



STORMWATER MANAGEMENT PLAN

Civil Engineering

Lottie Stewart Hospital Redevelopment
Wesley Mission

CONFIDENTIAL

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1 EXECUTIVE SUMMARY

This report outlines recommended stormwater quantity and quality management measures for the proposed seniors housing development at 40 Stewart Street, Ermington.

Bulk stormwater management will mitigate flow rates through inground detention storage. Discharge will be directed to existing stormwater infrastructure to the southwest corner of the site, mitigating peak post-development flow rates to not exceed pre-development conditions, thereby achieving a legal point of discharge.

Stormwater quality objectives per the New South Wales State Planning Policy and City of Parramatta's Development Engineering Design Guidelines will be achieved through a treatment train consisting of garden swales and proprietary inlet pit baskets and stormwater filters.

2 INTRODUCTION

2.1 BACKGROUND

This Stormwater Management Plan (SMP) is submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf of Wesley Mission (the Applicant), to support a State Significant Development Application (SSDA) for the redevelopment of the former Lottie Stewart Hospital, for the purpose of a seniors housing development at 40 Stewart Street, Ermington.

Under State Significant Development Declaration Order (No 11) 2025, dated 23 July 2025, the following development is declared to be State Significant Development:

- (j) *Development specified in EOI application 255387 dated 10 April 2025 including development for the purpose of retention of heritage items and seniors housing and provision of affordable housing at 40 Stewart Street, Ermington being Lot A/DP29480, Lot D/DP29480, Lot F/DP29480, Lot 2/DP574056.*

Specifically, the proposed works include the following:

- Site preparation and early works, including demolition of existing structures;
- Torrens title lot amalgamation of the existing four (4) lots to create one (1) lot;
- Retention of the heritage building, part of the hospital building and other character elements;
- Construction and adaptive reuse of existing buildings for 6 x independent living unit buildings and a range of low-rise detached villas and duplex villas, delivering 218 seniors living dwellings;
- Adaptive reuse of the heritage item (Tebbutt Lodge) including conservation works and curtilage improvements with sympathetic new additions to facilitate the provision of communal facilities, communal and private outdoor open space, and wellness facilities;
- Removal of existing hardscape areas, retention of significant higher value soft landscaping, new landscaping (including tree removal) and public domain works; and
- Augmentation of physical infrastructure and utilities, as required.

For a detailed description of the proposed development, refer to the Environmental Impact Statement (EIS) prepared by Beam Planning, and the Architectural Drawings prepared by Integrated Design Group.

2.2 THE SITE

The site is located at 40 Stewart Street, Ermington within the City of Parramatta Local Government Area (LGA). It is legally identified as Lot A, D and F in DP29480 and Lot 2 in DP574056 and is approximately 4.647 hectares.

The site has a frontage of approximately 220m along Stewart Street, with three (3) separate points for vehicular access. The site is currently occupied by the former Lottie Stewart Hospital, which was then operated as a residential care facility, but ceased operation in 2012. The site is primarily vacant and heavily underutilised. The built form on the site comprises the local heritage item I166 'R E Tebbutt Lodge'. An aerial image of the site is shown overleaf in **Figure 1**.



Figure 1 – Aerial image of the site

2.3 RELEVANT SEARS

This Stormwater Management Plan addresses the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the table below.

TABLE 1 SEARS COMPLIANCE TABLE

SEARS REQUEST	RESPONSE/LOCATION IN REPORT
11. Water Management - Detail the proposed drainage design and servicing infrastructure to be incorporated as part of the development (stormwater and wastewater). - Demonstrate how the development complies with council's drainage requirements and identify proposed stormwater treatment and water quality management measures to minimise adverse environmental impacts	Section 3 to Section 9

2.4 OBJECTIVES

This SMP aims to provide a conceptual framework of compliant drainage management strategies for the development proposal to be incorporated into the detailed design of the project works. It also aims to satisfy the requirements outlined in the City of Parramatta Planning Scheme and New South Wales State Environmental Planning Policies.

2.5 ZONING

The development is situated within the infrastructure land use with the purpose of "Health Services Facility". Refer to Figure 3 below for the NSW Planning Portal zoning.

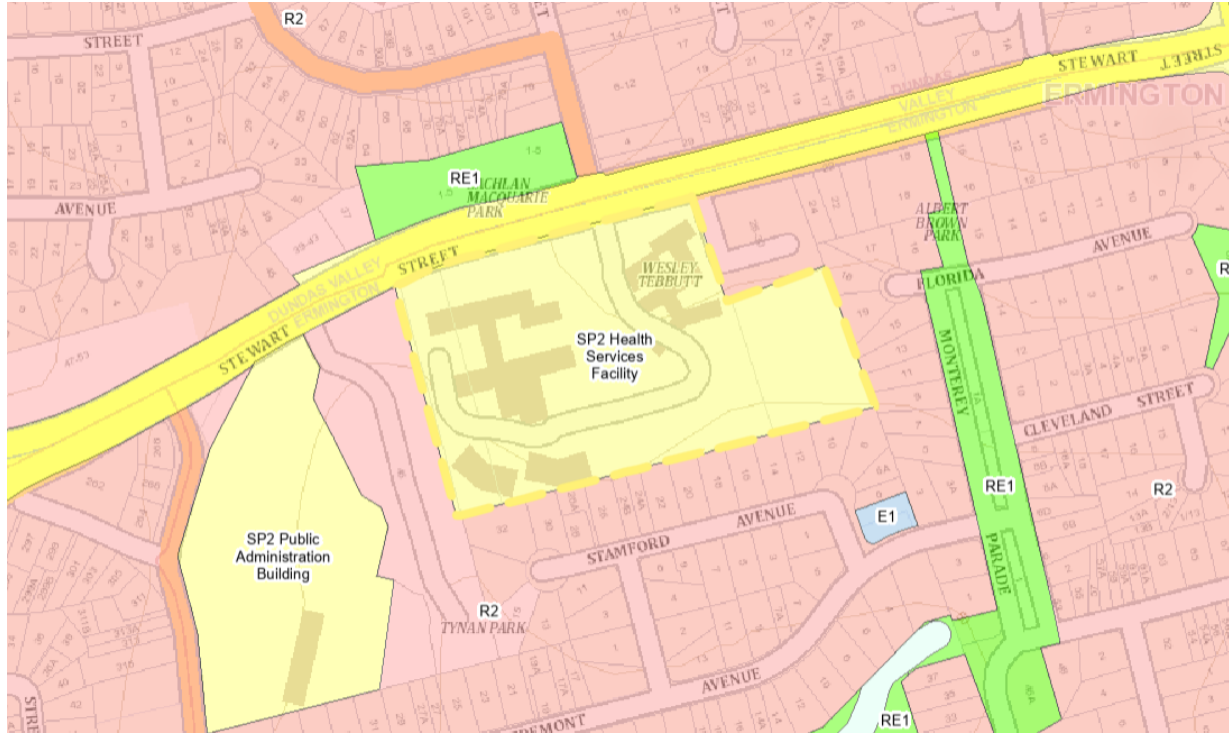


Figure 2 – Zoning (NSW Planning Portal)

3 DATA COMPILATION AND REVIEW

3.1 TOPOGRAPHIC DATA AND ASSET INFORMATION

Site survey and LIDAR information indicate the site is currently potentially affected by a small external catchment to the east. The eastern neighbouring lots appear to flow towards the development site. Refer to Figure 3 below for the surface topography and external catchment.

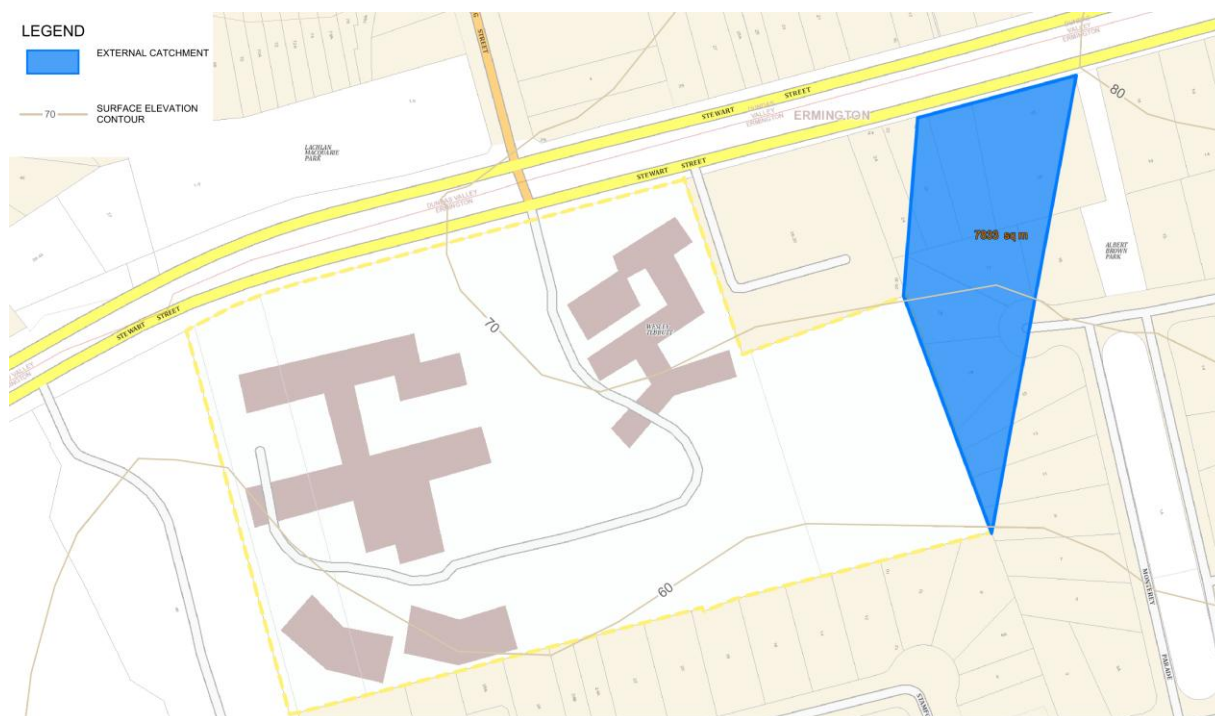


Figure 3 – Topography and Asset Information Adjacent to the Proposed Development (NSW Elevation Data Service)

3.2 DESIGN STORM EVENT DATA

The rainfall data utilised in the hydrological models has been extracted from the Bureau of Meteorology and AR&R datahub. Please refer to **Appendix B** for the rainfall data table.

3.3 FLOOD MAPPING

City of Parramatta's flood hazard mapping indicates that the proposed development site is not identified as a flood affected area, as detailed in Figure 4 below.

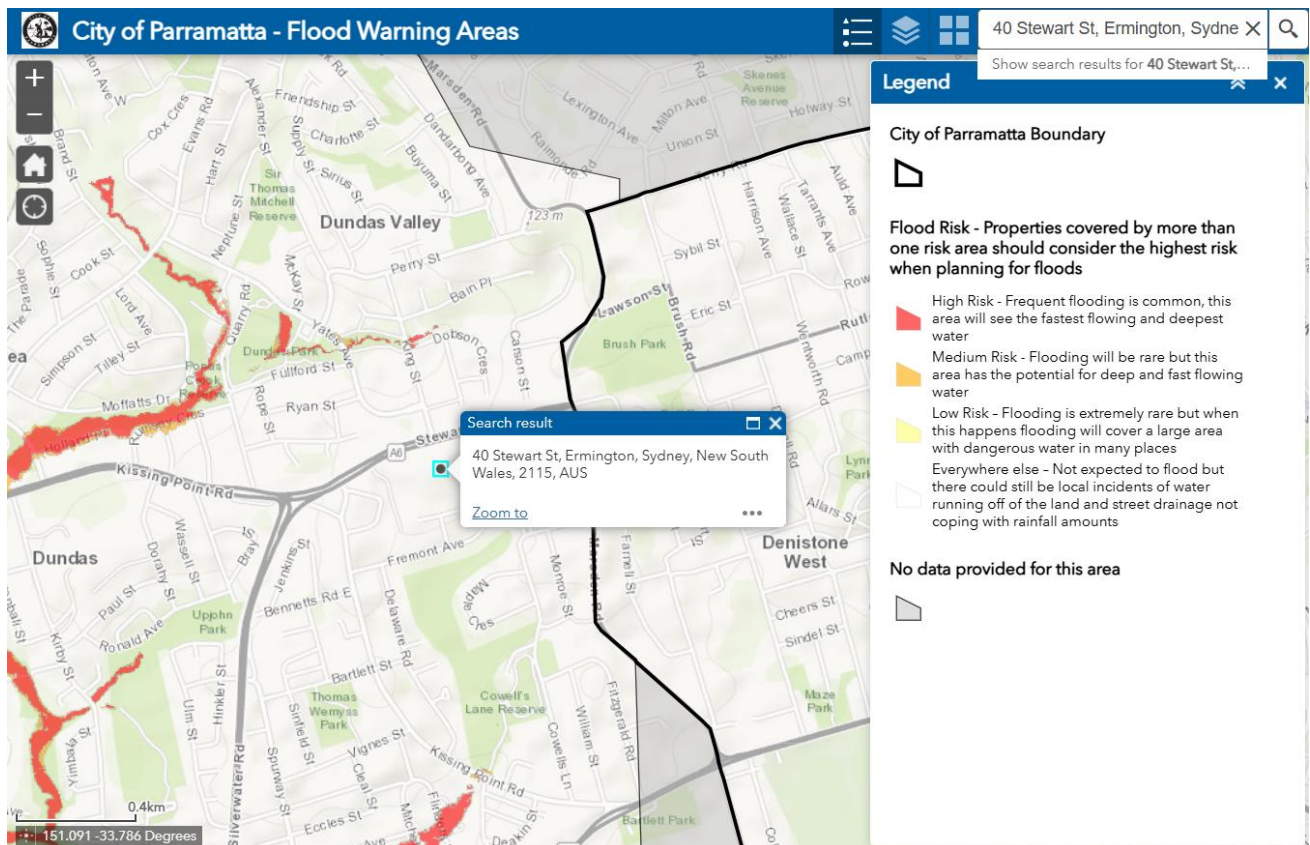


Figure 4 – City of Parramatta – Flood Warning Areas Mapping

4 STORMWATER QUANTITY ASSESSMENT

4.1 METHODOLOGY

The hydrologic assessment methodology was proposed in accordance with City of Parramatta's Development Engineering Design Guidelines and Australian Rainfall & Runoff using Watercom DRAINS with industry-standard methods, including:

- BoM design storm Intensity Frequency Duration (IFD) rainfall parameters
- ARR(Ball, et al., 2019) temporal ensembles (East Coast South region) and burst losses (initial loss – median pre-burst);
- Storm durations of 5-180 minutes; and
- Catchment lag factor of 0;

In accordance with current best industry practice, the hydrologic model assumes the external catchments, if any, are in the ultimate developed condition.

4.2 MODEL DEVELOPMENT

The hydrological and hydraulic modellings for pre-development and post-development scenarios are modelled in DRAINS using an ARR 2019 Initial Loss – Continuing Loss (IL-CL) hydrological model Figure 5 below depicts the parameters adopted.

Initial Loss - Continuing Loss Model

Model Name: East Coast South

Impervious Area Initial Loss (mm): 1

Impervious Area Continuing Loss (mm/hr): 0

Pervious Area Initial Loss (mm): 33

Pervious Area Continuing Loss (mm/hr): 1.8

For overland flow use:

☐ Friend's equation

☒ Kinematic wave equation

Note: The overland flow equation is only used if you choose to specify more detailed catchment data.

Note: Please click on the Help button above for a detailed description of the IL-CL model.

In summary:

1. DRAINS classifies areas as:
 - EIA (Effective Impervious Area),
 - RIA (Remaining Impervious Area), and
 - PA (Pervious Area)
2. The impervious area losses specified above apply to both EIA and RIA
3. The pervious area losses specified above apply to PA
4. This classification avoids the need to vary the PA Losses for urban and rural areas
 - simply specify the PA losses as for rural areas.

Figure 5 – Hydrological Model

4.3 CATCHMENT SUMMARY

The existing catchment consists predominantly of an existing hospital development and grassed areas and generally steep with an average 7% gradient towards the southeastern boundary, and it is assumed that runoff flows towards the neighbouring properties along the rear boundary of the site. The existing catchment is shown in **Appendix A**. Satellite mapping indicates the current site is partially developed, with an imperviousness of approximately 33%.

4.3.1 EXISTING CATCHMENT PARAMETERS

Table 1 below presents the parameters adopted for the pre-development scenario based on the existing catchments. **Figure 6** and **Figure 7** details the existing internal sub-catchment parameters adopted.

Table 1 – Existing Catchment Parameters

CATCHMENT ID	AREA (HA)	FRACTION IMPERVIOUSNESS (%)	10% AEP DISCHARGE (M ³ /S)	1% AEP DISCHARGE (M ³ /S)
E1 Pre-development	3.603	50.0	0.550	0.897
E2 Pre-development	1.102	0.0	0.117	0.278

Sub-Catchment Data

Sub-catchment name: E1 Pre-development Sub-catchment area (ha): 3.603

Hydrological Model: ☒ Default model ☐ You specify

Use: ☐ abbreviated data ☒ more detailed data

Note: The additional times you specify will be added to the times calculated from flow path length, slope and roughness to get the total times of concentration.

	EIA	RIA	PA
Percentage of area	44.2	0	55.8
Additional time (mins)	6	0	0
Flow path length (m)	280	0	280
Flow path slope (%)	2	0	10
Retardance coefficient n*	0.012	0	0.2

Where EIA = Effective Impervious Area
RIA = Remaining Impervious Area
PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes

OK Cancel Customise Storms Help

Figure 6 – Existing Internal Catchment Parameters (E1 Pre-development)

Sub-Catchment Data

Sub-catchment name: E2 Pre-development Sub-catchment area (ha): 1.102

Hydrological Model: ☒ Default model ☐ You specify

Use: ☐ abbreviated data ☒ more detailed data

Note: The additional times you specify will be added to the times calculated from flow path length, slope and roughness to get the total times of concentration.

	EIA	RIA	PA
Percentage of area	0	0	100
Additional time (mins)	0	0	0
Flow path length (m)	0	0	136
Flow path slope (%)	0	0	10
Retardance coefficient n*	0	0	0.2

Where: EIA = Effective Impervious Area
RIA = Remaining Impervious Area
PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes:

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Figure 7 – Existing Internal Catchment Parameters (E2 Pre-development)

4.3.2 PROPOSED CATCHMENT PARAMETERS

The proposed catchment predominantly consists of new paved and roof areas and generally adopts the existing site grading strategy to the southwestern boundary of the site; the design proposed to direct flows to the existing stormwater pit at the southwest corner of the property. The proposed catchment is shown in **Appendix A**.

Table 2 below details the proposed catchment hydrologic parameters. **Figure 8** to **Figure 11** details the proposed catchment parameters adopted on DRAINS.

Table 2 – Proposed Catchment Parameters

CATCHMENT ID	AREA(HA)	FRACTION IMPERVIOUSNESS (%)	10% AEP DISCHARGE (M ³ /S)	1% AEP DISCHARGE (M ³ /S)	DESCRIPTION
P1 Post-development	2.473	70.0	0.597	0.947	Catchment P1 including road pavement areas, landscaping areas, and building roof areas discharging to OSD P1.

CATCHMENT ID	AREA(HA)	FRACTION IMPERVIOUSNESS (%)	10% AEP DISCHARGE (M³/S)	1% AEP DISCHARGE (M³/S)	DESCRIPTION
P2 Post-development	1.072	70.0	0.316	0.500	Catchment P2 including road pavement areas, landscaping areas, and building roof areas discharging to OSD P1.
P3 Post-development	0.989	70.0	0.260	0.461	Catchment P3 including road pavement areas, landscaping areas, and building roof areas discharging to OSD P1.
Building F Catchment	0.175	100.0	0.066	0.103	Building F roof catchment discharging to Building F OSD.

Sub-Catchment Data

Sub-catchment name

P1 Post-development

Sub-catchment area (ha)

2.684

Hydrological Model

☒ Default model
☐ You specify

Use

☐ abbreviated data
☒ more detailed data

Note: The additional times you specify will be added to the times calculated from flow path length, slope and roughness to get the total times of concentration.

	EIA	RIA	PA
Percentage of area	70	0	30
Additional time (mins)	0	0	0
Flow path length (m)	385	0	242
Flow path slope (%)	1	0	10
Retardance coefficient n*	0.012	0	0.2

Where EIA = Effective Impervious Area
RIA = Remaining Impervious Area
PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes

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Cancel

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Figure 8 – Proposed Internal Catchment Parameters – P1 Post-development

Sub-Catchment Data

Sub-catchment name Sub-catchment area (ha)

Hydrological Model
☒ Default model
☐ You specify

Use
☐ abbreviated data
☒ more detailed data

Note: The additional times you specify will be added to the times calculated from flow path length, slope and roughness to get the total times of concentration.

	EIA	RIA	PA
Percentage of area	70	0	30
Additional time (mins)	0	0	0
Flow path length (m)	192	0	177
Flow path slope (%)	2	0	5
Retardance coefficient n*	0.012	0	0.2

Where EIA = Effective Impervious Area
 RIA = Remaining Impervious Area
 PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes

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 Cancel
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Figure 9 – Proposed Internal Catchment Parameters – P2 Post-development

Sub-Catchment Data

Sub-catchment name Sub-catchment area (ha)

Hydrological Model
☒ Default model
☐ You specify

Use
☐ abbreviated data
☒ more detailed data

Note: The additional times you specify will be added to the times calculated from flow path length, slope and roughness to get the total times of concentration.

	EIA	RIA	PA
Percentage of area	70	0	30
Additional time (mins)	0	0	0
Flow path length (m)	169	0	169
Flow path slope (%)	1	0	5
Retardance coefficient n*	0.012	0	0.2

Where EIA = Effective Impervious Area
 RIA = Remaining Impervious Area
 PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes

OK
 Cancel
 Customise Storms
 Help

Figure 10 – Proposed Internal Catchment Parameters – P3 Post-development

Sub-Catchment Data

Sub-catchment name Sub-catchment area (ha)

Hydrological Model

☒ Default model
☐ You specify

Use

☒ abbreviated data
☐ more detailed data

	EIA	RIA	PA
Percentage of area	100	0	0
Time of concentration (mins)	6	0	0

Where EIA = Effective Impervious Area
RIA = Remaining Impervious Area
PA = Pervious Area

Please click on the Help button for a detailed description of the IL-CL sub-catchment area definitions.

Notes

OK
Cancel
Customise Storms
Help

Figure 11 – Proposed Internal Catchment Parameters – Building F Catchment

4.4 DESIGN EVENT MODELLING

4.4.1 DESIGN STORM EVENTS AND DURATIONS

10% AEP and 1% AEP design storm events have been adopted for the minor and major drainage systems, respectively. Durations between 5-180 minutes were considered.

4.4.2 PRE-BURST RAINFALL

Pre-burst rainfall depths were obtained from the AR&R Data Hub.

4.4.3 TEMPORAL PATTERNS

BoM design storm Intensity Frequency Duration (IFD) rainfall parameters ARR (Ball, et al., 2019) temporal ensembles (East Coast North region) were applied based on the designated Rainfall patterns as per ARR.

