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ENGINEERING SERVICES REPORT

Proposed Lot 105, Flagstone Logistics Estate

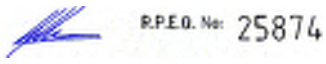
Prepared for CH Hydrangea Pty Ltd

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Executive Summary

This Engineering Services Report (ESR) has been prepared on behalf of CH Hydrangea Pty Ltd (Applicant) in support of a Development Application (DA) over land described as: proposed lot 105, part of Lot 1 on SP352820 (site). This Priority Development Area (PDA) DA seeks approval for a Development Permit for a Material Change of Use for a Warehouse, Low impact industry, and Medium impact industry.

The proposed development will be located approved Lot 1, approved by the Minister for Economic Development Queensland (MEDQ) as part of the PDA Development Approvals DEV2023/1466 and DEV2023/1446 issued on 11 October 2024 and 19 March 2025, respectively. The proposed development seeks to facilitate the establishment of a speculative warehouse and/or industrial facility that will operate 24 hours a day, 7 days a week and will be located on Proposed Lot 105.

This ESR provides advice on engineering services strategy for the proposed development's engineering planning issues associated with the application. This report demonstrates that the proposed development can connect to local stormwater, potable water, sewerage reticulation, electricity, telecommunications and transport infrastructure. The servicing strategy for the development is summarised below.

It is noted that the infrastructure referred to as existing in this report, is the estate infrastructure that is currently under construction. At the time of writing, Lot 1 is currently under construction.

Site Access – Two (2) heavy vehicle and one (1) light vehicle crossovers are proposed for the development via Enterprise Drive.

Stormwater Management – The proposed development will introduce a new internal pit and pipe system and connect into the existing lawful point of discharge. Refer to the SBSMP for the proposed lot 105 development that has been prepared by Northrop (BN26000284_SBSMP001_3_Lot 105 Flagstone Estate), and the overarching precinct SBSMP prepared by Arcadis (EAG001-30109334-AAR Revision 12).

Water Supply –The development's internal water reticulation network will be serviced by combined fire service and domestic services located within frontage of the site adjacent Enterprise Drive. Suitability is to be confirmed by the hydraulics consultant in detailed design. The proposed development loads are less than the projected loads for the site as outlined in Arcadis Water Network Assessment EAG005-30109334-AAR-WNA.

Sewer Reticulation – The development's internal sewer reticulation network will be constructed to meet the reticulation main along the southern boundary of the site, accessible by Enterprise Drive. The proposed development loads are less than the projected loads for the site as outlined in Arcadis Sewer Network Assessment EAG006-30109334-AAR-SNA.

Electrical Supply – Connection to existing electrical infrastructure within Enterprise Drive.

Gas Supply – No Gas infrastructure was identified in the vicinity of the site. Should gas services be required for the development, connection and extension requirements shall be undertaken by a specialist consultant and will form part of the future building works applications to both APA and EDQ.

Telecommunications – Connection to existing telecommunications infrastructure surrounding the site will be made via underground cables to the conduit network installed as part of the estate works in Enterprise Drive.

1. Introduction

This Engineering Services Report (ESR) has been prepared on behalf of CH Hydrangea Pty Ltd (Applicant) in support of a Development Application (DA) over land described as: proposed lot 105, part of Lot 1 on SP352820 (site). This Priority Development Area (PDA) DA seeks approval for the following aspects of development:

- Development Permit for Reconfiguring a lot – 1 into 2 lots
- Development Permit for a Material Change of Use for a Warehouse, Low impact industry, and Medium impact industry.

The proposed development will be located on Lot 1, approved by the Minister for Economic Development Queensland (MEDQ) as part of the PDA Development Approvals DEV2023/1466 and DEV2023/1446 issued on 11 October 2024 and 19 March 2025, respectively. The proposed development seeks to facilitate the establishment of a speculative warehouse and/or industrial facility that will operate 24 hours a day, 7 days a week.

The purpose of this ESR is to provide advice on the engineering servicing strategy for the proposed development regarding earthworks, roadworks, stormwater management (quality, quantity and flooding), sewerage, water supply, electricity, communications and gas. The required infrastructure will be subject to the conditions attached to the Development Approval to be provided by Economic Development Queensland (EDQ).

Table 1 – Property Details

Site Address	Enterprise Drive, North Maclean, QLD , 4280
Lot Title	Proposed Lot 105, Part of Lot 1 on SP352820
Total Site Area	32,559m^2
Proposed Land Use	Low & Medium Impact Industry

1.1. Related Reports and Documents

This report is to be read in conjunction with the following supporting and reference documents:

- Site Based Stormwater Management Plan Report by Northrop. Report No: 26000284_SBSMP001_3_Lot 105 Flagstone Estate
- Arcadis SBSMP EAG001-30109334-AAR Revision 12
- PDA Development Approval DEV2018/961/18
- Civil Design Drawings by Northrop. Appendix A
- Arcadis Water Network Assessment EAG005-30109334-AAR-WNA
- Arcadis Sewer Network Assessment EAG006-30109334-AAR-SNA

2. Site Context and Existing Characteristics

The site, Proposed Lot 105 is part of approved Lot 1, which was approved by the MEDQ as part of the PDA Development Approvals DEV2023/1466 and DEV2023/1446 issued on 11 October 2024 and 19 March 2025, respectively. The site is currently cleared and undeveloped, comprising primarily of exposed soils. The site generally falls east towards the existing combined bioretention and detention basin (Lot 900) at approximately 0.5% grade. The subject site is located within stage 1 of the overarching PDA Development Approval for the Flagstone Logistics Estate (DEV2018/961/18) and is located within the Industrial Warehouse, Business, Research and Technology Precinct of the endorsed greater Flagstone context plan.

Proposed Lot 105 is currently bound by:

- Lot 1 to the north
- Lot 1 to the west
- Northern Basin to the east (Lot 900)
- Enterprise Drive to the south

A site locality is shown in Figure 1.

