



civil engineering

Friends

70-72 Station Road, Loganlea


Engineering Services Report
For: Robinson Projects
February 2022

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Document Control

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Report Title	R002-FE22021 – Engineering Services Report		
Revision	01	Date	23/02/2022

Revision History

Revision	Date	Author	Approver	Description
01	23/02/2022	SH/GH	GH	Submission

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1. Introduction

This report has been prepared to support the development application to approve the construction of a new residential unit development. The development is proposed to take place over the following parcel of land:

Property Address: 70-72 Station Road, Loganlea

Property Description: Lot 2 on RP99638

Council: Logan City Council

Registered Site Area: 3,774m²

The purpose of this report is to demonstrate the civil engineering outcomes for the development to ensure compliance with all necessary State and Local Government policies.

1.1 Report Abstract

This report describes that no apparent significant constraints on the execution of earthworks, sediment and erosion control, provision of vehicular access, or the drainage of stormwater are expected resulting the development of the site.

1.2 Related Reports

A separate document by Friends Civil Engineering has been prepared to demonstrate the stormwater management of the development. Refer to report reference R1-FE22021.

2. Property Description

2.1 Locality and Previous Use

The proposed development is situated within Loganlea, which is registered as Lot 2 on RP99638.

The zoning of the land is “Low Density Residential” in accordance with the current zoning by Logan City Council.

Full details of the site topography and existing features are shown on the detailed site survey included in Appendix A. A general locality plan is presented in Figure 2.1 below:



Figure 2.1 Site Locality/Zoning (Courtesy of Logan City Council – Accessed February 2022)

2.2 Topography and Drainage

The site grades from the north-eastern corner to the south and west allowing for eventual discharge within existing concrete conveyance path to the west and Station Road to the south which ultimately also flows to the conveyance path to the west.

Site survey data indicates the highest levels on the site are around RL9.80m AHD at northern eastern corner of the block and lowest along the western boundary at around RL9.20m.

3. Proposed Development

The proposal is to build a new townhouse development, key components of the new development are:

- Residential unit buildings x 7;
- Carparking facilities;
- New driveway access.

No major external works are proposed as part of the development. The only works outside the boundary are expected to include new vehicle cross over (VXO), as well as connecting to public infrastructure like stormwater, water, sewer, electrical and communications.

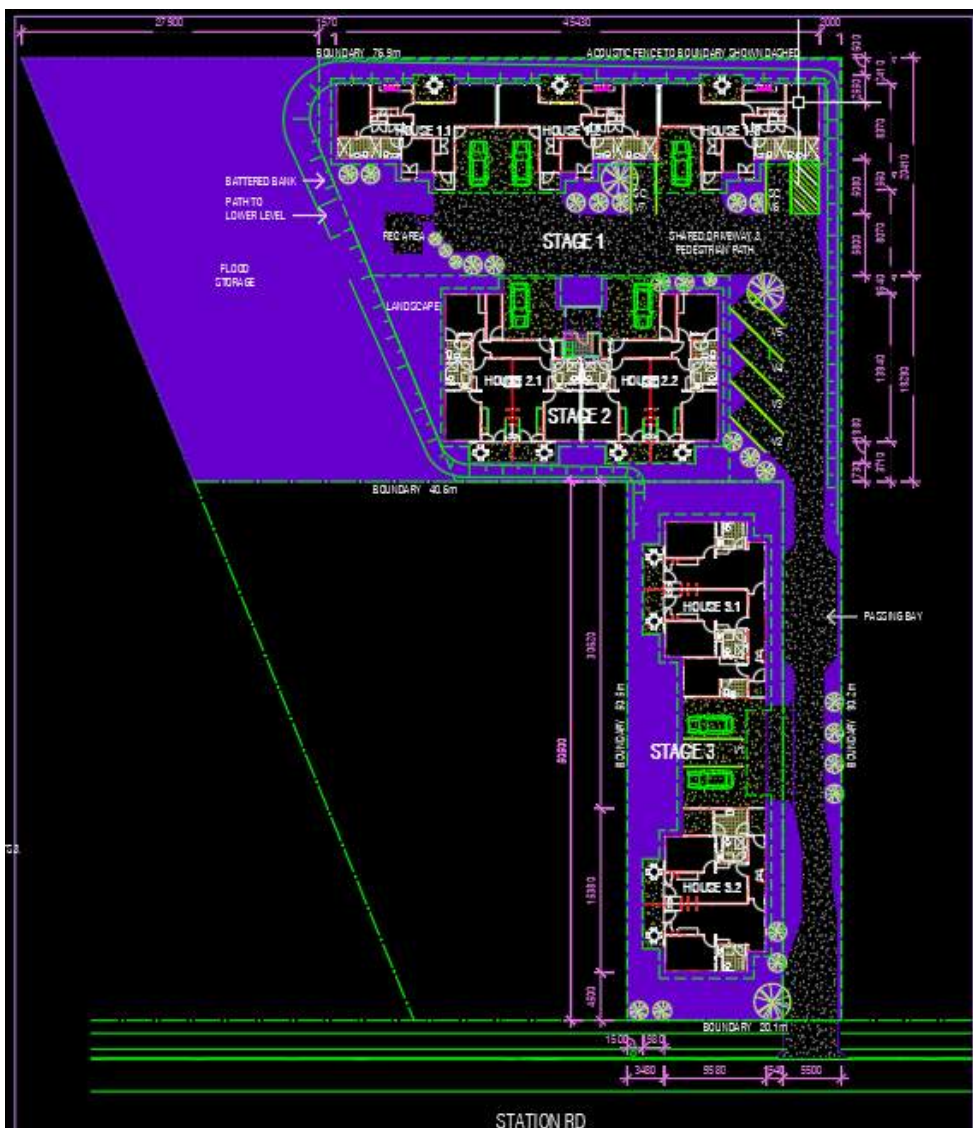


Figure 3.1 Layout Plan

Full development plans are located within Appendix A for further details.

4. Proposed Stormwater

The Site Based Stormwater Management Plan R1-FE22021 has been completed for the site. This report has demonstrated that attenuation of the post-development site discharge to pre-development rates can be achieved through the use of an end of line stormwater detention basin and rainwater tank for each dwelling. A bio-retention basin will also be employed to facilitate stormwater quality treatment prior to discharging from the site.

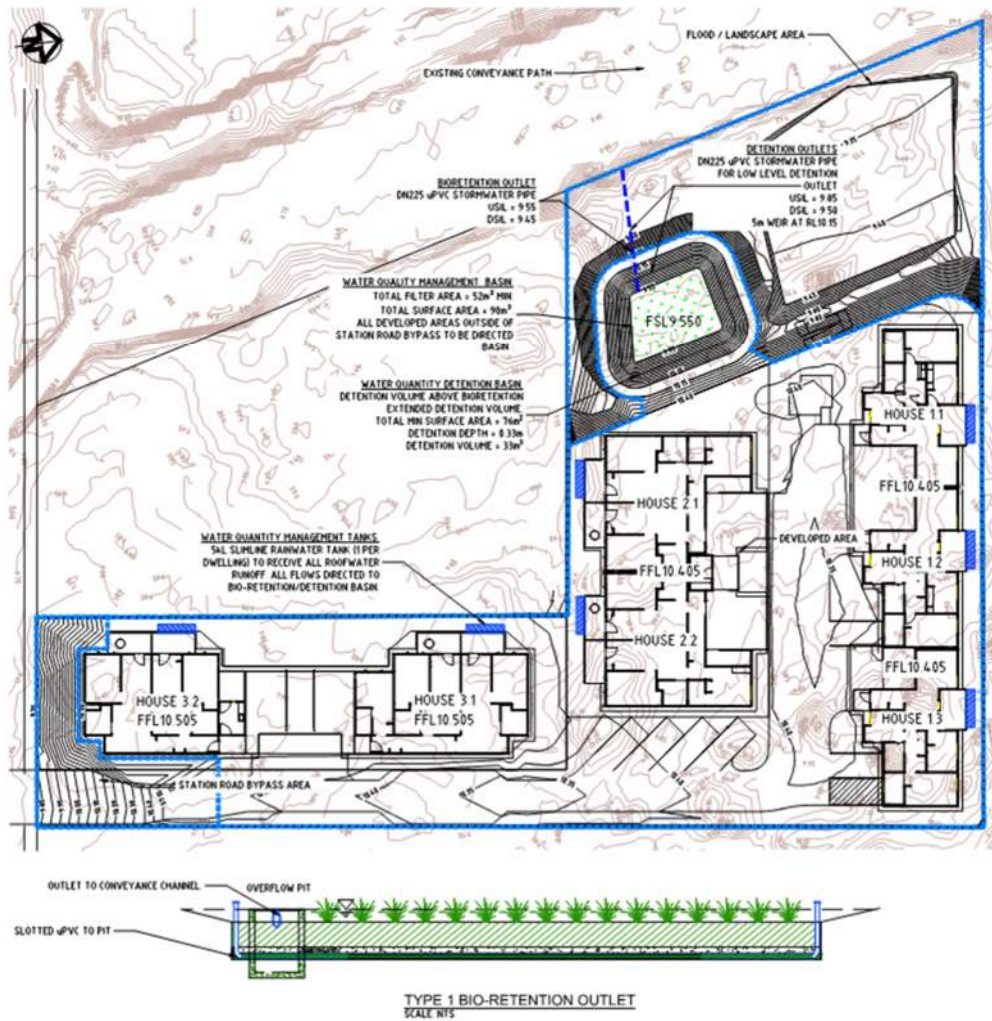


Figure 4.1 Stormwater Management

5. Earthworks

The earthworks associated with the proposed development will predominantly involve the importation of fill material with cut to fill excavation to facilitate the construction of the units and internal road network.

In addition to the fill, single-tier retaining walls are proposed within the site. These will be constructed as per Logan City Council standards. Refer the below Figure 5.1 and preliminary bulk earthworks plan and section in Appendix B detailing the preliminary earthworks proposed.