4.5 ON-SITE DETENTION SYSTEM DETAILS

A combination of four (4) detention tanks providing a total of 890 m³ detention volume is proposed to mitigate peak flow rates, to less than or equal to the pre-development peak flow rates. Table 3 outlines the adopted detention tanks parameters.

Table 3 – Underground Detention Systems Details

CHARACTERISTIC	DETAIL
OSD P1	
1% AEP Total Detention Volume	460 m ³
1% AEP Water Depth	1.40 m
Equivalent Outlet Orifice Size (mm)	600 mm or equivalent
OSD P2	
1% AEP Total Detention Volume	180 m ³
1% AEP Water Depth	1.50 m
Equivalent Outlet Orifice Size (mm)	290 mm or equivalent
OSD P3	
1% AEP Total Detention Volume	140 m ³
1% AEP Water Depth	1.20 m
Equivalent Outlet Orifice Size (mm)	320 mm or equivalent
OSD F	
1% AEP Total Detention Volume	120 m ³
1% AEP Water Depth	1.20 m
Equivalent Outlet Orifice Size (mm)	55 mm or equivalent

4.6 MODELLING RESULTS

4.6.1 MODEL LAYOUT

The Watercom DRAINS Model Layout is shown in **Figure 11** with the DRAINS Model Peak Flows Layouts for 10% and 1% AEP events shown in **Figure 12** and **Figure 13** respectively.

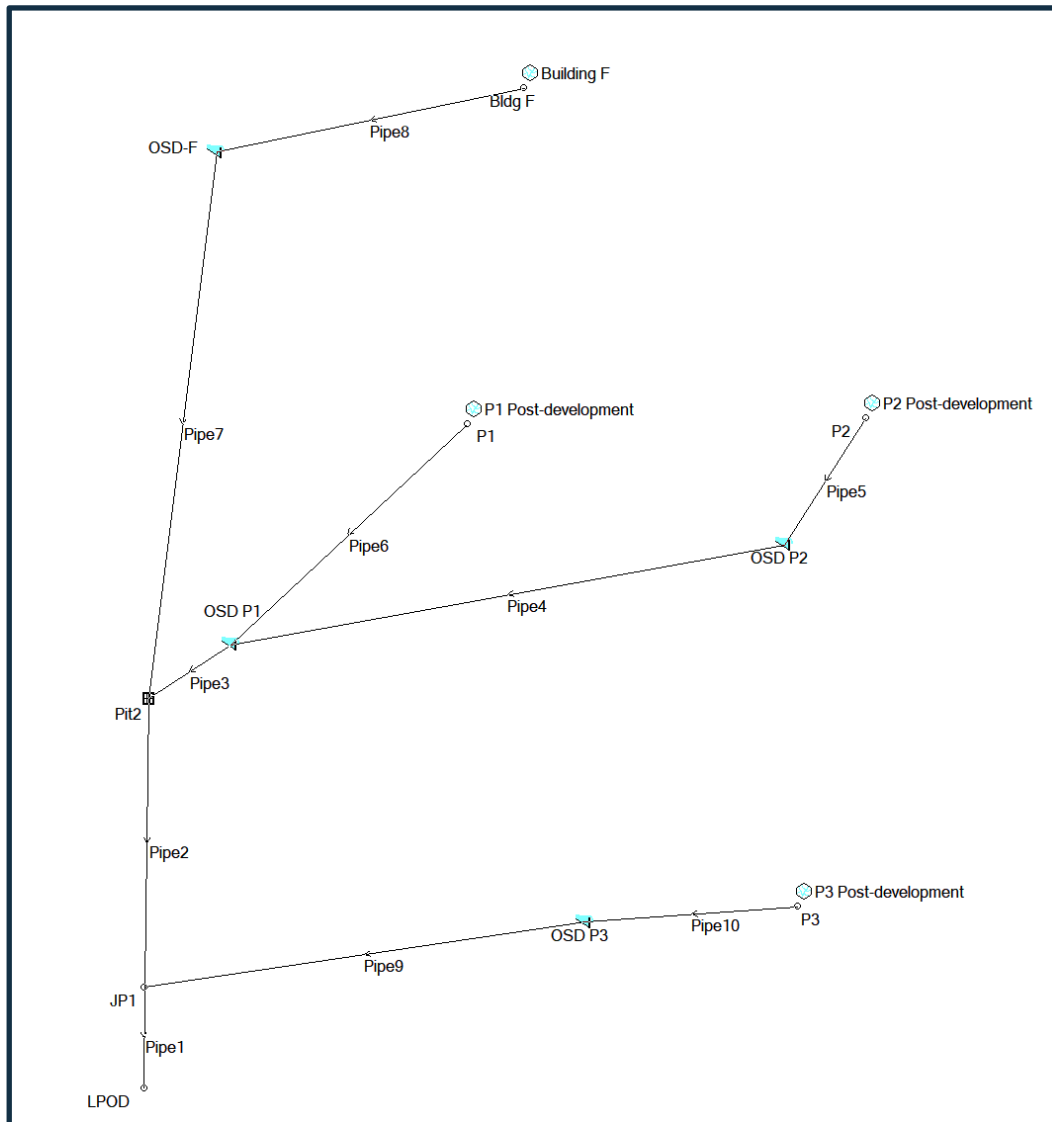


Figure 12 – DRAINS Model Layout

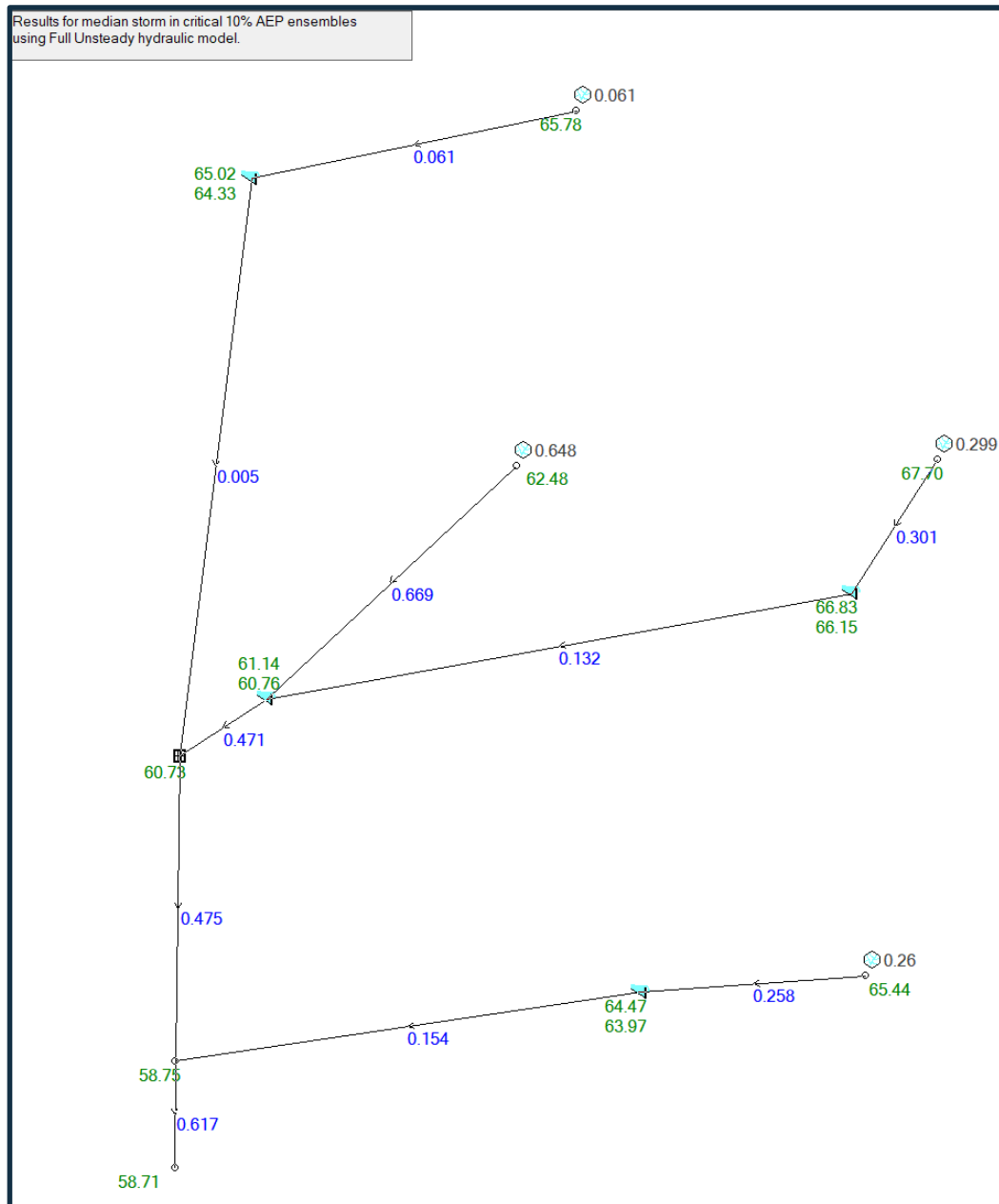


Figure 13 – 10% AEP DRAINS Model Peak Flows Layout

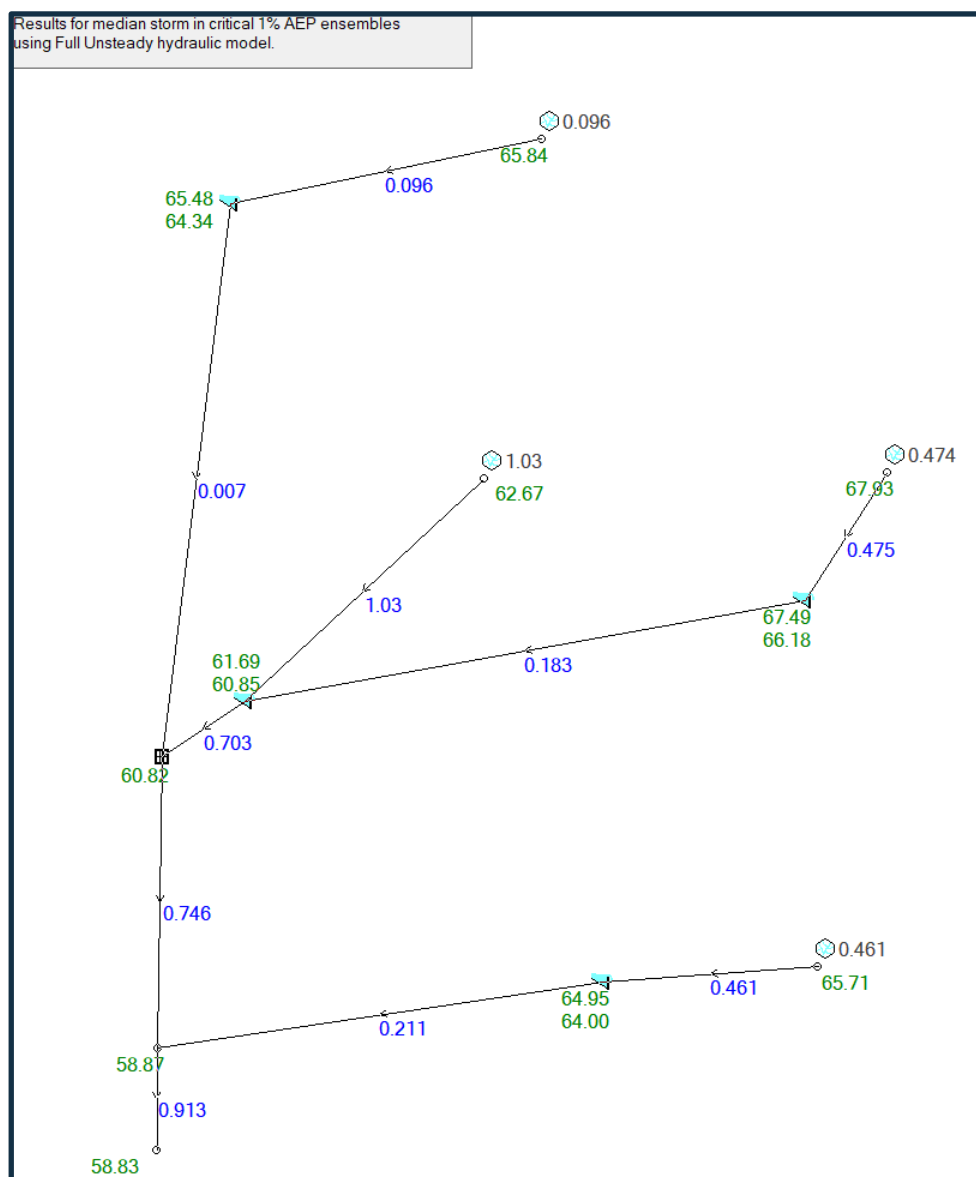


Figure 14 – 1% AEP DRAINS Model Peak Flows Layout

4.6.2 PEAK DISCHARGE COMPARISON

The median peak discharge comparison is shown in Table 4 below.

Table 4 – Median Peak Discharge Comparison

AEP (%)	PEAK FLOW RATE (m ³ /s)				
	EXISTING (m ³ /s)	DEVELOPED (m ³ /s)	MITIGATED (m ³ /s)	REDUCTION (m ³ /s)	REDUCTION (%)
10%	0.667	1.268	0.617	0.050	8%
1%	1.175	2.011	0.877	0.298	25%

4.6.3 DETENTION STORAGE VOLUME

The major (1% AEP) event detention storage volume graph is shown in **Figure 14** to **Figure 17**. Refer to **Appendix A** for further detail on the proposed stormwater detention layout.

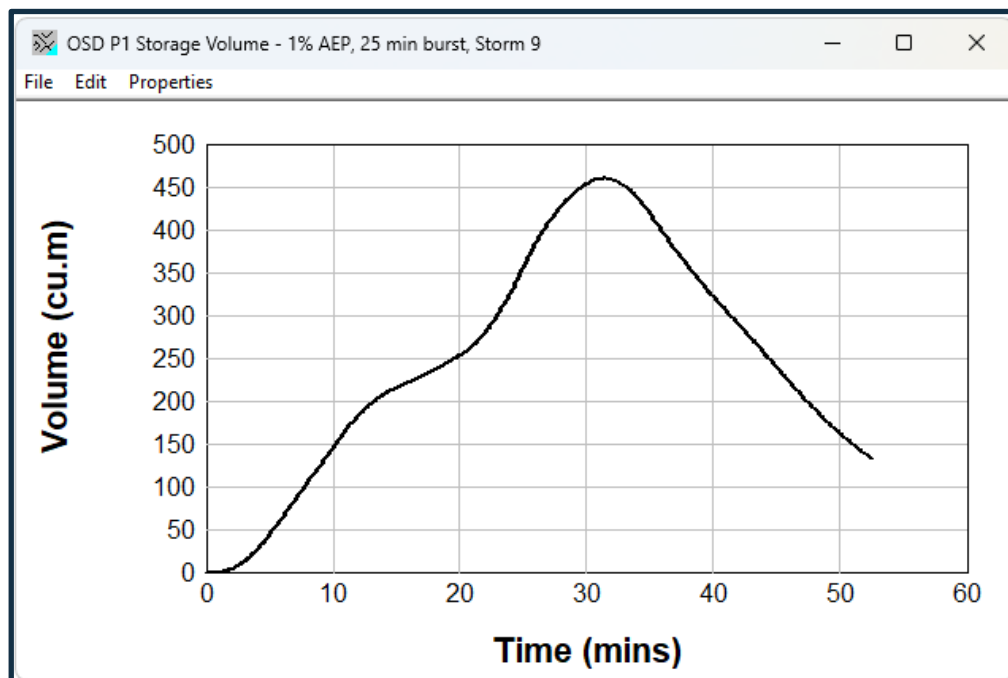


Figure 15 – 1% AEP Detention Tank Storage Volume (OSD P1 – 450 m³ Underground Tank)

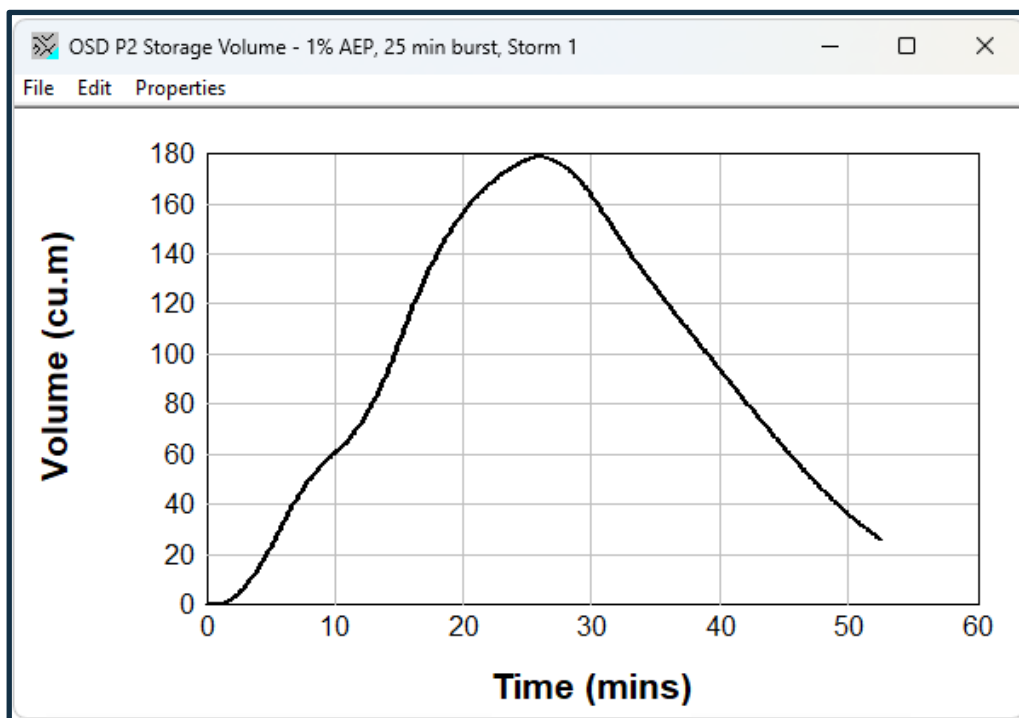


Figure 16 – 1% AEP Detention Tank Storage Volume (OSD P2 – 180 m³ Underground Tank)

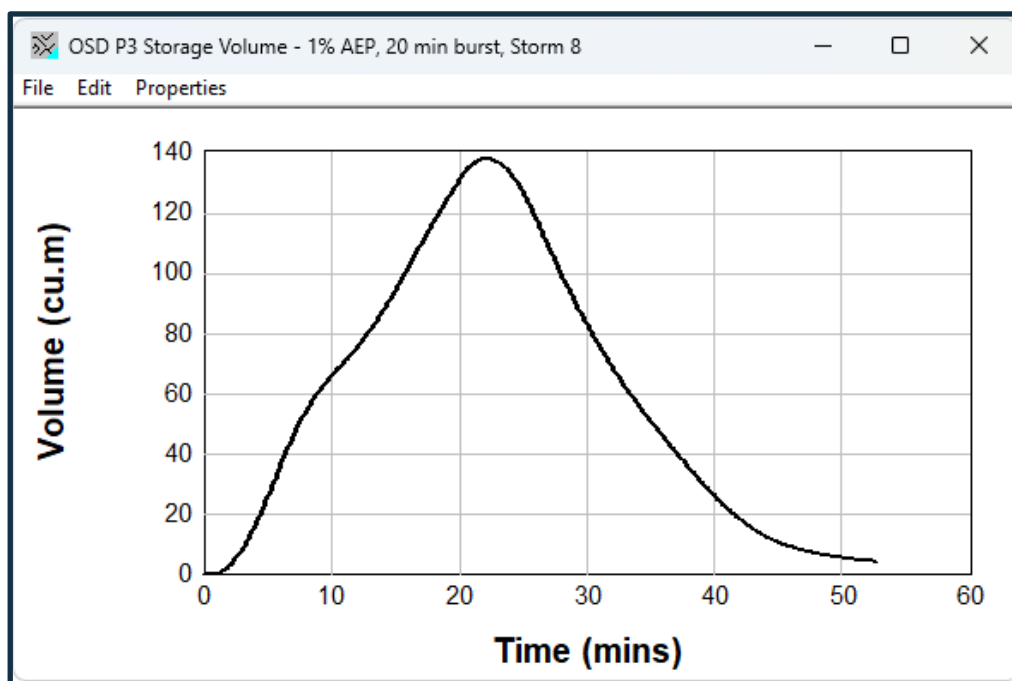


Figure 17 – 1% AEP Detention Tank Storage Volume (OSD P3 – 140 m³ Underground Tank)

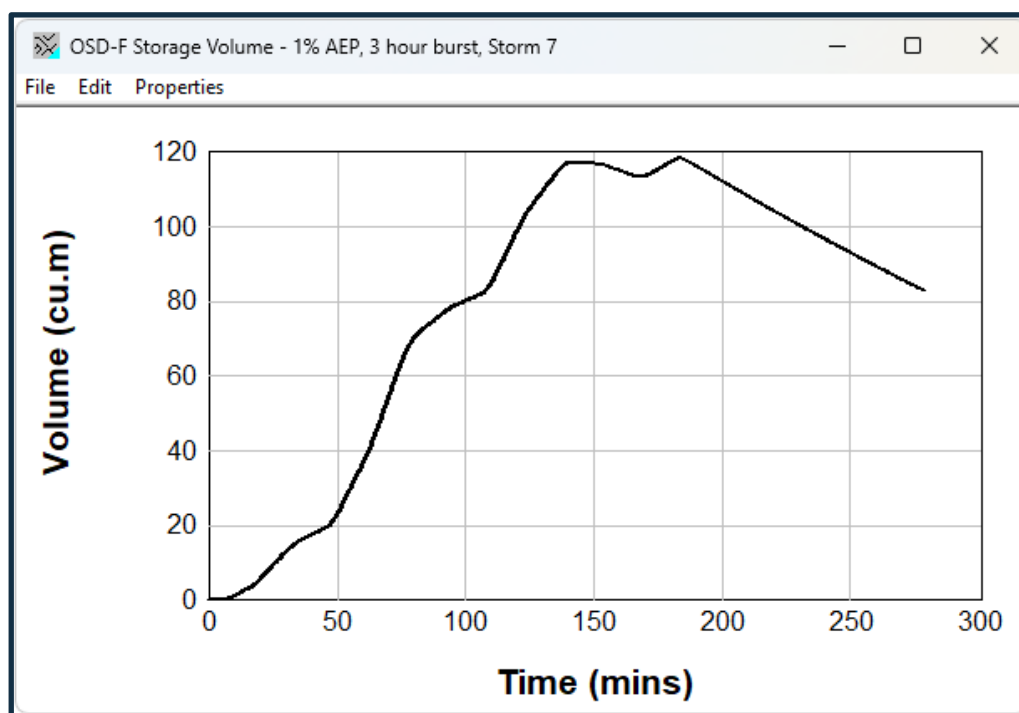


Figure 18 – 1% AEP Detention Tank Storage Volume (Building F OSD – 120 m³ Underground Tank)

4.6.4 SUMMARY

DRAINS modelling demonstrates that the post-developed peak flow rates at the discharge location area are mitigated to less than the pre-development peak flow rates in the 10% and 1% AEP events.

