

## INFRASTRUCTURE REPORT



# Private Plan Change 48 Esmonde Rd Takapuna

## PROJECT INFORMATION

CLIENT	Kingstone Property Limited
PROJECT	175001

## DOCUMENT CONTROL

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REVISION	B
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AUTHOR	
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Jignesh Patel  
Engineer - Team Leader

REVIEWED BY	
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Will Moore  
Director

APPROVED BY	
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Will Moore  
Director

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Level 2, 12–14 Walls Road, Penrose.  
PO Box 11605, Ellerslie, 1542.  
New Zealand  
Phone 09 571 0050  
[www.maven.co.nz](http://www.maven.co.nz)

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## 1.0 INTRODUCTION

### 1.1 PROJECT

This report is in support of a private Plan Change (Takapuna 2 Private Plan Change) for a site at 48 Esmonde Road, Takapuna, identified within Figure 1.1 Locality Plan (Below).

The report focuses on the establishment of a new precinct plan that seeks to provide for the comprehensive and integrated redevelopment of the site. The precinct enables a new residential community comprising a mixture of housing types within a unique urban setting.

The key zoning of the land within the precinct is Residential - Terrace Housing and Apartment Buildings Zone. A limited range of non-residential activities is intended to support the local residential community while not undermining the role, function and viability of existing centres nearby. The Plan Change also seeks to rezone the proposed 20 metre esplanade reserve to Open Space.

The purpose of this report is to provide an assessment of infrastructure associated with implementing the proposed Plan Change.

The proposed development comprises in the order of 550 apartments, including , a 182-unit hotel, and a number of non-residential uses (café/restaurant, fitness centre, health care, learning and community centre, convenience store etc.). The development will be constructed over 3 stages.

The information provided herein relates to the earthworks, flooding, stormwater, wastewater, water supply and other service infrastructure to service the construction of the proposed development.

The assessments included in this report are a 'desktop' analysis and are preliminary in nature based on information available at time of issue. Final design plans and calculations will be provided at each resource consent, Engineering approval and Building Consent stage as required.

This report provides information in support of a private Plan Change This report is to be read in conjunction with the SMP and engineering drawings.

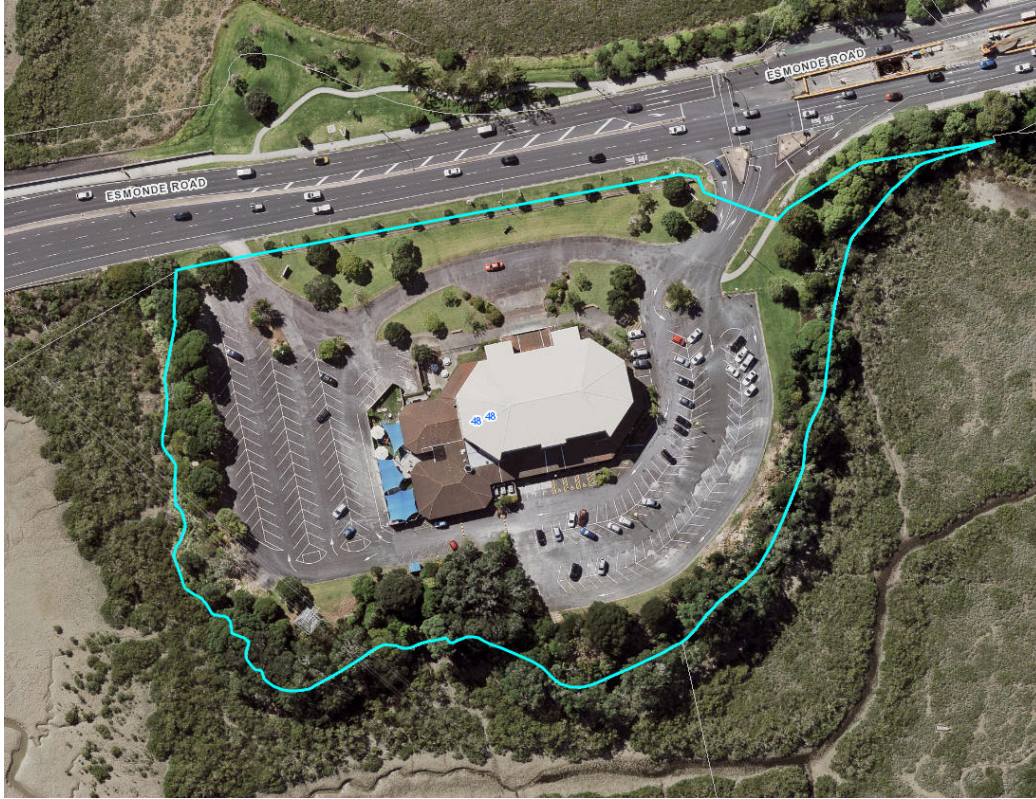


Figure 1.1 Locality Plan

## 1.2 LEGAL DESCRIPTION

The legal description of the land parcel is as follows-

48 Esmonde Road, Takapuna

LOT 32 DP 536045

Area – 21,566 square metres

Current Use: – Religious

AUP Zoning: – Terrace Housing and Apartment Building Zone  
– Coastal - General Coastal Marine Zone

### 1.3 SITE DESCRIPTION

The site is located on an island on the southern side of Esmonde Road, Takapuna and is irregular in shape, with a total area of 21,566m<sup>2</sup>. The site is currently occupied by the Harbourside Church and Harbourside Kids Childcare Centre. The majority of the site is covered by a church building and the church's carpark.

The site is surrounded by the Waitemata Harbour and does not have any adjoining neighbouring properties. In proximity to the site is a mixture of established residential and commercial properties. The site gains legal access via a signalised intersection and an existing vehicle crossing on Esmonde Road.

The centre of the site where the existing church building is situated is approximately 10.5m RL and is the crest of the site. The site gently slopes away from the building and falls towards the surrounding site boundary. From approximately the edge of carpark area, the site falls steeply into the coastal marine area (CMA).

A few trees are located on the site - these are mainly along the outer coastal edge of the site.

There are existing services in the vicinity of the site, including a public stormwater and wastewater network which traverse into the subject site. Other services including water supply, power and telecommunications are located within the road reserve of Esmonde Road. The exiting overhead transmission lines will be removed.

A resource consent has been granted for Stage 1 & Stage 2 of the development. That consent enables two new buildings, one along the eastern site boundary up to seven storeys in height, to be used as visitor accommodation providing approximately 164 studio units, 18 one-bedroom units, and four penthouses on the top level. The second building will also be up to seven storeys and be constructed along the Esmonde Road frontage and will be primarily residential including approximately 37 one-bedroom units, 32 two-bedroom units, and 17 three-bedroom units (total 86 Units) as well as non-residential uses including a café, a health care facility, a childcare facility, a convenience store, a community facility, and a supporting business centre (total GFA 1357m<sup>2</sup>) all of which are to be used primarily by residents and people staying in the visitor accommodation and their guests.

## 2.0 EARTHWORKS

In order to give effect to the plan change, earthworks are proposed over the majority of the site (excluding the areas of the proposed Open Space zone) and include the formation of building platforms and installation of drainage and accessways. Earthworks will involve ground disturbance of 14,247m<sup>2</sup>. Site wide excavation will be undertaken for the formation of building platforms for Stage 1,2 and future Stage 3. It is expected that the maximum cut depth will be approximately 6.0m. Temporary batter slopes not exceeding 1:2 will be created during construction. Earthworks volumes include excavations from drainage trenches.

As majority of earthworks involve excavations below existing ground levels, therefore the site will be subject to ponding and dewatering of dirty water will be required. Localised low points in the form of sump pits (storage/treatment device) will be established within the excavation area which runoff will be directed to, the water will then be pumped to a decant bund where water will be treated by flocculation and then discharged into the public stormwater network on Esmonde Road.

The Engineering Plans (**Appendix D**) detail the extent of works and sediment control measures. The following is a summary of the proposed works:

Total area of ground disturbance	=	14,247m <sup>2</sup>
Maximum cut and fill depth	=	7.9m Cut 0.7m Fill
Total volume of cut to waste off site	=	57,500m <sup>3</sup>
Total volume of cut to fill	=	100m <sup>3</sup>
Net Volume (waste off site)	=	57,500m <sup>3</sup>

Proposed measures for erosion and sediment control have been designed under the guidelines of Auckland Council's GD05 document. Resource consent will require that erosion and sediment control measures are implemented and maintained in accordance with the Engineering Drawings.

Silt control measures will need to be installed onsite prior to the earthworks commencing. All silt control measures will be checked and confirmed acceptable by the Engineer before works commence. The site will be progressively stabilised with imported hardfill.

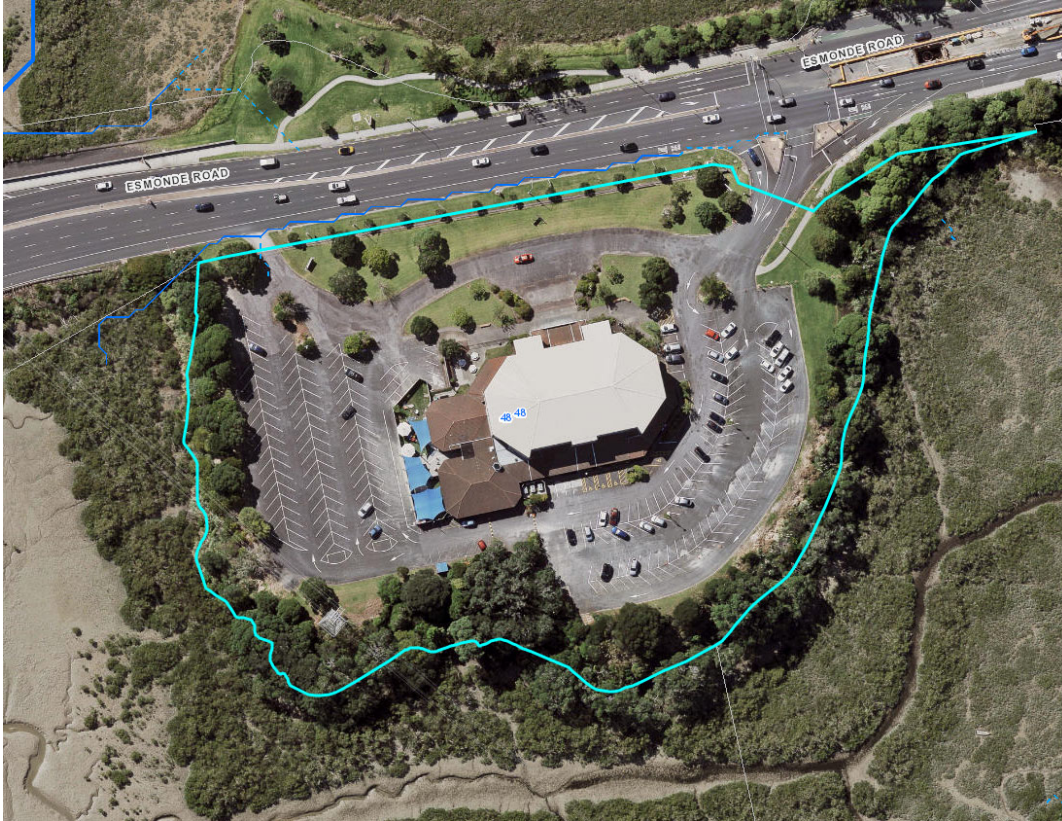
A geotechnical investigation will be undertaken to confirm the site is geotechnically suitable for the development proposals, a completion certificate will be provided at the completion of the earthworks as required.

As noted above, a resource consent has already been granted for Stage one of the redevelopment of the site. That consent includes a suite of consent conditions to manage the effects of construction and earthworks.

It is also noted that in order to give effect to the precinct plans, further resource consent will be required under both the precinct plan provisions and the Auckland wide rules. There are a range of Auckland wide rules that will serve to manage the construction and earthworks effects of the Plan Change. In particular, all development will be subject to sections E11 Land disturbance – Regional and E12. Land disturbance – District.

### 3.0 OVERLAND FLOW AND FLOODING

Auckland Council's GeoMaps identifies an overland flowpath ("OLFP") which flows east to west within the Esmonde Road reserve and discharges into the harbour to the west of the subject site. Majority of the OLFP's contributing catchment is from the subject site and a small portion is from half of Esmonde Road reserve fronting the site.



**Figure 3.1 GEOMAPS Overland Flowpath Plan**

Auckland Council's GeoMaps does not identify any flood sensitive, flood prone or flood plain areas within or directly surrounding the site. The coastal margins of the site are, however, subject to the 1% AEP and 1m sea level rise control. The Mean High Water Springs (MHWS) level surrounding the site is 1.57m and proposed finished floor level of the proposed buildings are 5.20m.

Finished levels associated with the development have been designed to direct overland flow within the site away from building platform. Runoff from Stages 1 & 2 will no longer discharge onto Esmonde Road and instead track along the proposed pavement and discharge directly into the harbour. Runoff from area reserved for future Stage 3 will continue to discharge onto Esmonde Road.

Any proposed buildings enabled by the Plan Change can be provided with adequate freeboard in accordance with Auckland Council and Building Code requirements. Overall, the site is well clear of natural hazards and is considered suitable for urban development in terms of natural hazards



## 4.0 STORMWATER

The Auckland Council Stormwater Code of Practice sets out design and construction standards for stormwater and requires all land development projects to be provided with a means of stormwater disposal.

In relation to this plan change application, Maven has produced a Stormwater Management Plan (SMP) "Stormwater Management Plan for Proposed Private Plan Change", Rev A separate to this report. According to the SMP the subject site is not located in a SMAF overlay area according to the Auckland Unitary Plan: Operative in Part (AUP OP).

The stormwater management requirements outlined in the SMP are:

1. The SMP proposes the use treatment of new impervious areas in accordance with the guidelines of Auckland Council's GD04 Water Sensitive Design for Stormwater, TP10 Stormwater Management Devices: Design guidelines manual and E.10 (Stormwater Management Area) of the AUP – OP. All future trafficable surfaces including roading networks, accessways, manoeuvring and carparking areas proposed as part of the development entail stormwater quality treatment via the utilisation raingardens to achieve the best practical stormwater management outcome.

### 4.1 STORMWATER RETICULATION

Auckland Council's GeoMaps identifies three separate existing public stormwater outlets within the site, (**Appendix A**). The North-West outlet is shown to be traversing through the site on GeoMaps, this is inaccurate as a recent topo survey confirmed the SW line remains within the Esmonde Road road reserve prior to discharging into the harbour. All of the identified stormwater outlets discharge to Shoal Bay, Waitemata Harbour.

The existing stormwater network and outlets within the site provide suitable connection points for stormwater disposal of the proposed development. To service the proposed development grounded levels, a portion of the existing SW infrastructure will be removed and a new deeper public stormwater network will be extended into the site boundary. Refer to engineering drawings in **Appendix D** for proposed reticulation. Private drainage will be extended from the public connection points.

All private stormwater drainage will be designed during the building consent phase and will be directed to the proposed public drainage infrastructure.

Development in accordance with proposed precinct provisions will require a gravity stormwater system which will be designed in accordance with Auckland Councils Stormwater Code of Practice. Scour and erosion protection designed in accordance with Auckland Councils Technical Report: 2013/018 (TR2013/018) shall be suitable for use at the proposed stormwater outlets.

### 4.2 STORMWATER CAPACITY

The proposed stormwater pipe network will be designed to have capacity for the 10-year storm event from the proposed development and will be subject to Engineering and Building Consent approval from Auckland Council.

Calculations for the proposed development entail a total stormwater discharge of 375.79L/s, of which 97.41L/s (servicing Stage 2) will be serviced by the North-East SW outlet and 278.38 L/s (servicing Stage 2 & 3) by the South-East outlet.

#### 4.3 STORMWATER QUALITY

All future trafficable surfaces including accessways, manoeuvring and carparking areas proposed as part of the development entail stormwater quality treatment via the utilising proprietary devices to achieve the best practical stormwater management outcome. The use of such devices will be subject to future consultation with Healthy Waters.

The Plan Change will require dwellings to be roofed with inert roofing materials (e.g. Colorsteel roofs) which will not generate contaminants and therefore will not require quality treatment., the design and construction of which will be subject to future consents from Auckland Council.

The following standard has been included in the proposed precinct plan:

##### ***1552.6.8. Stormwater***

*Purpose: To ensure that stormwater in the precinct is managed and, where appropriate, treated, to ensure the health and ecological values of streams are maintained.*

*(1) All land use development shall be managed in accordance with a Stormwater Management Plan approved by the stormwater network utility operator.*

It is considered that the approval of the SMP will ensure that stormwater effects arising from this Plan Change can be suitably addressed.

## 5.0 WASTEWATER

The Watercare Code of Practice for Land Development and Subdivision sets out the design principles for wastewater drainage and requires any development project to be provided with a means of wastewater disposal.

### 5.1 WASTEWATER RETICULATION

Auckland Council's GeoMaps identifies an existing wastewater connection located within the subject site on the eastern side of the lot. The existing connection is a 100mmØ line, which increases to a 150mmØ line, before connecting into an 825mmØ Watercare transmission trunk line.

Ultimate discharge is to the nearby pump station located North-West of the site adjacent to the Barrys Point Road/ Esmonde Road intersection.

The existing 100mmØ/ 150mmØ portion of the wastewater line will need to be upgraded in size to meet capacity requirements of the development. It is proposed a new 225mm public wastewater line will be extended in the same alignment from the existing manhole situated over the existing 825mm Watercare wastewater transmission line.

Installation of the new wastewater will be via drilling. Private wastewater infrastructure will be extended from the new public network to service the proposed development. The wastewater reticulation layout will be a gravity system designed in accordance with Watercare design standards as outlined in the code of practice.



Figure 35.1 GEOMAPS Existing Wastewater Network

## 5.2 WASTEWATER CAPACITY

The proposed development network has been designed for the total build out of up to 553 equivalent dwellings to have capacity for peak wet weather discharge, as per the WW COP.

Calculations for the proposed development entail a total wastewater design flow allowance of 5.75l/s, Peak Dry Weather/Self cleansing design flow (PDWF) of 17.26 L/s and peak wet weather flow (PWWF) of 38.54 L/s. (**Appendix B**).