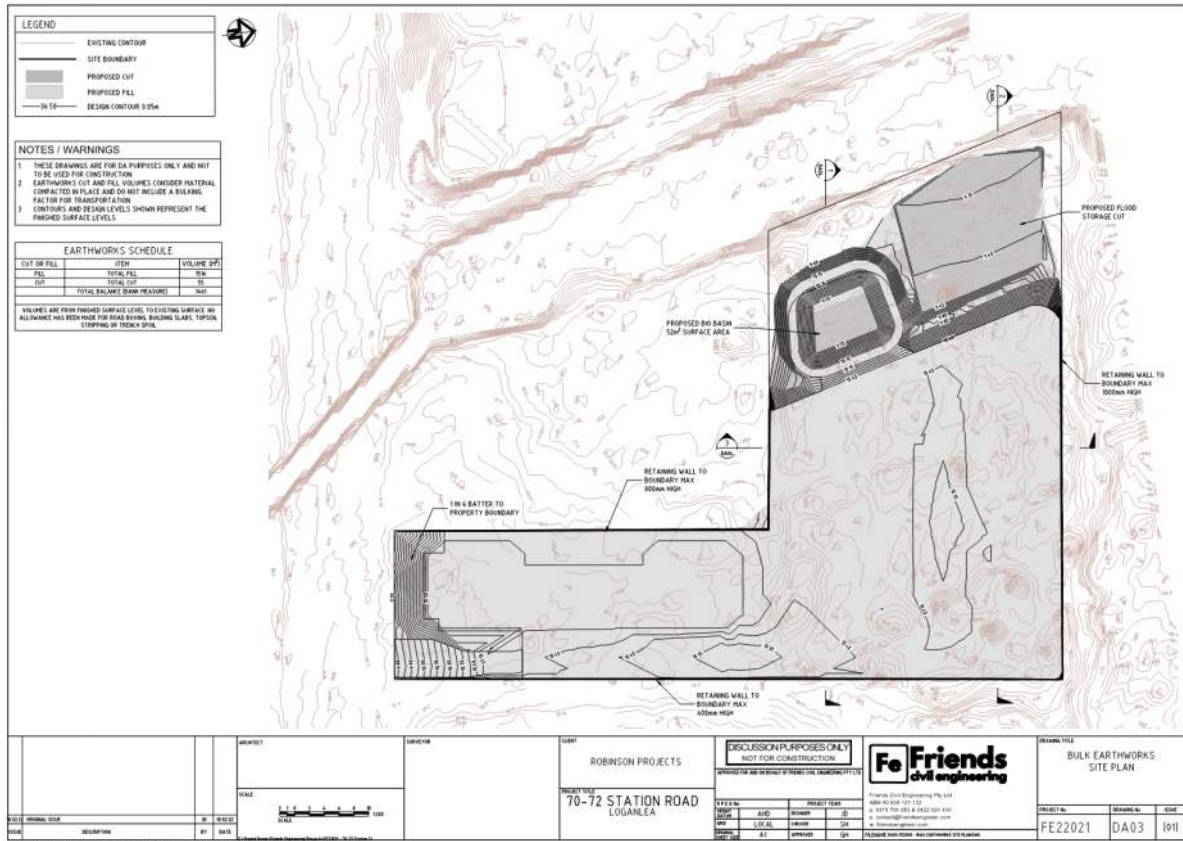


Figure 5.1 Preliminary Earthworks

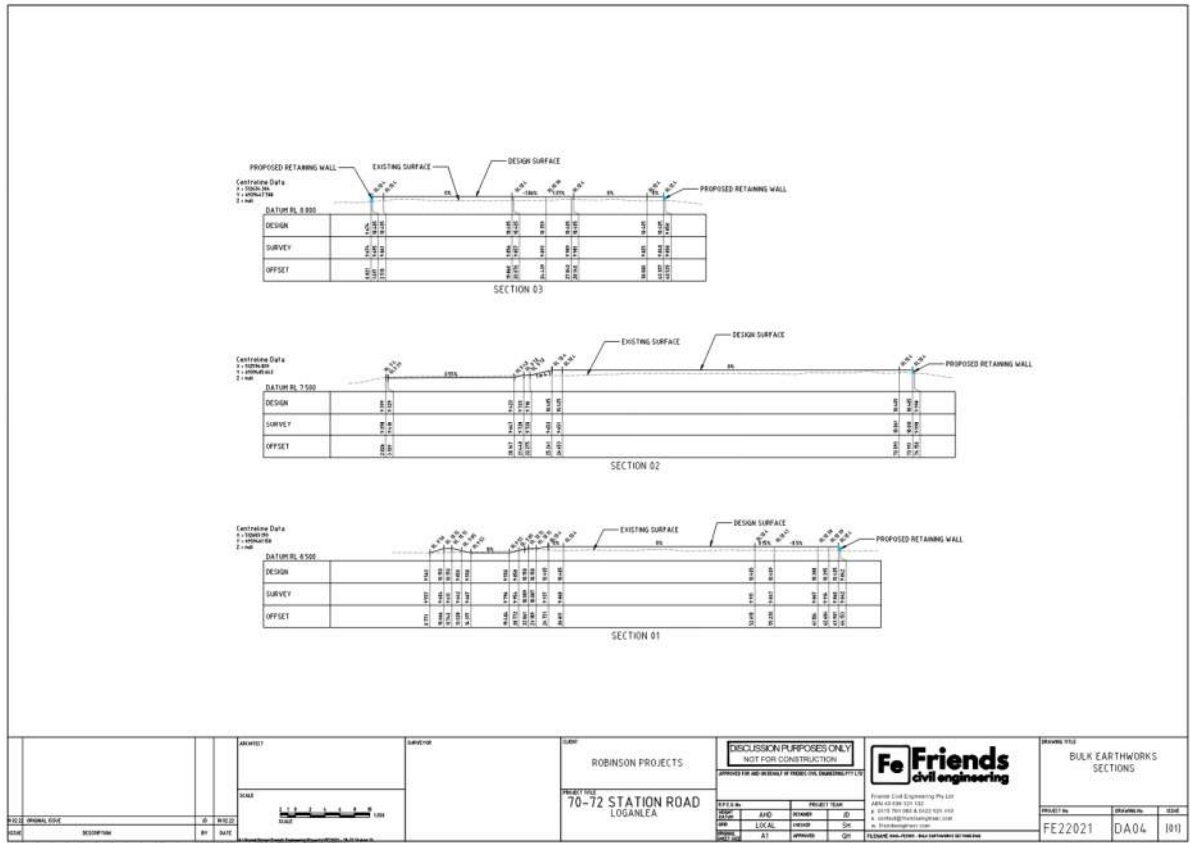


Figure 5.2 Earthworks Sections

Council mapping indicates the site to be within an Acid Sulfate Soils trigger overlay OM-01.00. Further investigation will be required on site by a suitably qualified geotechnical engineer prior to earthworks.

Refer Appendix C for the Filling Excavation Code details.

6. Erosion and Sediment Control

During construction, it shall be the responsibility of the Principal Contractor to ensure that the development complies with the relevant erosion and sediment control objectives.

This section of the report provides suggested inclusions in an erosion and sediment control plan for the proposed development site. This plan includes recommendations for monitoring and reporting responsibilities and the construction of site-specific sedimentation and erosion control measures. Detailed drawings specifying the proposed erosion and sediment control measures are to be provided at the next stage of the development.

6.1 General Erosion and Sediment Control Measures

It shall be the responsibility of the Principal Contractor to ensure the following erosion and sediment control measures are implemented on site:

- Clean stormwater runoff from upstream allotments is to be directed away from the development site using earth bunds or cut-off drains, as deemed appropriate by a suitable supervisor;
- The prevention of sediment runoff towards other allotments via the effective implementation of silt fences, sediment basins or other mitigation devices as deemed appropriate by a suitable supervisor;
- Sediment runoff shall also be prevented from entering the Council stormwater drainage system via the implementation of control measures such as gully pit sediment barriers;
- Erosion shakedown points shall be established at all vehicular access points, with shakedown areas regularly swept clean and sediment removed; and
- Erosion and sediment control measures are not to be removed from the development site until the site is completely rehabilitated and the surface is capable of resisting erosion.
- Site induction courses shall include details of an environmental management reporting system, through which personnel will be able to report perceived erosion and sediment control issues on site.

6.2 Spoil and Stockpile Management Measures

It shall be the responsibility of the Contractor to ensure the following spoil and stockpile management measures are implemented on site:

- Where the stockpiling of spoil and excess earthworks is necessary on the development site, stockpiles shall be established as far away as possible from stormwater inlets and pipelines to reduce the likelihood of sediment runoff; and
- Stockpiles are to be established within a designated zone of fill material and should be surrounded with appropriate erosion and sediment control measures.

7. Regional Flooding

The site is affected by regional flooding or mapped overland flow, refer the below Figure 7.1 which details the majority of the site being affected with a DFL 1% AEP level of RL9.8m.

The Site Based Stormwater Management Plan R1-FE22021 should be referred to for details of how the proposed development will match existing flood conditions on site.

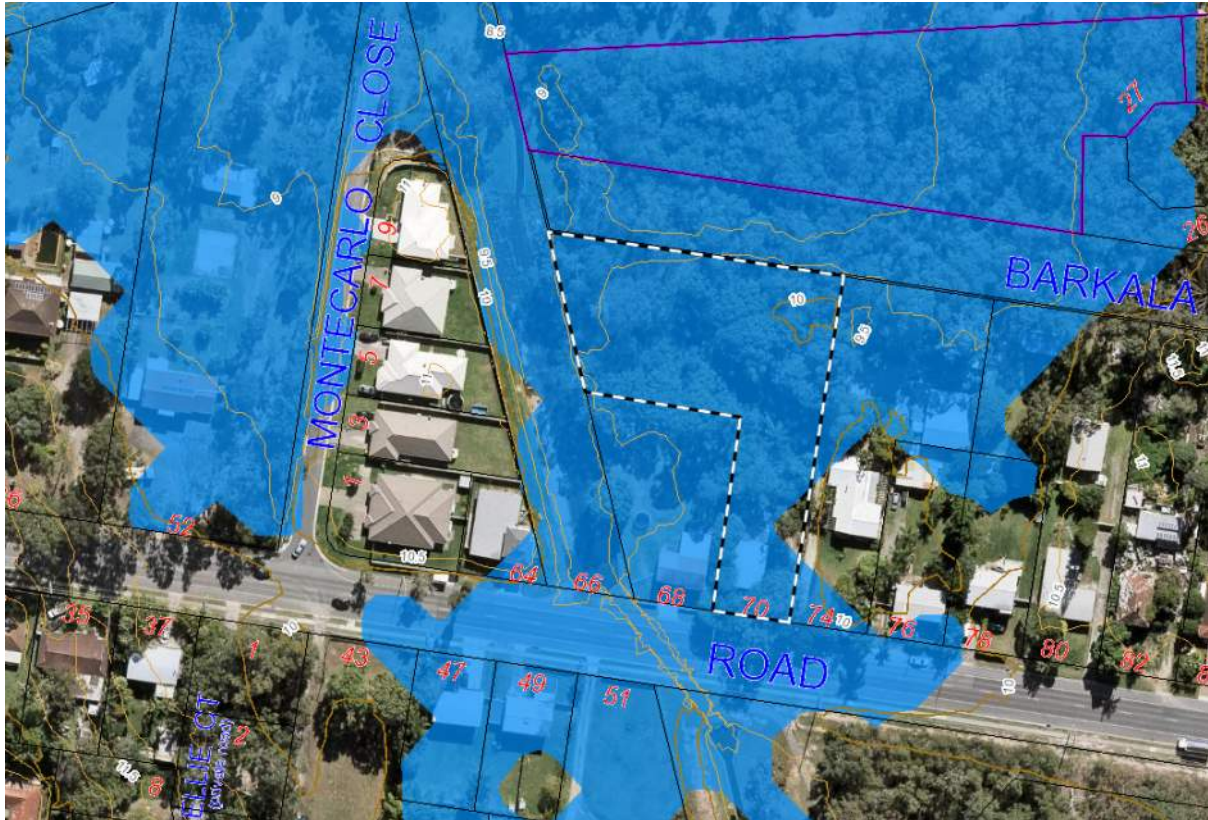


Figure 7.1 Extents of Flooding (1% AEP Event)

8. Sewer and Water Connection

8.1 Sewer Connection

The site is serviced by an existing sewer main which traverses the site and services upstream properties. The size of this main is currently unknown but is expected that the development can be serviced. Refer the below screenshot for the location the existing sewer infrastructure and also Appendix B for connection details.

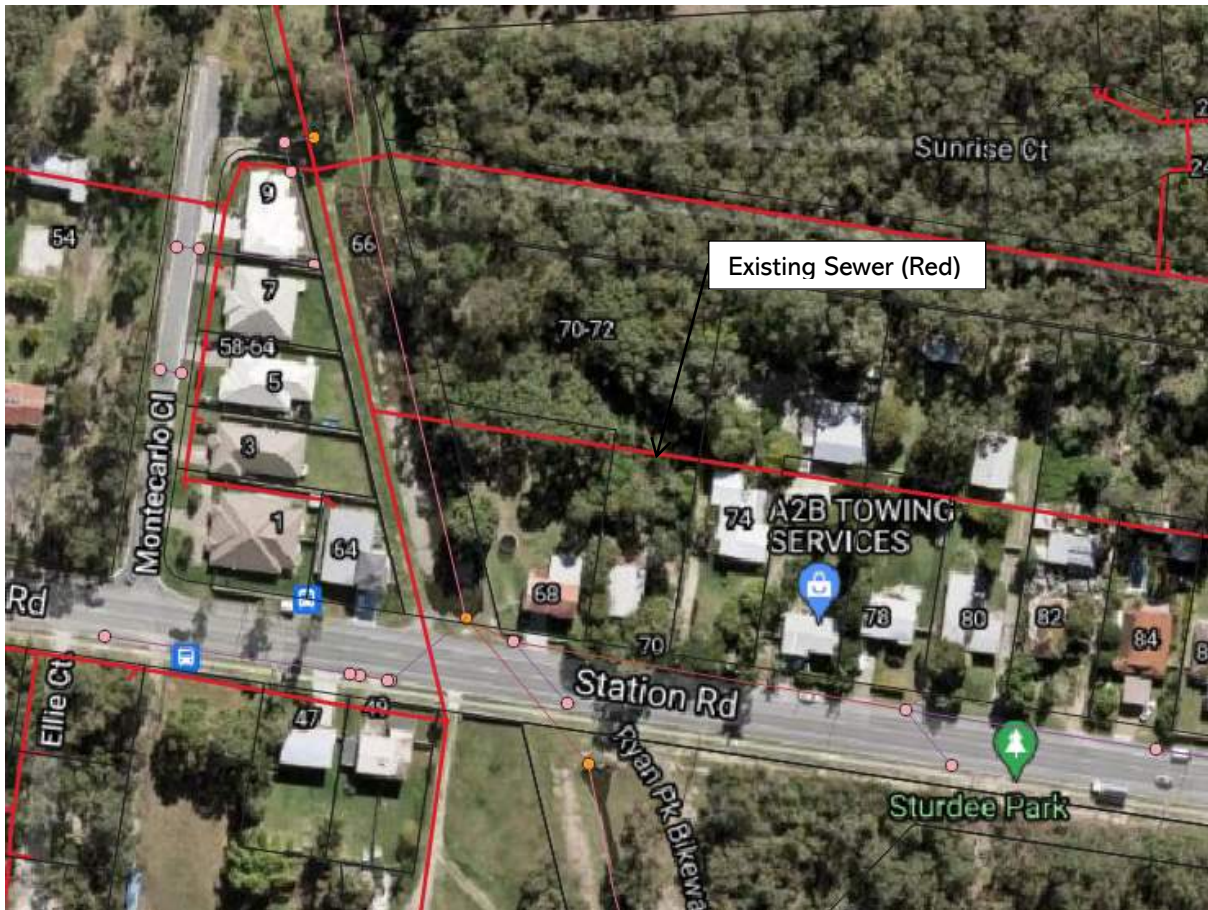


Figure 8.1 Existing Sewer Main Location

A new connection to the existing sewer main is proposed, refer Appendix B for preliminary sewer layout plan and details. No works are expected to be made outside of a new house connection to the existing sewer line although service protection will be required during construction works.

Capacity is subject to confirmation from Logan Water.

8.2 Water Connection

There is an existing water main located within the southern verge of Station Road. Connection for the development to this existing main is via new connection to align with the standard arrangement with above ground master meter arrangement and easement, refer Appendix B for details sizing and easement allocation.



