LANDWORKS
— CONSULTING ENGINEERS —

496 EAST COAST ROAD, WINDSORR PARK
INFRASTRUCTURE CAPACITY ASSESSMENT FOR PLAN CHANGE
JOB REF: P23-077, REV D
DATE: 11/09/2024

Report Prepared by:

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BE (Civil), CPEng
Landworks Ltd

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LIST OF FIGURES

LIMITATION

This report has been prepared for “Windsor Park Community & Multisport Hub INC”, according to their instructions, for the particular objectives described herein. Landworks Ltd accepts no responsibility for the content of this report if it is used by any other party or for any other objective. Any use of or reliance on the information contained in this report for decisions made by third parties is the responsibility of these third parties. Landworks Ltd accepts no responsibility for damage incurred by third parties resulting from the use of or reliance on this report, or if the report is used by any party for purposes other than the objectives described herein.

1 // INTRODUCTION

This report has been prepared on behalf of Windsor Park Community & Multisport Hub INC, for the purposes of a private plan change application. This report describes an illustrative option for the subject site to support a plans change, and to demonstrate how the site could be serviced with engineering infrastructure for 80 to 100 medium density dwellings, for a future resource consent application.

An indicative/potential design option has been depicted in the drawings and in this report to show as a base to assess capacity such as stormwater, wastewater, and other civil matters.

2 // SITE DESCRIPTION

The plan change site consists of one existing title with an area of 63,805m^2. However, the main area of development in the north of the site is only approximately 12,800m^2. The site is largely flat with an overall grade to the south. Large flat sports fields make up most of the site's area. There is an elevation difference of approximately 18m between the highest and lowest point on the site.

There are formal overland flowpaths with catchment areas over 4000m^2 or floodplains on the site.

There are multiple large diameter (600mm, 750mm and 1050mm) concrete stormwater pipes throughout the site. These pipes enter from northern, eastern, and western boundaries respectively and serve the larger catchment.

There is a 150mm diameter public wastewater main and manhole that traverses the main development area through the centre of the site from north to south.

There are multiple public water main in the road outside the site as well as a public water main within the site used by the sports field. A hydrant is located within the carpark area west of the site.

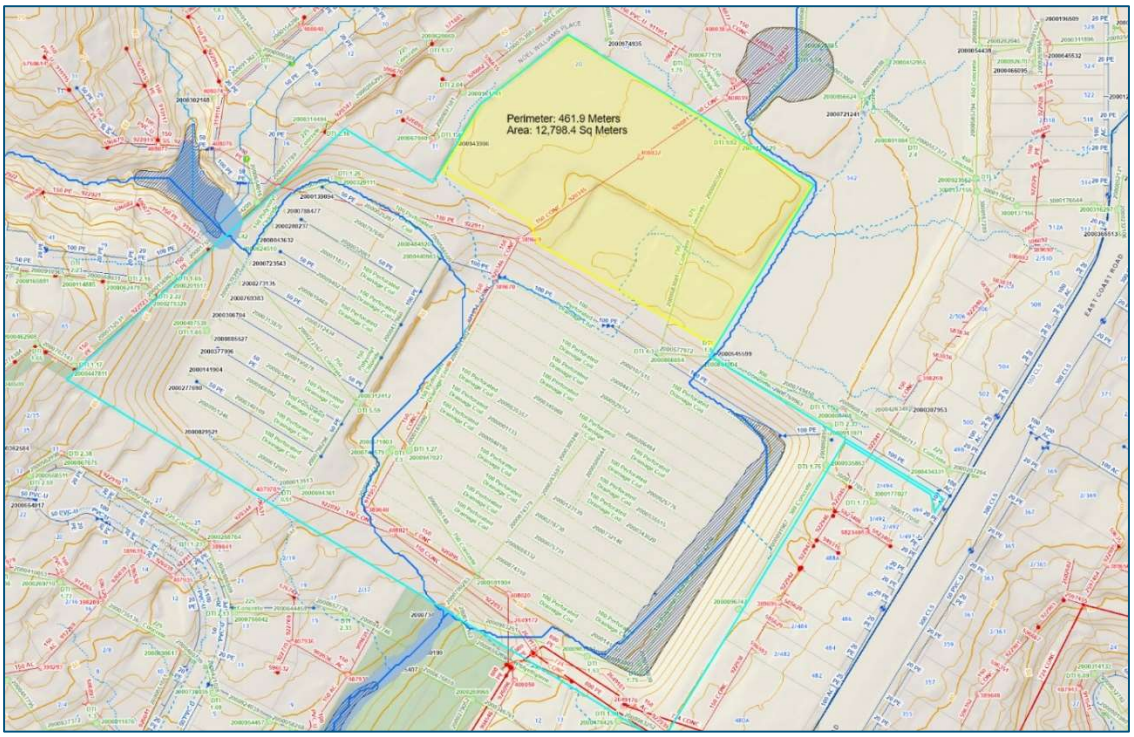


Figure 1 – Existing Public Services

3 // ILLUSTRATIVE OPTION FOR DEVELOPMENT

The plan change application proposal is to rezone part of the Active Recreation zoned parent site suitable for a residential development. Discussions with the urban designer and traffic engineer have estimated that the agreed development range is 80 – 100 units depending on the final design, layout and market demand.

For this plan change application for rezoning we have used an indicative scheme plan comprising of 85 units. The number of units could vary in any subsequent application in the range mentioned above. However, the infrastructure servicing requirements will not differ significantly over the range and can be appropriately managed within the MHU zone controls.

The current illustrative proposal is to subdivide into 85 units as generally shown below with:

- 60 walk up apartments
- 21 Terraced, two-storey dwellings
- 4 Duplexed, two-storey dwellings

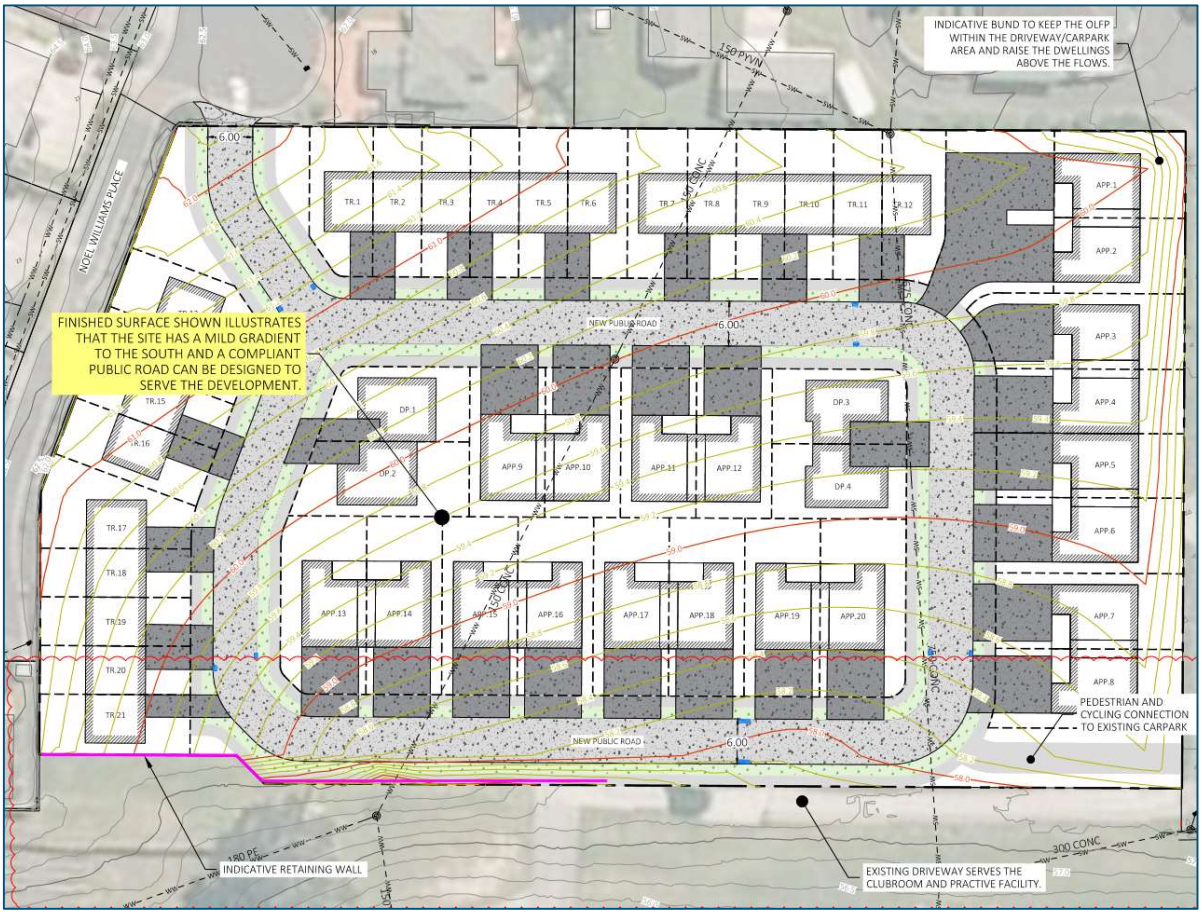


Figure 2 – Proposed layout

4 // EARTHWORKS

Earthworks for the site currently demonstrates that the site can be formed for use with compliant grades and is only indicative of what the site could look like. To generally grade the site to the south would involve an approximate cut of 7,000m^3 and fill of 1,000m^3 over an area of 13,000m^2. This is subject to future detailed design. The cut and fill volumes are calculated to indicative finished levels.

Retaining walls may be required through the site to provide suitable access grades, building platforms and outdoor living areas.

Erosion and sediment control drawings have been provided on drawing #220, to demonstrate that suitable erosion and sediment control measures can be implemented, and works can be completed in accordance with Auckland Council GD05.

5 // ACCESS TO THE SITE

Access to the development is demonstrated through a new public road and footpath for the residents within the site, with a road reserve corridor of 12m to show the proposal could be adequately serviced.

This potential design is detailed further within the traffic report from Commute.

The pavement design is not relevant at this stage for a plan change application and would be subject of an engineering approval.

A pedestrian and cycling connection is shown at the southeast corner of the site to connect to the existing carpark.

All accessways and roadways would be designed at the time of any actual consent application.

6 // STORMWATER MANAGEMENT AND DISPOSAL

Refer to the separate Stormwater management plan for all stormwater and Overland Flowpath related items.

7 // E36 - FLOODING AND OVERLAND FLOWPATH ASSESSMENT

Refer to the separate Stormwater management plan for all stormwater and Overland Flowpath related items.

8 // WASTEWATER

Wastewater would be serviced with new lot connections through a public wastewater extension.

Watercares requirement for a level 1 capacity check is given from their wastewater code of practice under section 5.3.5.1.2, specifically below;

Threshold criteria for eliminating the need for checks must meet all of the following criteria:

(1) The site is outside Watercare's defined combined network area;
(2) The net change in Peak Design Flow from the site is less than 1.0 L/s, or is for less than 20 new dwellings, or the proposed development reduces the current number of residential dwellings (for commercial/industrial/other users, reducing the current discharge);
(3) There is no future upstream greenfield land that is required to gravitate through the site in order to connect into the existing wastewater network;
(4) Any proposed buildings are less than four storeys high;
(5) The development or area of connection will connect up to a wastewater main which is usually 300mm or larger.

Figure 3 - level 1 capacity check requirements for wastewater

As the site proposed more than 20 new dwellings, and the increase of peak flows from the additional dwellings is over 1.0 L/s, a level 1 capacity check down to the nearest 300mm network has been completed and demonstrates there is adequate capacity in the existing network for additional dwellings as shown.

9 // WATER

A new privately owned reticulated water supply system would be proposed for the site, this will need to include a new 100mm private main to supply a hydrant for firefighting purposes.

A bulk water meter would supply the site at the boundary with the existing car park. Individual check meters will be installed for the new dwellings. A resident's association would be proposed to managed finances for water meter billing.

Fire hydrant flowrate testing if required, will be supplied to demonstrate that the existing network has enough pressure and flow available to supply the development for domestic usage and firefighting purposes.

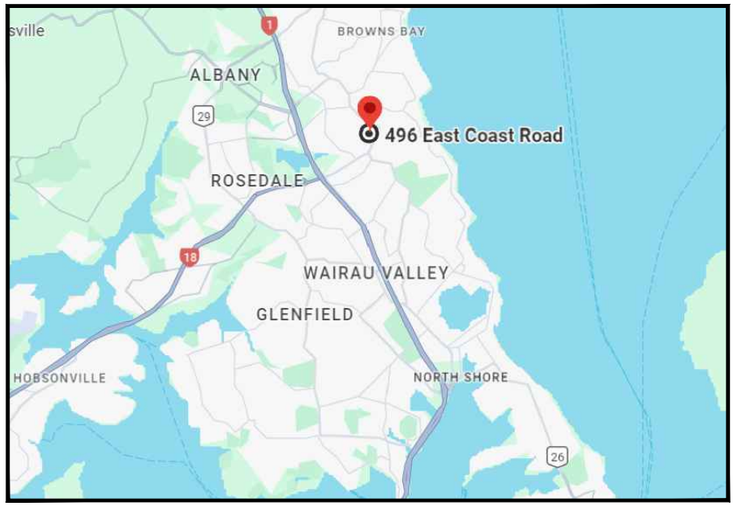
10 // POWER AND TELECOMS

Power and telecommunications are available in the street frontage, the development will need to arrange separate contracts for power and communication connections.