The proposed 225mmØ public wastewater line will have sufficient capacity to service the subject development.

Downstream capacity of the transmission line and pump station have been preliminarily investigated with Watercare. It is considered that the recent upgrade of the pump station will allow for Maximum probable development of the upstream catchment area (including the subject site). However, information regarding the modelled network capacity downstream is to be confirmed with Watercare.

## 6.0 WATER SUPPLY

The Watercare Code of Practice for Land Development and Subdivision sets out the design principles for water supply and requires assessment against SNZPAS 4509:2008 NZ Fire Service Fire Fighting Water Supply Code of Practice

### 6.1 POTABLE WATER SUPPLY

Auckland Council GeoMaps identifies an existing 100mmØ watermain fronting the site within the Esmonde Road reserve, refer to **Appendix A**.

As presented in the 48 Esmonde Road Building Utilities Report undertaken by WSP, based on Watercare guidelines of 250 litres per day per person and a Peak Factor of 5, the total daily demand is 470,018 litres and the peak flow rate is 27.54 L/s (5.31L/s for Stage 1, 4.23 L/s for Stage 2 and 18.00 L/s for Stage 3). Based on the calculations used for building design in the Building Code for consent, the daily demand is 160,398 litres and the peak flow rate is 35.07L/s. For resource consent, the greater use of 470,018 litres per day and the greater flow rate of 35.07 litres per second should be allowed to cover all scenarios and future building consent documentation.

In absence of flow testing, it is unlikely the existing 100mmØ watermain has sufficient capacity to service the entire development. The nearest larger sized main is a 310mmØ transmission main located adjacent to the Eldon Street / Esmonde Road intersection. To service the proposed development, a new 250mmØ OD watermain from the subject site will be installed alongside the existing watermain and connect to the existing 200mm DN which ultimately connects the 310mmØ transmission main on Eldon Street.

Watercare require potable water supply for domestic use for all new residential developments. To service the proposed development, a new public water supply network will be extended from the existing public water supply network. Lot connections will be formed on the network to serve all proposed lots under the subdivision. Refer to Engineering Plans in **Appendix D** for the proposed water supply layout.

Watercare have assessed a potential development scenario of for 553 apartments, including a 182 unit hotel, and several non-residential uses, This gives a demand greater than 15l/s), and have confirmed that there is sufficient local network capacity based on the proposed upgrades by the developer, new 250mm OD (200mm ID) watermain as shown below. Refer to **Appendix C**.

### 6.2 FIRE FIGHTING

The minimum firefighting water supply classification for residential developments is FW2. Therefore, any future residential development must meet the following water supply requirements:

- A primary water flow of 12.5 litres/sec within a distance of 135m
- An additional secondary flow of 12.5 litres/sec within a distance of 270m
- The required flow must be achieved from a maximum two hydrants operating simultaneously
- A minimum running pressure of 100kPa

It is proposed the development will be serviced by 3 new fire hydrants installed on the proposed 250mmØ watermain within the berm fronting the subject site.

Flow rates and pressures are to be tested to confirm minimum requirements for the water supply classification stipulated in SNZPAS 4509:2008 can be achieved.

## 7.0 OTHER SERVICES

Existing service networks are present in the surrounding area and telecommunications, power and gas are available for the proposed development.

It is anticipated that network upgrades/ extensions may be required to support the proposed development. This will be undertaken as required.

Services will be connected to the proposed development as per respective Service agreements. Telecommunications in the area are managed by Chorus, and power and gas supply in the area is managed by Vector.

Utilities requirements for the site are addressed in the Building Utilities Report undertaken by WSP.

## 8.0 ACCESS

Access to the development will be via a single vehicle entrance from Esmonde Road. No other vehicle access is proposed, as detailed in the Precinct Plan No public roading is proposed within the development.

Public access is proposed through the site and the precinct provisions facilitate the provision of a coastal boardwalk and the potential connection of the site with Francis Street. This connection would be subject to Council funding. It is noted that any works within the coastal environment would be subject to resource consent and detailed engineering review at that stage.

## 9.0 ASSESSMENT AGAINST PREINCT PROVISIONS

*1. Provision: 1552.6.8. Stormwater Purpose: To ensure that stormwater in the precinct is managed and, where appropriate, treated, to ensure the health and ecological value of streams are maintained.*

*(1) All land use development shall be managed in accordance with a Stormwater Management Plan approved by the stormwater network utility operator.*

There are no additional effects arising from this proposed provision as it is consistent with what would be required under the current zoning. The SMP proposes the use treatment of new impervious areas in accordance with the guidelines of Auckland Council's GD04 Water Sensitive Design for Stormwater, TP10 Stormwater Management Devices: Design guidelines manual and E.10 (Stormwater Management Area) of the AUP – OP. Stormwater runoff from future development of Accessways, manoeuvring and carparking areas, will include stormwater quality treatment by utilising proprietary devices to achieve the best practical stormwater management outcome. The use of such devices will be subject to future consultation with Healthy Waters.

*2. Provision 1552.6.2. Building Heights and Coverages*

*All development within the precinct must comply with the following standards:*

- 1) Buildings must not exceed the maximum heights specified in Table 1552.6.2.1 and on Precinct Plan 2 – Takapuna height and building coverage control areas.*

*Table 1552.6.2.1. Building height and coverages*

	<i>Area 0 Open Space</i>	<i>Area 1 Outer Area</i>	<i>Area 2 Intermediate Area</i>	<i>Area 3 Inner area</i>
<i>Maximum Impervious (includes podium / plaza / hard landscape)</i>	2%	100%	100%	100%

There are no additional adverse effects arising from this proposed provision. The site has recently been subdivided to remove the previous limitations to parcels, the total site area is

21,556m<sup>2</sup>. The site is currently located within the THAB zone, The THAB controls allow for 50% site coverage, and 70% impervious area, with the total permitted impervious area consisting of 15,089m<sup>2</sup>. The proposed plan change precinct provisions proposes to provide to 100% impervious within the development area of 14,247m<sup>2</sup> which less than the total permitted impervious area of 15,089m<sup>2</sup> under THAB Controls. Furthermore, the site is not located within a Stormwater Management Area (SMA) and therefore stormwater attenuation controls do not apply to the site.

**3. Provision I552.6.1. Dwelling Numbers**

*Purpose: To ensure that the precinct responds to the anticipated growth of the Takapuna area, while also ensuring that the planned outcomes for the precinct are not undermined through over development.*

- (1) *There must be no more than a total of X dwellings or Dwelling Unit Equivalents in the Takapuna 10 Precinct in total.*
- (2) *For the purposes of calculating a Dwelling Unit Equivalent, the following rates apply:*

**Table I552.6.1.1 Dwelling unit equivalents**

<b>Type</b>	<b>Equivalent dwellings unit value</b>
<i>Retirement village unit</i>	<i>0.61</i>
<i>Rest home bed</i>	<i>0.46</i>
<i>Visitor accommodation room</i>	<i>1.3</i>

The dwelling unit equivalents presented in this table are likely to result in the potential future development scenario that was presented to Watercare for review and confirmation of capacity. Watercare have assessed the a potential future development scenario (The proposal included 400 apartments, a 182 unit hotel, and several non-residential uses, This gives a demand greater than 15l/s), and have confirmed that there is sufficient local network capacity based on the proposed upgrades by the developer, new 250mm OD (200mm ID). It is therefore considered that the wastewater discharge and water supply demand resulting from the dwelling numbers presented in provision can be serviceable by Watercare.

## 9.0 CONCLUSIONS

Future resource consents will require resource consent in accordance with the Auckland wide controls. These consents will require that erosion and sediment control measures are implemented and maintained in accordance with the Engineering Plans.

Proposed site wide earthworks include excavations for formation of building platforms.

Tonkin and Taylor have provided a geotechnical assessment to be submitted with this report as part of the plan change application. The report identified a number of geotechnical considerations and concluded that the site is considered to be geotechnically suitable for the extent of development enabled by the proposed plan change.

Auckland Council's GeoMaps does not identify any flood sensitive, flood prone or flood plain areas within or directly surrounding the site. The coastal margins of the site are, however, subject to the 1% AEP and 1m sea level rise control. The Mean High Water Springs (MHWS) level surrounding the site is 1.57m and the proposed finished floor level of the buildings are 5.20m.

Stormwater drainage can be provided for the proposed residential development. Final stormwater details will require building consent further approvals and will be in accordance with the NZ Building Code for private drainage. The proposed SMP will manage the effects of stormwater, in particular, stormwater quality discharges in the Hauraki Gulf Harbour.

Wastewater drainage can be provided for the proposed residential development. Final wastewater details will require building consent further approvals and will be in accordance with the NZ Building Code for private drainage.

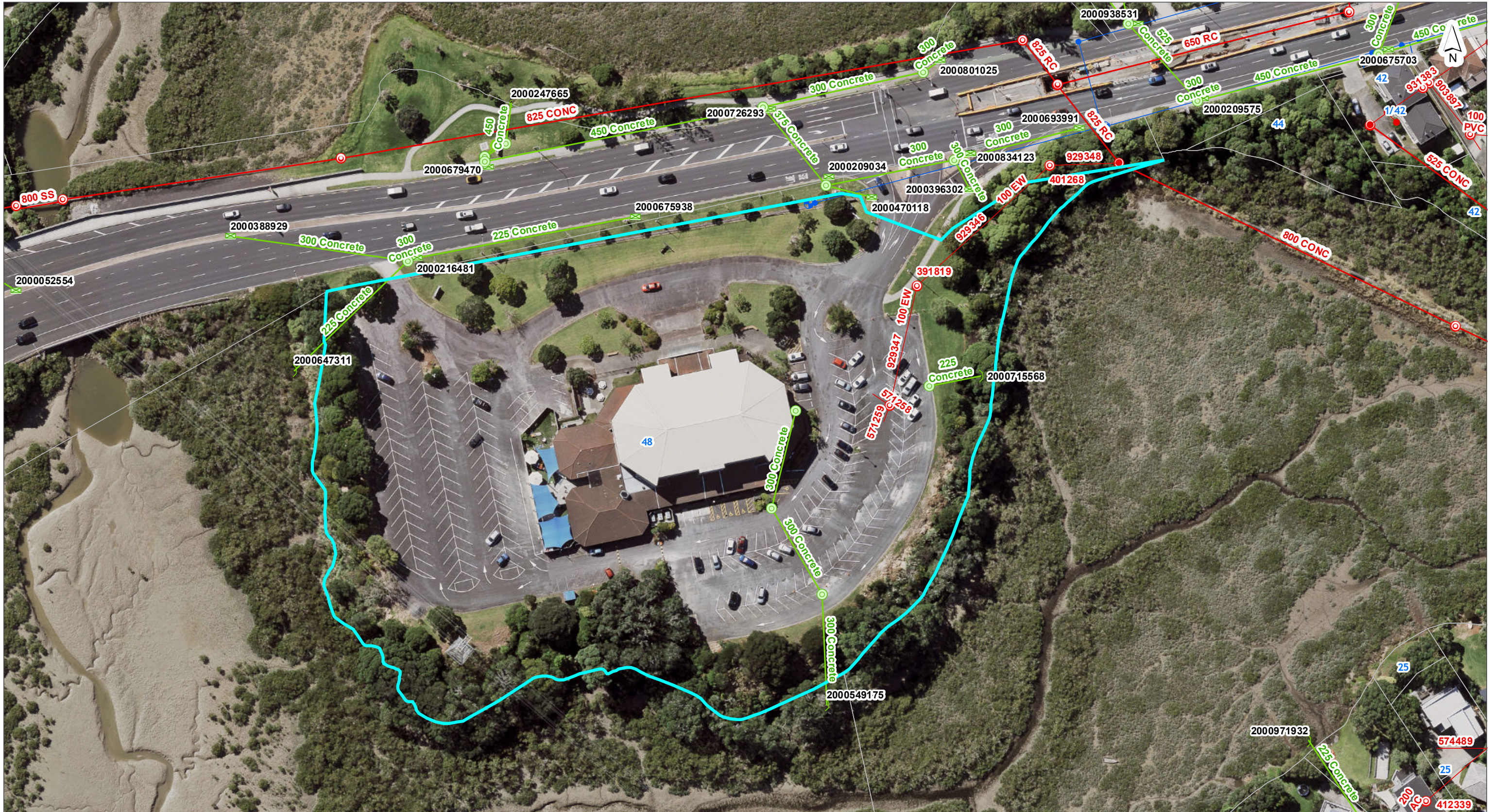
Water supply infrastructure surrounding the site is considered sufficient for potable water supply and firefighting demand required for the proposed residential development. However, final potable water demand of the proposed development is to be confirmed by the Hydraulic Engineer. Watercare will need to be confirm that this demand can be met by existing supply.

Telecommunications, power and gas networks are present in the surrounding area and service is to be confirmed by the utility providers.

The information gathered to-date confirms that the site is suitable for the proposed Plan Change.

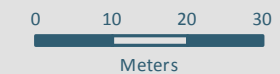


## **APPENDIX A – AUCKLAND COUNCIL GEOMAPS PLAN**



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### 48 Esmonde Road



Scale @ A3  
 = 1:1,000

Date Printed:  
 15/05/2020



## **APPENDIX B – ENGINEERING CALCULATIONS**



# MAVEN ASSOCIATES

Job Number  
175001

Sheets  
1

Rev  
A

Job Title 48 Esmonde Road, Takapuna  
Calc Title Decant Sizing for Dewatering

Author  
JP

Date  
5-May

Checked  
WM

Catchment Area	14,247 m <sup>2</sup>	Required storage for Dewatering Operations Not Required for Dewatering of excavation.
Pond Volume 2% of Area	284.94 m <sup>3</sup>	
Dead Storage 30% of volume	85.482 m <sup>3</sup>	
Live Storage 70% of volume	199.458 m <sup>3</sup>	
Decant Dewatering (3l/s/ha)	4.2741 l/s	

### Size Decant

Standard decent	4.5 l/s	=	200 holes
Therefore	4.27 l/s	=	190 holes
<b>Use</b>	<b>1</b>	<b>decants</b>	

### Pond Dimensions

v =	85.482	m <sup>3</sup>
d =	1	m
x =		width of pond base

Pond calculations allow for the sides and outlet of the pond to be at a 2:1 batter slope and for the inlet of the pond to be at a 3:1 batter slope.

### Calc 2: Calculate width and length of base, Quadratic Equation

#### 3:1 ratio

v = $\frac{((3x^2) + (x+4d)(3x+5d))}{2}d$			
=>	v = $3x^2d + 8.5xd^2 + 10d^3$	quadratic equation to find "x"	
		a	b
0	=	3	x <sup>2</sup> + 8.5
x	=	3.80	x + -75.482
or	=	-6.63	
		Check	= 85.482 m <sup>3</sup>

#### 5:1 ratio

v = $\frac{((5x^2) + (x+4d)(5x+5d))}{2}d$			
=>	v = $5x^2d + 12.5xd^2 + 10d^3$	quadratic equation to find "x"	
		a	b
0	=	5	x <sup>2</sup> + 12.5
x	=	2.83	x + -75.482
or	=	-5.33	
		Check	= 85.482 m <sup>3</sup>

Width of Base = 3.80 m

Length of Base = 11.39 m

### Dead Storage Depth

#### Pond Dimensions

x =	3.80	m
v =	85.5	m <sup>3</sup>
d =		Dead storage depth

Pond calculations allow for the sides and outlet of the pond to be at a 2:1 batter slope and for the inlet of the pond to be at a 3:1 batter slope.

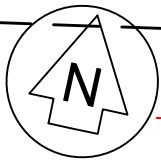
#### 3:1 ratio

v = $\frac{((3x^2) + (x+4d)(3x+5d))}{2}d$			
=>	v = $10d^3 + 8.5xd^2 + 3x^2d$	cubic equation to find "d"	
		a	b
0	=	d <sup>3</sup> + 3.226250811	d <sup>2</sup> + 4.321949
e	=		+d -8.5482
f	=	0.28	
g	=	5.35	
		2.20	

h = -0.13

**d** = **1.000** depth of dead storage

Check v = 85.48 m<sup>3</sup>



WAITEMATA HARBOUR

ESMONDE ROAD

CATCHMENT A  
3697m<sup>2</sup>

CATCHMENT C  
4950m<sup>2</sup>

CATCHMENT B  
5616m<sup>2</sup>

PROPOSED ESPLANADE RESERVE

WAITEMATA HARBOUR

Notes

1. All works to be in accordance with Auckland council standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
3. It is the contractors responsibility to locate all services that may be affected by his operations.
4. Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas.
8. All cesspit leads shall have min cover 0.9m.
9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
10. All lines to be abandoned shall be sealed at each end, timing of all sealing to be coordinated with council staff.