Figure 8.2 Existing Water Main Location (Courtesy of CoGC City Plan – Accessed 04/08/2021)

The size of this main is currently unknown but is expected that the development can be serviced. Capacity is subject to confirmation from Logan Water.

9. Road and Access

Vehicular access to the development is proposed via the construction of new vehicle cross over (VXO) at the site frontage of Station Road. The construction of a new private internal road within the development will be constructed to service the proposed new units.

All internal roads will be designed in accordance Australian standards and in particular for disabled access due to the nature of the NDIS proposed development with access VXO as per Logan City Council Guidelines.

Refer Appendix C for the Infrastructure Code details.

10. Conclusion

This report has been prepared to support the lodgement of a development application to approve the construction the townhouse development.

There are no apparent significant constraints on the execution of earthworks, sediment and erosion control, provision of vehicular access, or the drainage of stormwater from the site.

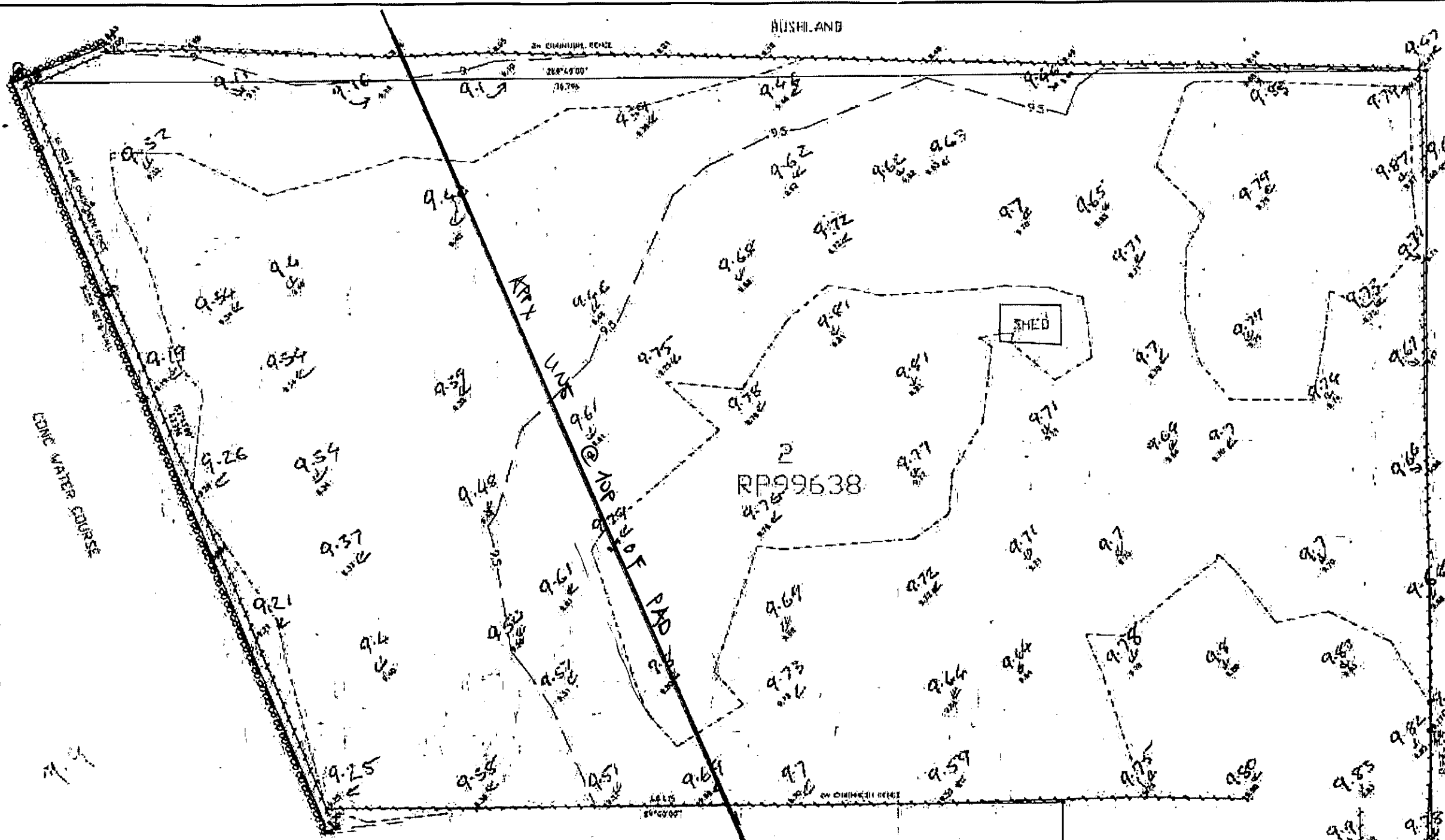
A summary of the proposed water and sewer connection strategy has been presented for Council's consideration.

This report demonstrates that the proposed development can be suitably serviced with all engineering services described and supports the type and scale and development that is proposed subject to water and sewer demand checks.



Appendix A

- Site Survey
- Development Layout Plans



CLIENT :
GRANT TODD

Site Survey of
Lot 2 RP99638
County STANLEY
Parish MACKENZIE
Locality LOGANLEA
Local Auth LOGAN CITY
UBD 242E9 Scale 1: 250@A3

Services

Sewerage	TBC
Stormwater	TBC
Water	TBC
Electricity	TBC
Telephone	TBC
Gas	TBC
Road	HIT
Kerb	BARRIER
Footpath	

Drawn SW Date 18/8/06
Order No.
Our Ref. 10347

LICENSED SURVEYOR DATE

THIS PLAN IS FOR THE USE OF GRANT TODD AND MAY ONLY BE COPIED IN ITS ENTIRETY BY THE PARTY NAMED OR BY COUNCIL ON THEIR BEHALF. FLOOD LEVEL VALUES MUST BE VERIFIED IN WRITING FROM COUNCIL PRIOR TO UTILISING THIS PLAN.

THE BOUNDARIES SHOWN HEREON ARE APPROXIMATE ONLY AND HAVE BEEN POSITIONED FROM FENCES OR CORNER PGS. AND AS SUCH MAY BE INCORRECT. A IDENTIFICATION SURVEY SHOULD BE UNDERTAKEN. NO RESPONSIBILITY IS ACCEPTED IN THOSE PGS OR FENCES ARE NOT CORRECT AND THE BOUNDARIES ARE PLOTTED INCORRECTLY. WHILE THE TITLE PLAN IS OVER 10 YEARS OLD A IDENTIFICATION SURVEY WILL BE REQUIRED PRIOR TO THE HOUSE BEING SETOUT.

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED. A FULL SERVICES AND TITLE SEARCH SHOULD BE DONE BEFORE ANY DESIGN OR CONSTRUCTION IS COMMENCED. IN CONSTRUCTION SERVICES AND ENCUMBRANCES.

THE HARD COPY VERSION OF THIS DRAWING TAKES PRECEDENCE OVER ANY DIGITAL VERSIONS. CUNCEP DIGITAL VERSION THOROUGHLY AGAINST AN ORIGINAL HARD COPY.

LEGEND

CORNER PEG	SEWER MH
CORNER STAKE	UNKNOWN MH
ENT PEG	STORM WATER MH
PEG DISTURBED	ROOFWATER MH
ROOFWATER OUTLET	GULLY TRAP
BENCHMARK	WATER METER
SURVEY STATION	FIRE HYDRANT
ELEC LIGHT POLE	WATER VALVE
POWER POLE	TELSTRA PIT
ELEC MH	TREE
ELEC DOME	RETAINING WALL
	FENCE
	GAS MISCELLANEOUS
	ELEC MISCELLANEOUS

Symbols are indicative of service location only and are not correct for service size.

WATTS VON SENDEN SURVEYING

LICENSED CONSULTING SURVEYORS
LAND AND ENGINEERING SURVEYS

PO BOX 4305
LOGANHOLME DC 4128
PH 3806 1037 FAX 3806 1045
wvss@ozemail.com.au

NOTE: ONLY FENCES HAVE BEEN SURVEYED. BOUNDARIES SHOWN ARE APPROXIMATE ONLY.

UNION LEVEL BENCHMARK
RL 7665 1041

THIS SURVEY MEASURES EXISTING SURFACE LEVELS ONLY AND MAY NOT BE SUITABLE FOR DETERMINING NUL AS REQUIRED. FOR HEIGHT CERTIFICATES

(HOUSE 3.1 OOA SHARED WITH HOUSE 3.2)

DEVELOPMENT SCHEDULE

TOTAL SITE AREA	- 3746m ² APPX
FLOOD STORAGE AREA	- 987m ²
TOTAL BUILDING AREA (FECA) STAGES 1, 2 & 3	- 865m ²
STAGE 1 AREA	- 1450m ²
STAGE 1 SITE COVER	- 407m ² 28%
STAGE 2 AREA	- 671m ²
STAGE 2 SITE COVER	- 398m ² 70%
STAGE 3 AREA	- 737m ²
STAGE 3 SITE COVER	- 385m ² 52%
TOTAL SITE COVER	- 1190m² 32%

(SITE COVER INCLUDES COVERED DRIVING COURTS, TERRACES, CARPORTS & REC AREA, EWES EXCLUDED)

STAGE 1 (FECA):

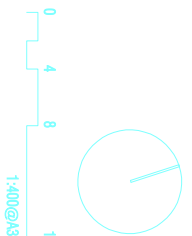
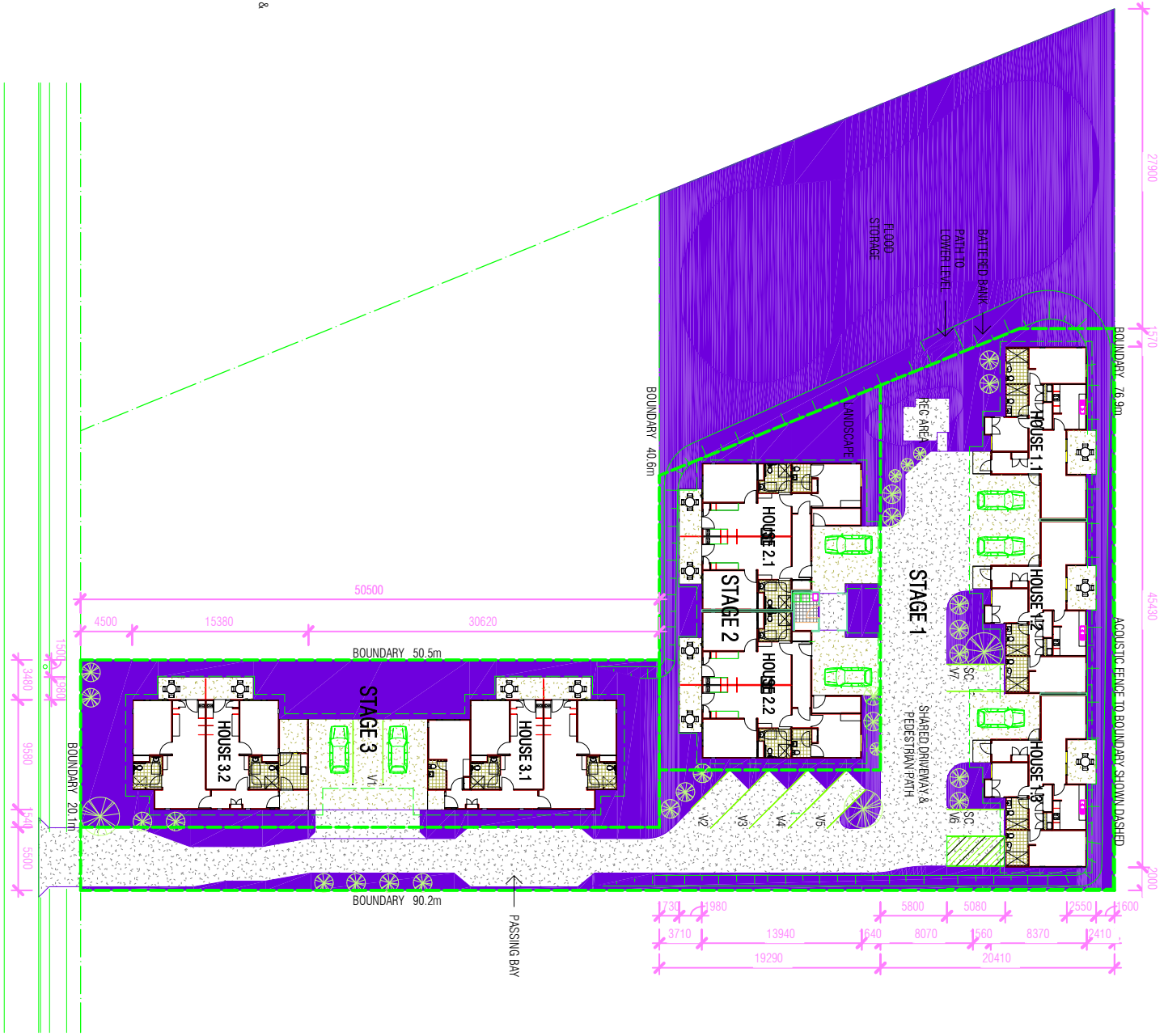
HOUSE 1.1 - 1 BED ROBUST & 1 OOA	- 96m ²
HOUSE 1.2 - 1 BED ROBUST & 1 OOA	- 96m ²
HOUSE 1.3 - 1 BED ROBUST & 1 OOA	- 97m ²
TOTAL	- 290m² (TRIPLEX)

STAGE 2 (FECA):

HOUSE 2.1 - 2 BED HIGH PHMS & 1 OOA	- 146m ²
HOUSE 2.2 - 2 BED HIGH PHMS & 1 OOA	- 153m ²
TOTAL	- 299m² (DUPLEX)

STAGE 3 (FECA):

HOUSE 3.1 - 2 BED HIGH PHMS & 1 OOA	- 147m ²
HOUSE 3.2 - 2 BED HIGH PHMS	- 129m ²
TOTAL	- 276m²



Flood Level Report



The Logan City Council Flood Level Report is provided to support planning and development in accordance with the current version of the Logan Planning Scheme 2015. This report summarises the relevant information for the Flood Hazard overlay code and applicable flood planning levels. The content of this report should be considered along with all other applicable planning and development requirements.