APPENDIX A – ENGINEERING DRAWINGS

RESIDENTIAL SUBDIVISION

496 EAST COAST ROAD, WINDSOR PARK, AUCKLAND



LOCATION MAP

DRAWING REVISION D FOR PLAN CHANGE

SHEET NO.	SHEET TITLE	26/03/2024	28/08/2024	4/09/2024	11/09/2024
		Rev A	Rev B - SW ONLY	Rev C	Rev D
000	GENERAL NOTES	A	A	-	-
100	EXISTING FEATURES PLAN - OVERALL VIEW	A	B	B	B
101	EXISTING FEATURES PART PLAN - SHEET 1	A	A	A	A
102	EXISTING FEATURES PART PLAN - SHEET 2	A	A	A	A
200	ACCESSWAY LAYOUT PLAN - OVERALL VIEW	A	A	B	C
201	ACCESSWAY LAYOUT PART PLAN - SHEET 1	A	A	B	C
202	ACCESSWAY LAYOUT PART PLAN - SHEET 2	A	A	B	-
210	CUT & FILL PLAN	A	A	B	C
220	EROSION AND SEDIMENT CONTROL PLAN	A	A	B	C
221	EROSION AND SEDIMENT CONTROL DETAILS	A	A	A	A
223	EROSION AND SEDIMENT CONTROL POND DETAIL	A	A	A	A
310	ACCESSWAY TYPICAL CROSS SECTION	A	A	B	B
400	STORMWATER PLAN - OVERALL VIEW	A	B	C	D
401	STORMWATER PART PLAN - SHEET 1	A	B	C	C
402	STORMWATER PART PLAN - SHEET 2	A	B	C	-
410	EXISTING STORMWATER LONG SECTION	A	A	A	A
411	STORMWATER LONG SECTION - 1/3	A	A	B	B
412	STORMWATER LONG SECTION - 2/3	A	A	B	B
413	STORMWATER LONG SECTION - 3/3	A	A	B	B
420	OVERLAND FLOW PATH PLAN	A	B	C	D
450	DRY DETENTION BASIN INVESTIGATION PLAN	-	A	B	C
500	WASTEWATER AND WATER SUPPLY PLAN - OVERALL VIEW	A	A	B	C
501	WASTEWATER AND WATER SUPPLY PART PLAN - SHEET 1	A	A	B	B
502	WASTEWATER AND WATER SUPPLY PART PLAN - SHEET 2	A	A	B	-
510	EXISTING WASTEWATER LONG SECTION	A	A	B	B
511	WASTEWATER LONG SECTION - 1/3	A	A	B	B
512	WASTEWATER LONG SECTION - 2/3	A	A	B	B
513	WASTEWATER LONG SECTION - 3/3	A	A	B	B

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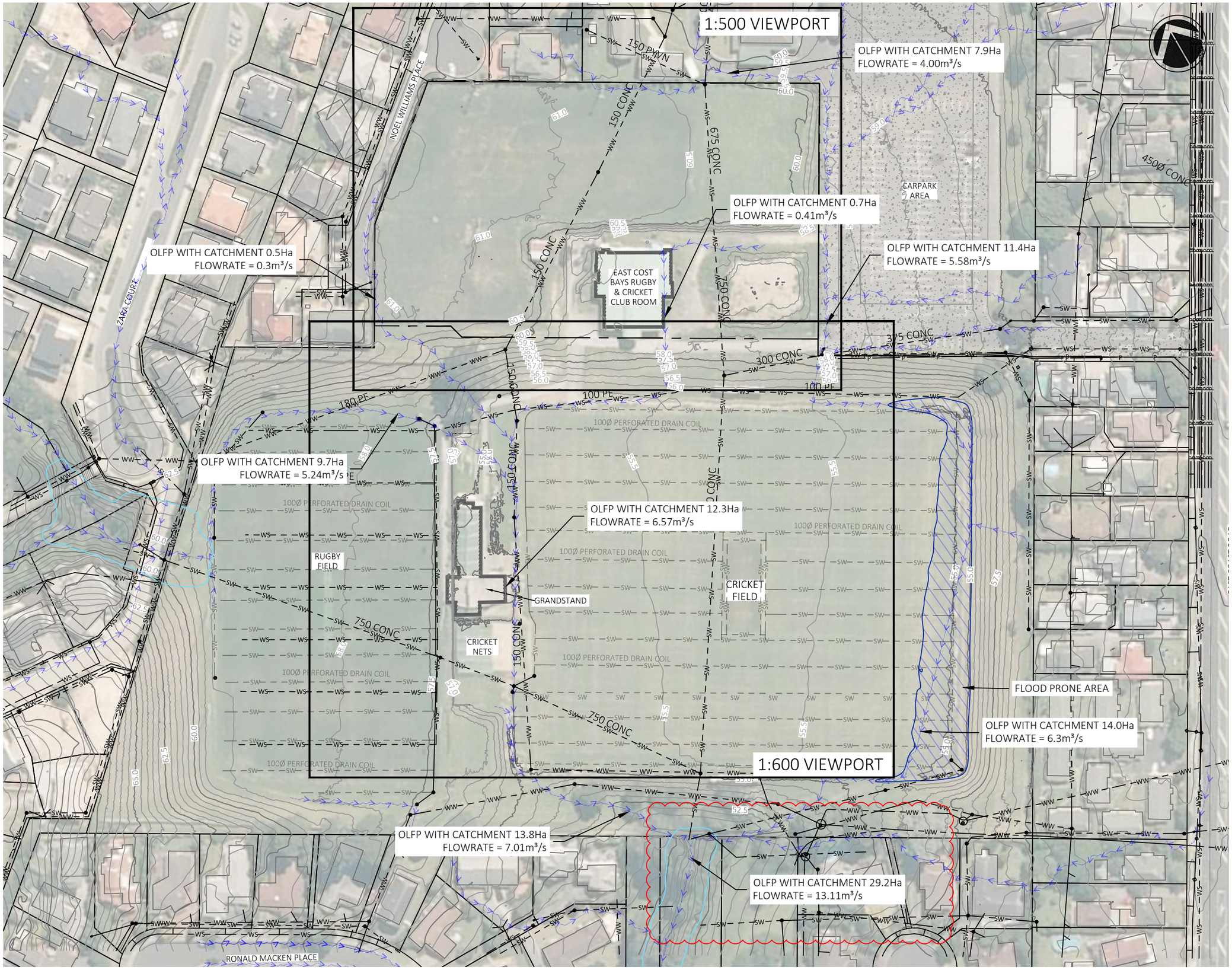

Notes:

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LEGEND

- EXISTING PROPERTY BOUNDARY
- SITE BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING HYDRANT
- EXISTING POWER & POWER POLE
- EXISTING POWER POLE
- EXISTING STREET LIGHT
- EXISTING GAS
- EXISTING TELEPHONE LINE
- EXISTING CONCRETE SURFACE
- EXISTING OVERLAND FLOW PATH

B	ADD OLFP INFORMATION	BT	28.08.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	PLAN CHANGE		

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PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Existing Features Plan Overall View

SCALE AT A3:	DRAWN:	CHECKED:
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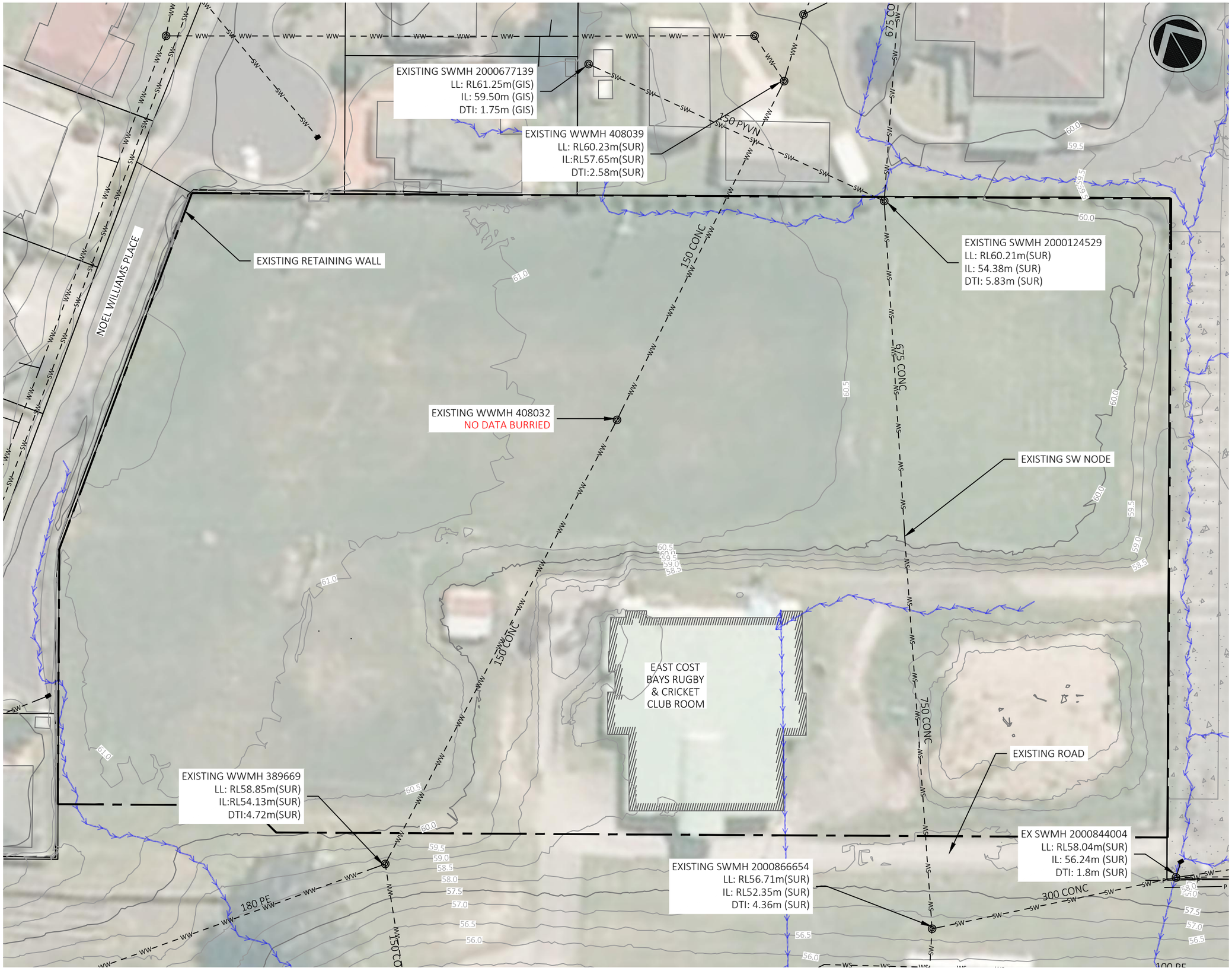
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	100	B

PRINT DATE: 11/09/2024 2:55 pm



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A	FOR PLAN CHANGE	BT	26.03.24

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SITE: 496 East Coast Road, Mairangi Bay

TITLE: Existing Features Part Plan Sheet 1

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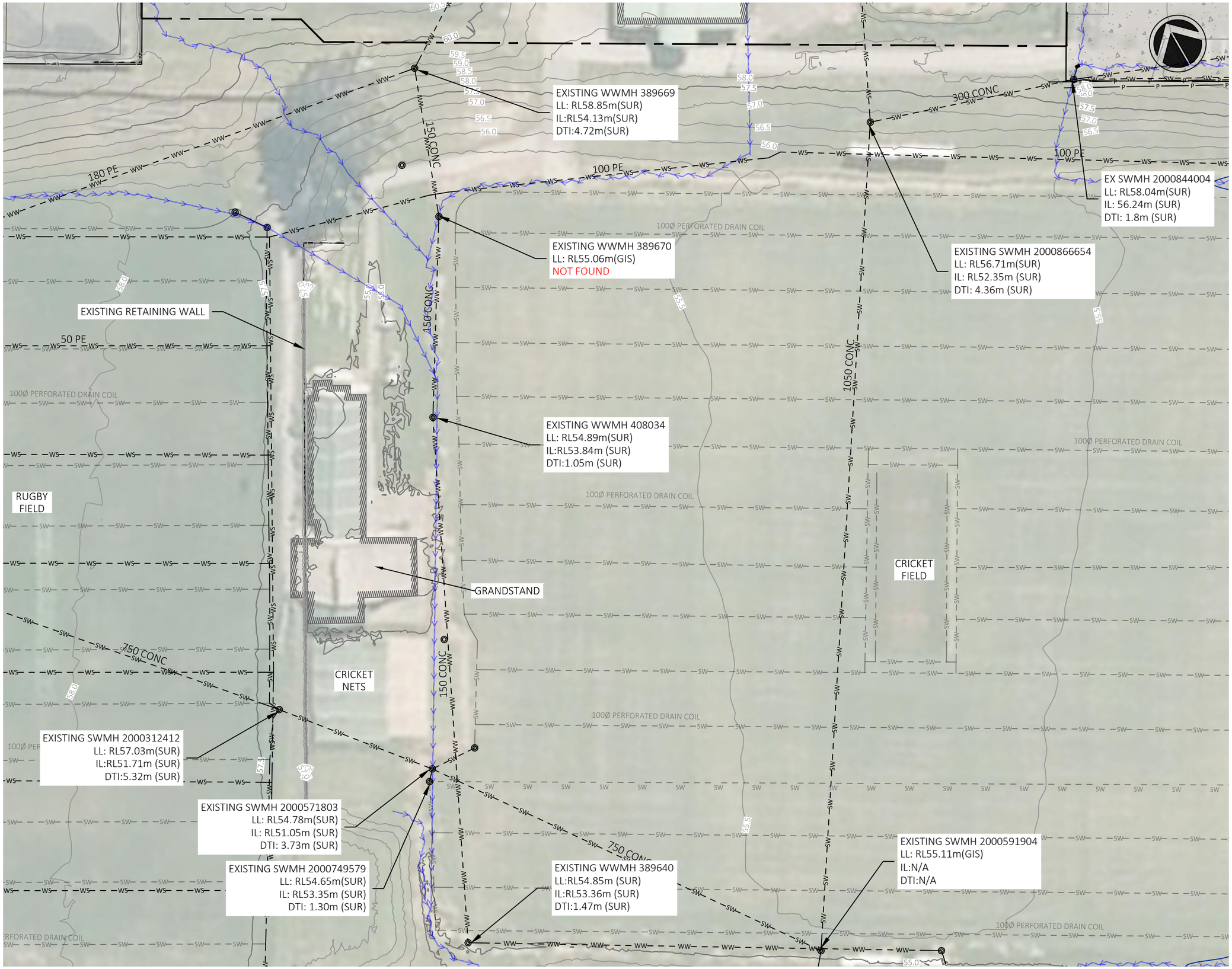

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A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

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CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Existing Features Part Plan Sheet 2