Legend

- EX BDY
- PROP BDY
- EX SW
- PROP SW
- EX/PROP SWMH
- PROP SWCP SINGLE
- PROP SWCP DOUBLE

Rev	Description	By	Date
B	RC	JP	09/20
A	RC	AS	05/20
Survey	HGLTD		03/2019
Design	AS		05/2020
Drawn	AS		05/2020
Checked	JP		05/2020

**M** **Maven Associates**  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**10YR STORMWATER  
 RUNOFF CATCHMENT  
 PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C450
Rev	<b>B</b>

**DRAFT FOR REVIEW**



# Maven Associates

Job Number	Sheet	Rev	48 Esmonde Road, Takapuna	Author	Date	Checked
175001	1	B	Calc Title: 10YR - Pipe Capacity Check	JP	4/09/2020	WM

<b>Rainfall Depth</b>	ARI 10YR (mm)
TP108 rainfall data	140
Climate change Increase	159.04

(assuming 2.1C increase in temperature)

Pipe ks factor = 0.15 mm (concrete pipes up to 1.0m dia)  
 Pipe ks factor = 0.015 mm (PE Pipes)

	<b>CN Number</b>		<b>CN Number</b>
Impervious area	98	Residential Lots	88.4
Pervious	74	Proposed Roads	94.4

Equivalent CN - (60% impervious coverage, 40% pervious coverage)  
 Equivalent CN - (85% impervious coverage, 15% pervious coverage)

Pipe Line number	Catchment letter	Catchment Area m2	CN	Peak Flow rate - 10YR ARI l/s	Cum. Flow l/s	Pipe dia m	Gradient %	Capacity l/s	Velocity m/s	Check OK
1-1 TO OUTLET 1-0	A	3697	98	97.41	<b>97.41</b>	0.300	1.00	132.31	1.87	OK
2-1 TO 2-1	B	5616	98	147.97						
	C	4950	98	130.42	<b>278.38</b>	0.375	1.60	299.95	2.72	OK
2-1 TO OUTLET 2-0 (PE)					<b>278.38</b>	0.311	2.85	305.59	4.02	OK

NOTE: GRADIENT OF 1-1 TO 1-0 ASSUMED BASED ON GRADIENT OF OUTLET 2-0



# Maven Associates

Job Number  
175001

Sheet  
1

Rev  
B

Job Title            48 Esmonde Road, Takapuna  
Calc Title            Outlet Structure 1-0

Author  
JP

Date  
7/09/2020

Checked  
WM

## OUTLET 1-0 STRUCTURE - ROCK RIPRAP

Pipe diameter = 0.300 m                      ks= 0.15

Pipe gradient = 1.00 %

Velocity = 1.87 m/s

Froude Number Fo = 1.09

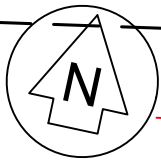
**Rock diameter** = 82 mm            => Use **85** mm (min 2 layers of aggregate)

**Outfall width** = 0.9 m            => Use **0.90** m

**Outfall length** = 2.59 m           => Use **2.60** m

2.60m LONG x 0.90m WIDE ROCK RIPRAP OUTLET  
0.17m DEEP (MINIMUM ROCK SIZE 85mm $\phi$ )





WAITEMATA HARBOUR

ESMONDE ROAD

48 ESMONDE ROAD

RAINGARDEN 2  
CATCHMENT: 390m<sup>2</sup> IMPERVIOUS AREA  
PROPOSED RG SIZE (2% WQT) = 7.80m<sup>2</sup>

RAINGARDEN 1  
CATCHMENT: 537m<sup>2</sup> IMPERVIOUS AREA  
PROPOSED RG SIZE (2% WQT) = 10.74m<sup>2</sup>

PROPOSED ESPLANADE RESERVE

WAITEMATA HARBOUR

Notes

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5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
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9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
10. All lines to be abandoned shall be sealed at each end, timing of all sealing to be coordinated with council staff.

Legend

- EX BDY
- PROP BDY
- - - EX PUBLIC SW
- - - PROP PUBLIC SW
- - - PROP PRIVATE SW
- - - EX PUBLIC WW
- - - PROP PUBLIC WW
- - - PROP PRIVATE WW
- EX/PROP SWMH
- PROP SWCP SINGLE
- PROP SWCP DOUBLE

Rev	Description	By	Date
B	RC	AS	09/20
A	RC	JP	05/20
Survey	HG LTD		03/2019
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Checked	WM		05/2020

**Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
TREATMENT  
PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C440
Rev	<b>B</b>



# Maven Associates

Job Number  
175001

Sheet  
1

Rev  
A

Job Title  
Title

48 Esmonde Road, Takapuna  
Raingarden Sizing

Author  
JP

Date  
11/05/2020

Checked  
WM

In accordance to GD01  
assuming water quality criteria only

Ponding footprint	2	%	$K_{(media)}$	1	
Rainfall Intensity	10	mm/hr	Rational Coefficient	0.95	(impervious)

Raingarden Name	Max Catchment Area (m <sup>2</sup> )	WQF (m <sup>3</sup> /hr)	Minimum Area of Bioretention device			Proposed Area
			A = WQF/(0.5 × K)	2% check	Use (m2)	
RG 1	537	5.10	10.20	10.74	10.74	10.74
RG 2	390	3.71	7.41	7.80	7.80	7.80



# Maven Associates

Job Number  
175001

Sheet  
1

Rev  
B

Job Title  
48 Esmonde Road, Takapuna  
Calc Title  
Wastewater Demand

Author  
JP

Date  
2/11/2020

Checked  
WM

**As per Building Utilities Report prepared by WSP:**

Total Water Demand as per Watercare standards: 27.54 L/s (peak flow)  
Demand obtained from WSP Report for Combined Site (Stages 1-3)

**Residential Discharge Rates**

As per WCOP daily Water consumption: 220 litres/person/day  
As Per WCOP daily Wastewater Discharge: 180 litres/person/day

Therefore assume Wastewater discharge is 82% of Water Demand

Therefore

Total Wastewater Demand ( x 0.82) 22.58 L/s (peak)

Total Wastewater Demand (1/5.0) 4.52 L/s

Total Wastewater Self Cleansing Design Flow 3.0/5.0 fact) 13.55 L/s (PDWF)

Total Wastewater Demand PWWF (6.7/5.0 fact) 30.26 L/s (PWWF)

(Peak Wet Weather Flow = PWWF)

**TOTAL PWWF (l/s) 30.26**

	<b>PWWF Flow</b> l/s	<b>Pipe dia</b> m	<b>Gradient</b> %	<b>Capacity</b> l/s	<b>Velocity</b> m/s	<b>Check</b> OK
Prop. Line (minimum)	30.26	0.225	0.75	75.35	1.89	OK

## **APPENDIX C – WATERCARE REVIEW**

Watercare Services Limited

Private Bag 94010

Auckland 2241

[www.watercare.co.nz](http://www.watercare.co.nz)

Customer service line

Mon to Fri 7.30 to 6pm

09 442 2222

[info@water.co.nz](mailto:info@water.co.nz)



Fault line

24 hours

09 442 2222

Free text 3130

[faults@water.co.nz](mailto:faults@water.co.nz)

21/10/2020

Rohan Khar  
Senior Development Engineer  
Regulatory Engineering North West  
50 Centreway Road  
Tasman Building  
Orewa

Dear Rohan,

**Council Resource Consent number LUC60359471**  
**48 Esmonde Road, Takapuna**  
**Watercare application number – RC 32290**

### Section 1 - Purpose

Watercare has reviewed the application for Resource Consent in relation to Watercare's ability to provide water and wastewater services to the proposed 400 apartment, 182 unit hotel, and several non residential uses development, and the proposed extension to our networks set out in the application, in particular to the attached reports and drawings as appropriate.

Subject to the conditions below, we confirm that Watercare is able to provide water and wastewater services to the proposed [subdivision/development], and that the proposed works under the resource consent application will meet our requirements for the vesting of public water supply and wastewater infrastructure.

### Section 2 – Special conditions

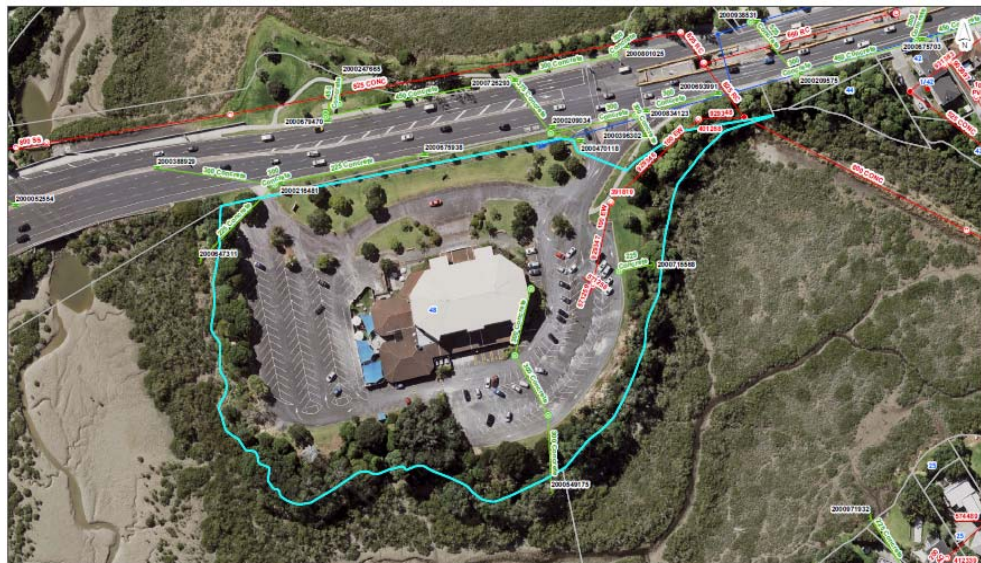
#### Water:

Watercare have assessed the development (The proposal is for 400 apartments, a 182 unit hotel, and several non-residential uses, This gives a demand greater than 15 l/s), and can confirm that there is sufficient local network capacity based on the proposed upgrades by the developer, new 250mm OD (200mm ID) watermain as shown below.



1. To confirm the proposed watermain is to connect to the existing 200mm PE (junction Eldon Street and Esmonde Road), no connection to the 300mm watermain should be made as this is a transmission watermain.
2. It is proposed that the watermain runs parallel along the existing 100mm PE watermain.
3. To ensure connectivity and water turnover the 200mm watermain should be connected to the 100mm PE outside the development to create a looped network.
4. The assessment has included fire flow with an assumed sprinkler flow plus 25 l/s hydrant flows.

**Wastewater:**



1. For EPA a more detailed wastewater flow analysis from the site will be required (residential, Hotel, commercial, etc) at EPA stage.
2. The connection to the 825mm Takapuna West Branch will need to be considered further. The manhole 13 appears shallow (1.m deep) and the connecting pipe should come in at soffit level to the Takapuna West Branch to avoid any backup through the local network. This will reduce the grade of their 225mm pipe and it is possible the pipe will need to be upsized to account for this.

**Section 2.1 – General conditions**

1. Watercare's confirmation in this letter is based on the application for resource consent as at today's date, in particular to attached reports and plans as appropriate. Any amendment to the proposals set out in those documents will require further review and approval from Watercare, and is not covered by this letter.
2. The applicant must produce under the engineering plan approval stage a completed design of the proposed water supply and wastewater infrastructure, including infrastructure to vest in Auckland Council and thereafter in Watercare (public water supply and wastewater works), in

accordance with the current Watercare Water and Wastewater Code of Practice for Land Development and Subdivision (Code of Practice) as well as Watercare's standards for material supply, construction and asset data capture.

3. All public water supply and wastewater works required to service this subdivision/development shall be designed and constructed by the applicant at no cost to Watercare.
4. The public water supply and wastewater works must be demonstrated to comply with Watercare's requirements in accordance with Watercare's Compliance Statement Policy, Part 1 for Land Development and Subdivision Works.
5. Engineering plan approval must be obtained from Auckland Council for all public water supply and wastewater works before construction begins.
6. All connections to Watercare's water/wastewater networks shall be made in accordance with Watercare's connection processes, and must comply with the Code of Practice.

### **Section 3 – Local conditions**

1. There is sufficient capacity in Watercare's water and wastewater networks at the time of this assessment to accommodate the proposed developments. This assessment is valid for 2 years from the date of this letter, and network upgrades may be required after the 2 year period.
2. Reassessment for water and wastewater capacity will be required if the construction of this development has not commenced within 2 years of the date of this letter.
3. Proposed water and wastewater connections at the time of this assessment are as follows:
  - a. 100mm water main on Esmond Road
  - b. Ex manhole MH13 (Takapuna branch sewer) and existing 150mm wastewater on Esmond Road
4. Watercare will review the proposed water and wastewater design after lodgement of the application to the Council for engineering plan approval and accompanying CS1 and CS2 if applicable.
5. All works on existing public wastewater drains and watermains shall be carried out only by a Watercare approved contractor at the applicant's expense.
6. Adequate provision shall be made during earthworks associated with construction to protect any existing public wastewater drains and watermains that traverse the site. Any damage to the drains or watermains that may occur during construction shall be the applicant's responsibility.
7. This letter does not constitute a guarantee from Watercare to provide a fire fighting capability in accordance with Fire and Emergency New Zealand Code of Practice.
8. Water pressure could change in the future. To comply with FW2 fire risk classification, the installation of a sprinkler system and/or booster pump may be required for commercial, industrial high-rise and mixed-use buildings.

9. Watercare approval is required before any individual building /lot is connected to the public water and/or wastewater network. An application for new connection shall be submitted to Watercare in conjunction with the application to Council for building consent.
10. Watercare infrastructure growth charges will apply to this development. Details of the charge are available on the website, [watercare.co.nz](http://watercare.co.nz).

**Next step**

To proceed with construction the applicant will be required to complete the design and lodge an engineering plan application with Auckland council

Yours faithfully,



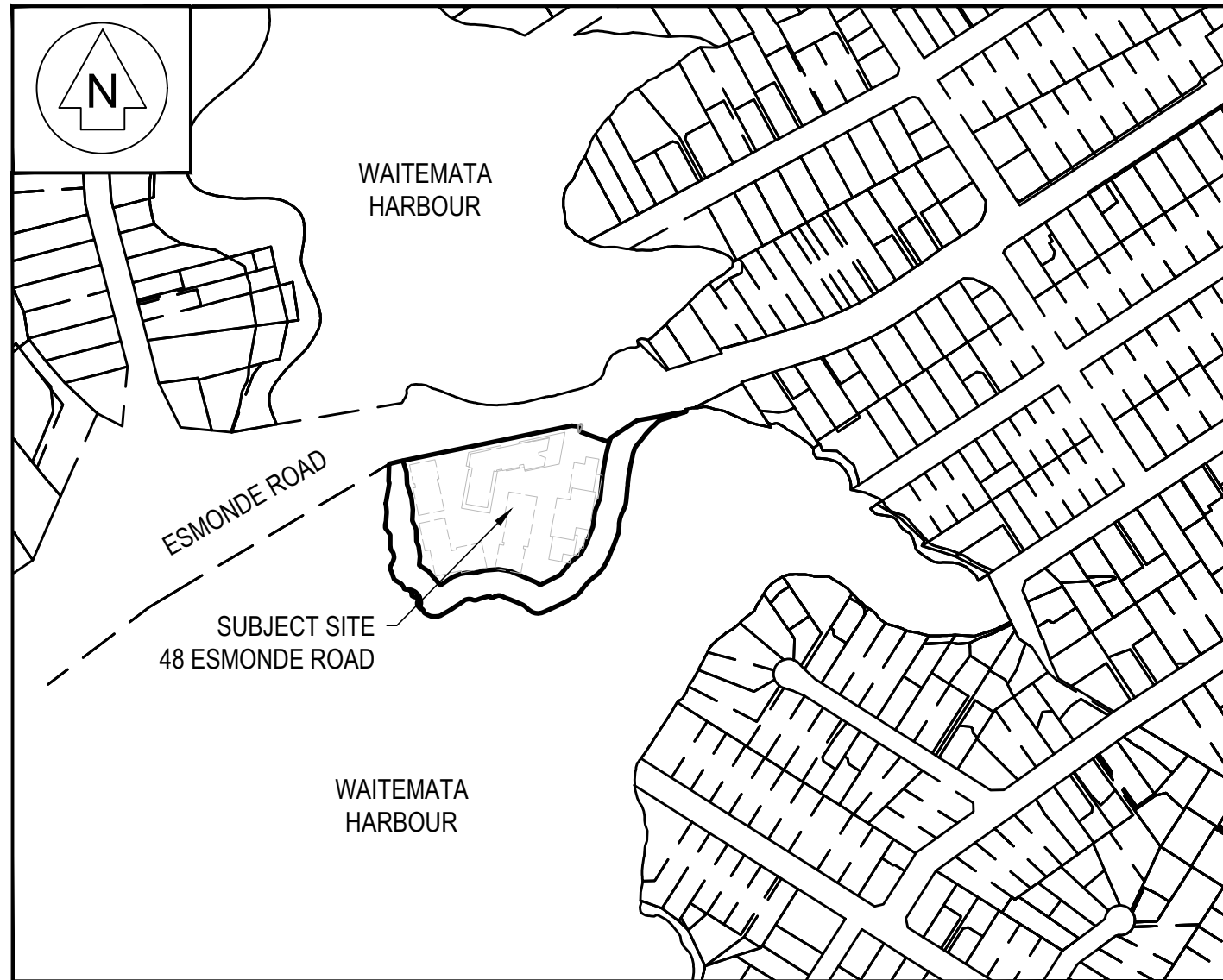
Nita Dharmadhikari  
Connection Engineer, Connection Services  
Watercare Services Limited