This tool is not designed to give information on the risk of flooding for the purposes of preparing for potential flooding that may affect your home or business. For information on disaster preparedness please visit Council's [Disasters and Emergencies](#) webpage.

Property Details

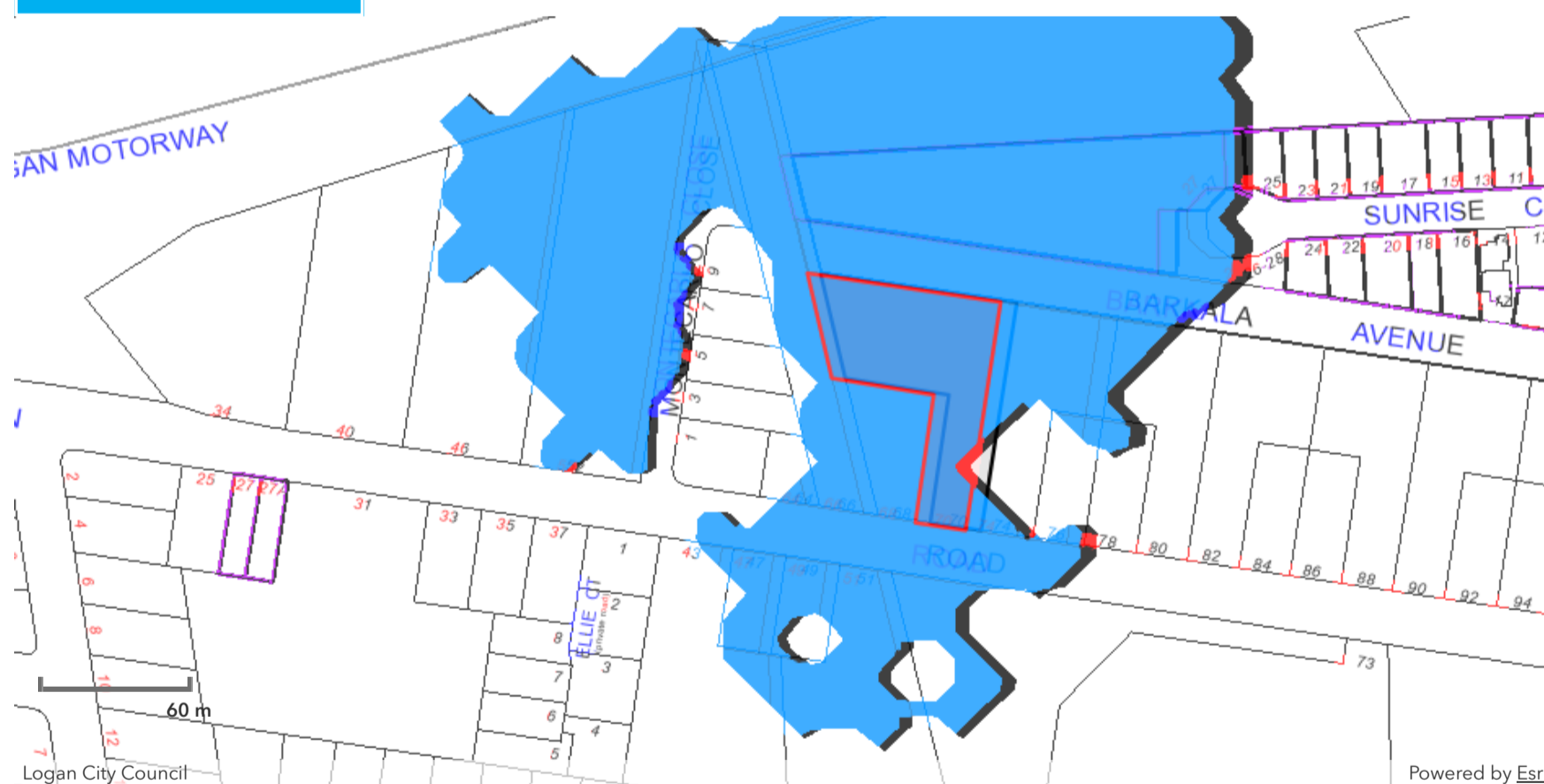
Address:	70-72 Station Road LOGANLEA QLD 4131	Property Key:	203382
Lot/Plan:	Lot 2 RP 99638	Division:	6
Property Size:	3,774 m ² (survey plan area)		
Zone and precinct:	Low Density Residential - Small Lot		

Planning and Development Triggers

The Flood Hazard Overlay from the [Logan Planning Scheme](#) 2015 is displayed. If the selected property is impacted/affected, the Flood Level Report will provide information about flood levels. For further information please contact Council by emailing Council@logan.qld.gov.au or phoning (07) 3412 5282.

Flood Hazard Overlay Code Applies

This property has been identified in a natural hazard area for flooding. The Flood Hazard overlay code is triggered for planning and development purposes.



Ground Level Information

Minimum Ground Level	8.7m AHD
Maximum Ground Level	10m AHD
Source	2013 Digital Elevation Model (5 metre grid)

Design Flood Level Information

The design flood level information below provides water surface levels for a range of typical planning and development design standards. The flood planning level for most development in the Flood Hazard overlay area is the Defined Flood Event. The design flood level information should be considered in conjunction with the Logan Planning Scheme 2015. These flood levels are provided to assist in planning and design and have been sourced from Council's adopted flood modelling and flood study at this location. The flood study has been based on the best available information at the time of completing the study. The flood levels are measured in metres Australian Height Datum (mAHD), where mean sea level is approximately zero (0) mAHD.

N/A = not available

Design Event	1 % AEP Defined Flood Level	2 % AEP	5 % AEP	10 % AEP *	20 % AEP *
Flood Level (m AHD)	9.8	9.2	N/A	N/A	N/A
Flood Study	Logan Albert Rivers Flood Study 2014				

Note: It is possible that some design flood level information may not be available (shown as 'N/A'). If design flood information is not available, please contact Council on (07) 3412 3412 or via email at Council@logan.qld.gov.au. It may be necessary for you to engage a suitably qualified Registered Professional Engineer of Queensland (RPEQ) to obtain the necessary information or seek advice related to your proposed building or development.

* Where design flood event levels have been sourced from a study completed before 2017, these %AEP's may be approximate.

Flood Hazard Triggers

It is possible for one or more sources of flooding to occur, especially where a property is near a creek or waterway. These flooding sources can include riverine, creek and overland flow flooding which can each behave differently and impact how a building or development is designed. All flood hazard triggers should be considered when designing and planning with flooding in mind.

River Flooding

This property has been identified as being at risk of flooding from the Logan and/or Albert River. Planning and development must consider risk to people and property, natural floodplain characteristics and access outcomes during a river flood event.

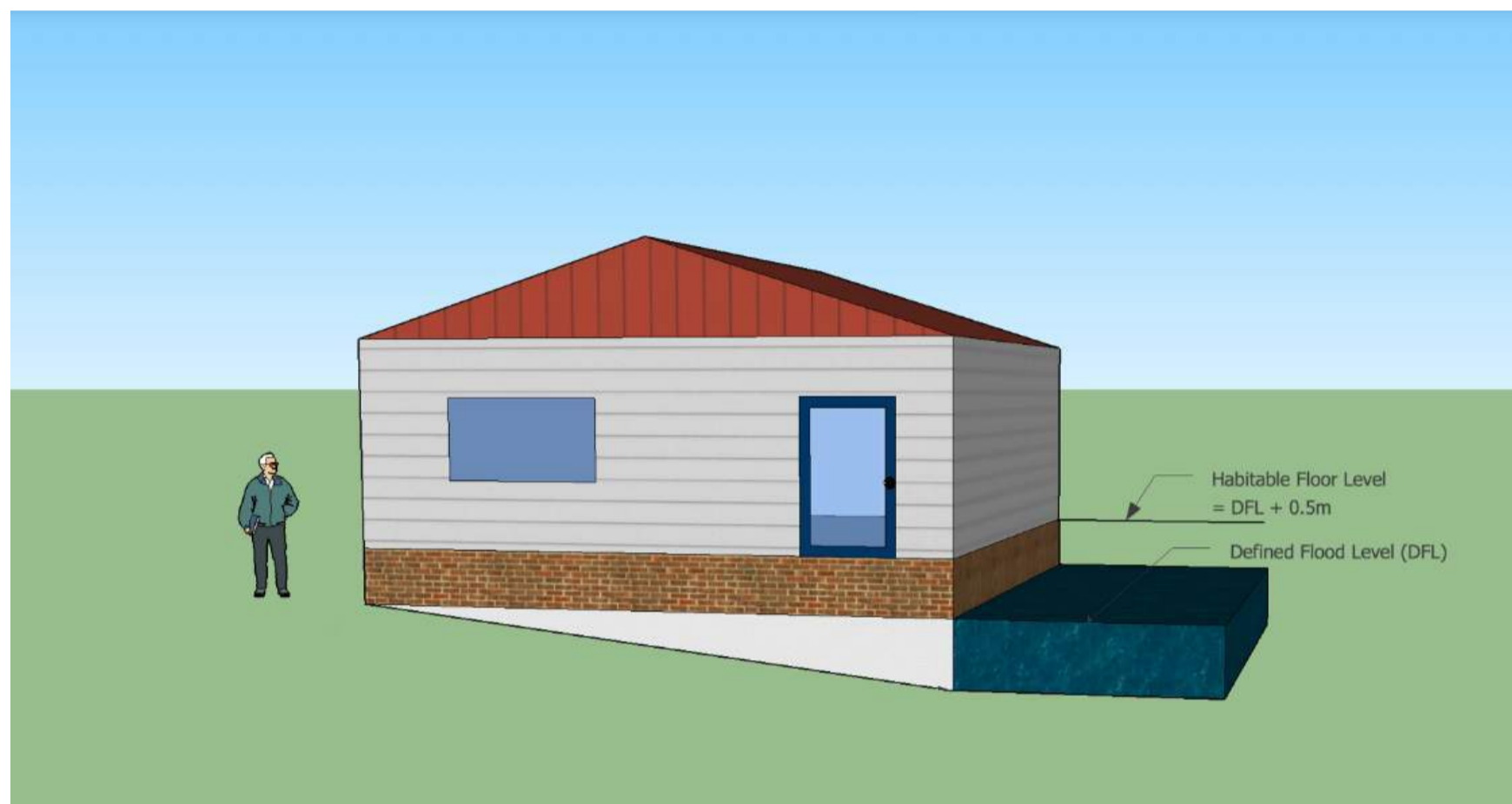
Where to next?

This Flood Level Report is designed to support the implementation of the Logan Planning Scheme 2015. The planning scheme helps Council to safely manage population growth, plan for a sustainable future and guide the way land is used and developed across the city.

Building a house?

A house located in a Flood Hazard overlay area must have a finished habitable floor level a minimum of 500mm above the defined flood event (as shown below).

A building permit, is required prior to commencing construction on most types of domestic or commercial build works. These can be sought from a private building certifier who will assess whether the proposed work complies with the relevant legislation, regulations and standards. You can access more information on the building works process from Council at [Planning & Building](#).



Lodging a development application?

For further advice regarding planning approval for a subdivision or material change of use, or operational works please visit the [Development in Logan](#) webpage or contact a Council planner on (07) 3412 5269.

Buying or selling?

Regulation of planning and development is just one way that we can help to make our city flood resilient. If you are looking to buy or sell a property it is important to consider the risk of flooding and how you can be prepared for potential flooding which may affect your property, business and neighbourhood. Being resilient is a shared responsibility, and Council has developed a range of information on flooding to assist all members of the community to be better prepared for severe weather and flooding. For information on all hazards, including flooding, please visit Council's [Disasters and Emergencies](#) website.

Please note:

All possible steps have been undertaken to ensure the information presented in this report is accurate at the time of generation. Changes to the topography and condition of the local creeks and waterways may have an impact on flooding. Over time, Council may undertake further technical studies to maintain the understanding of flooding across the city, and update the information available.