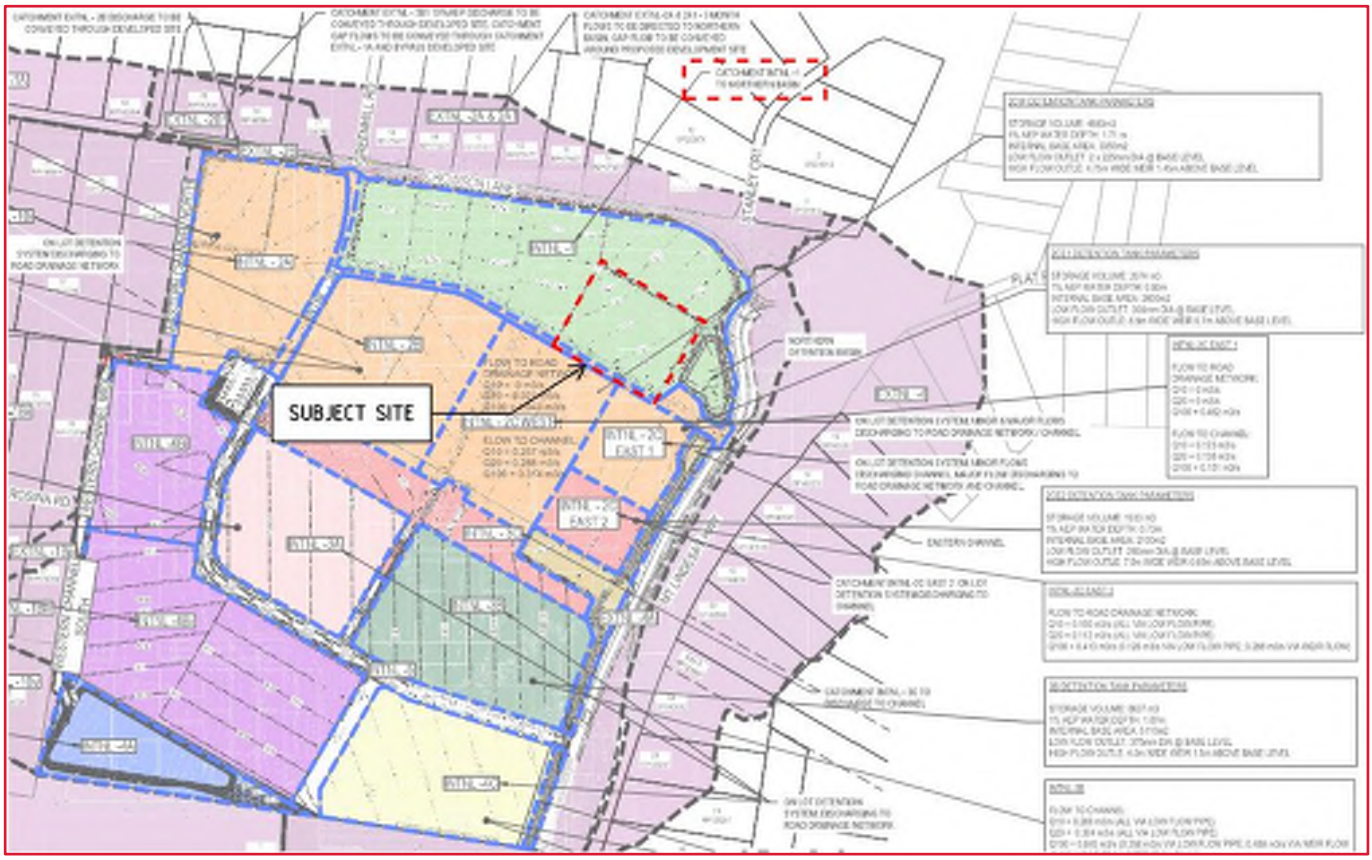


Figure 1 - Site Locality (Extract from Arcadis SBSMP EAG001-30109334-AAR)

3. Proposed Development

The proposed development involves the construction of a low & medium impact industrial warehouse (distribution centre) on Proposed Lot 105 (Part of existing Lot 1) in support of the Reconfiguration of Lot – 1 into 2 Lots, plus access easements. The proposed architectural layout of the development prepared by Watson Young is shown below in Figure 3-1. Architectural drawings are included in Appendix C.

The material change of use of the proposed development seeks approval for a Warehouse, Low impact industry, and Medium impact industry.