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P23-077	102	A

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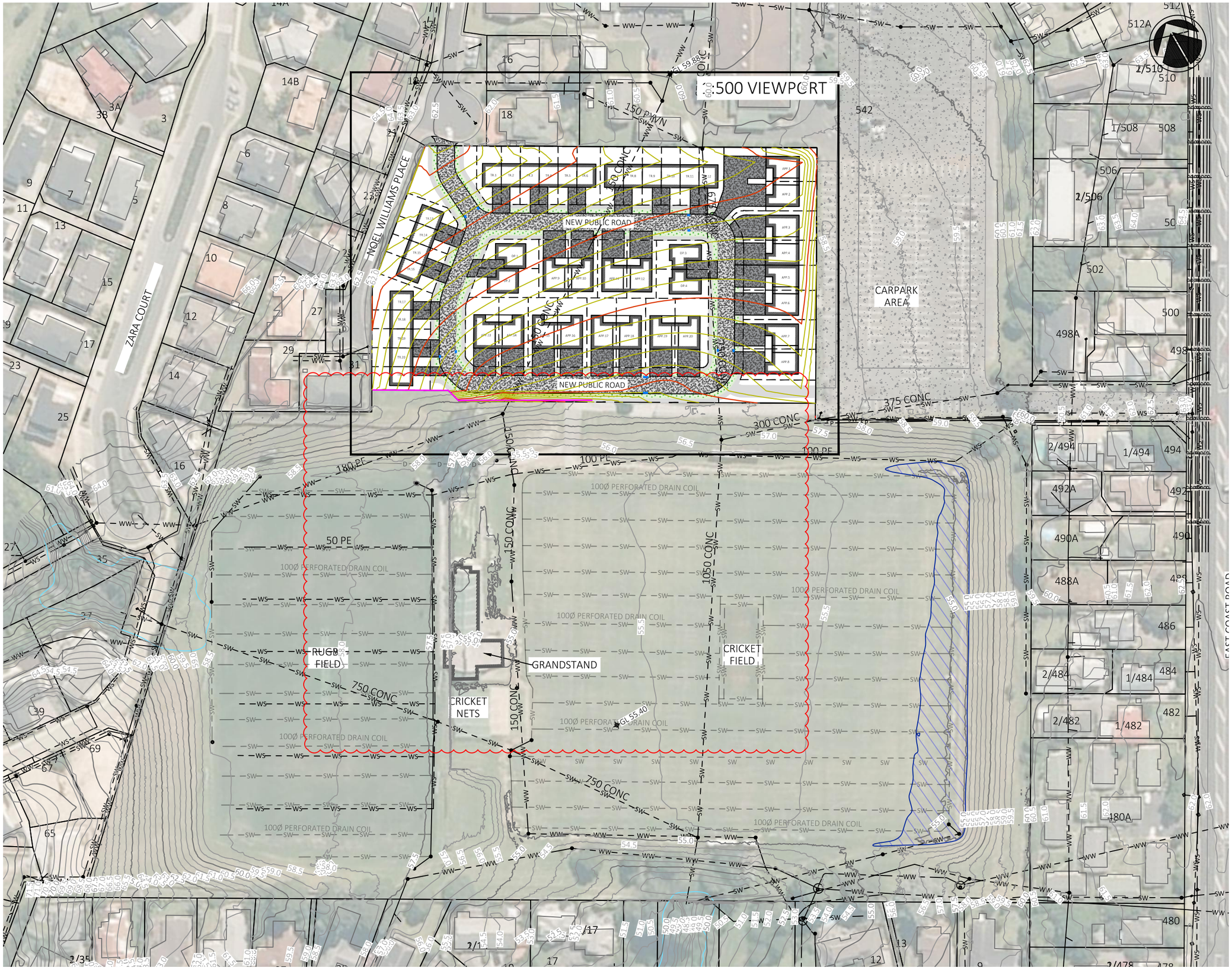

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- NEW FOOTPATH (CONCRETE)
- NEW BERM AREA
- COMMON ACCESSWAY PRIVATE CESSPIT
- RETAINING WALL
- DWELLING WITH EXTENT OF EAVES
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING HYDRANT
- EXISTING OVERLAND FLOW PATH

REV:	DESCRIPTION:	BY:	DATE:
C	REMOVE CLUBROOMS	BT	11.09.24
B	PUBLIC ROAD	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

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CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Accessway Layout Plan Overall View

SCALE AT A3:	DRAWN:	CHECKED:
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P23-077	200	C

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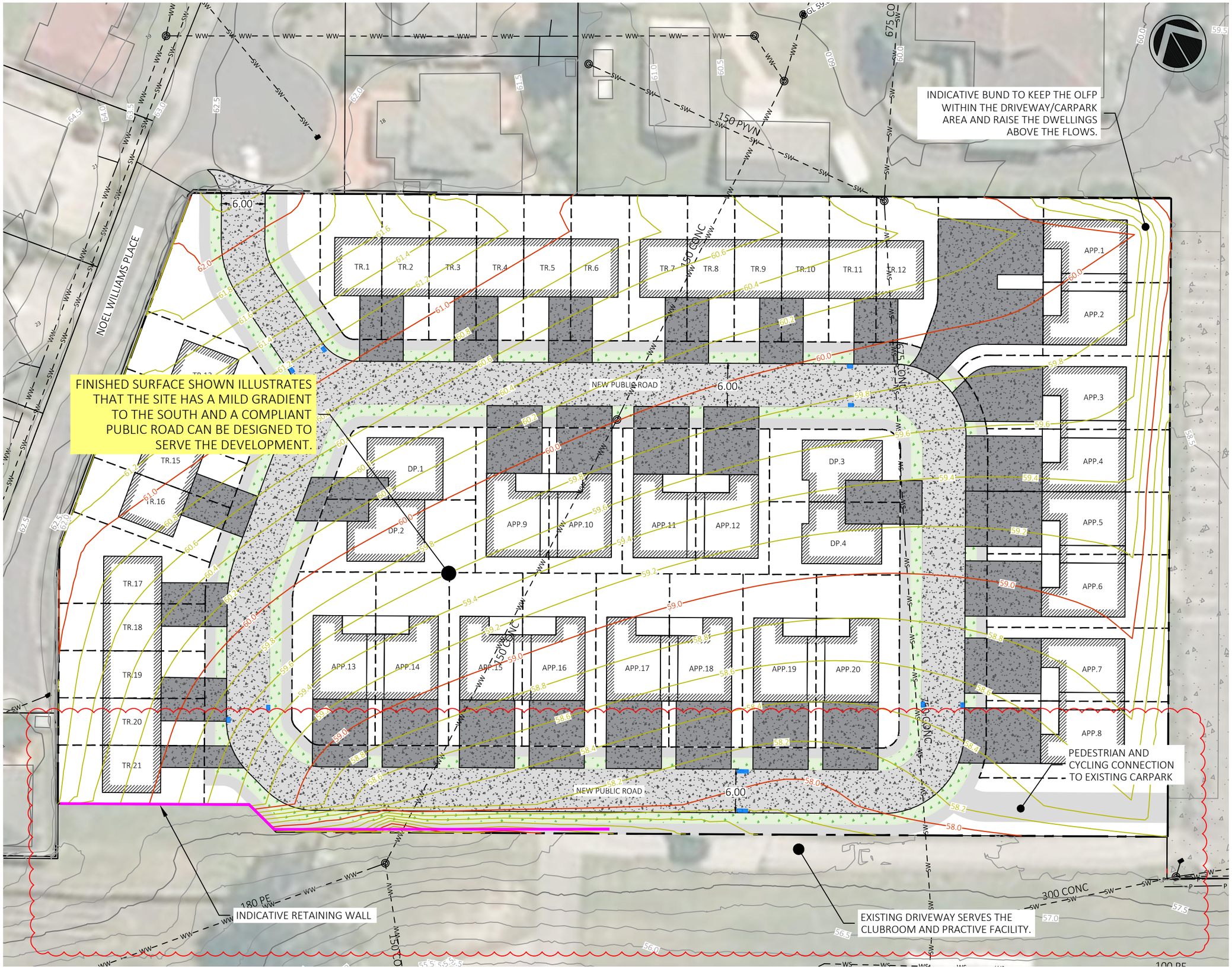

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C	REMOVE CLUBROOMS	BT	11.09.24
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

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TITLE: Accessway Layout Part Plan Sheet 1

SCALE AT A3:	DRAWN:	CHECKED:
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P23-077	201	C

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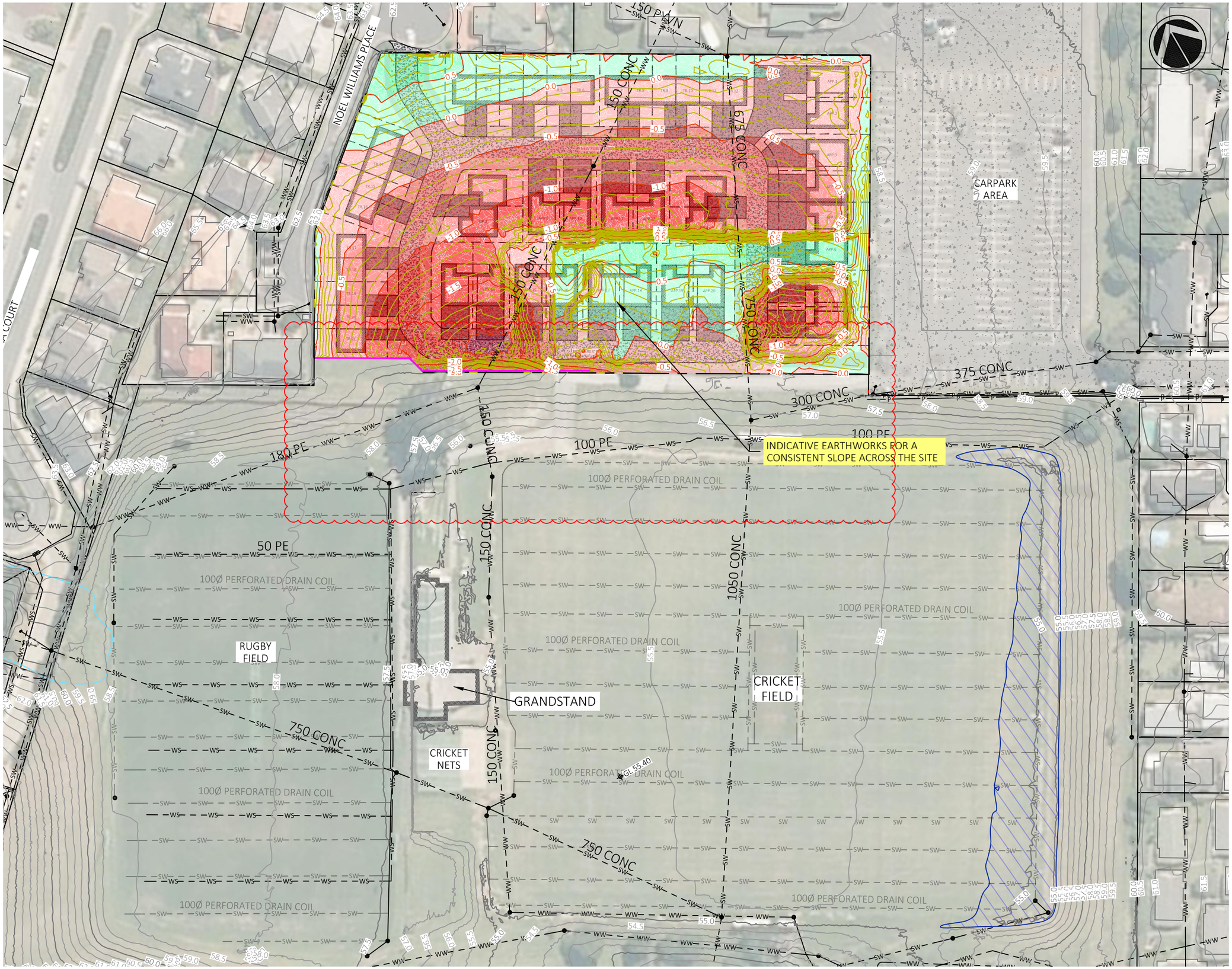

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LEGEND

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- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- MAJOR ISOPACH
- MINOR ISOPACH

Surface Analysis: Elevation Ranges

Number	Color	Minimum Elevation (m)	Maximum Elevation (m)	2D Area (m²)	Volume (m³)
1		-3.50	-2.00	150.5	42.9
2		-2.00	-1.00	2304.7	865.3
3		-1.00	-0.50	3298.5	2044.4
4		-0.50	0.00	3724.8	3785.3
5		0.00	0.50	2514.9	871.2
6		0.50	1.00	864.0	138.1

THE CUT AND FILL VOLUMES IN ABOVE TABLE IS COMPARISON BETWEEN EXISTING GROUND LEVEL AND FINISHED LEVELS.

EXTENT OF EARTHWORKS: 12,850m²

TOTAL CUT VOLUME: 6,740m³

TOTAL FILL VOLUME: 1,010m³

NET CUT VOLUME: 5,730m³

C	REMOVE CLUBROOMS	BT	11.09.24
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	PLAN CHANGE		

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Cut and Fill Plan

SCALE AT A3:	DRAWN:	CHECKED:
1:1000	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	210	C

PRINT DATE: 11/09/2024 2:55 pm

EROSION AND SEDIMENT CONTROL SHOWN IS INDICATIVE ONLY.

CLEAN WATER DIVERSION BUND

STABILISED CONSTRUCTION ENTRANCE

CARPARK AREA

DIRTY WATER DIVERSION BUND

INDICATIVE SEDIMENT RETENTION POND/DECANTING EARTH BUND FOR SITE EARTHWORKS RUNOFF.

GRANDSTAND

RUGBY FIELD

CRICKET FIELD

CRICKET NETS

NOEL WILLIAMS PLACE

Notes:

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   d. ANY CONDITIONS OF ASSOCIATED RESOURCE CONSENTS SHALL TAKE PRECEDENCE, AND SHALL BE COMPLIED WITH.

LEGEND

- EXISTING PROPERTY BOUNDARY
- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- MAJOR ISOPACH
- MINOR ISOPACH
- CLEAN WATER DIVERSION BUND
- SILT FENCE
- CONSTRUCTION ENTRANCE
- DIRTY WATER DIVERSION BUND

B	REMOVE CLUBROOMS	BT	11.09.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	PLAN CHANGE		

LANDWORKS CONSULTING

PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

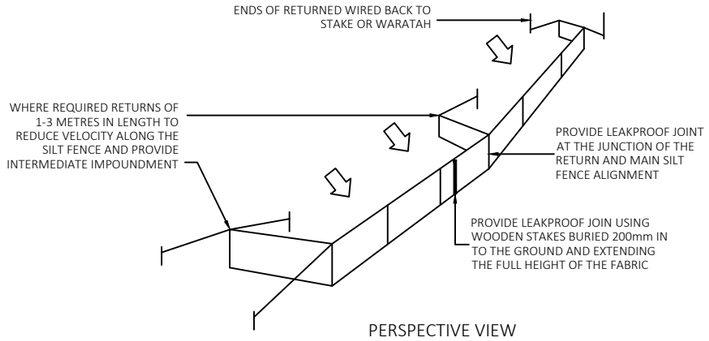
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

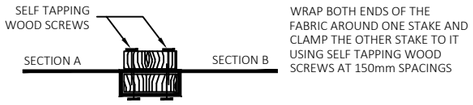
TITLE: Erosion and Sediment Control Plan

SCALE AT A3:	DRAWN:	CHECKED:
1:1000	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	220	B

PRINT DATE: 11/09/2024 2:55 pm



PERSPECTIVE VIEW

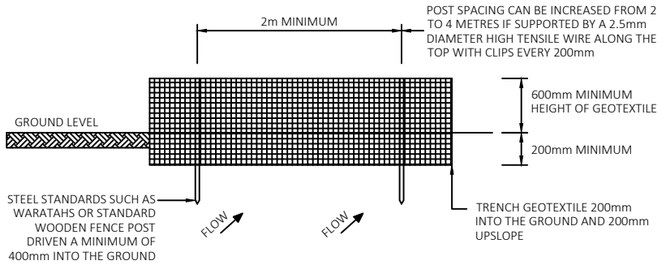


STANDARD FABRIC JOINT

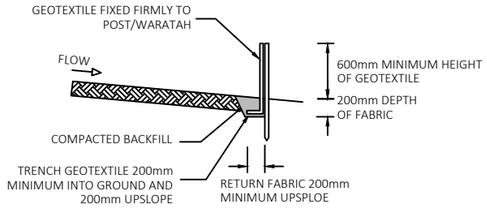
SILT FENCE DESIGN CRITERIA:

SLOPE STEEPNESS %	SLOPE LENGTH (m) (MAXIMUM)	SPACING OF RETURNS (m)
< 2%	N/A	UNLIMITED
2-10%	40	60
10-20%	30	50
20-33%	20	40
33-50%	15	30
>50%	6	20