## **APPENDIX D – ENGINEERING DRAWINGS**

**48 ESMONDE ROAD  
TAKAPUNA**

**FOR  
KINGSTONE PROPERTY LIMITED**



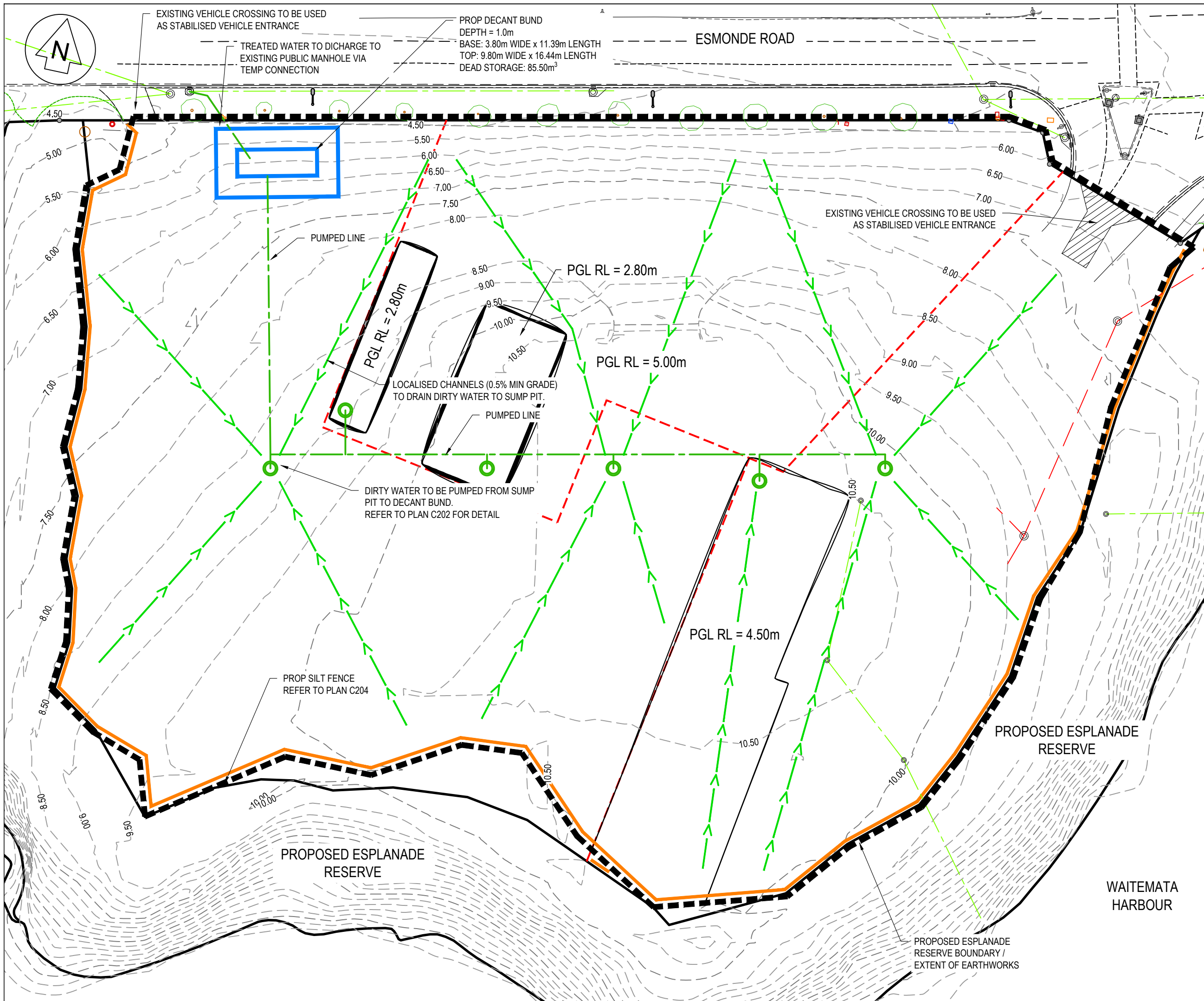
**DRAWINGS**

- C200 EARTHWORKS
- C300 ROADING
- C400 STORMWATER
- C500 WASTEWATER

**LOCALITY PLAN**  
SCALE 1:5000 @ A3

**PROJECT NUMBER : 175001**

ISSUED DATE : 11 May 2020



- Notes**
- All works to be in accordance with Auckland council standards.
  - Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000
  - Levels in terms of the Auckland Vertical Datum 1946.
  - Origin of Levels = SM XXXX SO XXXX(XXXX)  
Published RL=XX.XX, sourced from The LINZ Digital Geodetic Database.
  - It is the contractors responsibility to locate all services that may be affected by his operations.
  - The contractor shall comply with all relevant Health and Safety requirements.
  - The contractor shall obtain all necessary approval from utility operators before commencing work under or near their services.
  - Sediment control shall be installed and operational before earthworks start onsite in accordance with council standards.
  - Contractor shall provide asbuilt of working sediment control devices and confirmation of pond/decant volumes to engineer.

**Legend**

EX BDY	EX MAJOR CONTOUR
PROP BDY	PR MAJOR CONTOUR
STAGE BDY	PR MINOR CONTOUR
EX MINOR CONTOUR	PROP EXTENT WORK
PROP CLEANWATER	PROP CLEANWATER
PROP DIRTYWATER	PROP DIRTYWATER
PROP SILT FENCE	PROP SILT FENCE
PROP STOCKPILE	PROP STOCKPILE
PROP DECANT	PROP DECANT

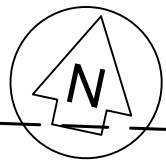
D	RC	AS	10/20
C	RC	JP	09/20
B	RC	AS	06/20
A	RC	AS	05/20
Rev	Description	By	Date

**Maven Associates**  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 12-14 Walls Road, Penrose

**Project**  
**48 ESMONDE ROAD**  
**TAKAPUNA**  
**FOR**  
**KINGSTONE PROPERTY LIMITED**

**Title**  
**PROPOSED**  
**EARTHWORKS**  
**PLAN**

Project no.	175001		
Scale	1:750 @ A3		
Cad file	C200 - EARTHWORKS.DWG		
Drawing no.	C200	Rev	<b>D</b>



WAITEMATA HARBOUR

ESMONDE ROAD

- Notes
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  10. Contractor shall provide asbuilt of working sediment control devices and confirmation of pond/decent volumes to engineer.
  11. Sediment control to comply with GD05 Standards.

Legend

	EX BDY
	PROP BDY
	PROP EXTENT WORK

Cut/Fill Table			
Number #	Minimum Elevation	Maximum Elevation	Color
1	-7.910	-7.000	
2	-7.000	-6.000	
3	-6.000	-5.000	
4	-5.000	-4.000	
5	-4.000	-3.000	
6	-3.000	-2.000	
7	-2.000	-1.000	
8	-1.000	0.000	
9	0.000	0.673	

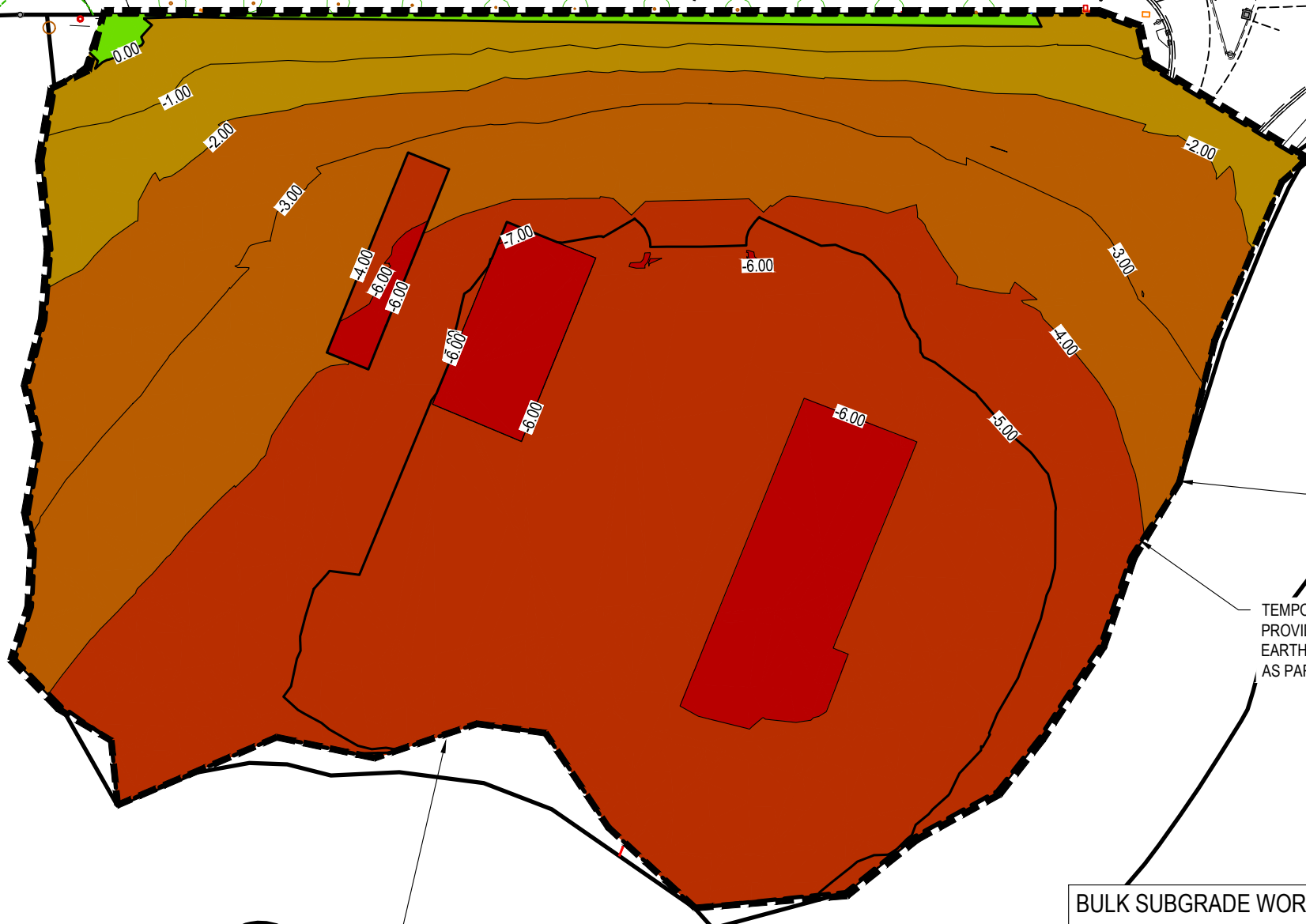
D	RC	AS	10/20
C	RC	JP	09/20
B	RC	AS	06/20
A	RC	AS	05/20
Rev	Description	By	Date
	Survey	HG LTD	03/2019
	Design	AS	09/2020
	Drawn	AS	09/2020
	Checked	JP	09/2020

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 09 571 0050  
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Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 CUT/FILL  
 PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C200 - EARTHWORKS.DWG
Drawing no.	C201
Rev	<b>D</b>



PROPOSED ESPLANADE RESERVE BOUNDARY / EXTENT OF EARTHWORKS

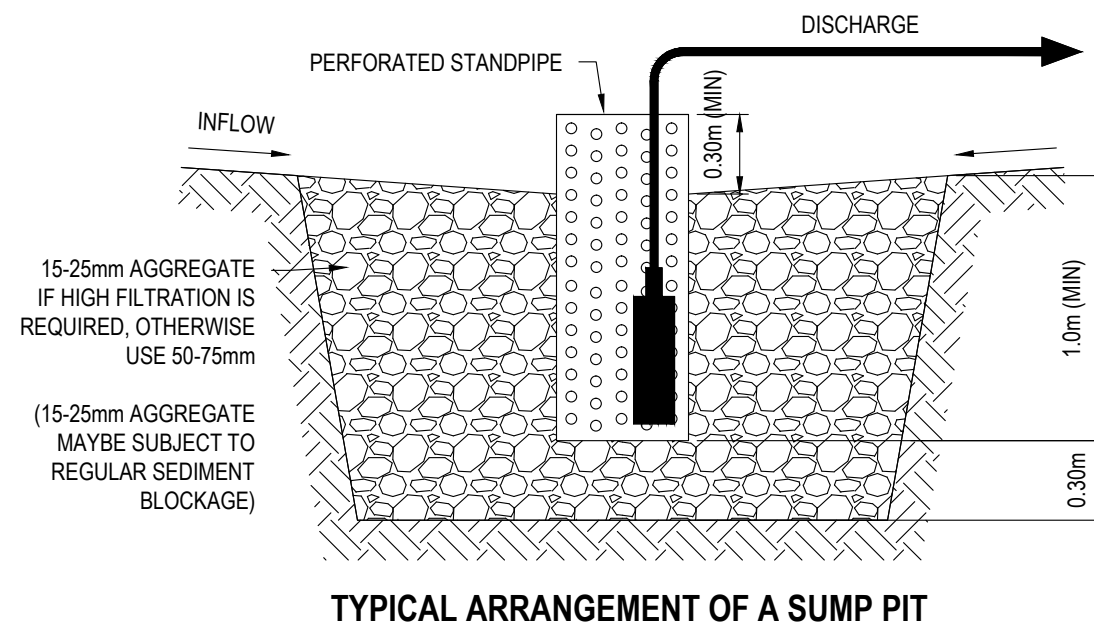
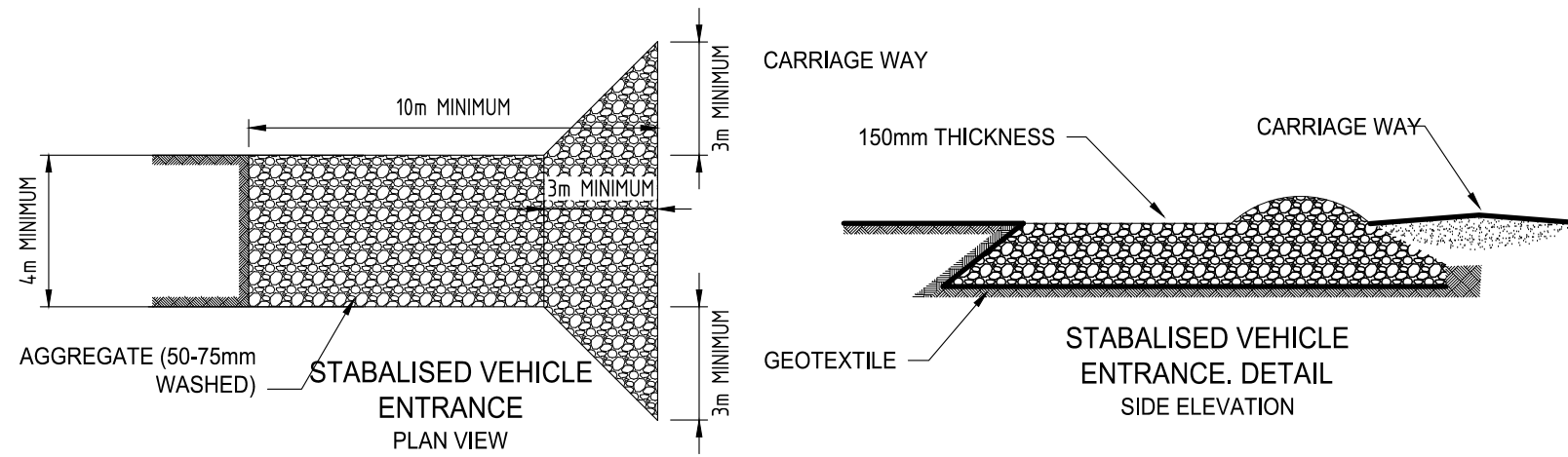
TEMPORARY 1:2 BATTERS WILL BE PROVIDED UNTIL FINAL BASEMENT EARTHWORKS ARE CONSTRUCTED ONSITE AS PART OF THE BUILDING PACKAGE.

TEMPORARY 1:2 BATTERS WILL BE PROVIDED UNTIL FINAL BASEMENT EARTHWORKS ARE CONSTRUCTED ONSITE AS PART OF THE BUILDING PACKAGE.

<b>BULK SUBGRADE WORKS</b>	
CUT VOLUME	57,550 m <sup>3</sup>
FILL VOLUME	50 m <sup>3</sup>
NET CUT	57,500 m <sup>3</sup>
TOPSOIL STRIPPED (150mm)	= n/a
EARTHWORKS AREA	= 14,247m <sup>2</sup>
NOTE: NO ALLOWANCE FOR SERVICES TRENCHES, VOLUMES AREA UNFACTORED AND INSITUE	

PROPOSED ESPLANADE RESERVE

WAITEMATA HARBOUR



- Notes
1. All works to be in accordance with Auckland council standards.
  2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000
  3. Levels in terms of the Auckland Vertical Datum 1946.
  4. Origin of Levels = RM 7760 SO 68697(C630)
  5. Published RL=17.11m, sourced from The LINZ Digital Geodetic Database.
  6. It is the contractors responsibility to locate all services that may be affected by his operations.
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  11. Sediment control to comply with GD05 Standards.

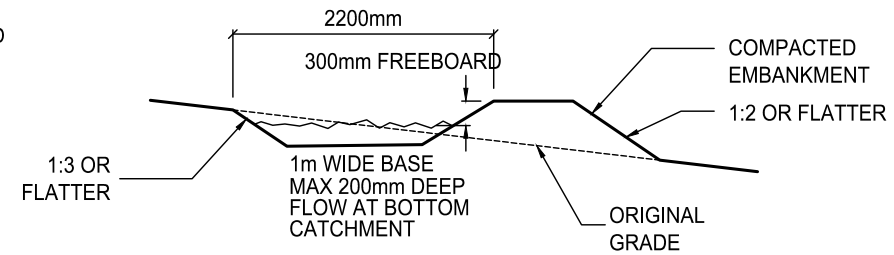
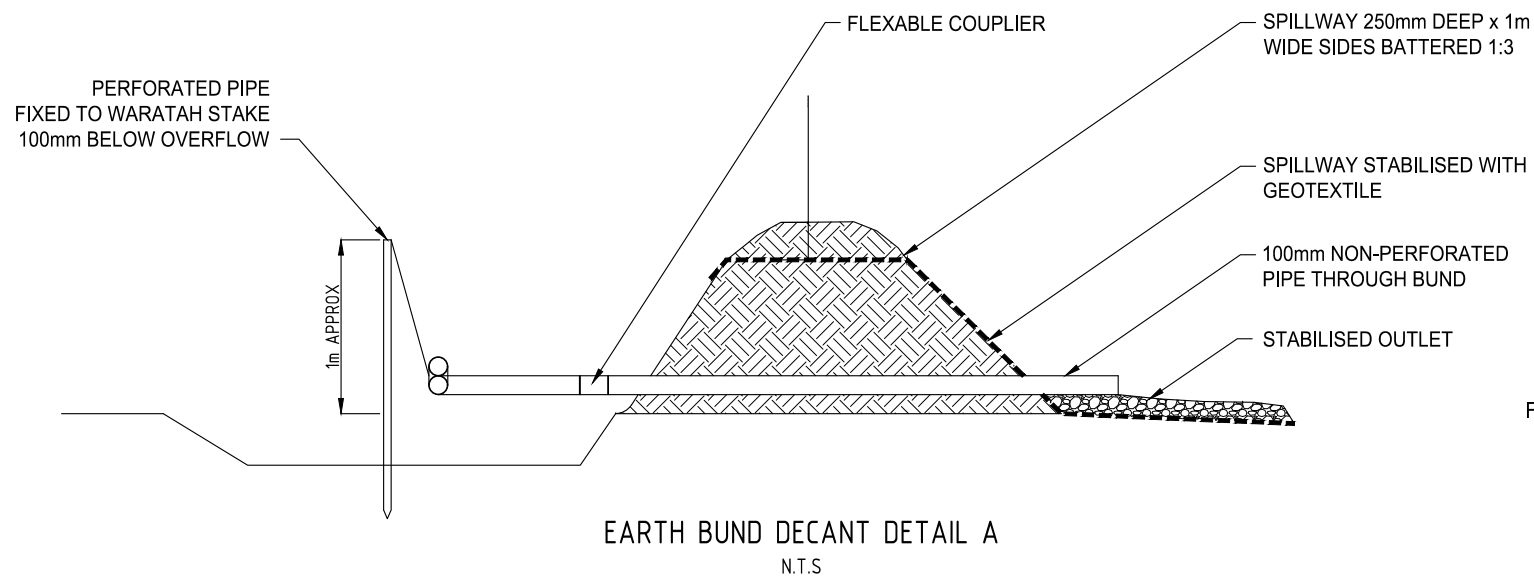
C	S&E RC	JD	28/20
B	RC	AS	06/20
A	RC	AS	05/20
Rev	Description	By	Date
		By	Date
Survey	HG LTD		03/2019
Design	AS		05/2020
Drawn	AS		05/2020
Checked	JP		05/2020