5 STORMWATER QUALITY MANAGEMENT

5.1 INTRODUCTION

The quality of runoff from a catchment depends upon many factors such as land use, degree of urbanisation, population density, sanitation, waste disposal practices, landform, soil types, and climate. Pollutants typically transported by runoff include litter, sediment, nutrients, oil, grease, and heavy metals. Whilst all these pollutants have a negative impact on the receiving water quality, suspended solids and nutrients cause the highest detrimental impact to the environment.

5.2 STORMWATER QUALITY TARGETS

As discussed in section 2 of this report, City of Parramatta aims to achieve the best practice stormwater quality outcomes. As such, the proposed development will be adopting the water quality performance targets as required by the Best Practice Environmental Management Guidelines (BPEMG) and as outlined in the below table.

Table 5.1: Water Quality Performance Targets

POLLUTANT	POST-DEVELOPMENT ANNUAL LOAD REDUCTION
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	45%
Total Nitrogen (TN)	45%
Gross Pollutant (GP)	70%

5.3 MODEL PARAMETERS

The following parameters shown in tables 5.2, 5.3, and 5.4 were stipulated from current NSW MUSIC Modelling guidelines (August 2015) and is subject to updates as advised by Greater Sydney Local Land Services.

Table 5.2. Meteorological and Rainfall and Runoff Data

PARAMETER	VALUE
Rainfall station	066124 – Parramatta
Time step	6 minutes
Modelling period	1984-2007
Mean annual rainfall	872 mm
Evapotranspiration	1312 mm

5.3.1 CATCHMENT PARAMETERS

The site catchments have been modelled as urban source nodes due to the proposed land use. All other parameters are based off recommendations from Greater Sydney Local Land Services (August 2015).

Table 5.3: Rainfall Runoff Parameters

PARAMETER	ALL NODES
Rainfall threshold (mm)	1.40
Soil storage capacity(mm)	170
Initial storage	30
Field capacity (mm)	70
Infiltration capacity coefficient a	210
Infiltration capacity coefficient b	4.70
Initial depth (mm)	10
Daily recharge rate (%)	50
Daily base flow rate (%)	4
Daily deep seepage rate (%)	0

5.3.2 POLLUTANT GENERATION PARAMETERS

The following table describes pollutant generation parameters given by Greater Sydney Local Land Services (August 2015) to apply in MUSIC for each of the catchment types as part of the stormwater quality modelling.

Table 5.4 Pollutant Generation Parameters

CATCHMENT		TOTAL SUSPENDED SOLIDS [LOG MG/L]		TOTAL PHOSPHOROUS [LOG MG/L]		TOTAL NITROGEN [LOG MG/L]	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Landscaping	Storm Flow Concentration	2.15	0.32	-0.60	0.25	0.30	0.19
	Base Flow Concentration	1.20	0.17	-0.85	0.19	0.11	0.12
Sealed Road	Storm Flow Concentration	2.43	0.32	-0.30	0.25	0.34	0.19
	Base Flow Concentration	1.20	0.17	-0.85	0.19	0.11	0.12
Roof	Storm Flow Concentration	1.30	0.32	-0.89	0.25	0.30	0.19
	Base Flow Concentration	n/a	n/a	n/a	n/a	n/a	n/a

5.4 MUSIC RESULTS

The results for the MUSIC model are summarized below in Figure 5.5. As shown in table below all reduction targets can be met and exceeded using the proposed treatment train.

	Sources	Residual Load	% Reduction
Flow (ML/yr)	25.2	25.1	0.4
Total Suspended Solids (kg/yr)	2910	211	92.7
Total Phosphorus (kg/yr)	6.6	2.31	65
Total Nitrogen (kg/yr)	54.3	23.5	56.7
Gross Pollutants (kg/yr)	575	0	100

Figure 19 – MUSIC Model Results

5.5 DESIGN PROCESS

Modelling of the proposed layout was carried out in MUSIC. Below is a schematic diagram of the treatment train model indicating catchment areas and proposed treatment devices.

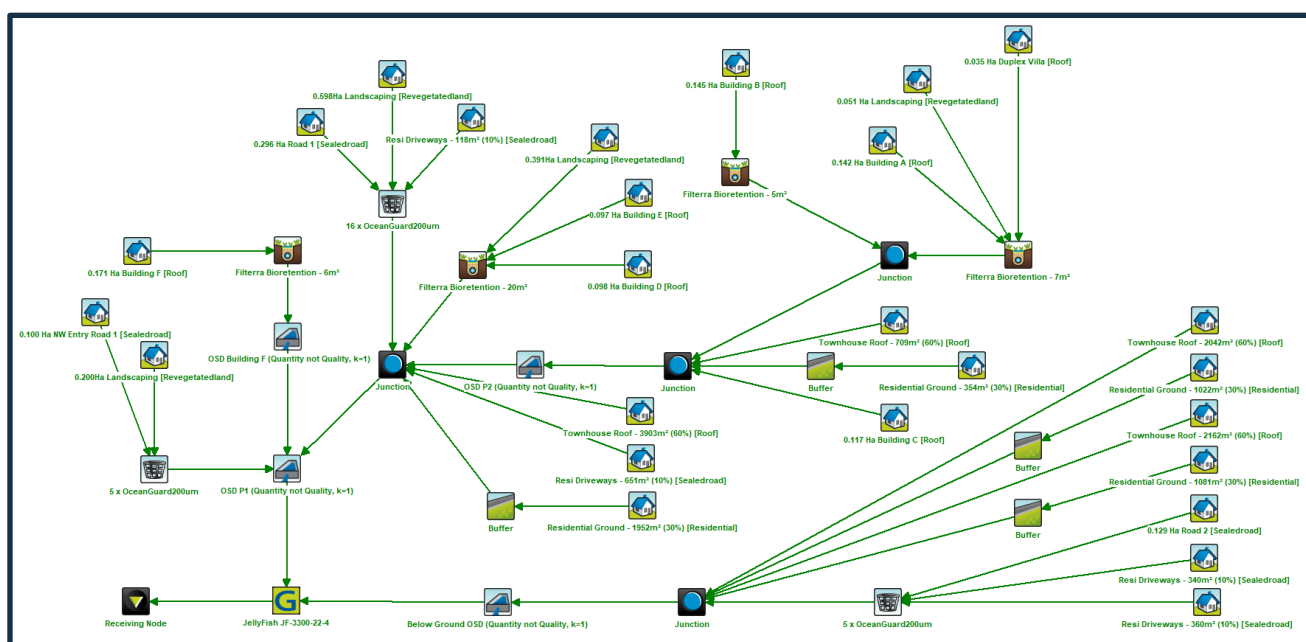


Figure 20 – Schematic Diagram of Treatment Train Model

The MUSIC modelling demonstrated that the required targets for stormwater quality can be achieved using the following strategy:

- Buildings and landscaped area to discharge stormwater to a total of 37m² Filtterra Bioscape raingardens by Ocean Protect.

- All inlet pits are to be installed with OceanGuard litter baskets (26 total) to filter all stormwater from external areas.
- Residential townhouse impervious external areas will sheet flow over landscaped buffer zones.
- End of line treatment Jellyfish JF-3300-22-4 downstream of all OSD's to treat all stormwater prior to discharge to council stormwater network.

Table 5.6 Proposed Stormwater Quality Treatment Devices

STORMWATER QUALITY DEVICE	QUANTITY/SIZE
Filterra Raingarden	37m ² total
OceanGuard with 200µm mesh bags (OG-200)	26
Jellyfish Filter System (JF3300-22-4)	1
Landscaping Buffers	n/a

6 WASTERWATER MANAGEMENT

The site will be connected for discharge of sewer, to Sydney Water's DN150 VC sewer main, and existing sewer maintenance hole located at the southwestern corner and southeastern corner, respectively. No onsite reuse or disposal is proposed.

An extension will be required from mains to the property in accordance with Sydney Water requirements. We recommend the use of water efficient applications to be incorporated to reduce wastewater loads to be investigated at detailed design stage.

Figure 21 below shows Sydney Water's asset map of the site.

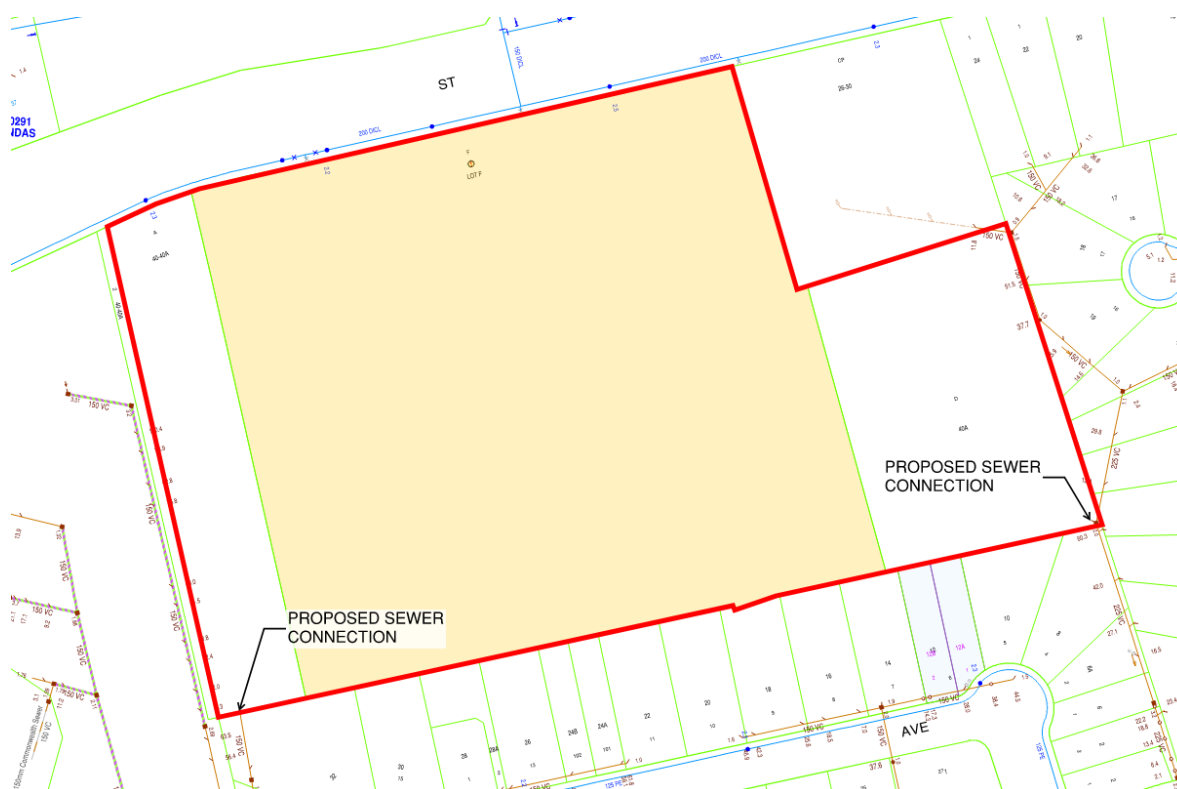


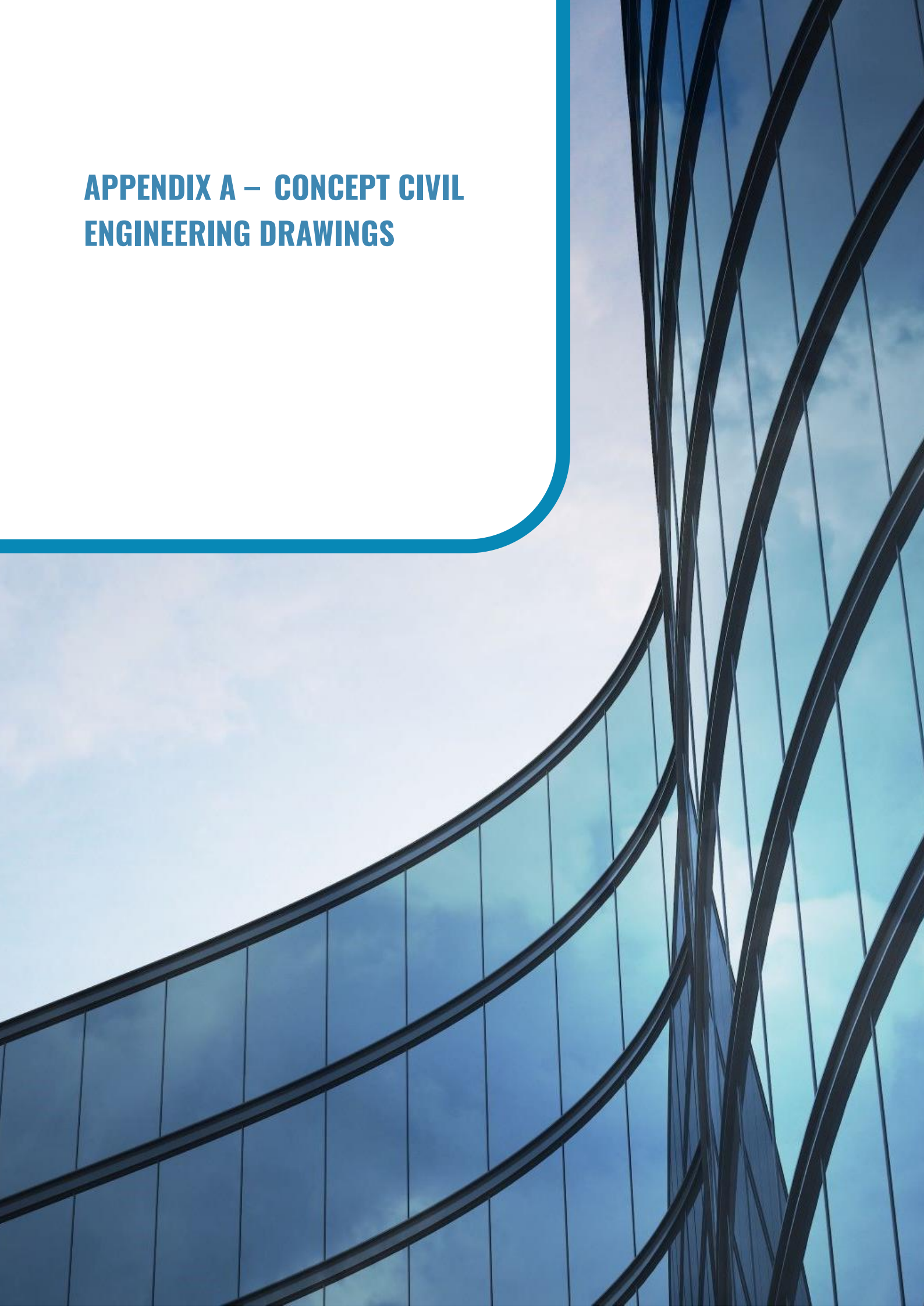
Figure 21 – Sydney Water Asset Map

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the investigation undertaken, it can be concluded that the proposed stormwater design and the proposed stormwater management measures demonstrate that stormwater can be suitably managed with a low potential for adverse impacts to neighbouring and downstream properties.

It is noted that the developer must construct as per the approved plans and take all reasonable steps to ensure that site works do not result in an actionable nuisance.

APPENDIX A – CONCEPT CIVIL ENGINEERING DRAWINGS



NDY

A TETRA TECH COMPANY

CIVIL ENGINEERING

LOTTIE STEWART

SENIORS LIVING

40 STEWART STREET ERMINGTON NSW 2117



LOCALITY PLAN
SCALE: NTS

DRAWING REGISTER	
DRAWING NUMBER	DRAWING TITLE
CI-00-0000	COVER SHEET, DRAWING INDEX AND LOCALITY PLAN
CI-00-0001	PROJECT NOTES
CI-01-0100	EXISTING FEATURES PLAN
CI-01-0110	EROSION & SEDIMENTCONTROL PLAN
CI-01-0111	EROSION & SEDIMENTCONTROL DETAILS
CI-01-0400	BULK EARTHWORKS OVERALL PLAN
CI-01-1000	SITE GRADINGOVERALL PLAN
CI-01-1010	ROADWORKSOVERALL PLAN
CI-01-1011	ROADWORKS LONG SECTIONSSHEET 1
CI-01-1012	ROADWORKS LONG SECTIONSSHEET 2
CI-01-1013	ROADWORKS LONG SECTIONSSHEET 3
CI-01-1014	ROADWORKS LONG SECTIONSSHEET 4
CI-01-3000	STORMWATER OVERALL LAYOUT PLAN
CI-01-4010	PRE-DEVELOPMENTCATCHMENT PLAN
CI-01-4011	POST-DEVELOPMENTCATCHMENT PLAN
CI-01-4020	STORMWATER QUALITYCATCHMENT PLAN
CI-01-9000	TYPICAL DETAILS
CI-01-9001	TYPICAL DETAILS

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Date	Rev	Description	Date	Rev	Description	Date
P1	PRELIMINARY ISSUE	23.02.2026						
P2	PRELIMINARY ISSUE	11.03.2026						
P3	DRAFT SSDA	20.03.2026						
P4	SSDA SUBMISSION	25.03.2026						

NDY QA SYSTEM
Reason For Issue
PRELIMINARY
Authorisation
By _____
Verification Of Latest
Amendment
By **P.S.** _____

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This drawing is diagrammatic and shows the general arrangement of equipment. Any information involving measurement of the works shall be taken from architectural drawings, workshop drawings by others and conditions at the site. The works shall comply with the contract conditions and Statutory Regulations. Copyright © NDY Management Pty Limited.

Project					LOTTIE STEWART SENIORS LIVING		C41 3D Version 2024	
					40 STEWART STREET			
					ERMINGTON NSW 2117			
Title					COVER SHEET, DRAWING INDEX AND LOCALITY PLAN			
					Drawing No.		Revision	
Scale @ A1		Project Commencement		Drawn	Design	Project No.		
NTS		NOV. 2025		S.C	S.C	0120.0041441.0001		CI-00-0000 P4

GENERAL

THESE CIVIL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT:

- a. SURVEY;
- b. ARCHITECTURAL;
- c. STRUCTURAL;
- d. HYDRAULICS (SERVICES);
- e. LANDSCAPE PLANS; AND

PROJECT SPECIFICATIONS, ALONG WITH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.

THE EXISTING FEATURES AND LEVELS SURVEY HAS BEEN PREPARED BY REEDS CONSULTING DATED 30/06/2023 REFERENCE 24076/D. ALL LEVELS SHALL BE OBTAINED FROM ESTABLISHED BENCH MARKS.

DO NOT SCALE DRAWINGS.

ALL DIMENSIONS RELEVANT TO THE SETOUT WILL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.

THE CONTRACTOR SHALL OBTAIN ALL RELEVANT AUTHORITIES' APPROVALS PRIOR TO COMMENCEMENT OF WORKS AND UPON COMPLETION.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT AUSTRALIAN STANDARDS AND OF ALL RELEVANT AUTHORITIES, EXCEPT WHERE VARIED BY THE PROJECT DOCUMENTATION.

THE CIVIL DRAWINGS DO NOT SHOW ALL DETAILS OF TRENCHES, FIXTURES, INSERTS, SLEEVES, OPENINGS, ETC. FOR ALL SERVICES AND THE LIKE THAT MAY BE PRESENT OR REQUIRED FOR THE WORKS, THE CONTRACTOR SHALL REFER TO ALL DRAWINGS AND SPECIFICATIONS FOR THE INCORPORATION OF SUCH ITEMS ITEMS. FURTHERMORE, THE CONTRACTOR SHALL SUBMIT DETAILS OF ANY SUCH ITEMS THAT MAY CONFLICT WITH THE PROPOSED DESIGN TO THE ENGINEER FOR APPROVAL.

ALL NEW AND EXHUMED SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENT WITHIN THE SITE MUST BE BACKFILLED WITH CLASS 3 CRUSHED ROCK TO SUBGRADE LEVEL AND COMPACTED TO 100% STANDARD DENSITY RATIO, SUBJECT TO APPROVAL FROM THE RELEVANT AUTHORITY.

ON COMPLETION OF SERVICES INSTALLATION, ALL DISTURBED AREAS SHALL BE RESTORED TO THE ORIGINAL CONDITIONS INCLUDING KERBS, FOOTPATHS, HARDSTANDS, ROADS, AND NATURE STRIP.

THE CONTRACTOR'S ATTENTION IS DRAWN TO THE REQUIREMENTS OF LOCAL COUNCIL. WHERE WORK IS LOCATED IN THE ROAD RESERVE OR CROSSES THE PAVEMENT OF A PUBLIC ROADWAY/FOOTPATH, THE CONTRACTOR SHALL OBTAIN A PERMIT COVERING THE NECESSARY OPENINGS AND COMPLY WITH THE CONDITIONS COVERING THE ISSUE OF SUCH PERMIT. THE CONTRACTOR SHALL OBTAIN DETAILS FROM THE LOCAL COUNCIL OR AUTHORITY AND CARRY OUT LIAISING AT NO EXTRA COST. PAVEMENT SURFACING INCLUDING REINSTATEMENTS SHALL BE UNDERTAKEN BY THE CONTRACTOR.

SITE MANAGEMENT

THE CONTRACTOR SHALL MAINTAIN ALL WORK SITES IN A SAFE, STABLE AND TRAFFICABLE CONDITION AT ALL TIMES.

THE CONTRACTOR SHALL RESTRICT ACTIVITIES TO THOSE AREAS DESIGNATED AS WORK AREAS UNDER THIS CONTRACT. AT NO TIME SHALL THE CONTRACTOR ENTER ADJOINING PROPERTIES OR CONTRACT AREAS ON THE SITE WITHOUT WRITTEN PERMISSION BY THE SITE SUPERINTENDENT.

THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL SHORING, PLANKING, AND STRUTTING, DE-WATERING DEVICES, BARRICADES, SIGNS, LIGHTS, ETC. NECESSARY TO KEEP WORKS IN A SAFE AND STABLE CONDITION AND FOR THE PROTECTION OF THE PUBLIC.

AS/NZ 4801 AND THE REQUIREMENTS OF THE RELEVANT AUTHORITIES SHALL BE COMPLIED WITH

THE CONTRACTOR WILL ADJUST ALL AFFECTED SERVICES COVERS TO MATCH NEW PAVEMENT LEVELS.

THE CONTRACTOR SHALL TRANSFER TBMS OUT OF THE CONSTRUCTION AREA PRIOR TO THE COMMENCEMENT OF WORKS.

THE CONTRACTOR WILL COORDINATE WORKS WITH THE RELEVANT PUBLIC TRANSPORT AUTHORITY PRIOR TO AND DURING THE CONSTRUCTION WORKS.

AT THE COMPLETION OF THE WORKS, THE SITE IS TO BE LEFT IN A CLEAN AND TIDY CONDITION TO THE SATISFACTION OF THE SUPERINTENDENT. ALL ADJOINING DISTURBED AREAS ARE TO BE REINSTATED TO "AS FOUND" CONDITIONS.

SITE CLEARING

THE SITE OF THE WORKS SHALL BE PREPARED BY STRIPPING ALL EXISTING TOPSOIL, FILL AND VEGETATION.

CLEAR THE SITE NECESSARY FOR THE CONSTRUCTION WORKS. CLEARING WILL INCLUDE BUT IS NOT LIMITED TO:

- a. VEGETATION SUCH AS WEEDS, ROOTS, BRUSH, STUMPS, AND OTHER MATERIALS;
- b. TREES AND OTHER FLORA;
- c. ROCKS, FLOATERS AND OTHER SURFACE BOULDERS;
- d. REFUSE AND OTHER MATERIALS; AND
- e. OBSTRUCTIONS, BUT NOT EXISTING OPERATIONAL SERVICES WHICH WILL BE REMOVED BY A LICENSED DEMOLITIONS CONTRACTOR.