GRAB TENSILE STRENGTH: >440N (ASTM D4632)
TENSILE MODULUS: 0.140 pa (MINIMUM)
APPARENT OPENING SIZE: 0.1-0.5mm (ASTM D4751)

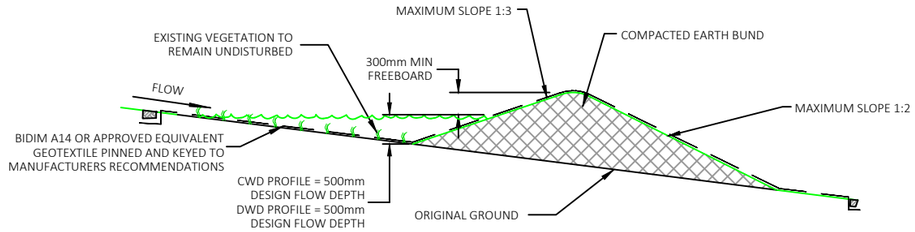


ELEVATION

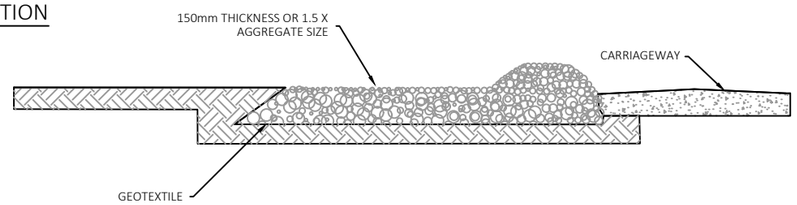


CROSS SECTION

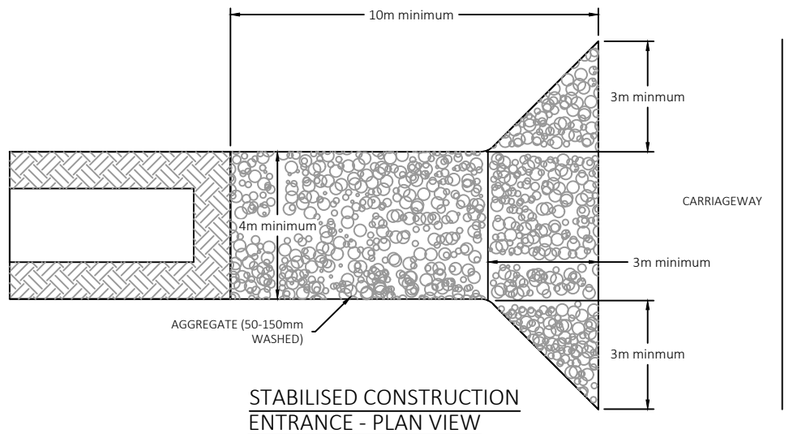
SILT FENCE CONSTRUCTION



CLEAN AND/OR DIRTY WATER RUNOFF DIVERSION BUND



STABILISED CONSTRUCTION ENTRANCE - SIDE ELEVATION



STABILISED CONSTRUCTION ENTRANCE - PLAN VIEW

Notes:

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A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

STATUS: PLAN CHANGE

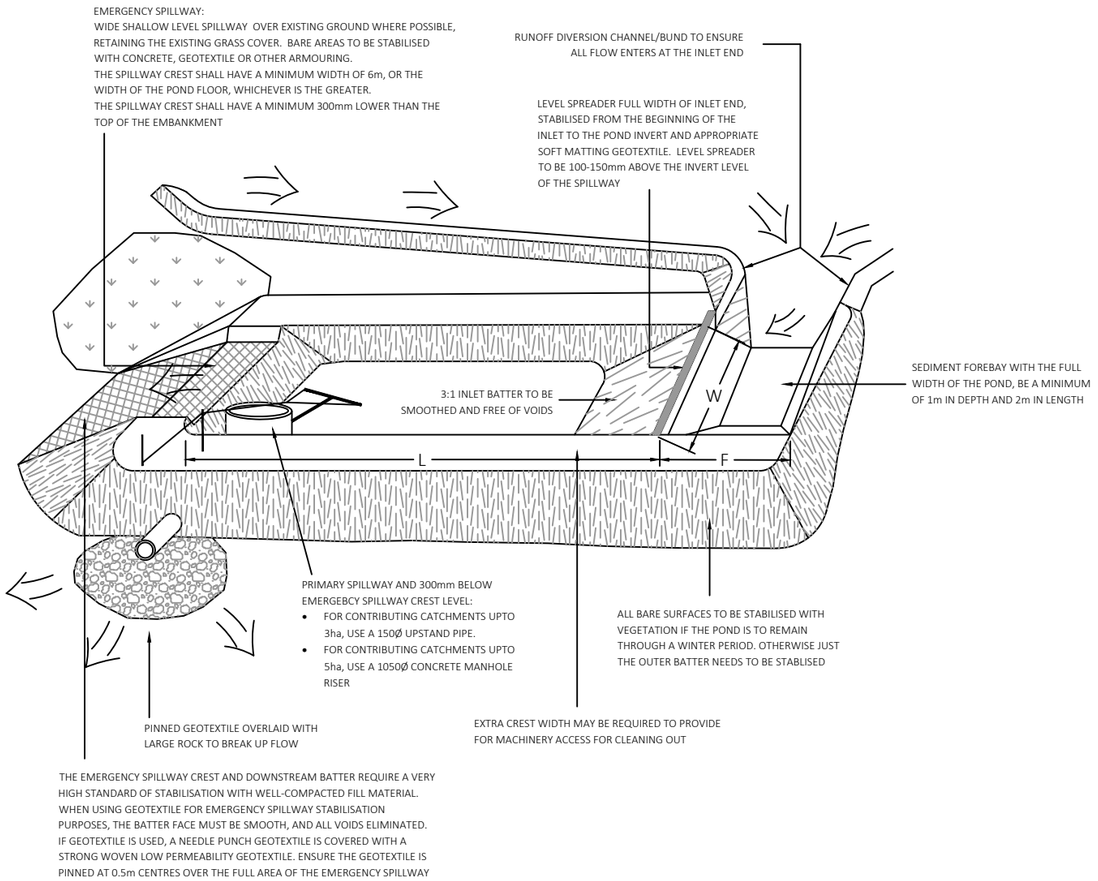
LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Erosion and Sediment Control Details

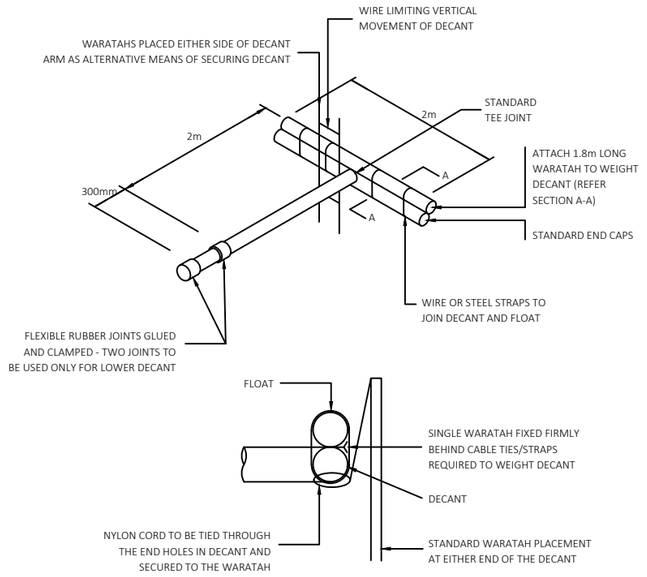
SCALE AT A3:	DRAWN:	CHECKED:
NTS	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	221	A



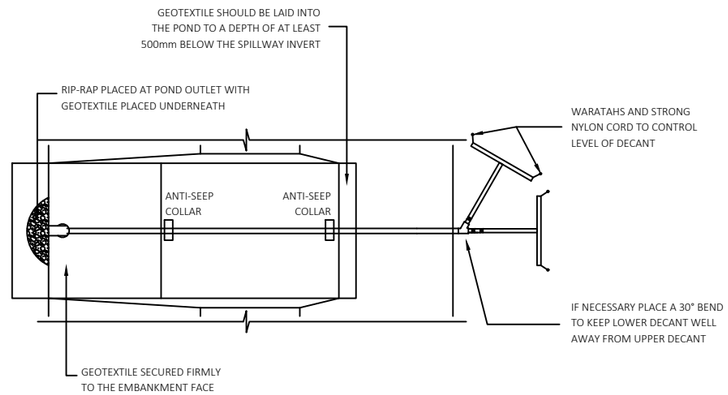
SEDIMENT RETENTION POND

SEDIMENT RETENTION POND SPECIFICATION

SRP CATCHMENT	1.95ha
POND/FOREBAY WIDTH (W)	13.9m
POND LENGTH (L)	36.9m
FOREBAY LENGTH (F)	6.2m
TOTAL LENGTH	43.1m
DEPTH FROM POND BASE TO EMBANKMENT	2.1m
DEPTH FROM FOREBAY BASE TO EMBANKMENT	1.6m
NUMBER OF DECANT BARS	2 T-BARS
HEIGHT OF FIRST DECANT FROM POND BASE	0.6m
OUTLET PIPE SIZE	150mm DIAMETER
PRIMARY SPILLWAY SIZE	150MM UPSTNAD
PRIMARY SPILLWAY LEVEL	1.5m FROM POND BASE
EMERGENCY SPILLWAY SIZE	11.5m CREST WIDTH
EMERGENCY SPILLWAY CREST LEVEL	1.8m FROM POND BASE



SEDIMENT RETENTION POND DECANT BAR DETAILS



SEDIMENT RETENTION POND DECANT OUTLET DETAIL

NUMBER OF DECANTS FOR EACH POND SHALL BE AS FOLLOWS:

I) UP TO 1.5HA CATCHMENT - 1 DECANT
II) 1.5-3.0HA CATCHMENT - 2 DECANTS
III) 3 TO 5 HA CATCHMENT - 3 DECANTS

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REV:	DESCRIPTION:	BY:	DATE:
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

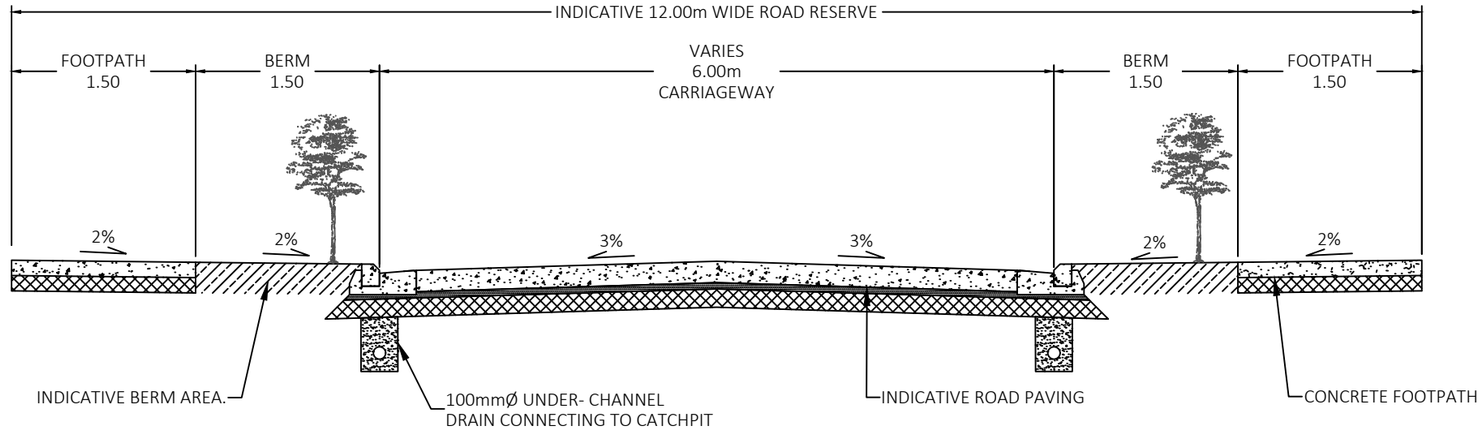
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Erosion and Sediment Control Pond Detail

SCALE AT A3:	DRAWN:	CHECKED:
NTS	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	223	A

PRINT DATE: 11/09/2024 2:55 pm



DETAIL: - / 200 ROADING TYPICAL CROSS SECTION

SCALE: 1:50H, 1:50V(A3)

Notes:

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5. FOR STANDARD CONCRETE PAVING :
- 175mm 20MPA CONCRETE WITH 665 REINFORCED MESH PLACED ON CENTER. SAWCUTS AT 5m INTERVAL
- 50mm COMPACTED GAP20 OR AP20 GRANULAR BASECOURSE
- 150mm COMPACTED GAP65 GRANULAR SUBBASE

6. FOR PERMEABLE PAVING:
- 80mm FIRTH FLOWPAVE WITH WPB7 CHIP FOR JOINTING. CONCRETE EDGE HAUNCH ON ALL OUTER EDGES.
- 20mm WPB7 LAYER
- 100mm WPB12 BASECOURSE FULLY WRAPPED IN GEOTEXTILE FILTER CLOTH
- 150mm GAP65 GRANULAR SUBBASE LAYER
- REFER FIRTH ECO PAVE INSTALLATION GUIDE

REV:	DESCRIPTION:	BY:	DATE:
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