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 09 571 0050  
 info@maven.co.nz  
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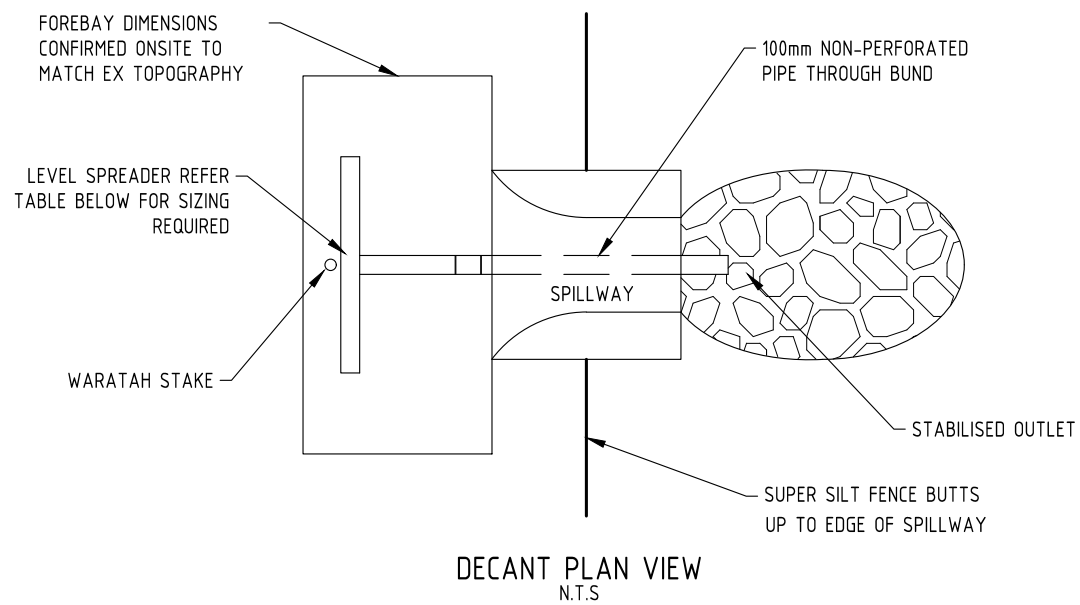
Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 SEDIMENT CONTROL  
 DETAILS PLAN**

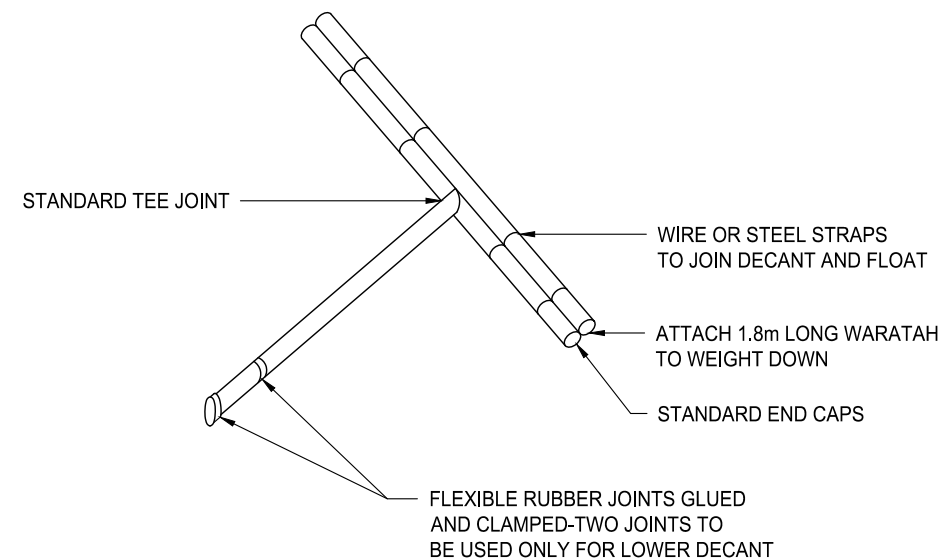
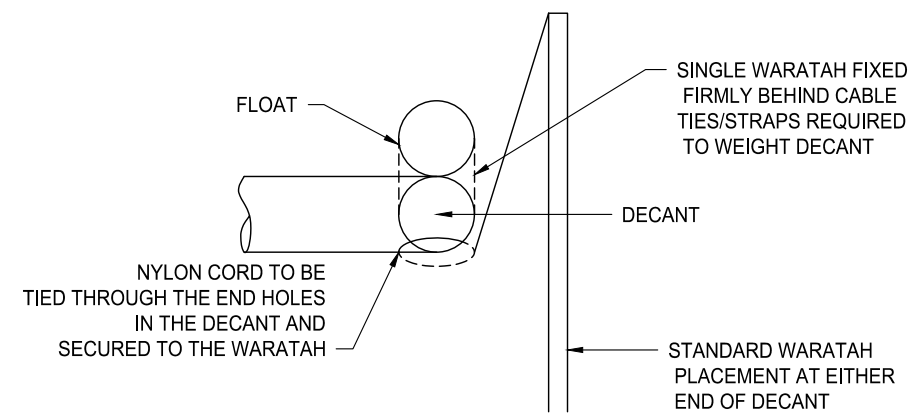
Project no.	175001
Scale	-
Cad file	C200 - EARTHWORKS.DWG
Drawing no.	C202
Rev	<b>C</b>



TYPICAL CROSS SECTION OF A RUNOFF DIVERSION  
TYPICAL DIMENSIONS UNLESS OTHERWISE NOTED



LEVEL SPREADER DESIGN CRITERIA (20 YEAR STORM EVENT)				
DESIGN FLOW (m <sup>3</sup> /sec)	INLET WIDTH (m)	DEPTH (m)	END WIDTH (m)	LENGTH (mm)
0-0.3	3	150	1	3
0.3-0.6	5	180	1	7
0.6-0.9	7	220	1	10



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  - Sediment control to comply with GD05 Standards.

Rev	Description	By	Date
B	RC	AS	06/20
A	RC	AS	05/20

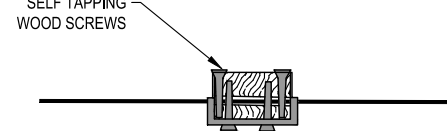
**M** Maven Associates  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

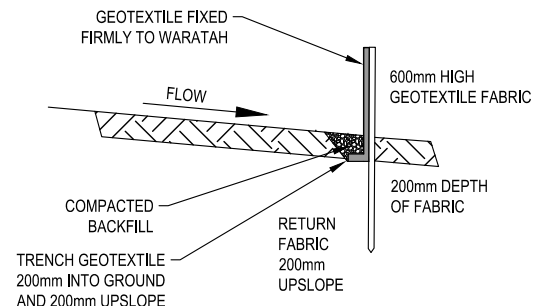
Title  
**PROPOSED  
SEDIMENT CONTROL  
DETAILS PLAN**

Project no.	175001
Scale	-
Cad file	C200 - EARTHWORKS.DWG
Drawing no.	C203
Rev	<b>B</b>

WRAP BOTH ENDS OF THE FABRIC AROUND ONE STAKE AND CLAMP THE OTHER STAKE TO IT USING SELF TAPPING WOOD SCREWS AT 150mm SPACINGS



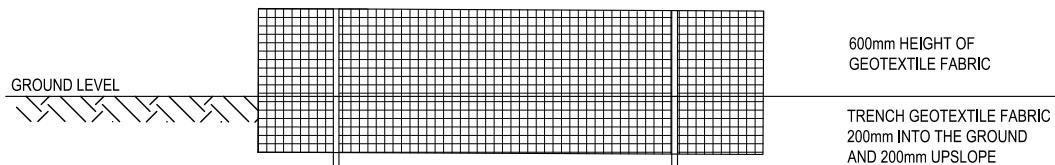
STANDARD DETAIL FOR FABRIC JOIN



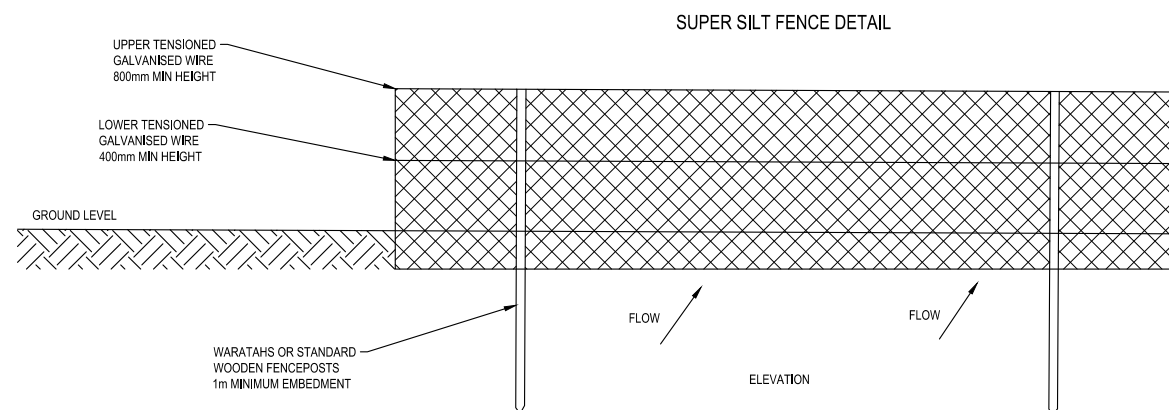
CROSS SECTION

STANDARD DETAIL FOR SILT FENCE

POST SPACING CAN BE INCREASED FROM 2 METRES TO 4 METRES IF SUPPORTED BY A 2.5mm DIAMETER HIGH TENSILE WIRE ALONG THE TOP WITH CLIPS EVERY 200mm



ELEVATION

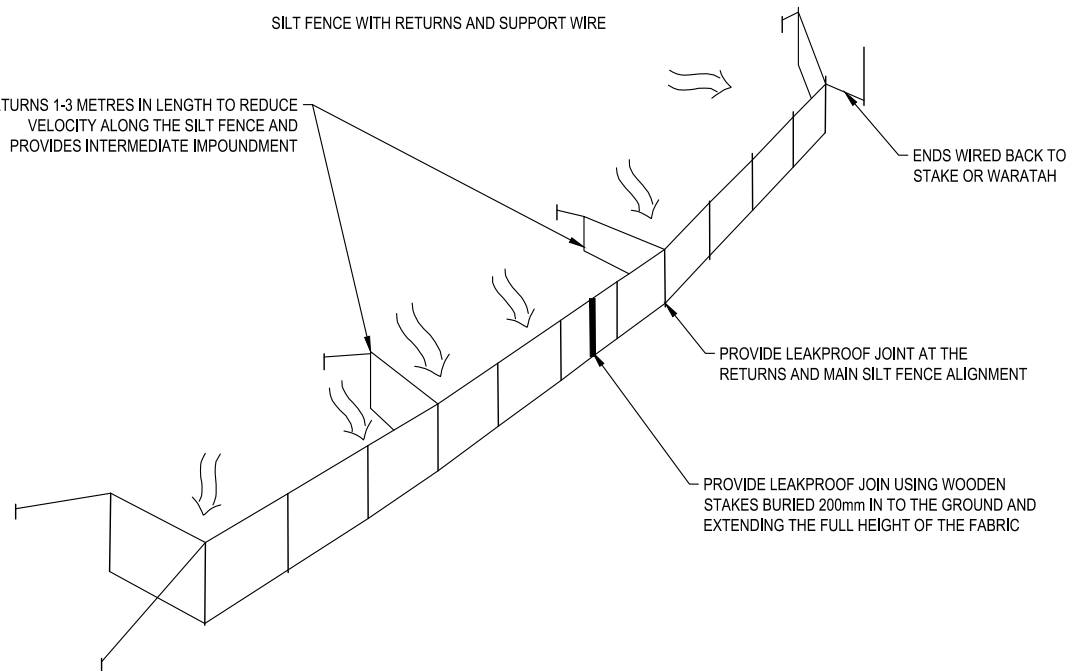


SUPER SILT FENCE DETAIL

ELEVATION

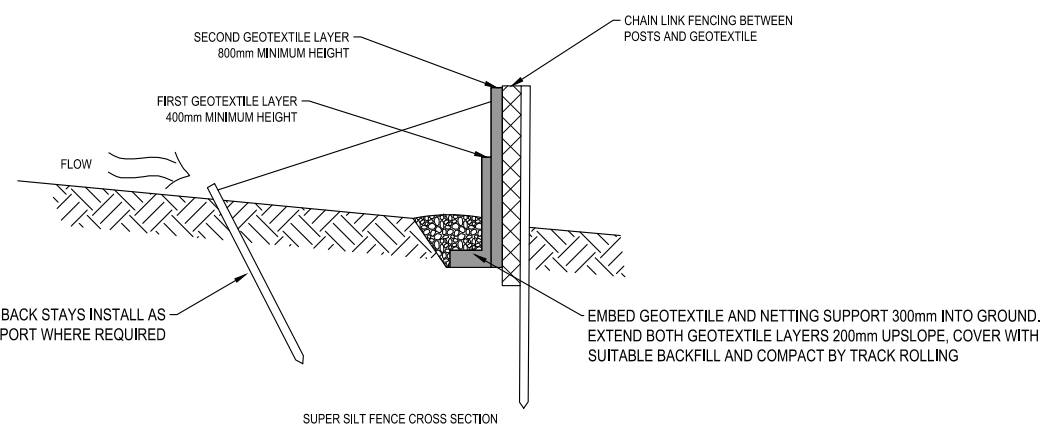
SILT FENCE WITH RETURNS AND SUPPORT WIRE

RETURNS 1-3 METRES IN LENGTH TO REDUCE VELOCITY ALONG THE SILT FENCE AND PROVIDES INTERMEDIATE IMPOUNDMENT



PROVIDE LEAKPROOF JOINT AT THE RETURNS AND MAIN SILT FENCE ALIGNMENT

PROVIDE LEAKPROOF JOINT USING WOODEN STAKES BURIED 200mm IN TO THE GROUND AND EXTENDING THE FULL HEIGHT OF THE FABRIC



SUPER SILT FENCE CROSS SECTION

Notes

1. All works to be in accordance with Auckland council standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000
3. Levels in terms of the Auckland Vertical Datum 1946.
4. Origin of Levels = RM 7760 SO 68697(C630)
5. Published RL=17.11m, sourced from The LINZ Digital Geodetic Database.
6. It is the contractors responsibility to locate all services that may be affected by his operations.
7. The contractor shall comply with all relevant Health and Safety requirements.
8. The contractor shall obtain all necessary approval from utility operators before commencing work under or near their services.
9. Sediment control shall be installed and operational before earthworks start onsite in accordance with council standards.
10. Contractor shall provide asbuilt of working sediment control devices and confirmation of pond/decent volumes to engineer.
11. Sediment control to comply with GD05 Standards.

Rev	Description	By	Date
A	S&E RC	JD	28/20
Survey	HG LTD		03/2019
Design	AS		05/2020
Drawn	JD		05/2020
Checked	JP		05/2020

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Title  
**PROPOSED  
 SEDIMENT CONTROL  
 DETAILS PLAN**

Project no.	175001
Scale	-
Cad file	C200 - EARTHWORKS.DWG
Drawing no.	C204
Rev	<b>A</b>



WAITEMATA HARBOUR

10. Pram crossings are to be flush to the channel with no lip.
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12. All kerbing, channels and edge beams shall have 4kg black oxide.
13. All signage and pavement markings to be in accordance with NZTA MOTSAM standards and the ATCOP TCDM.
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15. All line markings to be reflectorised in accordance with MOTSAM standards.
16. The minimum vertical and lateral clearances for signage shall be in accordance with MOTSAM standards.
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18. All new, modified or upgraded pram crossings must be in accordance with RTS 14 Guidelines for Facilities for Blind and Vision-impaired Pedestrians and NZS/AS 1428.4 and must comply with the details provided in AT's Standard Plan No.FP009.

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  7. Setout schedule with co-ordinates of chainage points along road centreline to be supplied to the contractor prior to construction.
  8. Refer to long section for finished centreline levels. Refer to typical cross sections to obtain levels for other locations
  9. All ducts shall have locations marked on kerb lines in accordance with specification.