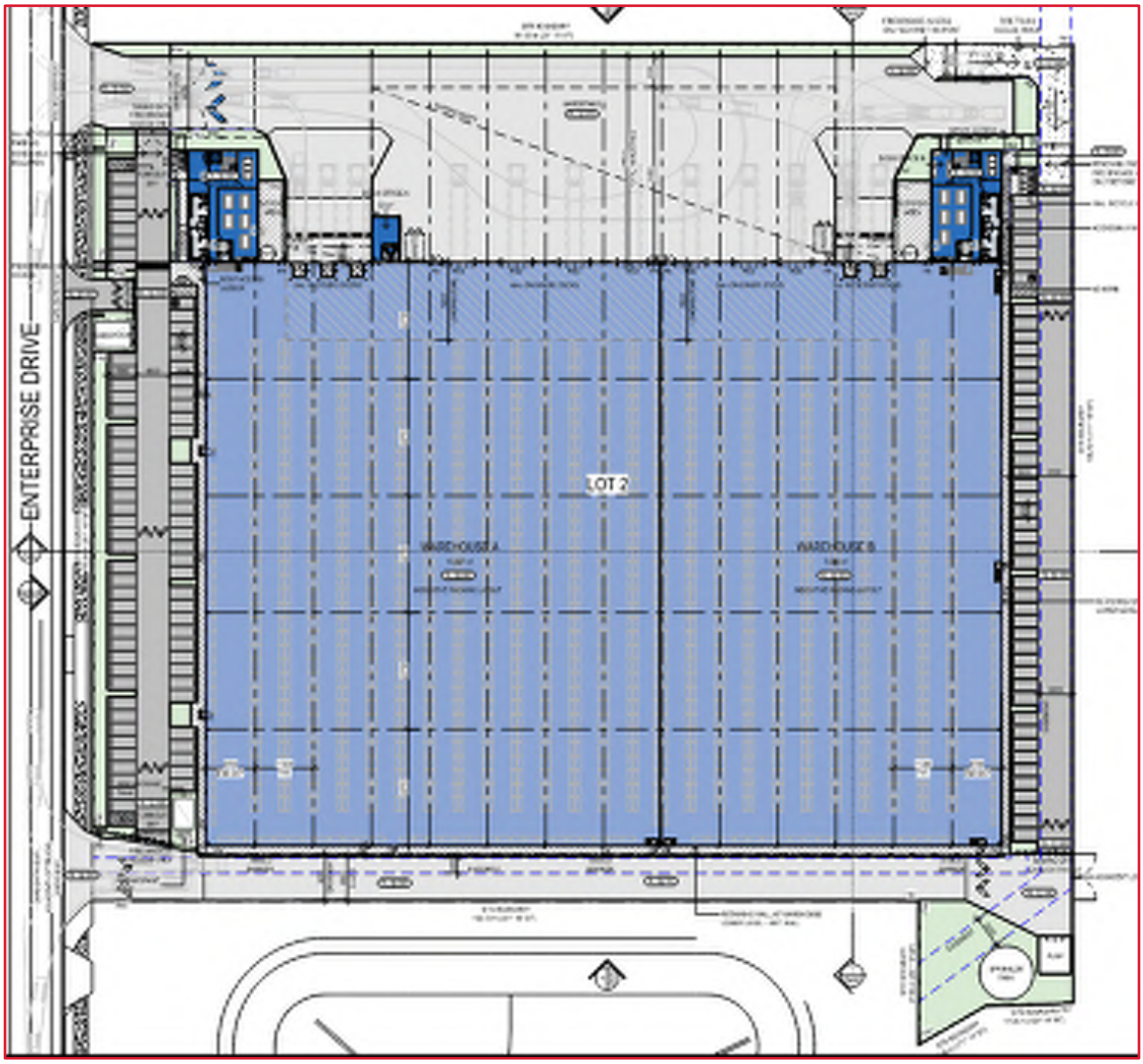


Figure 2 - Proposed Development (Watson Young 2025)

4. Earthworks

4.1. Bulk Earthworks

Bulk earthworks operations for the greater development have been undertaken as part of PDA Development Approval DEV2018/961/18. The proposed lot 105 development will require additional bulk earthworks operations to achieve the desired surface levels to accommodate the development.

4.2. Acid Sulfate Soil Assessment

Figure 3 below illustrates the Acid Sulfate Soil (A.S.S) overlay accessed from Logan Interactive Map. Figure 3 indicates that the site is not located within an area subject to risks associated with A.S.S. if acid sulfate soils are encountered on site, management of soils is to be in accordance with EDQ's requirements.



Figure 3 - Acid Sulfate Soils Overlay (Logan Interactive Map, 2025)

5. Roads and Access

Three (3) vehicular access points are proposed for the development. The development proposes to construct new vehicle crossovers to the proposed site and associated vehicle crossover for the private access driveway located servicing the adjoining Lot 1. Site access to the carpark for light vehicles, and heavy commercial vehicles is proposed at Enterprise Drive. Crossover locations shown below in Figure 4.

Internal hardstand areas will be designed in accordance with Logan City Council Land Development Guidelines and can cater for the design vehicle access to the loading docks.