Logan City Council

PO Box 3226 Logan Central QLD 4114

Generated: Monday, 28 June 2021 10:51 AM

Phone: (07) 3412 5269

Email: council@logan.qld.gov.au

Web: logan.qld.gov.au



Appendix B

- Civil Drawings



LEGEND	
	EXISTING EDGE OF BITUMEN
	EXISTING BUILDING
	EXISTING CONTOUR
	EXISTING CONTOUR
	EXISTING CONCRETE PAVEMENT
	EXISTING DRIVEWAY
	EXISTING FENCE
	EXISTING KERB
	EXISTING RETAINING WALL
	EXISTING SEWER LINE
	EXISTING WATER
	EXISTING STORMWATER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING OVERHEAD ELECTRICAL
	EXISTING TELSTRA
	EXISTING GAS

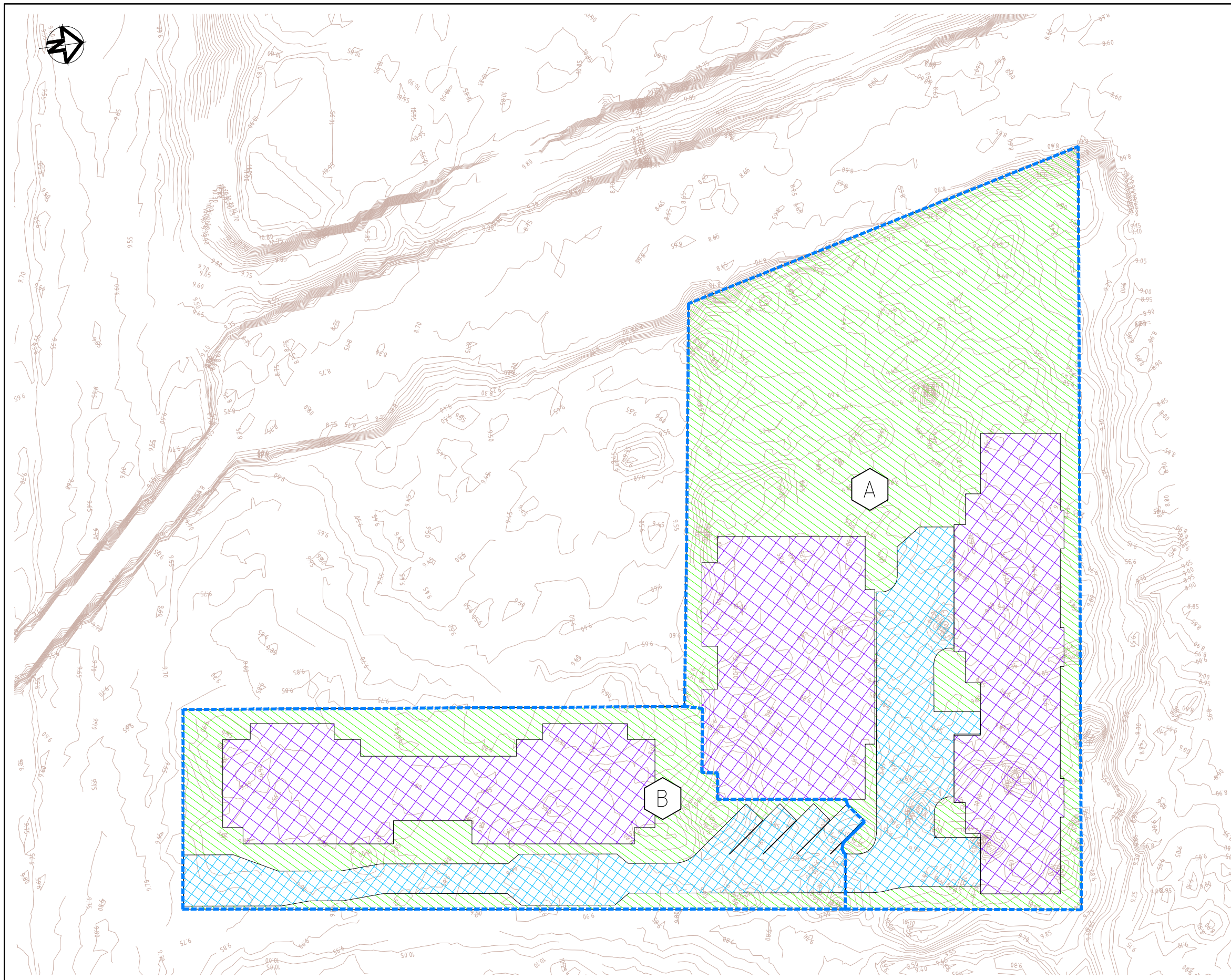
LEGEND	
	CATCHMENT LABELS

- NOTES / WARNINGS**
- THESE DRAWINGS ARE FOR DA PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION.
 - EXISTING CATCHMENT 'A' MEASURES AS 0% IMPERVIOUS.
 - EXISTING CATCHMENT 'B' MEASURES AS 16% IMPERVIOUS.

CATCHMENT 'A' AREAS		
LEGEND	AREA (M ²)	DESCRIPTION
	2701	LANDSCAPING GARDENS/LAWNS (PERVIOUS)
	0	LANDSCAPE HARDSTAND (IMPERVIOUS)
	0	ROOF

CATCHMENT 'B' AREAS		
LEGEND	AREA (M ²)	DESCRIPTION
	899	LANDSCAPING GARDENS/LAWNS (PERVIOUS)
	0	LANDSCAPE HARDSTAND (IMPERVIOUS)
	174	ROOF

ARCHITECT		SURVEYOR		CLIENT:		ROBINSON PROJECTS		DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION				DRAWING TITLE:																					
SCALE				PROJECT TITLE:		70-72 STATION ROAD LOGANLEA		APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD				EXISTING CASE SITE IMPERVIOUSNESS																					
[01] ORIGINAL ISSUE		SH 02/22		SCALE				<table border="1" style="font-size: small;"> <tr> <td>R.P.E.Q No :</td> <td colspan="3">PROJECT TEAM</td> </tr> <tr> <td>HEIGHT DATUM</td> <td>AHD</td> <td>DESIGNER</td> <td>JD</td> </tr> <tr> <td>GRID</td> <td>LOCAL</td> <td>CHECKER</td> <td>SH</td> </tr> <tr> <td>ORIGINAL SHEET SIZE</td> <td>A1</td> <td>APPROVED</td> <td>GH</td> </tr> </table>		R.P.E.Q No :	PROJECT TEAM			HEIGHT DATUM	AHD	DESIGNER	JD	GRID	LOCAL	CHECKER	SH	ORIGINAL SHEET SIZE	A1	APPROVED	GH	<table border="1" style="font-size: small;"> <tr> <td>PROJECT No.</td> <td>DRAWING No.</td> <td>ISSUE</td> </tr> <tr> <td>FE22021</td> <td>DA01</td> <td>[01]</td> </tr> </table>		PROJECT No.	DRAWING No.	ISSUE	FE22021	DA01	[01]
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HEIGHT DATUM	AHD	DESIGNER	JD																														
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ORIGINAL SHEET SIZE	A1	APPROVED	GH																														
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LEGEND	
	EXISTING EDGE OF BITUMEN
	EXISTING BUILDING
	EXISTING CONTOUR
	EXISTING CONCRETE PAVEMENT
	EXISTING DRIVEWAY
	EXISTING FENCE
	EXISTING KERB
	EXISTING RETAINING WALL
	EXISTING SEWER LINE
	EXISTING WATER
	EXISTING STORMWATER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING OVERHEAD ELECTRICAL
	EXISTING TELSTRA
	EXISTING GAS



LEGEND	
	CATCHMENT LABELS

- NOTES / WARNINGS**
- THESE DRAWINGS ARE FOR DA PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION.
 - DEVELOPED CATCHMENT 'A' MEASURES AS 54% IMPERVIOUS.
 - DEVELOPED CATCHMENT 'B' MEASURES AS 61% IMPERVIOUS.

CATCHMENT 'A' AREAS		
LEGEND	AREA (M ²)	DESCRIPTION
	1391	LANDSCAPING GARDENS/LAWNS (PERVIOUS)
	280	LANDSCAPE HARDSTAND (IMPERVIOUS)
	878	ROOF

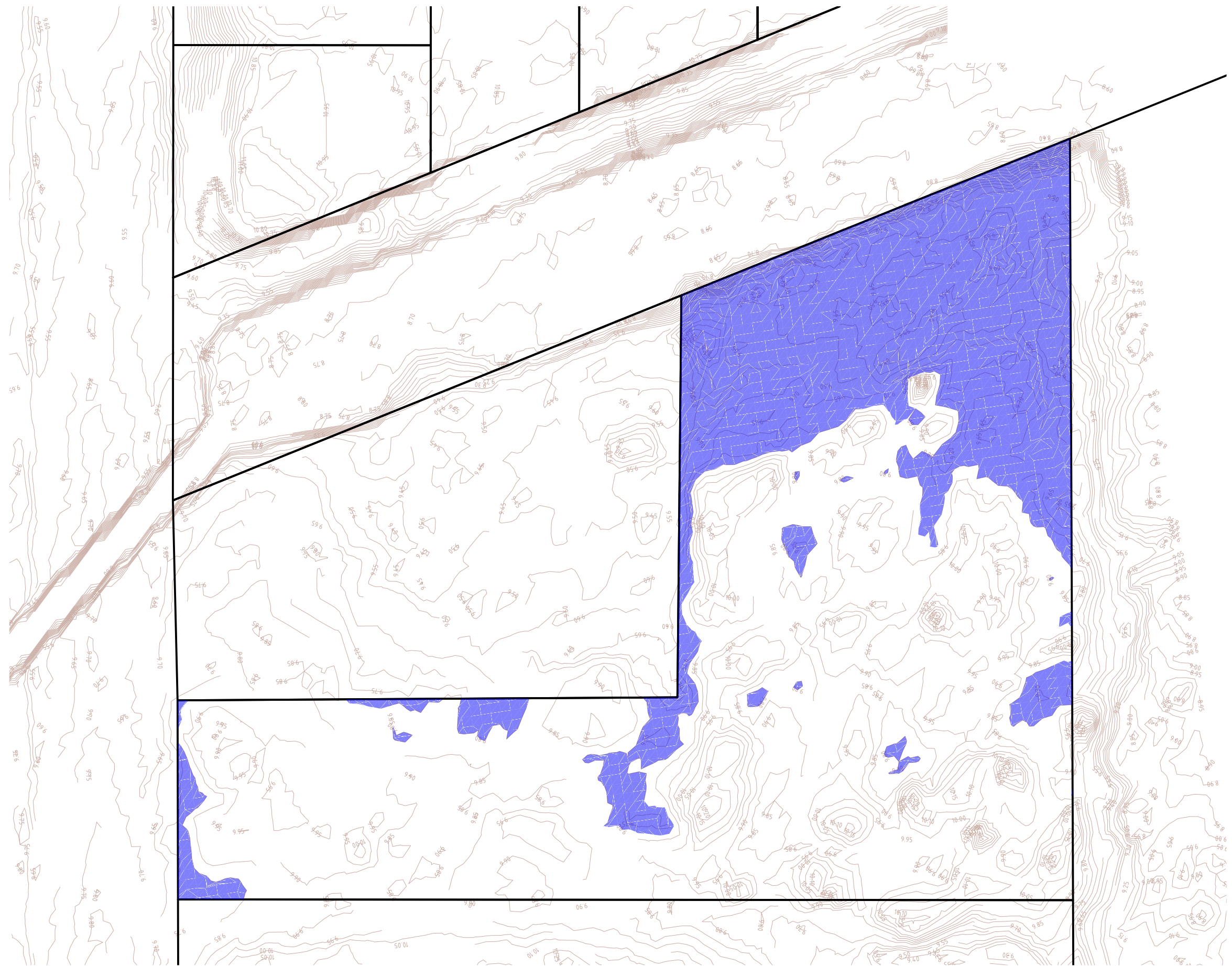
CATCHMENT 'B' AREAS		
LEGEND	AREA (M ²)	DESCRIPTION
	479	LANDSCAPING GARDENS/LAWNS (PERVIOUS)
	313	LANDSCAPE HARDSTAND (IMPERVIOUS)
	433	ROOF



























ARCHITECT		SURVEYOR		CLIENT: ROBINSON PROJECTS		<div style="border: 1px solid black; padding: 2px; text-align: center;">DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION</div> <small>APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD</small>		<p>Friends Civil Engineering Pty Ltd ABN 40 638 121 132 p. 0415 704 063 & 0422 024 440 e. contact@friendsengineer.com w. friendsengineer.com</p>		DRAWING TITLE: DESIGN CASE SITE IMPERVIOUSNESS																				
SCALE 2 1 0 2 4 6 8 10 SCALE 1:200		PROJECT TITLE: 70-72 STATION ROAD LOGANLEA		<table border="1"> <tr> <td>R.P.E.Q No.:</td> <td colspan="3">PROJECT TEAM</td> </tr> <tr> <td>HEIGHT DATUM</td> <td>AHD</td> <td>DESIGNER</td> <td>JD</td> </tr> <tr> <td>GRID</td> <td>LOCAL</td> <td>CHECKER</td> <td>SH</td> </tr> <tr> <td>ORIGINAL SHEET SIZE</td> <td>A1</td> <td>APPROVED</td> <td>GH</td> </tr> </table>		R.P.E.Q No.:	PROJECT TEAM			HEIGHT DATUM	AHD	DESIGNER	JD	GRID	LOCAL	CHECKER	SH	ORIGINAL SHEET SIZE	A1	APPROVED	GH	<table border="1"> <tr> <td>PROJECT No.</td> <td>DRAWING No.</td> <td>ISSUE</td> </tr> <tr> <td>FE22021</td> <td>DA02</td> <td>[01]</td> </tr> </table>			PROJECT No.	DRAWING No.	ISSUE	FE22021	DA02	[01]
R.P.E.Q No.:	PROJECT TEAM																													
HEIGHT DATUM	AHD	DESIGNER	JD																											
GRID	LOCAL	CHECKER	SH																											
ORIGINAL SHEET SIZE	A1	APPROVED	GH																											
PROJECT No.	DRAWING No.	ISSUE																												
FE22021	DA02	[01]																												
[01] ORIGINAL ISSUE		SH 02/22		PROJECT TITLE: 70-72 STATION ROAD LOGANLEA		<small>FILENAME: DA02-FE22021 - DESIGN IMPERVIOUSNESS.DWG</small>																								
ISSUE DESCRIPTION		BY DATE																												