Line Marking

CENTER LINE 1-	WC100R (30m)
CENTER LINE 2-	WC100R
NO STOPPING LINE-	Y1100R1x1
CONTINUITY LINE-	W1100R1x3
LIMIT LINE-	WC300R

Legend

	STAGE BDY
	EX BDY
	PROP BDY
	AC PAVING
	BRUSHED CONCRETE
	EXPOSED CONCRETE
	DISH CHANNEL
	K&C
	K&N
	WS
	PROP SWCP SINGLE
	PROP STREET LIGHT
	PROP STREET SIGN
	ROAD NAME SIGN
	TACTILE PAVERS

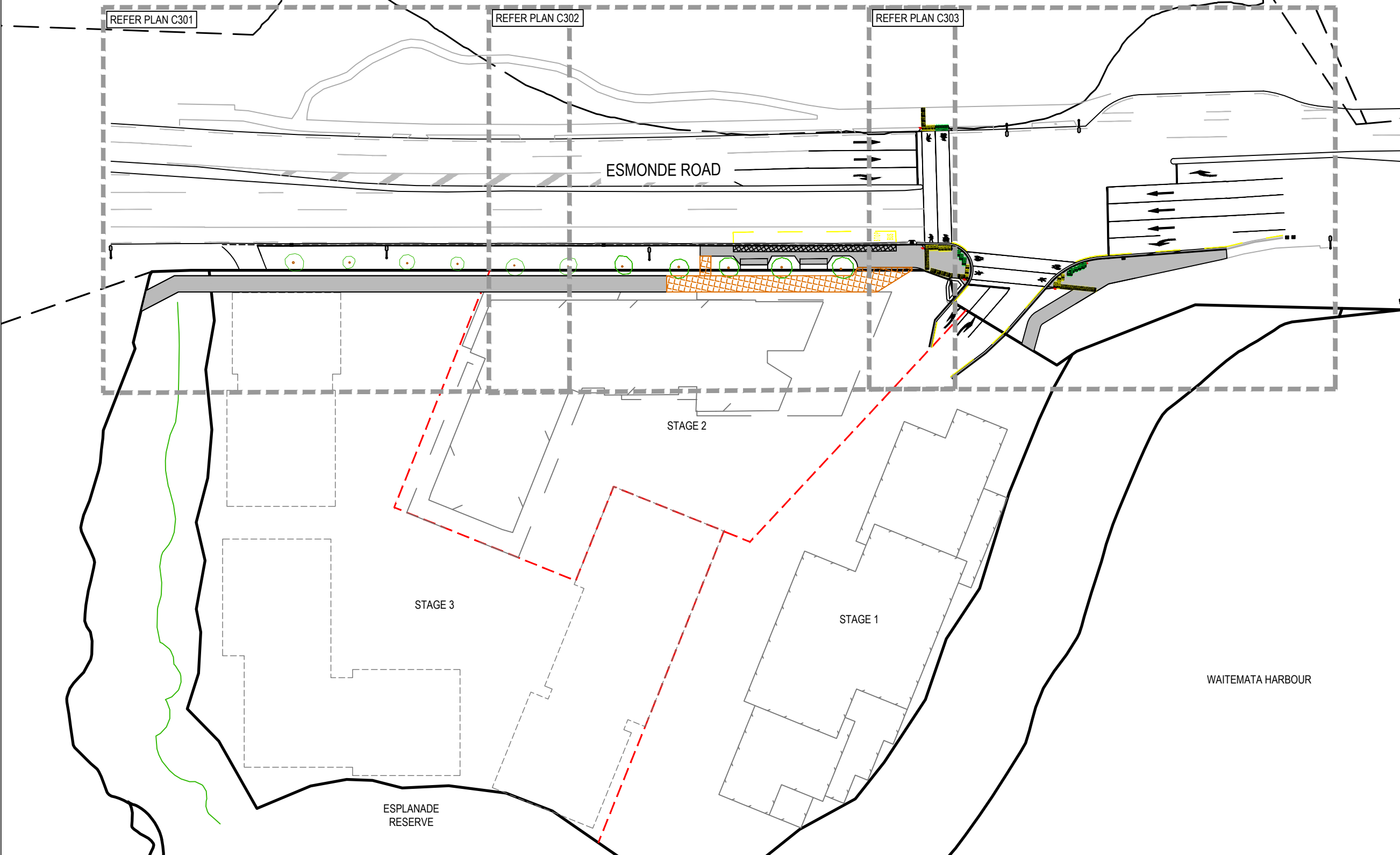
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C	RC	JP	12/20
B	RC	AS	08/20
A	RC	AS	05/20
Rev	Description	By	Date
		By	Date
Survey	HG LTD		03/20
Design	AS		05/21
Drawn	AS		05/21
Checked	JP		05/21

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Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 ROADING  
 PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C300 - ROADING.DWG
Drawing no.	C300
Rev	<b>D</b>







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Line Marking

CENTER LINE 1-	WC100R (30m)
CENTER LINE 2-	WC100R
NO STOPPING LINE-	Y1100R1x1
CONTINUITY LINE-	W1100R1x3
LIMIT LINE-	WC300R

Legend

--- (dashed red)	STAGE BDY
--- (dashed black)	EX BDY
--- (solid black)	PROP BDY
AC	AC PAVING
CB	BRUSHED CONCRETE
CEA	EXPOSED CONCRETE
DC	DISH CHANNEL
K&C	KERB AND CHANNEL
K&N	KERB AND NIB
WS	WHEEL STOP
	PROP SWCP SINGLE
○	PROP STREET LIGHT
□	PROP STREET SIGN
□	ROAD NAME SIGN
□	TACTILE PAVERS

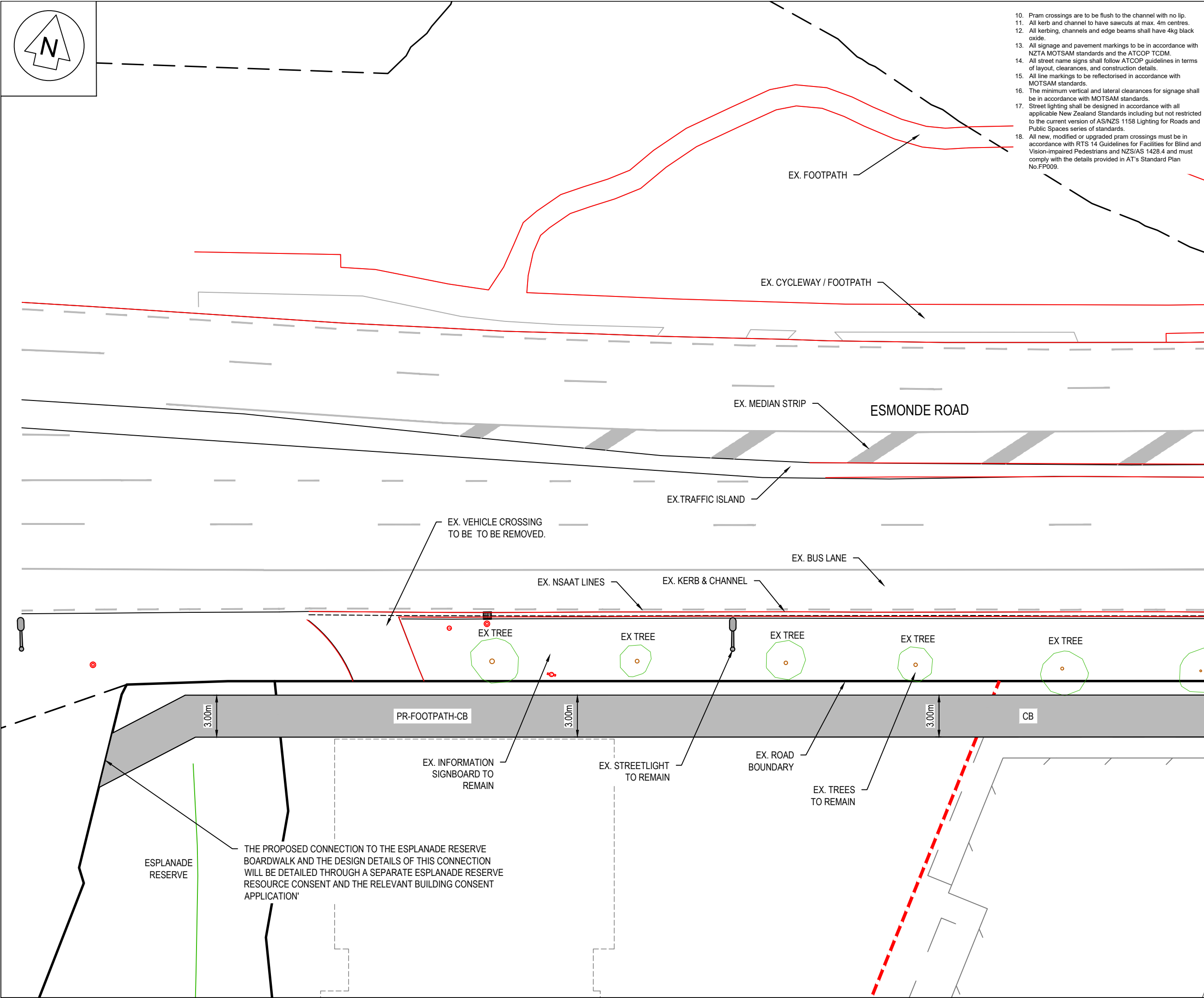
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C	RC	JP	12/20
B	RC	AS	08/20
A	RC	AS	05/20
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		By	Date
Survey	HG LTD		03/20
Design	AS		05/21
Drawn	AS		05/21
Checked	JP		05/21

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 info@maven.co.nz  
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Project  
**48 ESMONDE ROAD**  
**TAKAPUNA**  
**FOR**  
**KINGSTONE PROPERTY**  
**LIMITED**

Title  
**PROPOSED**  
**ROADING**  
**PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C300 - ROADING.DWG
Drawing no.	C301
Rev	<b>D</b>



THE PROPOSED CONNECTION TO THE ESPLANADE RESERVE BOARDWALK AND THE DESIGN DETAILS OF THIS CONNECTION WILL BE DETAILED THROUGH A SEPARATE ESPLANADE RESERVE RESOURCE CONSENT AND THE RELEVANT BUILDING CONSENT APPLICATION'



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CENTER LINE 2-	WC100R
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CONTINUITY LINE-	W1100R1x3
LIMIT LINE-	WC300R

Legend

	STAGE BDY
	EX BDY
	PROP BDY
	AC PAVING
	BRUSHED CONCRETE
	EXPOSED CONCRETE
	DISH CHANNEL
	KERB AND CHANNEL
	KERB AND NIB
	WHEEL STOP
	PROP SWCP SINGLE
	PROP STREET LIGHT
	PROP STREET SIGN
	ROAD NAME SIGN
	TACTILE PAVERS

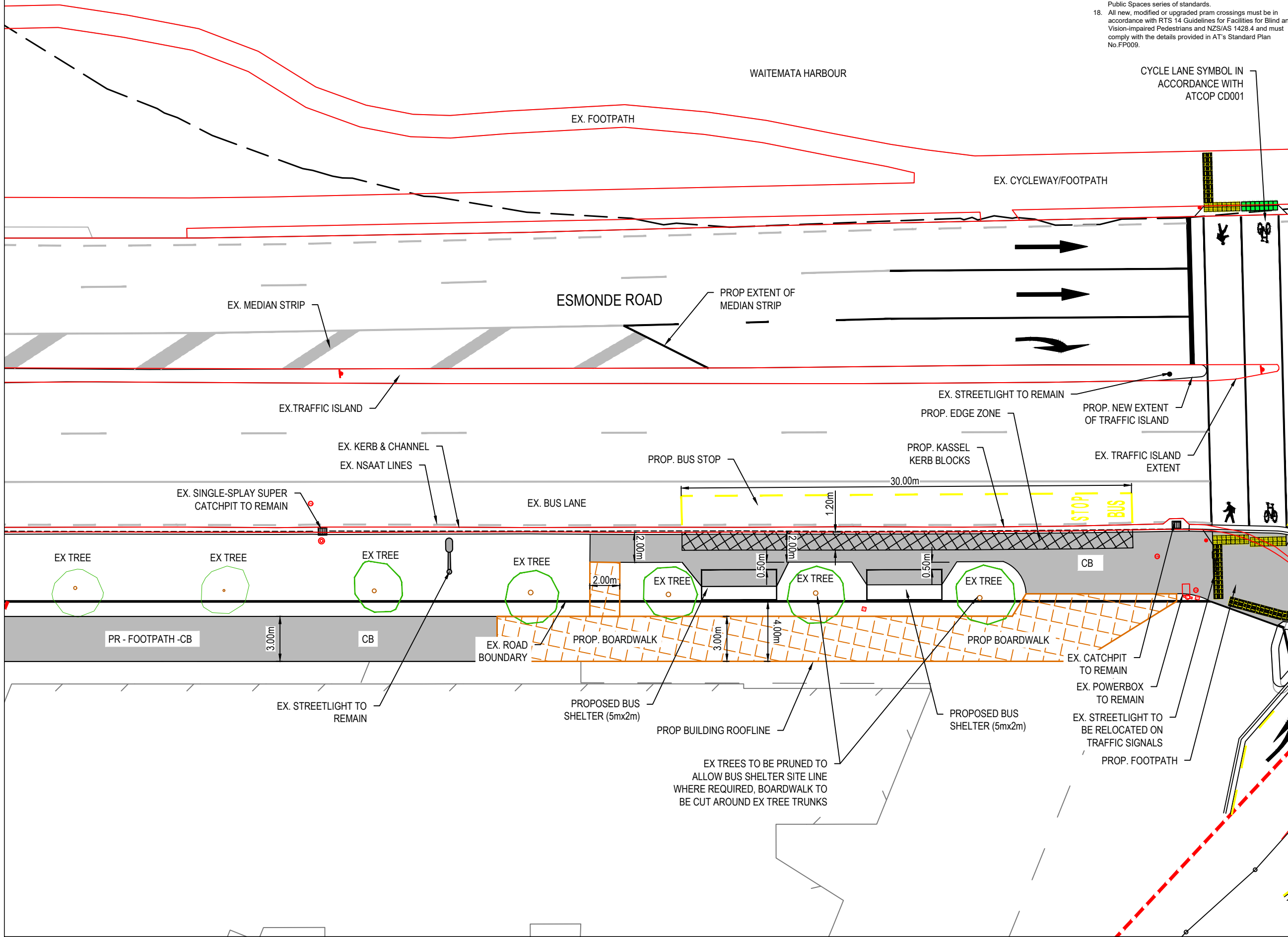
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C	RC	JP	12/20
B	RC	AS	08/20
A	RC	AS	05/20
Rev	Description	By	Date
	Survey	HG LTD	03/20
	Design	AS	05/21
	Drawn	AS	05/21
	Checked	JP	05/21

**M** Maven Associates  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 ROADING  
 PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C300 - ROADING.DWG
Drawing no.	C302
Rev	<b>D</b>





WAITEMATA HARBOUR

EX. PRAM CROSSING  
TO BE REMOVED AND  
REINSTATED AS KERB  
AND CHANNEL

EX. CYCLEWAY/FOOTPATH

EX. BUS STOP

EX. CYCLE LANE

PROP EXTENT OF  
TRAFFIC ISLAND

EX. TRAFFIC ISLAND  
EXTENT TO BE REMOVED

EX. STREET LIGHT  
AND TRAFFIC SIGNALS

EX. STREET LIGHT  
AND TRAFFIC SIGNALS

EX. TRAFFIC ISLAND

ESMONDE ROAD

EXTENT OF ROAD &  
FOOTPATH UPGRADE  
AS PER EXISTING ROAD  
BEYOND THIS POINT

EX. PEDESTRIAN ISLANDS,  
STREET LIGHTING AND  
SIGNAGE TO BE REMOVED

EX. CATCHPIT  
TO BE REMOVED

PROP KERB & CHANNEL

EX. KERB & CHANNEL  
TO BE REMOVED

PROPOSED FOOTPATH

EXISTING FOOTPATH

EX. DOUBLE SPLAY  
CATCHPIT TO REMAIN

PROP. KERB & CHANNEL

PROP. CYCLELANE RAMP  
TO MERGE ONTO  
FOOTPATH

PROPOSED FOOTPATH  
& CYCLEPATH

EX KERB & CHANNEL  
TO BE REMOVED

EX. POWERBOX  
TO REMAIN

EX. STREETLIGHT TO  
BE RELOCATED ON  
TRAFFIC SIGNALS

PROP LANDSCAPE WALL

PROP. KERB & CHANNEL

PROP. KERB & CHANNEL

EX. SINGLE-SPLAY  
SUPER CATCHPIT  
TO BE REMOVED

ESPLANADE  
RESERVE

WAITEMATA HARBOUR

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Line Marking

CENTER LINE 1-	WC100R (30m)
CENTER LINE 2-	WC100R
NO STOPPING LINE-	Y1100R1x1
CONTINUITY LINE-	W1100R1x3
LIMIT LINE-	WC300R

Legend

	STAGE BDY
	EX BDY
	PROP BDY
	AC PAVING
	BRUSHED CONCRETE
	EXPOSED CONCRETE
	DISH CHANNEL
	K&C
	K&N
	WS
	WHEEL STOP
	PROP SWCP SINGLE
	PROP STREET LIGHT
	PROP STREET SIGN
	ROAD NAME SIGN
	TACTILE PAVERS

D	EPA	JP	05/21
C	RC	RC	12/20
B	RC	AS	08/20
A	RC	AS	05/20
Rev	Description	By	Date
	Survey	HG LTD	03/20
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Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
ROADING  
PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C300 - ROADING.DWG
Drawing no.	C303
Rev	<b>D</b>



