary public access creates a well-connected permeability within the Site, allowing almost all future homes to address a “road frontage” and virtually avoiding any requirement for right of ways or narrow individual drive corridors to reach rear lots.

Complementing the vehicular corridor connections is the intention to capture two available opportunities to link with the riparian reserve and Goodall Reserve that present themselves. Those pedestrian connections are highlighted by a pair of white arrows on Attachment One and on the indicative scheme plan by the assignment of a pair of titles devoted to that linkage role and to generally heightening amenity.

The westernmost of these corridors sits in association with a slight rise to the toe of the spur approximately traced by Te Whau Drive. Its flared shape provides for a meander in a future path to achieve comfortable grading, and for riparian vegetative themes to be drawn up into the body of the Site. An eastern pocket of open space would provide a connection to the foot of Goodall Reserve. It also offers scope for that route to emphasise the presence of the small wetland that it would contain

It is anticipated that a detailed streetscape design process would deliver high quality street spaces, low impact urban design outcomes and a measure of unity throughout the Site, doing so in a way that relates to the established character of the wider Snells Beach settlement. Measures to achieve that collective result are likely to include variable carriageway widths, contrasting and permeable parking bays, emphasise of nodal points within the corridor, planting initiatives to modulate spaces and draw in contextual themes, and careful configuration of footpaths. Opportunities to merge the public and private realms that relate to the road corridors can also bring heightened spatial character and amenity.

SECTION F: AUCKLAND UNITARY PLAN

Section B 2.3 of the Regional Policy Statement portion of the Auckland Unitary Plan Operative in Part (UPOP) promotes “a quality built environment”. Many of these policies provide a useful framework against which to analyse the plan change component of the proposal, in particular.

The first grouping of policies under B2.3.2 requires that a proposal is configured to:

(1) Manage the form and design of subdivision, use and development, so that it does all of the following:

(a) supports the planned future environment, including its shape, landform, outlook, location and relationship to its surroundings, including landscape and heritage;

- The indicated pattern of development reflects the form and approximate density of the adjoining residential of the existing Residential Single House zone of Snells Beach, and particularly the Foster Crescent enclave.
- Forms an intermediary between long established suburban character to the east and Residential Large Lot zone to the west.
- The underlying landform and drainage pattern informs the schematic format of development.
- Site planning provides for the conservation and enhancement of the area of wetland on the Site that is of highest value.
- Detailed design will provide an opportunity for response to surrounding vegetative themes and the estuarine ambience of the Site’s wider setting

through street planting and development of the connecting fingers of proposed reserve on the northern edge of the Site.

- A deliberate relatedness to adjoining reserve areas fosters a sense of belonging and care for those public spaces amongst future residents.

(b) contribute to the safety of the site, street and neighbourhood;

- Indicated street spaces are strongly addressed by private properties, providing excellent surveillance and promoting engagement.
- The configuration of the proposal lends itself to traffic management/calming initiatives being woven into the detailed resolution of design for resource consenting.

(c) develops street networks and block patterns that provide good access and enable a range of travel options;

- Roading options are limited due to surrounding land ownership, but the proposal maximises potential internal circulation by the combination of a primary road corridor complemented by a more intimate public to provide a broad loop.

(d) achieves a high level of amenity and safety for pedestrians and cyclists;

- Detailed design will provide the opportunity to create low speed, pedestrian and cycle-friendly road corridors, as well as generally heightening amenity within those street spaces. Further cues should seek

to provide a linkage between the public and private realm, bring a measure of unity and concepts of “shared visual spaces” between each.

- Promotes access to and use of existing off-road routes for walkers.

(e) meets the functional needs of the intended use;

- A cohesive access pattern, close relationship with adjacent school, open space and recreation facilities and spatial arrangement that provides for further design resolution collectively engender the proposal for the Single House Residential zoning that is sought by the proposed plan change.

(f) allows for change and enables innovative design and adaptive re-use.

- A Residential – Single House Zoning provides for a range of built forms that can respond to occupant needs, lot orientation, shape and street relationship.

(2) Encourage subdivision, use and development to be designed to promote the health, safety and well-being of people and communities by all of the following:

(a) providing access for people of all ages and disabilities;

- Street corridors are aligned to flow with the moderate, natural gradients of the Site.
- Shops, the adjacent school and a range of recreational/community facilities that are close nearby are within easy reach and served by existing off-road pedestrian paths that are free of steps.

(b) Enabling walking, cycling and public transport and minimising vehicle movements;

- Walking and cycling are promoted through the provision of two pedestrian corridors connecting to the Te Whau esplanade and more directly into Goodall Reserve.
- Those connecting segments from the Site then provide access into a much wider network of pedestrian routes (and vice versa), including the primary vehicular transportation corridor along Mahurangi South Road.
- An existing, adjacent walkway links directly to Snells Beach School from the entrance to the Site.

(3) Enable a range of built forms to support choice and meet the needs of Auckland’s diverse population.

- At this rezoning and resource consent level, the proposal is not prescriptive other than seeking a Residential Single House Zoning in relation to a conceptual subdivision scheme plan. If that zone is applied, there are opportunities through the development of sites to provide a diversity of innovative options for how titles are utilised, as is catered for in the sought Zone.

(4) Balance the main functions of streets as places for people and the movement of vehicles.

- Scope is built into the spatial format of the public areas of the Site to be experienced as shared spaces for neighbourly interaction and a local asset to be valued and nurtured.
- Further detailed design resolution should explore the potential for traffic calming and an intimacy of streetscape that has a quiet, lane-line character that engenders neighbourhood involvement and moderates vehicle speed in the process. This may include initiatives such as varied carriageway widths, contrasting (and permeable) parking bays, contrasting road surfaces, a range of street planting techniques, public space furniture and a spectrum of other approaches that are well documented in the Auckland Design Manual.

Chapter E38 of the Auckland-wide rules in the UPOP covers urban subdivision. The following provisions are considered to be of most relevance to resource consent component of this proposal:

(3) Require subdivision design to respond to the natural landscapes by:

(a) avoiding building platforms and, where practicable, infrastructure, on identified or dominant ridgelines on sites zoned Residential – Large Lot Zone or Residential – Rural and Coastal Settlement Zone;

- The proposal seeks to rezone the Site from its current Residential – Large Lot status, but notwithstanding that circumstance the natural basin-like topography of the land ensures that it is removed from ridgeline terrain.

(c) locating and designing roads, access and infrastructure in a manner which minimises earthworks; and

(c) locating roads and development to follow land contours

- The format of proposed development sees roading corridors (the primary civil undertaking involved) running along the modest contour of the Site, thereby largely eliminating the need for enduring cut or fill intrusions.

(10) Require subdivision to provide street and block patterns that support the concepts of a liveable, walkable and connected neighbourhood including:

(a) a road network that achieves all of the following:

(i) is easy and safe to use for pedestrians and cyclists;

- It is anticipated that the detailed configuration of the road spaces will engender a low speed traffic environment and heightened level of amenity. That combination of outcomes is expected to “empower” those on foot or by bicycle relative to motorists to provide enhanced levels of safety and comfort.
- Sightlines and other traffic management parameters would be achieved with specialist advice.

(ii) is connected with a variety of routes within the immediate neighbourhood and between adjacent land areas; and

- The format of proposed development sees roading corridors (the primary civil undertaking involved) running along the modest contour of the Site, thereby largely eliminating the need for enduring cut or fill intrusions.

(iii) is connected to public transport, shops, schools, employment, open spaces and other amenities; and

- The position of the Site places it in easy reach of the adjacent school, shopping area, reserve areas and Mahurangi East Road as the arterial traffic corridor.
- Off road pedestrian linkages to all of these amenities is well integrated within the Site and offers direct access within a 10 minute walk.

(b) vehicle crossings and associated access designed and located to provide for safe and efficient movement to and from sites and minimising potential conflict between vehicles, pedestrians, and cyclists on the adjacent road network.

- Almost all allotments would have a generous and direct road frontage with associated sightlines. Only one title is a rear lot that is accessed by a drive stub between neighbouring titles.

(11) Require subdivision to be designed to achieve a high level of amenity and efficiency for residents by:

(a) aligning roads and sites for maximum sunlight access where topography and parent site shape allows; and

- The relatively narrow form and northwest orientation of the parent title is somewhat determinative in the configuration of allotments, but titles oriented to achieve a northerly quarter orientation along their long axis for heightened solar gain.

(b) aligning sites to the road to maximise opportunities for buildings fronting the road.

- Introducing a lower-tier loop road within the format allows all but one of the 52 proposed residential titles to have a direct relationship with the street, bringing urban form benefits and the values of engagement between private and public realm.

(12) Limiting rear sites to places where the site topography, existing boundaries, natural features, or scheduled places will prevent the creation of front sites.

- The proposal has been very deliberately configured to avoid rear lots, resulting in just a single title falling into that category in order to efficiently utilise the land.

(13) Require subdivision to deliver sites that are of an appropriate size and shape for development intended by the zone by:

(a) providing a range of site sizes and densities; and

- Lot sizes are determined by the provisions of the Residential - Single House Zone provisions, in accordance with that being the zoning sought. In so doing, the resulting neighbourhood would provide a consistency with adjacent established residential area to the east.

(b) providing for higher residential densities in locations where they are supportive of pedestrians, cyclists, public transport and the viability and vibrancy of centres.

- The convenient positioning of the Site relative to public amenities, the primary transportation corridor and an established network of off-road access corridors is a primary motivation for the proposal to rezone the land from its current Residential – Large Lot status.

(14) Encourage the design of subdivision to incorporate and enhance land forms, natural features, and indigenous trees and vegetation.

- A slight valley-like contour and the relatively narrow width of the Site dictate that the underlying landform is accommodated by the development. The terrain would inevitably be smoothed and evened to accommodate roading, surface water management and practicable private titles, but would not drive a requirement for substantial earthworks relative to comparable residential development on less accommodating sites.

- As indicated by the earlier description of the Site, it exists in a rather compromised and denuded state. The proposal allows to conserve the best of the wet areas and related vegetation.
- Road corridors – particularly around the entry to the proposed neighbourhood – and the reserve connections provide useful opportunity for the development of the Site to draw in established vegetative themes from related areas.

(18) Require subdivision to provide for the recreation and amenity needs of residents by:

(a) providing open spaces which are prominent and accessible by pedestrians;

(b) providing for the number and size of open spaces in proportion to the future density of the neighbourhood; and

(c) providing for pedestrian and/or cycle linkages.

- As the analysis contained in Attachment One demonstrates, the Site is virtually surrounded by an abundance of diverse public open space. This takes the form of Goodall Reserve with its range of recreational and public amenities, the walking corridor offered by the Te Whau Esplanade and the unnamed and undeveloped parkland immediately to the south of the Site.
- Provision for access takes the form of two path corridors to reach the esplanade and Goodall Reserve in the lower portion of the Site, connecting with well-established walkways that exist in each of those parks. A connection to the southern, un-named reserve at the crest of the

Site coincides with the entry to a concrete path that serves Snells Beach School on the opposite, western side of the reserve.

SECTION F: EFFECTS ASSESMENT

Preceding sections describe the characteristics of the Site and its setting. These are followed by a description of the anticipated subdivision of the Site and its component parts. The purpose of *this* section of the report is to define the effects of the proposal upon the setting, to consider how the proposal would impact upon the experience of people viewing development that would result from the plan change from outside of the site, and to comment upon the resulting level of effect upon landscape character, visual amenity and natural character.

Prior to providing that description however, it is useful to acknowledge a preliminary background technical report that Auckland Council commissioned to assist its decision-making in relation to the rural/urban boundary in the north and northwest of the region, prior to notification of the Proposed Auckland Unitary Plan (PAUP). That landscape investigation assessed landscape character, sensitivity, and capacity to absorb urban development in relation to the rural urban boundary to the

north and north-west of Auckland³ (the ENPAD report). The observations of that investigation that apply to the Site, as part of Area 10 - West Snells Beach, were:

- undulating to moderately sloping terrain;
- inner harbour headlands and slopes;
- contained southern basin framed by hills slopes to the south;
- defined headland contained by river to the east;
- strong visual and physical connection to existing residential areas; and
- strong capacity to accommodate urban built form.

ENPAD documents are appended to the section 32 reports for the PAUP.

Adverse effects impact negatively on the landscape and result in landscape or visual amenity values being diminished. **Benign or neutral effects** are those in which a proposed change neither degrades nor enhances the landscape setting when considered in the whole. In circumstances where **positive effects** arise from a development, the changes that have been brought are deemed to be beneficial relative to the landscape state of the site prior to that change.

Effect ratings that will be used:

Very high: resulting in a dramatic or total loss of the defining landscape characteristics of the site/context, or visual amenity associated with that setting.

³ *Rural\Urban Boundary (North and Northwest): Preliminary Landscape Investigation – Explanatory Note.* August 2013. ENPAD. Auckland Council

High: leading to a major change in the characteristics site or setting, or significantly diminishing key attributes, and/or comparable impacts upon visual amenity.

Moderate – high: an interim measure of effect in which impact of the development results in a change of some significance to the qualities or perception subject landscape.

Moderate: a self-explanatory magnitude in which effects sit midway between the extremes this spectrum of magnitude. Can also be considered as an “average” level.

Moderate – low: impacts on landscape characteristics and attributes are relatively contained. The threshold defining “minor” in relation to the S104D gateway test sits within this level of magnitude, typically towards the lower end of its spectrum.

Low: effects are generally very limited and do not result in compromising the characteristics of a landscape or perceptions of it in a more than subtle way.

Very low: negligible or imperceptible effects result upon the landscape and/ or perceptions of it.

Whilst the following descriptions and assessments will not provide a detailed comparison with a permitted baseline development of the Site, it is useful to maintain an awareness of the development that could occur on the property as-of-right.

A Residential Large Lot zoning provides for 9-10 lots to be created on the Site, making due allowance for an access within the area available. In addition to those dwellings, development is likely to include a road or shared access, individual driveways, boundary fences, ancillary sheds, and the like. Te Whau Drive provides a useful indicator of likely character (as seen in Attachments Two and Four), with generously-scaled homes occupying a relatively large portion of their titles and additional utility buildings being a common theme. When seen in an oblique view, as witnessed in many of the panoramas contained in Attachment Three, the buildings are often seen against the neighbouring dwelling, giving a sense of compressing the intervening space that is evident when viewed in plan form.

After making allowance for larger residential footprints, ancillary buildings and the fore-shortening of perspective that comes with oblique views, it is considered that Residential Large Lot development of the Site would come with an impact that is typically not dramatically less than that created by Residential Single House use of the land.

7 VISUAL AMENITY EFFECTS

Viewing audiences / affected parties

To assist with predicting the level of visual and landscape effect that the proposal would generate, publicly accessible vantage points in the area were selected to be broadly representative of each of the following identified audience groups, selecting worst-case views wherever possible. Photographs for each vantage point

are found in Attachment Three. These will be referred to in the following commentary. Their location is marked in the aerial photograph comprising Attachment Two.

The degree of adverse visual / landscape effect generated by a proposed change or development depends upon the character of the surrounding landscape (the context), existing levels of development on the application site, the contour of the land, the presence or absence of screening and/or backdrop vegetation, and the characteristics of the proposed development.

Travellers on Mahurangi East Road

As the primary arterial route between Warkworth and Snells Beach, Algies Bay, Scandretts Regional Park, Martins Bay and Scott Landing, this road corridor carries in the order of 5,000 vehicles per day as it travels past Goodall Reserve to the east of the Site, according to Auckland Transport figures. A lesser number of people would travel the corridor on foot or by bicycle, making this the most substantial viewing audience by a significant margin.

Panorama VP01 in Attachment Three is taken from the Mahurangi East Road verge and illustrates a typical limited view to the Site as glimpsed across Goodall Reserve from passing vehicles, with the Te Whau Drive residences seen projecting above the spur in the background and the window of view to the Site fragmented by intervening trees growing within the Reserve. Many of those trees are of moderate

maturity, so their scale and screening capacity will continue to increase over coming decades.

As a result of views to the Site being narrow, fleeting and moderated by intervening vegetation, adverse visual effects upon users of the Mahurangi East Road corridor would be very low.

Users of Goodall Reserve

The most intensively used parts of the Reserve are found on the parts with the flattest terrain and most closely related to Mahurangi East Road and Hamatana Road corridors. These portions of the reserve are, effectively, the most spatially separated from the Site and largely blocked from any visual connection by the substantial belts of trees seen in Attachments one and Two.

Panorama VP01, just described in relation to Mahurangi East Road, also serves to demonstrate the experience of users of the upper portion of the Reserve. Whilst users of the Reserve will have a more “static” view in comparison with the occupants of passing cars, the preceding observations in relation to the relative scale of vistas, imposition of trees within the park and conditioning role of Te Whau Drive residences apply equally to users of the upper portion of the Reserve. Accordingly, visual effects upon this grouping is predicted to be low.

Lower parts of the Reserve have a slightly closer connection with the Site, due in part to being at a similar elevation and being spatially closer. Panoramas VP02

and VP03 were captured from the central parts of the Reserve, as indicated in Attachment Two. The use of this part of the park is likely to be largely focussed upon the paths that are to be seen in these images, so the positioning and alignment of those walkways determines how the Site is experienced. For the most part, trees within the Reserve block views from the paths, but there are periodic points where the line of the path coincides with an opening in the vegetation. VP02 and VP03 were deliberately selected as examples of this relatively rare occurrence. They demonstrate that the exposed portion of the Site occurs as a segment of a much wider vista defined by the trees of the Reserve, so that pocket of future urban development would be *part* of the scene, rather than a dominating feature. Adverse visual effects experienced from these lower reaches of the reserve are therefore assessed as being low.

Walkers using the Te Whau Esplanade Reserve path

This path commences at the Mahurangi Harbour termination of Dawson Road and winds alongside the mangrove-lined shoreline of Dawson Creek as it heads north to link in with the network of paths that course through Goodall Reserve. The track typically sits upon a bench associated with the margin of the Creek, with a flank ascending quite steeply to inland terrain. That situation is most pronounced as the walkway passes along the toe of the Site.

Extensive indigenous planting has been installed to either side of the path for large parts of its length, as can be seen in Photograph 8 found earlier in this report. That installed vegetation supplements the mapou, pines and other naturally-occurring

flora described earlier to limit views outside of the walking corridor to occasional glimpses across to the creek.

The combination of blocking terrain and rapidly developing vegetation precludes any views to the Site from the adjacent esplanade, so there would be no adverse visual effect upon this audience.

Pedestrians and motorists on Dawson Road

In its position atop the Dawson Road Ridge (as identified in Attachment One), this road corridor sits above the Site and separated from it by a distance of approximately 150m by the semi-triangular block of unnamed open space sitting to the east of Snells Beach School. It is used by a modest number of residents and a much larger body of students, staff and parents associated with the school.

As Panorama VP05 illustrates, the view down to the Site is framed by the established residential neighbourhood associated with Foster Crescent to the east and by the complex of school buildings to the west. Lying in the midground – at a similar depth to the Site – are the buildings established to date on the Te Whau Drive subdivision and these will be joined by further structures as three remaining, undeveloped titles to the north are developed. In the more distant background are the building and oxidation ponds of the waste water treatment plant, which in turn are backed by the rural hinterland stretching off to the north and west.

The Dawson Road ridge is effectively exposed to the narrow axis of the descending Site, so future urban development of the land would be experienced primarily in terms of the most elevated edge of that housing, with the balance of the development lying within the lee of that first rank of buildings when experienced from this viewing area.

A likely influence upon the view will be the future state of the reserve. Whilst it currently sits partially mown and otherwise undeveloped, it is likely that at some stage it will be enhanced with planting to create an improved amenity and character, just as other nearby reserves have been enhanced over recent years. If such planting were to occur, it is highly likely that it would either screen or substantially buffer any future urban development on the Site from this more elevated viewing area.

Overall, and without accounting for the possible future improvement of the reserve just mentioned, it is considered that adverse visual effects upon this viewing audience would be at the bottom end of the moderate to low spectrum, and therefore less than minor.

Students, staff and community visitors to Snells Beach School

Impacts upon much of this viewing audience would be first initiated when moving along the Dawson Road corridor, as just outlined. The school's arrival area, building complex and car parking are concentrated in the upper, south western

portion of its site, nearest to Dawson Road. The buildings tend to be oriented on north west to south east axis, aligning their primary aspect roughly toward the Site.

The fabric of the school is tiered down the contour of its site in a series of platforms but those level changes do not appear to particularly provide for views over lower structures towards the Site. Most of the eastern side of the school and its buildings do, however, provide a largely unimpeded outlook in that direction. Similarly, a sports field and related hardcourt area that are positioned in the lowest, northern portion of the school grounds are closely associated with the Site and allow for unobstructed views in that direction.

As Panorama VP06 demonstrates, views towards the Site from the school are over the lower, presently unkempt portion of the neighbouring reserve, with homes on Te Whau Drive defining to the left, the Foster Crescent neighbourhood to the right and slopes of Goodall Reserve in the middle distant background, where they are capped by the large format retail buildings of the Snells Beach shopping centre. Previous comments about the likelihood of future development and planting of the reserve immediately adjacent to the school are of particular relevance to the outlook.

Putting aside that potential, it is considered that potential visual effects as experienced from various parts of Snells Beach School would be in the lower end of the moderate-low spectrum.



Photograph 11: Looking into the core of Snells Beach School, showing the outward looking classrooms oriented towards the Site (to centre and right) and the further tier of buildings to left that help to delineate courtyard spaces, but have a more limited outlook.

Residents living near or approaching the Cornell Circ turning head and those on the western edge of Foster Crescent

Panorama VP 07 shows the view from the eastern edge of the radiused elbow in the Cornell Circ cul-de-sac. Here the Site is seen above the two tiers of houses that lie between this vantage point and the boundary to the Site a short distance to the west. Buildings on Te Whau Drive can be seen atop that low spur in the middle distance and the rural hinterland beyond. Permitted activity development of the Site would see those Residential Large Lot building types flow over into the more immediate setting of the current settlement, significantly modifying its current “micro

rural” character, contained by the varied land uses that surround the Site and are described earlier.

The underlying topography and alignment of Foster Crescent determine that there is no view to the Site from that road corridor itself. A view to the Site only opens upon reaching the very end of that legal corridor, as seen in Panorama VP08. It is primarily the few houses at the western end of that street that are subject to any level of exposure, although some double storey dwellings situated on the slope above and to the south of Foster Crescent appear to have limited views amongst interspersed vegetation from upper level windows.

Introducing contemporary Residential Single House development to the Site would bring a predictable extension of the Foster Crescent suburban neighbour into this void, albeit in a more condensed form due to lesser lot sizes and a resulting limitation of residue space for establishing vegetation of any scale.

Those residents whose properties bound the Site would clearly be most affected by development resulting from the proposed zoning. As Panorama VP09 partially illustrates, the level of exposure of the bounding properties along the wider eastern edge of the Site varies considerably. A few properties are oriented to take in views to the west, whereas the balance have chosen to heavily plant their western boundary to provide backyard containment. The distribution of that domestic amenity vegetation can be seen through close inspection of Attachments Two (where shadows emphasise the presence of trees) and Four.

When compared with the visual and character effects of a permitted Residential Large Lot development, Residential Single House use of the Site would bring a moderate – low level of adverse visual effect to those properties set back from the Site and the related road corridor, and a moderate adverse visual effect to those which bound the Site. In considering this assessment, there needs to be an awareness that the owners of those properties which have provided for a view across the Site to the west would probably respond to either a Residential Large Lot or Residential Single House scenario with boundary screen fencing or planting in order to maintain privacy to their outdoor spaces.

Residents of Te Whau Drive

Panoramas VP08 and VP10 provide an overview of the relationship between the Residential Large Lot pocket associated with Te Whau Drive and the Site to its east. The dwellings and ancillary buildings that have been developed to date on those titles are evident in those two panoramas, leaving the two currently vacant allotments at the northern end of Te Whau Drive as grassland below those existing structures. The current buildings are positioned upon or slightly to the west of what is identified as the “Te Whau Spur” in Attachment One.

Examination from nearby (and what can be seen in Panorama VP10) indicates that these homes tend to be oriented to the estuarine and rural views to the northwest with their glazing and living areas, as distinct from the north eastern aspect occupied by the Site. It is also relevant to note that the built development on these

sites is largely very recent, so the gardens that typically follow construction are either in the earliest stages of maturity or yet to be installed. With time, it is likely that Te Whau Drive home owners will seek to shield their properties from the immediate intrusion of that shared access and will incidentally also largely block views back to the Site.

Panorama VP10 is captured from the edge of Te Whau Drive and emphasises the close relationship that inevitably accompanies a shared boundary. It also demonstrates the probability that residents using that access will have their primary experience of the future development of the Site as they travel to and from their properties, rather than from *within* their titles.

Comparing the differing forms of a compliant Residential Large Lot development with a Residential Single House is arguably of greatest relevance to this viewing audience. The more compact form of the latter will almost certainly drive demand for fencing to contain backyard living spaces. Some future residents may choose to construct two storied homes on the moderately constrained titles proposed, whereas a more generously scaled Residential Large Lot use would be more likely to result in single storied dwellings that utilise the greater land area that would be available.

Corresponding visual effects would be of greater magnitude than under a complying scenario, albeit that those effects are likely to be contained largely to the period when Te Whau Drive residents are moving along that accessway. There

are opportunities to minimise and mitigate the visual effects of a future Residential Single House development of the Site upon its western boundary (and more widely) through careful detailing of boundary demarcation, the use of screen and structural planting and a range of other, best-practise design solutions that can be explored during a resource consenting process.

Putting aside those potential mitigating measures, the adverse visual effect arising from development aligned to the proposed rezoning upon Te Whau Drive residents would be moderate to high. That impact would be primarily experienced from the accessway, rather than within properties.

8 LANDSCAPE EFFECTS

Landscape effects are those impacts upon the structure, pattern and character of landscape that result from a development or change in land use.

In the case of this proposal, the context of the Site is extremely influential in determining the magnitude of landscape effects arising from future application of the residential zoning sought.

The circumstances of the Site occupying what is effectively one face of a very shallow valley, with that terrain relating immediately to its partnering flank that has long been established as a residential neighbourhood; the inherent containment of that underlying landform; a fringe defined to the opposite, western side by a form of residential use; the immediate proximity of the built volume of Snells Beach School;

and presence of public open space to either end, collectively serve to “ringfence” the Site and draw it into a well established pattern of residential character.

In landscape terms, the proposal is a predictable and logical fit within that pattern and its wider impact is considerably constrained by the topographic characteristics of the land (as distinct, for example, from the level of landscape impact that may arise if the Site had instead sat across a ridge or spur in a more isolated setting).

In this context, and when compared with the development provided for under the current Residential Large Lot zoning, the magnitude of landscape effects of the proposal is considered to be moderate-low.

9 NATURAL CHARACTER EFFECTS

Section 6(a) of the Resource Management Act (1991) states that the following matter of national importance shall be recognised and provided for:

“The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development.”

A working definition of natural character is derived from research undertaken for the Ministry of the Environment in relation to Environmental Performance Indicators (Boffa Miskell Ltd 2002). This states that:

“The degree or level of natural character within an area depends on the extent to which natural elements, patterns and processes occur; and the nature and extent of modifications to the ecosystems and landscape / seascape. The highest degree of natural character (greatest naturalness) occurs where there is least modification. The effect of different types of modification upon the natural character of an area varies with the context and may be perceived differently by different parts of the community.”

As the preceding extract indicates, natural character exists on a continuum that spans from totally modified at one extreme, to entirely natural at the other.

The oblique aerial image that forms Figure 1 early in this report offers an overview that is informative when considering the relationship between the partial valley form of the Site and the adjacent maritime area. That topographic arrangement sees the Site relating largely to that tiny tributary arm to Dawson's Creek that lies at the northern foot of the Site, as more clearly seen in Attachment One.

A further relevant aspect highlighted by Attachment One is the way that the Te Whau Drive Spur and a subsequent, parallel landform to the west, serve to isolate the Site from the mid to lower reaches of Dawson Creek and the wider Mahurangi Harbour further to the south still. This situation is expressed in Panoramas VP05 and VP09, which highlight the small extent of mangrove canopy that represents Dawson Creek that are seen in connection with the Site.

Existing levels of natural character associated with Dawson's Creek are considered to lie in the midst of a spectrum that stretches from pristine down to dramatically compromised. The morphology of the creek is intact and it has a fringe of riparian vegetation – some of it exotic and a measure invasive – along much of its length. Recent efforts to revegetate parts of the esplanade reserve will serve to marginally heighten natural character values as that planting matures and diversity develops.

Countering those positive contributors are the unsympathetic intrusion of the waste water treatment ponds and related building, the modest impact of the Te Whau Drive enclave and Snells Beach School beyond, and the more assertive existence of the current Snells Beach settlement, reaching up to and along the Mahurangi East Ridge (as defined in Attachment One).

Fitting within that existing context and amidst the topographic containment described earlier, the magnitude of adverse effect resulting from development provided for by the proposed plan change is considered to be low.

SECTION G: CONCLUSIONS

The Site is an unremarkable pocket of terrain, related to adjacent, long established residential land-use established on the mirroring side of the shallow valley that it sits within. The frame to the Site includes Large Lot Residential development

along its other long boundary and public open space to its two lesser frontages. A close relationship with the newly established Snell's Beach School and the diverse community and recreational offerings of Goodall Reserve complete the local land use context.

Whilst physically close to the maritime Dawson's Creek, the Site has a remarkably restricted visual connection to that natural, estuarine body and natural character impacts are correspondingly limited. The site is not noted for its landscape values and the early ENPAD assessment determined that the wider Dawson's Road peninsula has a strong connection with the existing Snells Beach settlement and a correspondingly well-developed capacity to absorb residential growth.

Ecological values within the Site are substantially suppressed, as are the general landscape characteristics of the land, with a small pocket of wetland (proposed to be conserved under the proposal) being the only element worthy of enduring improvement and protection.

The subdivision layout being proposed relies upon the only vehicular access point into the Site and indicates a combination of a primary road and lower level lane to address the format of titles that could occur. Linkages are provided for the two walkway connections into neighbouring reserves that present themselves.

This subdivision concept carries the potential for detailed design resolution that optimises the public spaces in terms of their amenity, safety, local character reference and relatedness to established patterns of development that surround the

Site. Currently, Large Lot Residential zoning of the site effectively provides for a level of development – in terms of building footprints, ancillary buildings and other “structured” components – which is not dramatically less than the Residential Single House zoning sought by the application.

Adverse landscape, visual and natural character effects have been assessed as being largely at the lower end of the scale, and less than moderate-low, with higher (moderate through to high) effects being restricted to those occupying a small number of immediately adjacent properties where the land use change will be most directly experienced.

Mike Farrow

Registered landscape architect

May 2018

ATTACHMENTS

FOSTER CRESENT, SNELLS BEACH
PRIME PROPERTY GROUP PLAN CHANGE

ATTACHMENT TWO VANTAGE POINT LOCATIONS





ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP01:
Looking west from Mahurangi East Road alongside the Mahurangi East Fire Station. The Site is seen as a narrow, grass strip to either side of the road. Houses seen above that grassed strip are those reached by the private shared access to the west of the Site.



Panorama VP02:
Standing in Goodall Reserve, just beyond the northern end of Foster Crescent. The Site is glimpsed above the footpath seen leading downhill and punctuated by the pair of Norfolk Island pines seen in association with the footpath.

ATTACHMENT THREE SITE PHOTOGRAPHS

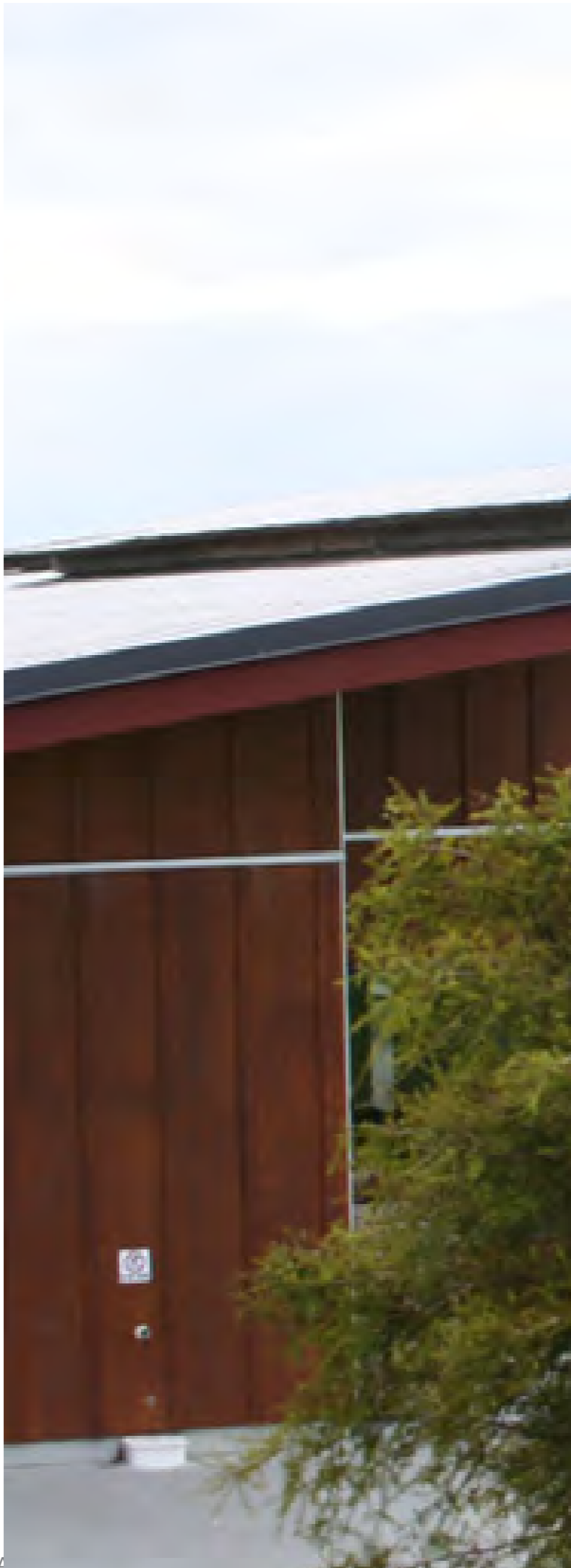


Panorama VP03:

A view south from the approximate midpoint of Goodall reserve, where a walkway connects the park with the esplanade track running near its estuarine toe. A segment of the Site can be seen in the centre of the image, framed between the poplars in the midground and the totara in the immediate foreground.



Photograph VP04:
Looking east along the Te Whau Esplanade Reserve walkway, just below the northern apex of the Site. None of the Site can be seen from this or adjacent parts of the shoreline walkway due to a combination of intervening topography and developing natural vegetation.



ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP05:
Taken from the eastern corner of the open parkland associated with Dawson Road, with some of the established housing in the Foster Crescent neighbourhood seen on the right margin. The Site is distinctly the brighter green grass to the right of the power pole and beyond the browning clippings that demarcate the recently mown reserve.



Panorama VP06:
A view to the north and east from within the adjacent school grounds. The Site is visible beyond the fence and mown grass of the adjoining reserve, largely to the right of the young totara situated in the foreground.



ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP07:
Glimpsing a narrow belt of the Site over roofs of mature homes clustered around the turning head related to the sharply angled bend in Cornel Circle.



A north west view down across the Site from the private shar

Panorama VP08:
oster Crescent.



ATTACHMENT THREE SITE PHOTOGRAPHS



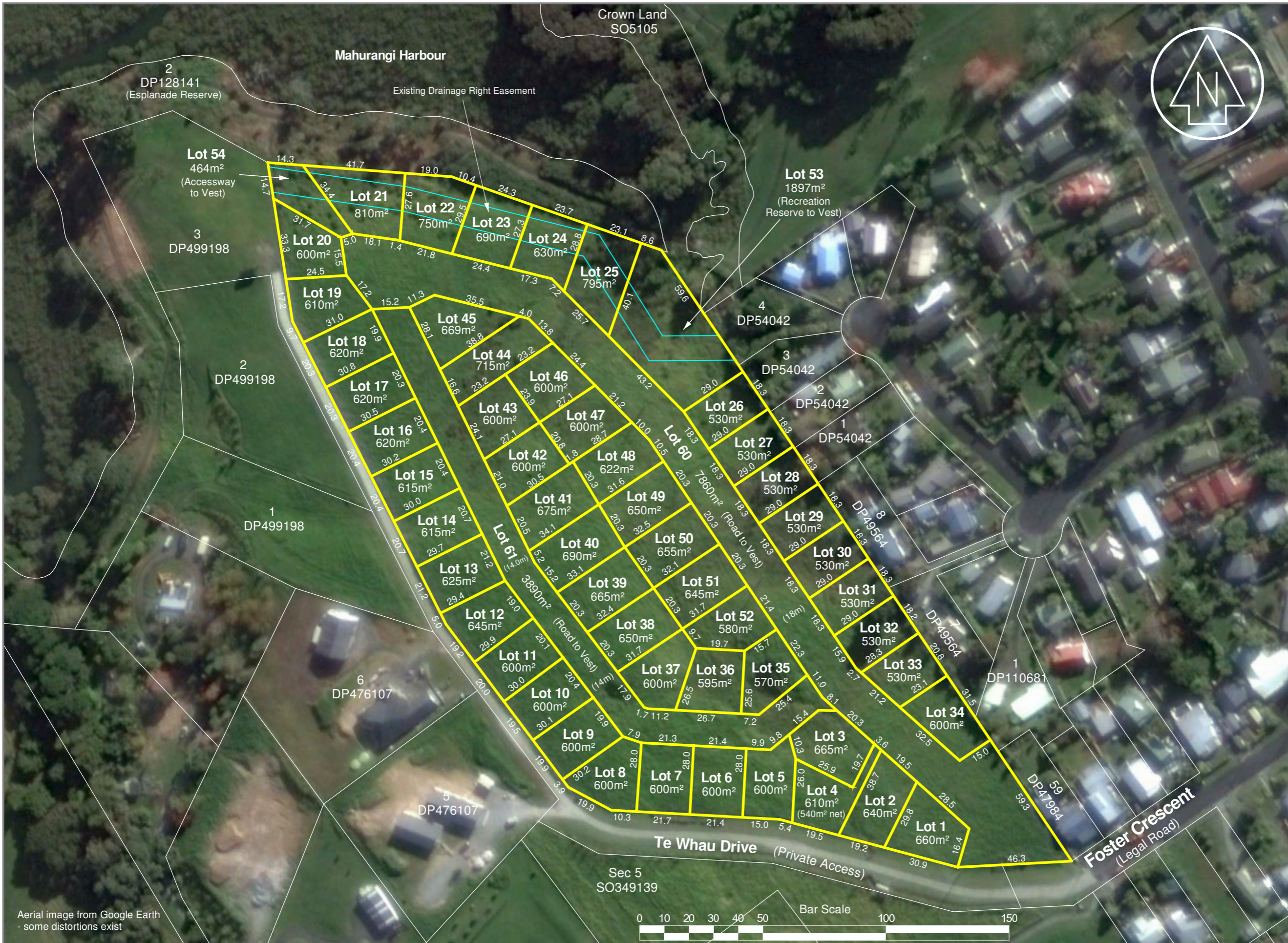
Panorama VP09:

A very close view downslope over the Site from midway along the private drive seen in the preceding.



Panorama VP10:

A sweeping panorama from within the low lot homes to the west to the Foster Cres neighbourhood and Goodall Reserve to the east.



Aerial image from Google Earth
- some distortions exist



C & R SURVEYORS LTD

Registered Professional
Land Surveyors

PO Box 564
Orewa 0946

www.crsurveyors.co.nz

Phone (09) 426 4051
Fax (09) 426 9087

Drawing Title:

**Lots 1 to 54 and 60 to 61
Being Proposed Subdivision
of Lot 1 DP149776**

Client:

**Prime Property Group Ltd
Foster Crescent
Snells Beach**

Total Area: 4.6384 ha
Comprised in: NA89A/917

Notes:

1. This plan is prepared for the purpose of obtaining subdivision consent and is not to be used for any other purpose.
2. All metric measurements and areas are subject to final survey.