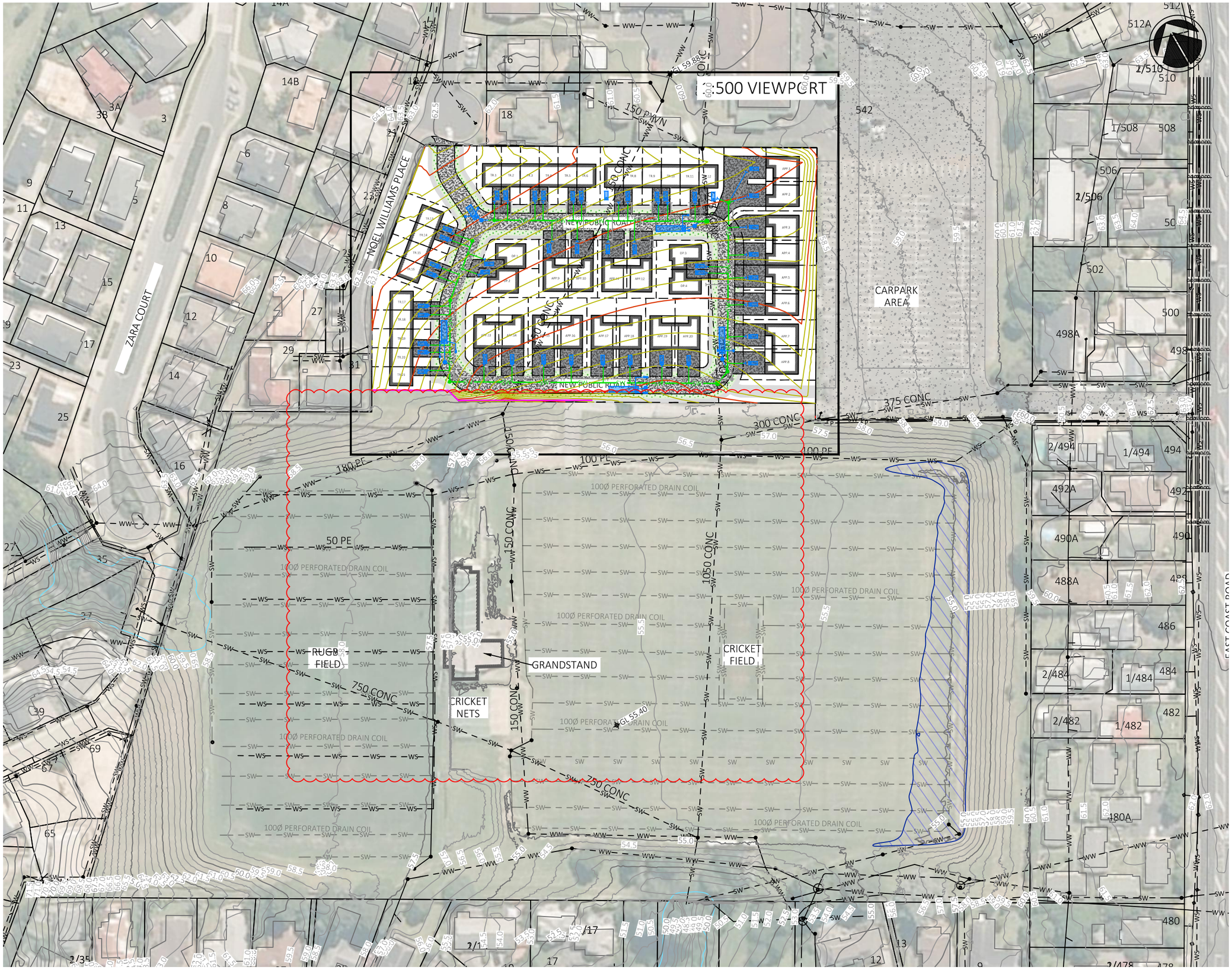
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Accessway/Road Typical Cross Section

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	310	B

PRINT DATE: 11/09/2024 2:56 pm



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LEGEND

- EXISTING PROPERTY BOUNDARY
- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- MAJOR CONTOUR
- MINOR CONTOUR
- DRIVEWAY/ROADING PAVEMENT (CONCRETE PAVING)
- DRIVEWAY (PERMEABLE PAVING)
- RETAINING WALL
- DWELLING WITH EXTENT OF EAVES
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING CONCRETE PAVE
- EXISTING OVERLAND FLOW PATH
- PUBLIC STORMWATER
- PRIVATE STORMWATER CONNECTION (100Ø uPVC)
- NEW SLIPFORM DISH/KERB CHANNEL
- 675 X 450 PRIVATE CESSPITS WITH TETRA TRAP OR SIMILAR WITH 150mmØ uPVC SN16 LEAD.
- UNDERGROUND DETENTION TANK. TO BE DESIGNED AT DETAIL DESIGN STAGE.
- PRIVATE STORMFILTER

D	REMOVE NEW CLUBROOMS	BT	11.09.24
C	GENERAL UPDATES	BT	04.09.24
B	FOR HEALTHY WATERS COMMENTS	BT	28.08.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

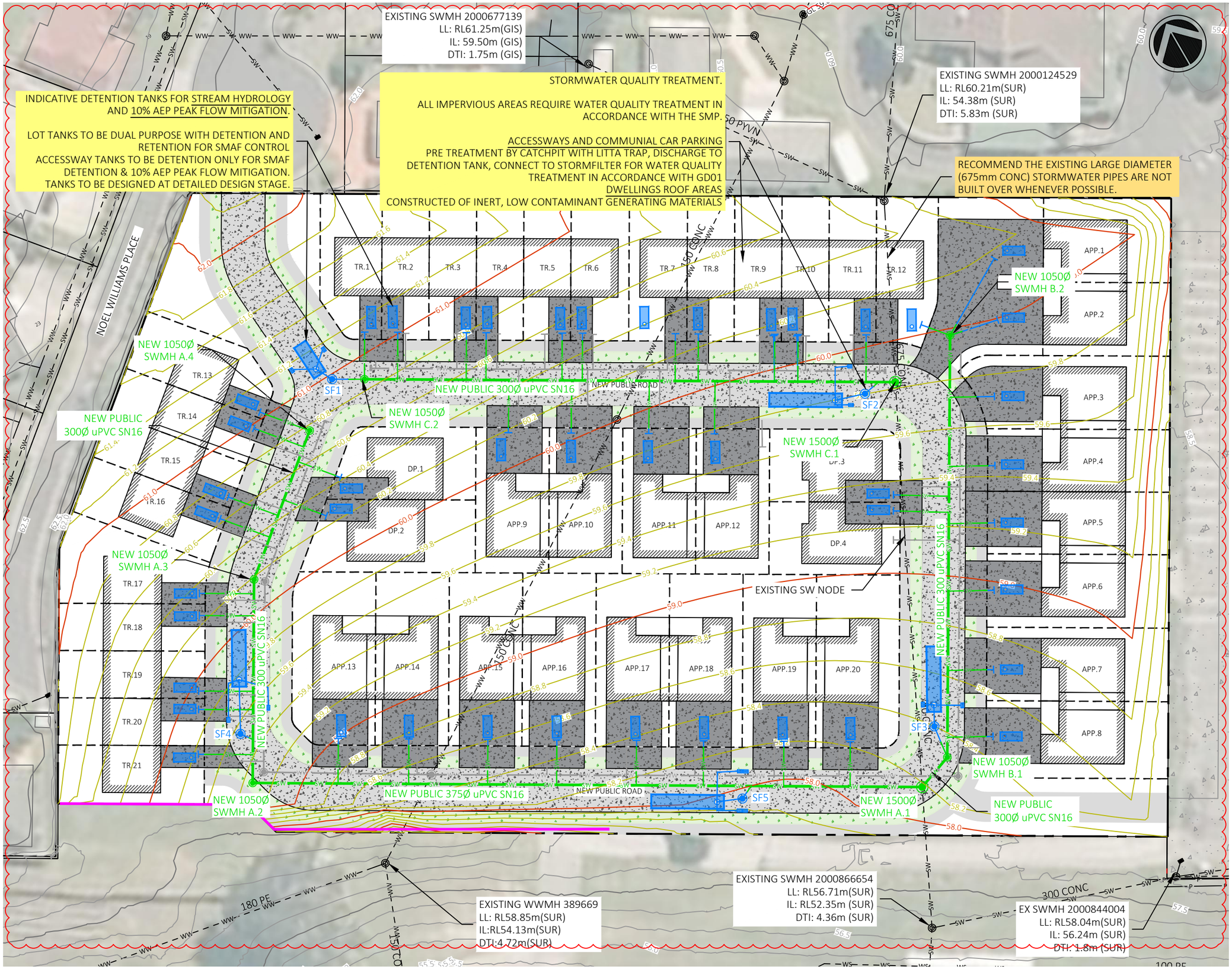
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Stormwater Plan Overall View

SCALE AT A3:	DRAWN:	CHECKED:
1:1250	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	400	D

PRINT DATE: 11/09/2024 2:56 pm



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C	GENERAL UPDATES	BT	04.09.24
B	FOR HEALTHY WATERS COMMENTS	BT	28.08.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

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Email:peter@landworks.co.nz

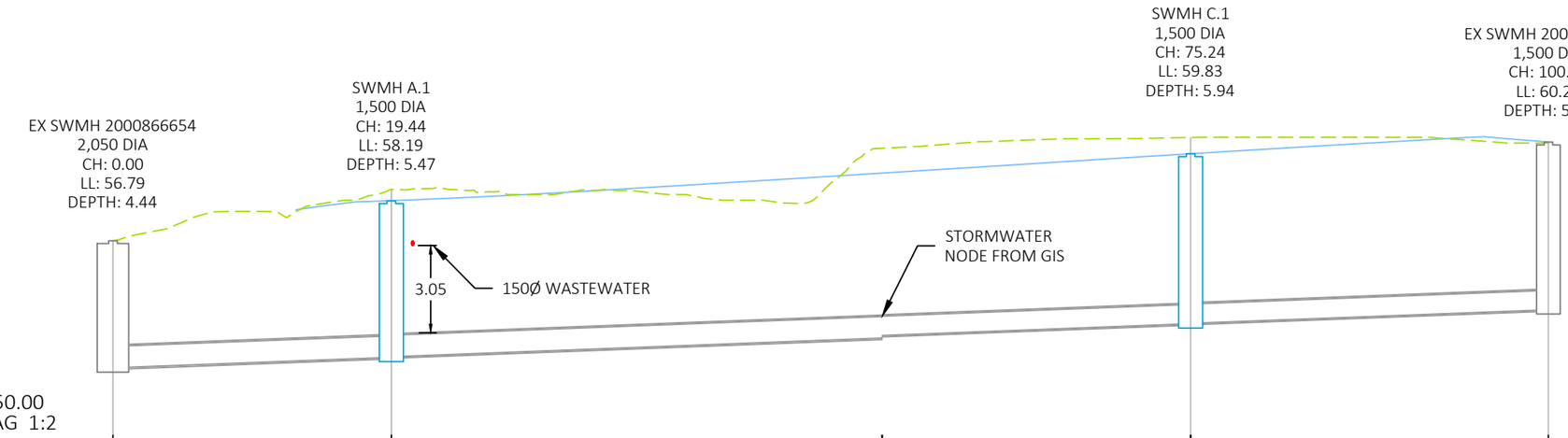
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Stormwater Layout Part Plan - Sheet 1

SCALE AT A3:	DRAWN:	CHECKED:
1:500	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	401	C

PRINT DATE: 11/09/2024 2:56 pm



PIPE DETAILS (CL to CL LENGTHS)	EX 750Ø CONC 2D L: 19.44m @ 1.90%		EX 750Ø CONC 2D L: 34.26m @ 1.90%		EX 675Ø CONC 2D L: 21.54m @ 1.90%		EX 675Ø CONC 2D L: 24.98m @ 1.90%	
DESIGN LEVEL AT MH CL	56.79	58.19				59.83		60.23
INVERT LEVEL	52.35	52.72	52.74	53.39	53.48	53.89	53.91	54.38
COVER	3.63	4.66	4.64	4.96	4.94	5.21	5.20	5.13
CHAINAGE	0.00	19.44				75.24		100.22

DETAIL: - / 400 EXISTING STORMWATER LONG SECTION

SCALE: 1:400H, 1:200V(A3)

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LEGEND

- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV:	DESCRIPTION:	BY:	DATE:
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

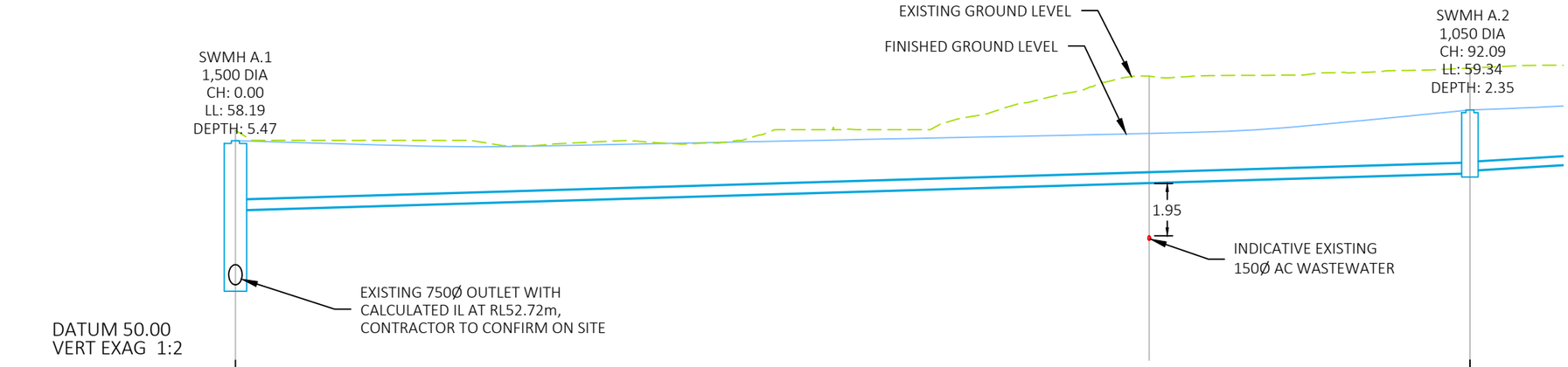
LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Existing Stormwater Long Section

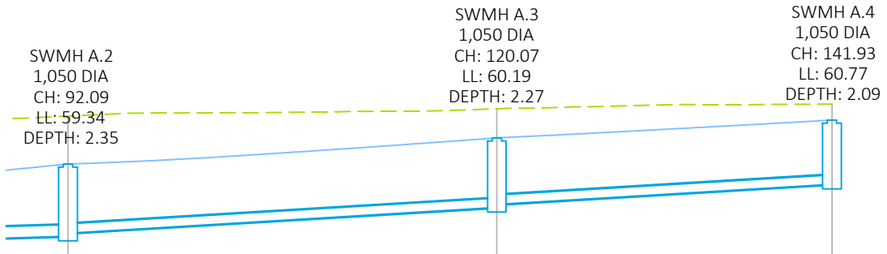
SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	410	A



DATUM 50.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)	NEW 375Ø UPVC SN16 2D L: 92.09m @ 1.50%	
DESIGN LEVEL AT MH CL	58.19	59.34
INVERT LEVEL	55.60	56.98 / 57.08
COVER	2.18	1.95 / 1.92
CHAINAGE	19.44	92.09

DETAIL: - / 400 STORMWATER LONG SECTION - A
SCALE: 1:400H, 1:200V(A3)



	NEW 300Ø UPVC SN16 2D L: 27.98m @ 3.00%	NEW 300Ø UPVC SN16 2D L: 21.86m @ 3.00%
	59.34	60.19 / 60.77
	56.98 / 57.08	57.92 / 58.02	58.68
	1.95 / 1.92	1.93 / 1.83	1.75
	92.09	120.07	141.93

DETAIL: - / 400 STORMWATER LONG SECTION - A CONTINUED
SCALE: 1:400H, 1:200V(A3)

Notes:

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   d. ANY CONDITIONS OF ASSOCIATED RESOURCE CONSENTS SHALL TAKE PRECEDENCE, AND SHALL BE COMPLIED WITH.