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LIMIT LINE-	WC300R

Legend

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	EX BDY
	PROP BDY
	AC PAVING
	BRUSHED CONCRETE
	EXPOSED CONCRETE
	DISH CHANNEL
	KERB AND CHANNEL
	KERB AND NIB
	WHEEL STOP
	PROP SWCP SINGLE
	PROP STREET LIGHT
	PROP STREET SIGN
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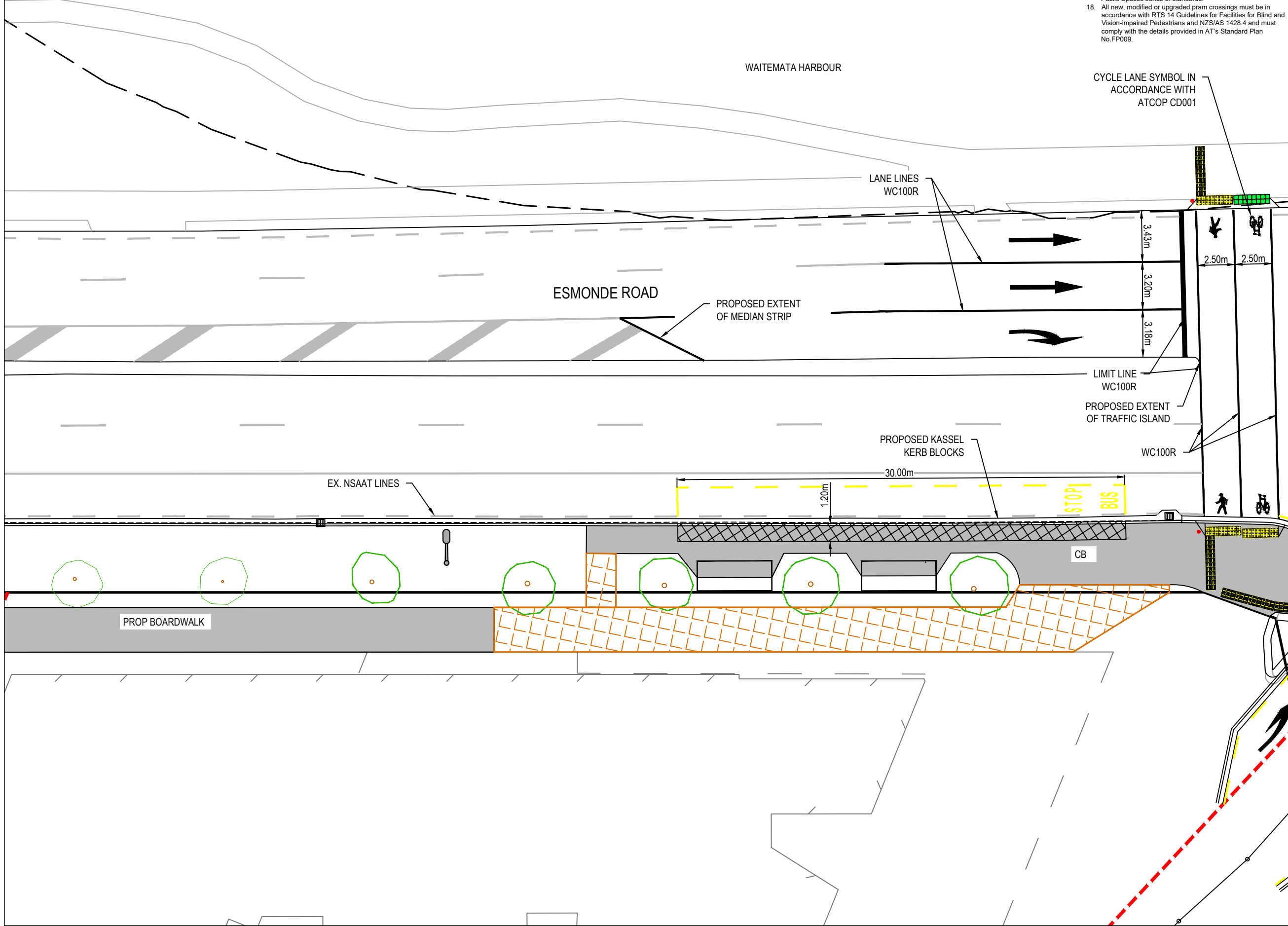
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Project  
**48 ESMONDE ROAD  
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 FOR  
 KINGSTONE PROPERTY  
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Title  
**PROPOSED  
 LINE MARKING  
 PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C300 - ROADING.DWG
Drawing no.	C304
Rev	<b>D</b>





WAITEMATA HARBOUR

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LIMIT LINE-	WC300R

Legend

---	STAGE BDY
---	EX BDY
---	PROP BDY
AC	AC PAVING
CB	BRUSHED CONCRETE
CEA	EXPOSED CONCRETE
DC	DISH CHANNEL
K&C	KERB AND CHANNEL
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WS	PROP STREET SIGN
WS	ROAD NAME SIGN
WS	TACTILE PAVERS

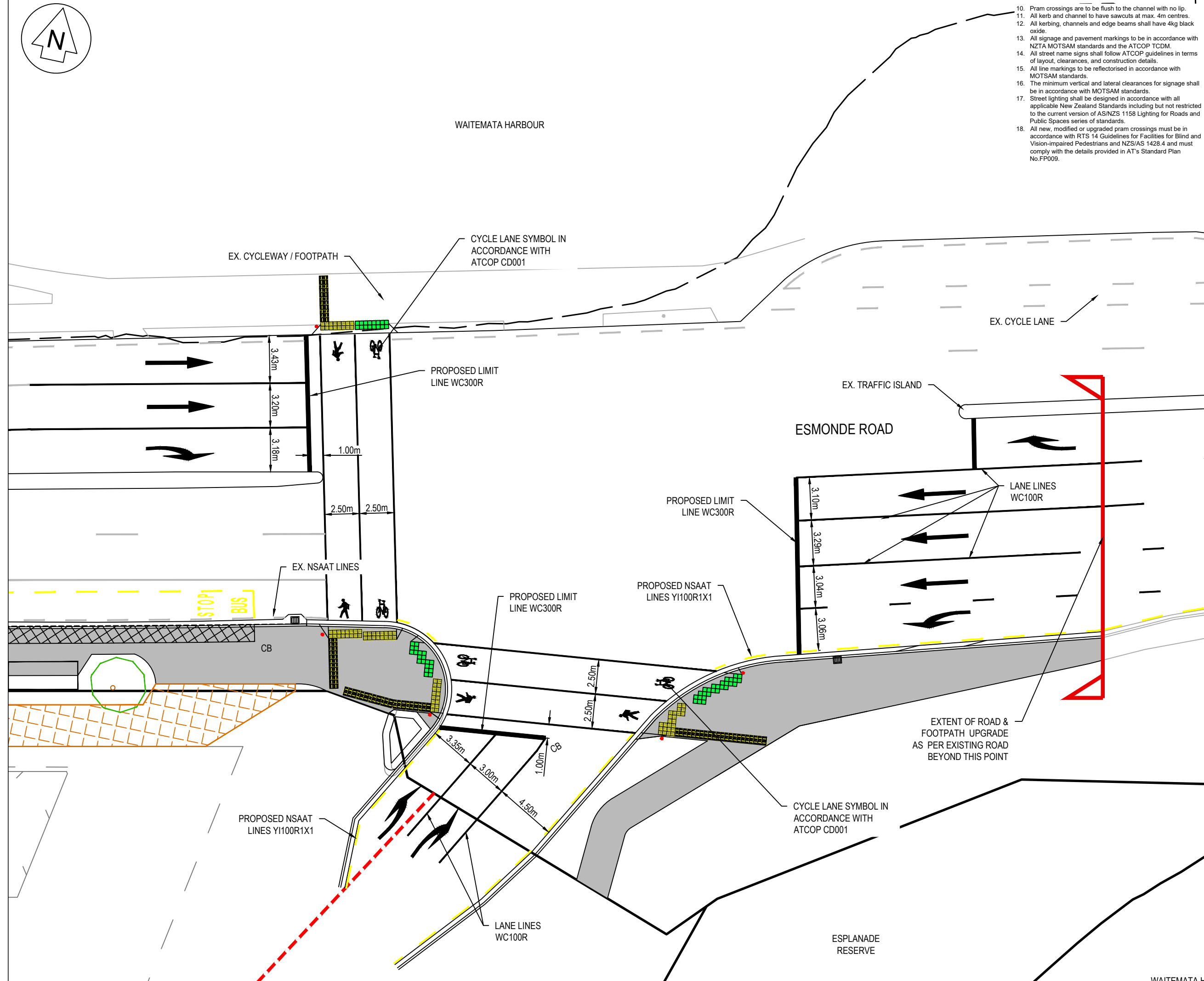
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Survey	HG LTD		03/20
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Checked	JP		05/21

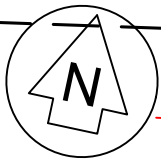


Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 LINE MARKING  
 PLAN**

Project no.	175001
Scale	1:250 @ A3
Cad file	C300 - ROADING.DWG
Sheet no.	C305
Rev	<b>D</b>





WAITEMATA HARBOUR

ESMONDE ROAD

48 ESMONDE ROAD

INDICATIVE POSITION OF PRIVATE SW DRAINAGE

PROPOSED ESPLANADE RESERVE

WAITEMATA HARBOUR

EX MH - GIS ID: 2000294315  
LID LEVEL TO BE ADJUSTED  
PROP LL: 5.61m  
IL: 4.68m (NEW CP)  
IL: 1.65m (out) (AS PER GIS, INVERT TO BE CONFIRMED)

EX MANHOLE, CESSPIT AND CESSPIT LEAD TO BE REMOVED

EX MANHOLE, CESSPIT AND CESSPIT LEAD TO BE REMOVED

EX SWMH 3-0  
LL: 3.66m  
IL: 2.36m

PR CP 1-0  
LL: 5.61m  
IL: 4.79m (out)

PROP 300mmØ RRRCRJ SW LINE @ 2.18%

PROP SW LOT CONNECTION

PR SWMH 1-1  
LL: 5.00m  
IL: 2.04m (in)  
IL: 1.99m (out)

PROP 300mmØ RRRCRJ SW LINE @ 1.00%

PROP SW OUTLET 1-0  
(300 SERIES WING WALL)  
IL: 1.79m (OUT)  
REFER TO PLAN C446 FOR  
PROP RIPRAP DETAILS

EX MANHOLE TO BE REMOVED AND EX 225mmØ LINE TO BE CONCRETE CAPPED.

EX 300mmØ PUBLIC SW LINE AND MANHOLES TO BE REMOVED

PR SWMH 2-1  
LL: 9.29m  
IL: 2.21m (in)  
IL: 2.16m (out)

EX 300mm TO BE UPGRADED TO PROP 355DN PE SDR17 SW LINE @ 2.85%. (LINE TO BE THRUSTED)

EX SW OUTLET 2-0  
IL: 1.79m  
EXISTING OUTLET PROTECTION TO BE MAINTAINED

PROP 375mmØ RRRCRJ SW LINE @ 1.60%

- Notes
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  - Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
  - It is the contractors responsibility to locate all services that may be affected by his operations.
  - Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
  - Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
  - Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
  - Heavy duty manhole lids and frames to be used in trafficked areas.
  - All cesspit leads shall have min cover 0.9m.
  - All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
  - All lines to be abandoned shall be sealed at each end, timing of all sealing to be coordinated with council staff.

Legend

	EX BDY
	PROP BDY
	EX PUBLIC SW
	PROP PUBLIC SW
	PROP PRIVATE SW
	EX PUBLIC WW
	PROP PUBLIC WW
	PROP PRIVATE WW
	EX/PROP SWMH
	PROP SWCP SINGLE
	PROP SWCP DOUBLE

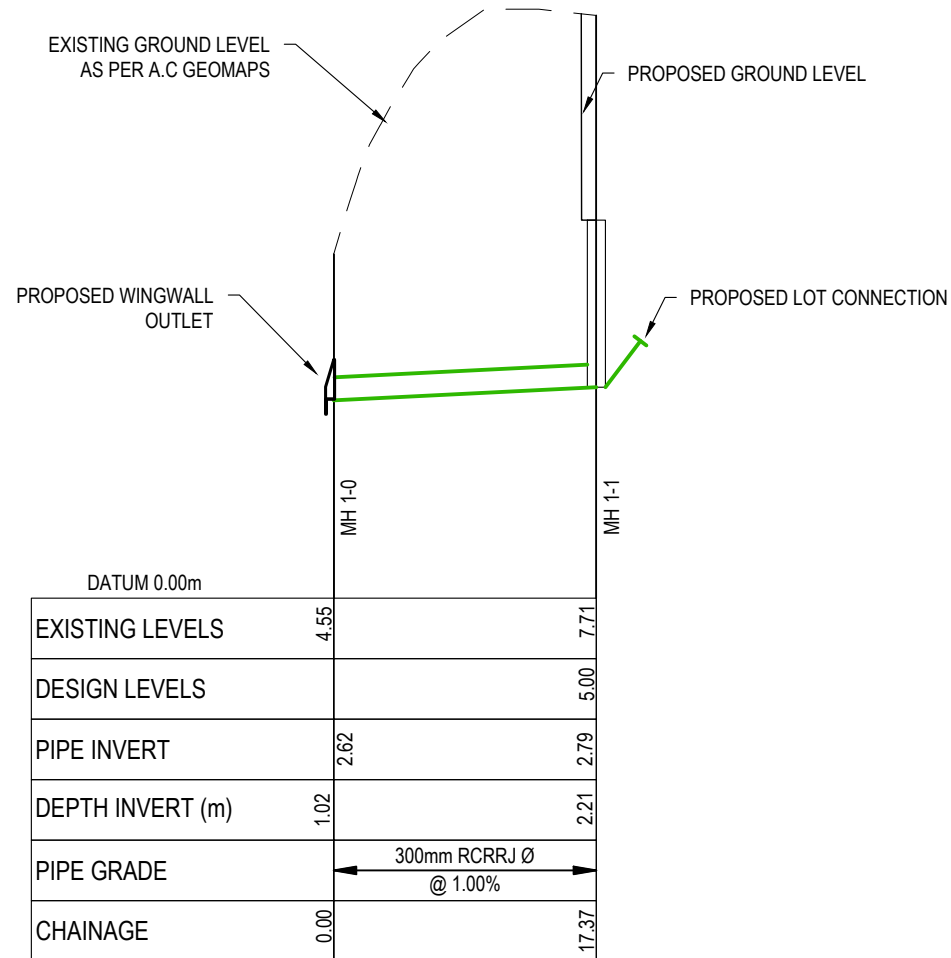
C	RC	JP	01/21
B	RC	AS	09/20
A	RC	JP	05/20
Rev	Description	By	Date
		By	Date
Survey	HGLTD		03/2019
Design	JP		09/2020
Drawn	JP		01/2021
Checked	WM		09/2021

**Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
12-14 Walls Road, Penrose

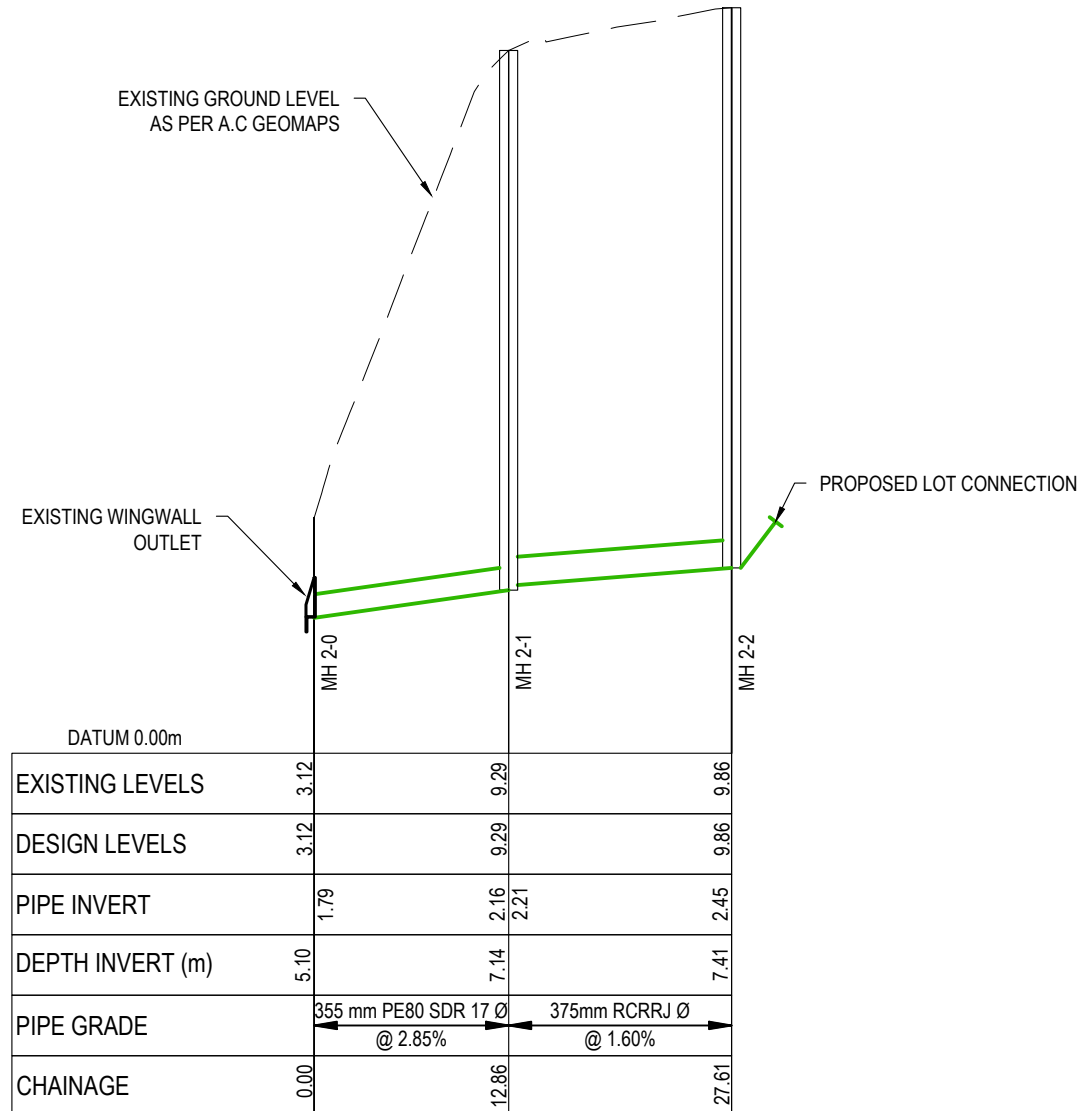
Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
STORMWATER DRAINAGE  
PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C400
Rev	<b>C</b>



**PROPOSED STORMWATER LINE 1**  
SCALE: HOR 1:500, VERT: 1:100 @ A3



**PROPOSED STORMWATER LINE 2**  
SCALE: HOR 1:500, VERT: 1:100 @ A3

**Notes**

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2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
3. It is the contractors responsibility to locate all services that may be affected by his operations.
4. Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas.
8. All cesspit leads shall have min cover 0.9m.
9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
10. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

**Legend**

- EX BDY
- PROP BDY
- EX PUBLIC SW
- PROP PUBLIC SW
- PROP PRIVATE SW
- EX PUBLIC WW
- PROP PRIVATE WW
- EX/PROP SWMH
- PROP SWCP SINGLE
- PROP SWCP DOUBLE