Original Scale: 1:1500	Original Size: A3
---------------------------	----------------------

Date: 21/06/2018	Job Number: 5708-5
---------------------	-----------------------

ATTACHMENTS

FOSTER CRESENT, SNELLS BEACH
PRIME PROPERTY GROUP PLAN CHANGE

ATTACHMENT ONE CONTEXT ANALYSIS



ATTACHMENT TWO VANTAGE POINT LOCATIONS





ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP01:
Looking west from Mahurangi East Road alongside the Mahurangi East Fire Station. The Site is seen as a narrow, grass strip to either side of the road. Houses seen above that grassed strip are those reached by the private shared access to the west of the Site.



Panorama VP02:
Standing in Goodall Reserve, just beyond the northern end of Foster Crescent. The Site is glimpsed above the footpath seen leading downhill and punctuated by the pair of Norfolk Island pines seen in association with the footpath.

ATTACHMENT THREE SITE PHOTOGRAPHS

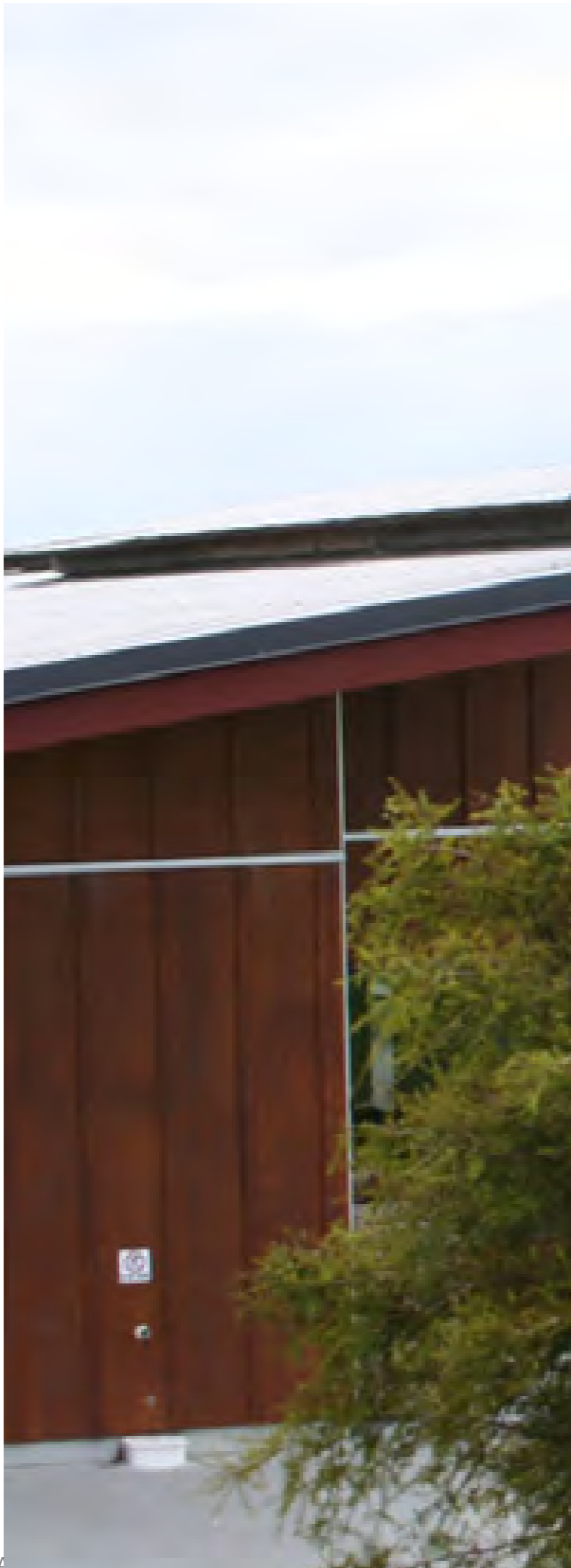


Panorama VP03:

A view south from the approximate midpoint of Goodall reserve, where a walkway connects the park with the esplanade track running near its estuarine toe. A segment of the Site can be seen in the centre of the image, framed between the poplars in the midground and the totara in the immediate foreground.



Photograph VP04:
Looking east along the Te Whau Esplanade Reserve walkway, just below the northern apex of the Site. None of the Site can be seen from this or adjacent parts of the shoreline walkway due to a combination of intervening topography and developing natural vegetation.



ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP05:
Taken from the eastern corner of the open parkland associated with Dawson Road, with some of the established housing in the Foster Crescent neighbourhood seen on the right margin. The Site is distinctly demarcated by the brighter green grass to the right of the power pole and beyond the browning clippings that demarcate the recently mown reserve.



Panorama VP06:
A view to the north and east from within the adjacent school grounds. The Site is visible beyond the fence and mown grass of the adjoining reserve, largely to the right of the young totara situated in the foreground.



ATTACHMENT THREE SITE PHOTOGRAPHS



Panorama VP07:
Glimpsing a narrow belt of the Site over roofs of mature homes clustered around the turning head related to the sharply angled bend in Cornel Circle.



A north west view down across the Site from the private shar

Panorama VP08:
oster Crescent.



ATTACHMENT THREE SITE PHOTOGRAPHS



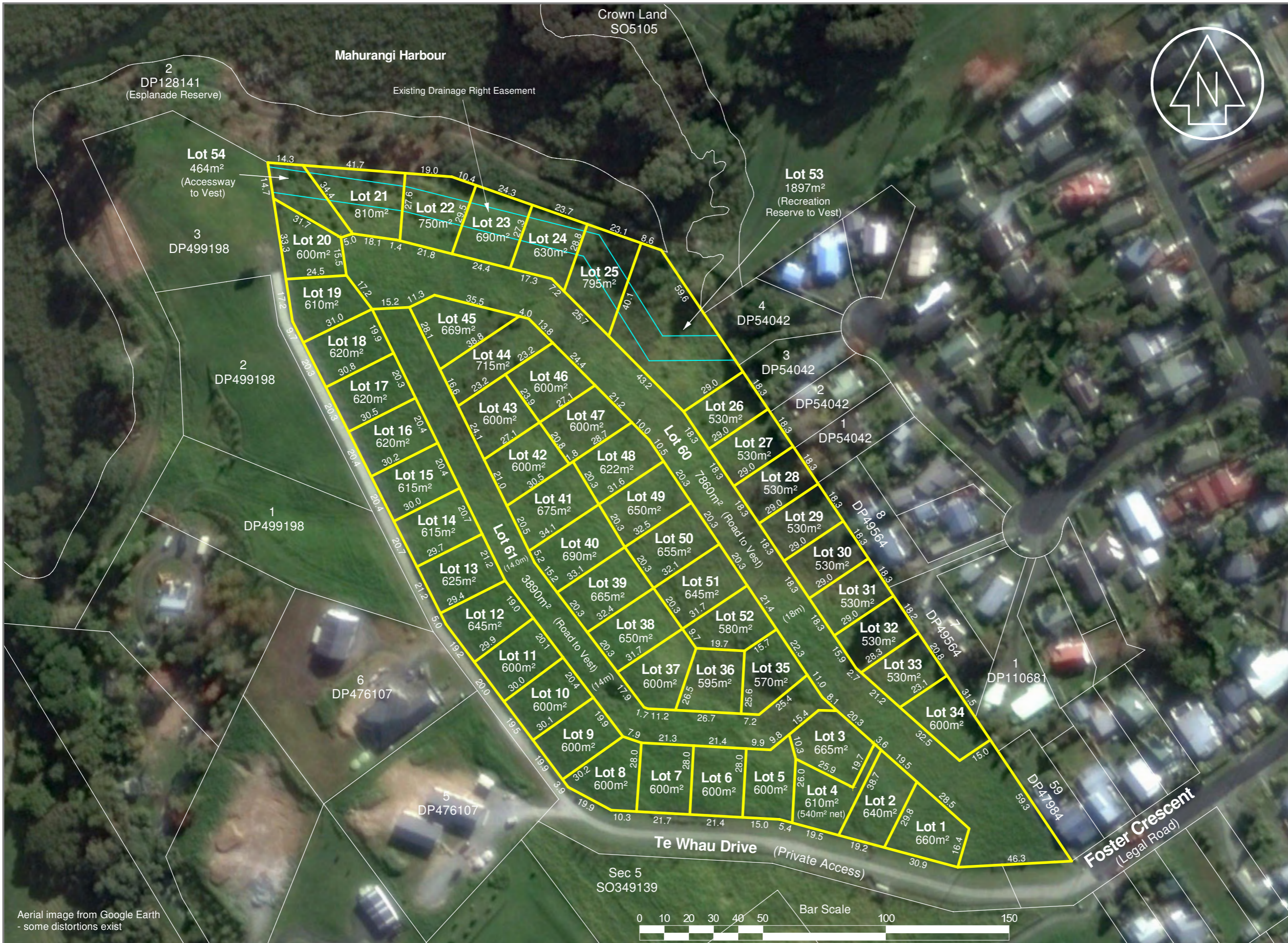
Panorama VP09:

A very close view downslope over the Site from midway along the private drive seen in the preceding.



Panorama VP10:

A sweeping panorama from within the low lot homes to the west to the Foster Cres neighbourhood and Goodall Reserve to the east.



Aerial image from Google Earth
- some distortions exist



C & R SURVEYORS LTD

Registered Professional
Land Surveyors

PO Box 564
Orewa 0946

www.crsurveyors.co.nz

Phone (09) 426 4051
Fax (09) 426 9087

Drawing Title:

**Lots 1 to 54 and 60 to 61
Being Proposed Subdivision
of Lot 1 DP149776**

Client:

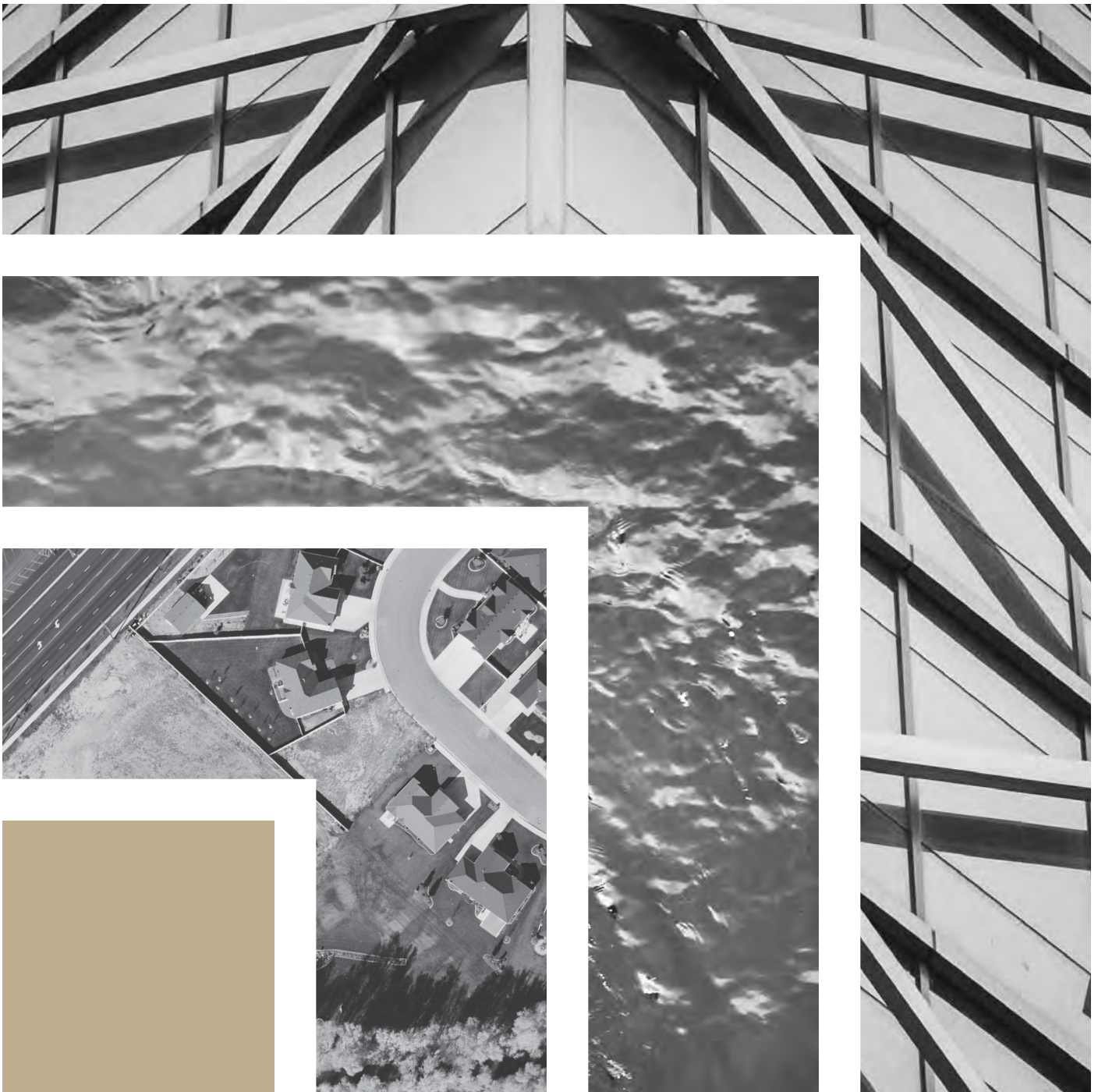
**Prime Property Group Ltd
Foster Crescent
Snells Beach**

Total Area: 4.6384 ha
Comprised in: NA89A/917

Notes:

1. This plan is prepared for the purpose of obtaining subdivision consent and is not to be used for any other purpose.
2. All metric measurements and areas are subject to final survey.

Original Scale: 1:1500	Original Size: A3
Date: 21/06/2018	Job Number: 5708-5



PRIVATE PLAN CHANGE REQUEST

FOSTER CRESCENT
SNELLS BEACH

CONSULTATION REPORT

PREPARED FOR:
PRIME PROPERTY GROUP LIMITED

15-Feb-2019

B&A
Urban & Environmental
439

CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	2
3.0	METHODS OF ENGAGEMENT AND STAKEHOLDERS.....	2
3.1	Methods	2
3.2	Key Stakeholders.....	2
4.0	SUMMARY OF CONSULTATION	3
4.1	Mana Whenua.....	3
4.2	Landowners and Occupiers Neighbouring the Plan Change Area	4
4.3	Key Stakeholders.....	17
4.4	Interest Groups	20

APPENDICES:

Appendix 1: Consultation pack

Appendix 2: Mana Whenua Consultation pack

Appendix 3: Community Meeting notes 16 August 2018

Appendix 4: Feedback and Requests for Additional Information

Appendix 5: Te Whau Lane meeting notes 26 August 2018 and Letters of Support

Appendix 6: Indicative Landscaping buffer along boundary with Te Whau Lane

Appendix 7: Auckland Council, Auckland Transport and Watercare consultation

Appendix 8: Written Approvals

1.0 EXECUTIVE SUMMARY

The Private Plan Change seeks to rezone the subject site (Lot 1 DP 149776) from Residential – Large Lot to Residential – Single House. The Plan Change has been prepared taking guidance from the requirements of the Auckland Unitary Plan Appendix 1 Structure Plan Guidelines.

In accordance with best practice, consultation on the draft Plan Change was undertaken on behalf of Prime Property Group Limited (PPGL), being the owner of the site proposed to be rezoned as detailed in the Section 32 report.

Consultation was undertaken with neighbouring property owners and key stakeholders from July to September 2018. Letters were sent to property owners and occupiers and a public meeting was held. There were also specific individual meetings held with the Board of Trustees of the Snells Beach Primary School and the Te Whau Lane residents.

A position has been reached with the owners and occupiers of properties on Te Whau Lane whereby they have provided letters of support for the plan change based on proposed development controls, including setbacks, lots sizes and a landscape buffer that will be reflected in, and secured via the subdivision consent.

In addition to the above, the following were also consulted on the draft Plan Change:

- Mana Whenua;
- Key stakeholders including Auckland Council, Auckland Transport and Watercare; and
- Local interest and community groups.

In response to the feedback, some changes were made to the Plan Change to address the concerns raised. These are described further below.

2.0 INTRODUCTION

The Plan Change area covers 4.6384 ha of land zoned Residential - Large Lot. The site is bounded to the east by the well-established residential area of Cornel Circle and Foster Crescent which is zoned Residential – Single House, to the west is Residential – Large Lot, to the north is the Dawson Creek arm of the Mahurangi Harbour, and to the south of the site is reserve land and the Snells Beach Primary School.

As part of the development of the private plan change request, consultation was undertaken to gauge the views of the community and relevant stakeholders.

3.0 METHODS OF ENGAGEMENT AND STAKEHOLDERS

3.1 METHODS

A consultation package was created consisting of a covering letter outlining the draft Plan Change process, a summary document of the Plan Change including maps, and a feedback form. Letters were dispatched by email, post and hand delivery. A copy of the Consultation Pack is included in **Appendix 1**. Follow up emails and phone calls were made to persons who did not respond or who sought further information.

A Community meeting was held at the Mahurangi East Community Centre on 16 August 2018 where a presentation of the proposal was given by Burnette O'Connor and Venessa Anich, followed by a question and answer session. One-on-one and neighbourhood meetings were held with land owners, including with the residents of Te Whau Lane on Sunday 26 August 2018 attended by Burnette O'Connor. Further detail is provided below.

Meetings were held with Auckland Council, while email correspondence has been undertaken with Watercare and Auckland Transport. Meetings were also held with the Snells Beach Primary School Principal and the Board of Trustees.

3.2 KEY STAKEHOLDERS

The following persons and groups were identified as key stakeholders:

- Mana Whenua;
- Landowners and occupiers of land around the Plan Change area;
- Auckland Council, Watercare, Auckland Transport, Snells Beach Primary School Board of Trustees;
- Local interest groups – Friends of the Mahurangi; Mahurangi Action Group and Snells Beach Ratepayers and Residents Association.

4.0 SUMMARY OF CONSULTATION

The following sections describe the engagement with each group and the key outcomes and feedback provided.

4.1 MANA WHENUA

In accordance with Te Puni Kokiri website regarding the rohe (tribal area of interest) maps representing the area over which different iwi exercise kaitiakitanga (guardianship) for the purposes of the Resource Management Act, ten iwi groups were invited to provide feedback on the proposal. This was done by way of an initial email, with an Executive Summary attached and links to all the technical reports. A copy of the email and the attached documents is in **Appendix 2**. The mana whenua groups were asked to respond by the 1 September 2018. A summary of the responses received is provided below:

- **Manuhiri Kaitiaki Charitable Trust:** Fiona McKenzie, Pou Kaitiaki of the Trust, attended an on-site meeting, and provided a Cultural Impact Assessment (CIA). There were no major cultural concerns raised in the CIA. A number of recommendations were made, which were agreed to. For example; having a representative present during ground disturbing activities adjacent to waterways; to be able to review the Erosion and Sediment Control Plan; and, that eels are relocated before the pond is de-watered.

A recommendation to remove the proposed lots along the coastal edge of the subject site was not agreed to. This is because all the matters raised were addressed. For example: not building on top of the existing wastewater easement, however, the required 15m by 8m buildable area is available on each of the lots clear of the easement; reducing the chance of discovering archaeological sites as these are often close to the coastal edge, however, the Accidental Discovery Protocol will be adhered to during all earthworks activities on the site; and, not having lots along the coastal edge will provide a buffer to the coast for sediment during earthworks, however, sediment will be controlled through the subdivision consent conditions, which will require erosion and sediment control measures to be in place.

- **Nga Tai ki Tamaki:** Gabriel Kirkwood confirmed that in this instance, they would defer to Ngati Manuhiri.
- **Te Runanga o Ngati Whatua:** Tame Te Rangi confirmed the Mana Whenua interests of Ngāti Whātua in the area of the proposed development, and stated that they defer those interests to Manuhiri in anticipation of their provision of an appropriate response accordingly, and that they anticipate that their future involvement will be determined following due consideration by Manuhiri.

- **Te Kawerau a Maki:** No response was received by 1 September, nor subsequently.
- **Ngāti Wai:** No response was received by 1 September, nor subsequently.
- **Ngāti Maru:** No response was received by 1 September, nor subsequently.
- **Ngāti Paoa:** No response was received by 1 September, nor subsequently.
- **Ngāti Whanaunga:** No response was received by 1 September, nor subsequently.
- **Ngāti Te Ata:** No response was received by 1 September, nor subsequently.
- **Ngāti Tamatera:** No response was received by 1 September, nor subsequently.

4.2 LANDOWNERS AND OCCUPIERS NEIGHBOURING THE PLAN CHANGE AREA

Owners of neighbouring properties, shown on the map at **Figure 1**, were contacted to provide feedback on the proposal. Details of the consultation methods is provided in section 3.1 of this report. A summary is provided in the table below. Response to the matters raised is addressed in section 4.2.1.



Figure 1: Map showing location of owners or occupiers who provided feedback (numbered) (B&A, September 2018).

Map Ref	Property Address	Person	Action & Feedback
1	62 Dawson Road	Snells Beach Primary Principal Board of Trustees Ministry of Education	Letter emailed 6 July 2018. Venessa Anich met with Principal 19 July 2018. Burnette O'Connor and Venessa Anich met with the Board of Trustees 1 August 2018. The matters raised are included later in this report. Flyer and technical documents link emailed to school 2 August 2018. Emails were sent to Ministry of Education on 23 July, 15 August, and 24 October 2018.
2	14 Te Whau Lane	Tara McGibbon and Ewen Thompson Brett and Loran Cowley	Letter mailed 10 July. Invite to community meeting mailed 26 July 2018. Attended Te Whau Lane residents meeting 26 August. Details of matters raised and the response is provided in section 4.2.1.
3	16 Te Whau Lane	Brian Philip Corric Chris Corric Brendan John Robinson	Letter mailed 10 July. Invite to community meeting mailed 26 July. Feedback: Concerned about only a small driveway between their property and the proposed new sites. Attended Community meeting (16 August). Attended Te Whau Lane residents meeting 26 August. Details of matters raised and the response is provided in section 4.2.1.

Map Ref	Property Address	Person	Action & Feedback
4	18 Te Whau Lane	Brett John Crockett	Letter mailed 10 July. Invite to community meeting mailed 26 July. Attended Te Whau Lane residents meeting 26 August. Details of matters raised and the response is provided in section 4.2.1.
5	20 Te Whau Lane	James David Stevens Marlene Joyce Stevens Grant Stevens	Letter mailed 10 July. Invite to community meeting mailed 26 July. Feedback form provided requesting additional meeting. Attended community meeting 16 August. Notes emailed out 21 August. Attended Te Whau Lane residents meeting 26 August. Raised concern about having to wait at the end of Te Whau Lane in peak times with the traffic from the proposed development, which would have right of way. Details of other matters raised and the response is provided in section 4.2.1.
6	22 Te Whau Lane	Joel & Suzannah Hemus	Email and feedback form requesting meeting 13 August. Attended Te Whau Lane residents meeting 26 August. Details of matters raised and the response is provided in section 4.2.1.
7	31 Cornel Circle	Watercare Services Ltd	See section 4.3.

Map Ref	Property Address	Person	Action & Feedback
8	29 Cornel Circle	Amanda Jane & Christopher John Paul Monks - Chandler	Letter mailed 10 July. Invite to community meeting mailed 26 July. Feedback: Neutral. Loss of privacy. Noise pollution from building works. So many residents in small area. Asks if houses will be fenced, and how close the dwellings will be to their property.
9	27 Cornel Circle	Andria Margaret & Puhī Alfred Johnson	Letter mailed 10 July. Invite to community meeting mailed 26 July. Attended community meeting 16 August. Notes mailed out.
10	25 Cornel Circle	Hayley Yvonne Gates Jake Anderson Nikita Eaves	Letter mailed 10 July. Invite to community meeting mailed 26 July. Attended community meeting 16 August. Notes emailed out 21 August. Request for a Cornel Circle neighbours meeting.
11	21 Cornel Circle	Graham and Edith Short	Attended community meeting 16 August. Notes emailed out 21 August.
12	19 Cornel Circle	Rachel Karen Baikie	Letter mailed 10 July. Meeting 23 July, concerns raised included drainage and flooding issues as water from site drains onto her property, loss of sunlight due to site being higher than her property, new fencing along shared boundary. Invite to community meeting mailed 26 July.

Map Ref	Property Address	Person	Action & Feedback
13	19a Cornel Circle	Dorothy Ada Muir	Letter mailed 10 July. Invite to community meeting mailed 26 July.
14	17 Cornel Circle	Nigel Robin Ross	Letter mailed 10 July. Invite to community meeting mailed 26 July.
15	12 Cornel Circle Snells Beach	Corrine and John Keast	Attended community meeting 16 August. Notes emailed out 21 August.
16	11 Cornel Circle	Robyn & Warwick Hambleton	<p>Letter mailed 10 July. Submission: Agree.</p> <p>Good site for subdivision. 600m² sites appear to be standard. Iris St is narrow, suggests that one side should be 'no parking'. Pedestrian access to water's edge and Goodall Reserve is good, shortcut to shops. Access should be formed to sufficient standard for a pram or mobility scooter. Stormwater from eastern side of site sheds towards Cornel Circle. Stormwater systems needs to address this. Stormwater from school flows onto paddock above Te Whau Drive. This needs to be piped downhill.</p> <p>Invite to community meeting mailed 26 July. Emailed reply will be attending 31 July. Attended community meeting 16 August. Notes emailed out 21 August.</p>
17	14 Cornel Circle	Bella Boston	Attended community meeting 16 August. Notes emailed out 21 August.

Map Ref	Property Address	Person	Action & Feedback
18	1 Foster Crescent	Treetop Properties Ltd Pauline Fell	Letter mailed 10 July. Invite to community meeting mailed 26 July. Attended community meeting 16 August. Notes emailed out 21 August.
19	2 Foster Crescent	Carol & Maurice Wallbank	Letter mailed 10 July. Feedback: Neutral. Concerned about traffic on Foster & Iris streets, school traffic & parking, construction effects, trucks, noise, machinery. Invite to community meeting mailed 26 July. Attended community meeting 16/8. Notes mailed out 21/8. Potential re-design of vehicle crossing mailed out 23/10/18.
20	3 Foster Crescent	Brett Allan Rapley	Letter mailed 10 July. Tech reports emailed 17 July. Invite to community meeting mailed 26 July. Feedback: Disagree. Increase in traffic and noise. Loss of property value, negative impact on appeal of nearby properties, which will affect his property, and derogate from the reasonable use and enjoyment of his home and tranquillity of the cul-de-sac. Concerned about high power cables being moved closer to his house, which affect his property and personal well-being. More pressure will be put on Warkworth intersection. Attended community meeting 16 August. Raised that he wants power lines put

Map Ref	Property Address	Person	Action & Feedback
			underground. Notes emailed out 21 August.
21	4 Foster Crescent	Ora Noa McIndoe	Letter mailed 10 July. Invite to community meeting mailed 26 July. Attended community meeting 16/8. Notes emailed out 21/8/, bounced, so mailed out.
22	5 Foster Crescent C/- 36 Heathcote Rd, Caster Bay, North Shore.	Gordon Lee Davidson	Letter mailed 10 July. Bounced back, hand delivered but only a holiday home, so sent letter to Castor Bay address. Invite to community meeting mailed 26 July.
23	6 Foster Crescent	Mudchute Trustee Co. Ltd Wendy Fong	Letter mailed 10 July. Invite to community meeting mailed 26 July. Feedback: Agree. Asks if there will be covenants for the Single House zone, what measures will be taken to ensure good quality housing, how traffic will be managed, and is there a public right of way from new development to reserve to the north. Reply emailed 17/9/18.
24	7 Foster Crescent	Linda Kemp	Attended community meeting 16/8. Notes emailed out 21/8/18.
25	8 Foster Crescent	Jennifer May Walsh	Letter mailed 10 July. Invite to community meeting mailed 26 July.
26	10 Foster Crescent	Neil Michael Kose	Letter mailed 10 July. Invite to community meeting mailed 26 July.

Map Ref	Property Address	Person	Action & Feedback
27	12 Foster Crescent	Brian Philip Corric & Brendan Robinson	Letter mailed 10 July. Invite to community meeting mailed 26 July.
28	17 Foster Crescent	Cheryl and Scott Fenwick	<p>They estimate 52 cars might result in 70+ cars to the street. They presume the entrance and exit for the proposal is Foster Crescent, and perhaps an extension to Te Whau Lane is at present. They want to know what improvements would be made to the pavements that children use to keep them safe from the road. Is there any provision or consideration for wider pavement and additional paving on the other side of the road?</p> <p>Is there any obligation and considerations for improving the corner of Foster Crescent and Iris Street for children to cross? More road markings, signs and possibly even no parking zig zags for visibility.</p> <p>Want to see anything that can be done to slow down cars, and improve safety as much as possible for the children. A lot of children bike on the road, there are buggies and prams, and scooters.</p>
Others who attended the Community Meeting 16 August 2018.			
N/A	11 Piccadilly Circus	A and C Catley	Attended community meeting 16 August. Notes emailed out 21 August.
N/A	500 Mahurangi East Road	Martin Harris	Attended community meeting 16 August. Notes emailed out 21 August.

Map Ref	Property Address	Person	Action & Feedback
N/A	95 Mahurangi East Road	Jim Dollimore	Attended community meeting 16 August. Notes emailed out 21 August.
N/A	180 Ridge Road.	Andrew Hay Mahurangi Oysters Ltd	Attended community meeting 16 August. Notes emailed out 21 August. Feedback: From an oyster farming and harbour protection viewpoint, he feels the stormwater capacity for the site needs to be designed over spec to cover the existing issues from past poor design (email 27 August).

4.2.1 Matters Raised at the Community Meeting 16 August 2018

The notes from the 16 August 2018 Community meeting are in **Appendix 3**. The feedback received and the requests for further information are in **Appendix 4**. A summary of the matters raised and the response is as follows:

- Zone Rules:** Questions were raised around the Residential - Single House zone development standards e.g. height – buildings could be two storied, breaches of maximum site coverage rules, and potential building setbacks from yards. Concern was raised by residents that the bulk and location rules will not be complied with.

Response: Resource consent would be required if rules were not complied with, which is likely to involve having to seek a written approval from the affected neighbour.

- Neighbour's Privacy and Amenity:** Residents asked how their privacy was going to be protected. Currently they stated that they have rural outlook, plan change will mean that they will feel like they have been built out. They would prefer similar house density to Foster Crescent and Cornel Circle.

Concerned about the closeness of the new houses to the existing houses along the shared boundary with Cornel Circle and Te Whau Lane, and two-storey houses being constructed along common boundary.

Te Whau Lane residents brought their properties expecting more Large Lot residential neighbours east of them. Would prefer larger lots on new subdivision along this boundary, then transition to smaller lots further east.

Response: Further discussion with Te Whau Lane neighbours has taken place about possible mitigation measures. See discussion in section 4.2.2 below.

Regarding density, explained that the existing residential area was established under old rules, when 600m² was the minimum (Rodney District Plan Residential M (medium intensity) zone – reticulated and outside of Township Policy Area). There is now a mixture of lot sizes in this area, with some sites having a higher density because of infill via cross lease. The section sizes of the existing properties range from 1,243m² to 421m², with a lot of 800m² properties. The proposed density on the subject site is considered to be relatively consistent with existing section sizes along the eastern shared boundary. The change for these neighbours is that the neighbouring residential density will change to something similar to their own. Therefore, the residential amenity will be maintained.

- **Traffic on Foster Crescent and Iris Street:** Residents were concerned that there are already traffic issues along Iris Street, Foster Crescent and Cornel Circle, and that would be exacerbated with additional traffic. Traffic travelling down these streets is down to single lane if cars are parked on both sides of road. There were also concerns raised about safety of children who use these roads as a thoroughfare to and from Snells Beach Primary School. A lot of parents drive down Iris Street and Foster Crescent to drop off and pick up their children from school. Particularly whilst there is construction work happening opposite the school (Kia Kaha Drive).

People raised the possibility of the proposed new road extending through the reserve to connect with Dawson Road.

Response: Explained that this land is classified as a Recreation Reserve, and therefore it would be difficult to change the use of the land from reserve to road.

Regarding congestion, the Traffic Impact Assessment (**Appendix 6** of the s32 Evaluation Report) has determined that the additional traffic generated by the proposed plan change and residential subdivision will not create any tangible safety or operational concerns for the surrounding road network, and there would be no discernible increase to queuing or delay at the intersection of Iris Street and Mahurangi East Road.

The Traffic Impact Assessment analysed observed movements of children along Iris Street and the intersections with Foster Crescent and Mahurangi East Road

during the peak pedestrian activity associated with the start and end of the school day. The assessment found that the additional traffic movements attributable to the proposed residential subdivision will not noticeably affect pedestrian safety on Foster Crescent or Iris Street.

- **Entrance to site:** Entrance to Te Whau Lane and the subject site is also where school walkway comes out. Concerns about safety of children.

Number 2 Foster Crescent's driveway is right at this point as well. Concerned that access to property will become dangerous given the location of the existing crossing into the site and the proposed road extension.

Response: The Traffic Impact Assessment considers that the shared private access (Te Whanu Lane) will have to be adjusted to create a new vehicle crossing off the proposed new road carriageway. Similarly, the existing vehicle crossing for numbers 1 or 2 Foster Crescent will have to be reconstructed to align with the new road formation for the proposed subdivision. The design and reconstruction of the vehicle crossings for Numbers 1 and 2 Foster Crescent and Te Whau Lane will be subject to consultation with the owners of these properties, and Auckland Transport, as road controlling authority.

The Traffic Impact Assessment confirms that changes to the existing turning head on Foster Crescent will consider the safe operation of the existing footpath on Foster Crescent and connection with the off-road path linking with the Snells Beach Primary School.

- **Earthworks:** Concern about sediment entering the Harbour. Concern about the noise, dust, disruption, heavy vehicles, etc during the construction phase for the subdivision.

Response: Explained that earthworks are controlled through the subdivision consent conditions, and the Engineering Report proposes earthworks mitigation measures like silt traps. Subdivision consent conditions also manage the construction effects, e.g. timing, duration, dust, hours of operation.

- **Water and Wastewater Servicing:** Concern that there wasn't sufficient infrastructure to service the site.

Response: Watercare has confirmed that the site can be serviced by water and wastewater (**Appendix 7**).

- **Stormwater:** It was raised that stormwater flows down Cornel Circle through people's properties (and garages, etc) then onto the subject site. There are two

boggy wet areas on the subject site along Cornel Circle properties shared boundary. Have concerns that stormwater on subject site, when developed into houses and roads, will make existing situation worse.

Response: It was explained that the subdivision of the subject site will not necessarily fix existing problems with stormwater running down Cornel Circle and through properties. Stormwater issues need to be raised with Auckland Council. Stormwater on the subject site will be managed, treated and directed to the wetland at the north eastern corner of the site, before entering the Harbour. The Engineering Report also confirms that stormwater can be managed for the proposed development.

- **Powerlines:** 3 Foster Crescent would prefer if power lines are buried. If not buried, then don't want them any closer to the houses.

Response: Concern is noted. The requirement will be to provide underground reticulated power supply within the development. This will be addressed at subdivision stage.

- **Reserves:** It was raised that there is a need for a local reserve within the subdivision, for a playground, etc. Path linkage to Goodall Reserve needs to be good enough for mobility scooters.

Response: Explained that there are Council standards for reserve requirements and this area has a number of reserves already. This is one of the positive attributes of this location. For example, there is Goodall Reserve, the Mahurangi East Community Centre and associated facilities, and the Te Whau coastal walkway.

4.2.2 Te Whau Lane Residents Meeting 26 August 2018.

The notes from the 26 August 2018 Te Whau Lane meeting are in **Appendix 5**. Agreement has been reached with these neighbours subsequent to this meeting, including the provision of letters of support from them for the plan change based on controls and amendments to the subdivision (**Appendix 5**).

A summary of the matters raised at the 26 August meeting and the response is as follows:

- *Larger sites along the common boundary with Te Whau Lane, a defined building site on each property that requires houses to be built closer to the internal road.*

Response: The scheme plan has been amended to provide for larger residential sites (800m² approx.) that still achieve an efficient utilization of the land resource. The scheme plan demonstrates that each proposed lot can contain the required 8 x 15 m building area that is clear of the required yards.

- *Limiting the maximum building height to single storey, or a specific Reduced Level so that there is no overlooking to Te Whau Lane*

Response: Through the subdivision consent, a single storey height restriction is to be placed on the proposed lots along the shared boundary with Te Whau Lane.

- *Lot 54 access way (to the coastal walkway) to be relocated so that there is no boundary adjoining Lot 3 DP 499198 (22 Te Whau Lane).*

Response: The scheme plan has been amended and the pedestrian accessway has been moved so that it is now located between proposed Lots 18 and 19.

- *Requested topographical survey information, including details of depths and areas of cut and fill, so Te Whau Lane residents can determine whether the current topography on the boundary is maintained, improved or worsened.*

Response: Advised that the current topography on the boundary is expected to be maintained, or slightly lowered. Detail on the final ground levels will be determined during the detailed engineering design stage. The height of the subsequent houses will be restricted to single storey through the subdivision consent. In addition, the effects of built development will be further mitigated by the proposed 15m building line restriction and proposed landscaping strip.

- *The proposed planting and fencing was generally supported but questions were raised about how the planting on the western side of the fence would be maintained as there would be no legal access to that area.*

Response: The indicative Landscaping Plan is to be included with the proposed subdivision and will be secured by consent conditions on the subdivision resource consent approval. There are options for the ongoing maintenance of this landscape planting that will be finalised in a legal agreement including:

- Provision for access over Te Whau Lane for the purposes of maintaining the planting.

- Establishment of an entity that the owners of each of the affected properties need to be part of. The entity shall be responsible for the ongoing maintenance of the landscape strip. The entity can have a contract with a landscaping company to undertake the ongoing maintenance.
- Te Whau Lane residents maintain the landscape planting.
- Each owner of the affected lots maintains the landscaping on their sites accordingly.
- *Traffic was raised as an issue particularly concerned about having to wait at the end of Te Whau Lane in peak times with the traffic from the proposed development which would have right of way on the road extension.*

Response: As stated above, the effects of additional traffic have been considered in the Traffic Impact Assessment (**Attachment 8** to the s32 Report). The Assessment states that the predicted increase in vehicle movements associated with the proposed plan change and subsequent subdivision is not expected to generate a notable concern with respect to queuing or delay on Foster Crescent and Iris Street, nor at the intersection of Iris Street with Mahurangi East Road.

- *Te Whau Lane Residents would like to see a 15 metre separation between their boundary and the proposed built development.*

Response: The amended scheme plan includes a 15 metre setback between the boundary and the proposed building sites.

4.3 KEY STAKEHOLDERS

Public organisations identified as being key stakeholders were contacted initially by email, and further engagement by way of phone calls and meetings. A summary of the consultation undertaken and key feedback is included below.

- **Auckland Council:** A pre-application meeting was held on 14 December 2016, with attendees listed below. Meeting notes are in **Appendix 7**. At this stage, the proposal was to subdivide the site into 59 residential lots.

Council	Applicant
Hayden Wadams (Senior Planner) Nicola Broadbent (Team Leader) Scott Lamason (Development Engineer)	Burnette Macnicol (OPC) Peter Chevin (Applicant, Northern Investors Trust)

On the 2 November 2017 a meeting was held with the staff members listed below at Auckland Council. Meeting notes are in **Appendix 7**.

Council	Applicant
Peter Vari (Planning Manager) Warren Maclennan	Burnette O'Connor (B&A) Lara Clark (B&A) David Badham (B&A)

Council staff were open to the idea of the plan change. They could see merit in smaller site sizes given the location and community facilities nearby.

Feedback was given that the wastewater capacity would be the main matter of importance to confirm suitability. Council staff advised the need to clarify with Watercare the servicing capacity from the proposed treatment plant and when this capacity would be available. See comments below regarding Watercare.