LEGEND	
	EXISTING CONTOUR
	SITE BOUNDARY

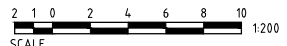





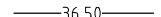
- NOTES / WARNINGS**
- THESE DRAWINGS ARE PRELIMINARY ONLY AND NOT TO BE USED FOR APPLICATION OR CONSTRUCTION.
 - EXISTING FLOOD STORAGE SHOWN IS CALCULATED FROM THE SURVEYED SURFACE LEVEL TO THE LOGAN CITY COUNCIL DESIGNATED FLOOD LEVEL OF 9.8m AHD.
 - THE CALCULATED EXISTING FLOOD STORAGE IS 253.3m³



FLOOD DEPTH	
	0 - 0.2m
	0.2 - 0.4m
	0.4 - 0.6m
	0.6 - 0.8m
	0.8 - 1.0m
	1.0 - 1.2m
	1.2 - 1.4m
	1.4 - 1.6m
	1.6 - 1.8m
	1.8 - 2.0m
	2.0 - 2.2m
	2.2 - 2.4m
	2.4 - 2.6m
	2.6 - 2.8m
	2.8 - 3.0m
	3.0 - 3.2m
	3.2 - 3.4m
	3.4 - 3.6m
	3.6 - 3.8m
	3.8 - 4.0m
	4.0 - 4.2m
	4.2 - 4.4m
	4.4 - 4.6m
	4.6 - 4.8m
	4.8 - 5.0m
	> 5.0m

- NOTES / WARNINGS**
- THESE DRAWINGS ARE FOR DISCUSSION PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION.

ARCHITECT		SURVEYOR		CLIENT: ROBINSON PROJECTS		DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION		Fe Friends civil engineering		DRAWING TITLE: FLOOD STORAGE EXISTING CASE		
SCALE 				PROJECT TITLE: 70-72 STATION ROAD LOGANLEA		APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD				PROJECT No. FE22021 DRAWING No. DA05 ISSUE [01]		
8.02.22	ORIGINAL ISSUE	JD	18.02.22	R.P.E.Q No.:		PROJECT TEAM		Friends Civil Engineering Pty Ltd ABN 40 638 121 132 p. 0415 704 063 & 0422 024 440 e. contact@friendsengineer.com w. friendsengineer.com				
ISSUE	DESCRIPTION	BY	DATE	HEIGHT DATUM	AHD	DESIGNER	JD	FILENAME: DA05-FE21011 - FLOOD STORAGE EXISTING CASE.DWG				
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				ORIGINAL SHEET SIZE	A1	APPROVED	GH					



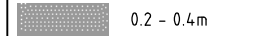

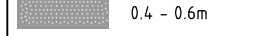
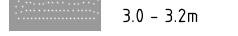
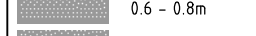
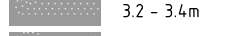
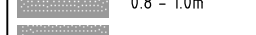
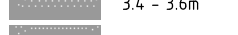
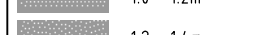
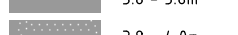
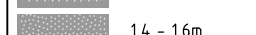

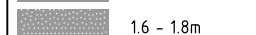
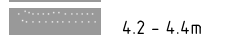
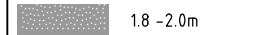
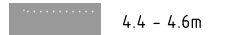
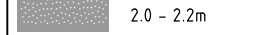
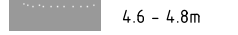
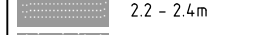
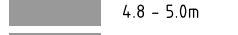
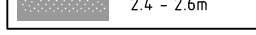
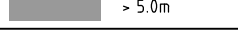


LEGEND	
	EXISTING CONTOUR
	SITE BOUNDARY
	PROPOSED RETAINING WALL
	DESIGN CONTOUR 0.05m



NOTES / WARNINGS

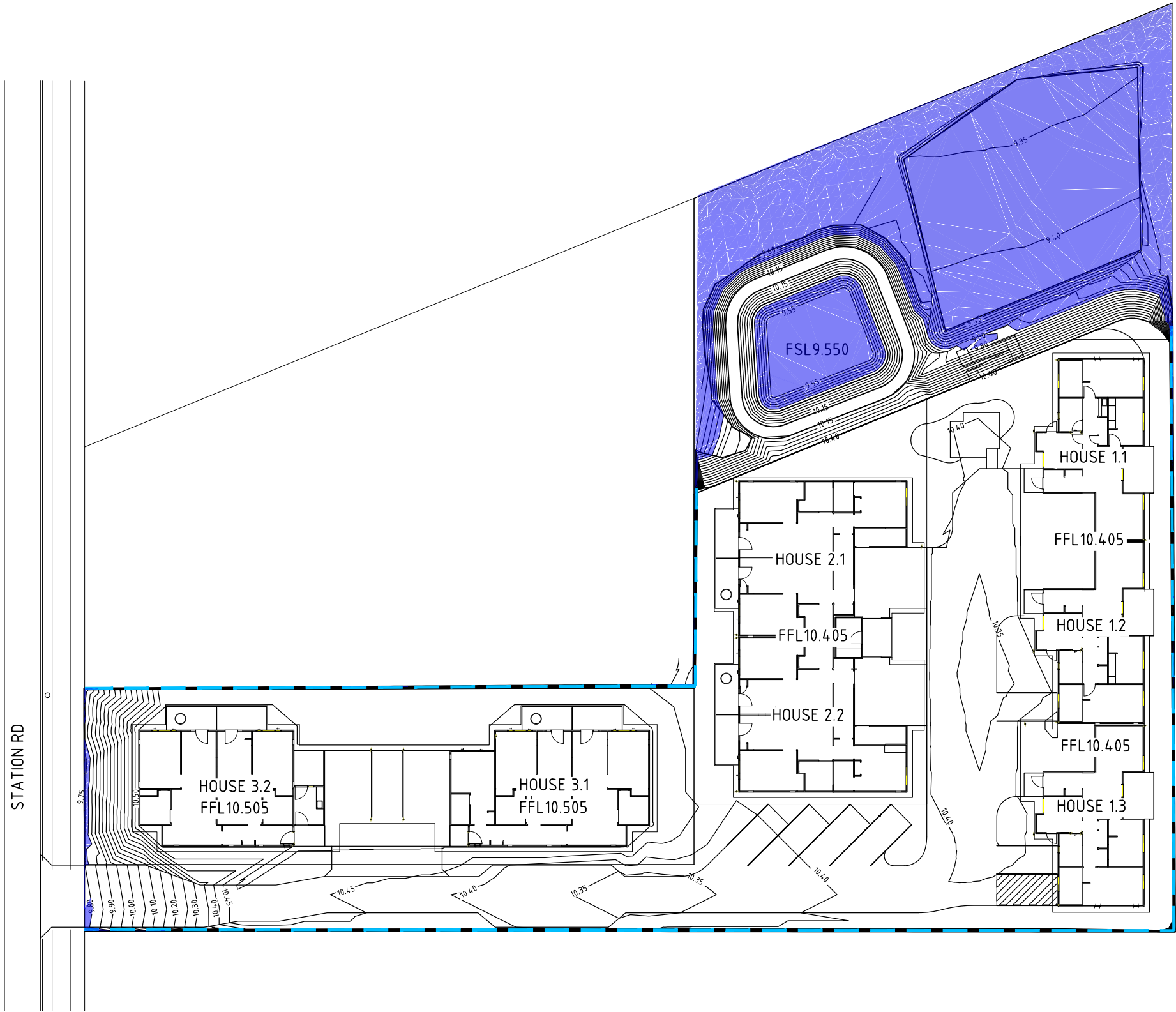
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2. EXISTING FLOOD STORAGE SHOWN IS CALCULATED FROM THE SURVEYED SURFACE LEVEL TO THE LOGAN CITY COUNCIL DESIGNATED FLOOD LEVEL OF 9.8m AHD.
3. THE CALCULATED EXISTING FLOOD STORAGE IS 253.3m³
4. DESIGN FLOOD STORAGE SHOWN IS CALCULATED FROM THE DESIGN SURFACE AND SURVEYED SURFACE LEVEL TO THE LOGAN CITY COUNCIL DESIGNATED FLOOD LEVEL OF 9.8m AHD
5. THE CALCULATED DESIGN FLOOD STORAGE IS 258.6m³

FLOOD DEPTH

	0 - 0.2m		2.6 - 2.8m
	0.2 - 0.4m		2.8 - 3.0m
	0.4 - 0.6m		3.0 - 3.2m
	0.6 - 0.8m		3.2 - 3.4m
	0.8 - 1.0m		3.4 - 3.6m
	1.0 - 1.2m		3.6 - 3.8m
	1.2 - 1.4m		3.8 - 4.0m
	1.4 - 1.6m		4.0 - 4.2m
	1.6 - 1.8m		4.2 - 4.4m
	1.8 - 2.0m		4.4 - 4.6m
	2.0 - 2.2m		4.6 - 4.8m
	2.2 - 2.4m		4.8 - 5.0m
	2.4 - 2.6m		> 5.0m

NOTES / WARNINGS

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ARCHITECT

SURVEYOR

CLIENT:

ROBINSON PROJECTS

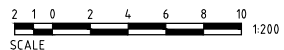
**DISCUSSION PURPOSES ONLY
NOT FOR CONSTRUCTION**



DRAWING TITLE:

FLOOD STORAGE
DESIGN CASE

SCALE



PROJECT TITLE:
**70-72 STATION ROAD
LOGANLEA**

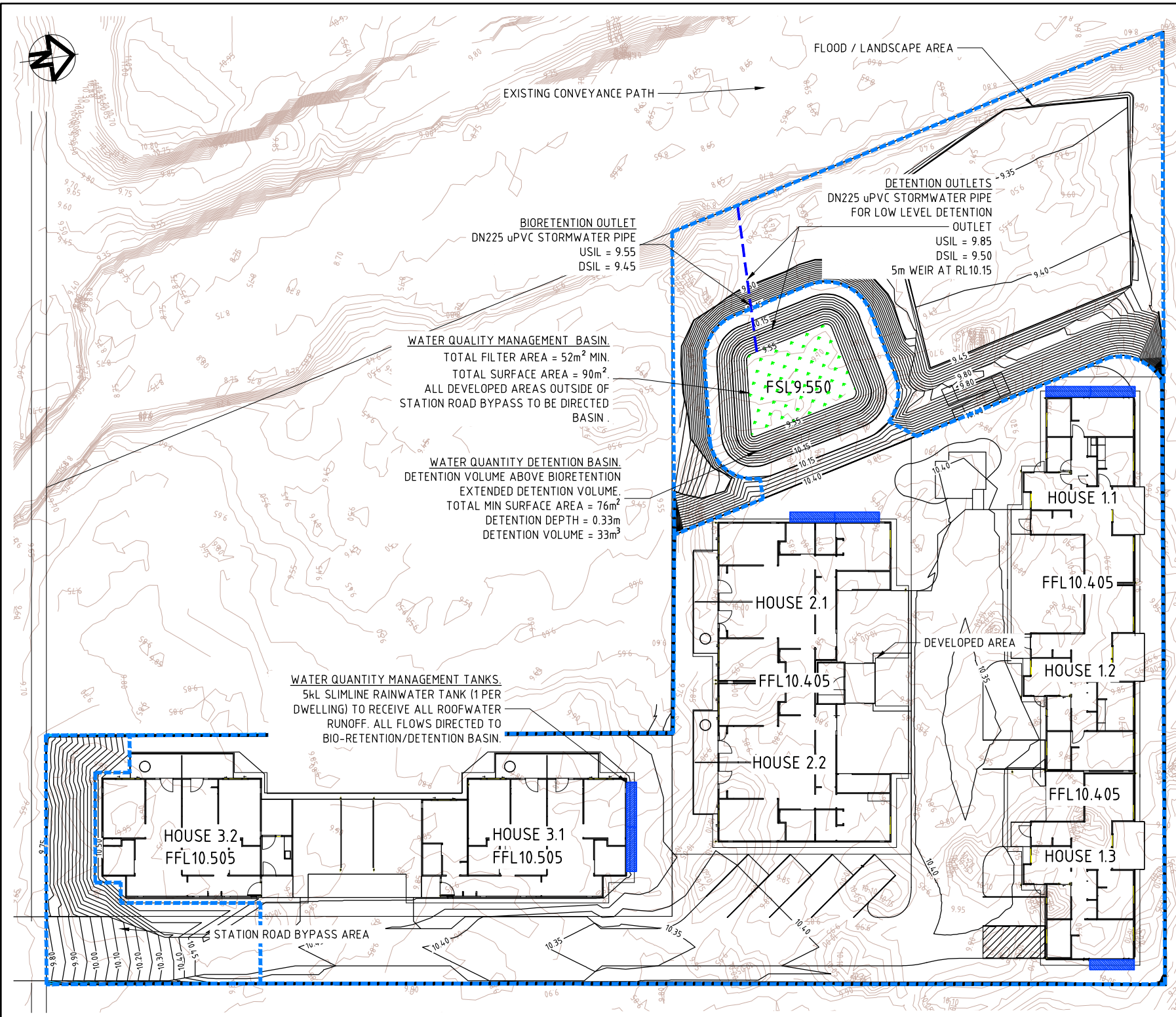
APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD