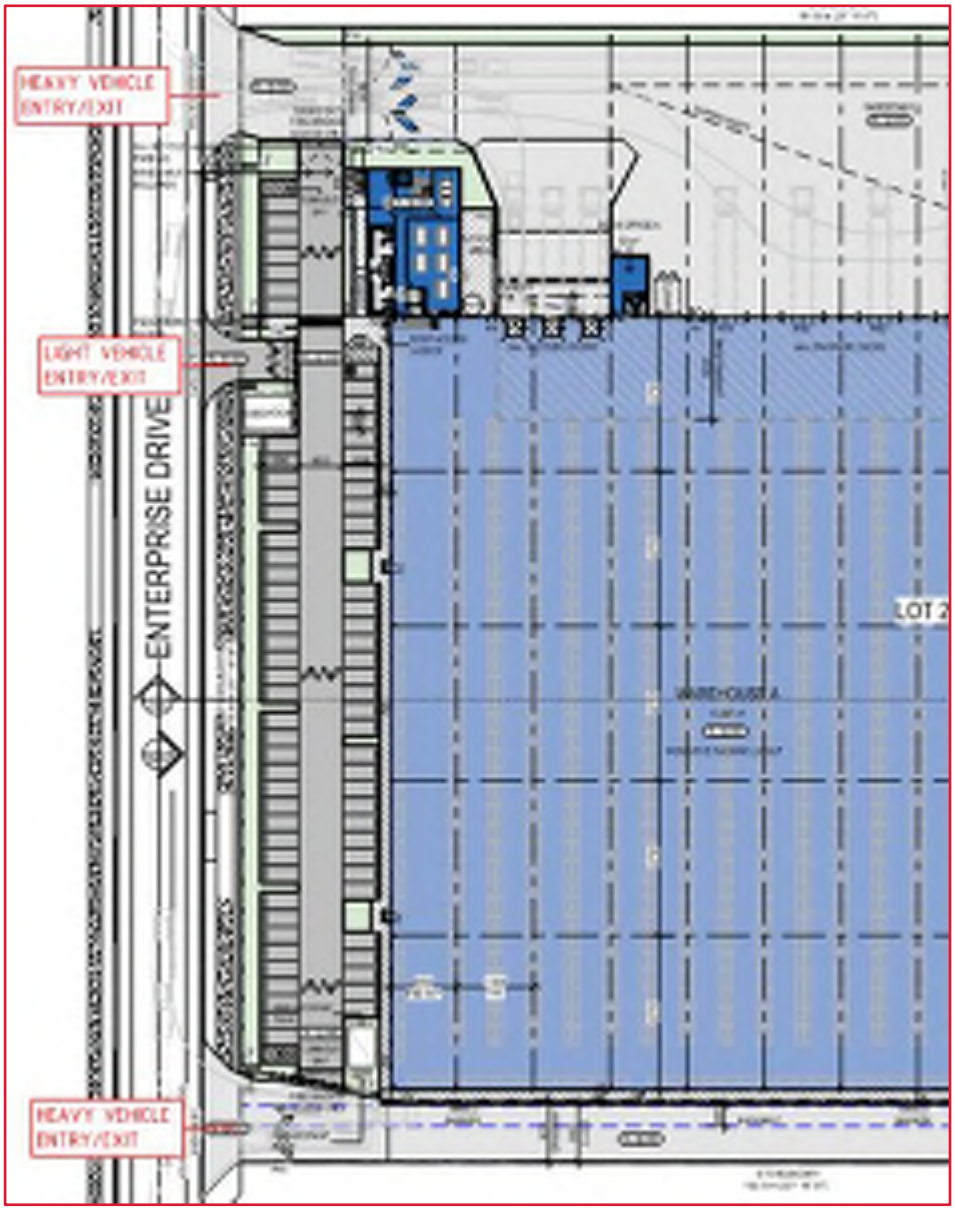


Figure 4 - Proposed Site Access

6. Flood Management

The estate Site Based Stormwater Management Plan (Quantity) by Arcadis (EAG001-30109334-AAR Revision 12) discusses the flood risk associated with the proposed estate for design storms up to and included the 1% AEP. The report demonstrates that the proposed Lot 105 development has immunity for all design storms.

Further to their SBSMP, Arcadis have prepared a technical memorandum (EAG001-30109334-AAR-02) which discusses the flood risk associated with the proposed estates for design storms exceeding the 1% AEP 2100, up to and including the 0.2% 2100 AEP. This memorandum was prepared in response to Logan City Council Planning Scheme 2015 Section 8.2.5 – Flood Overlay Code. In accordance with the memorandum and Council's requirements, the proposed lot 105 development is required to achieve immunity to the defined flood level (1% AEP at 2100). Based on the design site levels, the proposed lot 105 development will have immunity up to and including the 1% AEP at 2100 design event.

Refer to Northrop SBSMP BN26000284_SBSMP001_3_Lot 105 Flagstone Estate for further information.

7. Stormwater Drainage

SBSMP (BN26000284_SBSMP001_3_Lot 105 Flagstone Estate) has been prepared by Northrop Consulting Engineers. The report addresses the stormwater quality and quantity management scheme for the proposed development and should be referred to for full details of the stormwater management strategy. A summary of the proposed stormwater strategy is provided below.

7.1. Existing Stormwater Drainage Scheme

The subject site generally falls east towards the existing combined bioretention and detention basin (Lot 900) at 0.5% The site has been levelled as part of earthworks operations and is currently cleared and undeveloped, comprising primarily of stabilized soils. The following existing stormwater infrastructure has been identified in the vicinity of the site. The information has been sourced from the Arcadis Detailed Design documentation and the SBSMP EAG001-30109334-AAR Revision 12.

- Existing 1200 RCP Cl3 servicing the proposed site
- Existing 1650 RCP Cl3 passing through the site in a 3m easement, servicing the external road
- Existing 900 RCP Cl3 passing through the site servicing existing lot 1

7.2. Proposed Stormwater Management Objectives

Stormwater management for the proposed development has been designed in accordance with the following documents:

- EDQ Guideline – PDA Guideline No. 13 Engineering Standards, Stormwater Quantity and Quality
- State Planning Policy (SPP), 2017
- Environmental Protection (Water) Policy, 2009)
- Queensland Urban Drainage Manual (QUDM) Fourth Edition, 2016
- Water By Design MUSIC Modelling Guidelines, Version 3.0, 2018
- Water by Design - Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands V1.1, 2010
- Plumbing and Drainage Code AS3500.3
- Australian Rainfall and Runoff Guideline (ARR)
- International Erosion Control Association – Best Practise Erosion and Sediment Control, 2008

The stormwater management objectives for the development are summarised below:

- Development should not result in water being diverted onto land that is not normally subject to overland flow
- Define a lawful point of discharge that will not cause an actionable nuisance in accordance with QUDM
- Ensure that the development does not create adverse flood impacts to upstream or adjacent properties
- No increase in post development flows for all rainfall events up to and including 100-year event
- Stormwater quality to achieve the minimum design requirements of the State Planning Policy (2017) and achieve Water quality objectives in accordance with Environmental Protection (Water) Policy (2019), as follows in Table 2 Below.

Table 2 - Water Quality Objectives

Pollutant	Percent Reduction
Gross Pollutants (>5mm), GP	90%
Total Suspended Solids, TSS	80%
Total Phosphorous, TP	60%
Total Nitrogen, TN	45%

7.3. Proposed Stormwater Drainage Infrastructure

The stormwater quantity objective was to demonstrate non-worsening in peak discharges from the subject site flows outlined in the Arcadis SBSMP EAG001-30109334-AAR Revision 12 and approved as part of the EDQ approval DEV2018/961/18.

As outlined in the approved Arcadis Site Based Stormwater Management Plan (SBSMP) EAG001-30109334-AAR Rev 12: The northern on-site detention basin is situated in the north-east corner of the proposed development and attenuates flows from INTNL-1 (subject site) and the major flows from the northern portion of the internal road network, prior to discharge to the northernmost portion of the eastern conveyance channel. As such, no further onsite stormwater attenuation is proposed for the development

As part of the PDA Development Approvals DEV2023/1466 and DEV2023/1446 Arcadis completed a SBSQMP EAG003-30109334-AAR Rev 3. Bioretention systems have been constructed within the development layout to treat stormwater runoff from the internal road reserve and Catchment INTNL-1 as well as EXTNL-1A and EXTNL-1B. Stormwater runoff from Lot 1 (INTNL-1) and external catchments 1A and 1B (EXTNL-1A and EXTNL-1B) will be treated by the northern bioretention basin. Rainwater tanks are to be included in each allotment for roof water runoff which is to be reused across each lot through irrigation and toilet flushing. Half of each roof catchment is to be directed to rainwater harvesting tanks.

Refer to Northrop Consulting Engineers SBSMP (26000284_SBSMP001_3_Lot 105 Flagstone Estate) for more details.