Matters raised by Council have been taken into account in the final version of the Plan Change application.

- **Auckland Transport:** TEAM (Traffic Engineering & Management Ltd) have been in discussions with Alistair Lovell and Katherine Dorofaeff from Auckland Transport (AT) (**Appendix 7**). Following is the feedback from AT:

Topic	Comment
Traffic Engineering	No issues at this time. The development trip generation is low and there are no known existing traffic issues and this location. Would like to review detailed plan of the proposed road and its intersection with the existing Foster Crescent once it is available.
Walking and cycling	Need to be aware of the walkway that goes directly to Snells Beach School from Foster Crescent. During development there are likely to be additional trade vehicles parking around the entrance to the walkway and parking may need to be controlled. Note that the local board has endorsed the Pūhoi to Pakiri Greenway Plan which includes a section of route on the coastal esplanade adjacent to this development. https://aucklandtransport.sharepoint.com/sites/WnC-I/North/Greenway%20Plans%20-%20Rodney/P2P_All%20maps.pdf
Public transport	No network planning issues identified.

Regarding the intersection with Foster Crescent and the proposed road, and how construction traffic will be managed around the school walkway, these matters will be addressed in the subdivision application. This level of detail is not required for the plan change application.

The Pūhoi to Pakiri Greenways Plan has been considered in the Open Spaces and Community Facilities Report (Appendix 3 to the s32 Report). The subject site and the proposed subdivision layout will complement the network in the Greenways Plan. Within the site there is the provision for linkages between the site and the coastal walkway, Goodall Reserve, and the school. It is considered that this will be a positive addition to the greenways routes for Snells Beach as identified in the Greenways Plan.

- **Watercare:** Discussions were undertaken with Watercare in 2016, and written confirmation was provided from Watercare stating that the site can be serviced with wastewater provided a number of conditions are met (**Appendix 7**). In addition, they confirmed via email that there is sufficient capacity to service the site with reticulated water.

Given the time that has passed, a 'new' (September 2018) request has been made to Watercare for an updated confirmation that the subject site can be serviced with water and wastewater. Watercare have provided that confirmation. Correspondence to date is in **Appendix 7**.

- **Snells Beach Primary School:** A consultation package consisting of a covering letter outlining the draft Plan Change process, a summary document of the Plan Change including maps, and a feedback form was emailed out on 6 July 2018 (see **Appendix 1**). A meeting was held with the school Principal on 19 July 2018 attended by Venessa Anich. A meeting was held with the Board of Trustees on 1 August 2018. A community meeting flyer about the proposed public meeting was distributed and also link to the technical documents was emailed 2 August 2018.

The main concern raised by the Board regarding effects of the plan change on the school was around traffic issues and safety for their children on Foster Crescent and Iris Street. Children use Foster Crescent to walk to and from school, and a lot of parents park on Foster Crescent to drop off and pick up their children. The walkway from school joins Foster Crescent where access to Plan Change site is, so this is a busy location and busy street twice a day during the school week. The Board stated that Foster Crescent and Iris Street are narrow, and have a lot of traffic already. Have safety concerns for the children with the extra vehicles from the plan change site when it is subdivided.

Response: As stated above, the Traffic Impact Assessment has determined that the additional traffic generated by the proposed plan change and residential subdivision will not create any tangible safety or operational concerns for the surrounding road network. Regarding the safe and efficient movement of pedestrian along Foster Crescent and Iris Street, through observing the movement of school children, and observing and predicting vehicle movements, the Assessment considers that the additional traffic movements attributed to the proposed residential subdivision will not noticeably affect pedestrian safety or amenity on Foster Crescent and Iris Street.

It is noted that currently there is additional school traffic using these streets as a result of construction activities on Dawson Road opposite the school. Consequently, this additional use is likely to change once the construction is completed and the school traffic resume to primarily using the school entrance off Dawson Road.

- **Ministry of Education:** An email was sent to the Ministry's Property Advisor for Snells Beach School on 23 July and 15 August 2018. An email was sent to the Ministry's Principal Advisor for RMA acquisitions and designations. The email correspondence is in **Appendix 4**. Further information has been provided to the Ministry, a reply is yet to be received.

4.4 INTEREST GROUPS

Two local interest groups were emailed the consultation package with cover letter on 6 July 2018 (refer **Appendix 1**). Follow up emails, phone calls and texts messages were undertaken, as summarised below:

- **Snells Beach Ratepayers and Residents Association:** Phone and email contact with Maurie Hooper (Chairman) has been undertaken, and the proposal has been discussed with him. An invite to the community meeting was emailed on 30 July 2018. The community meeting Flyer was emailed on 2 August 2018. No written feedback has been provided to date.
- **Friends of the Mahurangi and Mahurangi Action:** Various emails and texts with Cimino Cole (Chair). A link to the Technical reports was emailed 24 July and 10 September 2018. An invite to community meeting was emailed 30 July 2018. Follow up email on 23 August 2018.

Their feedback is in **Appendix 4**, and summarised as follows:

Mahurangi Action is engaging intensively in the Warkworth Structure Plan process set in train by the decision that Warkworth be a satellite growth centre. An argument made by Auckland Council planners, during our discussions, is that Warkworth as a satellite growth centre is preferable to less structured growth over a wider geographic area.

The Mahurangi Action committee advise that this organisation does not immediately see what benefits the proposal for a 50 – 52 lot subdivision extension to urban Snells Beach would present socially or environmentally, including of landscape and visual impact, over the current Large Lot zoning.

Based on our current understanding of the private plan change proposal, Mahurangi Action cannot provide support.

Appendix 1

Consultation Pack

.....
B&A	20 Baxter Street
Urban & Environmental	Warkworth
•	0910
Whangarei	•
Warkworth	PO BOX 591
Auckland	Warkworth
Napier	0941
Christchurch
admin@barker.co.nz	T +64 9 422 3336
barker.co.nz	

9 July 2018

XX

XX

Dear,

RE: Proposed Private Plan Change – Foster Crescent, Snells Beach

You have been identified as a party who is likely to have an interest in a request for a private plan change to rezone a site at Foster Crescent, Snells Beach (Lot 1 DP 149776). The proposal seeks to change the current Residential - Large Lot zone to Residential - Single House zone in the Auckland Unitary Plan.

The purpose of this letter is to initiate the consultation process. A summary of the technical background and assessments to the proposed rezoning is attached to this letter. If you would like to view the complete technical and assessment package, please let us know and we can send this to you electronically.

We value any feedback that you may have, therefore your comments in written form would be appreciated. A form has been prepared for ease of responding should you wish to use it. The form along with a self-addressed envelope are attached. If you choose not to use the form but would like to provide comments we are happy to receive your feedback by way of email or delivery to our office at 20 Baxter Street.

If you would like to meet to discuss this proposal in further detail, please contact us to arrange a suitable time.

Yours faithfully

Barker & Associates Ltd



Burnette O'Connor

Senior Associate

Mob: 021 422 346

Email: burnetteo@barker.co.nz



Urban & Environmental

EXECUTIVE SUMMARY OF FOSTER CRESCENT PLAN CHANGE

INTRODUCTION

Prime Properties Limited is applying for a Plan Change to the Auckland Unitary Plan – Operative in Part to rezone Lot 1 DP 149776 (approximately 4.6384 hectares) from Residential - Large Lot Residential to Residential - Single House zone. At the same time, resource consent is proposed to be lodged for a vacant lot subdivision in accordance with the Single House zone rules.

The site subject to the proposed rezoning is shown in **Figure 1** below:

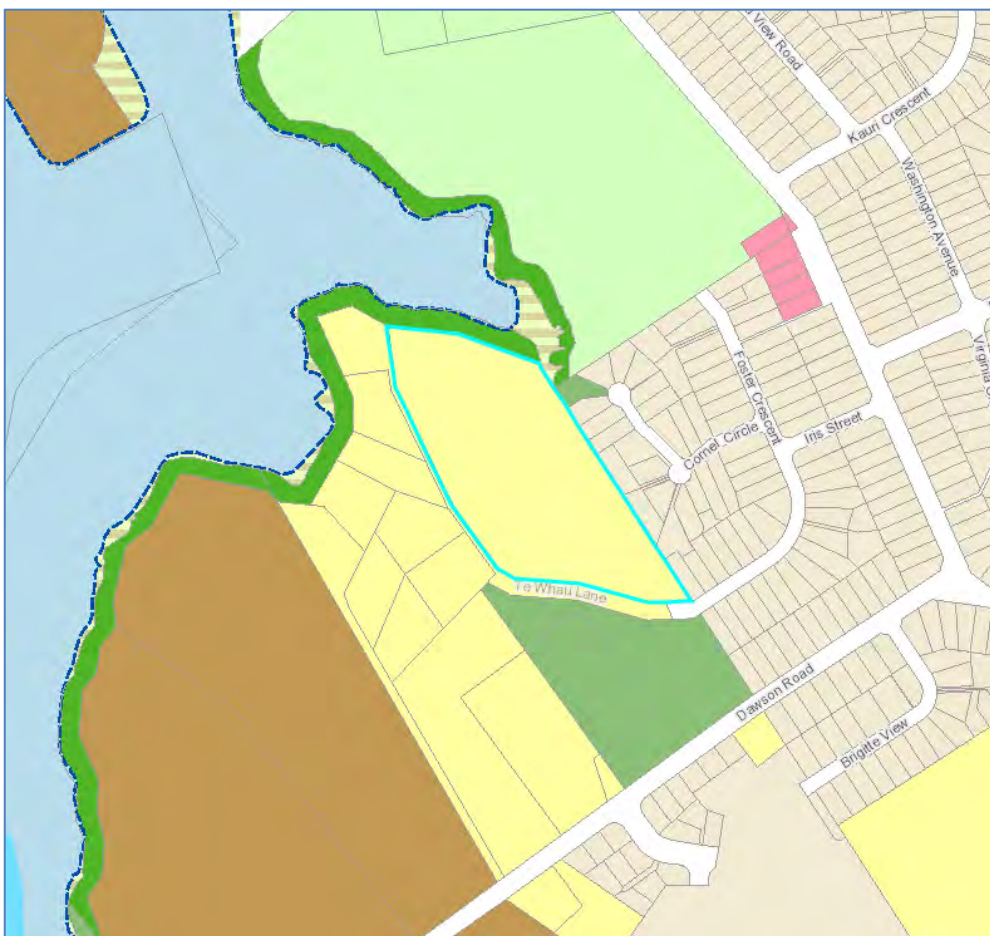


Figure 1: Showing Lot 1 DP 149776, proposed to be rezoned to Single House.

The site is currently in pasture and slopes in a northerly direction from Foster Crescent/Te Whau Lane to Dawson's Creek at the northern edge. The site is bounded by suburban residential development on the eastern side and larger lot development on the western side. The sites to the west have already been

subdivided in accordance with the Large Lot zone rules. Snells Beach School and a nearly three hectare Council reserve are located to the south of the site.

SUMMARY OF THE PROPOSAL

Under the former Rodney District Plan the site was zoned 'Low Intensity Urban' consistent with the Snells Beach – Algies Bay Structure Plan. This zoning was 'rolled over' to the Auckland Unitary Plan, which is now operative. While not explicitly stated, this zone was applied principally to provide a visual transition from the residential areas in the east and the rural edge of Dawsons Creek, and the wider Mahurangi harbour catchment in the west.

Since the Structure Plan was originally developed, the planning framework has changed considerably. The Regional Policy Statement of the Auckland Unitary Plan now emphasises the need to increase housing supply and achieve a 'quality compact' urban form that makes efficient use of land and infrastructure, while responding to local character and sense of place.

Taking into account the land required for access, utilities and stream maintenance, the proposed rezoning would allow for an additional 41 lots to be developed on the site, compared with the existing Large Lot zoning that would enable approximately 11 sites.

The extra lots would provide additional housing capacity within the existing urban area and make efficient use of land and infrastructure. The nature and density of development would also be consistent with the development to the East and the wider Snells Beach area. The existing and developed Large Lot zone to the west of the site would ensure that a visual transition in residential density is achieved between the residential area in the east and the rural land further west thereby retaining the area's sense of place. In addition to this, the proposal is considered to meet the key policies of the Auckland Unitary Plan for the following reasons:

- In terms of residential amenity and character:
 - The density envisaged by Single House zone (600m²) is generally consistent with the residential density to the east, and a consistent character would therefore be achieved;
 - The minimum site size for the Single House zone and the development controls that apply, including height in relation to boundary, maximum building coverage and minimum landscaped area for example, will ensure that potential privacy and dominance effects to neighbours will be effectively managed.
- In terms of infrastructure capacity:

- There is sufficient capacity in the road network to accommodate the proposed increase in dwellings;
- There is sufficient capacity in the wastewater and water supply networks to accommodate the proposed increase in dwellings;
- Stormwater from the site discharges directly to the Mahurangi Harbour and there is no risk of downstream flooding. Devices can be installed within the development to ensure that stormwater is sufficiently treated prior to being discharged;
- In terms of ecology, the primary permanent watercourse and wetland at the north-eastern edge of the site will be maintained within the development and will form part of a proposed utility reserve that links with the Te Whau esplanade reserve and wider open space network;
- In terms of the geotechnical conditions of the site, these have been assessed and the analysis confirms that the ground conditions can support a higher density of development on the site.

A draft subdivision plan has been prepared for the development and is shown in Figure 2 below, which illustrates the potential layout of the site under the Single House zone.



Figure 2: Showing the draft subdivision plan for the site.

A range of technical reports have been developed that have informed the conclusions outlined above, including:

- Landscape assessment prepared by Littoralis;
- Geotechnical assessment prepared by LDE Limited;
- Engineering report prepared by LDE Limited;
- Traffic Impact assessment prepared by LDE Limited;
- Ecological assessment prepared by Bioresarches.

Copies of these reports are available upon request.



Burnette O'Connor

Senior Associate, Barker & Associates Limited

Date: 6 July 2018

FEEDBACK ON PROPOSED PLAN CHANGE – Foster Crescent, Snells Beach.

My name and contact details:

Name:

Address of Property:

Phone number:

Email (or postal address if no email):

I have reviewed the proposed re-zoning to Residential Single House zone.

I **agree** with the proposed Residential - Single House zone.

I **disagree** with the proposed Residential - Single House zone.

I am **neutral** towards the proposed Residential - Single House zone.

The reasons for my / our opinion as indicated are -

and additional comments I / we wish to make are detailed below: *(please use reverse side of this page if more room is needed)*

I would like a meeting to discuss this proposal further:

I request additional information, as listed below:

Appendix 2

Mana Whenua Consultation Pack

.....
B&A	20 Baxter Street
Urban & Environmental	Warkworth
•	0910
Whangarei	•
Warkworth	PO BOX 591
Auckland	Warkworth
Napier	0941
Christchurch
admin@barker.co.nz	T +64 9 422 3336
barker.co.nz	

6 August 2018

XXX

XXX

Attn: XXXX

Dear

Re: Proposed Private Plan Change – Foster Crescent, Snells Beach

IWI XXX has been identified as a party who may have an interest in a private plan change proposal that is being advanced to rezone a site at Foster Crescent, Snells Beach (Lot 1 DP 149776). The proposal seeks to change the current Residential - Large Lot zone to Residential - Single House zone in the Auckland Unitary Plan. We are contacting you to initiate consultation on the proposal which has not yet been lodged with Auckland Council.

The purpose of this letter is to inform you of the proposal, where we are at in the process and seek any comment or feedback from you that you wish to make. A summary of the background and technical assessments to the proposed rezoning is attached to this email. The email also contains a link that will provide you access to the complete technical reports which include geotechnical, archaeological, ecological and engineering assessments amongst others. Community Facilities assessments are currently being prepared.

If you require any further detail or explanation please do not hesitate to contact me. If you would like to meet to discuss this proposal in further detail, please contact us to arrange a suitable time.

Based on information provided on Te Puni Kokiri website regarding the rohe maps representing the area over which different iwi exercise kaitiakitanga for the purposes of the Resource Management Act 1991, we are also consulting with Ngati Manuhiri, Ngati Wai, Te Kawerau a Maki, Ngati Maru, Ngati Paoa, Ngati Whanaunga, Te Runanga o Ngati Whatua, Nga Tai ki Tamaki, Ngati Te Ata, and Ngati Tamatera.

We would appreciate hearing from you by 1 September 2018.

Yours faithfully

Barker & Associates Ltd



Burnette O'Connor



Urban & Environmental

.....
B&A	20 Baxter Street
Urban & Environmental	Warkworth
•	0910
Whangarei	•
Warkworth	PO BOX 591
Auckland	Warkworth
Napier	0941
Christchurch
admin@barker.co.nz	T +64 9 422 3336
barker.co.nz	

Senior Associate

Mob: 021 422 346

Email: burnetteo@barker.co.nz

B&A

Urban & Environmental

EXECUTIVE SUMMARY OF FOSTER CRESCENT PLAN CHANGE

INTRODUCTION

Prime Properties Limited is applying for a Plan Change to the Auckland Unitary Plan – Operative in Part to rezone Lot 1 DP 149776 (approximately 4.6384 hectares) from Residential - Large Lot Residential to Residential - Single House zone. At the same time, resource consent is proposed to be lodged for a vacant lot subdivision in accordance with the Single House zone rules.

The site subject to the proposed rezoning is shown in **Figure 1** below:

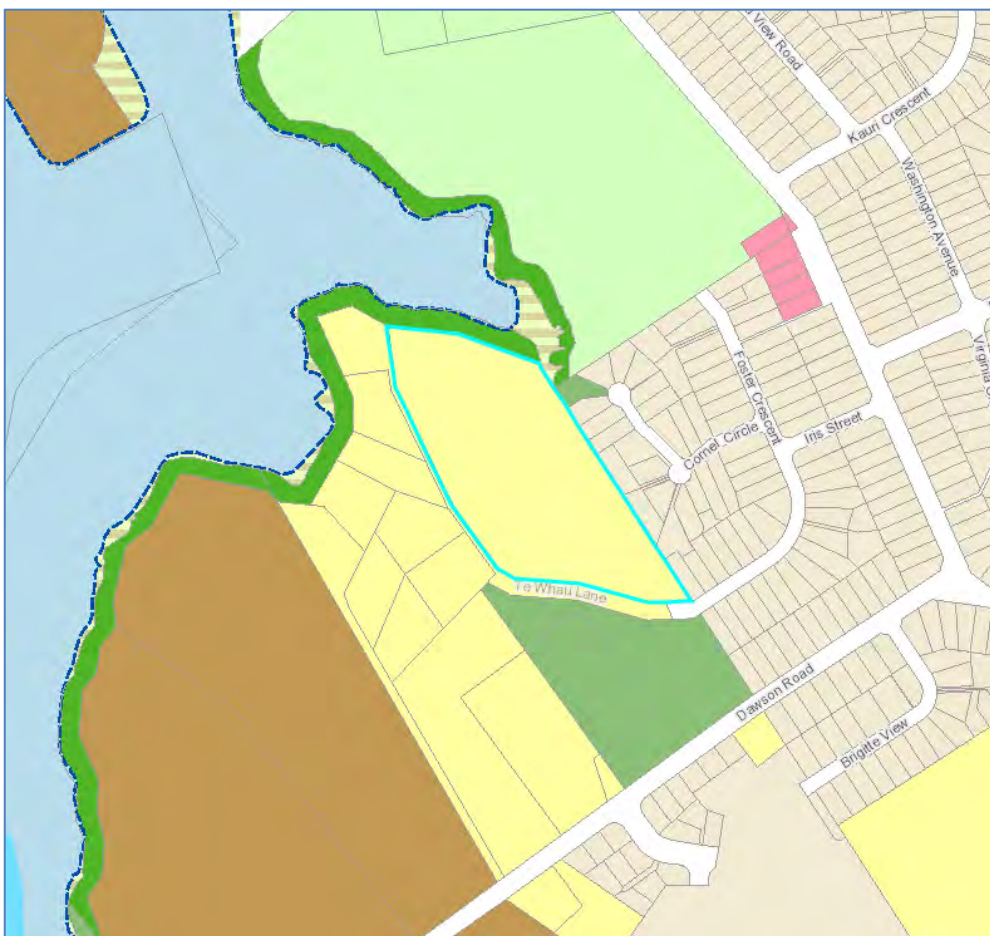


Figure 1: Showing Lot 1 DP 149776, proposed to be rezoned to Single House.

The site is currently in pasture and slopes in a northerly direction from Foster Crescent/Te Whau Lane to Dawson's Creek at the northern edge. The site is bounded by suburban residential development on the eastern side and larger lot development on the western side. The sites to the west have already been

subdivided in accordance with the Large Lot zone rules. Snells Beach School and a nearly three hectare Council reserve are located to the south of the site.

SUMMARY OF THE PROPOSAL

Under the former Rodney District Plan the site was zoned 'Low Intensity Urban' consistent with the Snells Beach – Algies Bay Structure Plan. This zoning was 'rolled over' to the Auckland Unitary Plan, which is now operative. While not explicitly stated, this zone was applied principally to provide a visual transition from the residential areas in the east and the rural edge of Dawsons Creek, and the wider Mahurangi harbour catchment in the west.

Since the Structure Plan was originally developed, the planning framework has changed considerably. The Regional Policy Statement of the Auckland Unitary Plan now emphasises the need to increase housing supply and achieve a 'quality compact' urban form that makes efficient use of land and infrastructure, while responding to local character and sense of place.

Taking into account the land required for access, utilities and stream maintenance, the proposed rezoning would allow for an additional 41 lots to be developed on the site, compared with the existing Large Lot zoning that would enable approximately 11 sites.

The extra lots would provide additional housing capacity within the existing urban area and make efficient use of land and infrastructure. The nature and density of development would also be consistent with the development to the East and the wider Snells Beach area. The existing and developed Large Lot zone to the west of the site would ensure that a visual transition in residential density is achieved between the residential area in the east and the rural land further west thereby retaining the area's sense of place. In addition to this, the proposal is considered to meet the key policies of the Auckland Unitary Plan for the following reasons:

- In terms of residential amenity and character:
 - The density envisaged by Single House zone (600m²) is generally consistent with the residential density to the east, and a consistent character would therefore be achieved;
 - The minimum site size for the Single House zone and the development controls that apply, including height in relation to boundary, maximum building coverage and minimum landscaped area for example, will ensure that potential privacy and dominance effects to neighbours will be effectively managed.
- In terms of infrastructure capacity:

- There is sufficient capacity in the road network to accommodate the proposed increase in dwellings;
- There is sufficient capacity in the wastewater and water supply networks to accommodate the proposed increase in dwellings;
- Stormwater from the site discharges directly to the Mahurangi Harbour and there is no risk of downstream flooding. Devices can be installed within the development to ensure that stormwater is sufficiently treated prior to being discharged;
- In terms of ecology, the primary permanent watercourse and wetland at the north-eastern edge of the site will be maintained within the development and will form part of a proposed utility reserve that links with the Te Whau esplanade reserve and wider open space network;
- In terms of the geotechnical conditions of the site, these have been assessed and the analysis confirms that the ground conditions can support a higher density of development on the site.

A draft subdivision plan has been prepared for the development and is shown in Figure 2 below, which illustrates the potential layout of the site under the Single House zone.



Figure 2: Showing the draft subdivision plan for the site.

A range of technical reports have been developed that have informed the conclusions outlined above, including:

- Landscape assessment prepared by Littoralis;
- Geotechnical assessment prepared by LDE Limited;
- Engineering report prepared by LDE Limited;
- Traffic Impact assessment prepared by LDE Limited;
- Ecological assessment prepared by Bioresarches.

Copies of these reports are available upon request.



Burnette O'Connor

Senior Associate, Barker & Associates Limited

Date: 6 July 2018

Appendix 3

Community Meeting Notes 16th August 2018

Notes from Community Meeting

Private Plan Change proposal, Foster Crescent, Snells Beach, 16 August 2018

Presenter: Burnette O'Connor, Planner B&A supported by Venessa Anich, Planner B&A

Notes By: Venessa Anich, B&A

Zone Rules:

Questions were raised around the Residential - Single House zone development standards e.g. height – could buildings be two storied, breaches of maximum site coverage rules, and potential building setbacks from yards.

Concern was raised by residents, primarily land owners and residents in the Foster Crescent and Cornel Circle area that the bulk and location rules will not be complied with. Explained that resource consent would be required if rules were not complied with, or otherwise an approval provided by the affected neighbour, which may allow a boundary approval process to be followed.

Neighbour's Privacy and Amenity:

Residents attending the meeting asked how their privacy was going to be protected? Currently have rural outlook, plan change will mean that they will feel like they have been built out.

The closeness of the new houses to the existing houses along the shared boundary with Cornel Circle and Te Whau Land is a concern for these neighbours.

Residents of Cornel Circle raised a concern with respect to two-storey houses being constructed along properties on the common boundary. This was an issue particularly for these neighbours (e.g. 17 Cornel Circle).

For Te Whau Lane residents, they brought their properties expecting more Large Lot residential neighbours east of them. Now could have 5 dwellings. Would prefer larger lots on new subdivision along this boundary, then transition to smaller lots further east.

Both sets of neighbours on the western and eastern boundary of the subject site are interested to have further discussion about possible mitigation measures, e.g. maximum height / single storey controls and a greater yard setback separation being secured as part of future subdivision process, landscaping, fencing, etc. Further meetings with two sets of neighbours to be planned.

Traffic on Foster Crescent and Iris Street:

A key issue raised by those attending the meeting was traffic on Iris Street, Foster Crescent and Cornel Circle. Residents were concerned that there were already traffic issues that would be exacerbated with additional traffic. Those at the meeting who raised concerns about traffic stated that the streets are down to single lane if cars are parked on both sides of road. So for two cars to pass each other, one must give way. There were also concerns raised about safety of children who use these roads as a thoroughfare to and from Snells Beach Primary School.

People attending the meeting explained that a lot of school children walk along Foster Crescent and cross Iris Street, or continue down Foster Crescent to Goodall Reserve. Goodall reserve can be

MEMORANDUM

unsafe, sometimes dogs running loose, intimidating teenagers, etc. A lot of parents drive down Iris Street and Foster Crescent to drop off and pick up their children from school. Can get congested at these times of the day.

Idea that access could come off Dawsons Road instead, across Council land to south of subject site. Explained that this is classified as a Recreation Reserve. Would be hard to change the use of the land from reserve to road. It is also likely to be used for the school to expand onto in the future.

Concerned that subdivision will result in more traffic congestion at the Warkworth Hill Street intersection. It can take an hour to get into Warkworth sometimes when it is congested, often a Saturday morning or weekend evenings in summer.

Entrance to site:

Entrance to Te Whau Lane and the subject site is also where school walkway comes out. Concerns about safety of children. Maybe need a Stop sign here, or some sort of traffic calming?

2 Foster Crescent's driveway is right at this point as well. Concerned that access to property will become dangerous given the location of the existing crossing into the site and the proposed road extension. Wants to know engineering details for this intersection.

Residential Density:

Question why not less houses on subject site. Would prefer similar house density to Foster Crescent and Cornel Circle. Explained that this residential area was established under old rules, when 800m² was the minimum. There is a mixture of lot sizes in this area, with some smaller sites because of infill via cross lease. The area of the existing properties range from 1,243m² to 421m², with a lot of 800m² properties.

Construction effects:

Concerns were raised about the noise, dust, disruption, heavy vehicles, etc during the construction phase for the subdivision.

During construction for Te Whau Lane properties, heavy vehicles could not turn around down narrow streets, so had to back up all the way along Foster Crescent. This was dangerous and inconvenient. During construction of the school (took 2-3 years) there was so much dust that could not hang washing on line when wind blow from the west (which is the predominant wind). Want to know how going to mitigate effects during construction. Explained that subdivision consent conditions manage the construction effects, e.g. timing, duration, dust.

Servicing:

One neighbour had rung Council, who said that there wasn't sufficient infrastructure to service the site. Explained that we have confirmation from Watercare that the site can be serviced with wastewater and water supply. Snells Beach Wastewater treatment plant is going to be upgraded. The engineering report also confirms that stormwater can be managed.

Stormwater:

Currently stormwater flows down Cornel Circle, through people's properties (and garages, etc) then onto the subject site. There are two boggy wet areas on the subject site along Cornel Circle

MEMORANDUM

properties shared boundary. Have concerns that stormwater on subject site, when developed into houses and roads, will make existing situation worse. Explained that the subdivision will not be able to fix existing problems with stormwater running down Cornel Circle and through properties. But stormwater on the subject site will be managed, treated and directed to the wetland at the north eastern corner of the site, before entering the Harbour. Detail available in the Engineering Plans.

Wastewater:

Currently the wastewater pumping stations stinks, located at the north western corner of Cornel Circle. The Pumping station was upgraded a couple of years ago with a Biofilter, but this made smell worse. Sometimes there is sewage leaking on the road.

Powerlines:

Would prefer if power lines are buried. If not buried, don't want them any closer to his house (3 Foster Cres).

Reserves:

Need a local reserve within the subdivision, for a playground, etc. Path linkage to Goodall Reserve needs to be good enough for mobility scooters.

Explained that there are Council standards for reserve requirements and this area has a number of reserves already.

Earthworks:

Concerned that most of site will be dug up when the subdivision roads and services are being established. This will result sediment entering the Harbour. Explained that this is controlled through the subdivision consent conditions, and the proposal includes earthworks mitigation measures like silt traps. They didn't think these measures work very well.

When the school was built, the exposed earth was very stinky. Might be the case with this site as well.

Asked how much cut and fill will be undertaken? How much retaining will be needed? Explained that the Engineering drawings have detail on this.

A link to all the Technical documents will be emailed out to those who provided their email addresses. .

Appendix 4

Feedback and Requests for Additional Information

Appendix 5

Te Whau Lane Meeting Notes 26 August 2018 and Letters of Support

Appendix 6

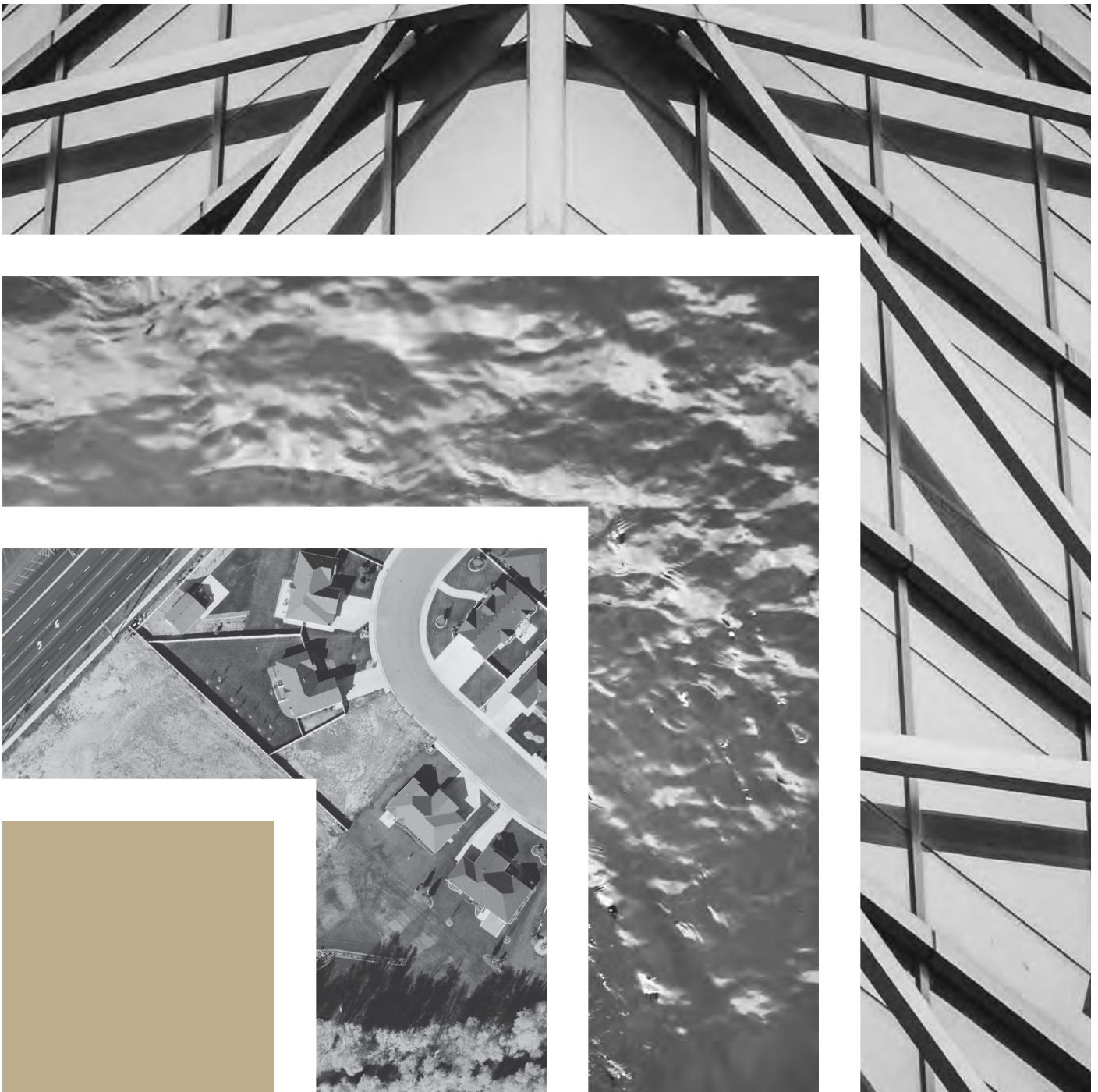
Indicative Landscaping buffer along boundary with Te Whau Lane

Appendix 7

Auckland Council, Auckland Transport and Watercare Consultation

Appendix 8

Written Approvals



PRIVATE PLAN CHANGE REQUEST

FOSTER CRESCENT
SNELLS BEACH

OPEN SPACE AND COMMUNITY FACILITIES REPORT

PREPARED FOR:
PRIME PROPERTIES GROUP LIMITED

15-Feb-2019

B&A
Urban & Environmental
484

CONTENTS

1.0	INTRODUCTION	2
1.1	Background and Scope	2
1.2	Purpose of this report	3
2.0	STRATEGIC FRAMEWORK	4
2.1	Long term Plan	4
2.2	Infrastructure Strategy	5
2.3	Community Facilities Network Plan	5
2.4	Open Space Provision Policy	8
2.5	Rodney Greenways Paths and trails Plan: Puhoi to Pakiri	1
3.0	EXISTING COMMUNITY FACILITIES AND OPEN SPACE AREAS IN SNELLS BEACH	2
3.1	Overview	2
3.2	Community Facilities Network Action Plan	5
4.0	PROPOSED PLAN CHANGE COMMUNITY FACILITY AND OPEN SPACE PROVISION	5
4.1	Analysis and Recommendations – Community Facilities	6
4.2	Analysis and Recommendations – Open Space	6
4.3	Overall Conclusion	6

1.0 INTRODUCTION

1.1 BACKGROUND AND SCOPE

This report has been prepared to inform the Foster Crescent Private Plan Change Request on behalf of Prime Property Group Limited that seeks to rezone land at the end of Foster Crescent Snells Beach. This report provides a high level analysis of the existing community facilities, including areas of open space available in Snells Beach.

The boundary for the Plan Change is shown in **Figure 1** below.

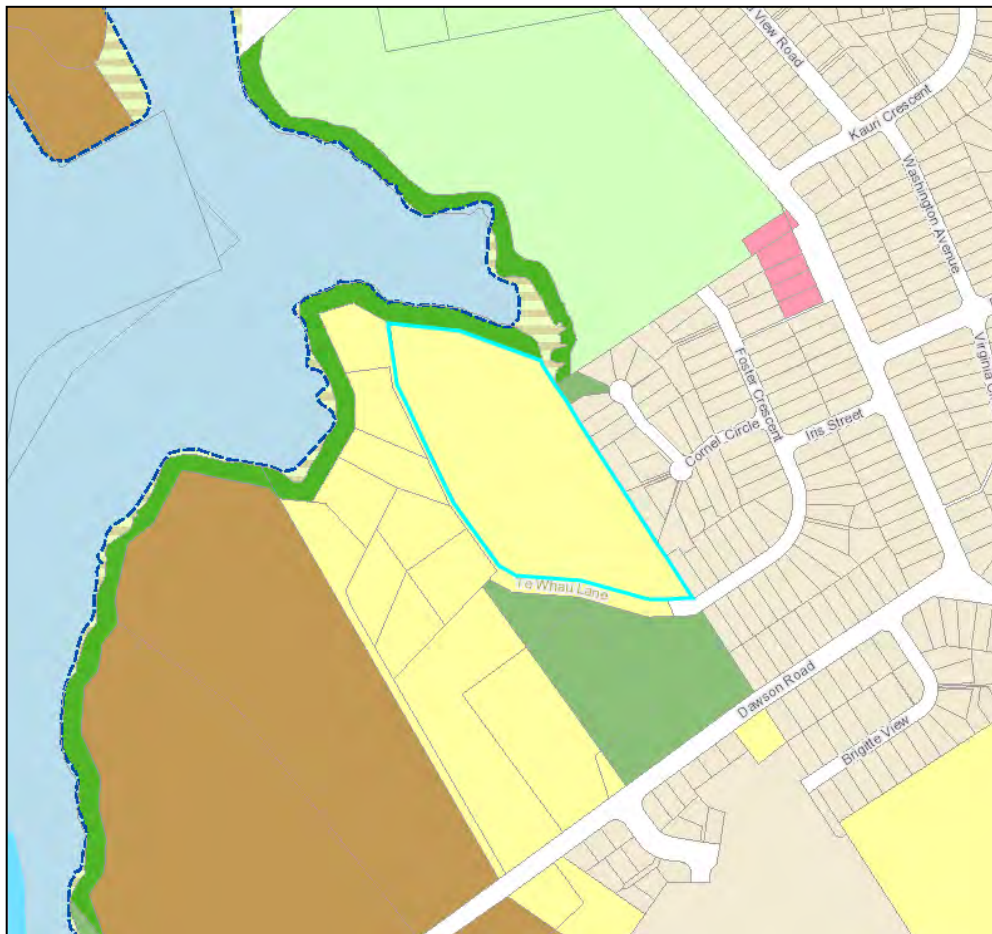


Figure 1: Outline of the proposed Plan Change area.

The Plan Change area is located immediately to the west of the land zoned Residential – Single House which forms part of the existing Snells Beach settlement. The neighbouring properties to the east are established residential houses which gain access off Foster Crescent and Cornel Circle. To the west of the subject site is the relatively recent housing development being established off Te Whau Lane, zoned

Residential – Large Lot. Further west the zoning changes to Rural Coastal, with the land use appearing to be either pastoral farming or lifestyle blocks.

The northern boundary of the site abuts the Te Whau River walkway and then the Dawson Creek arm of the Mahurangi Harbour. This is zoned Open Space – Conservation, with a small area of Coastal Transition zone bordering along the north east coastal corner of the site, towards Goodall Reserve.

Uphill from the site on the southern boundary, is an unnamed reserve and then further to the south is the Snells Beach Primary School which adjoins Dawson Road. There is walking access from the school across the reserve to Foster Crescent and the subject site via a formed walkway.

In relation to open space, the proposed development of the site will provide a reserve (Lot 53) and linkage to Goodall Reserve, and linkage to the coastal walkway (Lot 54).

1.2 PURPOSE OF THIS REPORT

This report has been prepared in support of the Foster Crescent Private Plan Change in accordance with Appendix 1: Structure Plan Guidelines, of the Auckland Unitary Plan (Operative in Part Version) (AUP(OP)). Appendix 1 requires the consideration of the location, scale, function and provision of community facilities including educational, health, welfare and cultural facilities and open space.

Although the extent of the Private Plan Change request is limited to one site, it was considered appropriate to investigate and report on community facilities as these form an important aspect to the site attributes which are considered to make this site suitable for a higher density of development than it is currently zoned for.