CLEARING WILL INCLUDE SURFACES COVERED BY THE WORKS

AREA, STOCKPILE AREAS AND AREAS USED FOR PERMANENT AND TEMPORARY ROADS OR HARDSTAND/LAYDOWN AREAS.

CLEARING WILL INCLUDE HARD OR FOREIGN OBJECTS ARISING FROM THE EXCAVATIONS WHICH ARE LOCATED WITHIN 1m OF ANY PART OF THE WORKS.

SETTING OUT

ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (U.N.O.).

ALL LEVELS ARE EXPRESSED IN METRES, DIMENSIONS IN MILLIMETRES AND RADII IN METRES (U.N.O.).

THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT BY A REGISTERED SURVEYOR AND CONFIRM THE SETOUT.

FILL & COMPACTION NOTES

FOUNDATION MATERIALS DEEMED AS UNSUITABLE BY THE SUPERINTENDENT SHALL BE REMOVED AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.

COMPACT THE SUBGRADE TO 98% MDD AS PER AS/NZ1289-1993. THE EXPOSED SUBGRADE SHOULD BE PROOF ROLLED WHERE POSSIBLE TO DETECT ANY SOFT OR WET AREAS WHICH SHOULD BE LOCALLY EXCAVATED AND BACKFILLED WITH SELECTED MATERIAL.

SELECT ENGINEERED FILL SHALL BE TO THE GEOTECHNICAL REPORT'S RECOMMENDATIONS AND PLACED IN A CONTINUOUS MANNER, APPROXIMATELY 200mm LOOSE THICKNESS, AND SHALL BE COMPACTED TO ACHIEVE NOT LESS THAN 98% MDD. THE TOP 300mm LAYER SHALL ACHIEVE A COMPACTION NOT LESS THAN 98% MDD.

MOISTURE CONTENT OF SUBGRADE SHOULD BE 85-115% OF STANDARD OPTIMUM MOISTURE CONTENT

BUILDINGS, PLANT AND ROAD COMPACTION REQUIREMENTS

NOT LESS THAN 98% MDD

FOOTPATHS, SERVICE TRENCHES COMPACTION REQUIREMENTS

NOT LESS THAN 95% MDD

IMPORTANT

THE TOP 300mm LAYER OF THE PAVEMENTS SHALL ACHIEVE A COMPACTION NOT LESS THAN 98% SMDD.

WHERE POSSIBLE, SUBGRADE PREPARATION SHOULD BE CONDUCTED DURING DRY WEATHER CONDITIONS. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS SUCH THAT ALL WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS, AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL.

WHERE REQUIRED, ENGINEERED FILL MATERIAL SHALL BE SAMPLED, TESTED, AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO USE.

ALL TESTING SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. TESTING AUTHORITY IN ACCORDANCE WITH THE PROJECT SPECIFICATION.

WHERE REQUIRED, EXISTING ONSITE SPOILS (MATERIAL) SHALL BE SAMPLED, TESTED, AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO REUSE IN NON-TRAFFICABLE ZONES.

ALL TESTING SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. TESTING AUTHORITY IN ACCORDANCE WITH THE PROJECT SPECIFICATION.

ALL IMPORTED STRUCTURAL FILL MATERIAL SHALL BE EITHER:

1. RIPPED SILTSTONE OR SANDSTONE (SEDIMENTARY ROCK)
2. CLASS 3 FCR COMPLIANT WITH VICROADS (SECTION 802)

ALL FILL MATERIAL TO HAVE PARTICLE SIZE NOM. 40mm OR LESS OR THROUGH THE FOLLOWING GUIDE:

(PLASTICITY INDEX) x (% PASSING 0.425mm) < 1000

REFER TO THE APPLICABLE GEOTECHNICAL REPORT FOR FURTHER DETAILS ON FOUNDATION AND SUBGRADE PREPARATION INSTRUCTIONS/RECOMMENDATIONS.

STORMWATER DRAINAGE

THE PROPOSED STORMWATER DRAINAGE SYSTEM IS DEEMED TO BE PROVISIONAL BASED ON THE AVAILABLE SURVEY INFORMATION. THE CONTRACTOR SHALL VERIFY ALL STORMWATER PIT LEVELS AND INVERTS PRIOR TO THE COMMENCEMENT OF WORKS.

THE PROPOSED STORMWATER LEGAL POINT OF DISCHARGE HAS BEEN NOMINATED BY LOCAL COUNCIL. THE CONTRACTOR SHALL ALLOW FOR THE NECESSARY SURVEY WORKS TO CONFIRM THE LOCATION AND LEVELS OF THE EXISTING DRAINAGE SYSTEM PRIOR TO THE COMMENCEMENT OF WORKS, AND SATISFY THEMSELVES THAT THE PROPOSED DRAINAGE SYSTEM WILL FUNCTION AS INTENDED.

NO WORKS SHALL CAUSE PONDING OF STORMWATER ON UPSTREAM PROPERTIES OR CONCENTRATE RUNOFF ONTO DOWNSTREAM PROPERTIES.

ALL 450mmØ DRAINAGE PIPES AND LARGER SHALL BE MINIMUM CLASS 2 REINFORCED CONCRETE (SRC) PIPES OF APPROVED SPIGOT AND SOCKET TYPE WITH RUBBER RING JOINTS (R.R.J) **UNLESS NOTED OTHERWISE**. ALL DRAINAGE PIPES UP TO AND INCLUDING 225mmØ TO BE MIN. SEWER CLASS uPVC WITH RUBBER RING JOINTS **UNLESS NOTED OTHERWISE**.

ALL PIPE JUNCTIONS UP TO AND INCLUDING 450mmØ AND TAPERS SHALL BE VIA PURPOSE MADE FITTINGS.

THE MINIMUM GRADE FOR STORMWATER DRAINS SHALL BE 1.0% (U.N.O.)

THE CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION TO DISSIMILAR WORK.

ALL CONNECTIONS TO EXISTING DRAINAGE SHALL BE MADE IN A PROFESSIONAL TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.

WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND PAVEMENTS, UNSLOTTED uPVC SEWER CLASS PIPES SHALL BE USED.

STORMWATER PITS SHALL BE INSTALLED TO THE DIMENSIONS AS NOTED ON THE CIVIL DRAINAGE SCHEDULE OR PER AS3500.3.2015 TABLE 7.5.2.1, WHICHEVER IS THE GREATER.

PIT DEPTHS GREATER THAN 0.9m IN DEPTH TO BE FITTED WITH APPROPRIATE STEP IRONS.

STORMWATER QUALITY TREATMENT UNITS AND SYSTEMS (WHERE SPECIFIED) SHALL BE INSTALLED STRICTLY IN ACCORDANCE TO THE MANUFACTURER'S INSTRUCTIONS.

AT THE COMPLETION OF THE CONSTRUCTION WORKS, THE CONTRACTOR SHALL INSPECT AND CLEAN THE PROPOSED ROOF DOWNPIPES, SUBSURFACE PIPES AND STORMWATER PITS. ALL DEBRIS AND TRASH SHALL BE REMOVED FROM PIPES, PITS AND RELATED STRUCTURES PRIOR TO THE HANDOVER OF WORKS.

UTILITY SERVICES

THE LOCATIONS OF ALL UNDERGROUND SERVICES MAY NOT HAVE BEEN SHOWN ON THE CIVIL DRAWINGS. NORMAN DISNEY & YOUNG CANNOT GUARANTEE THE PRESENCE, ABSENCE OR THEIR LOCATIONS OF SERVICES, AND CANNOT ACCEPT RESPONSIBILITY OR LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN ARISING FROM ANY CAUSE WHATSOEVER.

THE CONTRACTOR SHALL ALLOW FOR THE NECESSARY BURIED SERVICES DETECTION WORKS AND CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF EXCAVATION WORKS ON SITE.

THE CONTRACTOR SHALL ALLOW FOR THE NECESSARY AND APPROPRIATE SERVICES PROTECTION WORKS AND MEASURES TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF WORKS.

WHERE COVER (TO THE TOP OF SERVICE UTILITY) IS BELOW 0.50m FROM EXCAVATED SURFACE, PROVIDE MIN 20mm STEEL PLATE OR APPROVED EQUIVALENT PROTECTION

ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT AND CLEARANCES TO BE OBTAINED FROM THE RELEVANT SERVICES AUTHORITY.

PAVEMENT: CONCRETE (RIGID)

CARRY OUT CONCRETE WORK IN ACCORDANCE WITH AS/NZ 3600 AND THE PROJECT SPECIFICATIONS.

THE CONTRACTOR SHALL VERIFY ALL SETOUT AND DIMENSIONS PRIOR TO THE COMMENCEMENT OF WORKS.

PREPARE THE SUBGRADE AS PER THE EARTHWORKS NOTES

CONCRETE CHARACTERISTICS

KERBS, PITS, ETC.

- a. COMPRESSIVE STRENGTH = 25MPa (MIN.)
- b. SLUMP = 80mm
- c. MAX AGGREGATE SIZE = 20mm

FOOTPATH

- a. COMPRESSIVE STRENGTH = 25MPa (MIN.)
- b. SLUMP = 80mm
- c. MAX AGGREGATE SIZE = 20mm

LOADING BAYS

- a. COMPRESSIVE STRENGTH = 32MPa (MIN.)
- b. SLUMP = 65mm
- c. MAX AGGREGATE SIZE = 20mm

NO "BRECCIA" TYPE AGGREGATE SHALL BE USED.

CEMENT TO BE TYPE SL TO AS/NZ3972 (U.N.O.).

MAXIMUM CONCRETE SHRINKAGE TO BEej600m AS PER AS/NZ1012.

NO ADMIXTURES SHALL BE USED WITHOUT PRIOR APPROVAL FROM THE CIVIL ENGINEER.

A VIBRATOR SHALL BE USED FOR ALL COMPACTION OF CONCRETE.

CONCRETE SHALL BE CURED USING AN APPROVED METHOD. CURING COMPOUNDS SHALL COMPLY WITH AS/NZ 3799.

CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE CIVIL ENGINEER.

ALL CONCRETE USED ON SITE SHALL BE SUBJECT TO PROJECT CONTROLS, SAMPLE, AND TESTING TO AS/NZ 3600.

THE CONCRETE SHALL BE SCREEDED TO THE REQUIRED CROSS SECTION PROFILE, FREE OF DEPRESSIONS AND HIGH AREAS TO SATISFY THE REQUIREMENTS OF THE INITIAL FINISH.

FINAL FINISHING SHALL INCLUDE THE FLOATING AND TEXTURING OF THE PAVEMENT AND SHALL COMMENCE ONLY AS SOON AS THE WATER SHEEN HAS LEFT THE PAVEMENT SURFACE AND NOT IN ANY AREA WHERE THERE IS FREE SURFACE WATER.

THE COVER TO REINFORCEMENT FOR CORROSION PROTECTION SHALL BE AS DETAILED OR AS A MINIMUM, 40mm TO TOP, AND 50mm TO BOTTOM.

PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE COVER TO THE REINFORCEMENT.

THE REINFORCEMENT SHOWN IN THE DRAWINGS ARE

REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

SPICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITION SHOWN. THE WRITTEN APPROVAL OF THE CIVIL ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPlice.

WELDING OF REINFORCEMENT SHALL BE PERMITTED ONLY AFTER APPROVAL BY THE CIVIL ENGINEER.

SITE BENDING OF Y OR N-BARS SHALL BE DONE COLD WITH POWER OR MECHANICAL BENDING TOOLS.

FABRIC SHALL BE EXTENDED TO 70mm WITH A CROSSWIRE ONTO WALLS (U.N.O.).

JOINTS SHALL BE SAWN AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING. IF AN UNPLANNED CRACK OCCURS, THE CONTRACTOR SHALL REPLACE THE WHOLE SLAB EITHER SIDE OF THE PAVEMENT UNLESS DIRECTED OTHERWISE BY THE CIVIL ENGINEER.

DOWELS AND TIE BARS SHALL BE AS THE FOLLOWING:

- a. STRAIGHT
- b. TP THE LENGTH SPECIFIED
- c. CLEAR AND FREE FROM MILL SCALE, RUST AND OIL
- d. SAWN TO LENGTH NOT CROPPED DOWELS ONLY
- e. HOT DIP GALVANISED AFTER SAWING TO LENGTH

THE DIMENSIONS OF THE SEALANT RESERVOIR WILL BE DEPENDENT OF THE SEALANT TYPE ADOPTED.

LONGITUDINAL, ISOLATION AND CONSTRUCTION JOINTS SHALL BE LOCATED AS SPECIFIED.

PROVIDE ISOLATION JOINTS AROUND ALL STORMWATER PITS AND STRUCTURES.

PROVIDE RE-ENTRANT BARS ARRANGEMENT AROUND ALL STORMWATER PITS WITHIN CONCRETE PAVEMENTS WHERE NOMINATED (U.N.O.).

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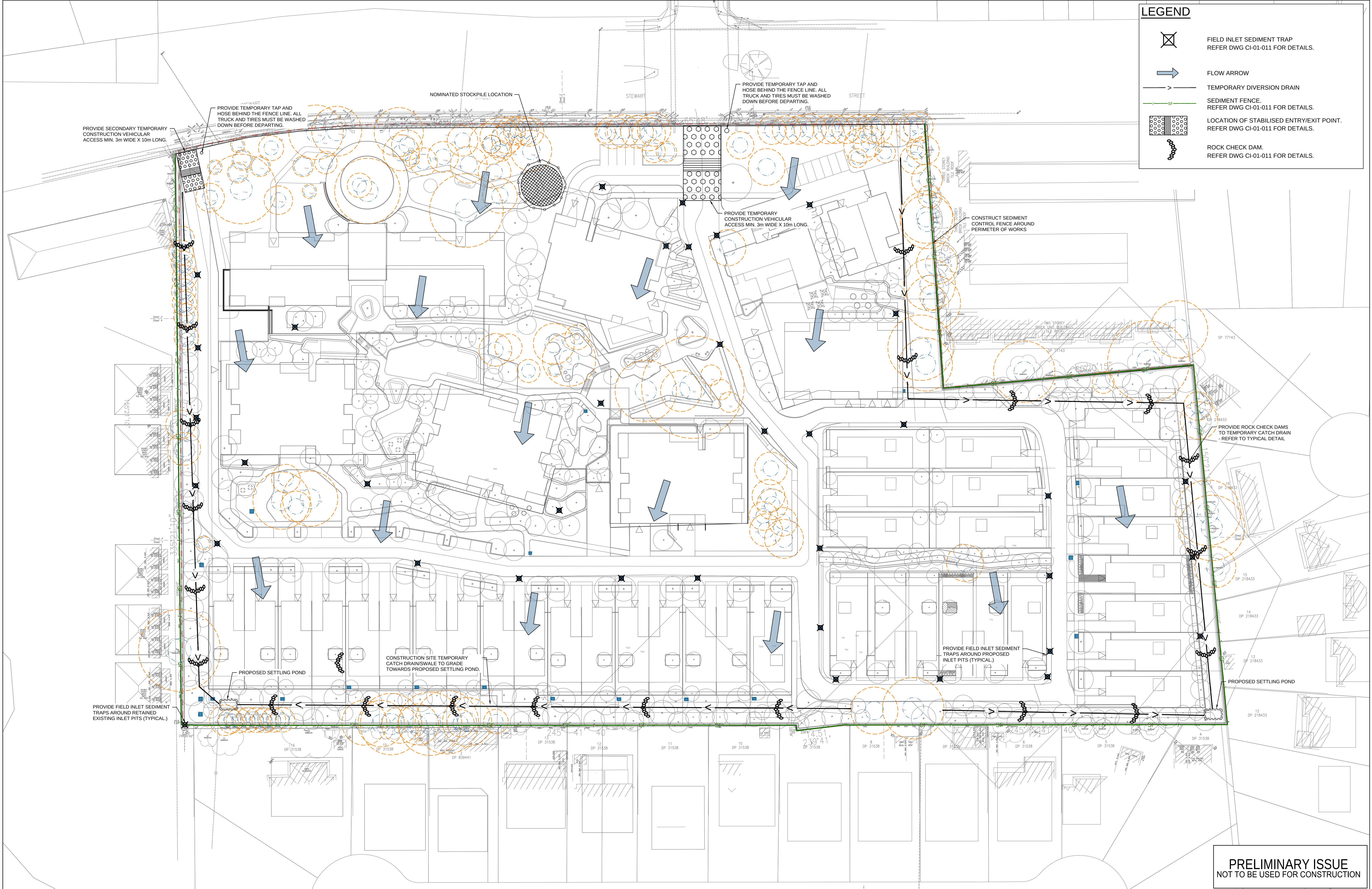
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Project **LOTTIE STEWART SENIORS LIVING**
40 STEWART STREET
ERMINGTON NSW 2117
Title **EXISTING FEATURES PLAN**

Scale @ A1 1:500	Project Commencement NOV. 2025	Drawn S.C	Design S.C	Project No. 0120.0041441.0001	Drawing No. CI-01-0100	Revision P4
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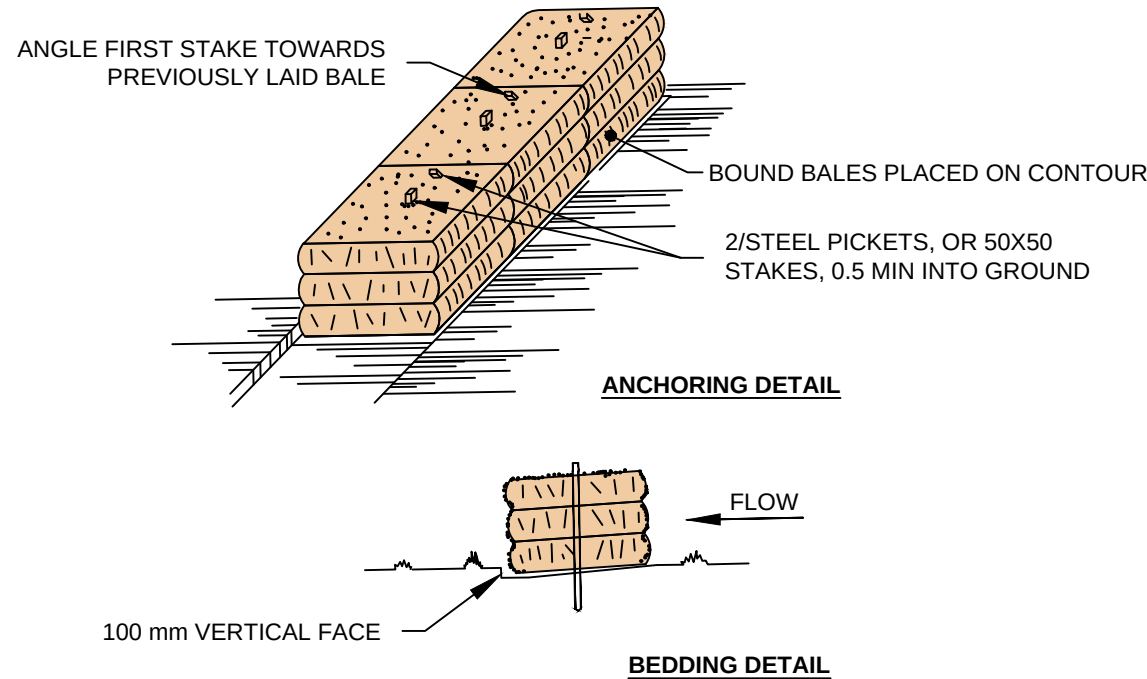


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EROSION AND SEDIMENT CONTROL

1. CONSTRUCTION OF ALL SEDIMENT MANAGEMENT DEVICES SHALL BE COMPLETED AND EFFECTIVE PRIOR TO:
2. ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE IN ACCORDANCE WITH THE 'BEST PRACTICE EROSION AND SEDIMENT CONTROL' - INTERNATIONAL EROSION CONTROL ASSOCIATION (AUSTRALASIA), NOVEMBER 2008.
3. ALL SEDIMENT MANAGEMENT DEVICES ARE TO REMAIN IN PLACE UNTIL WRITTEN NOTICE FROM THE COUNCIL ENGINEER.
4. BOTH TEMPORARY AND PERMANENT SEDIMENT MANAGEMENT DEVICES SHALL BE MAINTAINED AT A SUITABLE LEVEL/CONDITION THROUGHOUT THE CONSTRUCTION AND MAINTENANCE PERIOD. SEDIMENT BUILD UP IS TO BE REMOVED FROM THESE DEVICES AT REGULAR INTERVALS, ESPECIALLY IN WET WEATHER TO MAINTAIN THEIR EFFECTIVENESS. SEDIMENT FENCES ARE TO BE CLEANED OUT WHEN % CAPACITY IS REDUCED BY 25.
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION APPROVAL IS TO BE OBTAINED FROM THE COUNCIL ENGINEER FOR THE LOCATION OF THE SITE ACCESS POINT WASH DOWN AREA WHICH IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
6. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DEFICIENT OR FAILED IN SERVICE, DUE TO UNFORESEEN CIRCUMSTANCES, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL APPROVED EROSION PLANS. SUCH ADDITIONS ARE TO BE APPROVED BY THE COUNCIL ENGINEER.
7. THE INSTALLATION, REMOVAL, RELOCATION OR MODIFICATION TO EROSION AND SEDIMENT CONTROL DEVICES MAY BE MADE BY THE COUNCIL ENGINEER, IF DEEMED NECESSARY AND RELEVANT.