LEGEND
- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV	DESCRIPTION	BY	DATE
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

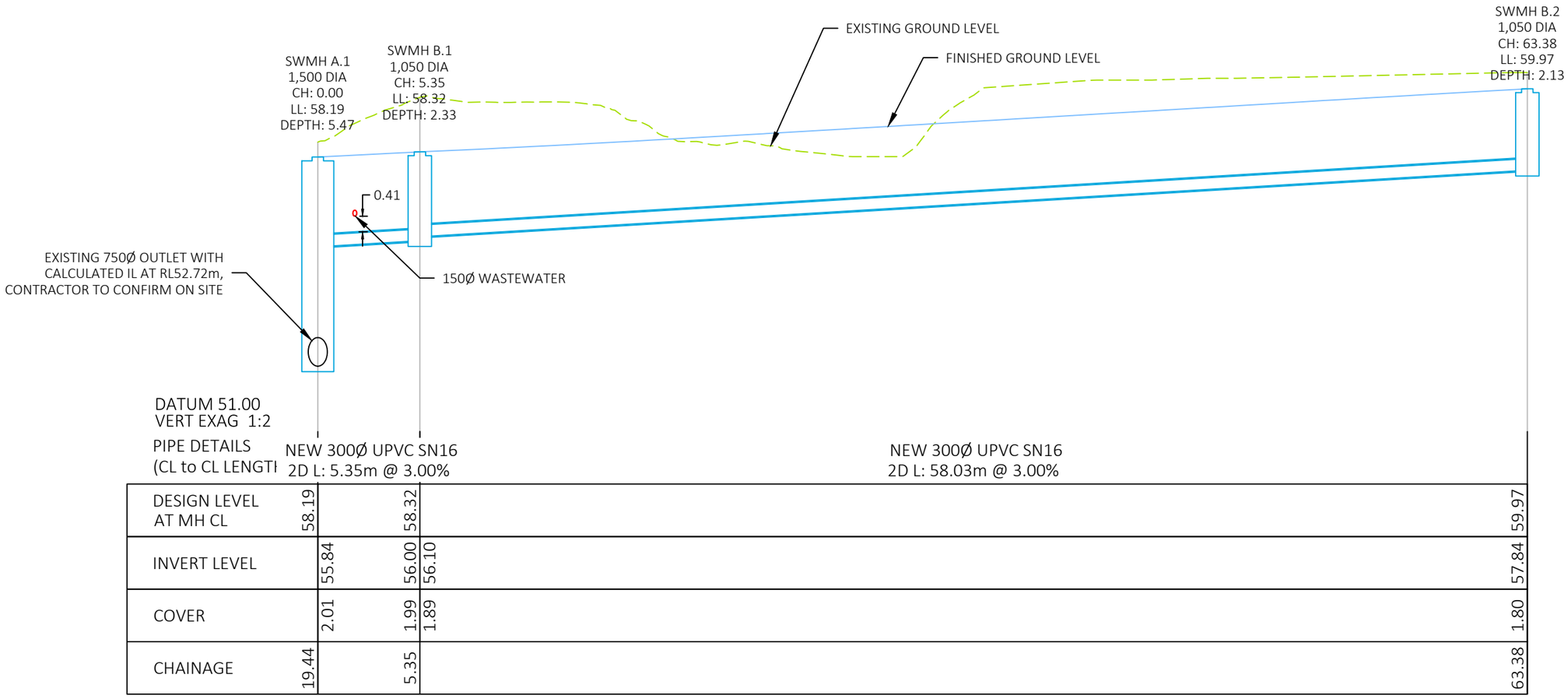
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Stormwater Long Section - 1/3

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	411	B

PRINT DATE: 11/09/2024 2:56 pm



DESIGN LEVEL AT MH CL	58.19	58.32		59.97
INVERT LEVEL	55.84	56.00	56.10	57.84
COVER	2.01	1.99	1.89	1.80
CHAINAGE	19.44	5.35		63.38

DETAIL: - / 400 STORMWATER LONG SECTION - B
SCALE: 1:250H, 1:125V(A3)

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LEGEND
- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV:	DESCRIPTION:	BY:	DATE:
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

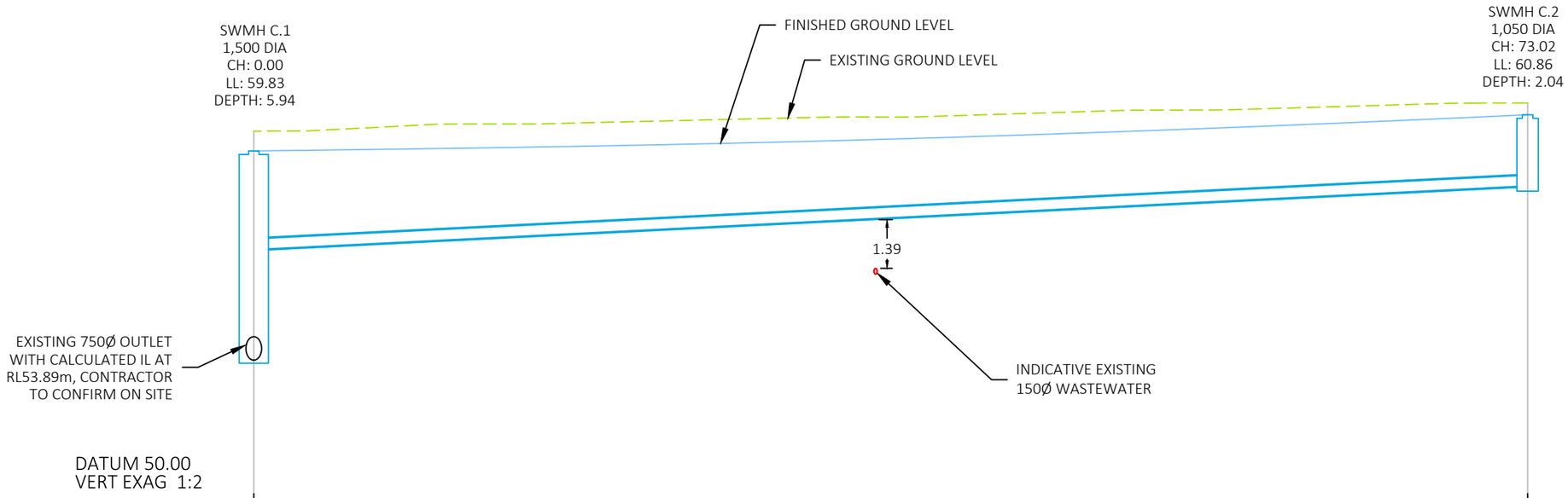
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Stormwater Long Section - 2/3

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	412	B

PRINT DATE: 11/09/2024 2:56 pm



DATUM 50.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)	NEW 300Ø UPVC SN16 2D L: 73.02m @ 2.50%	
DESIGN LEVEL AT MH CL	59.83	60.86
INVERT LEVEL	57.00	58.83
COVER	2.49	1.70
CHAINAGE	75.24	73.02

DETAIL: - / 400 STORMWATER LONG SECTION - C
SCALE: 1:300H, 1:150V(A3)

Notes:

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LEGEND
- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV:	DESCRIPTION:	BY:	DATE:
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

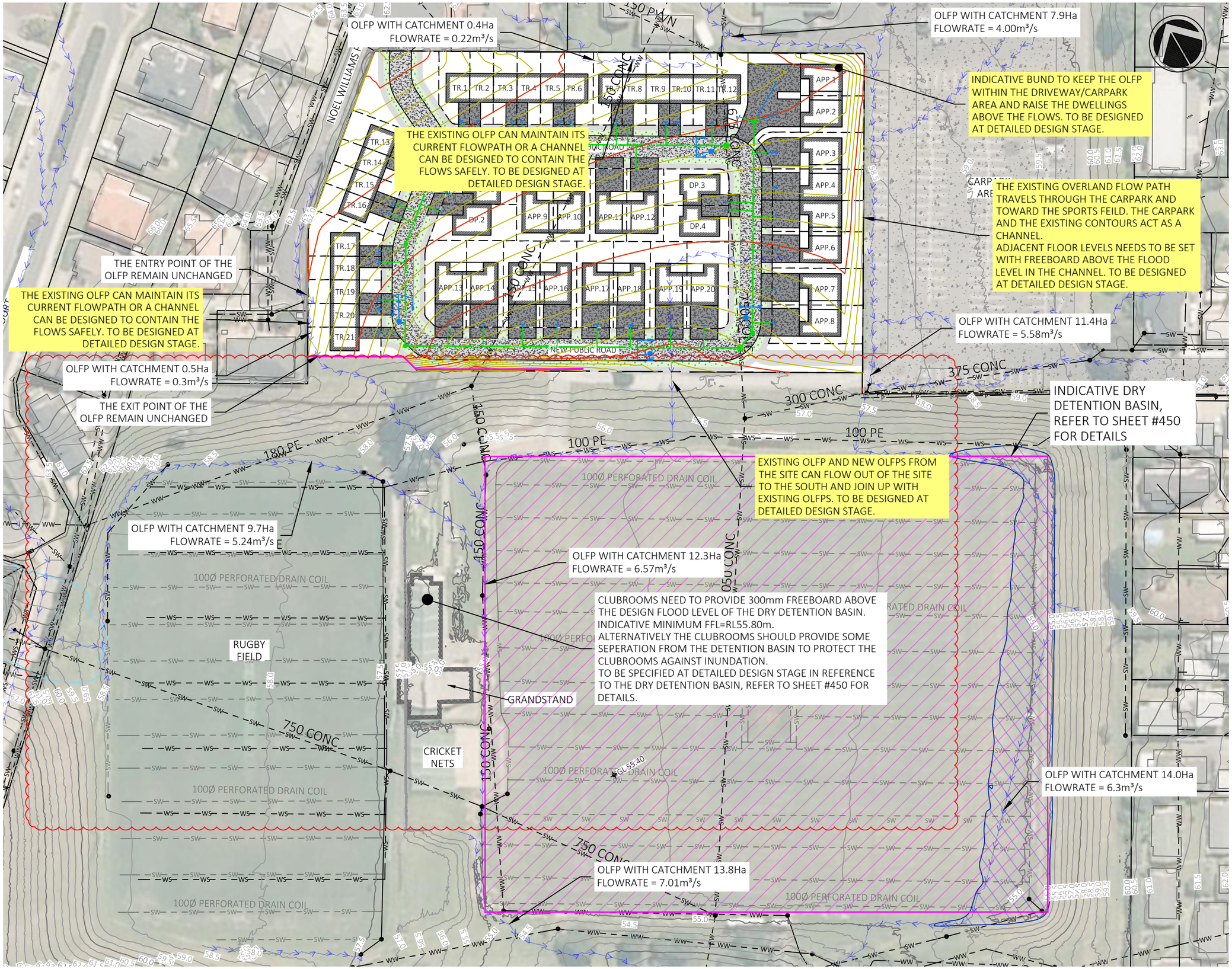
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Stormwater Long Section - 3/3

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	413	B

PRINT DATE: 11/09/2024 2:56 pm



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LEGEND

- EXISTING PROPERTY BOUNDARY
- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- MAJOR CONTOUR
- MINOR CONTOUR
- DRIVEWAY/ROAD PAVEMENT (CONCRETE PAVING)
- DRIVEWAY (PERMEABLE PAVING)
- RETAINING WALL
- DWELLING WITH EXTENT OF EAVES
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING HYDRANT
- EXISTING POWER
- EXISTING GAS
- EXISTING TELEPHONE LINE
- EXISTING CONCRETE PAVE
- POST DEVELOPMENT OVERLAND FLOW PATH

D	REMOVE NEW CLUBROOMS	BT	11.09.24
C	GENERAL UPDATES	BT	04.09.24
B	INVESTIGATE FIELD AS MITIGATION	BT	28.08.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	PLAN CHANGE		

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Overland Flow Path Plan

SCALE AT A3:	DRAWN:	CHECKED:
1:1000	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	420	D

PRINT DATE: 11/09/2024 2:56 pm

OLFP WITH CATCHMENT 9.7Ha
FLOWRATE = 5.24m³/s

OLFP WITH CATCHMENT 11.4Ha
FLOWRATE = 5.58m³/s

EXISTING PARKING AREA ABOVE RL58m, NOT AT RISK OF INUNDATION FROM A DRY DETENTION BASIN

DEVELOPMENT IS LOCATED AT ABOVE RL58m, THE DEVELOPMENT IS NOT AT RISK OF FLOODING DUE TO THE DRY DETENTION BASIN,

CLUBROOMS NEED TO PROVIDE 300mm FREEBOARD ABOVE THE DESIGN FLOOD LEVEL OF THE DRY DETENTION BASIN. INDICATIVE MINIMUM FFL=RL55.80m.
ALTERNATIVELY THE CLUBROOMS SHOULD PROVIDE SOME SEPERATION FROM THE DETENTION BASIN TO PROTECT THE CLUBROOMS AGAINST INUNDATION.
TO BE SPECIFIED AT DETAILED DESIGN STAGE IN REFERENCE TO THE DRY DETENTION BASIN, REFER TO SHEET #450 FOR DETAILS.

RUGBY FIELD ABOVE THE RETAINING WALL AT RL57.5m, PONDING WILL NOT OVERTOP THE WALL OR CAUSE FLOODING TO THE EAST.

INDICATIVE DRY DETENTION BASIN AREA.
APPROXIMATE AREA = 20,000m².
INDICATIVE PONDING LEVEL = RL55.50m

500mm EARTH BUND WOULD CREATE AN AVERAGE PONDING DEPTH OF 250mm ACROSS THE DRY DETENTION BASIN AREA.

THE DEVELOPMENT REQUIRES A 1% AEP PEAK FLOW MITIGATION VOLUME OF APPROXIMATELY 400m³.

THE POND WOULD PROVIDE APPROXIMATELY 5,000m³ OF TEMPORARY FLOOD STORAGE.

FURTHER DESIGN REQUIRES ADDITIONAL INVESTIGATION TO THE SITES EXISTING FEATURES, CATCHMENT REQUIREMENTS AND INPUT FROM STAKEHOLDERS AND EFFECTED PARTIES.

INDICATIVE 500mm HIGH EARTH BUND TO CREATE A DRY DETENTION BASIN OVER THE EXISTING CRICKET FIELD

SWALES TO CHANNEL FLOWS TO A CENTRALISED WIER OUTLET.

WEIR OUTLET STRUCTURE OR SIMILAR TO CONTROL FLOWS AND PROTECT AGAINST EROSION, DESIGN TO FIT IN WITH THE NATURAL ENVIRONMENT.