This report addresses the following:

- Investigation of Snells Beach’s current community facility and open space areas;
- Apply the Auckland Council Community Facilities Network Plan principles and provision guidelines to the Plan Change area; and
- Apply the Auckland Council Open Space Provision Policy 2016 to the Plan Change area.

2.0 STRATEGIC FRAMEWORK

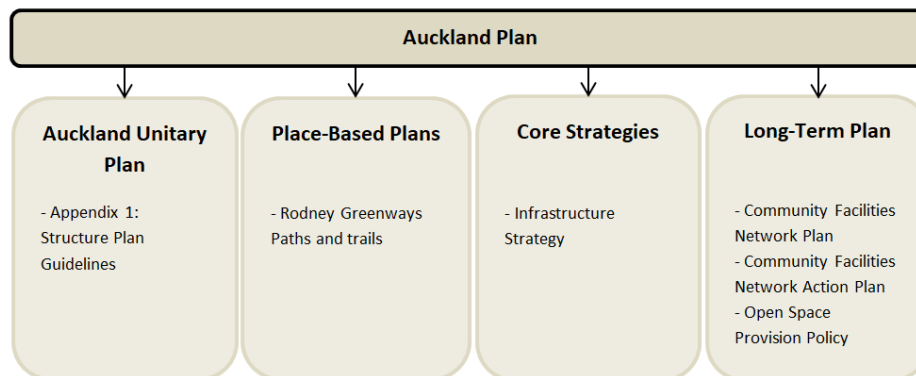


Figure 2: Strategic Framework of Council Documents which is of relevance to this assessment

Figure 2 above identifies the strategic framework which informs the provision for community facilities and open space areas in this plan change document. The relevant documents for this assessment are discussed further below.

2.1 LONG TERM PLAN

Council develops a ten year Long Term Plan (LTP) which is reviewed every three years to allocate funding for its various activities. The ability and timeframe to implement the actions in the network plan will be dependent on the level of budget allocated in the LT processes for community facilities.

The LTP 2018 – 2028 has identified that one of the issues facing Auckland is population growth. The rate and speed of population growth is putting pressure on communities. There is an increase demand for community infrastructure, which requires planning and response. Council aims to ensure that community facilities are fit for purpose going forward, and that there is a range of community-building initiatives at the local level.

Within the constraints of Council’s resources, the LTP has stated that it will promote innovation, diversity, inclusiveness, and cultural and recreational facilities that make Auckland a great city. A key role of Council, and one that is valued at the local level, is the provision of sport, recreational and community facilities. The LTP has made available funding of \$120 million for the development of sports and recreational facilities.

The 21 Local Boards identify projects that they believe to be most important for their local community. For the Rodney Local Board, the key parks, reserves, and

community facilities projects (Local Community Services activity) they have identified (LTP, Volume 3, Part 2) for 2018-19 include:

- progressing a business case to construct a local indoor courts facility at Huapai domain
- starting the masterplan (concept plan) for the future reserve at Green Road, Dairy Flat
- contributing \$150,000 to the design of the future multisport building at Warkworth Showgrounds
- beginning work on an Open Space Omnibus Plan to address the needs and future uses of Rodney's reserves and open space
- funding Rodney's conservation volunteers in our public spaces, including community planting programmes, plant and animal pest control, and providing materials and green waste disposal
- progressing the design of priority greenways links that have completed feasibility assessments.
- funding the investigation and detailed design of town centre improvements in Warkworth and Helensville, followed by Wellsford and Kumeu-Huapai.

2.2 INFRASTRUCTURE STRATEGY

As part of the Long Term Plan, the Council has approved a 30 year Infrastructure Strategy. The key purpose of this Strategy is to set out how the Council is going to manage the major drivers of demand for Auckland's infrastructure over the next 30 years within a constrained funding environment. The network plan has informed the strategy by providing data on the scale of investment required to meet future demand for community facilities.

2.3 COMMUNITY FACILITIES NETWORK PLAN

The Community Facilities Network Plan (the network plan) provides a road map for how Auckland Council will invest in community facilities over the next 20 years. The plan addresses the provision of:

- Arts and culture facilities;
- Community centres;
- Libraries;
- Pools and leisure facilities; and
- Venues for hire (Community or rural halls).

The network plan provides direction on the development of community facilities across Auckland including; arts and culture facilities, community centres, libraries, pools and leisure and venues for hire. The plan takes a regional approach to the planning and investment in facilities to prioritise and address competing demands across the region.

2.3.1 Community Facility Provision Targets – Quantity

The Foster Crescent Plan Change is expected to provide capacity for approximately 52 dwellings. Based on Statistics NZ (2013) assumption of 2.64 persons/dwelling, this would accommodate approximately 137 additional people.

To anticipate and plan for future demand, the network plan includes provision guidelines that help identify Council’s aspired provision levels. The guidelines show the type of community facility that should serve a particular population by outlining: function of the facility, type of facility (e.g. small or large), and the provision approach.

Table 1 shows the provision guidelines.

Facility	Functions	Rural provision approach
Community centre		
Small facility	Community development activities including small meetings, co-located working spaces, clubs and social gatherings with activated programming and services.	Target population threshold 5,000 – 10,000. Servicing a walking catchment of up to 15 minutes or 30 minute drive of rural and coastal villages.
Large facility	Community development activities including small and large meetings, social gatherings, recreation local arts and culture, health and wellbeing with activated programming	Target population of 20,000 plus. Serves a catchment of up to 15 minute driving time. Located in town centres and satellite towns. Desirably located within the centre of town.
Venues for hire	Bookable space for the community to book and run their own activities	Access to bookable space within 15 minute walk from local or town centres or 30 minute drive from rural centres.
Libraries	Access to information and technology	Respond to population growth of 10,000 in a rural area and 30,000 in a metropolitan centre. Capacity tests based on 33m ² / 1000 population.
Pools and leisure		
Local facility	Free play, fitness, learning, relaxation, casual-play, community programmes	Pools target population threshold of 35,000 to 50,000. Leisure target population thresholds of 18,000 to 40,000. Network to service local catchments of up to 5 km. Within 30 minute drive-time of a rural satellite town, target

Facility	Functions	Rural provision approach
		population of 9,000 people or more, consider partnerships.
Destination facility	Aquatic entertainment, pools sports training, indoor sports leagues, special leisure activities and possible local functions	Limited number of facilities based on evidence of need and assessment of viability to service a catchment of 10km plus.
Regional facility	Aquatic entertainment both indoor and outdoor, pools sports training, indoor sports leagues.	One to three facilities to service the region. Assessed on case by case basis, based on clear evidence of demand and viable business case. Recognise national facility strategy.
Arts and culture space		
Local facility	Provide space for local community arts activity such as community drama, dance, local art classes and presentations	Provide space, opportunities and programmes through existing and new multi-use community facilities.
Destination facility	Provides specialised space for emergent, semi-professional and professional artists	Assessed on an as needed basis to meet identified sector and audience demand.

2.3.2 Community Facility Provision Targets – Distribution

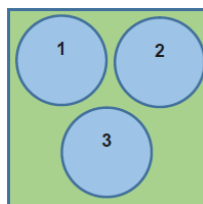
The Community Facility Network Plan also provides objectives and principles to guide where and how best to locate and develop facilities. The network plan identifies four options for the configuration of community facilities which are outlined below:

Single Site



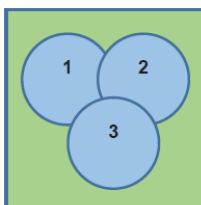
One site which accommodates one type of facility e.g. library space or community space

Co-Located



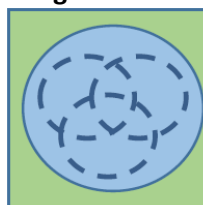
Two or more separate types of facilities developed on a site but have separate entrances and operate independently.

Connected



Two or more facilities developed in a connected building with a common entrance and administration area, but each type of facility has its own defined area.

Integrated



One building with multiple spaces flexibly designed to accommodate different activities. Integrated service offer, one entrance and combined administration.

It is noted that Council envisages seeing more facilities developed as connected and integrated facilities. Additionally, facilities which are accessible, well placed in the community, well maintained and are a sustainable option for the community and rate payers who fund them are highlighted as key elements.

Council will focus its investment on strategic, well integrated community facilities.

2.4 OPEN SPACE PROVISION POLICY 2016

The Open Space Provision Policy 2016 provides direction to developers, planners and designers on the provision of open space sought by Council. In doing so, it aims to achieve a consistent and transparent framework for assessing open space provision across the region. The policy provides information on network principles which guide how high quality open space should be located to the social, built and natural environment, and provision metrics, which guide the amount, type and distribution of open space expected in new greenfield development areas.

Table 2, on the following page, shows the provision guidelines as outlined in the policy document.

Typology	Description	Indicative amenities	Provision target
Pocket Park	<p>Provides 'door step' access to small amenity and socialising spaces in high density residential areas.</p> <p>Provides visual relief in intensively developed areas.</p> <p>New pockets parks are typically between 0.1 to 0.15 hectares.</p>	<ul style="list-style-type: none"> landscaping and gardens small lawn areas furniture specimen trees hard surface treatments areas for socialising and respite 	<p>Voluntarily provided at no capital cost and only on agreement by council. Alternatively pocket parks can be retained in private ownership.</p> <p>Located in urban centres or high density residential areas. Must be located on a public street and not an internalised space within a development block.</p> <p>Not to be located within 100m of other open space.</p> <p>In addition to requirements for neighbourhood parks.</p>
Neighbourhood Park	<p>Provides basic informal recreation and social opportunities within a short walk of surrounding residential areas.</p> <p>New neighbourhood parks are typically between 0.3 to 0.5 hectares.</p>	<ul style="list-style-type: none"> play space flat, unobstructed, kick-around space for informal games (30m by 30m) areas for socialising and respite landscaping specimen trees furniture 	<p>400m walk in high and medium density residential areas.</p> <p>600m walk in all other residential areas.</p> <p>Provides a range of different recreation opportunities between nearby neighbourhood and suburb parks.</p>
Suburb Park	<p>Provides a variety of informal recreation and social experiences for residents from across a suburb.</p> <p>Located in prominent locations and help form the identity of a suburb.</p> <p>Suburb parks will often accommodate organised sport facilities, such as sportsfields.</p> <p>New suburb parks are typically 3 to 5 hectares if providing for informal recreation uses only and up to 10 hectares or larger if also accommodating organised sport uses.</p>	<ul style="list-style-type: none"> walking circuits or trails within the park multiple kick-around spaces socialising spaces, including picnic and barbeque facilities larger and more specialised informal recreation attractions, such as large playgrounds, skate parks, hard courts beaches and watercraft launching facilities organised sport facilities 	<p>1000m walk in high and medium density residential areas.</p> <p>1500m walk in all other residential areas.</p> <p>Provides a range of different recreation opportunities between nearby neighbourhood and suburb parks.</p> <p>Provides a neighbourhood park function for immediately neighbouring residential areas.</p>

<p>Destination Park</p>	<p>Provides for large numbers of visitors, who often visit for an extended period of time, and may travel from across Auckland.</p> <p>Many destination parks are tourist attractions. Typically they will:</p> <ul style="list-style-type: none"> • be more than 30 hectares • accommodate specialised facilities • have significant or unique attributes. <p>Regional parks are considered to be destination parks.</p>	<ul style="list-style-type: none"> • community event space • car parking and toilets • large events space • networks of walking circuits and trails • destination and/or multiple playgrounds • specialised sport and recreation facilities • distinct natural, heritage or cultural features • multiple places for gatherings and socialising such as barbeque and picnic facilities 	<p>A variety of destination parks should be located to serve each of the northern, western, central and southern areas of urban Auckland.</p> <p>Future provision will be determined through network planning, which will identify if and where new destination parks are required.</p> <p>Provides neighbourhood and suburb park functions for immediately neighbouring residential areas.</p>
<p>Civic Space</p>	<p>Provides spaces for meeting, socialising, play and events in Auckland's urban centres.</p> <p>Civic space encompasses a network of public space including squares, plazas, greens, streets and shared spaces.</p> <p>Civic spaces can be:</p> <ul style="list-style-type: none"> • small (<0.1 hectares), typically providing respite, informal meeting and socialising opportunities • medium (0.15 to 0.2 hectares, typically capable of hosting small events) • large (0.3 to 0.4 hectares), typically capable of hosting medium scale events. 	<ul style="list-style-type: none"> • highly structured and developed urban spaces • predominately hard- surfaces meeting and socialising opportunities • event space • landscaping and gardens • public artworks 	<p>The extent of the civic space network should reflect the scale of the urban centre.</p> <p>Civic space should be planned as part of an integrated network, which responds to the local character and needs of an urban centre.</p> <p>Local Centre</p> <ul style="list-style-type: none"> • one small civic space. <p>Town Centre</p> <ul style="list-style-type: none"> • one or more small civic spaces; and • one medium civic space. <p>Metropolitan Centres</p> <ul style="list-style-type: none"> • one or more small civic spaces; • one or more medium civic spaces; and • one large civic space.

<p>Connection and linkage open space</p>	<p>Provides contiguous networks of open space that establish recreational, walking cycling and ecological connections, integrated with on-street connections.</p>	<ul style="list-style-type: none"> • trails • walkways • cycleways • seating • landscaping • boardwalks • native bush 	<p>The provision of open space for linkages and connections will depend on the particular characteristics of an area. Primarily provided along watercourses or the coast.</p>
---	---	--	---

2.5 RODNEY GREENWAYS PATHS AND TRAILS PLAN: PUHOI TO PAKIRI

The Greenways Plan 2017 is a visionary document which aims to provide cycling and walking connections which are safe and pleasant, while also improving ecology and access to recreational opportunities. To achieve this, Greenways may cross existing areas of parkland, and follow street connections between parks. This network will link together areas of housing and employment, open spaces, town centres, recreational facilities, places of interest and transport hubs. In rural areas such as Warkworth, Snells Beach, Matakana and beach communities, greenways include bridleways as well.

The Greenways Plan seeks to create a future network of greenways that will provide safe and enjoyable ways for people to get around, get active, and get engaged with their community and environment.

The network of greenways identifies the location and opportunity to:

- Improve walking connections
- Improve cycle connections
- Improve bridle connections
- Improve recreation opportunities
- Improve ecological opportunities
- Improve access to streams and waterways.

The Greenways Plan has identified a network of priority routes throughout the Rodney area. Figure 3 below illustrates these in relation to the western side of Snells Beach. The network of priority routes are identified around the subject site: through Goodall Reserve, connecting with the coastal walkway along to the boat ramp at the end of Dawson Road, looping back along Dawson Road through the school site, along the walkway to Foster Crescent, then back through to Goodall Reserve.

Future greenways infrastructure is provided for by the Plan Change that will complement the existing network. Within the site there is the provision for linkages between the site and the coastal walkway, Goodall Reserve, and the school. This will be through an offer of two reserves, one linking the site to the coastal walkway, another reserve linking to Goodall Reserve. This latter reserve will also be part of the stormwater drainage network for the subject site, and will include the ecological enhancement of the degraded wetland. Finally, the linkages to the school will be provided via a road to vest. It is considered that this will be a positive addition to the greenways routes for Snells Beach as identified in the Greenways Plan.

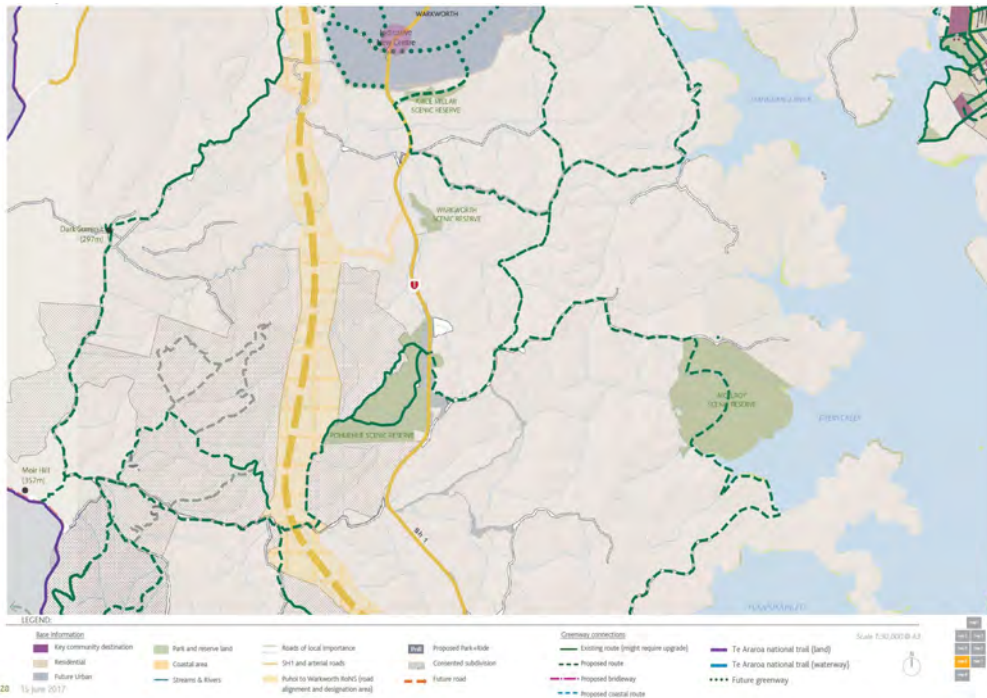


Figure 3: Proposed Greenways Network Plan for Snells Beach (Source: Rodney Greenways - Paths and trails Plan)

3.0 EXISTING COMMUNITY FACILITIES AND OPEN SPACE AREAS IN SNELLS BEACH

3.1 OVERVIEW

The existing community facilities network in Snells Beach consists of one council owned community centre, a library, and sports field facilities next to the Snells Beach shops. There are a number of non-council owned churches that have associated halls and facilities. There are also schools, kindergarten, and health care facilities.

These are illustrated in **Figure 4** and **Table 3** below.

In terms of open space, a number of neighbourhood parks and reserves are located within the Snells Beach urban area, including Goodall Reserve, the adjoining Te Whau esplanade / walkway and an extensive esplanade reserve along the main beach front.

Goodall Reserve is a generous Open Space - Sport and Active Recreation Zone focus for the wider settlement, catering for a range of team sports, tennis, lawn bowls, skate-boarding, library and informal pursuits. A network of predominantly concrete paths provides a range of walking route options through the reserve. Parking areas

are provided in the south east corner of the park. Collectively, these amenities define the reserve as a Suburb Park under the Auckland Council Open Space Provision Policy.

A second body of parkland exists as the Te Whau Esplanade Reserve; a riparian strip defined as Open Space – Conservation Zone that follows the coastal margin of Dawson Creek from the western end of Dawson Road through to Goodall Reserve, where it then continues on to the end of Hamatana Road. There is also a well-formed gravel path through the reserve which provides an easy, well graded route to connect with the network of trails within Goodall Reserve.

A third area of parkland lies uphill on the southern edge of the Plan Change site, where a reserve fills a semi-triangular space created by Dawson Road, Snells Beach School and the Te Whau Lane corridor and the western margin of the existing urban development. This open, largely undeveloped pocket of reserve is bisected by a concrete footpath that connects the end of Foster Crescent with the primary school.

In terms of coastal facilities, there are boat ramps at the main beach area as well as at the end of Dawson Road.

The subject site shares a boundary with both the Te Whau Esplanade Reserve Walkway and Goodall Reserve. This is beneficial in providing linkages to these reserves for future residents within the Plan Change area.

The open spaces and facilities mentioned above are identified in the **Table 3** and illustrated in **Figure 4** below.

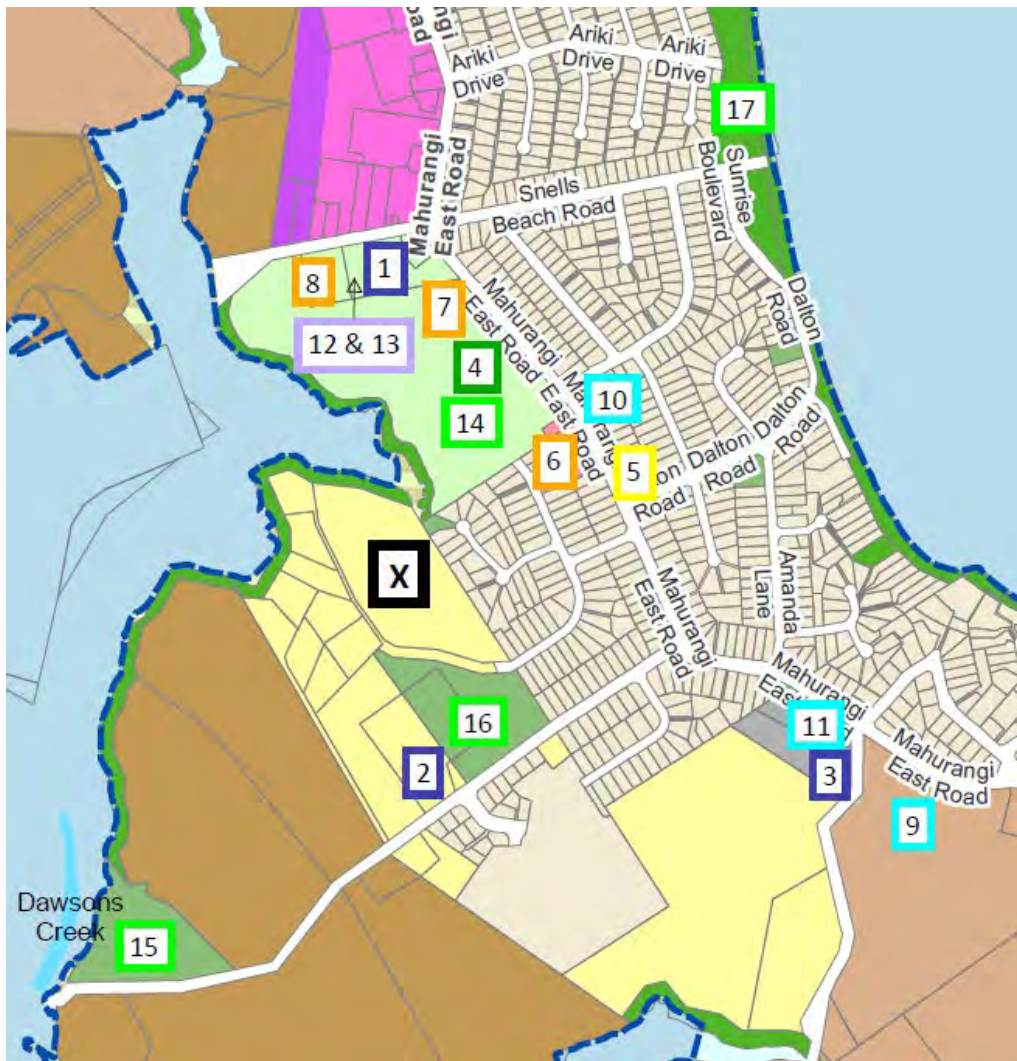


Figure 4: Existing community facilities and open space areas in Snells Beach

Education	
1	Snells Beach Kindergarten – 21 Hamatana Road
2	Snells Beach Primary School – 62 Dawson Road
3	Horizon School – 20 Goodall Road
Sports Fields	
4	Goodall Recreation Reserve – Mahurangi East Road
Healthcare centres	
5	Snells Beach Medical Centre – Corner Dalton and Mahurangi East Roads
Sports Centres	
6	Fitness Hub Ltd – 10/280 Mahurangi East Road
7	Snells Beach Tennis Courts & Club – Mahurangi East Road
8	Mahurangi East Bowls and Skate Park 21 Hamatana Road
Religious Facilities/Churches	
9	Snells Beach Seventh Day Adventist Church – 410 Mahurangi East Road

10	Snells Beach Community Church – 325 Mahurangi East Road
11	Snells Beach Baptist Church – 410 Mahurangi East Road
Community facilities and halls	
12	Mahurangi Community Centre – 21 Hamatana Road
13	Mahurangi East Library – 21 Hamatana Road
Open Space (Parks and Reserves)	
14	Goodall Reserve – Mahurangi East Road
15	Te Whau Esplanade Reserve Walkway – Dawson Road
16	Unnamed reserve (north of subject site) – Dawson Road
17	Ariki Drive Recreation Reserve – Snells Beach Road

Table 3: Existing community facilities and open space areas in Snells Beach

3.2 COMMUNITY FACILITIES NETWORK ACTION PLAN

The Community Facilities Network Action Plan (the Action Plan) is a companion document to the network plan. It identifies actions required to address gaps, growth or fit for purpose issues across the community facilities network.

While the Action Plan has identified no actions specifically for Snells Beach, for the Warkworth and the Mahurangi East area, the Action Plan has identified four actions. These are outlined in the table below. The upgrade of the Town Hall is now complete.

Priority Actions	1) Upgrade of Warkworth Town Hall
Non Priority Action	<p>1) Kowhai Art and Craft Inc and other Rodney Community Facilities: Undertake a community needs assessment to assess whether the existing facilities in Rodney are aligned to the community's needs.</p> <p>2) Investigate the need for a multi-purpose community facility space in Warkworth.</p> <p>3) Investigate the need for expansion and refurbishment of Warkworth library.</p>

4.0 PROPOSED PLAN CHANGE COMMUNITY FACILITY AND OPEN SPACE PROVISION

In order to identify likely community facility requirements for the Snells Beach area, this report has considered the following:

- The Community Facilities Network Plan's guidelines for community facilities;
- Criteria for community facility locations;

- Provision metrics from the Open Space Provision Policy 2016;
- The existing network; and
- Actions identified in the network action plan.

4.1 ANALYSIS AND RECOMMENDATIONS – COMMUNITY FACILITIES

The area covered by the proposed Plan Change will provide for approximately 52 dwellings. Based on the relatively small number of additional households the Plan Change will generate and the quantum and range of community facilities within close proximity to the area, it is considered that the existing community facilities infrastructure in Snells Beach is sufficient to support the proposed population increase from this Plan Change.

4.2 ANALYSIS AND RECOMMENDATIONS – OPEN SPACE

Following the guidelines outlined in section 2.4 above, it is considered that no additional open spaces are required to be provided within the Plan Change area. This is due to the proposed reserve (Lot 53) and linkage to Goodall Reserve, and the proposed accessway linkage to the coastal walkway (Lot 54) is adequate. In addition, there are only a small number of additional dwellings that the plan change will provide for, and there is a generous provision of existing open space surrounding the plan change site.

4.3 OVERALL CONCLUSION

In relation to community facilities, overall it is considered that the existing community facility infrastructure in Snells Beach is sufficient to support the small number of additional dwellings and households under this Plan Change. It is considered that no additional community facilities are required as a result of this Plan Change, and the potential effects in relation to the social well-being of the future community is likely to be positive.

In relation to the open space network, overall it is considered that the existing open spaces in Snells Beach is sufficient to support the Plan Change and the small increase in additional dwellings that would occur. In addition, given the linkages the Plan Change can provide to the existing open spaces and reserve, it is concluded that no additional open spaces are required as a result of this Plan Change. The potential effects in relation to the social well-being of the future community is likely to be positive, as is the case for community facilities.

Figure 4 above, demonstrates the close proximity of the Plan Change site to existing community facilities and open spaces.

CULTURAL IMPACT ASSESSMENT FOR PROPOSED FOSTER CRESCENT PLAN CHANGE AND RESIDENTIAL SUBDIVISION

Prepared By

Fiona McKenzie
Pou Kaitiaki

Manuhiri Kaitiaki Charitable Trust



Table of Contents

1.0 Introduction	4
1.1 Cultural Background.....	4
1.2 Legislative Framework	6
1.3 Ngāti Manuhiri Settlement Trust	7
1.4 Purpose	7
1.5 Objective	8
1.6 Proposed Works.....	8
1.6.1 Access.....	8
1.6.2 Earthworks	8
1.6.3 Vegetation	9
1.6.4 Waterways	9
1.6.5 Sediment and Erosion Controls	9
1.6.6 Stormwater.....	9
1.6.7 Biodiversity.....	10
1.6.8 Archaeology	11
1.6.9 Utilities.....	11
2.0 Ngāti Manuhiri Cultural Impact Assessment Process.....	12
2.1 Cultural Values.....	12
2.2 Ngāti Manuhiri Cultural Footprint	12
2.2.1 Te Ao Māori (Māori World View).....	13
2.2.2 Kaitiakitanga.....	13
2.3 Methodology.....	14
3.0 Ngāti Manuhiri Association With Site	15
3.1 Physical Setting.....	15
3.2 Cultural Significance	16
4.0 Cultural Impact Assessment	19
4.1 Wāhi tapu	19
4.2 Taonga	19
4.3 Spiritual values	20
4.4 Wellbeing	20
5.0 Recommendations	21
6.0 Discovery Protocols	25
7.0 Confidentiality.....	26
8.0 Disclaimer	26

9.0 References 26

1.0 Introduction

This document provides a Mana Whenua Cultural Impact Assessment (CIA) on behalf of Ngāti Manuhiri with regard to the proposed Foster Crescent Plan Change and (if approved) subsequent residential subdivision in Snells Beach. This report was commissioned by the Barker & Associates on behalf of the applicant/developer Prime Properties Limited.

As part of this assessment, reports prepared for the plan change and provided for our reference at time of writing include an Executive Summary, Engineering, Geotechnical, Ecological, Traffic and Landscape reports as well as plans and drawings. These reports and plans have been reviewed.

1.1 Cultural Background

Ngāti Manuhiri are the descendants of the eponymous ancestor Manuhiri, the eldest son of the Rangatira and warrior chieftain Maki who, along with other tribal members, came from Kāwhia to live among their relatives, all descendants of the Tainui waka, who occupied the greater Tāmaki Makaurau area from the 14th Century. From this whakapapa Ngāti Manuhiri in their own right through Maki and his sons, have unbroken ties to their ancestral rohe. After migrating from Kāwhia in the early 17th Century, Maki and his people progressively settled in the southern Kaipara, Waitākere, Waitematā, on to Whenua roa o Kahu (North Shore), Albany up to Mahurangi districts including Pakiri, Matakana, Puhinui (Warkworth), and finally the offshore islands such as Hauturu o Toi/Little Barrier and Āotea/Great Barrier.

Ngāti Manuhiri made strategic marriages with other tribal groupings such as Ngāi Tāhuhu and Ngāti Wai among others, who occupied the eastern coastline and many of the offshore islands. Through these marriages Ngāti Manuhiri strengthened their links with the land, sea, and islands on the eastern coastline from Paepae o Tū (Bream Tail) to Te Raki Paewhenua (Takapuna area) and inland Kaipara areas.

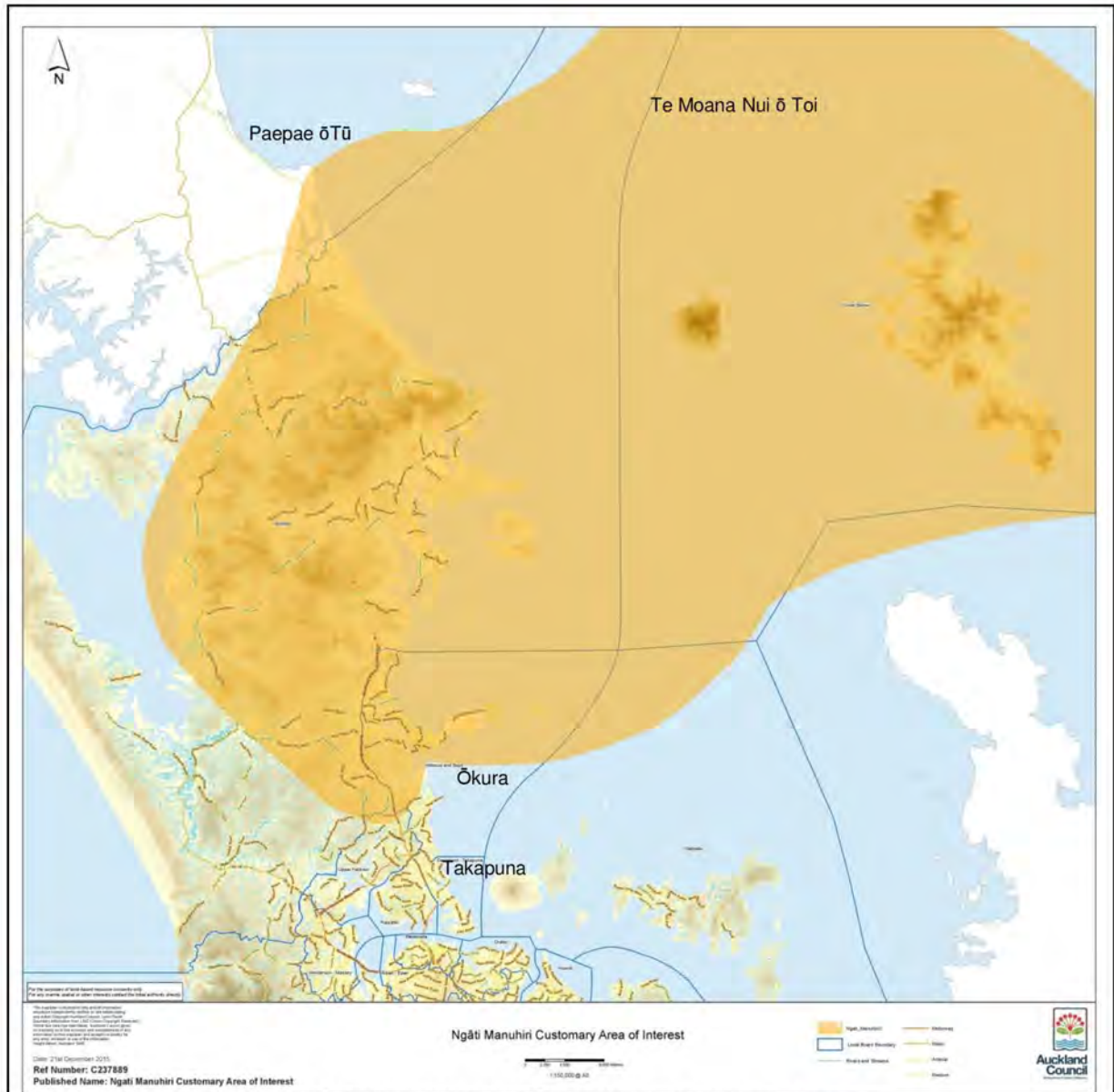


Figure 1: Statutory Ngāti Manuhiri Rohe (Area of Interest). Does not include ancestral domain.

Manuhiri, our Tupuna, has ancestral ties with his brothers Maraeariki, Ngawhetu and Tawhia Ki te Rangi but descent from Maki, his father, and Manuhiri himself is the basis of our mana today. Through the Ngāi Tahu and Te Uri o Katea descent, along with marriages, Ngāti Manuhiri developed intimate ties with the neighbouring iwi of Te Uri o Hau in the northwest. Ongoing strategic marriages also saw Ngāti Wai become an important relationship for Ngāti Manuhiri. Prior to the arrival of Europeans, Ngāti Manuhiri occupied all parts of their ancestral domain in a seasonal cycle of cultivation and resource gathering. While predominantly a coastal tribe because of the vast kaimoana resources available within Te Moana Nui o Toi, upper Waitematā, Mangawhai and Kaipara Harbours, other resources were routinely gathered from the

heavily forested interior, also occupied and utilised by Ngāti Manuhiri. These resources included food such as forest and wetland birds, freshwater fish and plants, but also medicines, weaving and building materials, as well as the vast kauri and other native trees valued for waka building. Specific areas within the forest interior are also immensely significant as they became sacred places, such as Te Ahiahi and Te Wahawaha. Ngāti Manuhiri frequently travelled to the Kaipara and west coast exchanging resources and strengthening their relationships with their whanaunga.

Ngāti Manuhiri maintain an unbroken connection with their rohe exercising their mana through manuhiritanga in the form of tribal, traditions, songs, place names, tupuna (ancestral rights), urupā (burial grounds) and kaitiakitanga (guardianship and management of cultural and natural resources).

1.2 Legislative Framework

Through the Waitangi Tribunal process, the Ngāti Manuhiri Claims Settlement Act 2012 came in to effect 19 November 2012. The act formally mandates and supports Ngāti Manuhiri as Mana Whenua for the rohe as outlined in the Deed of Settlement (Figure 1.). It recognised and apologised for breaches of the Treaty by the Crown - the actions of which have impacted negatively on the iwi for the past 150 years. The legislation provides statutory acknowledgement of statements by Ngāti Manuhiri regarding their particular cultural, spiritual, historical and traditional association, requiring the relevant authorities to have regard to the views of Ngāti Manuhiri in all matters affecting these areas.

The Resource Management Act (RMA) 1991 provides statutory recognition of the Treaty of Waitangi and the principles derived from the Treaty. It introduces the Māori resource management system via the recognition of kaitiakitanga and tino rangatiratanga and accords Territorial Local Authorities with the power to delegate authority to iwi over relevant resource management decisions. The Act contains over 30 sections, which require Councils to consider matters of importance to tangata whenua. Some of the most important of these are:

- The principles of the Treaty of Waitangi and their application to the management of resources (Section 8).
- Recognition and provision for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga (Section 6(e)).
- Having particular regard to the exercise of kaitiakitanga or the iwi's exercise of guardianship over resources (Section 7(a)).
- Having regard to any relevant planning document recognised by an iwi/hapū authority (Sections 61(2)(a)(ii), 66(2)(c)(ii), 74(2)(b)(ii)).
- The obligation to consult with iwi/hapū over consents, policies and plans. (Combination of all the sections above and Clause 3(1)(d) of Pt 1 of the first schedule of the RMA).

The Auckland Unitary Plan (AUP) further recognizes:

"Māori have a special relationship with natural and physical resources through whakapapa. Inherent in this relationship is kaitiakitanga which seeks to maintain the mauri of these resources, while allowing their use for social, cultural and economic well-being."

Also

"Development and expansion of Auckland has negatively impacted on Mana Whenua taonga, on customary rights and practices of Mana Whenua within their ancestral rohe. Further deterioration of taonga, sites and places of significance, and the values associated with cultural landscapes must be avoided. Degraded taonga and customary rights must be actively enhanced in order to restore the well-being and mana of those taonga, sites and places – and therefore the mana of the people. Mana Whenua participation in resource management decision-making, and the integration of mātauranga Māori and tikanga in resource management is of paramount importance to ensure a sustainable future for Mana Whenua and for Auckland as a whole".

1.3 Ngāti Manuhiri Settlement Trust

The post settlement interests of Ngāti Manuhiri are managed and administered by the Ngāti Manuhiri Settlement Trust. The central purpose of the Trust is to enhance the spiritual, cultural, social, and economic wellbeing of the iwi and to provide for the kaitiaki responsibilities of ensuring the restoration and maintenance of the sociocultural and natural environment. These goals form the basis of any meaningful consultation or engagement with Ngāti Manuhiri.

1.4 Purpose

This assessment of actual and potential impacts on cultural values and interests will assist Prime Properties Limited in meeting their obligations in a number of ways, including:

- having regard to the statutory acknowledgement of Ngāti Manuhiri as Mana Whenua for north-east Tāmaki Makaurau
- preparation of an Assessment of Environmental Effects (AEE) in accordance with s88(2)(b) and Schedule 4 of the Resource Management Act 1991 (RMA)
- requests for further information under s92 of the RMA in order to assess the application
- providing information to assist the council in determining notification status under ss95 to 95F of the RMA
- providing information to enable appropriate consideration of the relevant Part II matters when making a decision on an application for resource consent under s104 of the RMA
- consideration of appropriate conditions of resource consent under s108 of the RMA,

1.5 Objective

The objective of this CIA report is to provide Prime Properties Limited with insights into the potential cultural impacts associated with the proposed plan change and subsequent residential subdivision of the site, as far as can be ascertained, and recommendations as to how they might be considered and addressed.

1.6 Proposed Works

An overview of the proposed works as outlined by Barker & Associates is summarized below:

'Prime Properties Limited is applying to Auckland Council for a Plan Change to rezone Lot 1 DP 149776 (approximately 4.6Ha) from Residential - Large Lot Residential (11 lots) to Residential - Single House zone (additional 41 lots).