8. Water Supply

8.1. Existing Water Supply Infrastructure

The following water mains have been identified near the site based on the Arcadis IFC Documentation (site survey) refer Appendix B:

- DN150mm PVC-M water reticulation main located on Enterprise Drive, along the southern boundary of the subject site

8.2. Proposed Water Supply Infrastructure

Proposed water supply infrastructure for Proposed Lot 105 is to be constructed within the industrial road reserve of the adjoining Enterprise Drive. The proposed service size is subject to confirmation by the Hydraulic consultant during detailed design. It is expected the new meter will connect to the existing infrastructure within Enterprise Drive.

8.2.1. PROJECTED DEVELOPMENT LOADS

The projected loads have been assessed in accordance with SEQ Water Supply and Sewerage Design and Construction Code (SEQ WS&S D&C Code), and the Logan Water Technical Memorandum DD8001 North Maclean conversion rates. The calculated loading is presented in Table 3 Below.

Table 3 – Development Loading for Water Supply by Locality

Locality	IDM Development Type	GFA (Ha)	Development Density (EP/Ha)	EP
LCC	Lot 105 Development	0.96	55.90	53.664

Table 3 above demonstrates the development loading is calculated per net area for industrial developments. As part of the Water Network Analysis EAG005-30109334-AAR-WNA-03 Arcadis has considered the warehouse GFA for the subject site area as 2.2Ha (70% of site area) or 122 EP. Given this, it is expected that the existing water network adequately caters to the proposed development Lot 105 loads.

8.2.2. INTERNAL WATER NETWORK

As part of the building works, internal water reticulation service will be provided throughout the site. This will require a full water network design to be prepared by a qualified hydraulic engineer, designed to service all internal firefighting flows and services demands.

8.2.3. FIRE SYSTEM

In accordance with the SEQ WS&S D&C Code, the site is permitted to draw the following fire flows.

- Commercial/ Industrial – 30L/sec for 4 hours

The water connection and internal water reticulation network for the development will be designed as part of future Operational Works applications for the site.

9. Sewerage Reticulation

9.1. Existing Sewer Reticulation

The following sewer mains have been identified near the site based on the Arcadis IFC Documentation (site survey) refer Appendix B:

DN150mm PVC-U SN8 Sewer main located within Enterprise Drive, along the southern boundary of the site.
DN15mm PVC-U SN8 Sewer main located within a easement in the subject site servicing the upstream property

9.2. Proposed Sewer Reticulation

It is proposed to reuse the existing sewer property connection in the south of the site, located within Enterprise Drive along the southern boundary. If the proposed site is unserviceable by gravity sewer a private pump arrangement is to be provided. Details to be provided during detailed design by the hydraulic consultant.

The connection locations are detailed on the engineering drawings included in Appendix A. The internal wastewater network will form part of the design required for the Building Application approval.

9.2.1. PROJECTED DEVELOPMENT LOADS

The projected loads have been assessed in accordance with SEQ Water Supply and Sewerage Design and Construction Code (SEQ WS&S D&C Code), and the Logan Water Technical Memorandum DD8001 North Maclean conversion rates. The calculated loading is presented in Table 4 Below.

Table 4 – Development Loading for Water Supply by Locality

Locality	IDM Development Type	GFA (Ha)	Development Density (EP/Ha)	EP
LCC	Lot 105 Development	0.96	50.30	48.288

Table 4 above demonstrates the development loading is calculated per net area for industrial developments. As part of the Sewer Network Analysis EAG006-30109334-AAR-SNA-04 Arcadis has considered the warehouse GFA for the site area as 2.2Ha (70% of site area) or 110.7 EP. Given this, it is expected that the existing sewer network adequately caters to the proposed development loads for the site.

10. Electrical Supply

Bulk earthworks and infrastructure works are currently in progress across the flagstone estate. Connections for the proposed development will require an extension of the electrical cables of voltage <33kV to be designed by a qualified electrical consultant. The proposed development will utilise existing electrical conduit infrastructure installed as part of the external roadworks, as required by EDQ and Energex.

The need for a pad mount transformer to be located within the development site is subject to further design discussion with Energex; however sufficient provisions have been made within the proposed plan of development to accommodate one if required.

11. Gas Supply

The site is not serviced by gas supply. Should gas services be required for the development, connection and extension requirements shall be undertaken by a specialist consultant and will form part of the future building works applications to APA and EDQ.

12. Telecommunications

Telecommunication services have been identified within all road reserves bounding the subject site. It is proposed to utilise this existing surrounding infrastructure to provide telecommunication services to the proposed development.

Connection from the proposed development to the above-mentioned services will be undertaken by a specialist consultant and will form part of the future building works applications to the appropriate Telecommunications entity.

13. Conclusion

This Engineering Services Report (ESR) has been prepared on behalf of CH Hydrangea Pty Ltd (Applicant) in support of a Development Application (DA) over land described as: proposed lot 105, part of Lot 1 on SP352820 (site). This Priority Development Area (PDA) DA seeks approval for a Development Permit for a Material Change of Use for a Warehouse, Low impact industry, and Medium impact industry.

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This ESR provides advice on engineering services strategy for the proposed development's engineering planning issues associated with the application. This report demonstrates that the proposed development can connect to local stormwater, potable water, sewerage reticulation, electricity, telecommunications and transport infrastructure. The servicing strategy for the development is summarised below.

It is noted that the infrastructure referred to as existing in this report, is the estate infrastructure that is currently under construction. At the time of writing, Lot 1 is currently under construction.

Site Access – Two (2) heavy vehicle and one (1) light vehicle crossovers are proposed for the development via Enterprise Drive.

Stormwater Management – The proposed development will introduce a new internal pit and pipe system and connect into the existing lawful point of discharge. Refer to the SBSMP for the proposed lot 105 development that has been prepared by Northrop (BN26000284_SBSMP001_3_Lot 105 Flagstone Estate), and the overarching precinct SBSMP prepared by Arcadis (EAG001-30109334-AAR Revision 12).

Water Supply –The development's internal water reticulation network will be serviced by combined fire service and domestic services located within frontage of the site adjacent Enterprise Drive. Suitability is to be confirmed by the hydraulics consultant in detailed design. The proposed development loads are less than the projected loads for the site as outlined in Arcadis Water Network Assessment EAG005-30109334-AAR-WNA.