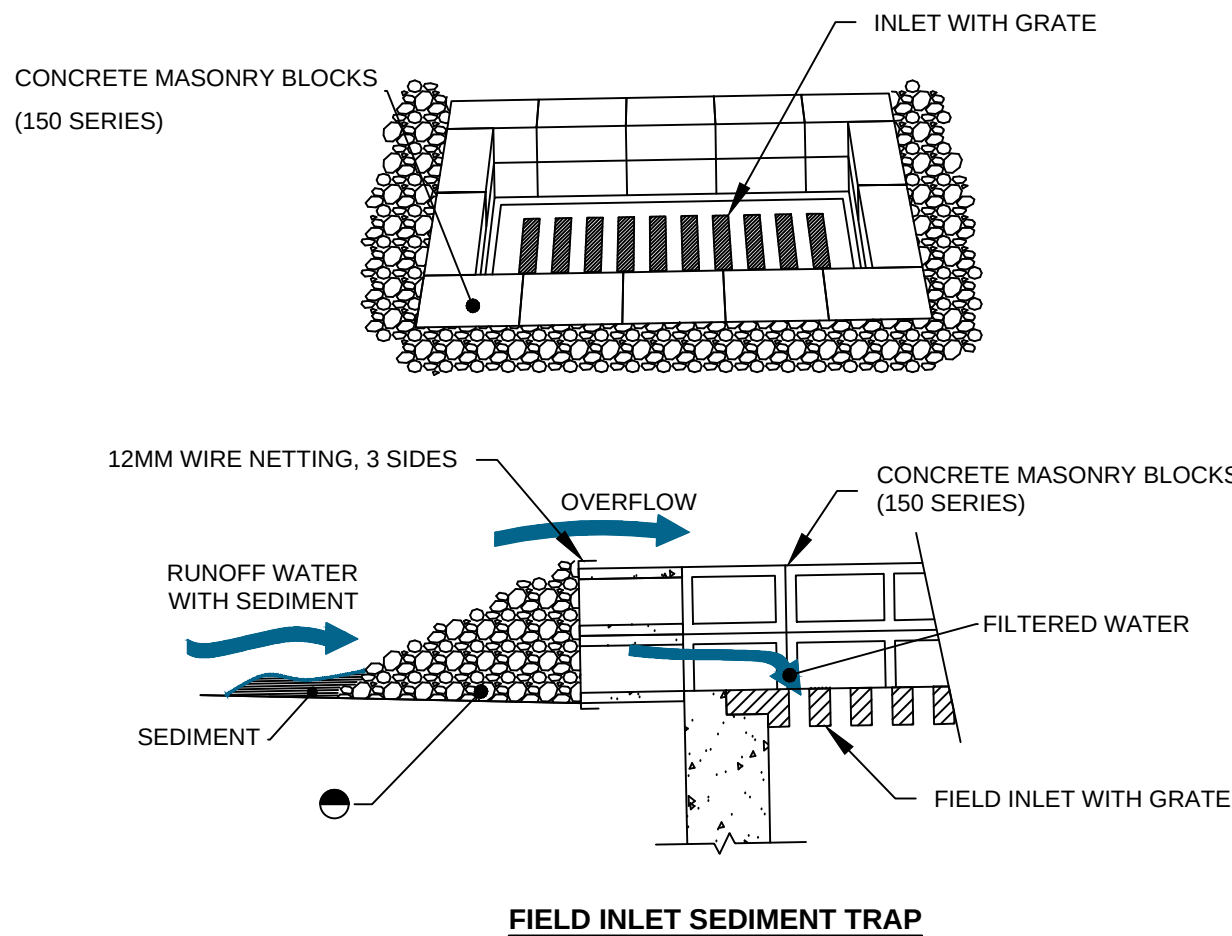
STRAW BALE BANK SEDIMENT CONTROL

STRAW BALE BANKS

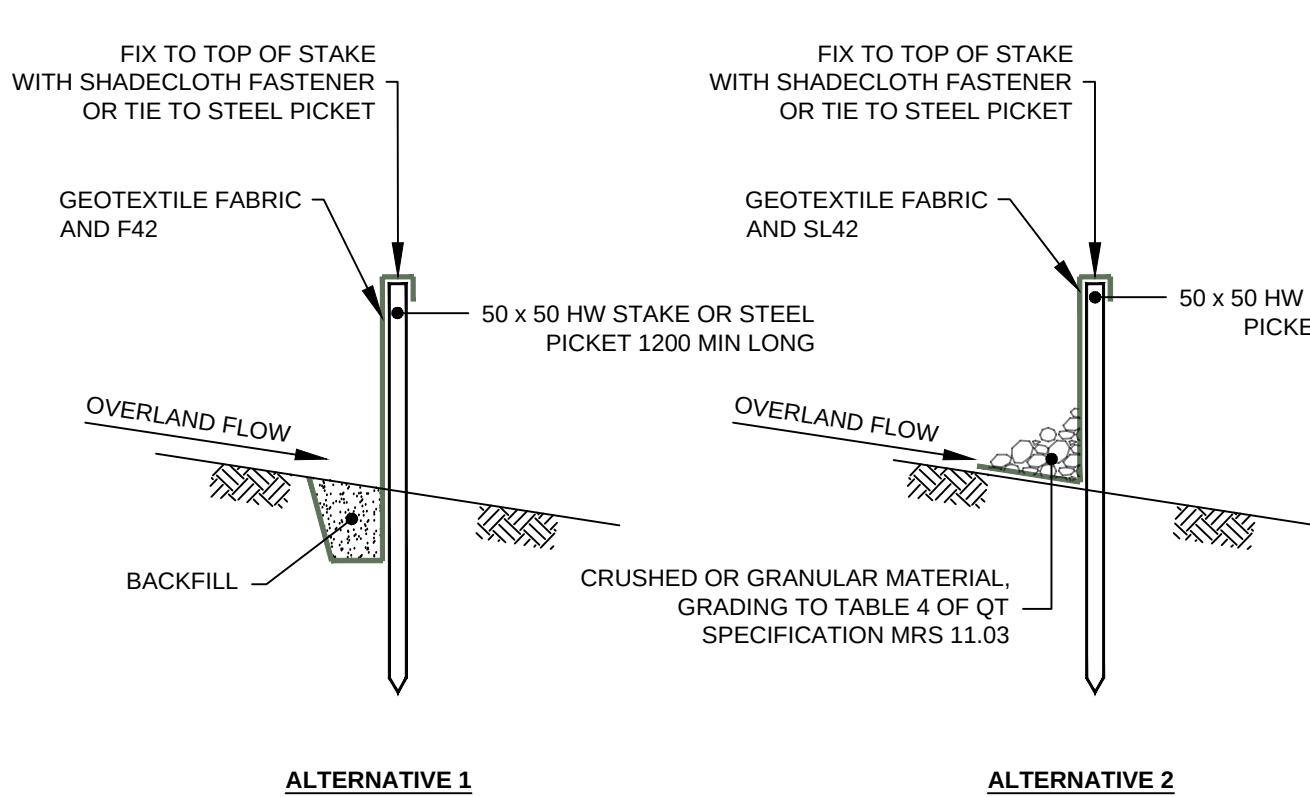
1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR, IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 100 mm ON THE DOWNSTREAM SIDE AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE WITH EITHER TWO STAKES OR STEEL PICKETS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER.
4. INSPECTIONS SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED. REPLACE AT LEAST 3 MONTHLY.

LEGEND:

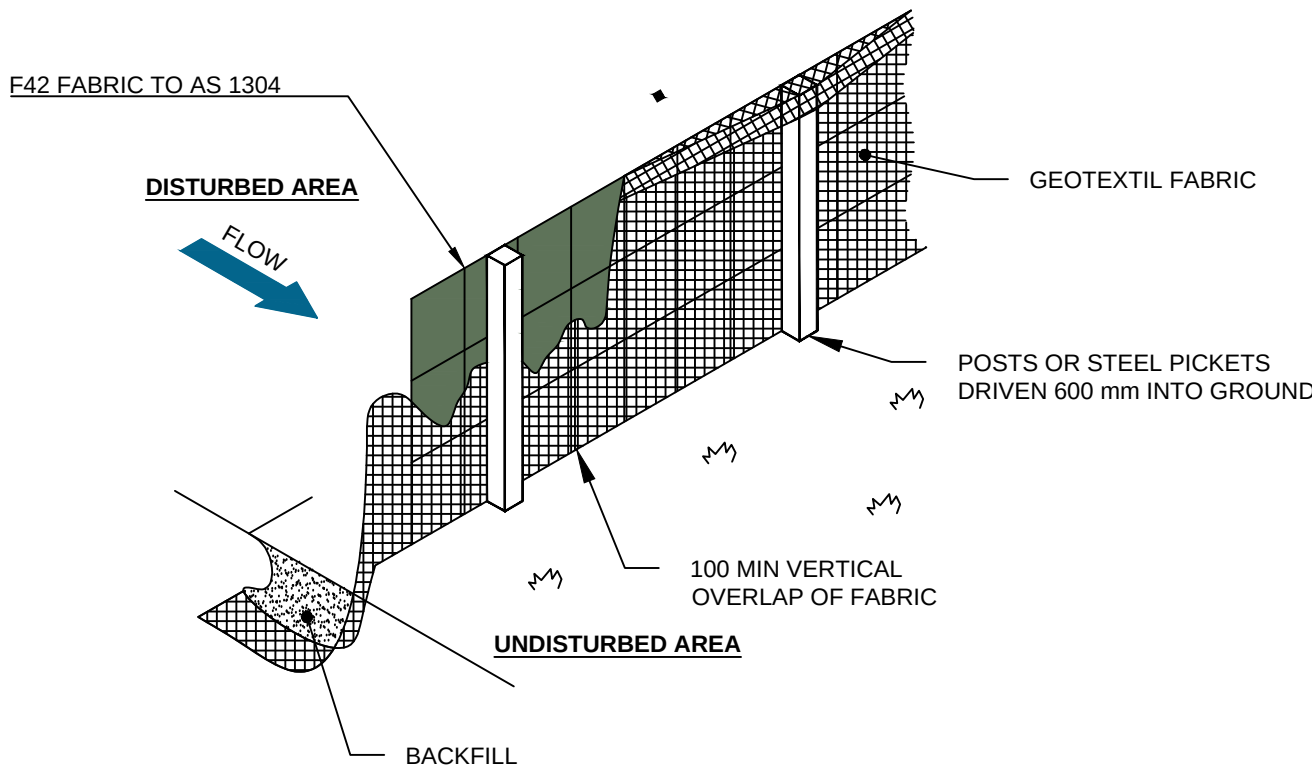
- UNBOUND PAVEMENT MATERIAL (GRAVEL)



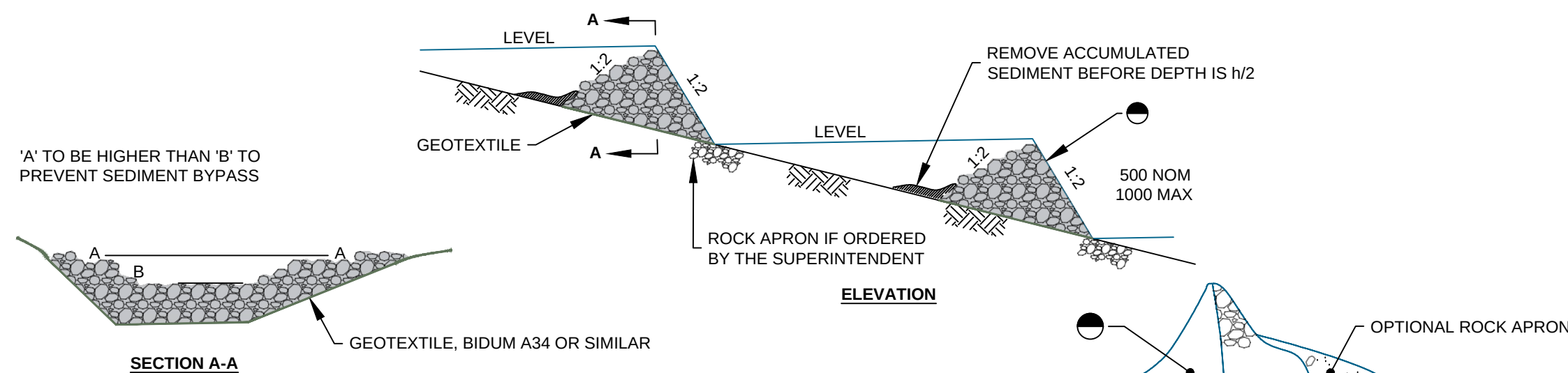
FIELD INLET SEDIMENT TRAP



TYPICAL LAYOUT ACROSS GRADE
POINTS A AT SAME ELEVATION



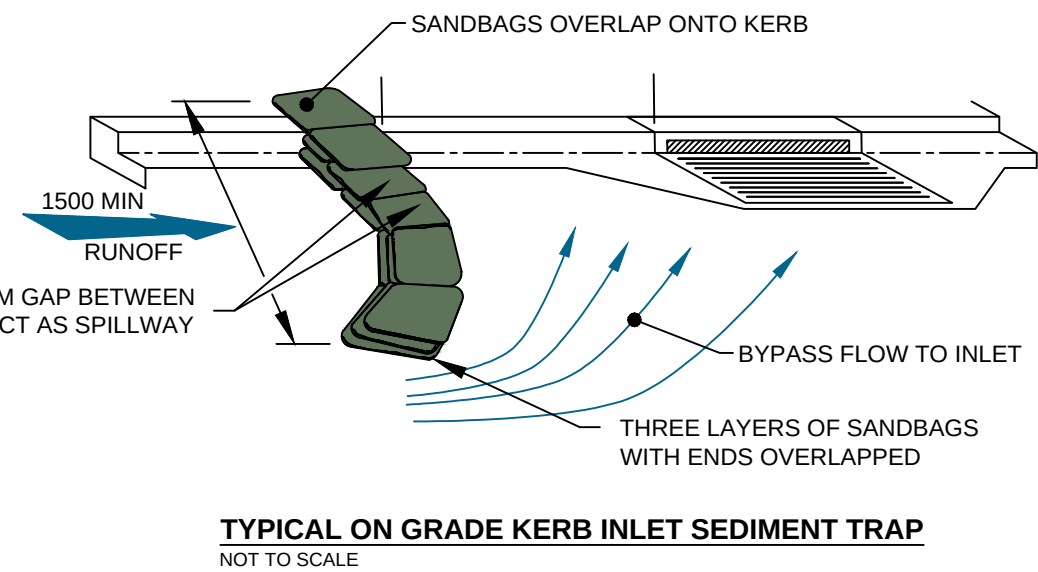
SEDIMENT FENCE ELEVATION
NOT TO SCALE



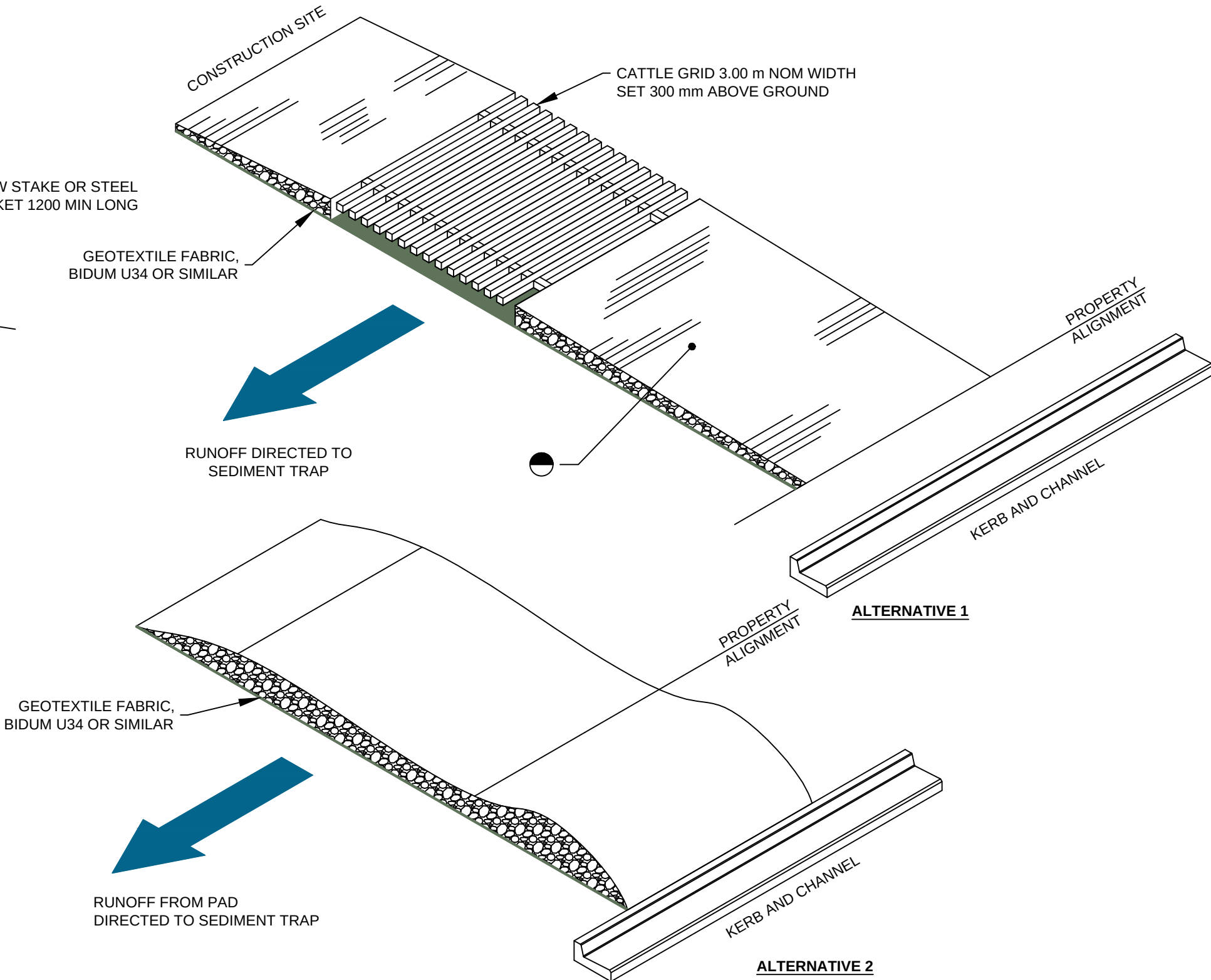
CHECK DAMS FLOW CONTROL

CHECK DAMS

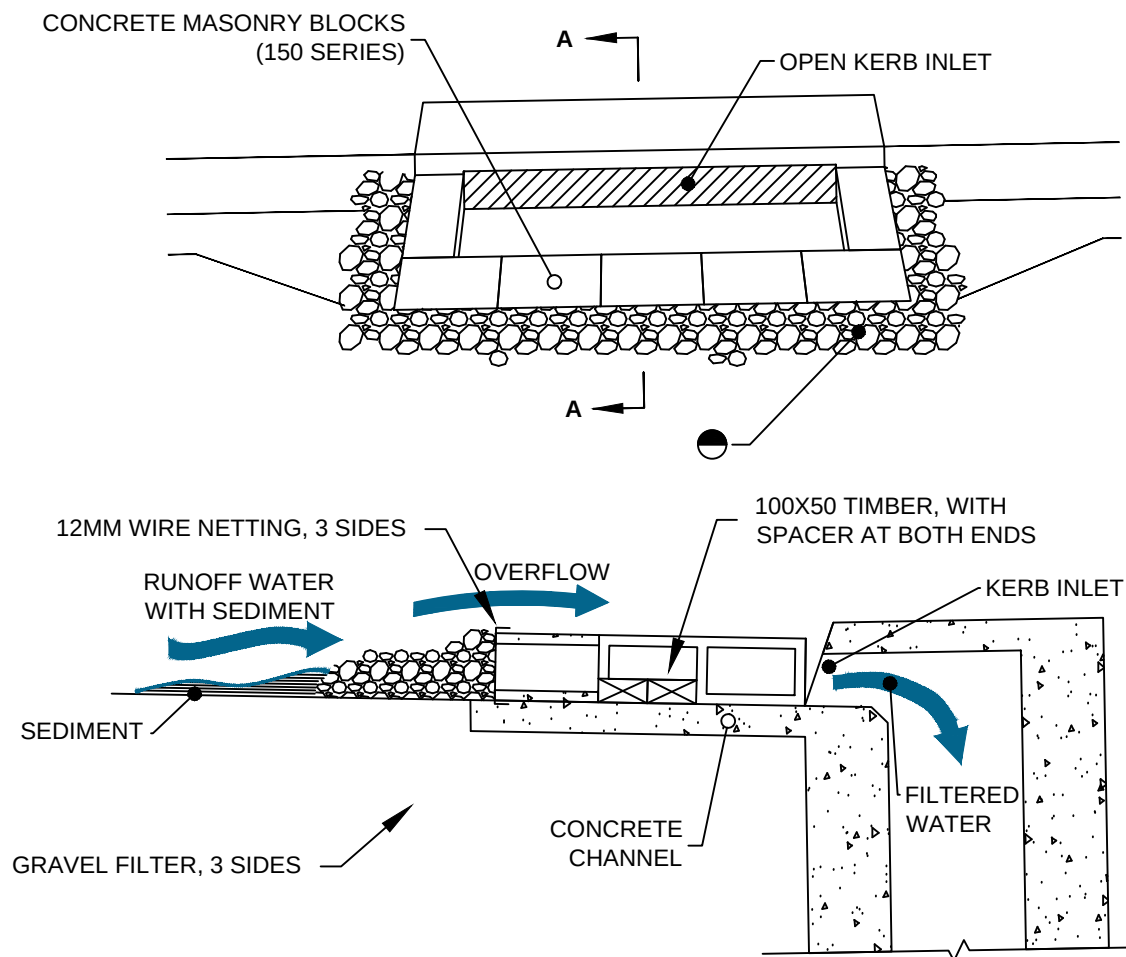
1. CATCHMENT AREA LIMITED TO 4 ha.
2. USE IN MINOR OPEN DRAINS ONLY, (VELOCITY CONTROL). SEDIMENT COLLECTION IS A SECONDARY PURPOSE.



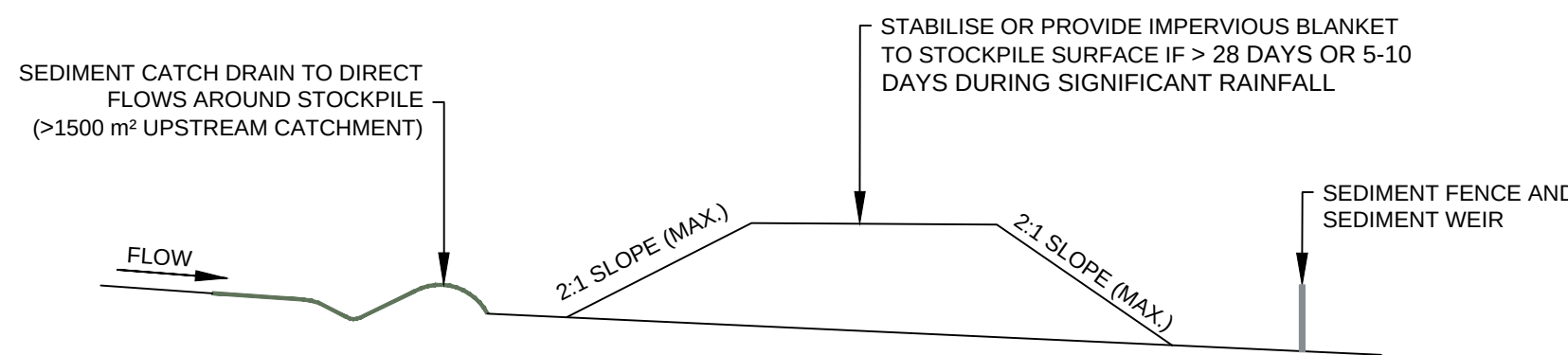
TYPICAL ON GRADE KERB INLET SEDIMENT TRAP
NOT TO SCALE



TEMPORARY CONSTRUCTION ENTRY / EXIT SEDIMENT TRAP



SECTION A-A
SAG INLET SEDIMENT TRAP
A STABILISED BYPASS 'OVERLAND FLOW PATH' SHOULD EXIST ADJACENT TO INLET IN GENUINE SAGS



TYPICAL STOCK PILE DETAILS
NOT TO SCALE

STOCKPILE CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

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P2	PRELIMINARY ISSUE	11.03.2026						
P3	DRAFT SSDA	20.03.2026						
P4	SSDA SUBMISSION	25.03.2026						

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Project		LOTTIE STEWART SENIORS LIVING				Cst 10 Version 2024	
		40 STEWART STREET ERMINGTON NSW 2117					
Title		EROSION & SEDIMENT CONTROL DETAILS				Drawing No.	
						Revision	
Scale @ A1	Project Commencement	Drawn	Design	Project No.	CI-01-0111		P4
AS SHOWN	NOV. 2025	S.C	S.C	0120.0041441.0001			



Rev		Description	Date	Rev	Description	Date	Rev	Description	Date
P1		PRELIMINARY ISSUE	23.02.2026						
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Project

LOTTIE STEWART SENIORS LIVING

40 STEWART STREET

ERMINGTON NSW 2117

Title

BULK EARTHWORKS

OVERALL PLAN

Scale @ A1

1:500

Project Commencement

NOV. 2025

Drawn

S.C

Design

S.C

Project No.