At the same time, resource consent is proposed to be lodged for a 52 lot subdivision in accordance with the Single House zone rules.'

1.6.1 Access

Access into the 52 lot subdivision would be via a road appending the end of the existing Foster Crescent. It is not known at this time whether this would be an extension of Foster Crescent or a 'new' road. Within the subdivision itself there would be a secondary loop (or linking) road. The main road will have footpaths on both sides while the link road (narrower) will only have a footpath on one side.

Pedestrian (and presumably cycle) access linking to the Te Whau Esplanade Reserve and Walkway, along the northern boundary would be gained via a utility reserve in the northeastern corner of the development.

1.6.2 Earthworks

A total volume of 19,000m³ of cut to fill earthworks is proposed for the bulk earthworks, installation of sediment controls, infrastructure and final stabilisation, to create the lot building platforms and roading network.

Soil from the swampy areas is not considered suitable for reuse on site, therefore approximately 1,050m³ excess cut has been allowed for disposal off site.

1.6.3 Vegetation

Existing vegetation on site primarily consists of grazed pasture with pockets of gorse (- from site visit grazing appears to have been halted with the grass now overgrown kikuyu or rank grass). Four small tōtara trees around the wetland are the only native plants of significance.

1.6.4 Waterways

Within the site itself there are 3 waterways all classified as ephemeral and in poor ecological condition. The 3 waterways meet in the northeastern (lowest) corner of the site, where approximately 30m of stream has then been classified as permanent. There is also a small, degraded wetland again with low ecological value. All ephemeral reaches and approximately 10m of permanent watercourse are proposed to be reclaimed.

Elsewhere on site are overland flowpaths (often 'fed' by drains from the neighbouring properties), a man-made pond for watering stock and 'boggy' areas. These areas are proposed to be reclaimed.

The Ecological Assessment recommends that the Plan Change ensures that the permanent section (below the confluence of the 3 waterways) as well as the wetland and its associated boggy areas are enhanced through restoration planting and protected through a covenant. There was also a requirement for a Weed Management and Planting Plan prior to earthworks commencing. The recommended enhancement would entail the restoration of approximately 40m of permanent watercourse and 110m² of wetland habitat, including the retention of the tōtara.

To the north the property abuts the Te Whau Esplanade reserve which is next to Dawson's Creek, a tributary of the Mahurangi River and Harbour – the receiving environments for runoff from this site.

1.6.5 Sediment and Erosion Controls

Erosion and sediment control and site stabilisation during the earthworks are proposed to be undertaken in accordance with the methodologies of Auckland Council's GD05. Controls will include a sediment pond, decanting earth bund, clean and dirty water diversion channels, stabilised entrance, staging and ground stabilising (i.e. reseeding and/or mulching).

1.6.6 Stormwater

The stormwater network is proposed to be designed generally in accordance with the Auckland Council's technical document TP10. It is considered that stormwater attenuation on this site is not

required as runoff from the site discharges directly into the Mahurangi Harbour and therefore there is no substantial increase in the risk of flooding or inundation of the surrounding properties from the creation of new impervious areas within the site.

Stormwater flows from both the roads and other impervious surfaces will be treated in one of two, Stormwater 360 stormfilter units to be installed within the utility reserve. It is understood the treated stormwater will discharge into a wetland before flowing to the Mahurangi Harbour (via Dawsons Creek).

1.6.7 Biodiversity

Given the lack of quality habitat to sustain native biodiversity on this site, very little was identified. No reptiles, fish or bats and the only birds seen were two exotic species. It is likely however that some native bird species do visit or utilize the site from time to time.

1.6.8 Archaeology

An archaeological assessment of the property was undertaken in late 2017. No archaeological sites of Māori origin were recorded for the site at that time, nor were any discovered or identified during the assessment. The likelihood of finding artifacts as the result of any physical works is considered to be low.

1.6.9 Utilities

Currently above ground powerlines cross the property in a north-south direction. These will have to be undergrounded for the development.

Watercare has (apparently) indicated that their reticulated water supply and wastewater systems have enough capacity for the additional residential lots to connect. Currently across the northeastern corner of the site, Watercare has an existing underground wastewater pipeline (rising main) that connects to a pumpstation just outside (east) of the property boundary.

It is assumed other services such as telecommunications are readily available.

2.0 Ngāti Manuhiri Cultural Impact Assessment Process

2.1 Cultural Values

Our cultural leaders are experienced in our whakapapa, history mātauranga and tikanga. We have leaders in all areas of environmental management, influencing stakeholders to protect Ngā Taonga tuku iho, providing guidance and inspiration for our people.

Ngā Tikanga – the values and principles which guide our role as kaitiaki, in environmental management:

- Manuhiritanga – our identity and uniqueness as Ngāti Manuhiri, upholding the mana of Ngāti Manuhiri
- Mana Motuhake – active leadership and decision making
- Kiatiakitanga – cultivating a sustainable healthy environment and healthy lifestyle for all people
- Kotahitanga – participating together; having open, honest and transparent communication; unity
- Whanaungatanga – through our whakapapa, our identity; knowing our matauranga Ngāti Manuhiri
- Manaakitanga – caring for the environment so that Ngāti Manuhiri can care for the people
- Sustainability – promoting use of environmentally friendly and sustainable practices and materials
- Principle of enhancement – restoration of degraded sites
- Long-term cultural wellbeing – a healthy environment for future generations
- Kí uta, ki tai (mountains to sea) – holistic integrated catchment management

2.2 Ngāti Manuhiri Cultural Footprint

Our uniqueness and identity as Ngāti Manuhiri is expressed in all the things that we do, that we can see, touch and hear. Our cultural footprint is underpinned by Manuhiritanga and how we express that through our tikanga and kawa.

One of our responsibilities and obligations as Mana Whenua Kaitiaki is to actively protect and enhance Ngā Taonga for the use and benefit of future generations as acknowledged in our governance and management protocols.

The role and responsibilities of Mana Whenua kaitiaki in contemporary cultural and natural resource management includes, but is not limited to:

- Protection and maintenance of wāhi tapu and other heritage sites

- Protection of taonga
- Placing of rahui (temporary ritual prohibition) to allow replenishment of harvested resources
- Restoration of damaged ecosystems
- Protection of sensitive environments
- Directing development in ways which are in keeping with the environment
- Ensuring the sustainable use of resources
- Observing the tikanga associated with traditional activities
- Providing for the needs of present and future generations

2.2.1 Te Ao Māori (Māori World View)

Māori traditionally believe that the forests, the waters, and all the life supported by them, together with natural phenomena such as mist, wind and rocks, possess a mauri or life force (Marsden, 1992).

Mauri is the life energy force or unique life essence that gives being and form to all things in the universe. All elements of the natural environment, including people, possess mauri and all forms of life are related. This interconnectedness of all things means that the wellbeing of any part of the environment will directly impact on the wellbeing of the people. The primary objective of Māori environmental management is to protect mauri from desecration and to maintain and restore the integrity of mauri and thus the interconnectedness of all forms of life.

Sustaining the mauri of taonga (treasure) whether a resource, species or place, is central to the exercise of kaitiakitanga. Tikanga (custom, protocol) has emerged around this duty bringing with it mātauranga, (knowledge, wisdom) or intimate knowledge and understanding about local environments, and a set of rules that guide our way of life, both spiritual and secular.

Mātauranga Māori (Māori knowledge) is dynamic and evolving, encompassing historical traditions as well as the aspirations of Tangata Whenua (indigenous people) for the provision of services for future generations. The protection of indigenous flora and fauna species as taonga species is important to the Kaitiaki role of Tangata Whenua.

2.2.2 Kaitiakitanga

The people of Ngāti Manuhiri have an obligation and responsibility to guard, protect and maintain the interests and associations of all aspects relating to the wellbeing of the iwi. In Te Ao Māori knowledge of the workings of the environment and the perception of humanity as part of the natural and spiritual world is expressed in the concept of mauri and Kaitiaki as described above. Practices have been

developed over many centuries to maintain the mauri of all parts of the world. Observing these practices involves the ethic and exercise of kaitiakitanga.

The root word is 'tiaki' which includes notions of guardianship, care, respect and wise management. The kaitiaki is the tribal guardian and can be spiritual or physical, human or non-human. The human kaitiaki must be a member of the local iwi holding customary authority of Mana Whenua or their appointed representative.

Expressing kaitiakitanga is an important way in which iwi maintain their Mana Whenua.

2.3 Methodology

This report is largely a desk top study, with oral kōrero provided by Manuhiri elders. An iwi representative attended a site visit on 16 August 2018. Satellite imagery, the Auckland Council's GIS and Cultural Heritage Inventory (CHI) database have been referenced. Historical material pertaining to Ngāti Manuhiri and the Snells Beach/Mahurangi area was obtained internally, however a full history of association is not offered here.

3.0 Ngāti Manuhiri Association With Site

3.1 Physical Setting

The Mahurangi Peninsula lies on the east coast approximately 70km north of Auckland City in the Rodney District. Predominantly rural it features two main urban areas being Snells Beach (pop. ~3,200) and Algies Bay (pop. ~ 900). The western edge of the peninsula is adjacent the Mahurangi River and Estuary, while the eastern coast adjoins Kawau Bay (Moanauriuri) and faces Te Kawau Tūmārō ō Toi (Kawau Island). The property proposed for the plan change and development is located adjacent the inner Mahurangi Harbour.

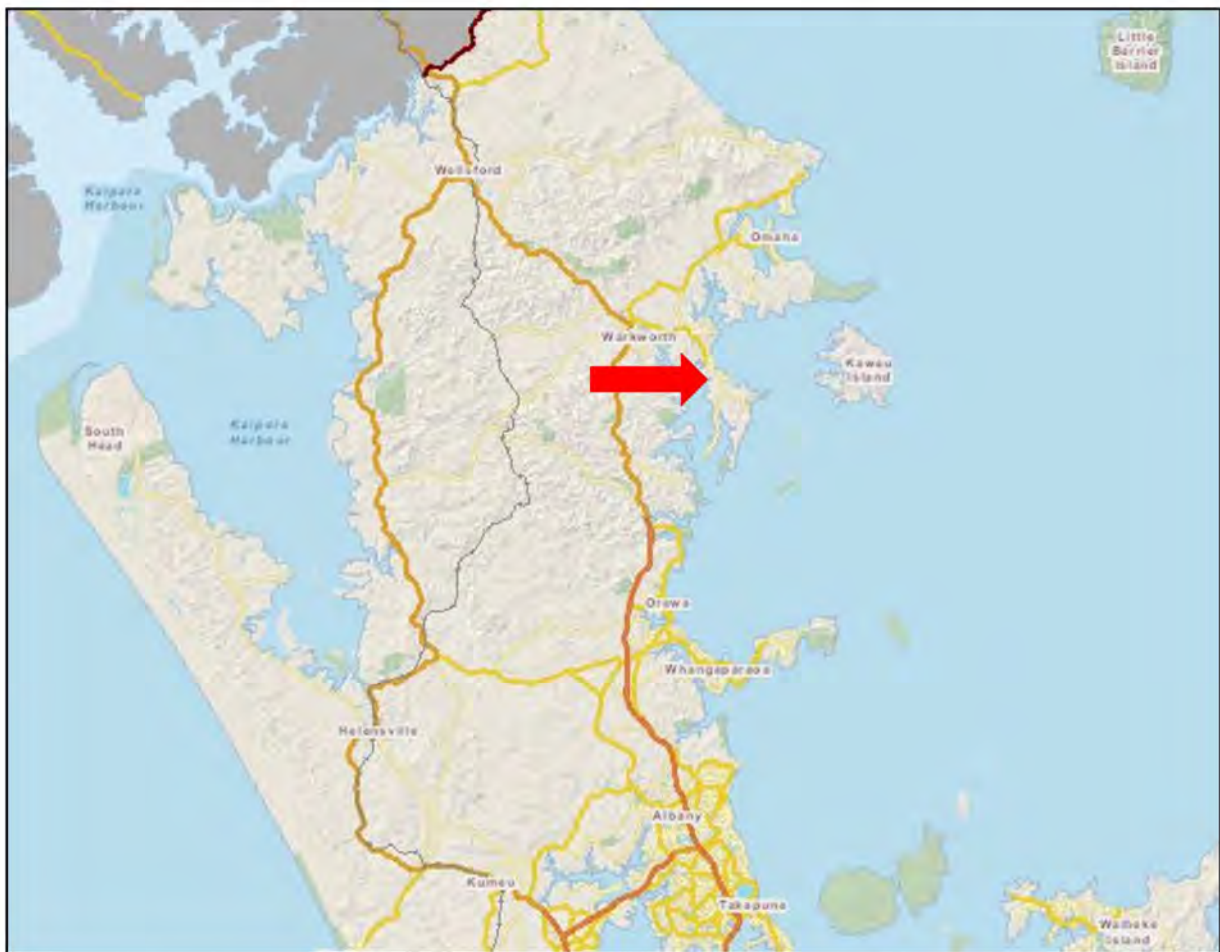


Figure 2: Map depicting approximate location of Foster Crescent (red arrow), Snells Beach, within the wider northeast Tāmaki Makaurau coastal region

3.2 Cultural Significance

As outlined previously, Ngāti Manuhiri links with the entire north east of Tāmaki Makaurau and eastern Kaipara date back to at least the 14th century. Ngāti Manuhiri maintained kāinga and pā throughout the rohe, with a focus on both coastlines. Pā were usually located in defensive, significant or strategic places and there were both permanent and temporary (seasonal) kāinga (settlements), particularly adjacent to sheltered waters or rivers. Rivers and streams were not only a source of fresh water and kai (food) but were the main highways inland to kāinga or cultivations and often the beginning of overland pathways. As previously stated, the entire rohe was occupied and utilised by Ngāti Manuhiri and their whanaunga (relations) for generations. This is evidenced by the large number of recorded archaeological sites of Māori origin (Figure 3) and traditional place names.

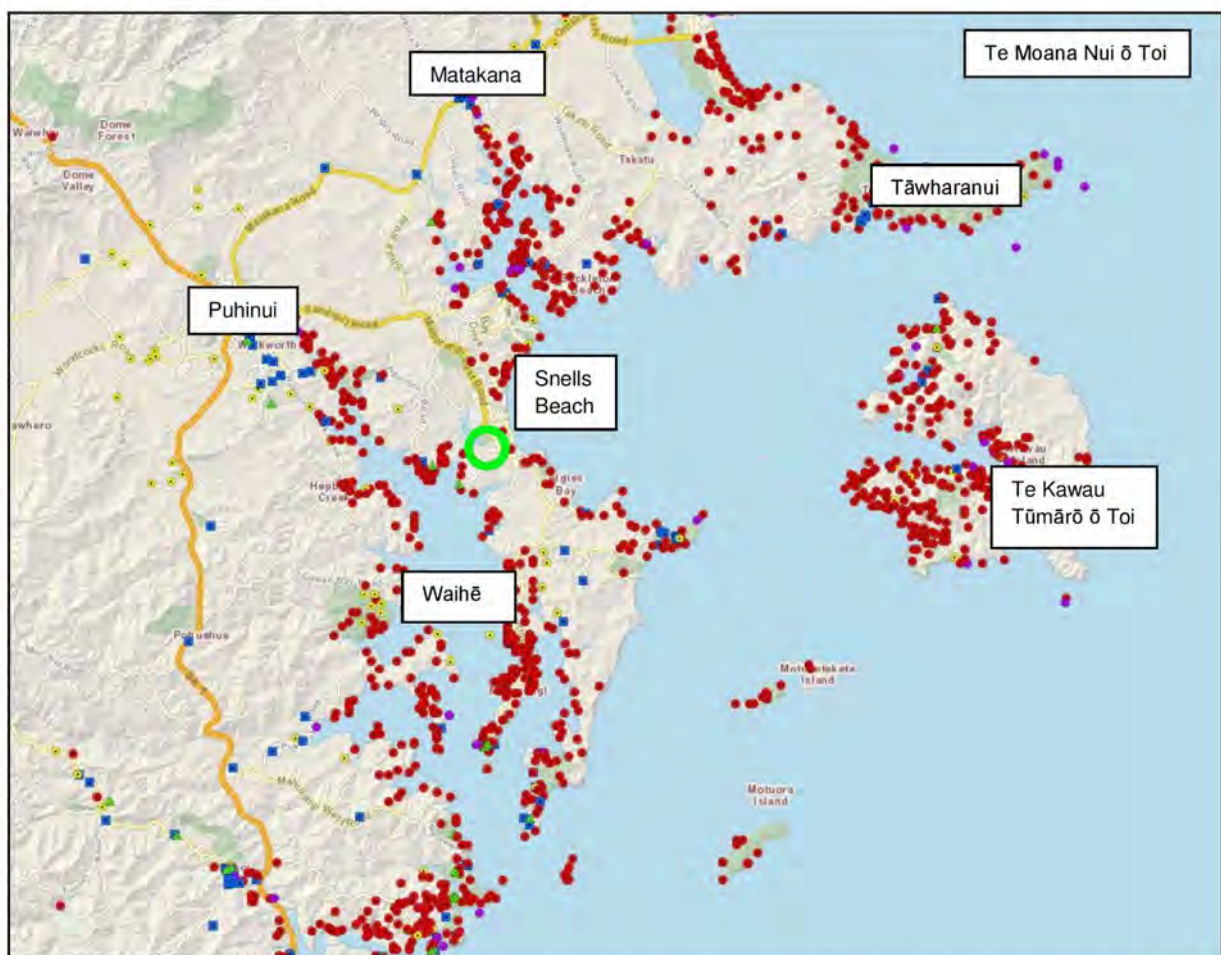


Figure 3: Map depicting location of recorded archaeological sites (red dots) around the wider Mahurangi area. Approximate development indicated with green circle.

It is notable that the majority of sites are dispersed around the coastal and riverine areas, which is in line with general pre- (and post-) European settlement patterns. There are fewer sites recorded further inland

and also within the heavily developed (urban) areas. The reasons for this apparent disparity may be attributed, in part at least, to; previous development activities that did not consider pre-European occupation; historic modification of the landscape by tree felling, horticulture and farming of heavy stock; and a lack of access and therefore archaeological recording within the forested interior rather than to a lack of occupation or activity within these locations. Thus, often what is recorded is merely representative of the actual number of sites and of the original occupation. Further, archaeological recording of sites does not/cannot capture esoteric or spiritual sites of significance to iwi.

The Mahurangi Peninsula is known to have been heavily occupied and utilised by Ngāti Manuhiri, and is evidenced by the multitude of recorded archaeological sites depicted in Figure 3 (Ngāti Manuhiri are aware of other currently unrecorded sites throughout the peninsula). Importantly, Manuhiri's father, Maki and his wife Rotu, occupied Te Korotangi Pā at the southern entrance to the harbour.

Generational occupation is also reflected by the numerous place names and landmarks that dominate the wider area e.g. Mahurangi (name taken from Motu Mahurangi, an island at the mouth of the Waiwera River - important in Ngāti Manuhiri traditions), Waihē (inner Mahurangi River), Motu Kororā (Saddle Island), the island pā of Maunganui (Casnell Island), Motu Kauri (Grant's Island), Puhinui (the waterfalls at Warkworth), and Pukapuka, a kāinga and now the site of a Cemetery which remains at the head of the harbour.

The traditional name for the harbour originates from the fact that its resources were jealously guarded and fought over down the generations, as recorded in the whakatauki;

Kō te iti ō Waihē, he puta kino nui – Even though Waihē (the disputed harbour) is not large, it has been the cause of great trouble.

This entire coastal region is associated with important tupuna, significant battles, kāinga, pā, wahi tapu, and rich resource gathering areas. Harbours, estuaries and rivers offered shelter, significant transport routes inland and food gathering areas, while the ridgelines of the forested interior were followed as walking tracks, with appropriate aspects utilised for gardening.

Snells Beach, mostly established on the eastern side of the peninsula, but growing, was protected by two pā, located at each end of the main beach (as was Algies Bay immediately to the south). It faces Te Kawau Tūmārō ō Toi (Kawau Island) across a stretch of water known as Moanauriuri. The tauranga mango (shark fishing grounds) of Moanauriuri were used by Ngāti Manuhiri and others to catch the school shark species known locally as muri. This important winter food source was desired by many iwi and became the cause of significant conflict. Recorded sites along the coastline include midden, pits, terraces, ovens and potentially remnant karaka groves that were cultivated.

To the north of Snells Beach is Te Awa Matakana (Matakana River) a river of major significance to Ngāti Manuhiri as a sub-regional boundary marker. The river provided an important inland route to kāinga

and cultivations located on the fertile country at the navigable head of the river. It also provided a wide range of food taken from both the fresh and salt water sections. The upper reaches were protected by several pā, including Pukematekeo, while the lower reaches and the adjoining harbour were protected by the headland pā (opposite Sandspit) known as Matakana – ‘the glowering eyes’. This pā, which is of considerable significance to Ngāti Manuhiri gives its name to the river, town and surrounding district. The 2012 Ngāti Manuhiri Claims Settlement Act recognised the iwi’s Statutory Acknowledgement of te Awa Matakana. The awa discharges into Te Moana Nui ō Toi (see below).

The area known today as Warkworth was once called Puhinui. The waterfalls at the head of the Mahurangi River, in the centre of town, are called the Puhinui Falls and are of particular significance to Ngāti Manuhiri. Further south of the Falls along the awa (river) are waka landing sites used by the people as they travelled inland from the coast.

Te Moana Nui ō Toi – the Great Sea of Toi. This is the name Ngāti Manuhiri use to describe the seas north and east of Whāngaparāoa. Named for the famous early Māori ancestor and voyager Toi Te Huatahi. This ocean area and its mauri, kaitiaki, biodiversity, seaways, islands and traditions lie at the heart of the identity of Ngāti Manuhiri. Tradition tells that Te Moana Nui ō Toi was a place of arrival for famous ancestral voyaging waka, a place intimately associated with the early ancestors of Ngāti Manuhiri, a place that is watched over by kaitiaki and a vast economic resource that was jealously guarded and desired over generations. Resources included sea mammals, fish, shellfish, seaweed and seabirds. School sharks locally known as muri, were an important winter food source, desired by many iwi and became the cause of significant conflict.

The impacts of post-European contact were devastating to Ngāti Manuhiri and included rewharewha (disease) and alienation of land from multiple illegal sales or confiscation events (including the controversial Mahurangi Purchase (1841) which encompassed land from Takapuna and north to Te Ārai, including Snells Beach) - without the knowledge of Ngāti Manuhiri - all of which was further compounded by significant losses in battle during the Musket Wars.

Today, Manuhiri’s traditional lands and Mana Whenua interests are protected and watched over by his living descendants, with the Ngāti Manuhiri Settlement Trust the entity mandated to represent, manage and protect these interests.

4.0 Cultural Impact Assessment

The CIA is largely a desktop study although a site visit was undertaken by a Ngāti Manuhiri representative in August 2018. This report documents Ngāti Manuhiri's cultural values, interests and associations with the site and its resources, and the potential impacts of the proposed activity on these from our perspective as Kaitiaki. Consideration of the proposal is made in regard to its impact upon Ngāti Manuhiri in the areas of wāhi tapu, taonga, spiritual values, and wellbeing.

Note: Any development, especially those involving cut or disturbance of the subsoil, has the potential to disturb archaeological materials and taonga. Under the Heritage New Zealand Pouhere Taonga Act (2014), any archaeological site or object, even if not previously recorded, is protected and it is prohibited to damage, modify, or destroy any such sites without an authority from Heritage New Zealand.

4.1 Wāhi tapu

Wāhi tapu may include pā sites, battlefields, burial grounds, significant historic iwi sites, canoe landings etc.

A search of the Auckland Council Cultural Heritage Inventory (CHI) and GIS Maps did not identify any recorded wāhi tapu sites/sites of significance or value to Mana Whenua specifically within the property boundaries. Given however the proximity of other recorded sites and the known intense occupation and use of the harbor to which this property is adjacent, we would highlight the potential for sites to be uncovered during any works.

4.2 Taonga

Taonga can refer to artifacts or parts thereof, objects, flora, fauna, water bodies, or people.

As for 4.1. While no physical cultural features are immediately apparent upon looking over the land, there is always potential for sub-surface taonga and sites of significance, especially when adjacent waterbodies.

Living taonga include plants, birds, reptiles and fish all of which are found in the area, although it is noted specifically for this site that natural habitats are seriously degraded. As Kaitiaki, Ngāti Manuhiri support all initiatives (e.g. avoidance, mitigation/enhancement planting) that will protect or enhance their continued presence and environment. This includes the ultimate receiving environments of Te Waihē and Te Moana Nui ō Toi.

4.3 Spiritual values

Spiritual values pertain to mauri (life force) and wairua (spiritual nature/forces/essences) of people, flora, fauna, land, bodies of water etc.

The significance of the harbour to Ngāti Manuhiri as a resource and transport route inland has already been stated. Te Waihē is also known to have a taniwha and Kaitiaki, known as Wāwaea. Historic land clearance and land use practices have resulted in large scale siltation of this awa, which impacts on both its mauri and wairua, including that of Wawaea.

The impacts affect the life force or life sustaining properties of the awa and the land, both in terms for the native biodiversity and water quality.

As Kaitiaki, Ngāti Manuhiri would see this mauri restored and enhanced rather than just mitigated.

4.4 Wellbeing

Wellbeing relates to the potential effects to the people of Ngāti Manuhiri by outside influences or events that affect their way of life or traditions.

On face value this project does little to directly enhance the wellbeing of Ngāti Manuhiri, other than this opportunity to express our concerns from a cultural perspective. Therefore, consideration, inclusion and implementation of our recommendations in this subdivision development project is appreciated.

Being Mana Whenua, Ngāti Manuhiri have kaitiakitanga (guardianship) obligations to fulfil. These obligations include the protection of our culture, heritage and taonga on behalf of past, present and future generations.

5.0 Recommendations

This CIA report considers the potential impacts of the proposed plan change and subsequent proposed subdivision development with its associated works at the property off Foster Crescent, Snells Beach, from a Ngāti Manuhiri cultural perspective.

The following recommendations for avoidance or mitigation of cultural impacts are provided as points of discussion between applicant Prime Properties Limited and Ngāti Manuhiri.

5.1 Ngāti Manuhiri are aware of the pressure the housing demand creates within Tāmaki Makaurau, which does not appear to be lessened in the Mahurangi region even given its distance from the CBD. The nearby settlement of Warkworth has been identified as a satellite town which will see population growth increase over the next 30 years from approximately 4-5,000 to 25-30,000. With an emphasis on creating local employment in the satellite towns, the attraction of this plan change, facilitating additional new homes close to jobs is obvious. In the context of Warkworth's predicted growth, this plan change is small in scale, however consideration needs to be given to cumulative impacts. Some of these concerns are outlined further in the points below. We request these concerns or recommendations are taken into consideration, discussed and implemented where possible/feasible.

- It is understood the original intention of the Large Lot Residential Zoning was to provide a visual transition from the dense urban housing of Snells Beach in the east to the largely rural aspect of the land to the west. As such the idea has merit as currently the urban density housing (off Fosters and Cornal Circle) ends very abruptly and sharply. Rezoning this site will simply move that urban density further west. We are aware that at the northern end of the site there is a buried Watercare Wastewater pipeline and further it is our understanding that such infrastructure cannot be built over. The current subdivision plan submitted shows 5 residential Lots over this pipe. It would be our preference if these Lots were removed from the Plan change and subdivision proposals and instead left as an extension to the proposed reserve. There are several advantages to this that would reduce cultural impacts:
 - Given these Lots are adjacent Dawson Creek (Mahurangi), leaving them undeveloped means that any undiscovered sub-surface taonga (which has a higher likelihood of being located near water) will remain undisturbed and protected
 - A larger reserve area provides the opportunity for the developer to 'enhance' the environment of the developed site, rather than just to 'mitigate' the works. Planting this expanded reserve with native fruiting and flowering trees will provide much more habitat for native biodiversity
 - The larger reserve area would be required to have a Weed and Pest control management plan. It is highly likely that native, cryptic wetland birds such as Banded

Rail and Australasian Bittern utilize the mangrove environment to the north of the site. A predator free/or controlled riparian reserve would provide a safe habitat for such birds.

- By leaving these Lots as reserve instead of developing means the northern end of the site would not require earthworks a) reducing the amount of sediment generated and b) providing an extra buffering zone for leeching sediment from the exposed soils during bulk earthworks
- The reduced number of Lots and larger reserve area would go some way toward providing the visual transitioning originally intended
- Fewer Lots will translate to fewer vehicles adding cumulative pressure onto the already congested Hill Street intersection in Warkworth
- Not building adjacent the foreshore future-proofs against sea level rise

Subdivision

5.2 All costs associated with any ceremonies, monitoring, reports, site visits and/or meetings attended by Ngāti Manuhiri representatives or the creation of any cultural structures, art or design, are to be met by the applicant.

5.3 While all archaeological sites, known and unknown, are afforded protection under the Heritage New Zealand Pouhere Taonga Act (2014), because of the potential for sub-surface taonga to be discovered during works, especially adjacent waterways, Ngāti Manuhiri request the following;

- We expect all contractors will be made aware of and adhere to Accidental Discovery Conditions. A Ngāti Manuhiri representative can present and/or review these with contractors at a pre-construction hui
- A Ngāti Manuhiri representative may be required to be present for all ground disturbing works adjacent the waterways. Applicant to keep Ngāti Manuhiri advised of the timing of these works
- If intact subsurface archaeological features or artifacts associated with Māori are exposed during any works, it will be necessary to cease works in the vicinity and representatives of Ngāti Manuhiri and the Heritage New Zealand should be notified immediately of the discovery (as outlined in section 6.0)
- If intact subsurface archaeological features or artifacts associated with Māori are exposed during works, Ngāti Manuhiri may wish to increase cultural monitoring to the remaining earthworks

- If any koiwi (human remains) should be exposed at any time, works should cease in the immediate vicinity and the police, Ngāti Manuhiri and the Heritage New Zealand should be contacted so that appropriate arrangements can be made (as outlined in section 6.0).

5.4 Maintaining a cut to fill balance within the same site is the preferred practice of Ngāti Manuhiri i.e. keeping the natural resources within the area where it has whakapapa (i.e. where it's from)

- It is understood that some of the swampy ground that will be cut is considered unsuitable for fill and will be taken off site. Ngāti Manuhiri request that the excess soil is deposited in a location as close as possible to the original site.

5.5 It is proposed that the erosion and sediment controls for the development will be designed in accordance with Auckland Council GD05;

- Ngāti Manuhiri request to be able to review and input into the detailed Erosion and Sediment Control Plan when available
- A Ngāti Manuhiri representative will require to visually inspect the sediment controls in place prior to bulk earthworks commencing.
- A sediment pond is proposed for receiving and treating runoff during earthworks. It is not stated whether or not the pond will be flocculated. The preference of Ngāti Manuhiri is that the contractors investigate the use an organic flocculant (e.g. HaloKlear), being more environmentally friendly, as opposed to the usual Polyaluminium Chloride (PAC)
- These requests stem not from rules or policy that require our waterways to be 'wadeable' or 'swimable' or to have so many ppm suspended solids (for example), but from our aspiration to see our waterways returned to a state that it is 'drinkable' and that freshwater food and other resources are both abundant and able to be harvested and eaten or utilized safely

5.6 It is understood that all stormwater from the subdivision will be treated through proprietary devices and a wetland before discharging into Dawson's Creek

- Ngāti Manuhiri are assuming that the devices and wetland are adequately sized to appropriately treat all runoff.

5.7 The manmade pond and ephemeral waterways are proposed to be infilled

- It is likely that tuna (eels) are resident within the stock pond at the very least. We request that fish are transferred out of these waterbodies prior to them being filled in.

5.8 It is our expectation that all re-vegetation will be of locally sourced, fruiting and flowering natives, appropriate for the riparian/esplanade environment.

- We assume all re-vegetation planting includes exotic weed removal
- We recommend that reptile-friendly plants are included to provide suitable habitat for native reptiles.
- Ngāti Manuhiri would appreciate being able to review and input into the Weed and Pest Management Plan

5.9 New buildings and associated infrastructure can contribute to good cultural and environmental outcomes through the use of sustainable, energy efficient materials and construction methods. Earthen, recycled or other sustainably sourced materials and careful design of natural lighting sources and heating, e.g. solar, can enhance the overall value of the project and site.

5.10 Ngāti Manuhiri welcome opportunities to reflect our cultural footprint as Mana Whenua and Kaitiaki via this development including but not limited to:

- Opportunities to name roads or reserves
- The commissioning of cultural art or design within the site

5.11 Ngāti Manuhiri request a formal written response to the above recommendations from the applicant.

6.0 Discovery Protocols

Protocol for the discovery of koiwi or taonga unearthed during construction operations

The term 'koiwi' here refers to human remains such as skeletal material, while 'taonga' means cultural artifacts such as implements, weapons or decorations traditionally and historically used by tangata whenua and includes parts or the remains thereof. Features such as pits, midden or terraces are afforded the same legal protection as other archaeological materials or taonga. Iwi play an important role as kaitiaki in the care and management of koiwi tangata/human skeletal remains and taonga following discovery. It is essential that iwi are notified at the earliest opportunity should any koiwi or taonga be unearthed during earthworks or other operations.

The following procedures should be adopted in the event that koiwi, archaeological features or taonga are discovered or are suspected to have been unearthed during construction activities:

- If koiwi, archaeological features, or taonga are exposed during development, earthworks should immediately cease in the vicinity. It is important that any remains or artifacts are left undisturbed or *in situ* once discovered.
- The Site Supervisor should take steps immediately to secure the area so that koiwi or taonga remain untouched and site access is restricted.
- The Site Supervisor will ensure that eating, drinking, and smoking in the immediate vicinity is prohibited.
- The Project Manager will notify
 - a) the New Zealand Police (in the case of koiwi/skeletal remains only)
 - b) Heritage New Zealand
 - c) Manuhiri Kaitiaki Charitable Trust
 - d) The Project Archaeologist (if applicable)
- Manuhiri Kaitiaki Charitable Trust will contact the appropriate kaumatua in order to guide and advise the parties involved as to the appropriate course of action. Any associated costs should be met by the developer.
- The Project Manager will ensure staff are available on site to guide police (as appropriate) and kaumatua to the site.
- In the case of koiwi, site access should be restricted to other parties until Police are satisfied the remains are not of forensic relevance.
- If the parties involved are satisfied that the koiwi or taonga are of Māori origin the kaumatua will decide how they are to be dealt with and will communicate this to

- the New Zealand Police and other parties are appropriate.
- Activity on the site will remain on hold until the Police (in the case of koiwi), the kaumatua and Heritage New Zealand have given approval for activity to recommence.
 - The Project Manager shall ensure that kaumatua have the opportunity to undertake karakia and other cultural ceremonies and activities at the site as may be considered appropriate in accordance with tikanga Māori (Māori customs and protocols).

7.0 Confidentiality

This report has been prepared for the particular brief given i.e. to inform applicant and Council. The data and opinions contained in it may not be used in any other context, shared with any other person or organization or for any other purposes without prior review and agreement with Ngāti Manuhiri.

8.0 Disclaimer

This report does not reflect the opinions, traditions or recorded history of any other iwi who express an interest in the Snells Beach region.

Should information in technical reports provided to Ngāti Manuhiri as reference material subsequently prove to be incorrect or inaccurate Ngāti Manuhiri should be informed immediately as this may result in the potential cultural impacts having to be reviewed.

9.0 References

Marsden, Māori. (1992). *God, Man and Universe*. King M. (ed) Te Ao Hurihuri. Reed Publishers. Auckland.

Murdoch, G. (2011). Ngāti Manuhiri – Mana Whenua, Mana Moana. Unpublished Report.

Ngāti Manuhiri and the Crown (2011). Deed of Settlement of Historical Claims

FOSTER CRESCENT, SNELLS BEACH – PROPOSED SUBDIVISION: ARCHAEOLOGICAL ASSESSMENT

Prepared for
Prime Property Group Ltd
OPC Creative Planning Solutions



October 2017

By

Charlotte Judge (MA Hons)

321 Forest Hill Rd,
Waiatarua, Auckland 0612
Telephone: (09) 8141946
Mobile 0274 850 059
www.clough.co.nz

Contents

Introduction	1
Project Background	1
Methodology	1
Historical Background	5
Maori Settlement	5
European Settlement	5
Archaeological Background	6
Historical Survey	10
Physical Environment	11
Field Assessment	13
Discussion and Conclusions	17
Summary of Results	17
Maori Cultural Values	17
Survey Limitations	17
Archaeological Value and Significance	17
Effects of the Proposal	18
Resource Management Act 1991 Requirements	18
Heritage New Zealand Pouhere Taonga Act 2014 Requirements	19
Conclusions	19
Recommendations	21
Bibliography	22

INTRODUCTION

Project Background

Prime Property Group Ltd is proposing the residential subdivision of the currently vacant lot at Foster Crescent, Snells Beach, Auckland (Figure 1, Figure 2). The legal description of the property is Lot 1 DP 149776. The proposal involves the subdivision of the 4.64ha property into 59 residential lots with associated roading and coastal access ways (Figure 3).

An archaeological assessment was commissioned by Prime Property Group Ltd and OPC Creative Planning Solutions Ltd to establish whether the proposed work is likely to impact on archaeological values. This report has been prepared as part of the required assessment of effects accompanying a resource consent application under the Resource Management Act 1991 (RMA) and to identify any requirements under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA). Recommendations are made in accordance with statutory requirements.

Methodology

The New Zealand Archaeological Association's (NZAA) site record database (ArchSite), Auckland Council's Cultural Heritage Inventory (CHI), Auckland Unitary Plan (AUP) schedules and the Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand Heritage List were searched to determine whether any archaeological or other historic heritage sites had been recorded on or in the immediate vicinity of the property. Literature and archaeological reports relevant to the area were consulted (see Bibliography). Early plans held at Land Information New Zealand (LINZ) and the Alexander Turnbull Library (ATL) were checked for information relating to past use of the property.

A visual inspection of the property was conducted on 8 October 2017. The ground surface was examined for evidence of former occupation (in the form of shell midden, depressions, terracing or other unusual formations within the landscape, or indications of 19th century European settlement remains). Exposed and disturbed soils were examined where encountered for evidence of earlier modification, and an understanding of the local stratigraphy. Subsurface testing with a probe and spade was carried out across the property to determine whether buried archaeological deposits could be identified or establish the nature of possible archaeological features. Particular attention was paid to the northern end of the property close to the tidal inlet and river bank where archaeological sites within the area are often found to be located. Photographs were taken to record the topography and features of interest.