Sewer Reticulation – The development's internal sewer reticulation network will be constructed to meet the reticulation main along the southern of the site, accessible by Enterprise Drive. The proposed development loads are less than the projected loads for the site as outlined in Arcadis Sewer Network Assessment EAG006-30109334-AAR-SNA.

Electrical Supply – Connection to existing electrical infrastructure within Enterprise Drive.

Gas Supply – No Gas infrastructure was identified in the vicinity of the site. Should gas services be required for the development, connection and extension requirements shall be undertaken by a specialist consultant and will form part of the future building works applications to both APA and EDQ.

Telecommunications – Connection to existing telecommunications infrastructure surrounding the site will be made via underground cables to the conduit network installed as part of the estate works in Enterprise Drive.

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Appendix A – Civil Engineering Plans

PROPOSED INDUSTRIAL DEVELOPMENT

PROPOSED LOT 105, 4499-4651 MT. LINDESAY HIGHWAY, NORTH MACLEAN QLD 4280
DEVELOPMENT APPLICATION



LOCALITY PLAN
NTS

SOURCE : METROMAP.COM.AU

DRAWING SCHEDULE

DWG NUMBER	DWG TITLE
DA-001	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
DA-101	BULK EARTHWORKS LAYOUT PLAN
DA-111	BULK EARTHWORKS SECTIONS
DA-210	ROADWORKS & STORMWATER OVERALL LAYOUT PLAN
DA-211	ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN - SHEET 1 OF 4
DA-212	ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN - SHEET 2 OF 4
DA-213	ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN - SHEET 3 OF 4
DA-214	ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN - SHEET 4 OF 4
DA-311	STORMWATER DRAINAGE CATCHMENT LAYOUT PLAN
DA-321	STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 1 OF 4
DA-322	STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 2 OF 4
DA-323	STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 3 OF 4
DA-324	STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 4 OF 4

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JOB MANAGER: A.DE ANDRADE
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RPEQ No: 25874

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	MM	ADA	SK	02.04.26
B	ISSUED FOR APPROVAL	MM	ADA	SK	21.04.26
C	ISSUED FOR APPROVAL	MM	ADA	SK	26.04.26

CLIENT: Charter Hall

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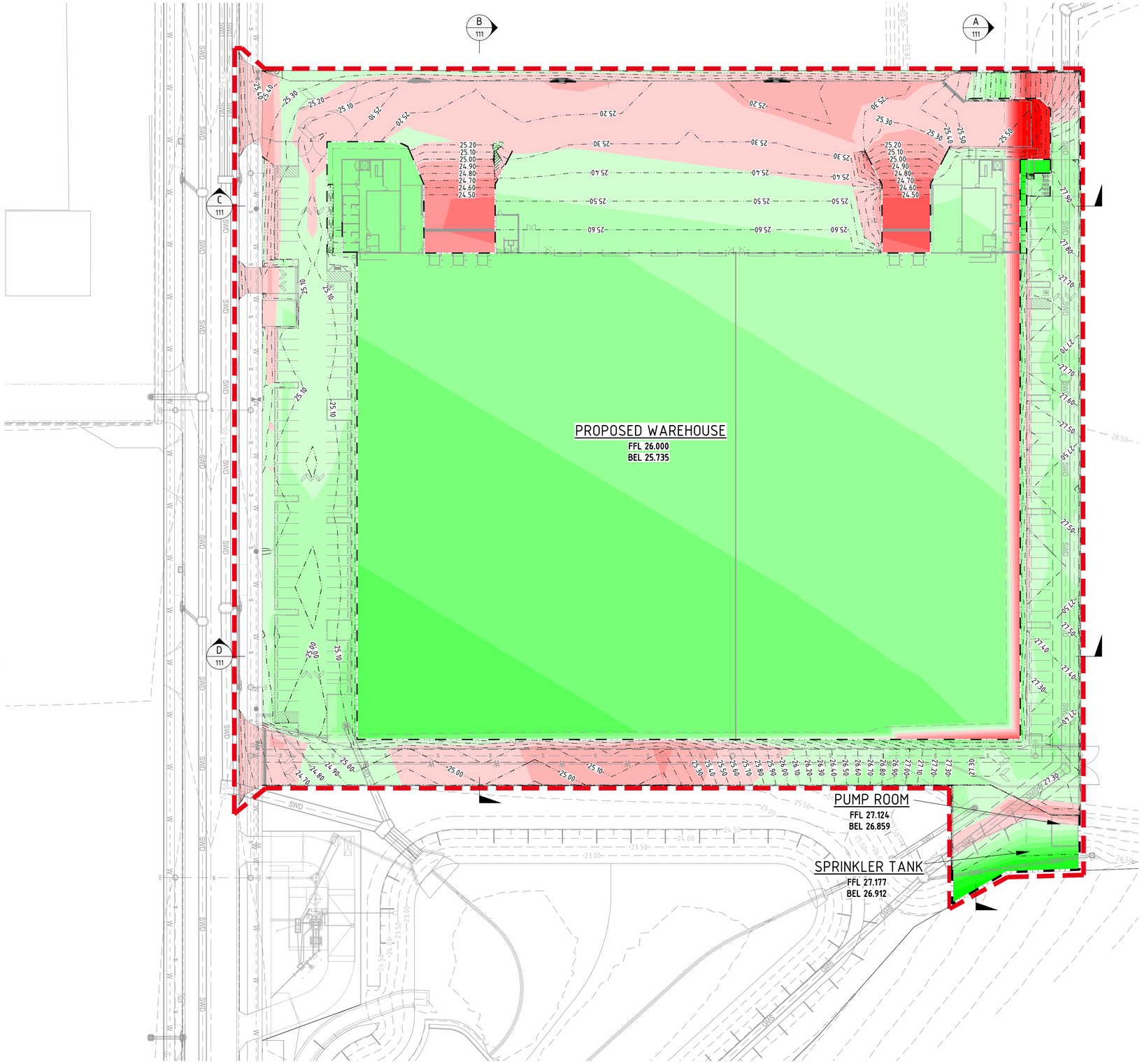
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PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE

JOB NUMBER: 26000287
DRAWING NUMBER: DA-001
REVISION: C
DRAWING SHEET SIZE = A1



VOLUME NOTES

1. VOLUMES ARE CALCULATED BETWEEN STRIPPED SURFACE AND BOXING (BULK) LEVELS.
2. VOLUMES DO NOT CONSIDER BULKING / COMPACTION FACTORS, UNSUITABLE GROUND REMOVAL OR CONTAMINATED GROUND REMOVAL.
3. IT HAS BEEN ASSUMED THAT THE SITE WILL REQUIRE 0mm TOPSOIL STRIP TO REMOVE ORGANIC MATERIAL. SHOULD THIS DEPTH VARY, PLEASE NOTIFY SUPERINTENDENT, GEOTECH & NORTHROP IMMEDIATELY.
4. REFER TO CIVIL PAVEMENT & STRUCTURAL FOUNDATION / SLAB DRAWINGS FOR PAVEMENT DEPTHS, TO BE CONFIRMED & VALIDATED AGAINST BULK / BOXING LEVELS BY CONTRACTOR & SURVEYOR PRIOR TO COMMENCEMENT OF EARTHWORKS.
5. ALL EARTHWORKS VOLUMES ARE PRELIMINARY ONLY, AND ARE TO BE USED AS A GUIDE ONLY. CONTRACTOR IS TO ALLOW ADEQUATE CONTINGENCY.

UNKNOWN GEOTECH PARAMETERS

THE CONTRACTORS IS TO ALLOW ADEQUATE PROVISIONAL AMOUNTS FOR CONTINGENCIES FOR THE FOLLOWING UNKNOWN EARTHWORKS/GEOTECH PARAMETERS:

- SWELLING/COMPACTION FACTORS - UNKNOWN
- SUBGRADE CBR - UNKNOWN
- SUBGRADE SUITABLE FOR FILLING/PAVEMENT - UNKNOWN
- IF CUT IS CONSIDERED SUITABLE FOR FILLING - UNKNOWN
- TOPSOIL DEPTH - 50mm
- ONSITE SOILS ARE DISPERSIVE/HIGHLY REACTIVE - UNKNOWN

LEVELS AND SETOUT NOTES

1. EARTHWORKS LEVELS SHOWN ARE BULK SURFACE LEVELS (UNDERSIDE OF PAVEMENT AND TOPSOIL LAYERS)
2. EARTHWORKS LEVELS ALLOW DRIVEWAY / CAR PARK SLAB THICKNESS AND BUILDING SLAB THICKNESS AS PER STRUCTURAL ENGINEERING DRAWINGS. REFER TO FINAL 'FOR CONSTRUCTION' STRUCTURAL DESIGN DRAWINGS FOR FINAL PAD THICKNESS AND CROSS-CHECK/VERIFY THE ASSOCIATED FINAL CIVIL BULK PAD LEVELS PRIOR TO CONSTRUCTION SETOUT.
3. FLOOD IMMUNITY - 200 YR ARI RIVER FLOOD LEVEL = 25.3m AHD ('FLOOD TECHNICAL NOTE' PREPARED BY ARCADIS DATED 1/03/24). ENSURE THE MINIMUM FINISHED FLOOR LEVELS FOR HABITABLE BUILDINGS CAN BE CONSTRUCTED AT ABOVE THIS RL.
4. ALL RETAINING WALL HEIGHT LABELS ARE CALCULATED TO FINISHED SURFACE LEVELS INCLUDING TOPSOIL (AND TO NEAREST 200mm HEIGHT). FINAL RETAINING WALL DESIGNS AND DETAILED STEPPING IS SUBJECT TO STRUCTURAL DESIGN BY OTHERS.
5. REFER TO ARCHITECTURAL DRAWINGS FOR BUILDING SETOUT INFORMATION.
6. CONTRACTOR TO CONFIRM SITE SURVEY STATION LOCATION AND BUILDING/PAD SETOUT LOCATIONS IN RELATION TO BOUNDARIES PRIOR TO CONSTRUCTION AND ADVISE SUPERINTENDENT IF ANY DISCREPANCIES/ANOMALIES FOUND.

PRELIMINARY BOXING DEPTHS

TRUCK MANEUVERING HARDSTAND, CONTAINER SET DOWN = 170mm THICK CONCRETE + 100mm CBR 15 SUBBASE = 270 TOTAL BOX

LIGHT DUTY PAVEMENT = 130mm THICK CONCRETE + 100mm CBR 15 SUBBASE = 230 TOTAL BOX

WAREHOUSE, OFFICE, PUMP ROOM = 165mm THICK CONCRETE + 100mm CBR 15 SUBBASE = 265 TOTAL BOX

TANK SLAB = 300mm THICK CONCRETE + 100mm CBR 15 SUBBASE = 400 TOTAL BOX

QFES = 230mm TOTAL BOX

FOOTPATH SLAB = 100mm THICK CONCRETE + 100mm CBR 15 SUBBASE = 200 TOTAL BOX

NOTE: FOR INTERNAL PAVEMENT DESIGN REFER TO STRUCTURAL DRAWINGS FOR DETAILS AND SPECIFICATIONS

LEGEND

- PROPOSED SURFACE CONTOURS (XX.XX)
- EXISTING SURFACE CONTOURS (XX.XX)
- EXISTING PROPERTY BOUNDARY
- WORKS BOUNDARY
- PROPOSED RETAINING WALL IN ACCORDANCE WITH STRUCTURAL ENGINEER'S SPECIFICATIONS

NOTES:

1. FOR FULL EXISTING FEATURES LEGEND REFER TO C-020.
2. ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.

CUT/FILL DEPTH

DEPTH COLOUR	LOWER DEPTH	UPPER DEPTH
	-999m	-2.0m
	-2.0m	-1.5m
	-1.5m	-1.25m
	-1.25m	-1.0m
	-1.0m	-0.75m
	-0.75m	-0.5m
	-0.5m	-0.25m
	-0.25m	0.0m
	0.0m	0.25m
	0.25m	0.5m
	0.5m	0.75m
	0.75m	1.0m
	1.0m	1.25m
	1.25m	1.5m
	1.5m	2.0m
	2.0m	999m



FIRE ANT TREATMENT ZONE

MOVEMENT OF MATERIAL SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF AGRICULTURE AND FISHERIES ACTS AND REGULATIONS. FOR MORE INFORMATION CALL BIOSECURITIES QUEENSLAND ON 13 25 23 OR VISIT WWW.DAF.QLD.GOV.AU FOR MORE INFORMATION.