OLFP WITH CATCHMENT 29.2Ha
FLOWRATE = 13.11m³/s

GRANDSTAND

CRICKET NETS

NEW PUBLIC ROAD

375 CONC

300 CONC

150 CONC

750 CONC

100 PE

100Ø PERFORATED DRAIN COIL

130m

144m

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LEGEND

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- EXISTING CONCRETE PAVE
- POST DEVELOPMENT OVERLAND FLOW PATH

C	REMOVE NEW CLUBROOMS	BT	11.09.24
B	GENERAL UPDATES	BT	04.09.24
A	INVESTIGATE FIELD AS MITIGATION	BT	28.08.24

REV:	DESCRIPTION:	BY:	DATE:

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

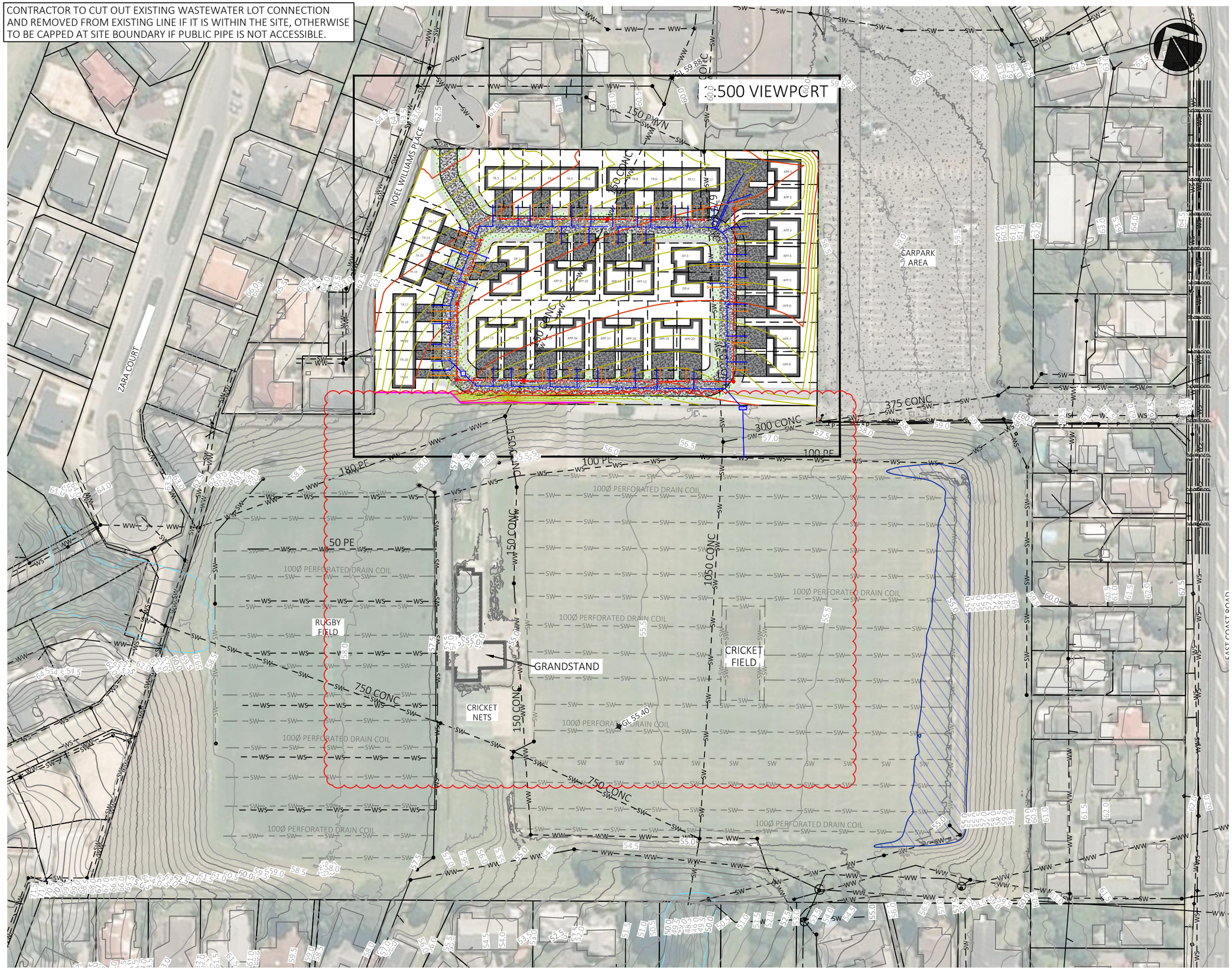
SITE: 496 East Coast Road, Mairangi Bay

TITLE: Dry Detention Basin Investigation Plan

SCALE AT A3:	DRAWN:	CHECKED:
1:750	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	450	C

PRINT DATE: 11/09/2024 2:56 pm

CONTRACTOR TO CUT OUT EXISTING WASTEWATER LOT CONNECTION AND REMOVED FROM EXISTING LINE IF IT IS WITHIN THE SITE, OTHERWISE TO BE CAPPED AT SITE BOUNDARY IF PUBLIC PIPE IS NOT ACCESSIBLE.



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5. WASTEWATER 100mm SERVICE CONNECTIONS TO BE 1.7% min GRADE AND FOLLOWING WW15 OF WATERCARE'S STANDARD. Y (WYE)-JUNCTION SHALL BE USED ORDINARILY. TEE JUNCTIONS ARE NOT ALLOWED.

6. WATERCARE ENGINEERING QUALITY STANDARD DRAWINGS SHALL BE USED WHEREVER APPLICABLE FOR THE WORK. WSL COP VERSION 2019.

7. A WORKS OVER APPROVAL IS REQUIRED WITHIN 2 METRES OF A PUBLIC WATER OR WASTEWATER ASSET.

LEGEND

- EXISTING PROPERTY BOUNDARY
- SITE BOUNDARY
- LOT BOUNDARY
- MAJOR CONTOUR
- MINOR CONTOUR
- DRIVEWAY/ROADING PAVEMENT (CONCRETE PAVING)
- DRIVEWAY (PERMEABLE PAVING)
- RETAINING WALL
- DWELLING WITH EXTENT OF EAVES
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING HYDRANT
- PUBLIC WASTEWATER
- PRIVATE WASTEWATER CONNECTION (100Ø uPVC SN16)
- WM WATERMETER/ MANIFOLD METER BANK
- PRIVATE WATER CONNECTION S

C	REMOVE NEW CLUBROOMS	BT	11.09.24
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

STATUS: PLAN CHANGE

LANDWORKS CONSULTING

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www.landworks.co.nz
Email:peter@landworks.co.nz

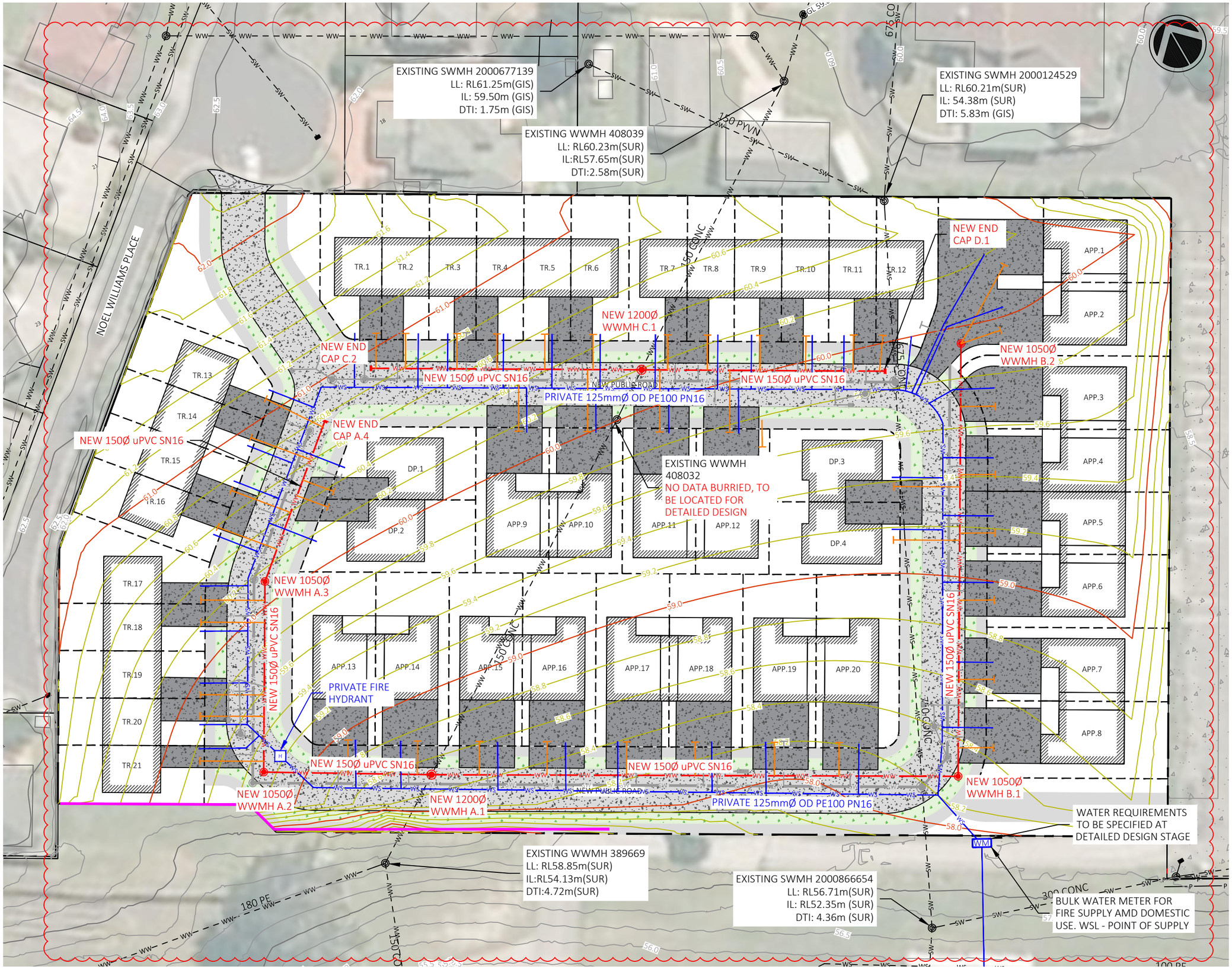
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Wastewater and Water Supply Plan - Overall View

SCALE AT A3:	DRAWN:	CHECKED:
1:1250	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	500	C

PRINT DATE: 11/09/2024 2:56 pm



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- LOT BOUNDARY
- MAJOR CONTOUR
- MINOR CONTOUR
- DRIVEWAY/ROADING PAVEMENT (CONCRETE PAVING)
- DRIVEWAY (PERMEABLE PAVING)
- RETAINING WALL
- DWELLING WITH EXTENT OF EAVES
- EXISTING PUBLIC STORMWATER
- EXISTING PUBLIC WASTEWATER
- EXISTING PUBLIC WATER SUPPLY
- EXISTING HYDRANT
- PUBLIC WASTEWATER
- PRIVATE WASTEWATER CONNECTION (100Ø uPVC SN16)
- WATERMETER/ MANIFOLD METER BANK
- PRIVATE WATER CONNECTION S

B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

REV:	DESCRIPTION:	BY:	DATE:

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

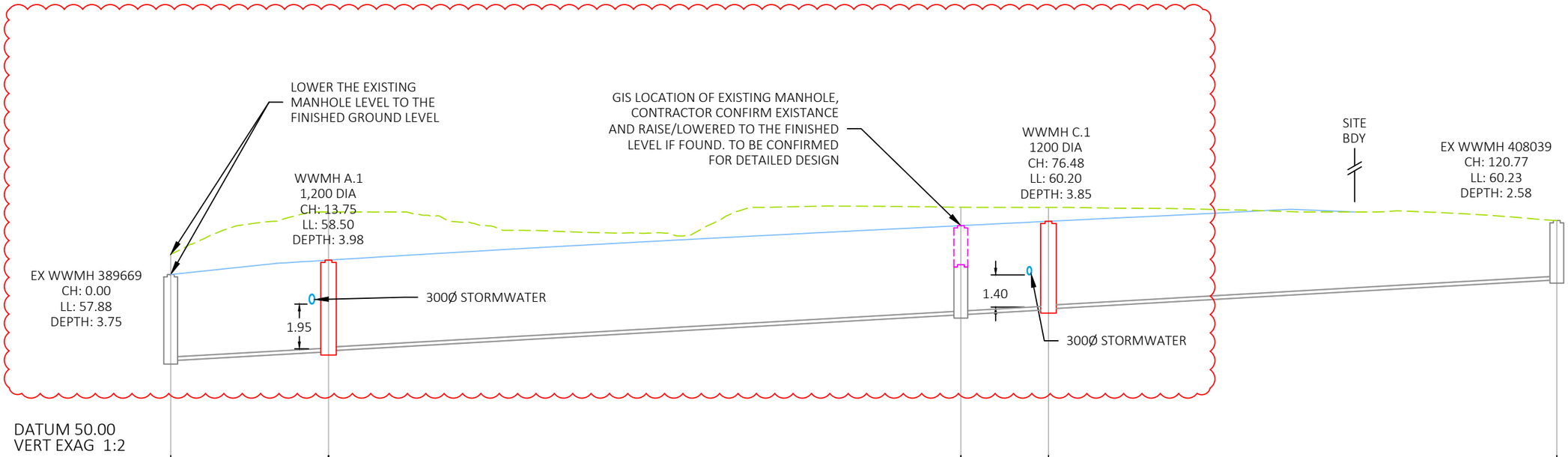
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Wastewater and Water Supply Part Plan - Sheet 1

SCALE AT A3:	DRAWN:	CHECKED:
1:500	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	501	B

PRINT DATE: 11/09/2024 2:56 pm



DATUM 50.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)	EX 150Ø CONC 2D L: 13.75m @ 2.85%		EX 150Ø CONC 2D L: 55.09m @ 2.85%		EX 150Ø CONC 2D L: 7.64m @ 2.85%		EX 150Ø CONC 2D L: 44.29m @ 2.85%	
DESIGN LEVEL AT MH CL	57.88	58.50	??		60.20		60.23	
INVERT LEVEL	54.13	54.52	54.56	56.13	56.13	56.35	56.39	57.65
COVER	4.46	3.82	3.78	3.71	3.71	3.69	3.65	2.42
CHAINAGE	0.00	13.75		68.84		76.48		120.77

DETAIL: 500 EXISTING WASTEWATER LONG SECTION
SCALE: 1:400H, 1:200V(A3)

Notes:

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b. WATERCARE, WATER AND WASTEWATER CODE OF PRACTICE FOR LAND DEVELOPMENT AND SUBDIVISION, VERSION 2.2, DATED NOV 2019.
c. AUCKLAND TRANSPORT CODE OF PRACTICE, AS IS UPDATED ON THEIR WEBSITE HTTPS://AT.GOVT.NZ/ABOUT-US/AUCKLAND-TRANSPORT-CODE-OF-PRACTICE
d. ANY CONDITIONS OF ASSOCIATED RESOURCE CONSENTS SHALL TAKE PRECEDENCE, AND SHALL BE COMPLIED WITH.

5. WASTEWATER 100mm SERVICE CONNECTIONS TO BE 1.7% min GRADE AND FOLLOWING WW15 OF WATERCARE'S STANDARD. Y (WYE)-JUNCTION SHALL BE USED ORDINARILY. TEE JUNCTIONS ARE NOT ALLOWED.