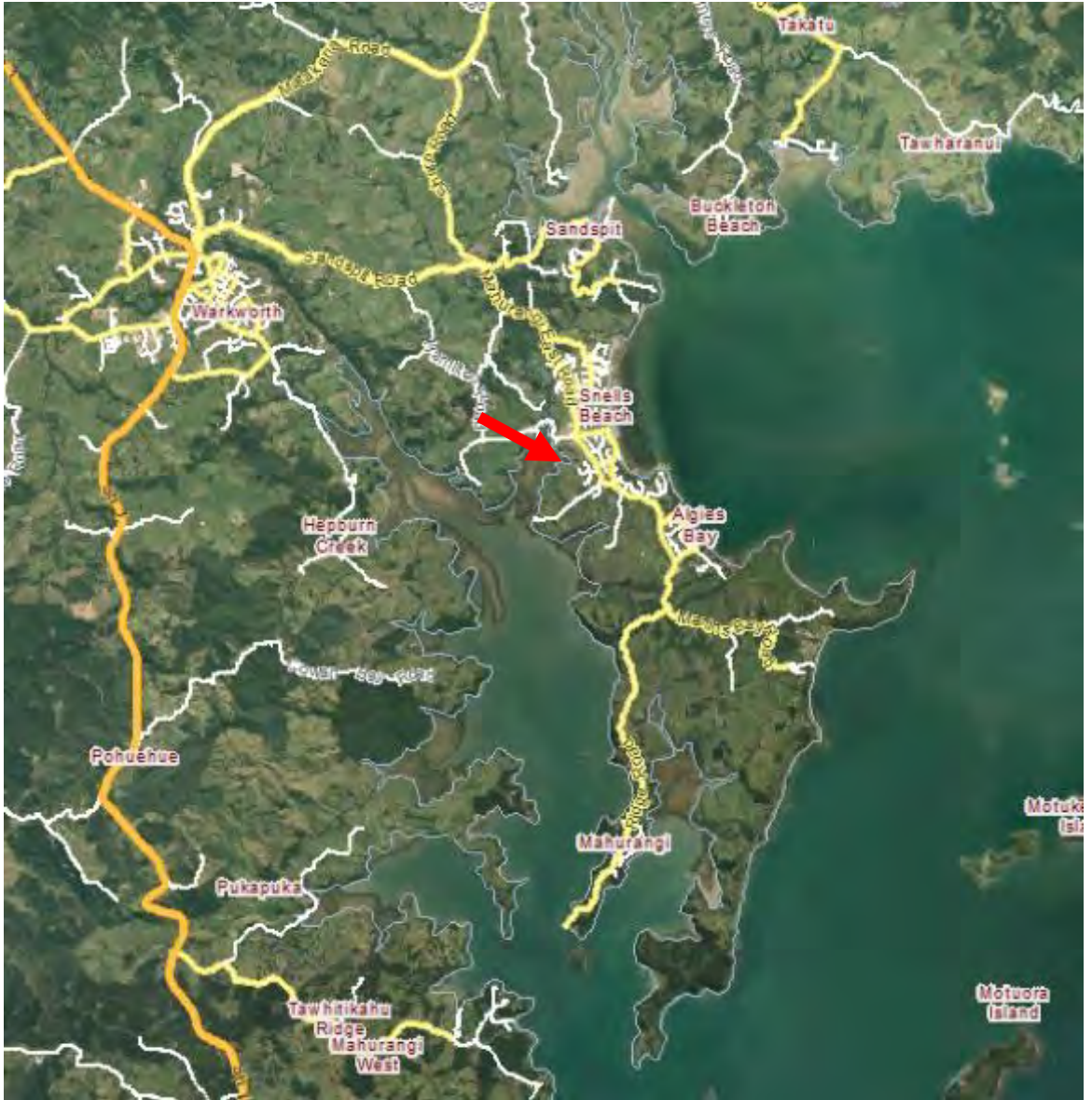


Figure 1. Aerial showing location of subject property (marked with arrow). Aerial source: Auckland Council GIS 2017

HISTORICAL BACKGROUND¹

Maori Settlement

The Mahurangi area has long been valued for its shark fishing grounds, control of which was the cause of much intertribal conflict. Shark meat was dried and kept as a winter food supply, while shark liver oil was mixed with pigments to produce paint. The inland forests provided bird and plant resources and were easily accessed via the Puhoi and Mahurangi rivers. Canoe travel along the coast and rivers and overland routes to the Kaipara Harbour provided good communication with other areas (ARC 2005). The main focus of settlement and agriculture focussed on the coastal areas of the peninsula, particularly to the south and along the south-western coast.

Snells Beach and Algies Bay on the eastern coast of the Mahurangi Peninsula clearly played defensive roles, looking out over Kawau Bay and The Hauraki Gulf. Pa were constructed on the headlands at the ends of the bays, with midden sites recorded within the bays.

European Settlement

The first European land purchase recorded in the area was a transaction completed (c.1838) between an American, William Webster, and the Hauraki iwi for 4,046 hectares between Point Rodney and Tawharanui for a price of £490, without the knowledge of Ngati Raupo, its former occupants (Murdoch 1991:7). Subsequently, in 1841, the Crown negotiated the 'Omaha and Mahurangi Purchase', an extensive tract of land that included the entire coastline between Pakiri and Takapuna. However, as the purchase was carried out between the Crown and tribes of the Hauraki without consulting Ngati Raupo, Ngati Rongo and Ngati Manuhiri, occupiers of the coastline immediately to the north, the transaction was not completed for a further 13 years (Murdoch 1991:7). Te Hemara Tauhia and his people continued to occupy their lands in the meantime.

After the Omaha and Mahurangi Purchase was finalised in 1853 European settlement of the Mahurangi area proceeded fairly rapidly. The earliest European settlement in the Mahurangi (and in the Auckland region) dates back to 1832, when a spar station was established by Gordon Browne for Captain Ranulph Dacre on the Pukapuka Peninsula on the western side of the Mahurangi River. Browne had obtained cutting rights from Hauraki Maori and employed many Maori labourers. The venture ended in 1834 when Captain Sadler arrived on HMS *Buffalo*, having obtained permission from the Ngapuhi chief Titore to take spars for the navy, and took over the supply of trees and the work force. Logging continued around the harbour and in 1844 the first sawmill was established at Warkworth by John Brown. After the foreshore area had been cleared, logging extended inland, continuing until the late 1930s, by which time all the kauri had been logged. (ARC 2005).

Other early industries included shipbuilding, which flourished from c.1849 until 1880. At least 75 vessels were built in the Mahurangi area in this 30 year period. Lime kilns producing quicklime for mortar were established on the Mahurangi River by 1850, and the Wilson's cement works was established at Warkworth in 1872, producing the first Portland cement in the country by 1885. Farms progressively replaced kauri forest. (ARC 2005).

¹ Adapted from Farley & Clough 2008.

ARCHAEOLOGICAL BACKGROUND

Kawau Bay, the Mahurangi Harbour and Matakana River were shark breeding grounds and traditional fishing areas visited by many whanau/hapu during the summer months. Many temporary encampments were established around the bays and inlets taking advantage of these rich fishing grounds – hence the concentration of midden sites around the coastal margins (Figure 4). Produce was gathered and processed in volume – preserving supplies for the winter. Occasionally, small gardens were planted in advance of the fishing season (Farley & Clough 2008).

Previous archaeological surveys undertaken close to the current survey area have included assessments for proposed subdivisions and developments, civil works and Council initiated coastal surveys. The earliest extensive site recording between Snells Beach and Algies Bay on the eastern side of the peninsula was undertaken by Walton in 1976. A total of 38 sites were located within the coastal margins of this area, predominantly comprising isolated shell midden deposits, with one pa, a cultivation area and one pit site also noted (Walton 1976).

A large scale survey for an extensive proposed subdivision at the end of Goodall Road on the western side of the peninsula was undertaken by Foster in 1999. The assessment located six archaeological sites, all of which were located within c.200m of the coast. No sites were located further inland within the study area (Foster 1999).

In 2004/05 an extensive coastal survey of the Mahurangi Harbour was undertaken by Judge for the former Auckland Regional Council (Brassey 2010). This survey resulted in the recording of numerous previously unrecorded archaeological sites related to both pre-European Maori and early European settlement of the coastal Mahurangi area.

In 2007 Clough & Associates undertook an assessment of the proposed new primary school on Dawson Road, Snells Beach (Judge & Clough 2007). No archaeological sites were identified.

In 2013 Clough & Associates undertook a survey for a proposed new watermain riser along Mahurangi East Road, Brigitte View and Dawson Road. No archaeological sites were located (Judge 2013).

In 2014 Clough & Associates undertook a survey of the proposed Snells Beach to Algies Bay replacement wastewater line (Judge 2015). The assessment ran from the wastewater treatment plant in the north, crossing through the northern end of the Te Whau Esplanade Reserve and along the western edge of the subject property, continuing south to culminate south of Algies Bay.

An assessment of Te Whau Esplanade Reserve was first undertaken by CFG Heritage Ltd in 2013 (Harris 2013). The assessment relocated two previously recorded coastal shell midden sites R09/1080 and R09/1081. The sites had originally been recorded during the 2004/5 survey of the Mahurangi Harbour (CHI site records). The Reserve was again surveyed by Clough & Associates in 2015 (Judge 2015b). In addition to the previously recorded sites, a further three coastal shell midden deposits were identified. Monitoring works undertaken for the project under Heritage NZ Authority No. 2015/1079 resulted in the modification of three of the recorded sites. No additional features were exposed as a result of the works and the midden deposits were interpreted as short term seasonal encampments along the banks of the Mahurangi River (Judge 2017).

Few excavations of pre-European Maori sites have previously been undertaken within the general area. In 2006, Clough & Associates undertook the investigation of a shell midden site (R09/152) located at Algies Bay on the eastern shores of the Mahurangi Peninsula (Farley and Clough 2008). The site was found to comprise a scatter of shell with three associated hangi and a posthole and limited artefacts including obsidian flakes and chert located on a natural terrace. The remains identified indicated a short term settlement site located on the natural terrace overlooking the bay. There was no indication of long term settlement in the form of food storage pits or house floors. Shellfish comprised predominantly cockle and pipi. The midden also contained a small amount of snapper and mackerel bones, indicative of fishing. The site was thought to have originally been more extensive; however, post depositional modification, mainly the result of farming activities, was likely to have modified the site.

Also in 2006, Clough & Associates undertook the investigation of two shell midden sites at Whisper Cove, Snells Beach. The investigations showed patches of shell midden with no associated occupation features, once again indicating that these were likely to have been the remains of temporary fishing encampments (Farley & Clough 2007).

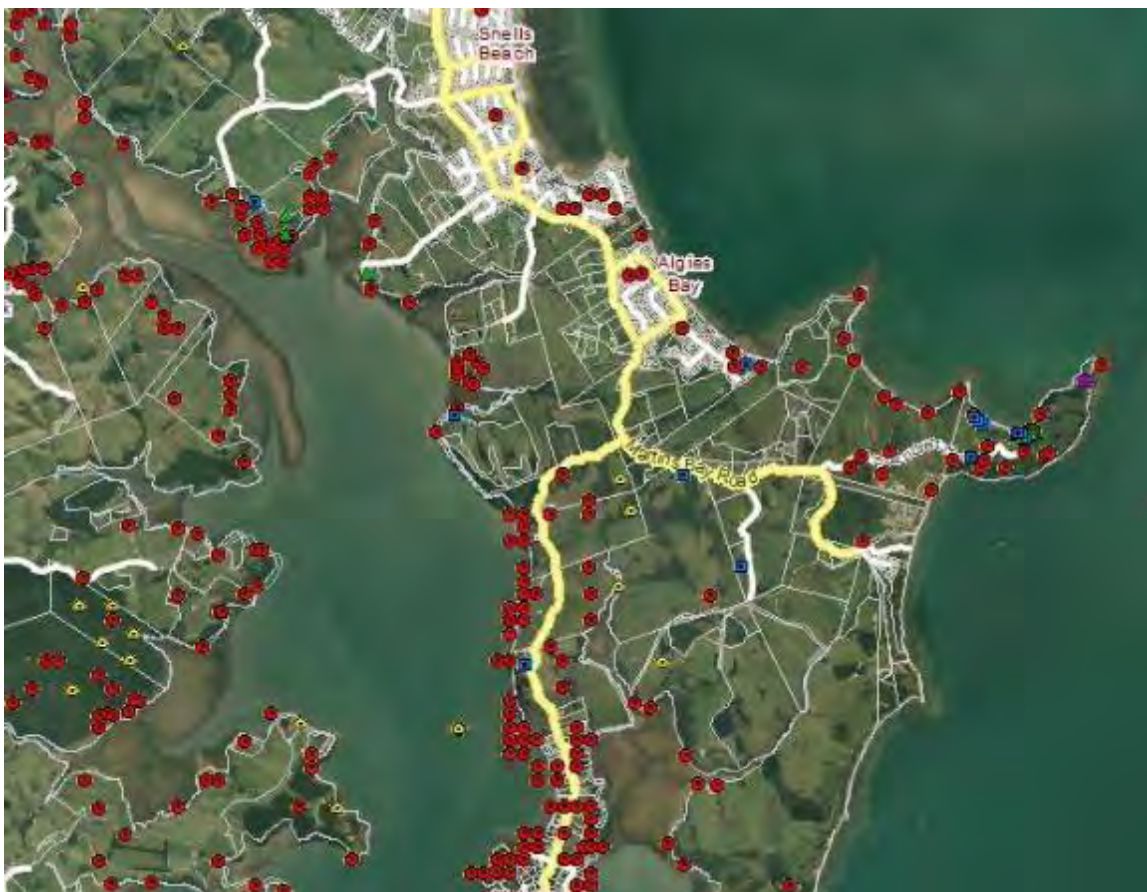


Figure 4. Aerial map showing distribution of recorded archaeological and heritage sites within the general project area. Source: Auckland Council GIS 2017

No archaeological sites have previously been recorded within the bounds of the subject property. The closest recorded archaeological sites comprise shell midden deposits identified within the Te Whau Esplanade Reserve (Figure 5, Figure 6), the closest of which is located c.200m to the west (Figure 6).

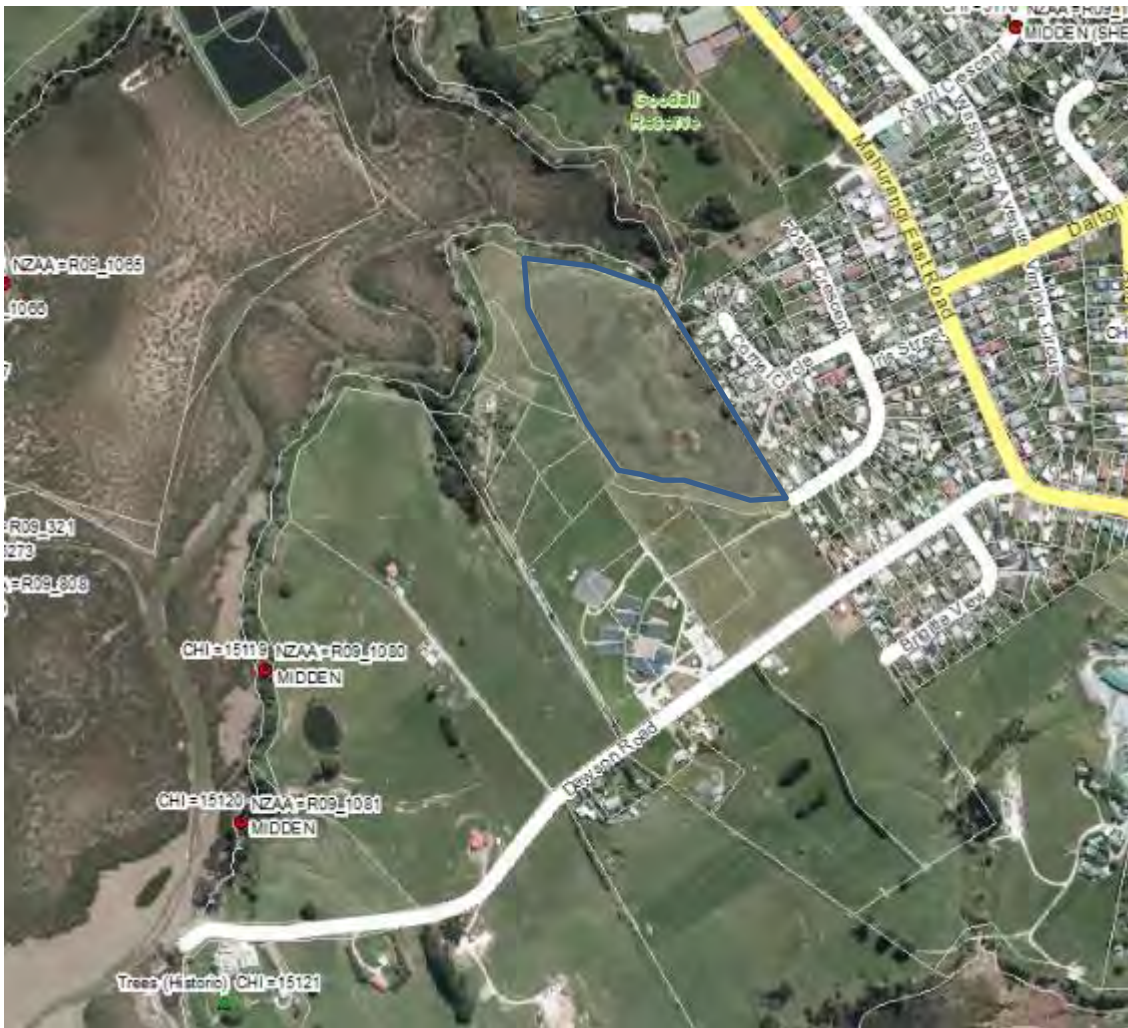


Figure 5. Aerial showing distribution of archaeological sites (red dots) recorded within the Auckland Council CHI 2017 in relation to the subject property (outlined)



Figure 6. Map showing distribution of archaeological sites recorded within the NZAA site recording scheme within general proximity to the subject property (outlined). Source: Archsite 2017

HISTORICAL SURVEY

Detail from the 1928 Geological Map of Mahurangi and Kawau Survey Districts shows a number of historic farm settlements across the Mahurangi Peninsula (Figure 7). No buildings or other features are recorded within the area of the subject property.

No other information relevant information relating to early land use on the property was noted in a search of early survey plans.

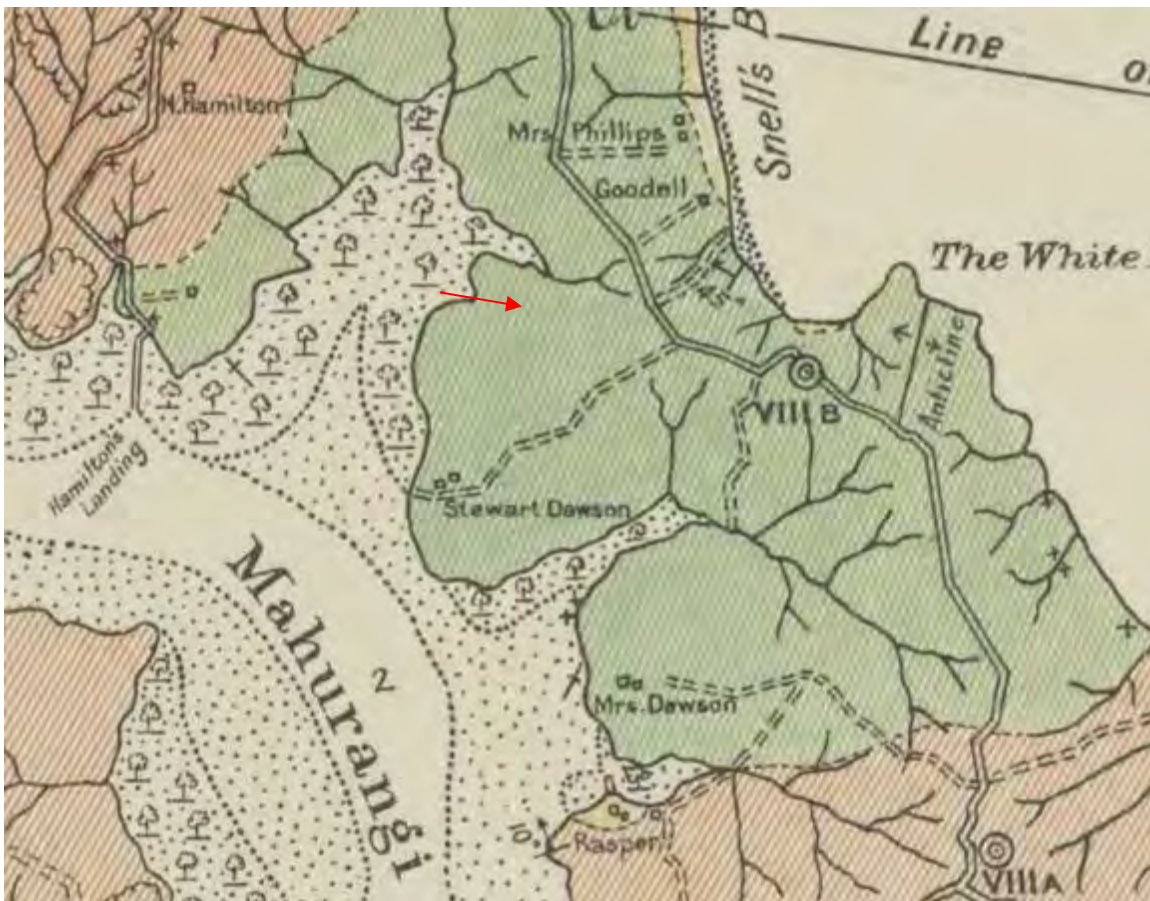


Figure 7. Detail of Geological Map of Mahurangi and Kawau Survey Districts drawn by G.E. Harris and J.E. Hannah 1928, with location of subject property indicated. Source: Alexander Turnbull Library

PHYSICAL ENVIRONMENT

The property covers a gently sloping and hummocky section of land located on the southern side of an inlet that runs into the eastern shores of the Mahurangi Harbour (Figure 8). The inlet is very shallow, comprising exposed mud and mangroves outside of high tide. The property is currently in rough pasture and appears previously to have been grazed by cattle. Areas of waterlogged swampy land were identified towards the eastern edge of the property where overland flow paths culminate.

A line of electricity pylons crosses the property in a south–north direction. The installation of these would have caused modification within the area of works, as has long term farming of the area.



Figure 8. Aerial map showing the contours of the property as well as overland flow paths (shown in blue). The legal boundaries of the subject property are outlined in red. Map source: Auckland Council GIS 2017

The underlying geology of the area comprises rocks of the Mangakahia Complex which are typified by ‘soft, poorly exposed and structurally complex rocks’ (Edbrooke 2001).

The soils are of the Albic Ultic type which are described as being ‘strongly weathered soils that have a well-structured, clay enriched subsoil horizon’. These soils are poorly drained and prone to livestock treading damage and erosion. They are also described as being strongly acidic with low nutrient reserves (Landcare Research 2017). This type of soil

would have proved unsuitable for the cultivation of Maori crops such as kumara, which typically require more free draining soils with greater nutrient content – although soil additives could be used (Furey 2006).

FIELD ASSESSMENT

Probing and test pitting were undertaken across the property to determine if subsurface archaeological remains could be identified. Access was good for the purpose of this assessment over most areas, although dense kikuyu grass across parts of the property and gorse growth at the far northern end limited surface visibility and access to a minor degree.

The property was found to be covered in rough pasture (Figure 9, Figure 10). Areas of waterlogged, swampy ground were identified around the overland water flow channels along the southern edge of the property (Figure 11). Test pitting and examination of exposed soils across the property showed a soil profile comprising a mixed pale grey clay soil to a depth of c.20-25cm overlying the sterile clay subsoil (Figure 12 - Figure 14).

No archaeological remains were identified within the bounds of the subject property as a result of the current assessment.



Figure 9. Looking north over the subject property from Foster Crescent



Figure 10. Looking north over property



Figure 11. Waterlogged overland flow paths down eastern side of property



Figure 12. Exposed pale grey clay soils along wheel ruts



Figure 13. Typical results of test pitting



Figure 14. Exposed soils evident along northern boundary of property

DISCUSSION AND CONCLUSIONS

Summary of Results

The property is located within the upper reaches of an inlet on the eastern side of the Mahurangi Harbour. No archaeological sites have previously been recorded within the bounds of the subject property, nor were any identified as a result of the current assessment.

Maori Cultural Values

This is an assessment of effects on archaeological values and does not include an assessment of effects on Maori cultural values. Such assessments should only be made by the tangata whenua. Maori cultural concerns may encompass a wider range of values than those associated with archaeological sites.

The historical association of the general area with the tangata whenua is evident from the recorded sites, traditional histories and known Maori place names.

Survey Limitations

It should be noted that archaeological survey techniques (based on visual inspection and minor sub-surface testing) cannot necessarily identify all sub-surface archaeological features, or detect wahi tapu and other sites of traditional significance to Maori, especially where these have no physical remains.

Archaeological Value and Significance

The proposed area of works is located within the broader landscape of pre-European Maori and early European settlement of the Mahurangi River and Harbour. The majority of sites related to pre-European Maori occupation tend to be located along the coastal margins and river banks, with the vast majority relating to temporary encampments that were established around the bays and inlets of the harbour and up the navigable section of the Mahurangi River (as far as present day Warkworth) to take advantage of the rich fishing grounds and river access into the interior of the Mahurangi area. Sites indicating more permanent settlement along the banks of the river comprise pit, terrace and pa sites recorded within Duck Creek Scenic Reserve and Dunning Scenic Reserve. Additional pa and pit/terrace sites are located on the prominent headlands on the shores of the Mahurangi Harbour.

Extensive farms developed from the mid-1800s have resulted in damage to and probably the destruction of many of the sites within the general area, as has infrastructure and housing development, coastal erosion and tree removal and planting. However, many coastal and riverside shell midden sites have been identified within the wider area.

The subject property is located adjacent to an inlet on the eastern side of the Mahurangi Harbour within an area where recorded archaeological sites become scarcer. No archaeological sites have been identified within the subject property. The subject property therefore has no known archaeological value or significance.

Effects of the Proposal

The proposed subdivision will have no known effects on archaeological values as no archaeological sites were identified as a result of the current assessment.

In any area where archaeological sites have been recorded in the general vicinity it is possible that unrecorded subsurface remains may be exposed during development. While it is considered unlikely in this situation due to the results of the current assessment, the possibility can be provided for by putting procedures in place ensuring that the Council and Heritage NZ are contacted should this occur, or by obtaining an archaeological authority from Heritage NZ in advance of works (see below).

Archaeological features and remains can take the form of burnt and fire cracked stones, charcoal, rubbish heaps including shell, bone and/or 19th century glass and crockery, ditches, banks, pits, old building foundations, artefacts of Maori and early European origin or human burials. In this location shell midden relating to Maori occupation would be the most likely subsurface archaeological remains.

Resource Management Act 1991 Requirements

Section 6 of the RMA recognises as matters of national importance: ‘the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga’ (S6(e)); and ‘the protection of historic heritage from inappropriate subdivision, use, and development’ (S6(f)).

All persons exercising functions and powers under the RMA are required under Section 6 to recognise and provide for these matters of national importance when ‘managing the use, development and protection of natural and physical resources’. There is a duty to avoid, remedy, or mitigate any adverse effects on the environment arising from an activity (S17), including historic heritage.

Historic heritage is defined (S2) as ‘those natural and physical resources that contribute to an understanding and appreciation of New Zealand’s history and cultures, deriving from any of the following qualities: (i) archaeological; (ii) architectural; (iii) cultural; (iv) historic; (v) scientific; (vi) technological’. Historic heritage includes: ‘(i) historic sites, structures, places, and areas; (ii) archaeological sites; (iii) sites of significance to Maori, including wahi tapu; (iv) surroundings associated with the natural and physical resources’.

Regional, district and local plans contain sections that help to identify, protect and manage archaeological and other heritage sites. The plans are prepared under the rules of the RMA. The Auckland Unitary Plan Operative in Part is relevant to the proposed activity.

There are no scheduled historic heritage sites located on the property. This assessment has established that the proposed activity will have no effect on any known archaeological remains, and has little potential to affect unrecorded subsurface remains. If resource consent is granted, consent conditions relating to archaeological monitoring or protection would therefore not be required. However, if suspected archaeological remains are exposed during subdivision development works, the Accidental Discovery Rule (E12.6.1) set out in the Auckland Unitary Plan Operative in Part must be complied with. Under the Accidental Discovery Rule works must cease within 20m of the discovery and the Council, Heritage NZ, Mana Whenua and (in the case of human remains) NZ Police must be informed. The Rule would no longer apply if an Authority from Heritage NZ was in place, with the exception of significant post-1900 remains not covered by the Authority.

Heritage New Zealand Pouhere Taonga Act 2014 Requirements

In addition to any requirements under the RMA, the HNZPTA protects all archaeological sites whether recorded or not, and they may not be damaged or destroyed unless an Authority to modify an archaeological site has been issued by Heritage NZ (Section 42).

An archaeological site is defined by the HNZPTA Section 6 as follows:

‘**archaeological site** means, subject to section 42(3), –

(a) any place in New Zealand, including any building or structure (or part of a building or structure) that –

(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(b) includes a site for which a declaration is made under section 43(1)’

Authorities to modify archaeological sites can be applied for either in respect to archaeological sites within a specified area of land (Section 44(a)), or to modify a specific archaeological site where the effects will be no more than minor (Section 44(b)), or for the purpose of conducting a scientific investigation (Section 44(c)). Applications that relate to sites of Maori interest require consultation with (and in the case of scientific investigations the consent of) the appropriate iwi or hapu and are subject to the recommendations of the Maori Heritage Council of Heritage NZ. In addition, an application may be made to carry out an exploratory investigation of any site or locality under Section 56, to confirm the presence, extent and nature of a site or suspected site.

While no known archaeological sites will be affected by the proposed works, there is some, but limited potential for unidentified subsurface archaeological remains to be exposed during development. If archaeological sites should be exposed during earthworks and cannot be avoided, an Authority will be required before works that affect the site can proceed.

Alternatively, to avoid any delays should unidentified subsurface features be exposed, consideration should be given to applying for an authority under Section 44(a) of the HNZPTA to cover all works undertaken for this project, as a precaution. This should be obtained before any earthworks are carried out. The conditions of the authority are likely to include archaeological monitoring of preliminary earthworks, and procedures for recording any archaeological evidence before it is modified or destroyed. This approach would have the advantage of allowing any archaeology uncovered during the development of the property to be dealt with immediately, avoiding delays while an Authority is applied for and processed.

Conclusions

No archaeological sites have previously been recorded within close proximity to the proposed subdivision at Foster Crescent, Snells Beach, nor were any identified as a result of the current assessment. While there is some potential to expose unidentified subsurface archaeological remains during earthworks, this potential is considered to be low.

As no known archaeological sites will be affected by the proposed works, an archaeological Authority under HNZPTA is not a requirement. However, if suspected archaeological sites should be exposed during earthworks the Accidental Discovery Rule in the Auckland Unitary Plan will apply, requiring works to cease in the immediate vicinity while the appropriate authorities are notified, and an Authority may have to be obtained before works can proceed. Alternatively, an archaeological authority under the Heritage NZ Pouhere Taonga Act 2014 could be considered in advance of works as a precaution if time frames are tight.

RECOMMENDATIONS

- There should be no constraints on the proposed subdivision on archaeological grounds, since no archaeological sites are known to be present and it is considered unlikely that any will be exposed during development.
- If subsurface archaeological evidence should be unearthed during construction (e.g. intact shell midden, hangi, storage pits relating to Maori occupation, or cobbled floors, brick or stone foundation, and rubbish pits relating to 19th century European occupation), or if human remains should be discovered, the Accidental Discovery Rule (section E.12.6.1 of the AUP) must be followed. This requires that work ceases within 20m of the discovery and notification to the Auckland Council, Heritage NZ, Mana Whenua and (in the case of human remains) the NZ Police, who will determine the actions required.
- If modification of an archaeological site does become necessary, an Authority must be applied for under Section 44(a) of the HNZPTA and granted prior to any further work being carried out that will affect the site. (*Note that this is a legal requirement*).
- Alternatively, consideration could be given to applying for an Authority under Section 44(a) of the HNZPTA as a precaution prior to the start of works to minimise any delays once works are under way.
- Since archaeological survey cannot always detect sites of traditional significance to Maori, such as wahi tapu, the tangata whenua should be consulted regarding the possible existence of such sites on the property.

BIBLIOGRAPHY

- Auckland Council Cultural Heritage Inventory, accessed at <http://maps.aucklandcouncil.govt.nz> and <https://chi.org.nz>
- ARC 2005. Auckland Regional Council, *Historic Mahurangi*, booklet/poster.
- Baquié, B. and R. Clough. 2006. Algies Bay Subdivision: Archaeological Assessment. Clough & Associates report prepared for Albro Holdings Ltd.
- Best, E. 1977. *Fishing Devices and Methods of the Maori*. E.C. Keating, Government Printer, Wellington.
- Bickler, S. and R. Clough. Nov. 2004. Muncaster Rd, Snells Beach Archaeological Assessment. Clough & Associates report prepared for Cabra Developments Ltd.
- Billman, M. 1965. *A Century in Hot Water. A Tale of Waiwera*. Rodney & Waitemata Times, Warkworth.
- Brassey, R. 2010. The Auckland Regional Council Coastal Survey 2000-2010. Auckland Regional Council.
- Clough, R. and D. Prince. 2002. Snells Beach Subdivision (Lots 4,5,6,7 & 8 DP 10559), Snells Beach, Rodney District. Preliminary Archaeological Assessment. Clough & Associates report prepared for Kawau Holdings Ltd.
- Clough, R. and D. Prince. 2003. Snells Beach, Rodney District: Proposed Application for Landuse/ Subdivision Consent. Parklands Estate, Aurora Avenue - Preliminary Archaeological Assessment. Clough & Associates report prepared for Neil Construction Ltd.
- DNB. 1990. *The Dictionary of New Zealand Biography*. Volume I. 1769-1869. Allen & Unwin and Department of Internal Affairs, Wellington.
- Edbrooke, S. 2001. *Geology of the Auckland Area*. Institute of Geological and Nuclear Sciences Ltd.
- Farley, G. and R. Clough. 2007. Whisper Cove Subdivision, Snells Beach, Rodney District: Archaeological Investigation of Sites R09/976 And 977. Clough & Associates report in fulfilment of NZHPT Authority No. 2005/159 prepared for Kawau Holdings Ltd.
- Farley, G. and R. Clough. 2008. Algies Bay Subdivision, Mahurangi, Rodney District: Archaeological Investigation of Site R09/152. Clough & Associates report prepared in fulfilment of NZHPT Authority No. 2007/36 for Albro Holdings Ltd.
- Foster, R.S. 1999 and 2000. Proposed Subdivision, Goodall Road, Snells Beach: Archaeological Assessment.
- Furey, L. 2006. *Maori Gardening: An Archaeological Perspective*. Science & Technical Publishing, Department of Conservation, Wellington, New Zealand.
- Harris, J. 2013. Te Whau Walkway, Snells Beach: evaluation of the historic heritage values. CFG report prepared for Auckland Council.
- Heritage NZ. 2006. Writing Archaeological Assessments. Archaeological Guidelines Series No. 2. New Zealand Historic Places Trust Pouhere Taonga (now Heritage NZ).
- Judge, C. and R. Clough. 2007. New Primary School, Dawson Road, Snells Beach, Rodney District: Archaeological Assessment. Clough & Associates report prepared for Naylor Love Construction Ltd.
- Judge, C. 2013. Proposed New Rising Main, Algies Bay, Mahurangi East, Auckland: Archaeological Assessment. Clough & Associates report prepared for Watercare Services Ltd.
- Judge, C. 2015. Proposed Snells Beach to Algies Bay Outfall Replacement, Mahurangi, Auckland: Archaeological Assessment. Clough & Associates report prepared for Watercare Services Ltd.
- Judge, C. 2015b. Proposed Walkway Upgrade and Landscaping, Te Whau Esplanade Reserve, Snells Beach, Mahurangi: Archaeological Assessment. Clough & Associates report prepared for Auckland Council.
- Judge, C. 2017. Te Whau Walkway, Mahurangi, Auckland: Interim Archaeological Monitoring and Investigation Report. Clough & Associates report prepared for Auckland Council.
- Landcare Research 2017. *Ultic Soils*. Accessed at: <https://soils.landcareresearch.co.nz/describing-soils/nzsc/soil-order/ultic-soils>
- Locker, R.H. 2001. *Jade River. A History of the Mahurangi*. Friends of the Mahurangi, Warkworth.

- Mabbett, H. 1977. *The Rock and the Sky: The story of Rodney County*. Wilson and Horton, Auckland.
- Murdoch, G.J. 1991. A History of the Human Occupation of Tawharanui Regional Park. Auckland Regional Council Planning Department.
- Murdoch, G.J. 1992. Tawharanui Regional Park: Management Plan. Auckland Regional Council, Regional Parks Services.
- New Zealand Archaeological Association ArchSite Database, accessed at <http://www.archsite.org.nz>.
- New Zealand Heritage List, accessed at <http://www.historic.org.nz>
- Pritchard, K. 1983. Prehistoric Maori Settlement Patterns in East Rodney. Unpublished Thesis, University of Auckland.
- Simmonds, D. n.d. 'Mahurangi - Fact and Legend', in H.J. Keys (ed.), *Mahurangi River, Its Story*, n.p.
- Walton, A. 1976. Site Recording on the east coast of the Mahurangi Peninsula between Snells Beach and Martins Bay. NZ Historic Places Trust, Archaeological Site Surveys 1975-76.
- Wilson, P. 2016. Dredging and Land Disposal Report, Mahurangi River, Warkworth. Hutchinson Consulting Engineers report for The Mahurangi River Restoration Trust.

APPENDIX 3

SUBMISSIONS AND FURTHER SUBMISSIONS

Appendix 3 – Submissions and Further Submissions

#01

From: Ron Goodwin <rongooodwin@xtra.co.nz>
Sent: Thursday, 14 November 2019 17:10
To: Austin Fox <Austin.Fox@aucklandcouncil.govt.nz>
Subject: RE: Proposed Plan Change 35 (Private) - Foster Crescent, Snells Beach

Hello Mr Austin Fox

Thank you so much for sending me their scheme plan.

It all looks pretty good to me, and I take my hat off to the developers! It's just what Snells Beach needs; more subdivision and more houses, and hence more customers to uplift the run-down, tired, old shopping centre!

There is some unstable land in that area. No doubt your council engineers will ensure such remedial works as deep seepage drains or even shear keys will be implemented as necessary.

The big question is how the sewer pipe from the treatment plant out to the distant sea outfall will cope with the extra load. Your council has recently installed modern, high strength, black plastic pipes through streets in the immediate area, and all credit to the council for that.

However, as you might know, the old fibrolite sewer pipe through the farmlands is in pretty bad shape. Whilst the pumps can pump a lot more sewage under ever-increasing pressure, and the latest black plastic sewer line can easily handle the extra pressure, the old fibrolite sewer pipe cannot handle the extra pressure without cracking and bursting, as has already happened in the past.

It would be great if the council could upgrade a lot more of the sewer outfall pipe, as they have through the suburban streets!

By all means send this email on to the developers if you want to. They deserve a medal!

Keep up the good work.

Regards
Ron Goodwin

1.1



Watercare Services Limited
 158 Remuera Road, Remuera
 Auckland 1013, New Zealand
 Private Bag 92747, Broadway Street,
 Auckland 1142
 Telephone 0849 539 7300
 Facsimile 0849 539 7301
www.watercare.co.nz

Auckland Council
 Level 24, 135 Albert Street
 Private Bag 92300
 Auckland 1142

Attn: Planning Technicians

unitaryplan@aucklandcouncil.govt.nz

TO: Auckland Council
SUBMISSION ON: PC 35 (Private) – Foster Crescent, Snells Beach
FROM: Watercare Services Limited
ADDRESS FOR SERVICE: lize.gotelli@water.co.nz
DATE: 22 November 2019

Watercare could not gain an advantage in trade competition through this submission.

1. INTRODUCTION

1.1. Watercare's purpose and mission

Watercare Services Limited ("Watercare") is New Zealand's largest provider of water and wastewater services. Watercare is a council-controlled organisation under the Local Government Act 2002 ("CCO") and is wholly owned by the Auckland Council ("Council").

Watercare provides integrated water and wastewater services to approximately 1.4 million people in Auckland. Watercare collects, treats and distributes drinking water from 11 dams, 26 bores and springs, and four river sources. A total of 330 million litres of water is treated each day at 15 water treatment plants and distributed via 89 reservoirs and 90 pump stations to 450,000 households, hospitals, schools, commercial and industrial properties.

Watercare's water distribution network includes more than 9,000 km of pipes. The wastewater network collects, treats and disposes of wastewater at 18 treatment plants and includes 7,900 km of sewers.

Watercare is required to manage its operations efficiently with a view to keeping overall costs of water supply and wastewater services to its customers (collectively) at minimum levels, consistent with effective conduct of the undertakings and maintenance of long-term integrity of the assets. Watercare must also give effect to relevant aspects of the Council's Long Term Plan, and act consistently with other plans and strategies of the Council, including the Auckland Unitary Plan and the Auckland Future Urban Land Supply Strategy.¹

2. SUBMISSION

2.1. General

This is a submission on a change proposed by Prime Property Group Ltd. ("Applicant") to the Auckland Unitary Plan (Operative in Part) that was publicly notified on 24 October 2019 ("Proposal").