0120.0041441.0001

Drawing No.

CI-01-0400

Revision

P4

N

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S

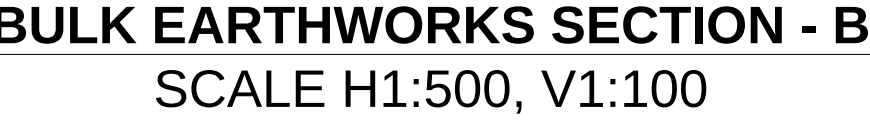
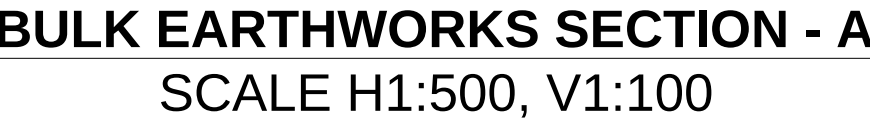
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Civil 3D

Version 2024

DRAWING

IN CLOUD

[illegible]

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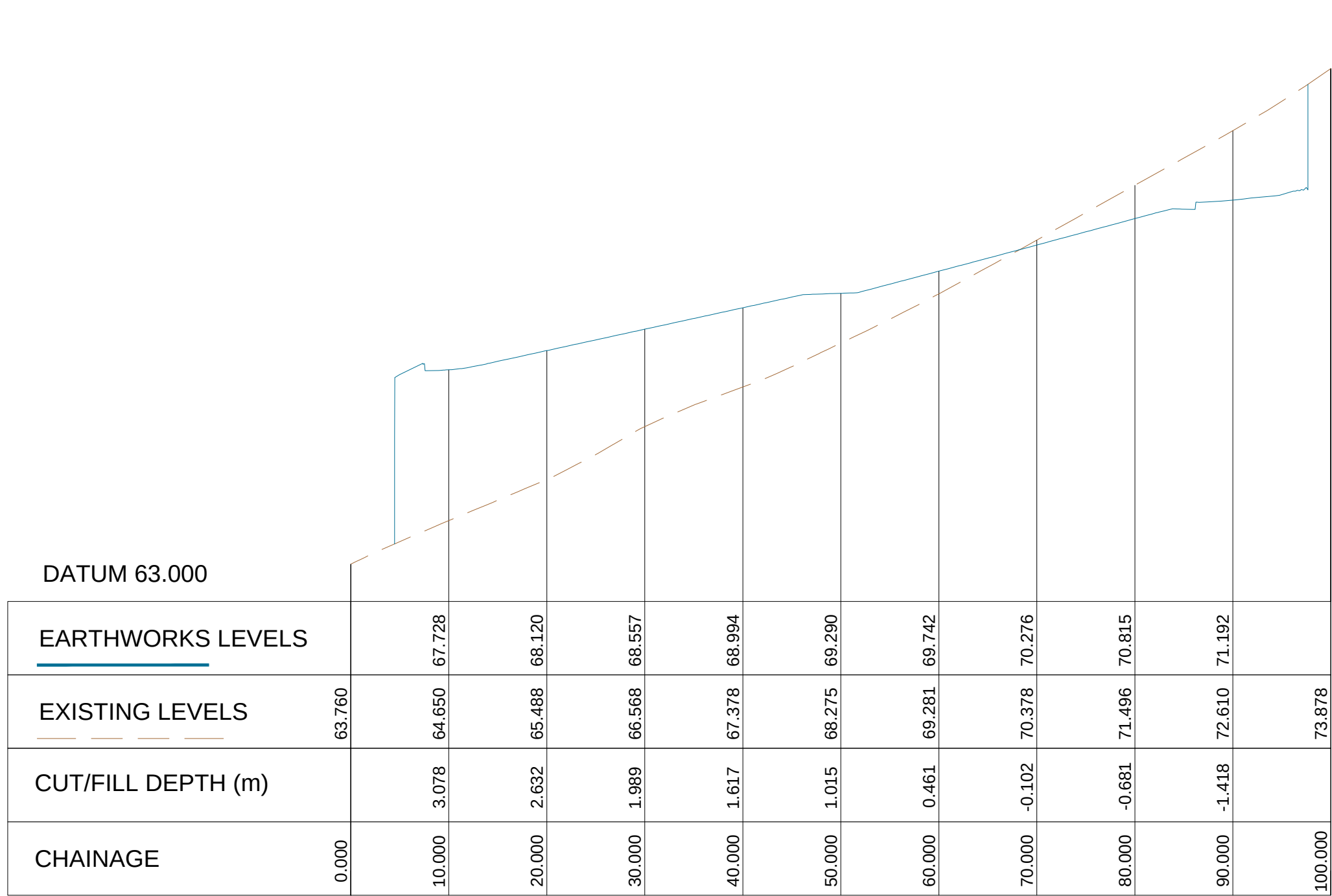
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Title	BULK EARTHWORKS SECTIONS SHEET 1

Civil 3D
Version 2024

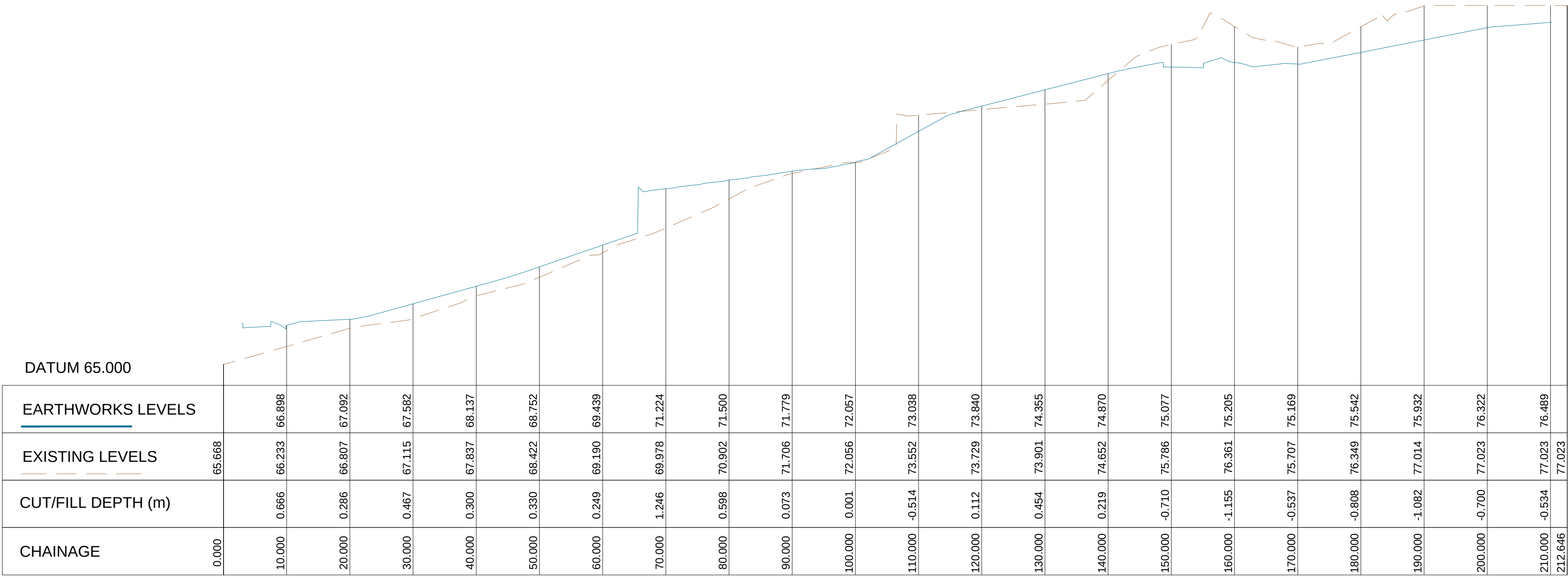
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IN COLOUR

Revision

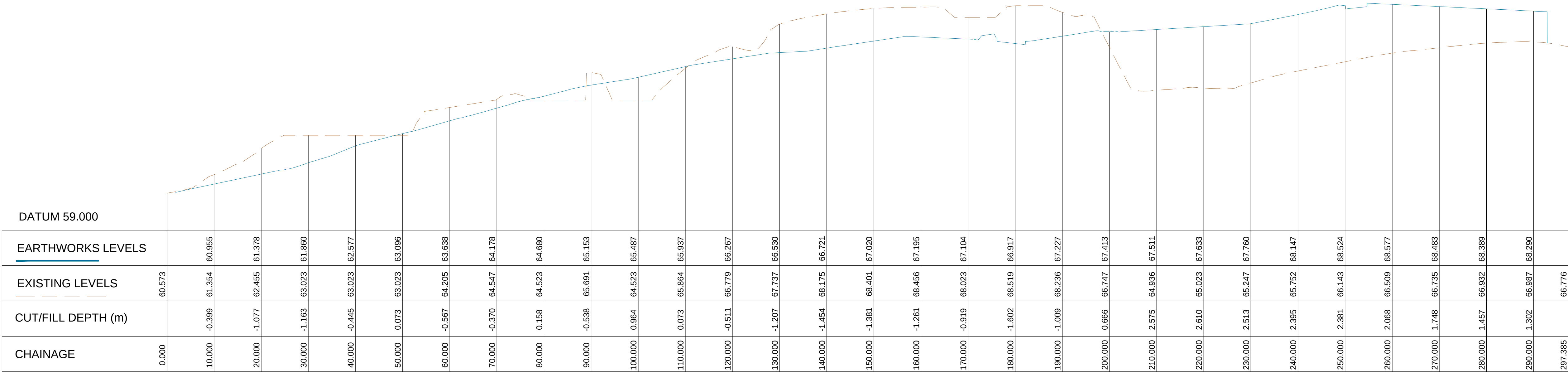
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BULK EARTHWORKS SECTION - C
SCALE H1:500, V1:100



BULK EARTHWORKS SECTION - D
SCALE H1:500, V1:100



BULK EARTHWORKS SECTION - E
SCALE H1:500, V1:100

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Project

Lottie Stewart Seniors Living

40 Stewart Street
Ermington NSW 2117

Title

Bulk Earthworks Sections
Sheet 2

Scale @ A1

1:500

Project Commencement

NOV. 2027

Drawn

S.C

Design

S.C

Project No.

0120.0041441.0001

Drawing No.

CI-01-0411

Revision

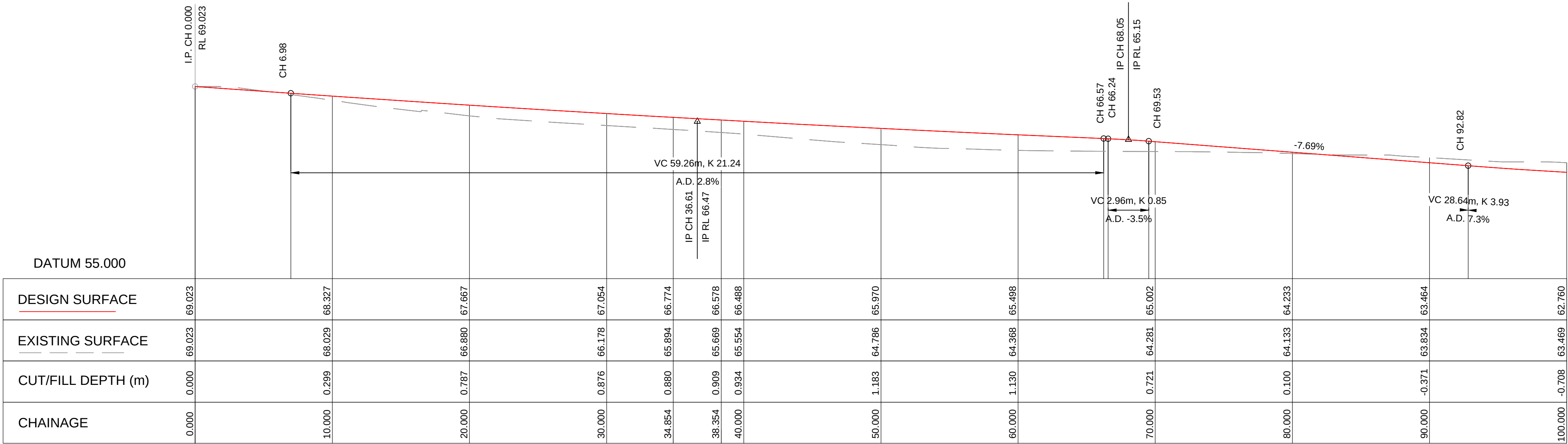
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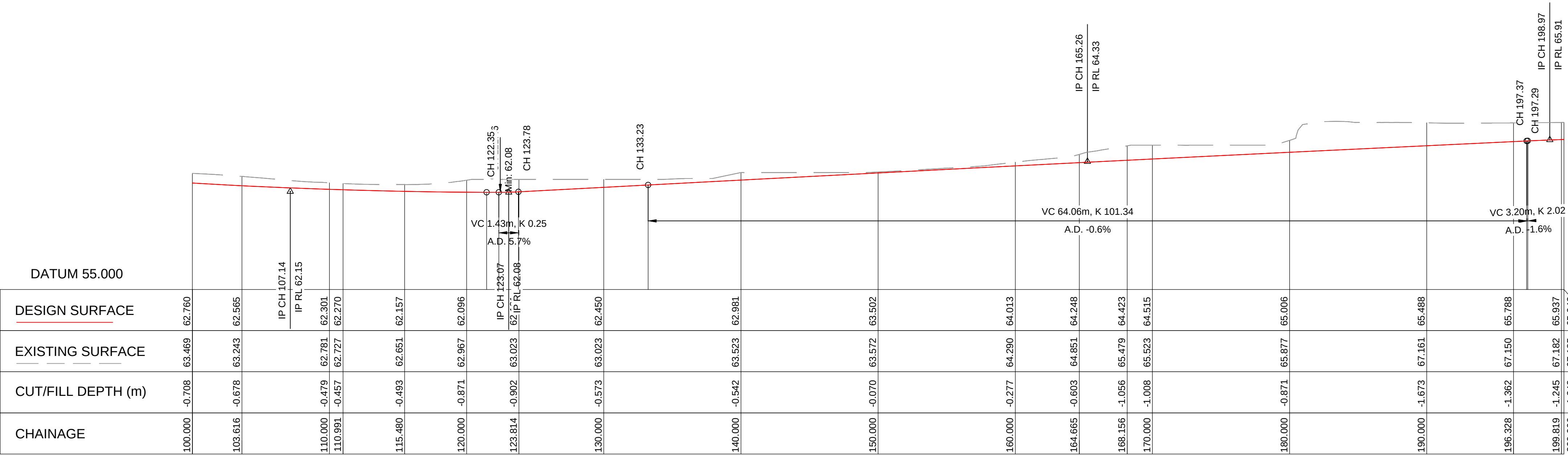
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Project				LOTTIE STEWART SENIORS LIVING 40 STEWART STREET ERMINGTON NSW 2117		Cx1 ID Version 2024  DRAWING IN COLOUR	
Title				ROADWORKS OVERALL PLAN		Drawing No. _____ Revision _____	
Scale @ A1 1:500		Project Commencement NOV. 2025		Drawn S.C		Design S.C	
Project No. 0120.0041441.0001				CI-01-1010		P4	



LONGITUDINAL SECTION - CL-1
SCALE H1:200, V1:200



LONGITUDINAL SECTION - CL-1
SCALE H1:200, V1:200

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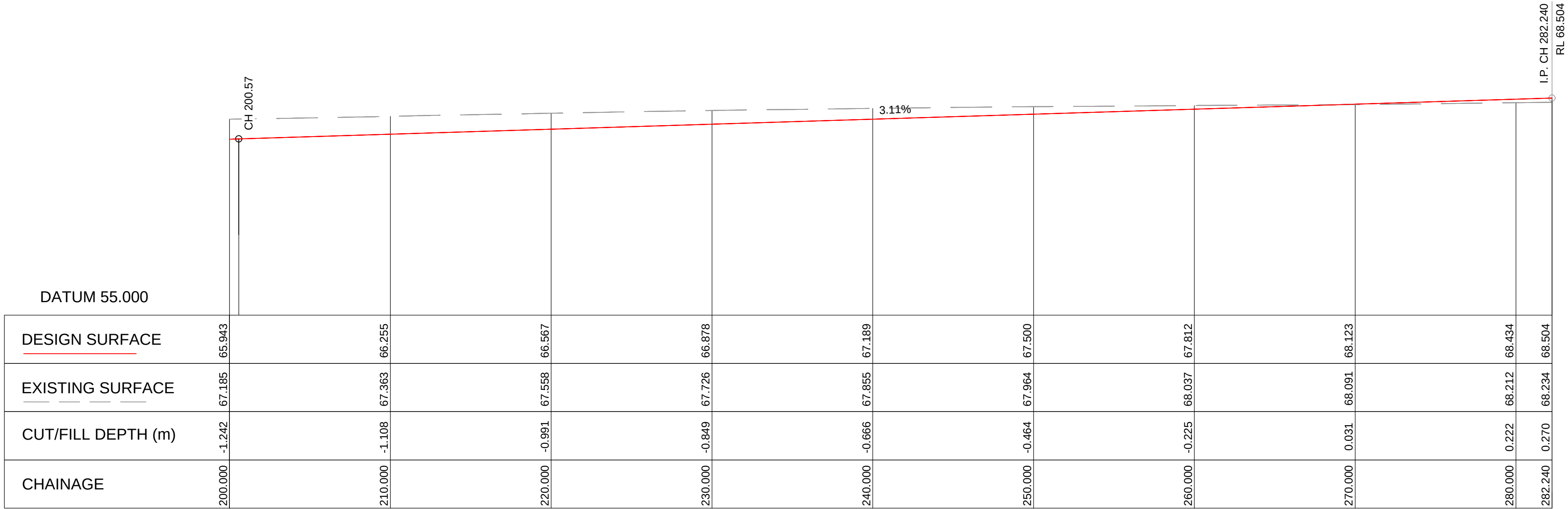
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P1	PRELIMINARY ISSUE	23.02.2026						
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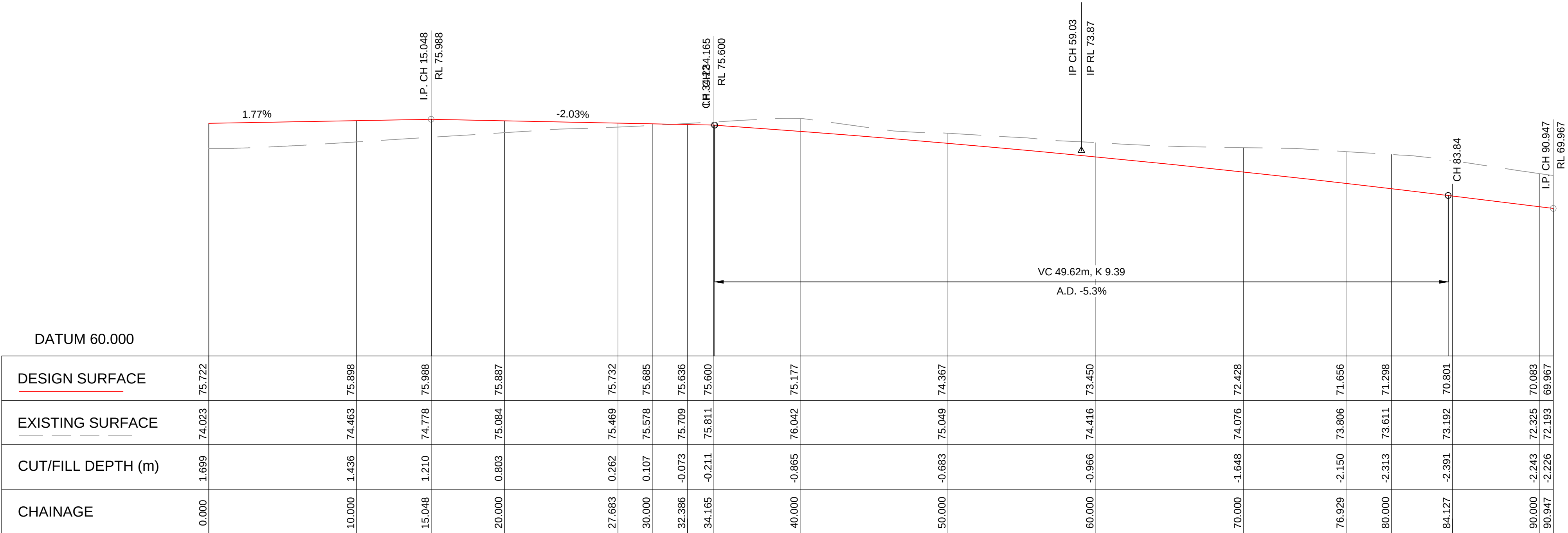
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Project	LOTTIE STEWART SENIORS LIVING 40 STEWART STREET ERMINGTON NSW 2117				Client ID Version 2024
Title	ROADWORKS LONG SECTIONS SHEET 1				DRAWING IN COLOUR
Scale @ A1	Project Commencement	Drawn	Design	Project No.	Drawing No.
AS SHOWN	NOV. 2025	S.C	S.C	0120.0041441.0001	CI-01-1011
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LONGITUDINAL SECTION - CL-1
SCALE H1:200, V1:200