R.P.E.Q. No. :		PROJECT TEAM	
HEIGHT DATUM	AHD	DESIGNER	JD
GRID	LOCAL	CHECKER	SH
ORIGINAL SHEET SIZE	A1	APPROVED	GH

Friends Civil Engineering Pty Ltd
ABN 40 638 121 132
p. 0415 704 063 & 0422 024 440
e. contact@friendsengineer.com
w. friendsengineer.com

PROJECT No.	DRAWING No.	ISSUE
FE22021	DA06	[01]

ISSUE	DESCRIPTION	BY	DATE
8.02.22	ORIGINAL ISSUE	JD	18.02.22



NOTES / WARNINGS

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GENERAL NOTES

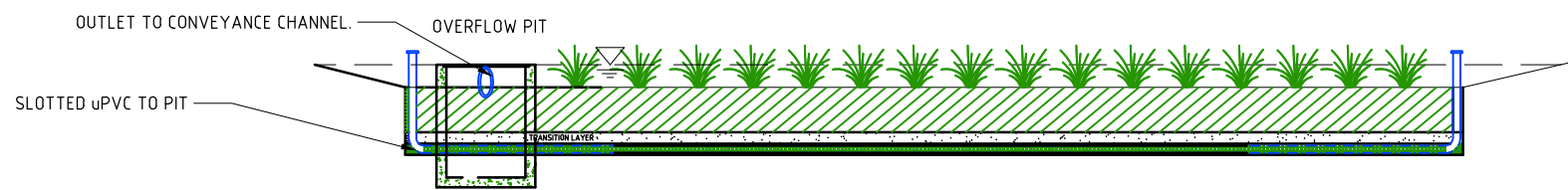
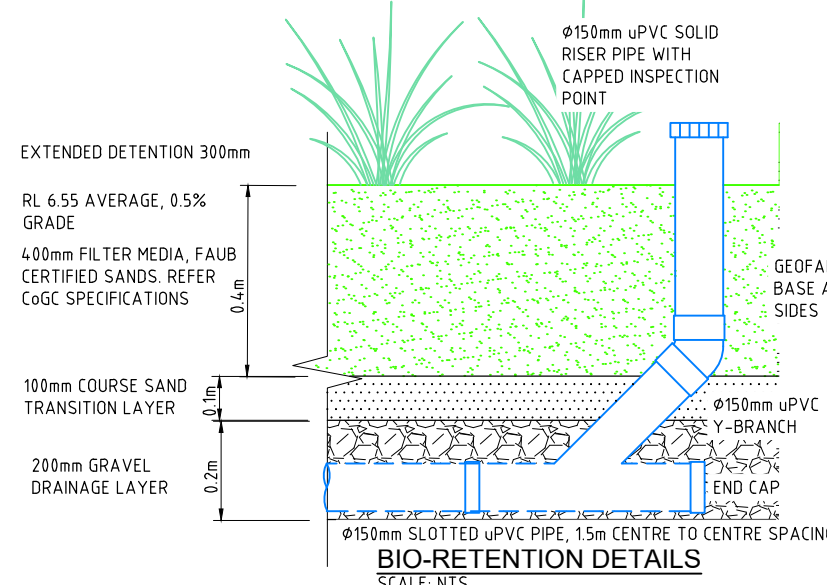
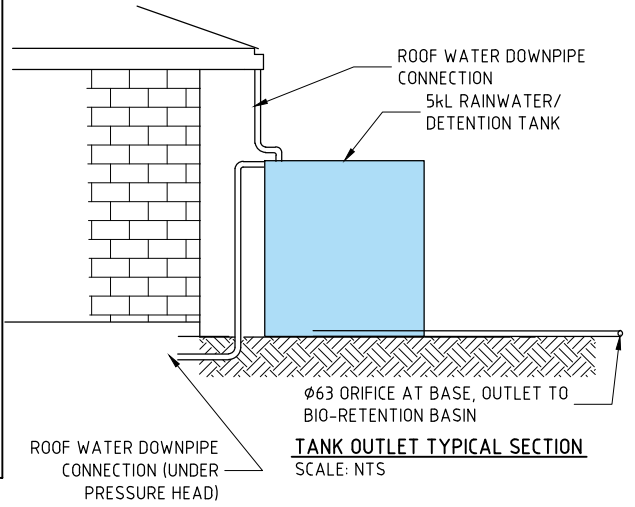
1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH LOGAN CITY COUNCIL'S STANDARDS AND SPECIFICATIONS.
2. ANY REQUIRED ADJUSTMENTS OF EXISTING SERVICES SHALL BE CARRIED OUT TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY, AT THE DEVELOPERS EXPENSE.
3. TRAFFIC CONTROL PLAN TO BE PROVIDED BY CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION.
4. ALL EXISTING SERVICES ARE TO BE LOCATED AND LEVELS CONFIRMED BEFORE COMMENCING CONSTRUCTION.
5. ALL SPOT LEVELS SHOWN ARE FINISHED SURFACE LEVELS AND ALLOW FOR 100mm NOMINAL OF TOPSOIL.
6. MINOR EARTHWORKS TO DIRECT STORMWATER INTO FIELD INLETS SHALL BE CONSTRUCTED AS DIRECTED.
7. CONTOURS SHOWN ON ROADS ARE FINISHED PAVEMENT LEVELS.
8. ROOF WATER KERB ADAPTORS SHALL BE PROVIDED, IF DIRECTED, AT THE LOW SIDE OF EACH PROPERTY.
9. ALL EXISTING INFORMATION IS PROVIDED BY THE SURVEYOR. CONSTRUCTION SETOUT TO BE BASED ON CONTROL DATA AND COMPUTER DESIGN DISKS TO BE PROVIDED BY THE PRINCIPALS SURVEYOR.

STORMWATER DRAINAGE NOTES

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC
3. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
4. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O.
5. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
6. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY
10. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1000mm TO HAVE CLIMB IRONS.
12. ALL DRIVEWAY & OSD PITS TO BE 600 SQUARE UNLESS NOTED OTHERWISE.
13. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
14. PITS LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
15. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
16. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.

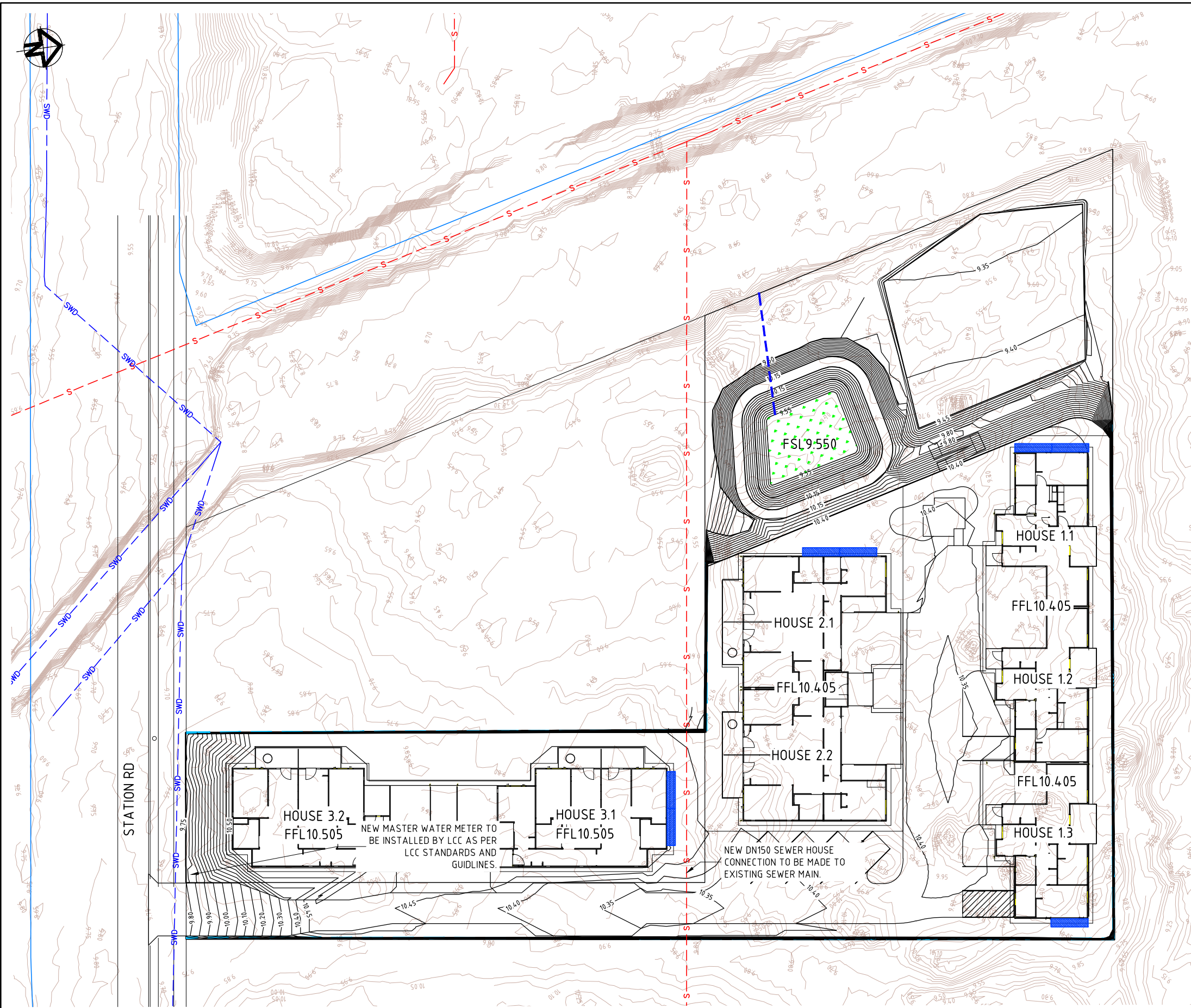
LEGEND

---	EXISTING EDGE OF BITUMEN
---	EXISTING BUILDING
---	EXISTING CONTOUR
---	EXISTING CONCRETE PAVEMENT
---	EXISTING DRIVEWAY
---	EXISTING FENCE
---	EXISTING KERB
---	EXISTING RETAINING WALL
-S-	EXISTING SEWER LINE
-W-	EXISTING WATER
-SW-	EXISTING STORMWATER
-E-	EXISTING UNDERGROUND ELECTRICAL
-OE-	EXISTING OVERHEAD ELECTRICAL
-T-	EXISTING TELSTRA
-G-	EXISTING GAS
-S-	PROPOSED STORMWATER OUTLET
-W-	PROPOSED WATER CONNECTION
-S-	PROPOSED SEWER CONNECTION



TYPE 1 BIO-RETENTION OUTLET
SCALE: NTS

[01] ORIGINAL ISSUE		SH	02/22	ARCHITECT	SURVEYOR	CLIENT:	DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION		Fe Friends civil engineering	DRAWING TITLE:		
ISSUE		DESCRIPTION	BY	DATE	SCALE	ROBINSON PROJECTS	APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD			Friends Civil Engineering Pty Ltd ABN 40 638 121 132 p. 0415 704 063 & 0422 024 440 e. contact@friendsengineer.com w. friendsengineer.com	STORMWATER MANAGEMENT PLAN	
[01]					2 1 0 2 4 6 8 10 SCALE 1:200	PROJECT TITLE: 70-72 STATION ROAD LOGANLEA	R.P.E.Q No.:	PROJECT TEAM	PROJECT No.	DRAWING No.	ISSUE	
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							GRID: LOCAL	CHECKER: SH	FILENAME: DA07-FE22021 - STORMWATER MANAGEMENT PLAN.DWG			
							ORIGINAL SHEET SIZE: A1	APPROVED: GH				



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LEGEND

---	EXISTING EDGE OF BITUMEN
---	EXISTING BUILDING
---	EXISTING CONTOUR
---	EXISTING CONCRETE PAVEMENT
---	EXISTING DRIVEWAY
---	EXISTING FENCE
---	EXISTING KERB
---	EXISTING RETAINING WALL
-S-	EXISTING SEWER LINE
-W-	EXISTING WATER
-SWD-	EXISTING STORMWATER
-E-	EXISTING UNDERGROUND ELECTRICAL
-OE-	EXISTING OVERHEAD ELECTRICAL
-T-	EXISTING TELSTRA
-G-	EXISTING GAS
-S-	PROPOSED STORMWATER OUTLET
-W-	PROPOSED WATER CONNECTION
-S-	PROPOSED SEWER CONNECTION

SEWER

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH L.C.C. STANDARD DRAWINGS AND STANDARD SPECIFICATION FOR SEWERAGE RETICULATION.
- ALL HOUSE CONNECTION BRANCHES TO BE 100mm DIA (150mm FOR INDUSTRIAL) 2. AND TO FINISH BETWEEN 0.75m AND 1.5m BELOW GROUND LEVEL (unol). ALL HCB'S TO BE MARKED BY A LENGTH OF PLASTIC COATED WIRE BOUGHT TO SURFACE.
- CONNECTION TO EXISTING LIVE SEWER TO BE CONSTRUCTED AT DEVELOPER'S EXPENSE, BY L.C.C.