The Applicant proposes to rezone 4.6384 hectares of Residential – Large Lot land at Lot 1 DP 149776 to a Residential – Single House Zone ("Plan Change Area").

The purpose of this submission is to address the technical feasibility of the proposed water and wastewater servicing arrangement to ensure that the effects on Watercare's existing and planned water and wastewater network are appropriately considered and managed in accordance with Resource Management Act 1991 ("RMA") and to address the requirement to adequately protect the existing network from the effects of subdivision.

Watercare opposes the Proposal in part.

In making its submission, Watercare has considered the relevant provisions of the Auckland Plan 2050, Te Tahua Taungahuru Te Mahere Taungahuru 2018 – 2028/The 10-year Budget Long-term Plan 2018 – 2028, the Auckland Future Urban Land Supply Strategy 2015 and 2017, the Water Supply and Wastewater Network Bylaw 2015, the Water and Wastewater Code of Practice for Land Development and Subdivision and the Watercare Asset Management Plan 2016 – 2036. It has also considered the relevant RMA documents including the Auckland Unitary Plan (Operative in Part) and the National Policy Statement on Urban Development Capacity 2016 which (amongst other matters) requires local authorities to ensure that at any one time there is sufficient housing and business development capacity which:

- (a) in the short term, is feasible, zoned and serviced with development infrastructure (including water and wastewater);
- (b) in the medium term, is feasible, zoned and either:
 - (i) serviced with development infrastructure, or

¹ Local Government (Auckland Council) Act 2009, s58.

- (ii) the funding for the development infrastructure required to service that development capacity must be identified in a Long Term Plan required under the Local Government Act 2002; and
- (c) in the long term, is feasible, identified in relevant plans and strategies, and the development infrastructure required to service it is identified in the relevant Infrastructure Strategy required under the Local Government Act 2002.²

2.2. Specific parts of the Proposal

The specific parts of the Proposal that this submission relates to are:

- (a) the proposed water and wastewater servicing arrangement; and
- (b) the effects of the Proposal on Watercare's existing wastewater network.

Watercare has reviewed the Proposal and does not consider that it has appropriately assessed the effects on the water and wastewater network and will consequently result in unacceptable adverse effects on Watercare's existing wastewater infrastructure network. Specifically:

- (a) there is adequate capacity in the water and wastewater network to service the land with a zoning of Residential – Single House, subject to confirmation of capacity at resource consent application stage and an appropriate design of the water and wastewater network as part of the Engineering Plan Approval process; however,
- (b) the proposed layout of residential Lots 18-23 does not adequately protect the existing 375mm wastewater rising main that runs through the proposed sites. This rising main is protected by an easement and is shown in blue on the schema plan.

2.2.1. Water supply

2.2.1.1. Water supply infrastructure for Servicing the Plan Change Area

The existing water supply terminates in Foster Crescent. The Applicant will be required to extend the water supply network into the Plan Change Area. There is currently capacity to service the Plan Change Area at the proposed level of development. This will need to be reconfirmed as part of the resource consent application process. The design of the water supply network must conform with Watercare's Code of Practice. This will be assessed at the Engineering Plan Approval stage.

For clarity, all of the water supply network required to service the Plan Change Area is considered local network, and is therefore required to be funded by the developer.

² National Policy Statement on Urban Development Capacity 2016, policy PA1

2.2.2. Wastewater

2.2.2.1. Wastewater Infrastructure for Servicing the Plan Change Area

There are two existing wastewater pipes that run through the Plan Change Area. Neither of these pipes will directly service the Plan Change Area. The Applicant will need to construct a new local gravity wastewater network for the development that will connect into an existing manhole located near the Cornel Pump Station located on the Watercare property at 31 Cornel Circle. There is currently capacity to service the Plan Change Area at the proposed level of development. This will need to be reconfirmed as part of the resource consent application process as other connections may have been confirmed in the interim. The design of the wastewater network must conform with Watercare's Code of Practice. This will be assessed at the Engineering Plan Approval stage.

For clarity, all of the wastewater network required to service the Plan Change Area is considered local network, and is therefore required to be funded by the developer.

2.2.2.2. Existing Wastewater Infrastructure

There is a 375mm diameter wastewater rising main that pumps wastewater from the Cornel pump station across the estuary to the Snells-Algies Wastewater Treatment Plant. This rising main carries all wastewater flows from the wider Snells area and is considered a critical asset. Currently, the rising main is protected by an easement in favour of Watercare, granted in perpetuity. The easement grants the right to convey wastewater and the right of access to operate, maintain, and replace the wastewater network. The easement requires:

The Grantor will not place or construct any structure which could hinder the Council's right of access to the lines of pipes or to the servient land and will not at any time hereafter do or permit or suffer to be done any act whereby the rights powers privileges and liberties hereby created and granted to the Council may be interfered with or affected or whereby the free and unimpeded flow of sewage waste-water and water through the lines of pipes may be in any interrupted or restricted and will do nothing to injure or damage the lines of pipes or any of them as may be laid down constructed or erected in pursuance of the said easement PROVIDED ALWAYS this provision shall not affect any boundary fence between the servient land of the Grantor and any adjoining land.

In the proposed subdivision scheme, the wastewater rising main and easement transect Lots 18-23. The Applicant has stated the location of the rising main was considered in the scheme plan and that buildings can be located on the lots so that they do not infringe the rising main (Engineering Report, p. 8). However, while it may be possible to locate a building so that it does not impact the rising main, Watercare considers that the restrictions on the use of the properties at Lots 18-23 will be significant and it will materially affect the owners' ability to utilise their lots, including restricting their ability to fence their lots.

In addition to the easement, Watercare has 'works over' requirements that are set out in the Auckland Water and Wastewater Bylaw 2015 that restrict the works that can be done within 10 metres of a critical asset.

It is essential that the wastewater rising main is adequately protected to ensure that Watercare retains the ability to operate, maintain, access, and renew the wastewater line. As such, Watercare does not support the creation of Lots 18-23 as indicated on the scheme plan.

3. DECISION SOUGHT

In its current form, Watercare opposes the Proposal in part, as Lots 18-23 do not adequately protect Watercare's existing assets.

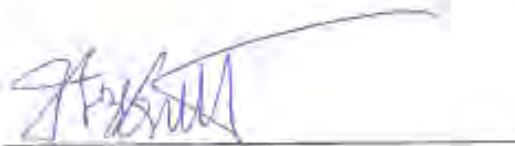
- 2.1 | Watercare therefore seeks a decision that ensures that the wastewater network, in particular the wastewater rising main, is adequately protected.

To enable that decision to be made, Watercare requests that either:

- 2.2 | (a) the scheme plan is updated to provide that Lots 18-23 will vest to Council as public drainage reserve; or
- 2.3 | (b) Lots 18-23 are enlarged or otherwise reconfigured so that they are of adequate size to provide for a housing foundation and yard space for each lot that will not compromise the protection of the network.

4. HEARING

Watercare wishes to be heard in support of its submission.



Ilze Gotelli
Head of Major Developments

The following customer has submitted a Unitary Plan online submission.

Contact details

Full name of submitter: Ministry of Education

Organisation name:

Agent's full name: Jess Rose

Email address: jess.rose@beca.com

Contact phone number: 093084565

Postal address:
21 Pitt Street
Auckland Central
Auckland 1010

Submission details

This is a submission to:

Plan modification number: PC 35

Plan modification name: PC 35(Private) – Foster Crescent, Snells Beach

My submission relates to

Rule or rules:
See attached submission

Property address:

Map or maps:

Other provisions:

Do you support or oppose the provisions you have specified? I or we oppose the specific provisions identified

Do you wish to have the provisions you have identified above amended? Yes

The reason for my or our views are:
See attached submission

3.1 | I or we seek the following decision by council: Amend the plan modification if it is not declined

Details of amendments: See attached submission

Submission date: 22 November 2019

Supporting documents
MoE Submission Auckland Unitary Plan - Plan Change 35.pdf

Attend a hearing

Do you wish to be heard in support of your submission? Yes

Would you consider presenting a joint case at a hearing if others have made a similar submission? No

Declaration

Could you gain an advantage in trade competition through this submission? No

Are you directly affected by an effect of the subject matter of this submission that:

- Adversely affects the environment; and
- Does not relate to trade competition or the effects of trade competition.

Yes

I accept by taking part in this public submission process that my submission (including personal details, names and addresses) will be made public.



FORM 5

Submission on publicly notified proposal for policy statement or plan, change or variation under Clause 6 of Schedule 1, Resource Management Act 1991

To: Auckland Council

Name of submitter: **Ministry of Education ('the Ministry')**

Address for service: C/- Beca Ltd
21 Pitt Street
Auckland 1010

Attention: Jess Rose

Phone: (09) 308 4565

Email: jess.rose@beca.com

This is a submission on the Proposed Plan Change 35 (Private) – Foster Crescent, Snells Beach to the Auckland Unitary Plan ('the Proposed Plan Change').

The specific parts of the Proposed Plan Change that the Ministry of Education's submission relates to are:

The potential traffic effects around Snells Beach School, which may impact on the safety of students walking or cycling to and from school.

Background:

The Ministry is the Government's lead advisor on the New Zealand education system, shaping direction for education agencies and providers and contributing to the Government's goals for education. The Ministry has responsibility for all education property owned by the Crown. This involves managing the existing property portfolio, upgrading and improving the portfolio, purchasing and constructing new property to meet increased demand, identifying and disposing of surplus State school sector property and managing teacher and caretaker housing.

The Ministry is therefore a key stakeholder in terms of activities that may impact on educational facilities and assets in the Auckland region. Most of the Ministry's properties are subject to designations under the Resource Management Act (RMA), and therefore not subject to the provisions of underlying land use zoning. However, given the Ministry's mandate, it does have a special interest in how education facilities in general are managed within district and unitary plans, with the aim of promoting education opportunities in general.

The Ministry of Education's submission is:

Under the Resource Management Act 1991, decision makers must have regard to the health and safety of people and communities. Furthermore, there is a duty to avoid, remedy or mitigate actual and potential adverse effects on the environment.

The Ministry is concerned that the proposed plan change may have an adverse impact on the safety of children walking to and from Snells Beach School. This is because the subsequent subdivision on the site will result in increases in traffic at peak times, which is also when students are walking and cycling to school. This concern is the greatest around Foster Crescent and Iris Streets as these streets provide access to the proposed plan change site and will be the subject of increased traffic flows at peak times. Many students navigate these streets on their daily walk/cycle to school. The Ministry would like to ensure that risks to pedestrians from traffic increases are minimised.

3.2

The Ministry of Education seeks the following decision from the consent authority:

The Ministry is neutral in respect of the merits of the proposed plan change. However, if the consent authority approves the plan change, the Ministry requests that the Ministry of Education and Snells Beach School Board are engaged with and consulted throughout the subdivision application and construction process to ensure that the safety of school students is maintained throughout the construction and establishment of the site.

The Ministry of Education wishes to be heard in support of its submission.



Jess Rose
Planner – Beca Ltd

(Consultant to the Ministry of Education)

Date: 22 November 2019

22/11/2019

Proposed Private Plan Change 35 – Rezone Lot 1 DP 149776 from Residential – Large Lot to Residential – Single House Zone

To whom it may concern

We would like to express our concerns in regards to the above proposed Plan Change.

We have attended the public meeting held as well as having a private meeting with Bernadette O'Connor from Barker and Associates with other concerned residents from Cornel Circle. At the public meeting Bernadette gave her word that she would not submit this proposed Plan to the Council until she had notified everyone interested to advise, email addresses were supplied to Bernadette on the night of the public meeting. Bernadette never kept her word and the Plan was submitted without advising any interested parties.

Bernadette also advised at this public meeting that her previous Company had been involved in the Development of the adjoining portion of land that was divided into the Residential Large Lots "Te Whau Lane". Many of these lots have been built on, and when we spoke with one of these neighbours, they advised us that they knew Bernadette from when they purchased their property and were already in negotiations with her as they were not happy about the proposal. Since then the original proposal provided at the public meeting has been changed, the neighbours on the adjoining land that Bernadette was originally involved in with her own Company have a buffer of land between them, larger sites gradually reducing in size adjoining their properties and a guarantee of single storey only on their boundary. Due to this change this has now caused the lots on the boundary of Cornel Circle to be smaller and more than likely will have to have multiple storey's.

When this was discussed with Bernadette at the private meeting for Cornel Circle resident's, she advised the reason they were given this guarantee and the plan changed was because they had purchased the land with a rural outlook and therefore she had approached the land owner and got his approval for them on the agreeance that they sign a letter of support for the plan change. We advised Bernadette that we had also purchased our property with a rural outlook many years ago and many of the owner occupiers had been guaranteed during negotiations to purchase that the land would never be build out, due to the zoning of the land. Bernadette advised that she would discuss this with the land owner but did not hold out much hope as he was wanting to get as many houses on the property as he could. She has never come back to any of the Cornel Circle residents on this matter. Maybe if we had purchased properties that Bernadette's Company had been involved in we may have received this preferential deal.

We have also been advised that the land could not be built on due to an agreement that was on this land due to the water drainage. Bernadette advised that she was not aware of this and has not followed up with our query.

4.1 | Our other concerns and the reason we oppose this proposal are as follows:

Safety of children walking to School along Foster Crescent, this is used by many children to get to school via the reserve. The back entry to the school is right where the entrance will be to the proposed subdivision. If 53 houses are built this will have traffic of up to 106 cars extra per day (based on 2 per house), due to the narrow road this is very unsafe. When this was surveyed this was not done at an appropriate time to get a true reflection the foot traffic.

Iris Street is extremely narrow and when cars are parked on either side of this road, only one car at a time can pass. As this is the only way in and out for Iris Street, Foster crescent, Cornel Circle and Te Whau Lane, adding 106 cars to the mix is going to make an already congested road even more dangerous. In the mornings there is sun strike at the start of Iris Street when the stop sign is place, this can make it very hazardous for children and cars.

The ongoing issue of traffic build up from Snell's Beach getting into Warkworth during working hours, weekends and also in the Summer will be even more affected by adding 53 houses on this land rather than the 11 that was originally proposed. With the other housing developments that are already underway in Snell's Beach this will already make an impact on traffic, like Whangaparoa Road. Adding another 106 cars instead of 22 is just going to add to this problem.

At the public meeting there was a lot of concern about the impact this will have on the Amenities in the area, as there is already a huge issue with Septic, flooding and drainage. This has not been suitable addressed.

Bernadette was asked how she was going to mitigate, the dust and noise from developing 53 houses rather than 11, the only response was that this would be dealt with after the zoning was changed. This is not satisfactory.

On the current plan, 17 Cornel Circle has 5 houses on the Boundary which has a huge impact on privacy and noise. This property was brought with a rural outlook and having 5 houses adjoining the boundary will have an extreme affect during the construction phase and also everyday living. This was also discussed at the public and private meeting and although Bernadette acknowledge that this was not ideal no solutions were offered.

The residents in Snell's Beach have signed a petition against this re zoning happening and I am more than happy to provide this to show the opposition against this. If you would like to contact either Nigel or Hayley we have provided our phone numbers below.

Kind regards

Nigel Ross - 17 Cornel Circle - 0212750080

Hayley Gates - 25 Cornel Circle - 02102609935

22/11/2019

Proposed Private Plan Change 35 – Rezone Lot 1 DP 149776 from Residential – Large Lot to Residential – Single House Zone

To whom it may concern

We would like to express our concerns in regards to the above proposed Plan Change.

We have attended the public meeting held as well as having a private meeting with Bernadette O'Connor from Barker and Associates with other concerned residents from Cornel Circle. At the public meeting Bernadette gave her word that she would not submit this proposed Plan to the Council until she had notified everyone interested to advise, email addresses were supplied to Bernadette on the night of the public meeting. Bernadette never kept her word and the Plan was submitted without advising any interested parties.

Bernadette also advised at this public meeting that her previous Company had been involved in the Development of the adjoining portion of land that was divided into the Residential Large Lots "Te Whau Lane". Many of these lots have been built on, and when we spoke with one of these neighbours, they advised us that they knew Bernadette from when they purchased their property and were already in negotiations with her as they were not happy about the proposal. Since then the original proposal provided at the public meeting has been changed, the neighbours on the adjoining land that Bernadette was originally involved in with her own Company have a buffer of land between them, larger sites gradually reducing in size adjoining their properties and a guarantee of single storey only on their boundary. Due to this change this has now caused the lots on the boundary of Cornel Circle to be smaller and more than likely will have to have multiple storey's.

When this was discussed with Bernadette at the private meeting for Cornel Circle resident's, she advised the reason they were given this guarantee and the plan changed was because they had purchased the land with a rural outlook and therefore she had approached the land owner and got his approval for them on the agreeance that they sign a letter of support for the plan change. We advised Bernadette that we had also purchased our property with a rural outlook many years ago and many of the owner occupiers had been guaranteed during negotiations to purchase that the land would never be build out, due to the zoning of the land. Bernadette advised that she would discuss this with the land owner but did not hold out much hope as he was wanting to get as many houses on the property as he could. She has never come back to any of the Cornel Circle residents on this matter. Maybe if we had purchased properties that Bernadette's Company had been involved in we may have received this preferential deal.

We have also been advised that the land could not be built on due to an agreement that was on this land due to the water drainage. Bernadette advised that she was not aware of this and has not followed up with our query.

5.1 | Our other concerns and the reason we oppose this proposal are as follows:

Safety of children walking to School along Foster Crescent, this is used by many children to get to school via the reserve. The back entry to the school is right where the entrance will be to the proposed subdivision. If 53 houses are built this will have traffic of up to 106 cars extra per day (based on 2 per house), due to the narrow road this is very unsafe. When this was surveyed this was not done at an appropriate time to get a true reflection the foot traffic.

Iris Street is extremely narrow and when cars are parked on either side of this road, only one car at a time can pass. As this is the only way in and out for Iris Street, Foster crescent, Cornel Circle and Te Whau Lane, adding 106 cars to the mix is going to make an already congested road even more dangerous. In the mornings there is sun strike at the start of Iris Street when the stop sign is place, this can make it very hazardous for children and cars.

The ongoing issue of traffic build up from Snell's Beach getting into Warkworth during working hours, weekends and also in the Summer will be even more affected by adding 53 houses on this land rather than the 11 that was originally proposed. With the other housing developments that are already underway in Snell's Beach this will already make an impact on traffic, like Whangaparoa Road. Adding another 106 cars instead of 22 is just going to add to this problem.

At the public meeting there was a lot of concern about the impact this will have on the Amenities in the area, as there is already a huge issue with Septic, flooding and drainage. This has not been suitable addressed.

Bernadette was asked how she was going to mitigate, the dust and noise from developing 53 houses rather than 11, the only response was that this would be dealt with after the zoning was changed. This is not satisfactory.

On the current plan, 17 Cornel Circle has 5 houses on the Boundary which has a huge impact on privacy and noise. This property was brought with a rural outlook and having 5 houses adjoining the boundary will have an extreme affect during the construction phase and also everyday living. This was also discussed at the public and private meeting and although Bernadette acknowledge that this was not ideal no solutions were offered.

The residents in Snell's Beach have signed a petition against this re zoning happening and I am more than happy to provide this to show the opposition against this. If you would like to contact either Nigel or Hayley we have provided our phone numbers below.

Kind regards

Nigel Ross - 17 Cornel Circle - 0212750080

Hayley Gates - 25 Cornel Circle - 02102609935

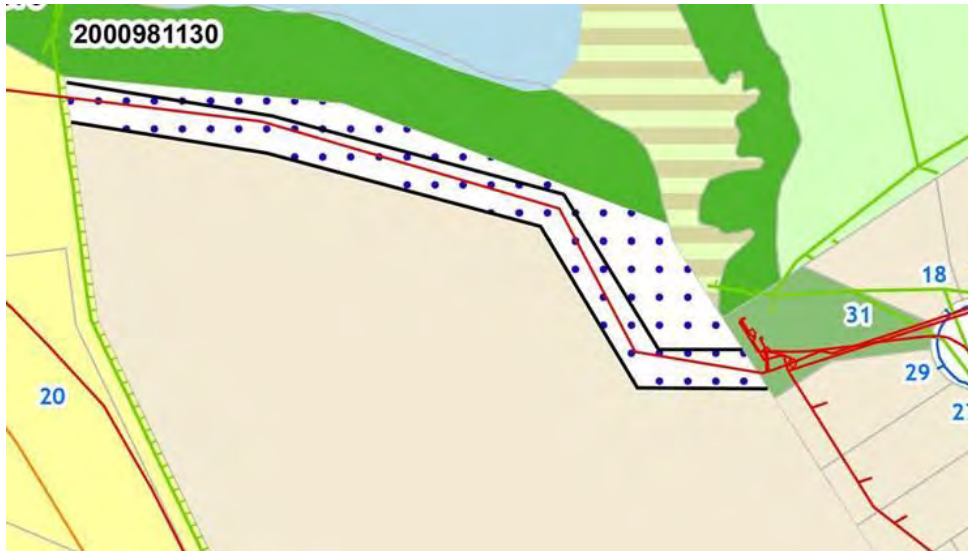
APPENDIX 4

RECOMMENDED CHANGES

Appendix 4 – Recommended Changes

Amendments are shown with text to be deleted as struck through and text to be added as underlined.

- a) Amend the planning maps by inserting the Subdivision Variation Control (Snells Beach) over the land shown dotted in the map below.



- b) Amend Table E38.8.2.4.1 Subdivision of sites identified in the Subdivision Variation Control by adding a new row as follows;

Area	Minimum net site area
<u>Snells Beach</u>	<u>1000m²</u>

APPENDIX 5
COUNCIL EXPERT REVIEWS

Appendix 5 – Council Expert Reviews

Peter Kensington – Landscape



memo

Date: 9 June 2020

To: **Austin Fox**
Principal Planner – North, West and Islands Planning, Plans and Places, Auckland Council

Copy: **David Wren**
Planning Consultant (David Wren Planning Policy Research Limited) for North, West and Islands Planning, Plans and Places, Auckland Council

Copy: **Peter Vari**
Team Leader – North, West and Islands Planning, Plans and Places, Auckland Council

From: **Peter Kensington**
Consultant Specialist Landscape Architect (KPLC Limited) for North, West and Islands Planning, Plans and Places, Auckland Council

Re: **Private Plan Change 35 – Foster Crescent, Snells Beach**
Request by Prime Property Group Limited for a Private Plan Change to the Auckland Unitary Plan (Operative in part) at Foster Crescent, Snells Beach seeking the rezoning of 4.6384 hectares of land from Residential – Large Lot to Residential – Single House.
**LANDSCAPE (INCLUDING NATURAL CHARACTER) AND VISUAL EFFECTS
SECTION 42A REPORT SPECIALIST INPUT – MERITS / SUBMISSIONS**

Dear Austin

1. I write in response to the briefing memo from Peter Vari dated 4 February 2020 which sought my assistance with a review of the above request in terms of landscape and visual effects.
2. This response is provided further to my preliminary review memo dated 15 March 2019, my subsequent visit to the site on 18 April 2019 and my email to David Wren dated 14 June 2019 regarding the adequacy of the information provided with the request. I understand that the council subsequently resolved to accept the request in whole and proceeded with notification.

Terms of reference

3. I have reviewed the following relevant documents to inform my review:

Proposed Private Plan Change documentation

- Letter from Barker & Associates Limited (Burnette O'Connor and Briar Belgrave) to Auckland Council (Peter Vari), 'Re: Private Plan Change Request – Lot 1 DP 149776, Foster Crescent, Snells Beach', dated 14 February 2019;
- 'S32 Evaluation - Private Plan Change Request, Foster Crescent, Snells Beach – Assessment of Environmental Effects and Statutory Analysis', prepared by prepared by Barker & Associates Limited ('Barker & Associates Evaluation'), dated 30 May 2019 with associated appendices 1-11, including in particular Appendix 7, being:
 - 'Foster Crescent, Snells Beach, Proposed Private Plan Change and Resource Consent Application - Landscape Assessment', prepared by Littoralis Landscape Architecture Limited, dated May 2018 ('Littoralis Landscape Assessment')¹; and
- Letter from Barker & Associates Limited (Burnette O'Connor and Briar Belgrave) to David Wren, 'Response to Request for Further Information under Clause 23 of the First Schedule to the Resource Management Act 1991 for the Private Plan Change Request: Foster Crescent, Snells Beach', dated 30 May 2019.

Submissions received

- Auckland Unitary Plan Operative in Part, Proposed Plan Change 35 (Private): Foster Crescent, Snells Beach – Summary of Decisions Requested (Submissions 1-5) and copies of all submissions, including in particular:
 - Submission 4 from Nigel Ross (17 Cornel Circle) dated 22/11/2019 and;
 - Submission 5 from Hayley Gates (25 Cornel Circle) dated 22/11/2019.
4. I have also read the Rodney District Council 'Sandspit - Snells Beach - Algies Bay Structure Plan' which was adopted in October 1999.
5. In addition, I have reviewed a relevant background document which is mentioned within the Littoralis Landscape Assessment at the start of Section F (page 18) and is referenced as:

'Rural\Urban Boundary (North and Northwest): Preliminary Landscape Investigation – Explanatory Note. August 2013. ENPAD. Auckland Council'

In respect of the above document, the Littoralis Landscape Assessment notes that:

"... it is useful to acknowledge a preliminary background technical report that Auckland Council commissioned to assist its decision-making in relation to the rural/urban boundary in the north and northwest of the region, prior to notification of the Proposed Auckland Unitary Plan (PAUP). That landscape investigation assessed landscape character, sensitivity, and capacity to absorb urban development in relation to the rural urban boundary to the north and north-west of Auckland."

6. I have set out my relevant qualifications and experience in **Attachment 1**.

¹ Noting that the Littoralis Landscape Assessment is also 'framed' to form part of an application for resource consent(s).

Site description and landscape context

7. When I reference “*the site*”, I am referring to the private property which is the subject of this proposed private plan change, being Lot 1 DP 149776, Foster Crescent, Snells Beach 0920.
8. I am generally familiar with the settlement of Snells Beach. In addition to my initial 18 April 2019 visit to the site and surrounding area²; on 27 February 2020 I visited the properties of the two submitters stated above (Nigel Ross and Hayley Gates) in order to experience the outlook towards the site from the properties at 17 and 25 Cornel Circle³.
9. Based on my own assessment, I concur with and adopt the Littoralis Landscape Assessment description of the site’s biophysical and land use characteristics, as well as the analysis of the site’s context and viewing audiences. I agree that the site is a modified landscape, located within the coastal environment and the landscape character gained from the existing rural land use activity on site is influenced by property size, the existing residential zoning under the AUP(OP) and the proximate urban development, particularly that to the immediate east and west.

Understanding of request and adequacy of information

10. As set out in the Barker & Associates Evaluation, it is my understanding that the proposed plan change request seeks only to rezone the site and does not necessitate any consequential changes to any objectives, policies or rules of the AUP(OP). I also understand that, once rezoned, the land will be developed by way of application(s) for resource consent(s) to enable subdivision and development – with these applications to be assessed under the Urban Subdivision (Chapter E38); the Residential – Single House Zone (Chapter H3); and the Auckland-wide provisions.
11. You will be aware that my 15 March 2019 memo raised initial concern over whether enough analysis had been undertaken (from a landscape and visual effects perspective) in order to justify the proposed rezoning – as per the extracts from my memo quoted below:

“... provide an analysis of the site’s opportunities and constraints in order to inform whether the extent of proposed rezoning is appropriate within the site’s wider and immediate contexts. As part of this opportunities and constraints analysis (mapping) I suggest that the results may well determine that the proposed indicative scheme plan does not reflect the most appropriate subdivision and development pattern, particularly in relation to the site’s sensitive northern coastal interface and when considering ecological, landscape and recreational (passive and active) opportunities and constraints.

I also suggest that the assessments overall which examine the request are too focussed on the site extent and do not look broadly enough at how the site interfaces with land to the west (in particular) and other urban and rural land within the wider localised context. In other words, should the area of proposed rezoning be expanded in extent beyond the site boundaries (as indicated in the structure plan) and/or include greater provision of open space, for example?

In my opinion, the assessments and other documentation within the request focus too heavily on the indicative scheme plan (Appendix 2) in a manner that, in my experience, is more akin to following the process of an application for resource consents rather than associated with a plan change process. The opportunities and constraints mapping would, in my opinion, highlight whether there might be other more appropriate solutions available when considering a range of factors, which would include landscape and visual effects considerations.

² With David Wren (for the council) and Burnette O’Connor, Briar Belgrave and Mike Farrow (for the applicant).

³ With David Wren (for the council) and Briar Belgrave and Mike Farrow (for the applicant).

Finally, for the purposes of justifying this request when considering landscape and visual effects, I hold a preliminary concern that the 1999 structure plan may well be outdated and should be 'refreshed' to better reflect the current conditions of the Snells Beach area. Having said this, the requested detailed opportunity and constraints mapping may well provide enough analysis and information to inform the most appropriate future zoning of the site and surrounding area.

12. My 14 June 2019 email to David Wren confirmed that, from a landscape and visual effects perspective, the applicant had responded (in the Barker & Associates Limited letter dated 30 May 2019) adequately to the above issues in order for the council to proceed with the plan change process. However, my email also outlined that I held some preliminary concerns over reliance on the current provisions of the AUP(OP) to appropriately address relevant landscape and visual effects related matters when considering future applications for resource consent. I acknowledge that the Barker & Associates Evaluation responds to these concerns.
13. I also acknowledge that the AUP(OP) regional policy statement provisions within Chapter B2⁴ provide for the proposed rezoning, in particular through Policy B2.6.2(4) as set out below:

B2.6.2. Policies

- (1) *Require the establishment of new or expansion of existing rural and coastal towns and villages to be undertaken in a manner that does all of the following:*
- (a) maintains or enhances the character of any existing town or village;*
 - (b) incorporates adequate provision for infrastructure;*
 - (c) avoids locations with significant natural hazard risks where those risks cannot be adequately remedied or mitigated;*
 - (d) avoids elite soils and avoids where practicable prime soils which are significant for their ability to sustain food production;*
 - (e) maintains adequate separation between incompatible land uses;*
 - (f) is compatible with natural and physical characteristics, including those of the coastal environment; and*
 - (g) provides access to the town or village through a range of transport options including walking and cycling.*
- (2) *Avoid locating new or expanding existing rural and coastal towns and villages in or adjacent to areas that contain significant natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage or special character, unless the growth and development protects or enhances such resources including by any of the following measures:*
- (a) the creation of reserves;*
 - (b) increased public access;*
 - (c) restoration of degraded environments;*
 - (d) creation of significant new areas of biodiversity; or*
 - (e) enablement of papakāinga, customary use, cultural activities and appropriate commercial activities.*
- ...
- (4) *Enable small-scale growth of and development in rural and coastal towns and villages without the need for structure planning, in a manner consistent with policies B2.6.2(1) and (2).*

⁴ Tāhuhu whakaruru hau ā-taone - Urban growth and form.

Analysis of landscape and visual effects issues (merits)

Matters of agreement with Littoralis Landscape Assessment

14. I agree with the methodology and approach that has been utilised by the Littoralis Landscape Assessment, including the representative public viewpoint locations which have been identified.
15. I agree that no high level landscape or natural character sensitivities or values have been identified for the site under the AUP(OP) or other statutory and non-statutory provisions.
16. In addition to the comprehensive assessment of the relevant statutory provisions within the Barker & Associates Evaluation, I agree that the Littoralis Landscape Assessment has outlined and considered relevant AUP(OP) regional policy statement and district plan provisions.
17. I agree with the seven-point scale of adverse effects that has been utilised by the Littoralis Landscape Assessment, being:
 - i. Very low
 - ii. Low
 - iii. Low to moderate
 - iv. Moderate
 - v. Moderate to high
 - vi. High
 - vii. Very high.

I have adopted this same scale in my review.

18. I agree with the Littoralis Landscape Assessment that the adverse landscape effects of development enabled by the proposed plan change will be '*low to moderate*' compared to that which would be enabled under the current zoning provisions. I also agree that the adverse natural character effects will be '*low*'. Finally, I also agree with the Littoralis Landscape Assessment in terms of the adverse visual effects determined through representative viewpoint analysis; including that these will be: '*moderate*' for people viewing from properties immediately adjacent the site within Cornel Circle and Foster Crescent; and '*moderate to high*' for people viewing from properties immediate adjacent the site within Te Whau Lane.
19. I agree that, from a landscape and visual effects perspective, the proposed zoning will continue to provide for future residential development that will be a logical fit with the pattern of the existing landscape. As explored within the Littoralis Landscape Assessment⁵, the higher density outcome provided for through the Residential – Single House zoning may not be appreciably different to that enabled under the Residential – Large Lot zoning, given that both provide for urban residential land use activity with associated structures. I acknowledge that there is a difference, in that large lot zoning generally provides more open space (to allow for tree planting, for example) on private land; however, I also understand that larger dwellings and associated ancillary structures (sheds, for example) would likely eventuate when compared to development enabled under the single house zoning, which would be at a much finer grain and density.

⁵ Refer discussion page 19.

20. I also acknowledge that it is likely that smaller lot sizes will likely be enabled under the AUP(OP) than those within the *existing* settlement pattern to the east – with associated smaller yard setbacks and potentially larger (modern) dwellings, with new tree planting taking time to establish and mature.
21. While I am not in full agreement with all aspects of the Littoralis Landscape Assessment, I generally agree with the overall findings⁶, as per the extract set out below:

“The Site is an unremarkable pocket of terrain, related to adjacent, long established residential land-use established on the mirroring side of the shallow valley that it sits within. The frame to the Site includes Large Lot Residential development along its other long boundary and public open space to its two lesser frontages. A close relationship with the newly established Snell’s Beach School and the diverse community and recreational offerings of Goodall Reserve complete the local land use context.

Whilst physically close to the maritime Dawson’s Creek, the Site has a remarkably restricted visual connection to that natural, estuarine body and natural character impacts are correspondingly limited. The site is not noted for its landscape values and the early ENPAD assessment determined that the wider Dawson’s Road peninsula has a strong connection with the existing Snells Beach settlement and a correspondingly well-developed capacity to absorb residential growth.

Ecological values within the Site are substantially suppressed, as are the general landscape characteristics of the land, with a small pocket of wetland (proposed to be conserved under the proposal) being the only element worthy of enduring improvement and protection.

...

Adverse landscape, visual and natural character effects have been assessed as being largely at the lower end of the scale, and less than moderate-low, with higher (moderate through to high) effects being restricted to those occupying a small number of immediately adjacent properties where the land use change will be most directly experienced.”

22. As set out in the Barker & Associates Evaluation⁷, I understand that a letter of support has been provided from the residents of the Te Whau Lane properties, based on an agreed set of bespoke provisions that will apply to future subdivision and development of the land – these include:
- a. An indicative landscaping buffer of 5.0m in width;
 - b. Larger lots (800m²);
 - c. Single storey dwellings; and
 - d. 15m building line setbacks from Te Whau Lane.

While the proposed plan change does not and cannot formally require the above outcomes, I support these initiatives, as a means of mitigating potential adverse landscape and visual effects.

Matters of agreement with Barker & Associates Evaluation

23. In addition to the Littoralis Assessment, I also agree with relevant aspects of the Barker & Associates Evaluation, including in relation to the *“key landscape related matters that will potentially help integrate future development”*⁸, being:

⁶ Refer Conclusion (Section G, pages 26-27).

⁷ Refer discussion page 34.

⁸ Barker & Associates Evaluation, page 31.

- *Contiguity with the area of well-established residential neighbourhood that adjoins to the east and is served by Foster Crescent, Cornel Circle and Iris Street;*
- *Containing topography where a spur provides a physical definition to the otherwise least delineated margin to the site;*
- *Frame of open space, with Goodall Reserve to the North and an unnamed parcel of reserve to the east;*
- *Close connection with Snells Beach School, in both spatial terms and in relation to the "built presence" established by the schools dynamic, modern buildings;*
- *Visual separation from the wider expanse of Mahurangi Harbour and limited imposition upon Dawson Creek, which is barely navigable and heavily contained by mangroves; and*
- *Potential for pedestrian connections to the adjoining esplanade reserve and Goodall Reserve."*

24. Additionally, I agree with the following aspects of the Barker & Associates Evaluation⁹ in relation to the potential adverse effects on existing residential amenity and character:

"... the proposed rezoning is considered to address amenity and character effects of the development for the following reasons:

- *The density envisaged by Single House zone (600m² average) is generally consistent with the residential density to the east of the subject site, and a consistent character would therefore be achieved. The change for these neighbours is that the neighbouring residential density will change to something similar to their own;*
- *It is considered that the properties at Te Whau Lane already provide an appropriate transition between the Residential Large Lot zoning on the western boundary of the site and the Rural Coastal zoning beyond, and the Residential Single House zoning on the eastern boundary of the site. Further, it is considered Te Whau Lane provides sufficient separation between the Plan Change site and the low-density zoned properties to the west;*
- *It is acknowledged that there is going to be a change in anticipated residential character as a result of the proposed rezoning of the site from Residential Large Lot to Residential Single House zone. . . .*

. . .

The Landscape Assessment (Appendix 7) has undertaken an analysis of the visual effects on the surrounding viewing audiences from the site. The visual effects can be considered the main driver of effects on amenity ... [and] ... those residents whose properties bound the site would be most affected by development resulting from the proposed zoning."

Matters of disagreement with Littoralis Landscape Assessment and Barker & Associates Evaluation

25. Having agreed with the majority of the overall findings of the Littoralis Landscape Assessment, there are aspects of that assessment and of the Barker & Associates Evaluation with which I disagree. For example, as set out below¹⁰, I do not agree that:

- *. . . This Plan Change application is to address the use of the land, and any potential visual and/or amenity effects will be dealt with at subdivision stage.*
- *The site size of the Single House zone and the development controls that apply, including height in relation to boundary, maximum building coverage and minimum landscaped area for example, will ensure that potential privacy and dominance effects to neighbours will be effectively managed. . . ."*

⁹ Refer discussion at page 33.

¹⁰ Barker & Associates Evaluation, page 33.

26. While various documents which accompany the Barker & Associates Evaluation and proposed plan change request, refer to the indicative subdivision scheme plan which is contained as Attachment 4 in the Littoralis Landscape Assessment, I understand that this possible development outcome should not influence my assessment of the proposed plan change request. Acknowledging therefore that my assessment review may stray somewhat outside the considerations of this plan change request, from a landscape and visual effects perspective, it is my opinion that the proposed development layout, as illustrated in the indicative subdivision scheme plan, may not represent the most appropriate design response for the site when considering the relevant localised opportunities and constraints¹¹.
27. For example, while I appreciate that development of the site for residential land use will inevitably require bulk earthworks, I suggest that the final landform, resulting roading and residential / open space property layout and public access connections could be stronger and better informed by the underlying stormwater and overland flowpath patterns, so that redevelopment of the site can provide a remedied and enhanced outcome and be more appropriate from a landscape and visual effects perspective.
28. I therefore suggest that a detailed '*landscape architectural led*' analysis (mapping) of the site's opportunities and constraints should inform an appropriate future subdivision and development pattern, particularly in relation to the site's sensitive northern coastal interface and when considering ecological, landscape and recreational (passive and active e.g. additional public access walkway linkages to connect to existing tracks) opportunities and constraints. In addition, further mechanisms for mitigating adverse effects on the existing outlook from residential properties to the immediate west and east of the site could be included, alongside mechanisms to ensure an appropriate interface with Te Whau Lane and the adjoining openspace to the south. There may also be opportunities to remedy existing overland flowpaths through planting and the avoidance of built development interrupting these natural landform influenced patterns.
29. I therefore hold some concern that the AUP(OP) provisions will not fully provide for or require the above outcomes at an application for resource consent stage and the only mechanism available for third parties (such as neighbouring property owners) to achieve '*bespoke*' outcomes which address their amenity values (such as in relation to outlook e.g. through dwelling footprint constraints and/or lot boundaries and specific yard setback requirements) will be through private agreements with the developer – in order to achieve consent notice restrictions on future property titles for example.
30. Perhaps it might transpire that a '*landuse led approach*' to development of the site (with subdivision around approved development) might be more appropriate – rather than approaching the task as a vacant lot subdivision. This may not achieve 52 lots and might see larger lot sizes in places than the minimum / average size lots provided by the AUP(OP) Residential - Single House zone, for example, but it may possibly result in a stronger and more appropriate landscape outcome.
31. Having said the above, I acknowledge that the council has limited scope to include bespoke provisions, such as those discussed above, when considering this private plan change request.