LONGITUDINAL SECTION - CL-2
SCALE H1:200, V1:200

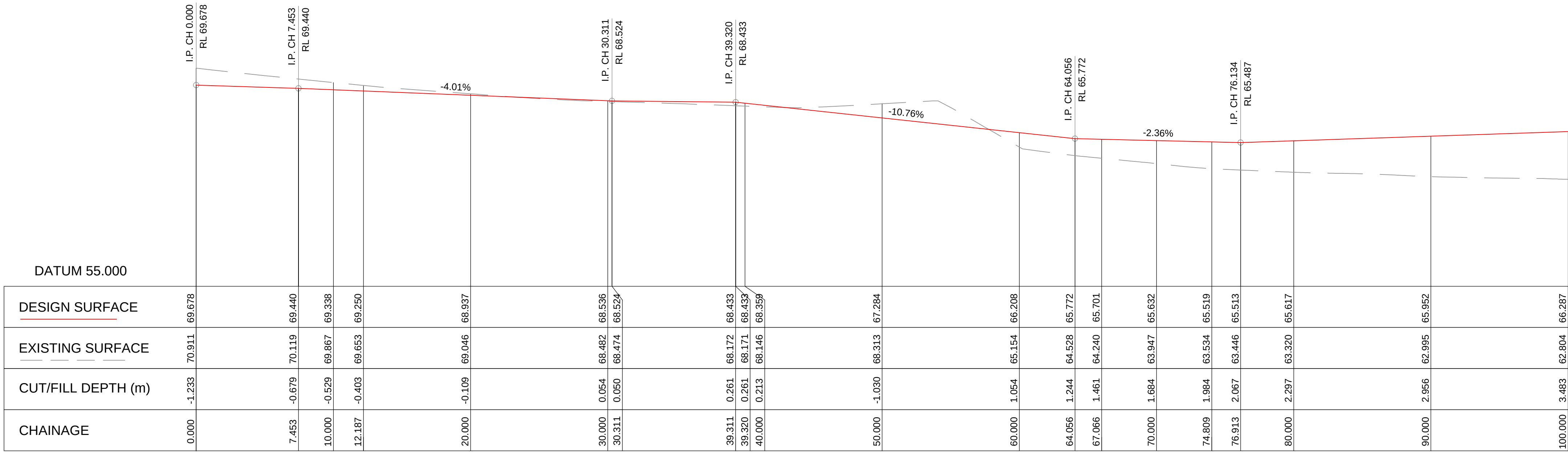
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P3	DRAFT SSDA	20.03.2026						
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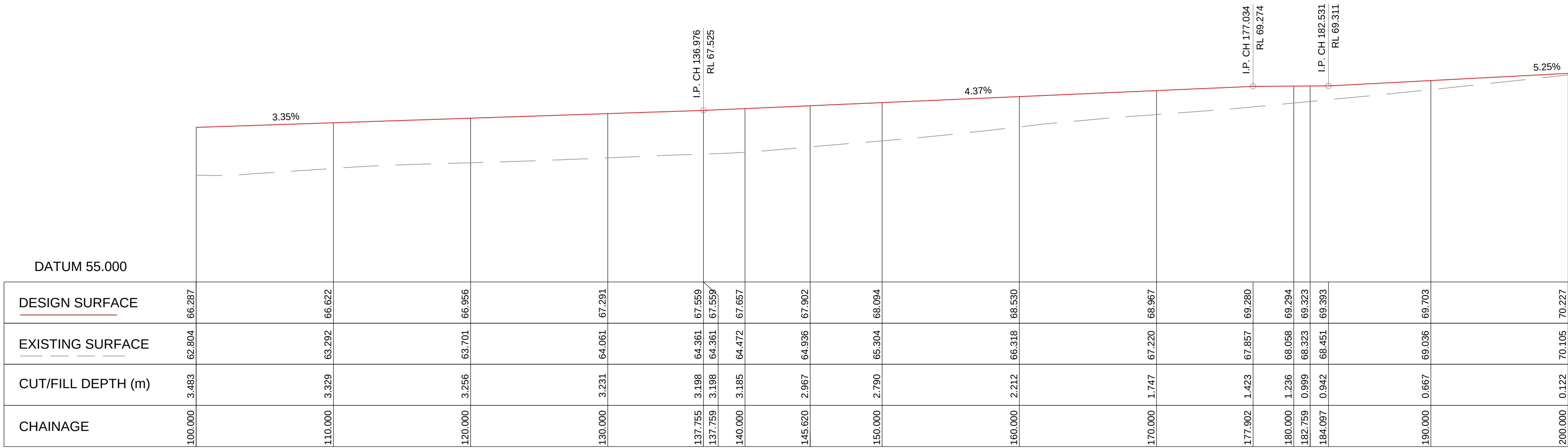
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Title		ROADWORKS LONG SECTIONS SHEET 2				 DRAWING IN COLOUR	
						Drawing No.	Revision
Scale @ A1	Project Commencement	Drawn	Design	Project No.			
AS SHOWN	NOV. 2025	S.C	S.C	0120.0041441.0001		CI-01-1012	P4



LONGITUDINAL SECTION - CL-3
SCALE H1:200, V1:200



LONGITUDINAL SECTION - CL-3
SCALE H1:200, V1:200

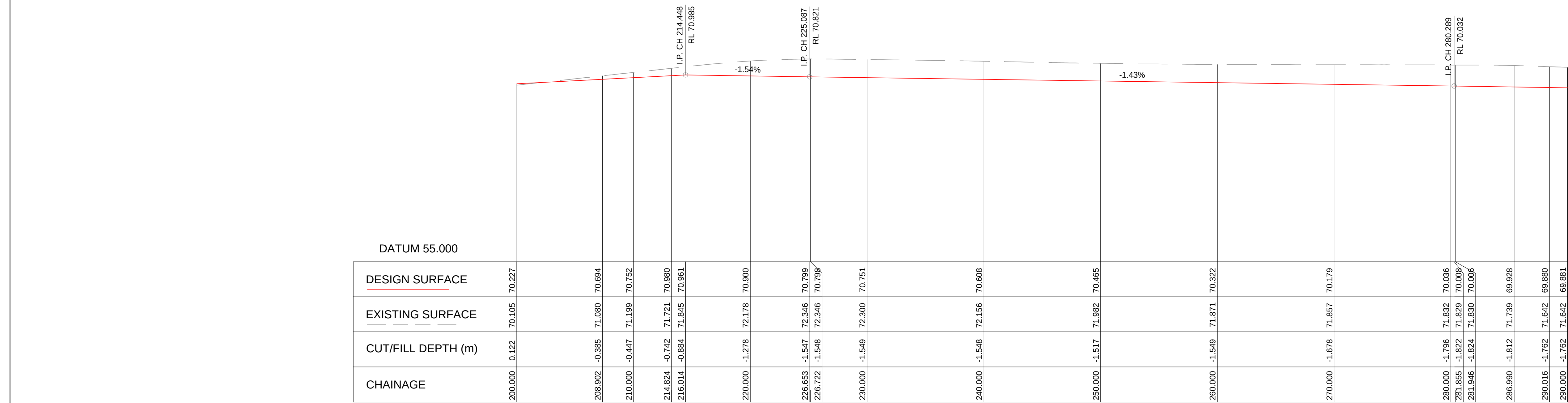
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P3	DRAFT SSDA	20.03.2026						
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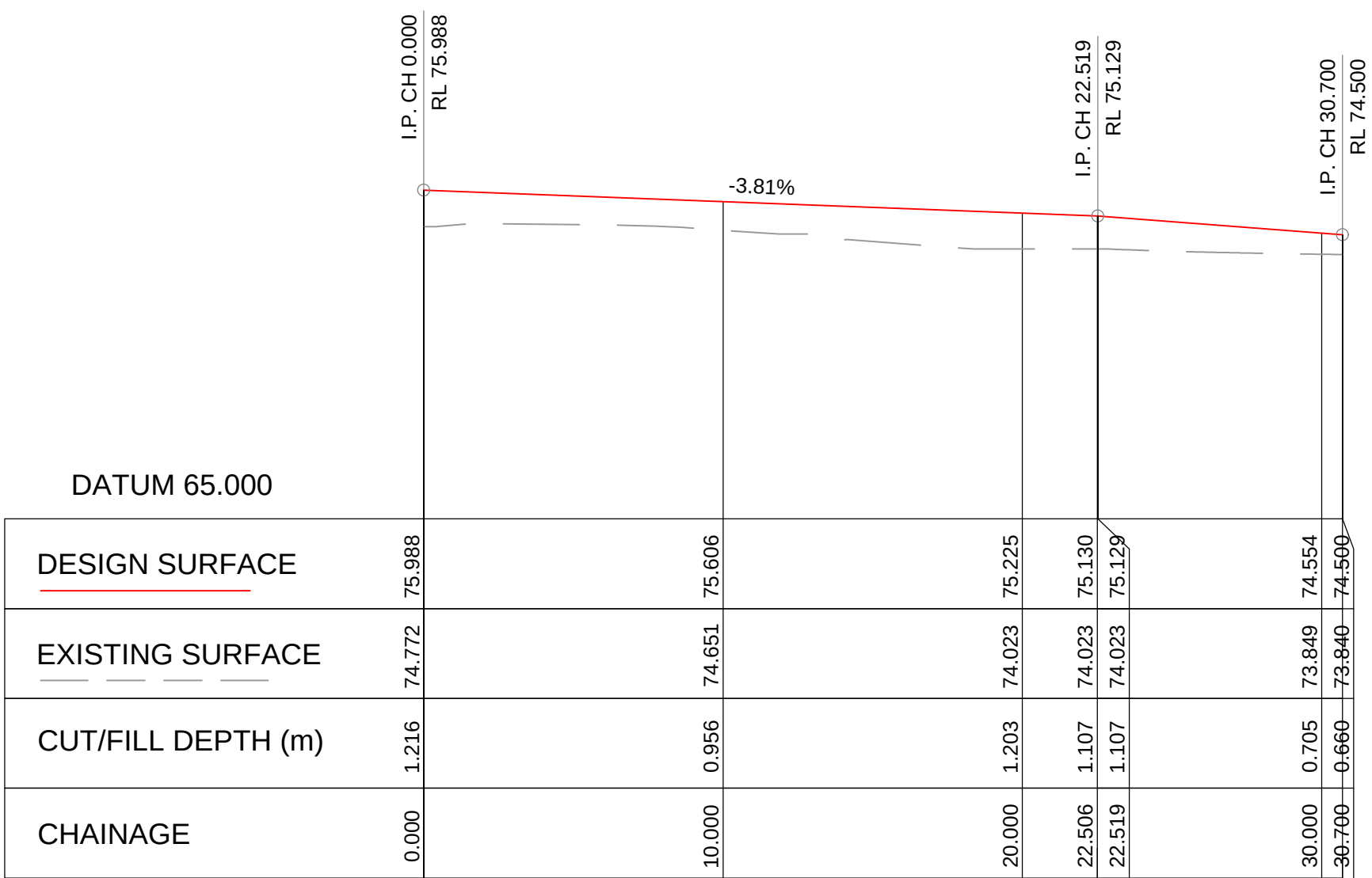
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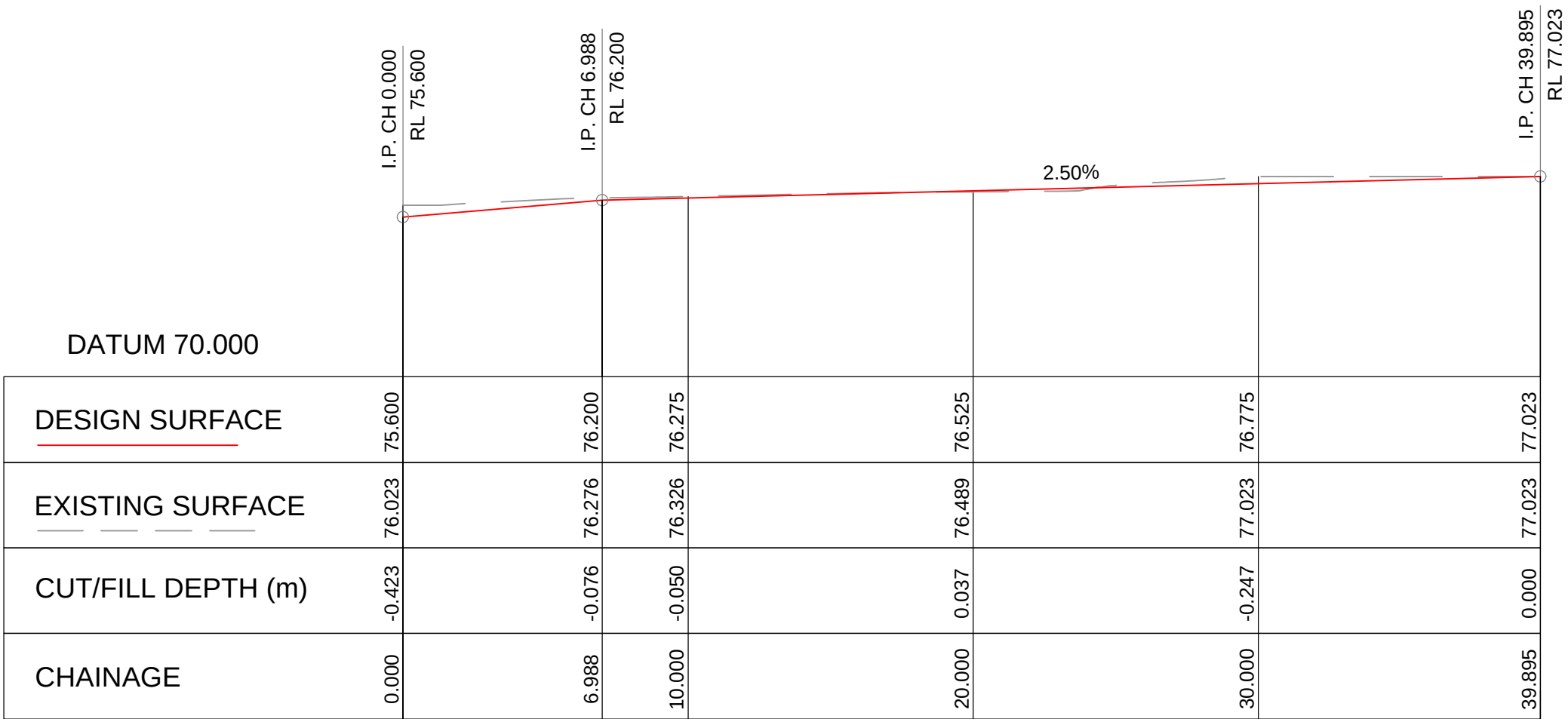
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Scale @ A1		Project Commencement		Drawn		Design		Project No.		Drawing No.		Revision	
AS SHOWN		NOV. 2025		S.C		S.C		0120.0041441.0001		CI-01-1013		P4	



LONGITUDINAL SECTION - CL-3
SCALE H1:200, V1:200



LONGITUDINAL SECTION - CL-4
SCALE H1:200, V1:200



LONGITUDINAL SECTION - CL-5
SCALE H1:200, V1:200

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P3	DRAFT SSDA	20.03.2026						
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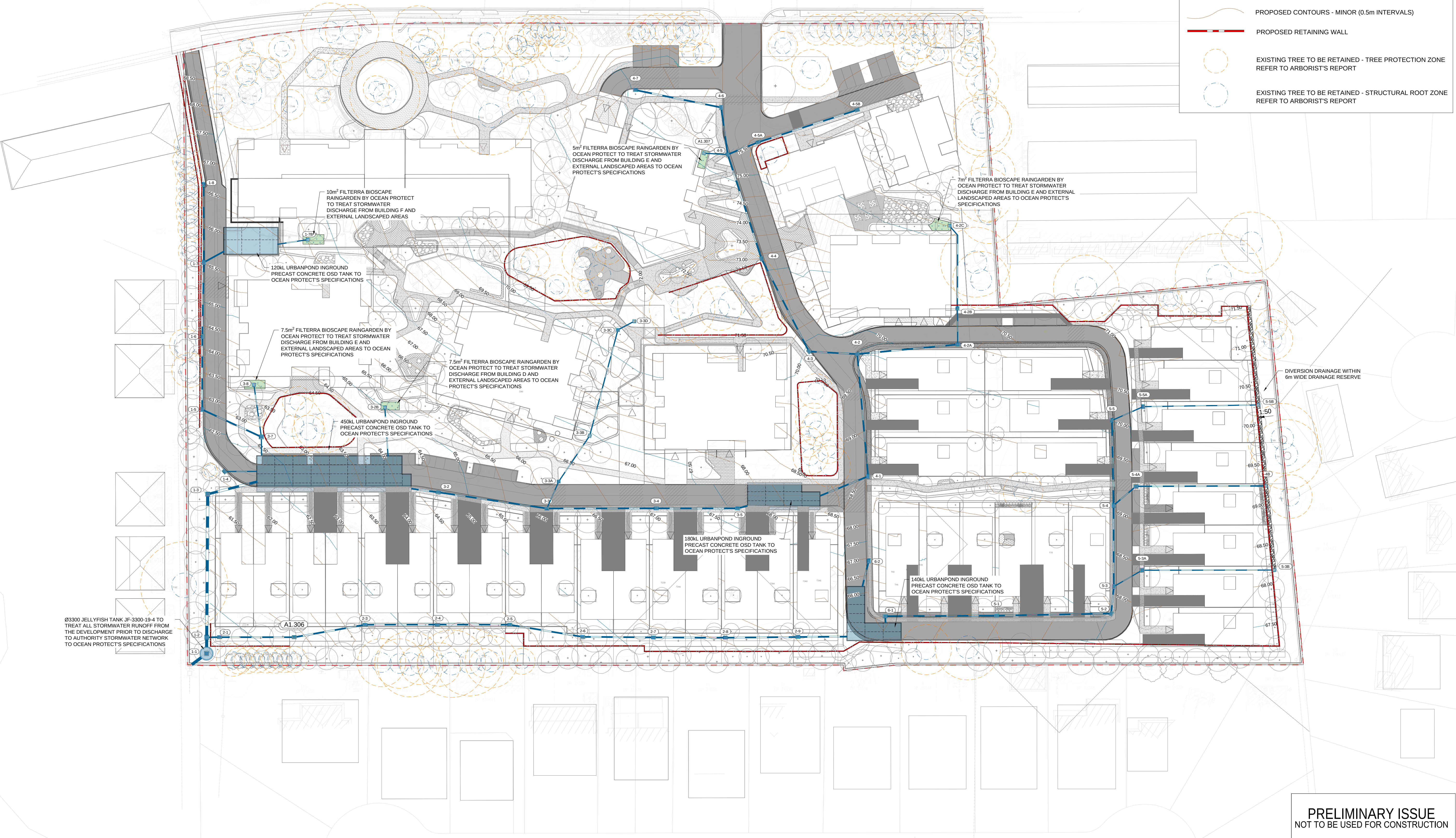
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LOTTIE STEWART SENIORS LIVING
40 STEWART STREET
ERMINGTON NSW 2117
Title
ROADWORKS LONG SECTIONS
SHEET 4

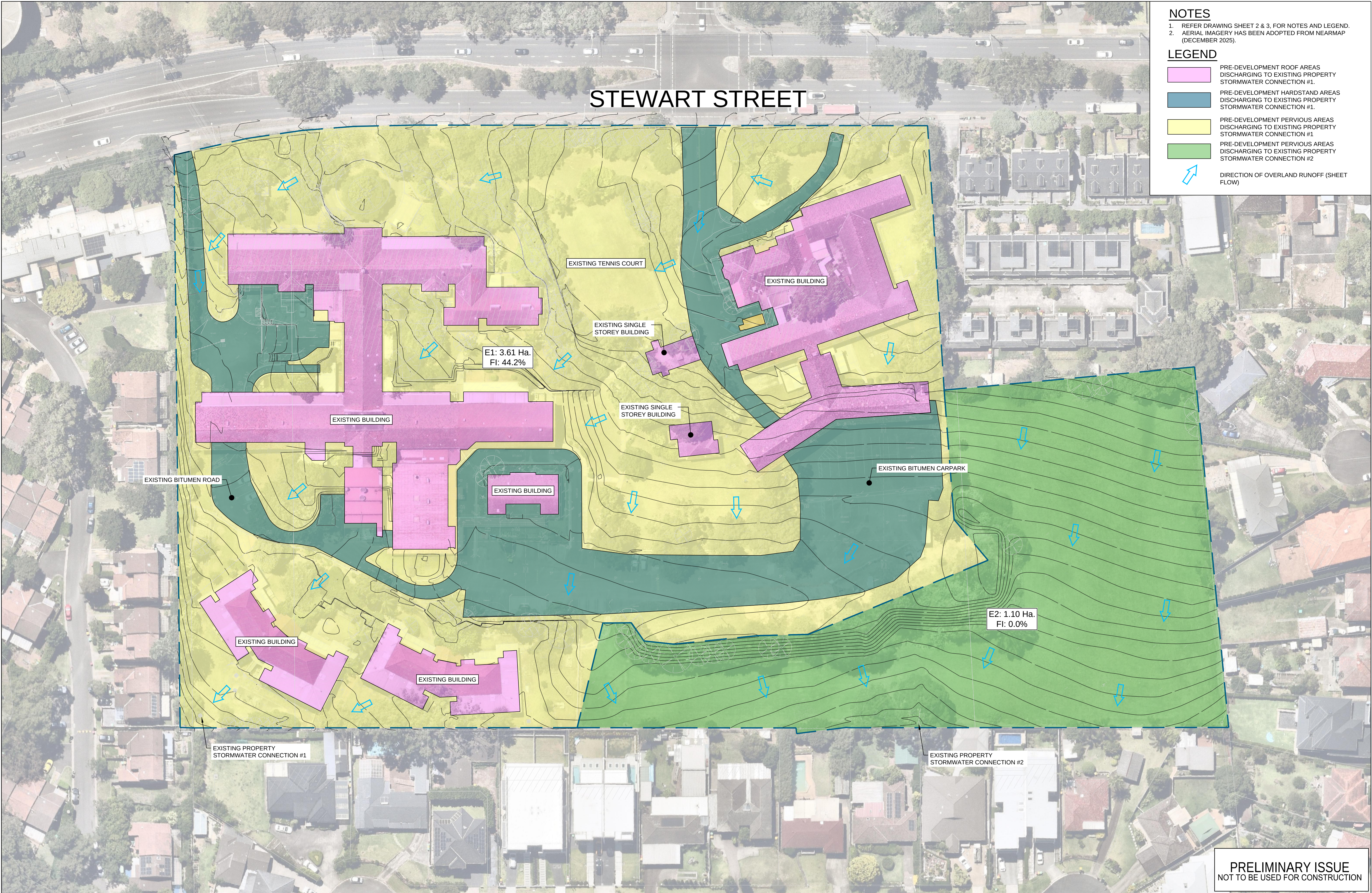
Scale @ A1 AS SHOWN	Project Commencement NOV. 2025	Drawn S.C	Design S.C	Project No. 0120.0041441.0001	Drawing No. CH-01-1014	Revision P4
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- STORMWATER NOTES:**
1. ALL INLET PITS WITHIN ROADS AND PAVED AREAS TO BE INSTALLED WITH OCEANGUARD LITTER BASKETS.
 2. PIPE SIZES TO BE DETAILED IN FURTHER DESIGN STAGES.
 3. BUILDING STORMWATER DRAINAGE TO DISCHARGE TO RAINGARDENS WHERE SUITABLE. PROVIDE PERFORATED DRAINS BEHIND RETAINING WALLS WITH MINIMUM 1:100 PIPE GRADIENT AND CONNECT TO THE NEAREST STORMWATER DRAINAGE.

LEGEND

- SITE BOUNDARY
- PROPOSED STORMWATER PIT
- PROPOSED STORMWATER PIT NUMBER
- PROPOSED STORMWATER PIPE
- PROPOSED CONTOURS - MAJOR (2.5m INTERVALS)
- PROPOSED CONTOURS - MINOR (0.5m INTERVALS)
- PROPOSED RETAINING WALL
- EXISTING TREE TO BE RETAINED - TREE PROTECTION ZONE REFER TO ARBORIST'S REPORT
- EXISTING TREE TO BE RETAINED - STRUCTURAL ROOT ZONE REFER TO ARBORIST'S REPORT





- NOTES**
- REFER DRAWING SHEET 2 & 3, FOR NOTES AND LEGEND.
 - AERIAL IMAGERY HAS BEEN ADOPTED FROM NEARMAP (DECEMBER 2025).