WATER

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH LOGAN CITY COUNCIL'S TECHNICAL SPECIFICATION FOR CONSTRUCTION OF PRESSURE MAINS FOR WATER SUPPLY AND SEWERAGE.
- WATER CROSSING CONDUITS TO BE 100mm DIA uPVC CLASS '12' (unol) FOR RESIDENTIAL AND 150mm DIA uPVC CLASS '12' (unol) FOR INDUSTRIAL. AND EXTEND 300mm (min) BEYOND BACK OF KERB, IN ACCORDANCE WITH L.C.C. STANDARD DRAWINGS.
- CONNECTION TO EXISTING WATER MAIN TO BE CONSTRUCTED AT DEVELOPER'S EXPENSE BY LOGAN CITY COUNCIL.

HOUSE 3.2 FFL 10.505
 HOUSE 3.1 FFL 10.505
 NEW MASTER WATER METER TO BE INSTALLED BY LCC AS PER LCC STANDARDS AND GUIDELINES.

NEW DN150 SEWER HOUSE CONNECTION TO BE MADE TO EXISTING SEWER MAIN.

ARCHITECT	SURVEYOR
SCALE	2 1 0 2 4 6 8 10 1:200
ISSUE	DESCRIPTION
BY	DATE

CLIENT:	ROBINSON PROJECTS
PROJECT TITLE:	70-72 STATION ROAD LOGANLEA

DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION	
APPROVED FOR AND ON BEHALF OF FRIENDS CIVIL ENGINEERING PTY LTD	
R.P.E.Q No.:	PROJECT TEAM
HEIGHT DATUM: AHD	DESIGNER: JD
GRID: LOCAL	CHECKER: SH
ORIGINAL SHEET SIZE: A1	APPROVED: GH

Fe Friends civil engineering

Friends Civil Engineering Pty Ltd
 ABN 40 638 121 132
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 e. contact@friendsengineer.com
 w. friendsengineer.com

FILENAME: DA08-FE22021 - SEWER AND WATER SERVICES PLAN.DWG

DRAWING TITLE: SEWER AND WATER SERVICES PLAN		
PROJECT No.	DRAWING No.	ISSUE
FE22021	DA08	[01]



Appendix C

- Council Codes

Table 9.4.2.3.1 - Filling and excavation code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	Comments
For accepted development (subject to requirements) and assessable development		
Protection of natural processes and ecosystems		
PO1 The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	AO1 The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	A01 – COMPLIES The development will require erosion and sediment control plans prior to excavation works occurring onsite as part of any operation works approvals.
PO2 Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	AO2 Topsoil and spoil is stockpiled to comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	A02 – COMPLIES The development will require erosion and sediment control plans prior to excavation works occurring onsite as part of any operation works approvals.
PO3 Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	AO3 Filling complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	A03 – COMPLIES The development will be required to completed works under Level 1 geotechnical supervision in accordance with Policy 5 – Infrastructure require erosion and sediment control plans prior to excavation works occurring onsite as part of any operation works approvals.
Protection of existing and planned infrastructure		
PO4 Filling or excavation works do not adversely affect infrastructure, including any services.	AO4 Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	A04 – COMPLIES The development will not be filling over existing services and if so will be done in a manner which protects any existing or proposed infrastructure in accordance with the standards in Policy 5 – Infrastructure
Protection and enhancement of personal health and safety and premises		

<p>PO5 Filling or excavation works do not adversely affect personal health and safety.</p>	<p>AO5 Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.</p>	<p>A05 – COMPLIES All earthworks will be done in a safe manner with appropriate workplace health and safety measures being implemented.</p>
<p>Surface water flow</p>		
<p>PO6 Surface water drainage does not cause any of the following:</p> <ul style="list-style-type: none"> a. ponding on any premises; or b. a hazard or adversely affect personal health and safety and premises; or c. diversion or concentration of flow from or onto adjoining premises or infrastructure. 	<p>AO6 Surface water drainage complies with part 3.3 - Filling or excavation standards in Planning scheme policy 5 - Infrastructure.</p>	<p>A06 – COMPLIES The development proposes to maintain a similar drainage regime with the site still being free draining. Refer R01-FE22021 Stormwater Management Plan for further details.</p>
<p>Batters</p>		
<p>PO7 A batter:</p> <ul style="list-style-type: none"> a. does not adversely affect the natural physical processes and ecosystems; b. protects existing and planned infrastructure; c. is safe, stable and easily maintained; d. is landscaped to enhance visual amenity. 	<p>AO7 A batter is designed and constructed to comply with the standards specified in 3.3.6 - Batters and retaining walls in Planning scheme policy 5 - Infrastructure.</p>	<p>A07 – COMPLIES The development will be completing batters done in accordance with the standards in Policy 5 – Infrastructure refer Preliminary Earthworks plans attached.</p>
<p>Retaining walls</p>		

PO8

A retaining wall:

- a. is not constructed of timber and is not located on existing or proposed lot boundaries, or movement networks;
- b. does not adversely affect the natural physical processes and ecosystems;
- c. is located to avoid conflict with adjoining premises;
- d. is located such that existing and planned infrastructure is not adversely affected;
- e. protects the visual amenity of adjoining premises or a public open space;
- f. is located within the premises that is being filled;
- g. is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot;
- h. is safe and stable;
- i. enables easy access for maintenance.

A08

A retaining wall is designed and constructed to comply with the standards specified in [section 3.3.6.2](#) - Retaining walls in [Planning scheme policy 5](#) - Infrastructure.

A08 – COMPLIES

The development will be completing retaining walls done in accordance with the standards in Policy 5 – Infrastructure refer Preliminary earthworks plans attached.

Filling of a dam

PO9

A09

A09 – COMPLIES

<p>The filling of a dam:</p> <ol style="list-style-type: none"> does not adversely affect the natural physical processes and ecosystems; creates a safe and stable surface; is integrated into the landscape. 	<p>The filling of a dam complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.</p>	<p>No existing dam is present on the site.</p>
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Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	COMMENTS
For accepted development (subject to requirements) and assessable development		
Provision, design, construction and location of infrastructure		
<p>PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.</p>	<p>AO1 Reports, plans and drawings are provided in accordance with part 2 of Planning scheme policy 5 - Infrastructure.</p>	<p>PO1 – COMPLIES Refer R2-FE22021 for service connection details.</p>
<p>PO2 Development:</p> <ol style="list-style-type: none"> provides necessary infrastructure to service the development; provides that the design, construction and location of necessary infrastructure: <ol style="list-style-type: none"> protects existing and planned 	<p>AO2 Development:</p> <ol style="list-style-type: none"> in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres; in a sewerage supply service area connects to the waste water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code; 	<p>PO2 – COMPLIES Refer R2-FE22021 for service connection details.</p>

<ul style="list-style-type: none"> ii. infrastructure networks; services proposed development; iii. integrates with existing and planned infrastructure networks; iv. delivers a standard of service that is efficient and equitable; v. minimises the cost to the community for the life of the infrastructure by providing a suitable design life, ease of maintenance and ease of replacement; vi. protects personal health, safety and premises; vii. protects environmental values. 	<ul style="list-style-type: none"> e. provides stormwater infrastructure in accordance with part 3.6 of Planning scheme policy 5 - Infrastructure; f. provides a movement network infrastructure in accordance with part 3.4 of Planning scheme policy 5 - Infrastructure; g. provides parks in accordance with part 3.12 of Planning scheme policy 5 - Infrastructure; h. provides road lighting in accordance with part 3.5 of Planning scheme policy 5 - Infrastructure; i. provides electricity reticulation in accordance with part 3.8 of Planning scheme policy 5 - Infrastructure; j. provides gas and telecommunications reticulation in accordance with part 3.9 of Planning scheme policy 5 - Infrastructure. k. is consistent with the general planning layouts in part 7.2 of Planning scheme policy 5 - Infrastructure. <p>Editor's note - The delivery of any part of a network identified in the plans for trunk infrastructure is governed by Part 4 - Local government infrastructure plan.</p>	
Location of development		
P03	A03	P03 – COMPLIES

Development is located to protect existing and planned infrastructure networks.

Development is located outside:

- a. planned widening of a road or a new road identified in [Table 7.3.1.1](#) - Road encroachment maps of [Planning scheme policy 5](#) - Infrastructure;
- b. planned public transport network identified on [Figure 3.4.1.3.1](#) - Public transport network in [Planning scheme policy 5](#) - Infrastructure;
- c. a planned cycle network identified on [Figure 3.4.1.2.1](#) - Cycle network in [Planning scheme policy 5](#) - Infrastructure;
- d. a planned network identified in Local government infrastructure plan map LGIP-07.00 Plan for trunk parks infrastructure in [Schedule 3](#) - Local government infrastructure plan mapping and tables.

Refer R2-FE22021 for service connection details.

Fire fighting

PO4

Development in a water service area accessed by common private title provides:

- a. fire hydrant infrastructure;
- b. unimpeded access for emergency services vehicles.

Editor's note - The term common private title refers to areas such as access roads in community title

A04

Development in a water service area involving a material change of use or reconfiguring a lot where, or to be, accessed by common private title ensures that fire hydrant placement and technical requirements for streets and access ways are in accordance with:

- a. Australian Standard (AS) 2419.1 - 2005 *Fire hydrant installations*;

P04 – COMPLIES

Access is available from the site frontage with service connection for fire available for the site. Refer R2-FE22021 for service connection details.

developments or strata title unit access, which are private and under group or body corporate control.	b. QFES: <i>Fire Hydrant and vehicle access guidelines for residential, commercial and industrial lots.</i>	
<p>PO5 Development not in a water service area provides sufficient water storage with adequate pressure, volume and flow to service development for fire fighting purposes.</p>	<p>A05 Development:</p> <ul style="list-style-type: none"> a. is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for fire fighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa; or b. has on-site water storage in accordance with Table 9.4.3.3.2 - Water storage for fire fighting, dedicated or retained for fire fighting purposes that is made of fire resistant materials and is: <ul style="list-style-type: none"> i. a separate tank; or ii. a reserve section in the bottom part of the main water supply tank water tank. <p>Editor's note - The requirement in A05 is:</p> <ul style="list-style-type: none"> - in addition to the requirement for potable water supply/storage in AO2 in Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and assessable development; - reflected in AO5 in Table 8.2.3.3.1 - Bushfire hazard overlay code: accepted development (subject to requirements) and assessable development. 	P05 – N/A
Disposal of trade waste		
<p>PO6 The disposal of trade waste in a sewerage supply service area</p>	<p>A06 The disposal of trade waste in a sewerage supply service area complies with the sewer admission standards</p>	P06 – N/A

<p>does not adversely affect the sewerage network.</p>	<p>in section 3.2.6 - Sewer admission standards in Planning scheme policy 3 - Environmental management.</p>	
<p>Roof water drainage and surface water drainage</p>		
<p>PO7 Development provides stormwater infrastructure for the drainage of the premises so as not to cause any of the following:</p> <ul style="list-style-type: none"> a. ponding of stormwater on the premises; b. a hazard to personal health and safety; c. damage to premises; d. an increased risk of flooding to premises within the catchment. 	<p>A07 Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>P07 – COMPLIES Refer R1-FE22021 for service layouts</p>
<p>Natural flow of surface water</p>		
<p>P08 Development provides that the natural flow of surface water is:</p> <ul style="list-style-type: none"> a. not altered so as to cause a risk to personal health and safety or damage to property; b. not increased in intensity, velocity or frequency; 	<p>A08 Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>P08 – COMPLIES Refer R1-FE22021 existing outlet measures are being proposed.</p>

c. not concentrated onto adjoining premises.

Water sensitive urban design

P09

Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to:

- a. protecting existing natural features and ecological processes;
- b. protecting the natural hydrologic behaviour of catchments;
- c. protecting the existing natural flow and water quality regimes of waterways;
- d. protecting water quality of surface and ground waters;
- e. minimising demand on the water network;
- f. minimising sewage discharges to the natural environment;
- g. integrating water into the landscape to enhance visual and ecological values.

A09

Development complies with the standards for stormwater infrastructure specified in [part 3.6](#) of [Planning scheme policy 5](#) - Infrastructure.

P09 – COMPLIES

Refer R1-FE22021 for compliant measures proposed.

Movement network

<p>PO10 The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.</p>	<p>AO10 Development does not cause or contribute to projected traffic levels:</p> <ul style="list-style-type: none"> a. exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in Planning scheme policy 5 - Infrastructure; or b. exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in Planning scheme policy 5 - Infrastructure. 	<p>PO10 - COMPLIES</p>
<p>Integrated movement concept report</p>		
<p>PO11 Development which generates more than 3,000 vehicle trips per average weekday is designed to integrate the movement network to minimise the transportation costs required to service the use.</p>	<p>AO11 Development which generates more than 3,000 vehicle trips per average weekday provides an integrated movement concept report which integrates the planning of the movement network in accordance with part 2 and 3 of Planning scheme policy 5 - Infrastructure.</p>	<p>PO11 – N/A</p>