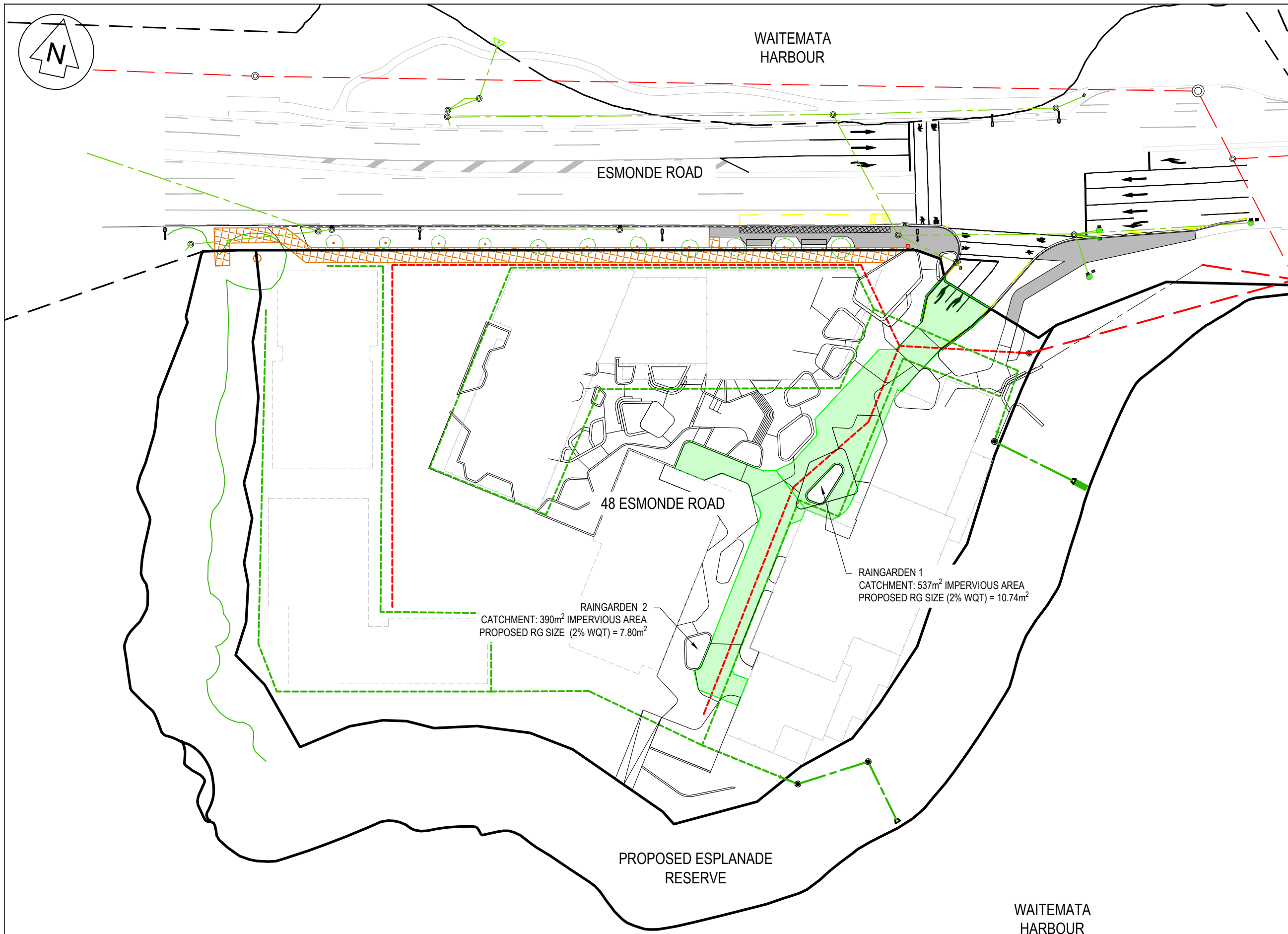
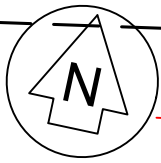
Rev	Description	By	Date
A	RC	JP	09/20
	By	Date	
Survey	HG LTD	03/2019	
Design	JP	09/2020	
Drawn	JP	09/2020	
Checked	WM	09/2020	

**Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
LONGSECTION  
PLAN**

Project no.	175001
Scale	1:500 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C401
Rev	<b>A</b>



- Notes
1. All works to be in accordance with Auckland council standards.
  2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
  3. It is the contractors responsibility to locate all services that may be affected by his operations.
  4. Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
  5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
  6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
  7. Heavy duty manhole lids and frames to be used in trafficked areas.
  8. All cesspit leads shall have min cover 0.9m.
  9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
  10. All lines to be abandoned shall be sealed at each end, timing of all sealing to be coordinated with council staff.

Legend

	EX BDY
	PROP BDY
	EX PUBLIC SW
	PROP PUBLIC SW
	PROP PRIVATE SW
	EX PUBLIC WW
	PROP PUBLIC WW
	PROP PRIVATE WW
	EX/PROP SWMH
	PROP SWCP SINGLE
	PROP SWCP DOUBLE

Rev	Description	By	Date
B	RC	AS	09/20
A	RC	JP	05/20
Survey	HGLTD		03/2019
Design	JP		05/2020
Drawn	AS		05/2020
Checked	WM		05/2020

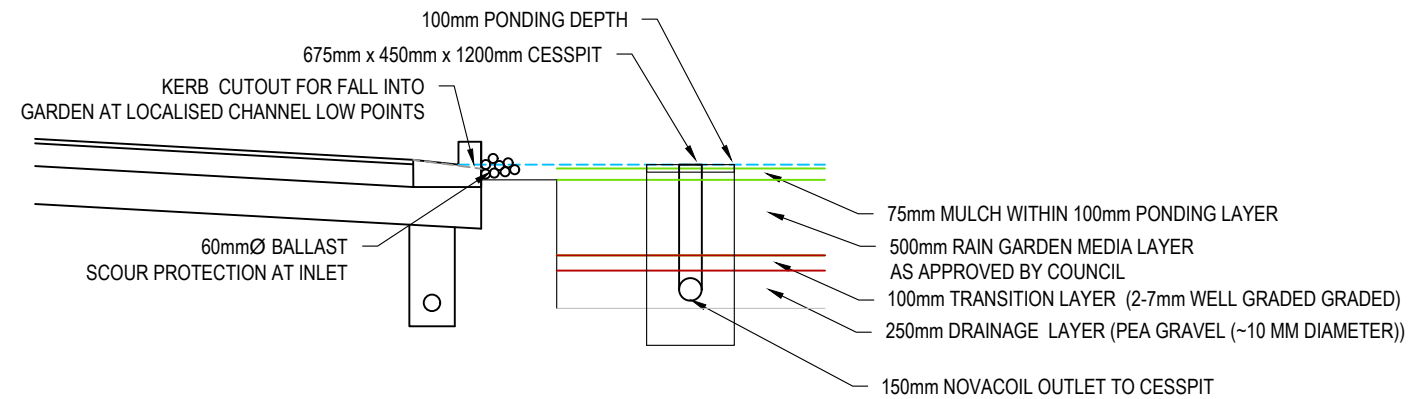
**Maven Associates**  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

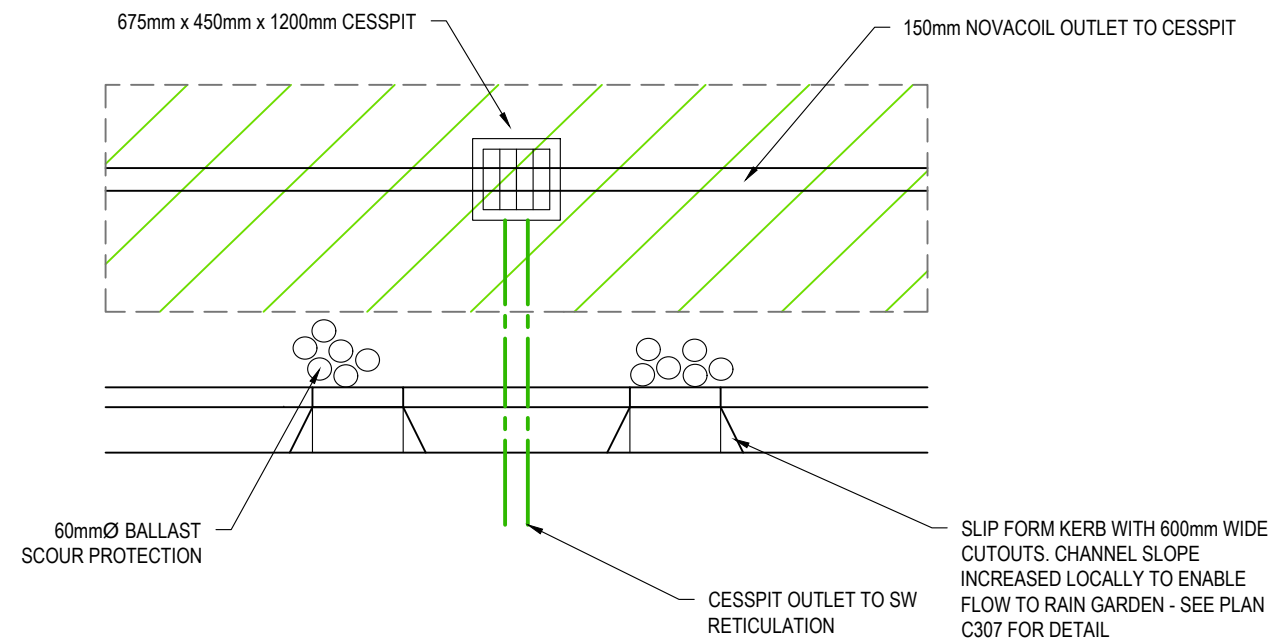
Title  
**PROPOSED  
 TREATMENT  
 PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C440
Rev	<b>B</b>





RG  
-  
TYPICAL RAIN GARDEN PLAN DETAIL  
SCALE 1:50 @ A3



RG  
-  
TYPICAL RAIN GARDEN SECTION DETAIL  
SCALE 1:50 @ A3

Notes

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- Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
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- Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
- Heavy duty manhole lids and frames to be used in trafficked areas.
- All cesspit leads shall have min cover 0.9m.
- All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
- All lines to be abandoned shall be sealed at each end, timing of all sealing to be coordinated with council staff.

Legend

EX BDY	EX PUBLIC SW
PROP BDY	PROP PUBLIC SW
EX PUBLIC SW	PROP PRIVATE SW
PROP PRIVATE SW	EX PUBLIC WW
EX PUBLIC WW	PROP PUBLIC WW
PROP PUBLIC WW	PROP PRIVATE WW
PROP PRIVATE WW	EX/PROP SWMH
EX/PROP SWMH	PROP SWCP SINGLE
PROP SWCP SINGLE	PROP SWCP DOUBLE

A	RC	JP	05/20
Rev	Description	By	Date
		By	Date
Survey	HG LTD		03/2019
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Drawn	AS		05/2020
Checked	WM		05/2020

**M** **Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
12-14 Walls Road, Penrose

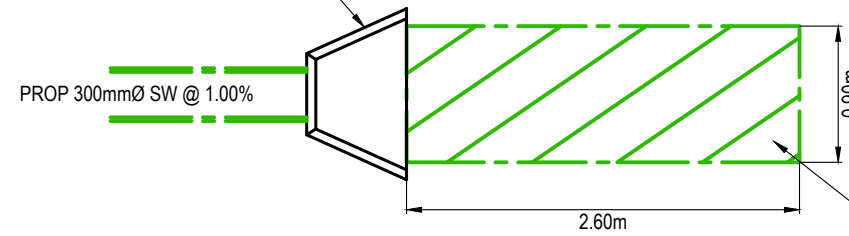
Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
RAIN GARDEN  
DETAILS**

Project no.	175001
Scale	-
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C445
Rev	<b>A</b>

PROP SW OUTLET 1-0  
300 SERIES PRECAST WING WALL

PROP 300mmØ SW @ 1.00%



MINIMUM ROCK SIZE 85mmØ  
0.170m DEEP (2 X LAYERS)  
SMALL AGGREGATES TO FILL VOIDS  
TO BE ANCHORED WITH COCONUT FIBRE1200  
MAT - BIOCOIR BC1200 OR EQUIVALENT

RG PROP RIPRAP 1-0 DETAIL  
SCALE 1:50 @ A3

Notes

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- It is the contractors responsibility to locate all services that may be affected by his operations.
- Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
- Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
- Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
- Heavy duty manhole lids and frames to be used in trafficked areas.
- All cesspit leads shall have min cover 0.9m.
- All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
- All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

	EX BDY
	PROP BDY
	EX PUBLIC SW
	PROP PUBLIC SW
	PROP PRIVATE SW
	EX PUBLIC WW
	PROP PUBLIC WW
	PROP PRIVATE WW
	EX/PROP SWMH
	PROP SWCP SINGLE
	PROP SWCP DOUBLE

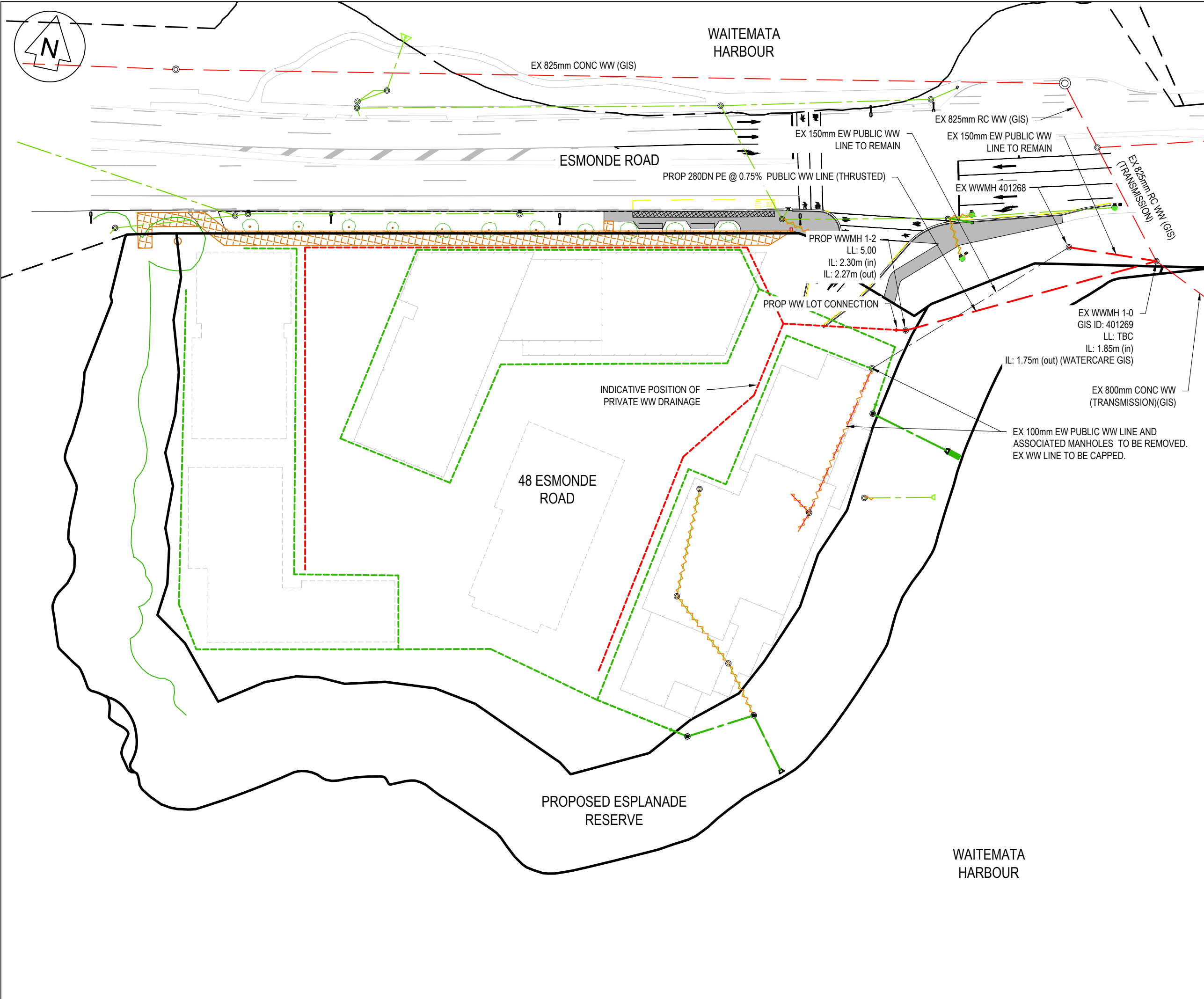
Rev	Description	By	Date
B	RC	JP	09/20
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Survey	HG LTD		03/2019
Design	JP		09/2020
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Checked	WM		09/2020

**M** **Maven Associates**  
09 571 0050  
info@maven.co.nz  
www.maven.co.nz  
M A V E N 12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
TAKAPUNA  
FOR  
KINGSTONE PROPERTY  
LIMITED**

Title  
**PROPOSED  
STORMWATER OUTLET  
DETAILS**

Project no.	175001
Scale	-
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C446
Rev	<b>B</b>



- Notes
- All works to be in accordance with Auckland council standards.
  - Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
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  - Pipe bedding: 0 - 10% granular bedding, 10 - 20% weak concrete bedding, greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
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  - Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
  - Heavy duty manhole lids and frames to be used in trafficked areas, all manholes shall have stainless grates installed.
  - All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
  - 150mmØ pipes that do not terminate in a manhole must be terminated with a 100mmØ on a 150mmØ london junction and blank cap.
  - All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

	EX BDY
	PROP BDY
	EX PUBLIC SW
	PROP PUBLIC SW
	PROP PRIVATE SW
	EX PUBLIC WW
	PROP PUBLIC WW
	PROP PRIVATE WW
	EX/PROP SWMH
	PROP SWCP SINGLE
	PROP SWCP DOUBLE

B	RC	JP	09/20
A	RC	JP	05/20
Rev	Description	By	Date

**Maven Associates**  
 09 571 0050  
 info@maven.co.nz  
 www.maven.co.nz  
 12-14 Walls Road, Penrose

Project  
**48 ESMONDE ROAD  
 TAKAPUNA  
 FOR  
 KINGSTONE PROPERTY  
 LIMITED**

Title  
**PROPOSED  
 WASTEWATER DRAINAGE  
 PLAN**

Project no.	175001
Scale	1:750 @ A3
Cad file	C400 - C500 DRAINAGE.DWG
Drawing no.	C500
Rev	<b>B</b>