- LEGEND**
- PRE-DEVELOPMENT ROOF AREAS DISCHARGING TO EXISTING PROPERTY STORMWATER CONNECTION #1.
 - PRE-DEVELOPMENT HARDSTAND AREAS DISCHARGING TO EXISTING PROPERTY STORMWATER CONNECTION #1.
 - PRE-DEVELOPMENT PERVIOUS AREAS DISCHARGING TO EXISTING PROPERTY STORMWATER CONNECTION #1.
 - PRE-DEVELOPMENT PERVIOUS AREAS DISCHARGING TO EXISTING PROPERTY STORMWATER CONNECTION #2.
 - DIRECTION OF OVERLAND RUNOFF (SHEET FLOW)

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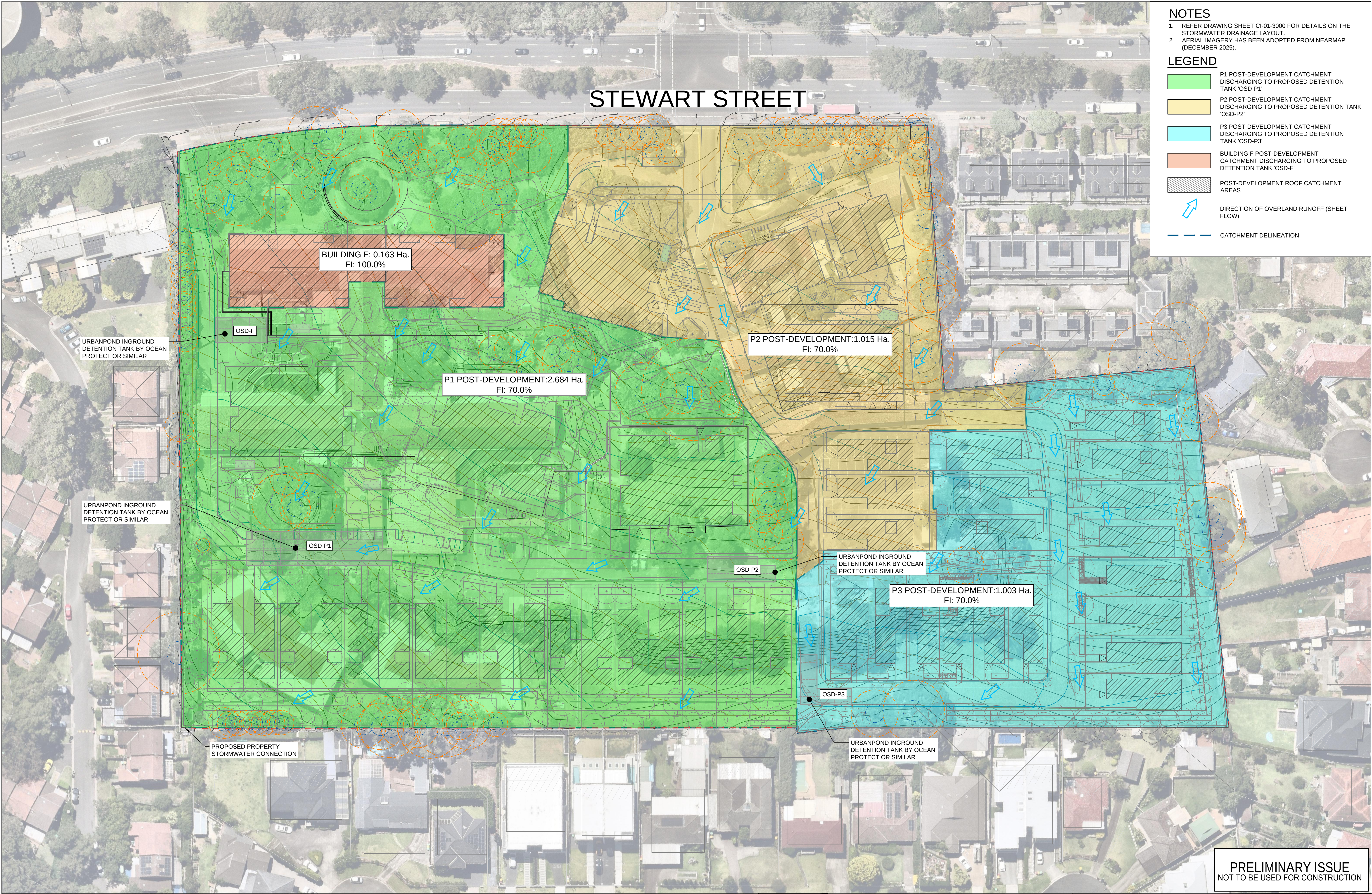
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P1	PRELIMINARY ISSUE	23.02.2026						
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Project	LOTTIE STEWART SENIORS LIVING 40 STEWART STREET ERMINGTON NSW 2117				Client Version 2024
Title	PRE-DEVELOPMENT CATCHMENT PLAN				DRAWING IN COLOUR
Scale @ A1	Project Commencement	Drawn	Design	Project No.	Drawing No.
1:500	NOV. 2025	S.C	S.C	0120.0041441.0001	CI-01-4010
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P3	DRAFT SSDA	20.03.2026						
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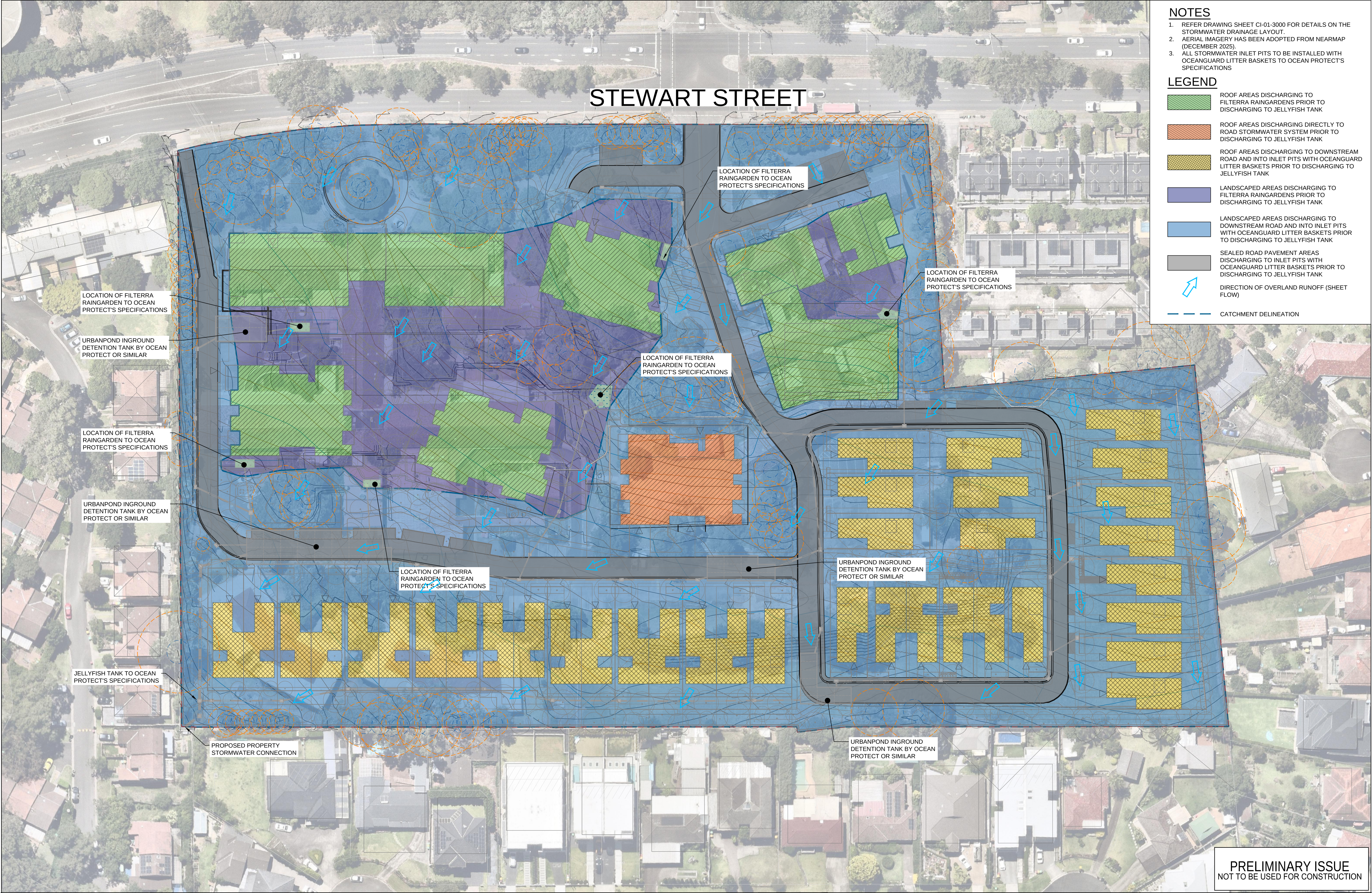
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Title							
Scale @ A1		Project Commencement	Drawn	Design	Project No.	Drawing No.	Revision
1:500		NOV. 2025	S.C	S.C	0120.0041441.0001	CI-01-4011	P4



NOTES

1. REFER DRAWING SHEET CI-01-3000 FOR DETAILS ON THE STORMWATER DRAINAGE LAYOUT.

2. AERIAL IMAGERY HAS BEEN ADOPTED FROM NEARMAP (DECEMBER 2025).

3. ALL STORMWATER INLET PITS TO BE INSTALLED WITH OCEANGUARD LITTER BASKETS TO OCEAN PROTECT'S SPECIFICATIONS

LEGEND

ROOF AREAS DISCHARGING TO FILTERRA RAINGARDENS PRIOR TO DISCHARGING TO JELLYFISH TANK

ROOF AREAS DISCHARGING DIRECTLY TO ROAD STORMWATER SYSTEM PRIOR TO DISCHARGING TO JELLYFISH TANK

ROOF AREAS DISCHARGING TO DOWNSTREAM ROAD AND INTO INLET PITS WITH OCEANGUARD LITTER BASKETS PRIOR TO DISCHARGING TO JELLYFISH TANK

LANDSCAPED AREAS DISCHARGING TO FILTERRA RAINGARDENS PRIOR TO DISCHARGING TO JELLYFISH TANK

LANDSCAPED AREAS DISCHARGING TO DOWNSTREAM ROAD AND INTO INLET PITS WITH OCEANGUARD LITTER BASKETS PRIOR TO DISCHARGING TO JELLYFISH TANK

SEALED ROAD PAVEMENT AREAS DISCHARGING TO INLET PITS WITH OCEANGUARD LITTER BASKETS PRIOR TO DISCHARGING TO JELLYFISH TANK

DIRECTION OF OVERLAND RUNOFF (SHEET FLOW)

CATCHMENT DELINEATION

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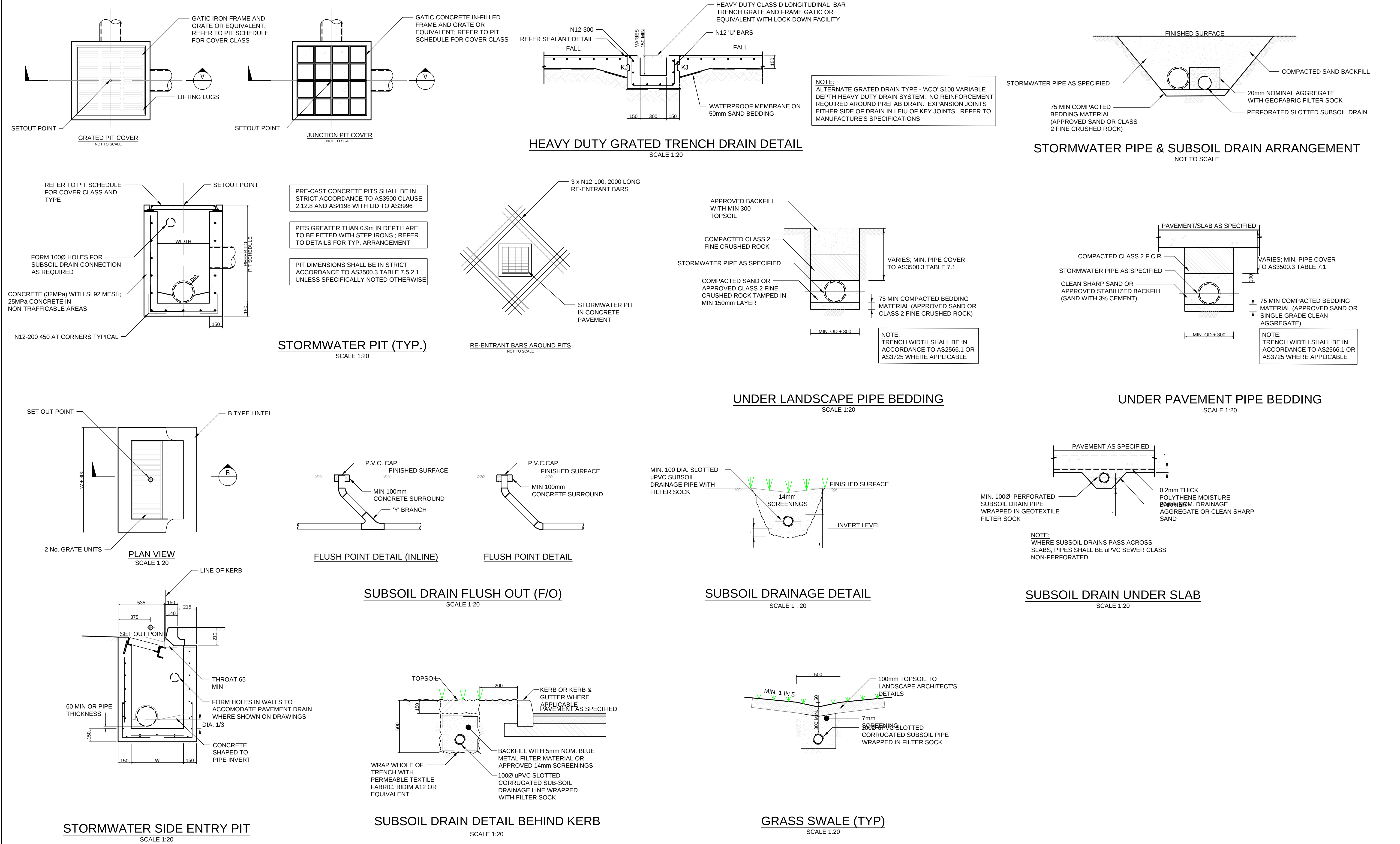
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Project	LOTTIE STEWART SENIORS LIVING 40 STEWART STREET ERMINGTON NSW 2117				Client Version 2024
Title	STORMWATER QUALITY CATCHMENT PLAN				DRAWING IN COLOUR
Scale @ A1	Project Commencement	Drawn	Design	Project No.	Drawing No.
1:500	NOV. 2025	S.C	S.C	0120.0041441.0001	CI-01-4020
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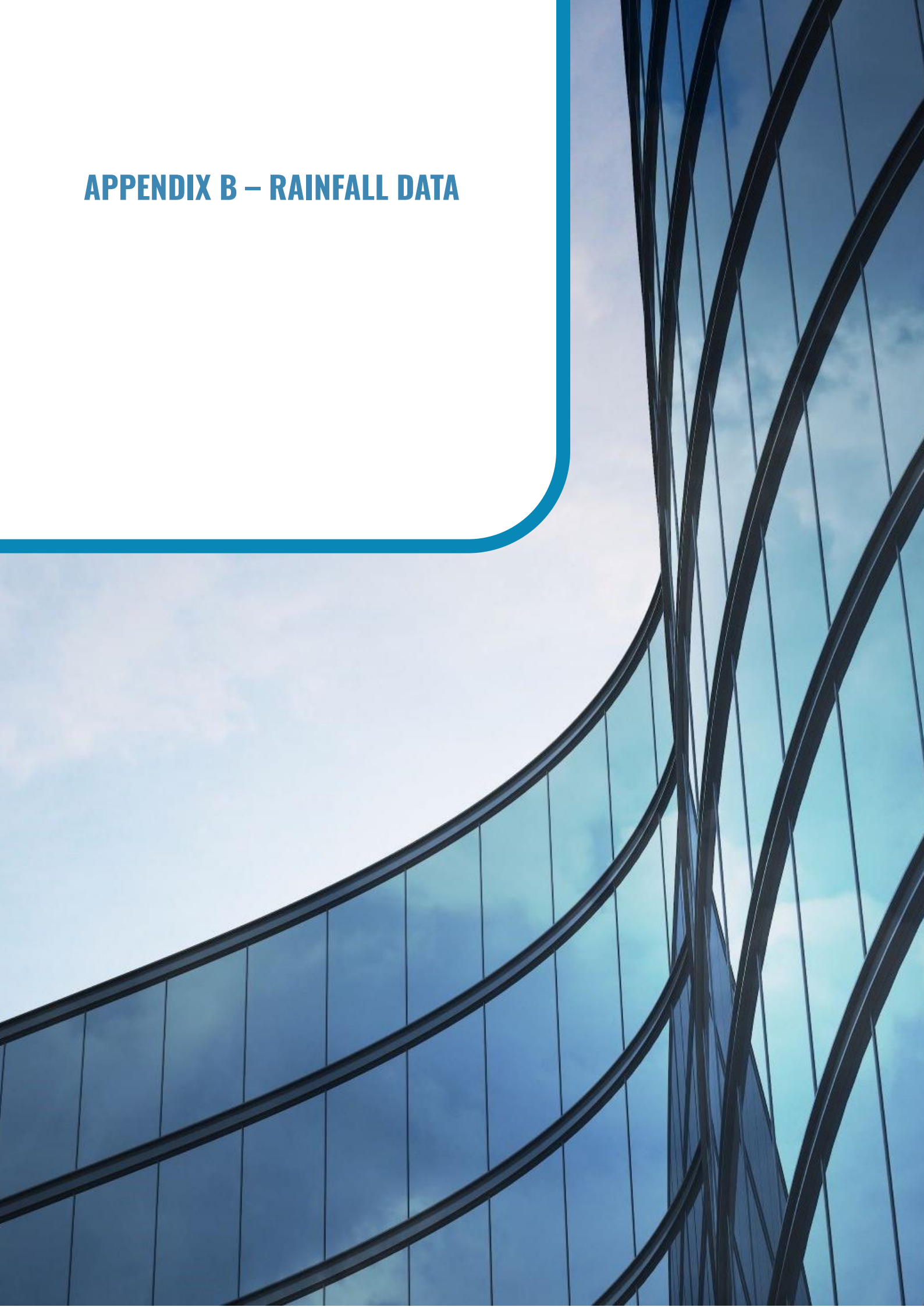
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By **P.S.**

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Project	LOTTIE STEWART SENIORS LIVING 40 STEWART STREET ERMINGTON NSW 2117				Client ID Version 2024
Title	TYPICAL DETAILS - SHEET 1				DRAWING IN COLOUR
Scale @ A1	Project Commencement	Drawn	Design	Project No.	Drawing No.
AS SHOWN	NOV. 2025	S.C	S.C	0120.0041441.0001	CI-01-9000
					P4

APPENDIX B – RAINFALL DATA



All Design Rainfall Depth (mm)

Issued: 6-Nov-25

Location Label:

Requested Latitude -33.798 Longitude 151.06

Nearest grid Latitude 33.7875 (S) Longitude 151.0625 (E)

Duration	Exceedance Annual Exceedance Probability (AEP)																		
	Duration in	12EY	6EY	4EY	3EY	2EY	63.20%	50% 0.5EY	20% 0.2EY	10%	5%	2%	1% 1 in 200	1 in 500	1 in 1000	1 in 2000			
1 min	1	0.972	1.11	1.35	1.53	1.79	2.26	2.53	2.8	3.36	3.43	3.94	4.52	5.3	5.9	6.37	7.2	7.84	8.48
2 min	2	1.69	1.92	2.32	2.6	3	3.69	4.07	4.52	5.31	5.42	6.19	7.08	8.36	9.4	10.3	11.7	12.7	13.8
3 min	3	2.3	2.63	3.2	3.6	4.16	5.14	5.68	6.31	7.45	7.6	8.7	9.96	11.7	13.2	14.4	16.3	17.8	19.3
4 min	4	2.83	3.25	3.97	4.48	5.21	6.48	7.18	7.98	9.47	9.66	11.1	12.7	14.9	16.7	18.2	20.5	22.4	24.2
5 min	5	3.3	3.79	4.65	5.26	6.14	7.68	8.55	9.49	11.3	11.5	13.3	15.2	17.9	20	21.6	24.4	26.6	28.8
10 min	10	4.97	5.75	7.13	8.14	9.61	12.2	13.7	15.2	18.3	18.7	21.5	24.6	28.8	32.1	34.5	39	42.4	45.9
15 min	15	6.09	7.05	8.78	10	11.9	15.3	17.1	19	22.9	23.3	26.8	30.8	36	40	43	48.6	52.9	57.2
20 min	20	6.93	8.03	10	11.5	13.6	17.5	19.6	21.7	26.2	26.7	30.7	35.2	41.1	45.7	49.3	55.7	60.6	65.6
25 min	25	7.61	8.82	11	12.6	15	19.3	21.5	23.9	28.7	29.3	33.7	38.6	45.1	50.2	54.2	61.3	66.7	72.3
30 min	30	8.19	9.49	11.8	13.5	16.1	20.7	23.1	25.7	30.8	31.4	36.1	41.4	48.4	53.9	58.3	65.9	71.8	77.7
45 min	45	9.54	11	13.7	15.7	18.7	24.1	26.8	29.7	35.5	36.2	41.6	47.7	56	62.5	67.6	76.5	83.4	90.4
1 hour	60	10.6	12.2	15.2	17.4	20.6	26.6	29.5	32.8	39.1	39.8	45.7	52.5	61.7	69	74.8	84.6	92.2	100
1.5 hour	90	12.2	14.1	17.5	20	23.7	30.5	33.8	37.5	44.6	45.5	52.3	60.1	71	79.7	86.3	97.6	106	115
2 hour	120	13.5	15.6	19.3	22.1	26.2	33.7	37.3	41.4	49.3	50.2	57.8	66.5	78.8	88.7	95.9	108	118	128
3 hour	180	15.5	18	22.4	25.6	30.4	39.1	43.3	48	57.3	58.4	67.4	77.9	92.7	105	113	127	139	150
4.5 hour	270	18	20.9	26.1	29.9	35.5	45.8	50.8	56.4	67.7	69.1	80.1	93	111	126	135	152	165	179
6 hour	360	20	23.3	29.2	33.5	39.9	51.5	57.4	63.8	77.1	78.7	91.6	107	128	145	155	175	190	205
9 hour	540	23.4	27.3	34.3	39.6	47.3	61.5	68.9	76.5	93.7	95.6	112	131	158	179	191	215	234	252
12 hour	720	26	30.5	38.6	44.6	53.5	69.9	78.8	87.4	108	110	130	153	184	209	223	252	273	295
18 hour	1080	30.3	35.7	45.5	52.8	63.7	83.9	95.2	106	133	136	161	190	229	260	278	315	342	370
24 hour	1440	33.5	39.7	50.9	59.3	71.8	95.1	109	120	153	156	186	220	265	301	325	367	400	433
30 hour	1800	36.1	42.9	55.3	64.6	78.5	104	120	133	170	174	207	246	296	336	374	430	473	519
36 hour	2160	38.2	45.6	59	69.1	84.1	112	129	143	185	188	225	267	322	364	412	476	527	580
48 hour	2880	41.4	49.7	64.8	76.1	93	125	144	160	208	212	254	301	362	409	465	537	594	653
72 hour	4320	45.3	55	72.4	85.5	105	142	164	182	238	242	291	345	412	464	521	594	652	711
96 hour	5760	47.4	58	77	91.3	113	152	176	196	255	260	312	369	439	493	546	618	673	729
120 hour	7200	48.5	59.6	79.9	95.1	118	159	184	205	266	271	324	383	454	507	558	630	684	738
144 hour	8640	48.9	60.5	81.8	97.7	121	164	190	211	273	278	332	391	461	513	564	638	692	747
168 hour	10080	48.9	60.8	83	99.5	124	168	194	215	277	283	336	396	464	515	566	645	701	758

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