6. WATERCARE ENGINEERING QUALITY STANDARD DRAWINGS SHALL BE USED WHEREVER APPLICABLE FOR THE WORK. WSL COP VERSION 2019.

7. A WORKS OVER APPROVAL IS REQUIRED WITHIN 2 METRES OF A PUBLIC WATER OR WASTEWATER ASSET.

LEGEND
- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV:	DESCRIPTION:	BY:	DATE:
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

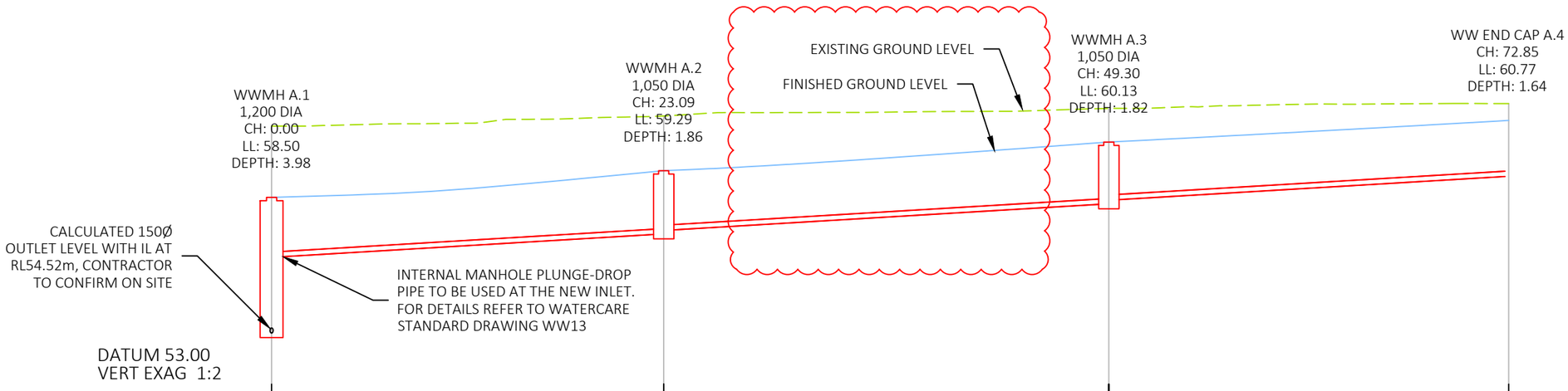
LANDWORKS CONSULTING
PO Box 65595, Mairangi Bay, Auckland 0754
www.landworks.co.nz
Email:peter@landworks.co.nz

CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Existing Wastewater Long Section

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	510	B



DATUM 53.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)		NEW 150Ø UPVC SN16 2D L: 23.09m @ 3.00%		NEW 150Ø UPVC SN16 2D L: 26.21m @ 3.00%		NEW 150Ø UPVC SN16 2D L: 23.55m @ 3.00%	
DESIGN LEVEL AT MH CL	58.50		59.29		60.13		60.77
INVERT LEVEL		56.74	57.43	57.53	58.32	58.42	59.13
COVER		1.61	1.70	1.60	1.66	1.56	1.49
CHAINAGE	0.00		23.09		49.30		72.85

DETAIL: - / 500 WASTEWATER LONG SECTION - A
SCALE: 1:250H, 1:125V(A3)

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LEGEND
- EXISTING GROUND LEVEL
- FINISHED LEVEL
- HARDFILL BACKFILL
- DWELLING FOUNDATION

REV	DESCRIPTION	BY	DATE
B	GENERAL UPDATES	BT	04.09.24
A	FOR PLAN CHANGE	BT	26.03.24

STATUS: PLAN CHANGE

LANDWORKS CONSULTING
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www.landworks.co.nz
Email:peter@landworks.co.nz

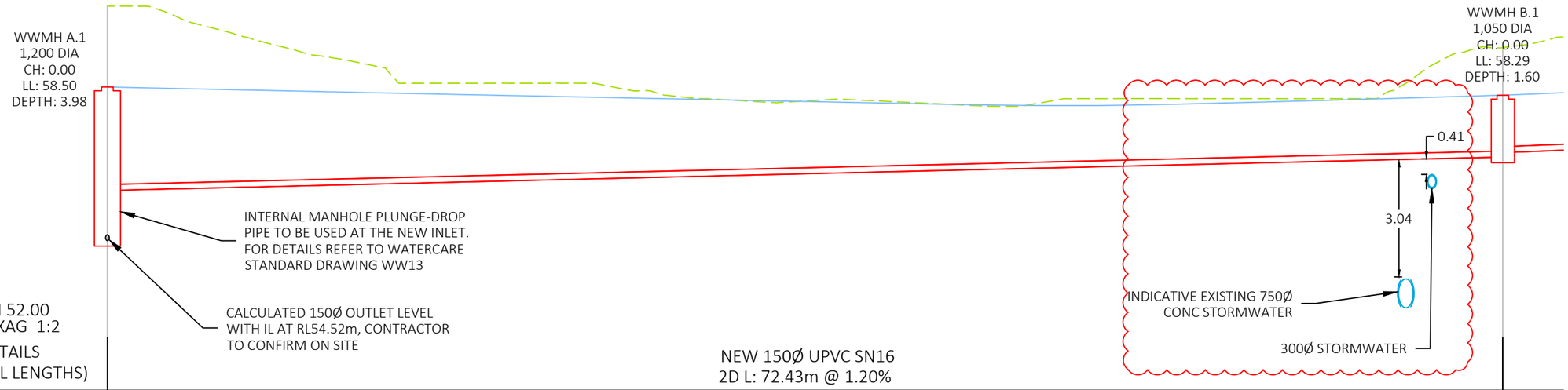
CLIENT: Windsor Park Community & multisport Hub INC

SITE: 496 East Coast Road, Mairangi Bay

TITLE: Wastewater Long Section - 1/3

SCALE AT A3:	DRAWN:	CHECKED:
As Shown	BT	PL
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	511	B

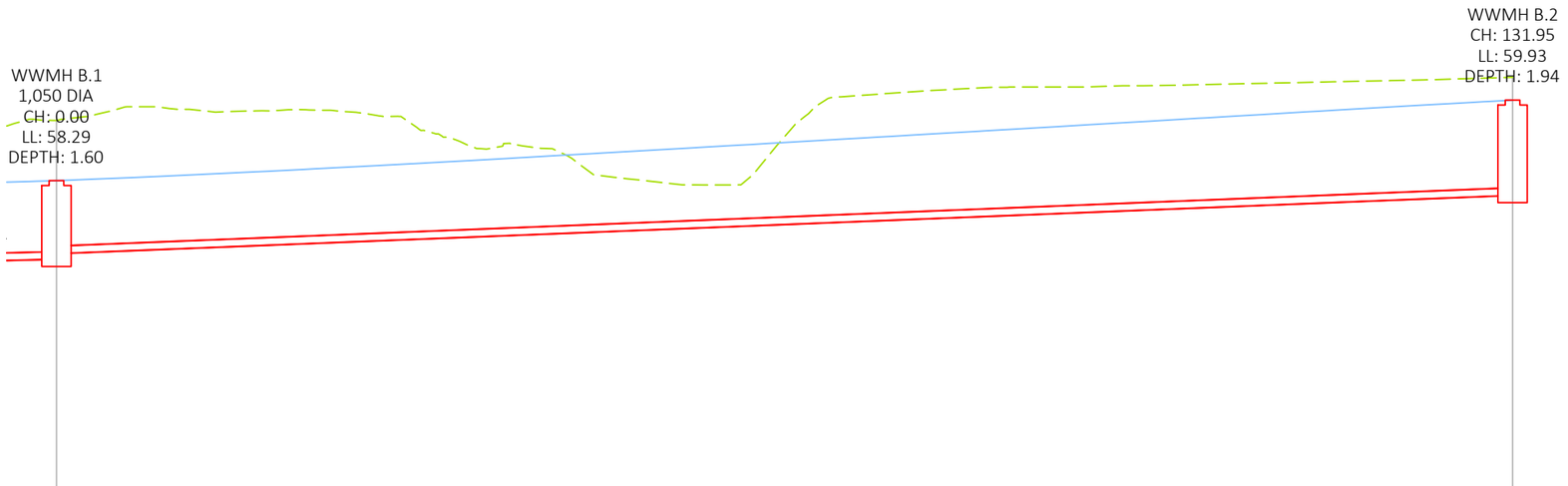
PRINT DATE: 11/09/2024 2:57 pm



PIPE DETAILS (CL to CL LENGTHS)				
DESIGN LEVEL AT MH CL	58.50		58.29	
INVERT LEVEL	55.82		56.69	56.80
COVER	2.53		1.45	1.33
CHAINAGE	0.00		72.43	

DETAIL: - / 500 WASTEWATER LONG SECTION - B

SCALE: 1:250H, 1:125V(A3)



	58.29		59.93	
	56.69	56.80	57.99	
	1.45	1.33	1.79	
	72.43		131.95	

DETAIL: - / 500 WASTEWATER LONG SECTION - B CONTINUED

SCALE: 1:250H, 1:125V(A3)

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LEGEND

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TITLE: Wastewater Long Section - 2/3

SCALE AT A3:	DRAWN:	CHECKED:
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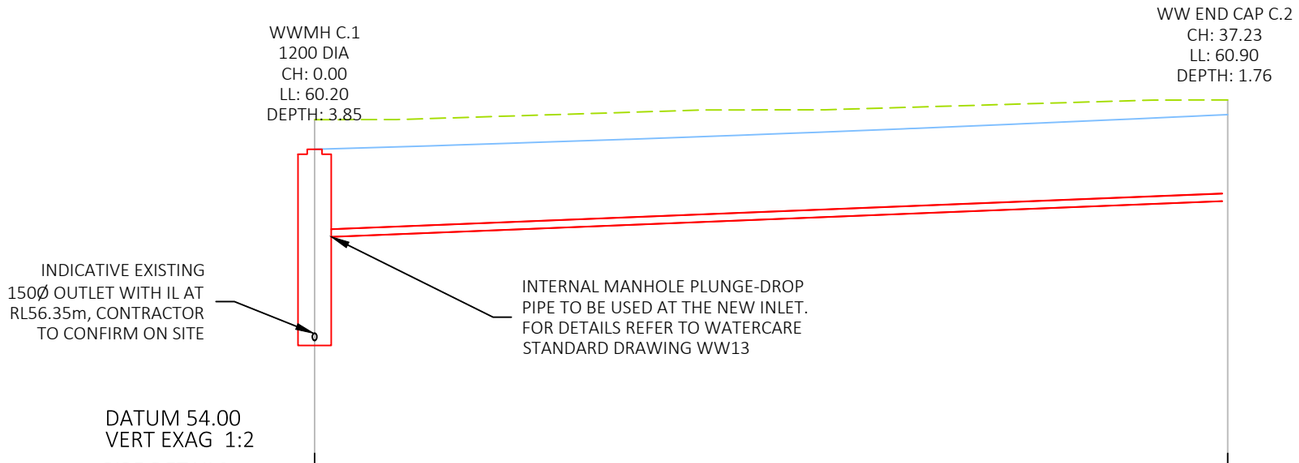
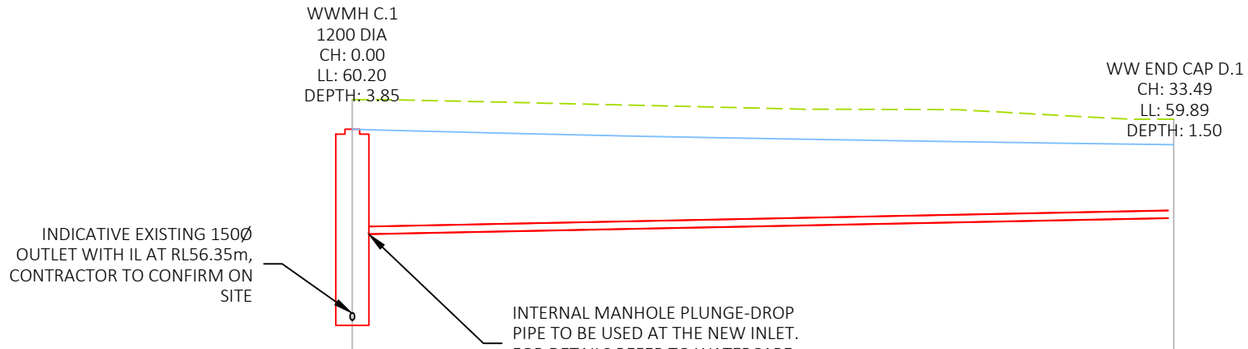
PROJECT NO:	DRAWING NO:	REVISION:
P23-077	512	A



DATUM 54.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)		NEW 150Ø UPVC SN16 2D L: 37.23m @ 2.00%	
DESIGN LEVEL AT MH CL	60.20		60.90
INVERT LEVEL	58.40		59.14
COVER	1.64		1.60
CHAINAGE	0.00		37.23

DETAIL: - / 500 WASTEWATER LONG SECTION - C
SCALE: 1:250H, 1:125V(A3)



DATUM 54.00
VERT EXAG 1:2

PIPE DETAILS (CL to CL LENGTHS)		NEW 150Ø UPVC SN16 2D L: 33.49m @ 1.00%	
DESIGN LEVEL AT MH CL	60.20		59.89
INVERT LEVEL	58.05		58.39
COVER	1.99		1.34
CHAINAGE	0.00		33.49

DETAIL: - / 500 WASTEWATER LONG SECTION - D
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PROJECT NO:	DRAWING NO:	REVISION:
P23-077	513	B

APPENDIX B – GENERAL CALCULATIONS

LANDWORKS CONSULTING

CALCULATION SHEETS

PROJECT	496 East Coast Road
PROJECT NUMBER	P23-077
DATE	26/03/2024
AUTHOR	Peter Lowe

Contents:

PROJECT	496 East Coast Road
DATE	26/03/2024
AUTHOR	Peter Lowe

Wastewater and Water supply Assessment

Wastewater Flows	Pre development	Post Development	
Residential Catchment Area	89442	89442	m^2
Average lot size	400	400	
Number of dwellings	157	242	
Number of new Dwellings	0	85	
Number of occupants per dwelling	3.0	3.0	
Design population	470	725	p
Design Flow per person	180	180	l/p/d
Design ADWF (Ave Dry weather Flow)	0.978	1.510	L/s
Self Cleansing Peaking Factor	3.0	3.0	
Self Cleansing Design flow	2.93	4.53	L/s
Peak Design Peaking Factor	6.7	6.7	
Peak Design Flow	6.55	10.11	l/s
Increase in Flows		3.56	l/s

Pipe Capacity Check

Colebrook White Flows	Pre development	Post Development
Downstream manhole GIS ID	408020	408020
Downstream manhole RL (m)	52.74	52.74
Upstream manhole	389640	389640
Upstream manhole RL (m)	53.40	53.4
Distance between manholes	76.80	76.8
Pipe Gradient (m/m)	0.0086	0.0086
Pipe Diameter (mm)	150.00	150.00
Colebrook-White 'k'	0.60	0.60
Flow Velocity (m/s)	0.93	0.93
Pipe Capacity (L/s)	16	16
Pipe Capacity OK?	YES	YES

Residential Water Demand	Pre development	Post Development	
Number of dwellings	0.0	85.0	
Number of occupants per dwelling	3.0	3.0	
Design population	0	255	p
Design Flow per person	220	220	L/p/d
Average Daily Demand	0	56100	L/d
Average Demand	0.00	0.65	L/s
Daily Peaking Factor	2.0	2.0	
Peak Day Demand	0	112200	L/d
Hourly Peaking Factor	2.5	2.5	
Peak Hourly Demand	0	11687.5	L/h
Peak Residential Demand	0.00	3.25	L/s
Increase in Demand		3.25	l/s