¹¹ As listed within Section D of the Littoralis Landscape Assessment (pages 11-12).

Review of relevant issues raised by submissions

32. Out of the five submissions received, only two raise relevant landscape and visual effects related issues, these being the following submissions:
- Submission 4 from Nigel Ross (17 Cornel Circle) dated 22/11/2019 and;
 - Submission 5 from Hayley Gates (25 Cornel Circle) dated 22/11/2019.
33. The issue raised by both submitters is in relation to the loss of existing rural outlook and the adverse effects of viewing potentially 53 new dwellings on the site (as enabled under the Residential – Single House zone) compared with potentially 11 new dwellings (as enabled under the Residential – Large Lot zone).
34. I acknowledge that there will be differences in likely outlook between each of these two potential scenarios; however, under each scenario the land use will be residential with the main potential for adverse landscape and visual effects being in relation to the location of these dwellings proximate to the viewers in Cornel Circle. Options to mitigate these potential effects might be available through a future application for resource consent; however, as per the discussion above, I hold some reservation over how effective the existing AUP(OP) provisions will be in securing this type of outcome – short of reaching a private agreement in the same way as has been achieved for those property owners in Te Whau Lane.
35. Following further consideration, I remain of the opinion that the adverse visual effects of increased residential development on site, as enabled by the proposed plan change, will be *'moderate'* as has been assessed by the Littoralis Landscape Assessment.

Conclusion

36. It is my opinion that, from an overall landscape and visual effects perspective, the plan change request is appropriate for the reasons outlined above. In addition, I acknowledge that it will provide for a more efficient use of residential land (i.e. the underlying activity on site will continue to be residential; albeit at a higher density than under the Residential – Large Lot zone), giving effect to the regional policy statement provisions under the AUP(OP), in particular those under Chapter B2 (Tāhuhu whakaruruhau ā-taone – Urban growth and form).
37. Having said this, I continue to hold reservations as to how effective the existing AUP(OP) provisions will be in requiring the most appropriate landscape response to future residential development on this site, at a site specific development scale, under the Residential – Single House zone. However, I understand that these concerns may not be entirely relevant when considering this proposed plan change request which simply seeks to change the zoning.

Please let me know if you require any further comments or if you have any questions of clarification.

Regards

Peter Kensington

Consultant Specialist Landscape Architect
Registered NZILA and MNZPI

Email: peter@kplc.co.nz

Phone: 027 227 8700

Attachment 1 – Relevant qualifications and experience (Peter Kensington)

1. I have worked as a landscape architect and a planner for twenty-three years. I am currently a director of Kensington Planning and Landscape Consultants Limited (KPLC) which was formed in September 2017. As a KPLC consultant, I provide professional landscape architectural and planning services and advice for applicants, regulatory authorities and submitters.
2. My relevant qualifications include a Bachelor of Landscape Architecture (Honours), 1995, from Lincoln University (Canterbury) and a Bachelor of Regional Planning (Honours), 1993, from Massey University (Palmerston North). I am a Registered member of the Tuia Pito Ora / New Zealand Institute of Landscape Architects (NZILA) and a Full member of the New Zealand Planning Institute. I have been an elected member of the national executive committee of the NZILA (during the 2011-2013 term), holding the office-bearing role of Treasurer. I was again appointed to the executive committee as a proxy member between 2016-2017. I have been a member of NZILA awards judging panels, including for the 2019 awards. I am a subscribing member of the Resource Management Law Association of New Zealand and the Urban Design Forum of New Zealand. I am a current MfE 'Making Good Decisions' certificate holder.
3. I have worked for the Christchurch City Council (1995-1997), the Wellington City Council (1999), the Auckland office of Boffa Miskell Limited (1999-2012) and, prior to establishing KPLC, the Auckland Council (Council) (2012-2017). At the Council I was a Principal Planner in the Hearings and Resolutions team of the Resource Consents Department. In that role, I was responsible for the case management of appeals, direct referrals, judicial reviews, objections, hearings and independent duty and hearings commissioner processes – in relation to applications for resource consent associated with the geographic area generally defined by the then Auckland Council District Plan (Isthmus Section) and the Auckland Council District Plan (Hauraki Gulf Islands Section). In addition to my core role, I also prepared expert landscape architecture evidence in relation to various matters. I also assisted the Resource Consents Department's Practice and Training team with interpretation and integration of the Auckland Unitary Plan (Operative in part) into the department's practices and procedures.
4. My landscape architectural work is focussed within the landscape planning speciality of landscape architecture, where an assessment of effects on natural character, landscape and/or visual amenity values is required primarily in relation to applications for resource consent or plan changes. Throughout my professional career, I have provided expert landscape architectural advice in relation to many matters where an assessment of the effects of proposed developments on the landscape character and visual amenity values of urban, rural or coastal environments is required. The majority of my recent KPLC consulting over the past two-years has been undertaken on behalf of the Council's Resource Consents Department, primarily through the Auckland Design Office, Design Review Unit.
5. Relevant to this proposed plan change request, through KPLC, I have provided advice in relation to:
 - i. the proposed construction and operation of new aged care facilities / retirement village at Bremner Road, Drury on rural land zoned future urban;
 - ii. bulk earthworks, stormwater, roading infrastructure and street tree planting to provide for a staged residential subdivision at East Coast Road, Silverdale;
 - iii. residential 48-lot subdivision, Waitakere foothills, Christian Road, Swanson;
 - iv. 19-lot residential subdivision in 'Orere River Terraces' Outstanding Natural Feature, Orere Point; and
 - v. private plan change request to rezone land from rural to residential at Oākura, Taranaki.

PETER KENSINGTON
Planner • Landscape Architect
NZPI • Registered NZILA
027 227 8700
peter@kplc.co.nz

KPLC
PLANNING • LANDSCAPE • CONSULTANTS



David Wren
PO Box 46018
Hearne Bay
Auckland 1147

19 June 2019
Our Ref: P18011

By email: david@davidwren.co.nz

Dear David

Traffic Review of Private Plan Change Request for Snells Beach

A request has been lodged by Barker & Associates for a private plan change for the rezoning of an area of land in Snells Beach from Large Lot to Single House zone dated 14 February 2019.

This report reviews the traffic aspects of the request and supporting documentation. These documents include:

- Section 32 Report, Barker & Associates (dated 15 February 2019)
- Transport Impact Assessment, Team Traffic (dated 27 November 2018)
- Engineering Drawings, Land Development & Exploration Ltd (20 March 2018)
- Consultation Document and Responses (various dates and parties)
- Further information provided by Applicant (30 May 2019)

A site visit was conducted on 11 March 2019 to observe the site and to understand any constraints or factors that may affect the requested land rezoning.

1. Proposal

The proposal is for a Private Plan Change for the rezoning of 4.6 Ha of land at Foster Crescent, Snells Beach from Large Lot to Single House Zone and would accommodate 52 dwellings.

The site would be accessed from an extension to Foster Crescent and would be serviced by two new roads that are proposed to be vested with the Council. The connection into the site would require the realignment of adjacent vehicle crossings to properties on Foster Crescent and to large lot sites at Te Whau Drive.

2. Site Description

The subject site is currently undeveloped fenced land. It is connected to the wider road network via Foster Crescent (an existing cul-de-sac) and Iris Street. These roads connect to Mahurangi East Road which is effectively an arterial road which provides for traffic movements to Warkworth to the

north. Both Iris Street and Foster Crescent have kerb to kerb carriageway widths of 7.8m. This allows for on-street parking, although when this occurs, the roads may be narrowed to a single lane.

A footpath access is provided from the cul-de-sac turning head on Foster Crescent to the Snells Beach Primary School. Foster Crescent is used by parents as a drop off and pick up location for the school.

3. Auckland Transport Feedback

Auckland Transport (AT) has not raised any issues to the re-zoning of the land at this stage due to the trip generation being relatively low. However, they have requested that further details of the proposed road, cross-sections and intersections with Foster Crescent should be provided if the Private Plan Change is accepted. AT has provided comment on the details of the design which is probably more relevant to the subdivision design rather than the Plan Change. AT has made comment on the proposed road reserve cross-sections which is discussed below in Section 0.

AT has requested that they would like to review and comment on text for any proposed plan change once drafted and that the road cross-sections should be treated as indicative only and should not be included within the Auckland Unitary Plan (Operative in Part).

AT's response is included as Attachment 1 for reference.

4. Trip Generation

The Transport Impact Assessment (TIA) references the Roads and Traffic Authority (RTA), New South Wales – 'Guide to Traffic Generating Developments', and the Transfund New Zealand Research Report 210 'Trips and Parking Related to Land Use' in determining the trip generation from the site.

The applicant has adopted 10 vehicle trips per household per day and one vehicle trip per household during the peak hour. Based on recorded traffic movements from the residential area immediately to the east of the subject site and the number of dwellings, the peak hour generation of the existing dwellings was assessed in the TIA to be of the order 0.71 to 0.87 trips per hour. Therefore, it is considered that the adopted generation rate is appropriate and provides a robust assessment.

Table 1 summarises the total number of forecast trips for the Single House Zoning, the number of trips that would be associated with the existing Large Lot zone should it be developed with 11 lots, and the total additional number of trips.

Table 1 - Forecast Additional Trips

	No. of Trips (two-way)	
	Daily	Peak Hour
Single House Zone	520	52
Large Lot Zone	110	11
Additional trips	410	41

5. Link and Intersection Capacity

Traffic counts provided in the TIA indicate that the traffic volume on Iris Street which connects Foster Crescent to Mahurangi East Road has up to 74 vehicles per hour during the peak periods. With the forecast additional traffic with the Single House Zone there would be a total of around 125 vehicles per hour on Iris Street. This is considered to be well within the link capacity of the road.

The applicant has provided details of the turning volumes at the intersection between Iris Street and Mahurangi East Road with the proposed development (Section 4, Tables 3 and 4). Given the relatively low volumes of turning vehicles and the number of vehicles travelling along Mahurangi East Road, it is concurred with the TIA assessment that the intersection has sufficient capacity to accommodate the increase in traffic.

The TIA considers the addition of traffic from a known residential development on Dawson Road to the south of the subject site. Traffic using this site would travel through the Iris Street / Mahurangi East Road intersection. This development is forecast to increase two-way traffic on Mahurangi East Road by around 70 vehicles at peak times. It is agreed with the TIA assessment, that this would not have a noticeable effect on the operation of the Iris Street intersection.

It is noted that traffic from the subject site will access the wider road network through Warkworth, including the SH1 Hill Street intersection. Any additional traffic will have an adverse effect on the operation of this critical intersection. The Supporting Growth programme has identified transport improvements for Warkworth, and this will provide some relief to this intersection as it will provide an improved connection to the extension to the northern motorway around Warkworth via the Matakana Link Road and future link between Sandspit Road and Matakana Road.

6. Pedestrians

Iris Street and Foster Crescent are used as pedestrian routes for school children walking to and from Snells Beach Primary School. There is an existing walkway at the end of Foster Crescent that connects to the school which is well used by students. This walkway is proposed to be retained with the Plan Change but may need some minor realigning depending on the design of the connection of the subject site to Foster Crescent.

Foster Crescent and Iris Street have footpaths on only one side; Foster Crescent on the southside and Iris Street on the northern side.

The proposals for the plan change are that the proposed new roads within the site would provide footpaths. The main connecting road to Foster Crescent (Road A) would have footpaths on both side of the road, and the road connecting to the rear of the lots (Road B) would have a footpath on only one side. The proposed cross-sections show these footpaths to comply with Auckland Transport Code of Practice (ATCOP) minimum 1.8m wide footpath. Auckland Transport has indicated that they would seek to have footpaths on both side of Road B. This would require a wider road reserve width to accommodate the additional footpath. As discussed in Section 0, AT would accept a change to the proposed road reserve widths which would facilitate the provision of the additional footpath.

As noted in Section 8 on Public Transport, there are bus stops on Mahurangi East Road. For bus passengers to walk to these stops, this requires pedestrians walking along the footpaths to cross the road numerous times. For those who are less mobile or with pushchairs, there are no pram crossings or formal facilities to assist pedestrians crossing the road.

A connection is proposed from with the subject site to the esplanade reserve via a pedestrian accessway. It is unclear if this access way is to be vested with Auckland Transport as a road or with Auckland Council as part of the reserve. The design of the accessway would need to comply with the requirements of either of Auckland Transport or Auckland Council as appropriate.

There is an access to Snells Beach School from Foster Crescent. There is some drop-off and pick up activity on Foster Crescent associated with the school at school start and finish times. As this is a cul-de-sac, motorists are required to either turn around in the turning head or U-turn using driveways. Surveys indicate that the majority of vehicles associated with the school utilise the existing turning head to turn around.

The proposed development would remove the turning head and therefore, this removes a facility for motorists to turn around. It is likely that the new roads within the development would be used as a way to turn around to exit the area. The new roads should be designed to encourage slower speeds to promote pedestrian safety.

7. Cyclists

There are no formal on-road cycle facilities in the area of the subject site.

The Rodney Local Board "Rodney Greenways: Paths and Trails Plan", May 2017, indicates that there are off-road facilities along greenway routes in the vicinity of the site which connect to local amenities, such as Snells Beach Primary School and the retail area on Mahurangi East Road to the north of the site, but these do not currently connect further afield, for instance to Warkworth. These are proposed routes that will be delivered at some point in the future.

No cycle facilities are proposed as part of the plan change other than a potential connection to the off-road route through the northern part of the site to the esplanade reserve.

8. Public Transport

There is limited public transport in the vicinity of the subject site. Bus stops are located adjacent to the intersection of Dawson Road / Mahurangi East Road an approximate 550m walk from where the site meets Foster Crescent. These cater for one scheduled local bus service (Route 996) which has approximately one bus every 2 hours. This bus route has an origin and destination in Warkworth.

There is also a private bus operator, Mahu Express, that travels from Snells Beach to Central Auckland via Warkworth on weekdays with two city bound services in the morning peak and two outbound services in the evening peak. However, this bus does not stop at the bus stops on Dawson Road. This service starts and stops at the Snells Beach Baptist Church, an 800m walk from the subject site.

Commuters into central Auckland are also able to catch scheduled buses from Warkworth. If travelling from the site to Auckland using Auckland Transport scheduled buses, this would require passengers to transfer twice between services.

It is typically accepted that bus passengers will walk up to 400m to a bus stop. As outlined in Section 6 there is no continuous footpath between the subject site and the bus stops. Therefore, given the distance to bus stops, poor pedestrian connections to the bus stops and frequency of services, it is considered that the subject is not easily accessible to the public transport network. In this regard, the development is therefore not consistent with Unitary Plan objectives (Objective B3.3.2(5)(b)) of reducing demand for private vehicle trips.

9. Proposed Road Cross-section

Two roads are proposed within the subject site. Road A has a proposed road reserve with of 18m and the second, which serves the rear of lots, Road B, has a width of 14m. These are both proposed to have a carriageway width of 6m.

Road A exceeds the minimum typical road reserve width required in ATCOP of 17.0m. Information provided in response to further information requests has clarified that the proposed kerb to kerb carriageway width would be 9.8m for Road A and 7.3m for Road B. It is understood that the additional width is required for parking. The overall kerb to kerb dimension of Road A is wider than the kerb to kerb width of 7.8m on Foster Crescent and Iris Street.

Auckland Transport has indicated that from experience of developments in recent years that a minimum width of 16m is required to facilitate all necessary functions within the road reserve. AT has suggested that the Road B road reserve should be increased to 16m and that Road A road reserve could be reduced to 16m.

10. Road Safety

The crash records in the vicinity of the site do not indicate that there are road safety issues of particular concern.

The roads within the subject site should be designed for a 30km/h speed environment. This is to promote the safety of pedestrians and residents, particularly at the site roads would be used by some motorists to turn around to exit the area such as when dropping off or picking up children for the school.

11. Vehicle Tracking

Indicative vehicle tracking has been shown for an 85th percentile car and 10.3m truck assuming that the carriageway width is 6m. Whilst this indicates that this width may be appropriate for these vehicles, without confirmation of the actual cross-section and alignment of the roads it is not possible to comment on the suitability of the tracking. This could be dealt with during resource consent stage and engineering plan approval.

12. Construction Traffic

To develop the site, construction vehicles, including large heavy vehicles will need to access the site. No details of how the site would be developed have been provided, but it is assumed that this would be via Iris Street and Foster Crescent. As highlighted in the TIA, these streets from time to time do not allow two way traffic due to on-street parking. In addition, Foster Crescent is used for pick-up and drop-off of children for the school. At these times, it would be difficult for large vehicles to access the site and this may be a safety issue should a conflict between a truck and a pedestrian occur.

Additional information provided by the Applicant's Traffic Engineer states that semi-trailers would be required from time to time to access the site and that traffic management would be needed to enable these vehicles to reach the site.

A condition should be included that requires a Construction Traffic Management Plan to be prepared and approved.

13. Conclusions

The traffic effects of the proposed Private Plan Change for the rezoning of land at Forster Crescent from Large Lot to Single House Zone have been assessed. It is considered that the traffic effects of the proposed development can be appropriately addressed provided that:

- a) The roads within the subject site are designed to promote speeds less than 30km/h
- b) The roads within the subject site are designed to enable vehicles on Forster Crescent (such as drop-off and pick-up for the school) to be able to exit the area safely

Whilst the forecast traffic can be accommodated, it is noted that the site is not readily accessible to public transport. There are infrequent bus services along Mahurangi East Road and the site is 550m from the nearest bus stop for scheduled public local buses, or 800m for private commuter services to Auckland. This is inconsistent with some of the Unitary Plan objectives to reduce the demand for private vehicle trips.

It is not clear whether the proposed walkway connection to the esplanade reserve from the subject site would be vested, and if so whether this would be with Auckland Transport or Auckland Council. It is recommended that the applicant has early discussions with the appropriate organisation with regards to this walkway if this is to be vested to ensure that the requirements for the design of the walkway are met.

Auckland Transport has provided a number of comments on detail of the proposals (refer to Attachment 1) including the proposed road reserve widths and provision of footpaths on the roads. It is recommended that the applicant engage early with Auckland Transport with regards to the points raised.

AT has requested the opportunity to review and comment on text associated with a plan change.

Construction traffic would be required to use Iris Street and Forster Crescent to access the subject site. Larger vehicles would not be able to do so safely or easily due to the geometry of the roads and if there is on-street parking. Therefore, a condition should be imposed that requires the preparation and approval of a Construction Traffic Management Plan to ensure that construction vehicles can safely access and exit the subject site with particular reference to vehicle tracking along Iris Street and Forster Crescent, and how the requirement for drop-off and pick-up for the school on Forster Crescent would be managed.

I would be happy to discuss any queries on the above assessment.

Yours sincerely

A handwritten signature in black ink, appearing to read "Martin Peake".

Martin Peake

Progressive Transport Solutions Limited

M: 021 663548

E: martin@progressivetransport.co.nz

Attachment 1 – AT Comments on Proposals

AT comments on TIA for proposed plan change and residential subdivision at Foster Crescent, Snells Beach (11 Oct 2018)

Topic	Comment
Traffic Engineering	<p>No issues at this time. The development trip generation is low and there are no known existing traffic issues and this location.</p> <p>Would like to review detailed plan of the proposed intersection and road once it is available.</p>
Walking and cycling	<p>Need to be aware of the walkway that goes directly to Snells Beach School from Foster Crescent. During development there are likely to be additional trade vehicles parking around the entrance to the walkway and parking may need to be controlled.</p> <p>Note that the local board has endorsed the Pūhoi to Pakiri Greenway Plan which includes a section of route on the coastal esplanade adjacent to this development. https://aucklandtransport.sharepoint.com/sites/WnC-1/North/Greenway%20Plans%20-%20Rodney/P2P_All%20maps.pdf</p>
Public transport	No network planning issues identified.

Memo

06 January 2020

To:	Austin Fox, Plans and Places
From:	Iresh Jayawardena, Senior Specialist, Healthy Waters
Cc:	Lakshmi Nair, Senior Specialist, Healthy Waters (Appendix 1) Ken Tompkins, Senior Specialist, Healthy Waters Clarke McKinney, Resource Management Team Manager, Healthy Waters
Subject:	Foster Crescent, Snells Beach - Private Plan Change 35, Healthy Waters Memorandum
Status:	Final

1. Introduction

The applicant, Prime Property Group Limited, has applied for a private plan change to the Auckland Unitary Plan (Operative in Part) (AUP: OP) to rezone approx. 4.6384 Ha of land (Lot 1 DP 149776) from Residential – Large Lot Zone to Residential – Single House Zone (Figure 1). The plan change was notified on 24 October 2019 and further submissions closed on 22 November 2019.

The current Residential – Large Lot Zoning enables the development of 11 residential lots on the site. The proposed Residential-Single House zoning (as included in the subdivision layout plan (reference # Dwg 13641-C01)) submitted with the private plan change application indicated an establishment of a higher density development on the site in which includes approximately 52 single house residential lots (Figure 2).



Figure 1: An aerial view of the proposed plan change site and surrounding environment



Figure 2: Proposed 52 lot residential subdivision on the plan change site

2. Scope and Purpose of Memo

This memo provides Healthy Waters advice on the quality of the plan change lodged by Prime Property Group Limited for the proposed Foster Crescent - Private Plan Change, and an assessment of the hydrological mitigation, water quality and overland flow paths as they affect stormwater management and views on submissions if relevant. The memo is intended to support the s42 report of this plan change proposal.

In preparing this memo the following documents were reviewed submitted by the applicant:

- Appendix 4 – Engineering Report and Drawings (ref# 13641), prepared by Land Development & Exploration Ltd, dated 21 March 2018
- Appendix 7 – Ecological Assessment, prepared by Bioreserchers, dated 17 July 2018
- s32 evaluation for the Proposed Plan Change Request and Assessment of Environmental Effects, prepared by Barkers and Associates (ref# 16220), dated 20 May 2019
- Summary of decisions requested and submissions

Other:

- Auckland Unitary Plan: Operative in Part
- Auckland Council databases and Geomaps aerial imagery

3. Assessment of Proposal

The plan change proposes to change the existing zoning from Residential – Large Lot to Residential – Single House which results in increasing the maximum impervious coverage from 35% to 60% on-site. The plan change does not introduce precinct plans or propose additional rules and/or standards beyond what is currently operative under the Residential - Single House Zoning in the AUP: OP.

The stormwater management for the proposed PPC was reviewed taking into consideration whether appropriate measures are taken to avoid, remedy and/or mitigate any stormwater flow effects, stormwater quality; streams; wetlands, including water features; contaminated lands; and flooding perspectives on the receiving environment.

The key issues covered in this technical memo are:

- hydrological mitigation,
- stormwater quality treatment
- managing overland flow paths, and
- stormwater network design

More detail assessment on these points is provided below.

3.1 Site and catchment context

As discussed in section 1, the site subject to this plan change is approx. 4.6384 ha and currently zoned Residential – Large Lot Zone under AUP: OP. Access to the land has gained via Foster Crescent that directly connect to the Mahurangi East Road via Iris Street. The

subject land is located at the Mahurangi catchment and stormwater from the proposed future development will discharge directly to Mahurangi Harbour. The site is currently grassed and free from any physical development.

3.2 Hydrological mitigation

The maximum permitted impervious area coverage for the subject site under the current zoning is 35% (standard H1.6.6). If the PPC becomes operative, the proposed Residential-Single House Zone will enable the development of impervious coverage area of 60% (standard H3.6.9) as a permitted activity. The increase in impervious area coverage from 35% (residential large lot zone) to 60% (residential single house zone) as a result of this plan change will have potential implications on the downstream Mahurangi Harbour receiving environment. The Mahurangi Harbour is identified as a Significant Ecological Area under AUP OP.

It is considered, adverse effects on the receiving environment can be mitigated by implementing and adopting the best practicable options (BPOs) to stormwater management. Typically, in Auckland, this can be achieved through the provision of hydrological mitigation as described in GD01/GD04.

The applicant has provided an Engineering Report for the proposed Lot 52 Residential Subdivision (ref# 13641). In section 3.1 of LDE Engineering Report states stormwater attenuation is not required as the proposed development is to be directly discharged into Mahurangi Harbour.

We agree with the applicant, that stormwater attenuation will not be required for this site. However, conditions 15c of the existing Mahurangi East NDC (29384) granted in 2012 states, pre-development flow regime is to be retained for storm events up to a 1 in 10 year ARI (Appendix 1). The condition 16 iii states offline controls to achieve hydraulic neutrality.

Advise note:

- *A Stormwater Management Plan for the future development will be required to demonstrate how the existing conditions under Mahurangi East discharge consent (29384) will be met.*

As the PPC proposal is to increase the density, including the impervious coverage, it is recommended that any existing infrastructure and their capacity must be assessed to support the development. This is to identify constraints and capacity on the existing infrastructure for increased future flows and to identify any upgrades will be required prior to development.

Given the stormwater discharges directly to SEA, it is also recommended to undertake further investigation to identify any risk of coastal erosion, as a result, increased stormwater flows coming from future development and the conditions of the existing outlets.

3.3 Streams/Freshwater

It is noted that there are potentially permanent and intermittent streams traverse across and or part of the site. The PPC proposal does not seem to appear adequately assess and or identify actual and potential effects on these potential watercourses and wetlands. in.

particular, any ecological effects, such as a hydrological change in the stream network. A change from the current greenfield land use to predominantly residential land use is associated with increased imperviousness, which has the potential to alter the stormwater regime, in regard to both stormwater quantity and quality. Development of greenfield will exacerbate stream erosion if unmitigated. A watercourse assessment must demonstrate that mitigation of hydrological adverse effects from erosive flows and will be needed to provide stream bank stability, as well as associated effects on stream habitat and receiving environments.

It is considered that further, more detailed, site-specific stream erosion assessments may be required at a time preceding development, to prevent exacerbating stream erosion issues.

Page 20 of the s32 report states, through the subdivision process, the proposed PPC will give effects to Chapter B7 objectives and Policies, in particular; Policy B7.3.2 (6) that states,

(6) Restore and enhance freshwater systems where practicable when development, change of land use, and subdivision occur

The Engineering report presents a design layout provided by C&R Surveyors Ltd for the civil infrastructure servicing for the development, including scheme plans, access, proposed earthworks, stormwater management systems, wastewater management and water supply. Engineering drawings also indicate filling in the existing pond. Given the nature of PPC proposal, including submitted design drawings (refer Appendix 3, Sheet 1 of LDE Engineering Drawings) insufficient assessment have been undertaken to identify effects of those reclamations.

Although it was noted as a potential effect, it is considered the future development of the land must meet the relevant policy directives with regards to stream restoration and enhancement opportunities within the site as directed under AUP: OP Chapter E3. It is anticipated a level of assessment needs to be undertaken prior to development to allow opportunities to restore permanent and intermittent watercourses on-site and to give effects on objectives and policies in AUP OP, Chapter B7 Policies B7.3.2 (6) and Chapter E1.

Furthermore, it is also considered that E3 of the AUP has sufficient provisions to allow for any applications of watercourse reclamation of in-streams structures to be assessed appropriately. This includes relevant objectives and policies, rules and assessment criteria. Accordingly, given the policy directions of the AUP: OP, the reclamation of any stream, lake or wetland is a non-complying activity and this will be assessed under a resource consent application.

3.4 Water quality

The AUP: OP promotes integrated stormwater management. Integrated stormwater management focuses on stormwater management that integrates land uses with its effects on stormwater including, source of contaminants and impacts of changes in hydrology. Chapter E1 of the AUP specifically addresses what integrated stormwater management is and what is expected for managing stormwater in greenfield areas. It is also considered a

risk of potential to increase contamination loads into the receiving environment. This will require treatment prior to discharge.

With regards to stormwater quality treatment for runoff from the development, section 3.3.2 of the LDE Engineering report, the applicant proposes to install two Stormwater360 StormFilters. The StormFilters are to be located at the base of the site and discharge to a common outlet. The report also states runoff from the road areas within the site is to be treated before the flows reach the filters located at the bottom of the development.

In response to the above comment, it is considered the AUP OP policy directions under Chapter E38.3 (22) & (23) provides subdivision to be designed to manage stormwater by giving effects to the followings policies.

- (22) Require subdivision to be designed to manage stormwater:*
 - (a) in accordance with any approved stormwater discharge consent or network discharge consent;*
 - (b) in a manner consistent with stormwater management policies in E1 Water quality and integrated management;*
 - (c) by applying an integrated stormwater management approach to the planning and design of development in accordance with stormwater management policies in E1 Water quality and integrated management;*
 - (d) to protect natural streams and maintain the conveyance function of overland flow paths;*
 - (e) to maintain, or progressively improve, water quality;*
 - (f) to integrate drainage reserves and infrastructure with surrounding development and open space networks; and*
 - (g) in an integrated and cost-effective way.*
- (23) Manage subdivision and development to avoid, remedy or mitigate adverse effects on infrastructure including reverse sensitivity effects, which may compromise the operation and capacity of existing or authorised infrastructure*

The PPC site is a greenfield area with no current impervious surfaces. Therefore, prior to identifies potential stormwater devices, such as StormFilters, the future development may be required to explore alternative methods of stormwater quality treatment that could be applied at site level. It is encouraged to consider integrated stormwater management, known as Water Sensitive Design (WSD) process when considering the stormwater management for the site to mitigate potential adverse effects on the sensitive receiving environment.

Advise note:

- *Healthy Waters is unlikely to accept the installation of StormFilters given the high maintenance and cost concerns. It is recommended that applicants explore alternative options using GD01/GD04. This can be undertaken before the detailed development design is determined for the subdivision proposal.*

Similarly, more information should be provided at the resource consent stage detailing how on-site treatment devices, such as vegetated swales and rain gardens will be implemented from development. If there are site constraints for implementation of GD01/GD04, the applicant must provide details of the device selection process at the resource consent stage.

3.5 Managing overland flow paths and flooding

Council's Geomaps indicates three major overland flow paths crossing the site one of them taking flows from a 4 hectare of upstream catchment. The PPC is for rezoning the land from lower residential density to a higher residential density land use. It is considered a more rigorous assessment to demonstrate how the proposed cut and fill approach to manage effects and of those OLFs will be diverted along the road or through the new lots to manage effects. This assessment is likely to be achievable provided that overland flow paths are managed effectively at a future design stage. Given the existing AUP Chapter E38.6 General standards for subdivision of land in a residential zone must comply with applicable standards that covers OLFs otherwise requires a discretionary resource consent. As such, an assessment of the OLFs is required to inform management of those effects and consistency with the relevant policies of AUP OP E12 and E38.

As the site is located at the bottom of the catchment and runoff will enter the coastal receiving environment it is not considered that the increase in impervious area as a result of the zoning change will result in increased flooding beyond the site.

4. Review of submissions and further submissions

One submission was received in relation to flooding, this is summarised below:

"At the public meeting there was a lot of concern about the impact this will have on the Amenities in the area, as there is already a huge issue with Septic, flooding and drainage. This has not been suitable addressed".

Comment: As the site is located at the bottom of the catchment and runoff will enter the coastal receiving environment it is not considered that the increase in impervious area as a result of the zoning change will result in increased flooding beyond the site. Any buildings to be created within the 1% AEP flood plain would require restricted discretionary resource consent. A Stormwater Management Plan submitted for NDC authorisation would also need to address flood management at the site-specific development.

5. Auckland Council stormwater network discharge consents

This site is within the catchment of 'stormwater discharge consent' (29384) and coastal permit (38181) granted in 2012 to divert and discharge stormwater from the existing and future public reticulated stormwater network for the Mahurangi East catchment. Auckland Council Healthy Waters Department now holds a Region-wide Network Discharge Consent (NDC) that allows diversion and discharge of stormwater from the current and future public stormwater network for the whole of the Auckland Region which will supersede the previous consents.

Advice note:

- *The NDC requires that a site- specific stormwater management plan is prepared in order to authorise the diversion and discharge of stormwater from new public network. This will need to be prepared and approved by Healthy Waters alongside the other resource consent and subdivision applications relating to this site. it is recommended that the applicant discuss the specific requirements and*

proposed mitigation within the SMP with Healthy Waters well in advance of lodging those applications.

6. Recommendations

In the context of stormwater and based on the above assessments and dependent on the provided recommendations in relation to future hydrological mitigation, quality treatment, erosion and sediment controls, overland flow path management and network design the Private Plan Change can be supported.

It is recommended that:

1. PPC will result in increased density and impervious coverage. It is therefore recommended any existing infrastructure and their capacity must be assessed to support the development. This is to identify constraints and capacity on the existing infrastructure for increased future flows and to identify any upgrades will be required prior to development.
2. The development will increase flows and directly discharge to Mahurangi harbour SEA. It is recommended that erosion protection measures may be required where possible, and to avoid sedimentation discharge to Mahurangi Harbours.
3. Given the land is greenfield, the applicant considers the need for integrating water sensitive design for land use development and stormwater quality treatment using Auckland Council GD01/GD04.
4. When the detailed design for the development of the site is undertaken and resource and land use consent applications are made the applicant will need to also prepare a stormwater management plan in accordance with Auckland Council's NDC if the proposed network is intended to be vested as public.

Advise notes

The following matters, including Appendix 1 attached to this memo provides additional information that may be required to be addressed at the time of preparing a SMP for site development.

- *With respect to the requirements of Clause 15c of the 2012 NDC, the applicant will need to provide further information to confirm that the existing stream is not affected in any way by any changes to the current 10 year discharge regime, before Healthy Waters can consider lifting the requirement to retain the existing flow regime post development, and*
- *Anti-erosion measures and appropriate energy dissipators will be required at outlets to the stream and coastal environment areas.*
- *Storm Filters are not a preferred treatment device, due to high capital running costs and the need to work in a confined space. Other devices will need to be considered and reported on together with full maintenance costs.*

- *The preliminary designed stormwater reticulation system includes relatively steep grades and high velocities. This may need to be re-evaluated at the subdivision stage.*

Memo

Date: 06.03.2020

To: Iresh Jayawardena, Specialist, Healthy Waters

From: Lakshmi Nair, Senior Specialist, Healthy Waters

Review of proposed stormwater design for a Private Plan Change application

Address: LOT 1 DP 149776, FOSTER CRESCENT, SNELLS BEACH

Application Reference:

Introduction:

The Engineering Report prepared by LDE Ltd under section 3 provides "Stormwater Management" options for the proposed 52 lot subdivision. The report also has provided stormwater catchment and proposed pipe capacity assessment. My responses below are comments after a review of this report.

The catchment for this site has a catchment specific "stormwater discharge consent" granted in 2012 under the name "Snells - Algies Beach (aka Mahurangi East) with the consent number 29384.

However, it is recommended that this development apply under the newly granted Regionwide Network Discharge Consent (NDC) as the Snells Beach discharge consent was issued prior to Unitary Plan. As this development will be a Greenfield development, a Stormwater Management Plan (SMP) specific to the site must be approved by Healthy Waters to confirm that the performance requirements under the Schedule 4 of the NDC. The link for the SMP template can be found here <http://www.aucklanddesignmanual.co.nz/regulations/technical-guidance/ndc/guidance/plans-and-templates>.

The SMP should consider that the discharge location of Mahurangi Harbour is an area of SEA or "Significant Ecological Area".

Development Specific Comments:

Stormwater Attenuation: - The attenuation requirements for the stormwater runoff will be assessed through the approval process of the SMP. It is recommended to use TP108 rainfall data and not HIRDS for calculations.

Stormwater Treatment: - The treatment devices will also need to be approved through the SMP assessment. The proposed treatment method of Stormfilters are generally not acceptable as public assets due to high maintenance costs.

Overland flow path: - Geomaps show at least 3 overland flow paths crossing the site one of them taking flows from a 4-hectare upstream catchment. There is not enough information in the LDE report on how those OLFPs will be diverted along the roads or through the new lots. Also, more information on the effects of filling in the existing ponds will be required.

Network Design: Even though the alignment of the proposed reticulation may be acceptable in principle, formal approval to be obtained through the adoption of SMP. If using existing outlets, they will need to be investigated and upgraded to minimise erosion as required.

Ezra Barwell – Community Investment

RE: Plan Change 35 - Foster Crescent, Snells Beach



Ezra Barwell
To Austin Fox



12/03/2020

You forwarded this message on 13/03/2020 09:12.

This message is part of a tracked conversation. [Click here](#) to find all related messages or to open the original flagged message.

Hi Austin

I confirm that I have no comments on the merits (or otherwise) of the plan change itself.

Cheers

Ezra

Ezra Barwell | Senior Policy Advisor
Community Investment

DDI +64 9 890 8285

Mob +64 21 897 004

Auckland Council, Level 21, 135 Albert Street, Auckland Central

Private Bag 92300, Victoria Street West, Auckland 1142, New Zealand

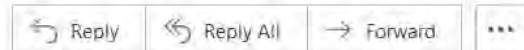
Visit our website: www.aucklandcouncil.govt.nz

Maylene Barrett – Parks Planning

RE: Plan Change 35 - Foster Crescent, Snells Beach



Maylene Barrett
To Austin Fox, Ezra Barwell



16/03/2020

You forwarded this message on 16/03/2020 14:44.

Hi Austin

I have completed my review of the plan change application and have the following comments and requests for further information:

- The proposed development site is well served with regards to existing walkway networks and open space provision/community facilities. It will just be important to ensure that the proposal makes good use of these existing facilities and provides good connections to ensure connectivity and good CPTED outcomes.
- With regards to Watercare's request to have Lots 18-23 vested as drainage reserve in Auckland Council (looks to me like they mean lots 21-25 on the plan below) could you please keep Parks in the loop with regards to this. Healthy Waters will also need to provide input on this request. It is difficult to see how they will be able to accommodate a building platform within the lots that are at least 10m away from the pipes as per Watercare's requirements. If these private lots are to be enlarged and remain as private lots, then Parks will be interested in how the public private interface will be handled with regards to boundary treatments and fencing.
- Lot 54 is too narrow at the entrance from the road to vest (Lot 60) at only 5m width. Pedestrian accessway should be 10m wide for their full length in accordance with current standards.
- The proposed Recreation Reserve to vest (Lot 53) of 1897m2 appears to accommodate a significant section of the Wastewater rising main, and it could be argued that this should instead be vested as local purpose drainage reserve. A further question would be how will safe access be provided from this new park to the existing Te Whau River walkway that runs along the esplanade reserve. There is a bridge that crosses between the Te Whau Esplanade to the Hamatana marginal strip. There is also an existing walkway access from the Cornel Circle culdesac across the Watercare pumpstation site. It is recommended that provision is provided for a new walkway connection across Lot 53 to the existing walkway as part of the proposal.
- The New Zealand Coastal Policy Statement 2010 (NZCPS), Regional Policy Statement (RPS) chapter B.10 (Environmental Risk), Auckland Unitary Plan (AUP) chapter E.36 (Natural Hazards and Flooding) and E.38 (Subdivision) direct that coastal erosion hazard risk over a 100 year timeframe is considered for new development in the coastal environment. With regards to potential impacts on Lots 21-25, and to ensure that safe public access and recreational use of the esplanade reserve can be maintained for the future, please provide a Coastal Hazard Assessment which assesses the effects of coastal hazards on the esplanade reserve in accordance with Rules E.36.9(1), E38.12.2 and section 6 of the RMA, which identifies managing Natural Hazards as a matter of national importance.



Regards

Maylene Barrett | Principal Specialist Parks Planning
 Parks Planning
 Parks Sports and Recreation
 Mobile 021829752