WARNING

UNDERGROUND SERVICES

UNDERGROUND SERVICES EXIST IN THIS AREA. UNDERGROUND SERVICE LOCATIONS AND DEPTHS TO BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.

PRELIMINARY BULK EARTHWORKS VOLUMES

CUT	FILL	BALANCE
1,835 m^3	14,907 m^3	13,072 m^3 (FILL)

DRAWN: M MANLAPIT
DESIGNED: G DE LANGE
JOB MANAGER: A DE ANDRADE
VERIFIER: S KILLORAN
RPEQ No: 25814

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	MM	ADA	SK	02.04.26
B	ISSUED FOR APPROVAL	MM	ADA	SK	21.04.26
C	ISSUED FOR APPROVAL	MM	ADA	SK	26.04.26

CLIENT: Charter Hall

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: watson young

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SCALE 1:500@A1 — 0 5 10 15 20 25m

NORTHROP
Brisbane
Level 25, 12 Creek Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

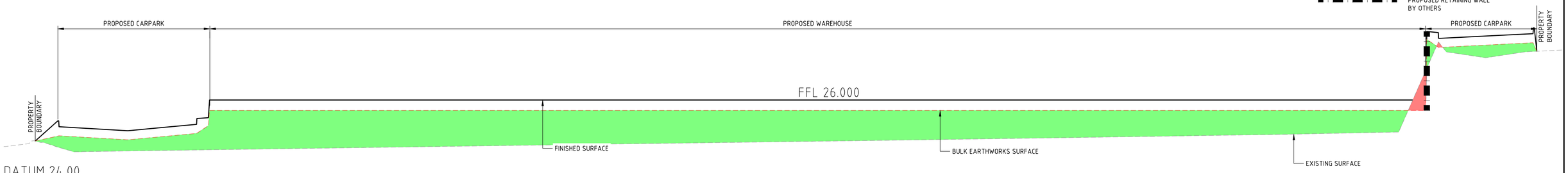
PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: BULK EARTHWORKS LAYOUT PLAN

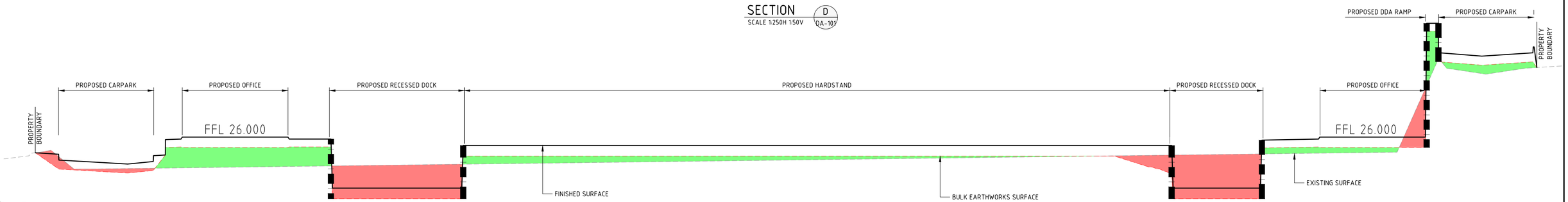
JOB NUMBER: 26000287
DRAWING NUMBER: DA-101
REVISION: C
DRAWING SHEET SIZE = A1

LEGEND

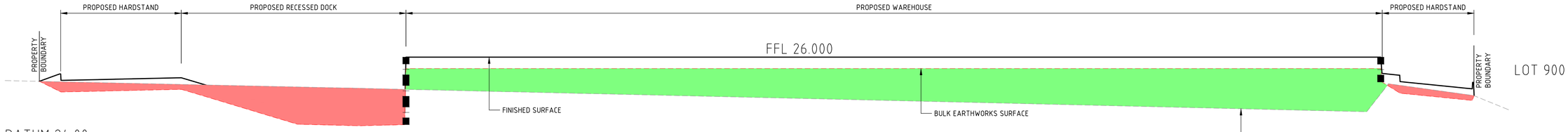
- FINISHED SURFACE
- EXISTING SURFACE
- STRIPPED SURFACE
- BULK EARTHWORKS SURFACE
- EARTHWORKS AREA OF CUT
- EARTHWORKS AREA OF FILL
- PROPOSED RETAINING WALL BY OTHERS



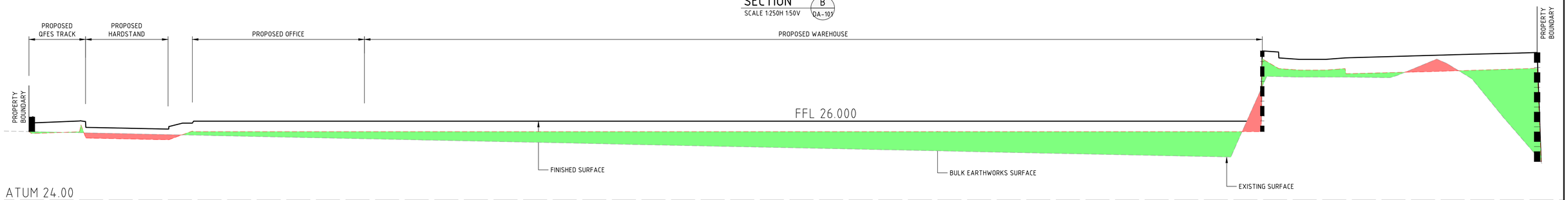
SECTION D
SCALE 1:250H 1:50V
DA-101



SECTION C
SCALE 1:250H 1:50V
DA-101



SECTION B
SCALE 1:250H 1:50V
DA-101



SECTION A
SCALE 1:250H 1:50V
DA-101

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CLIENT
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ARCHITECT
watson young
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SCALE 1:50@A1 0.0 0.5 1.0 1.5 2.0 2.5m
SCALE 1:250@A1 0 2 4 6 8 10 12m

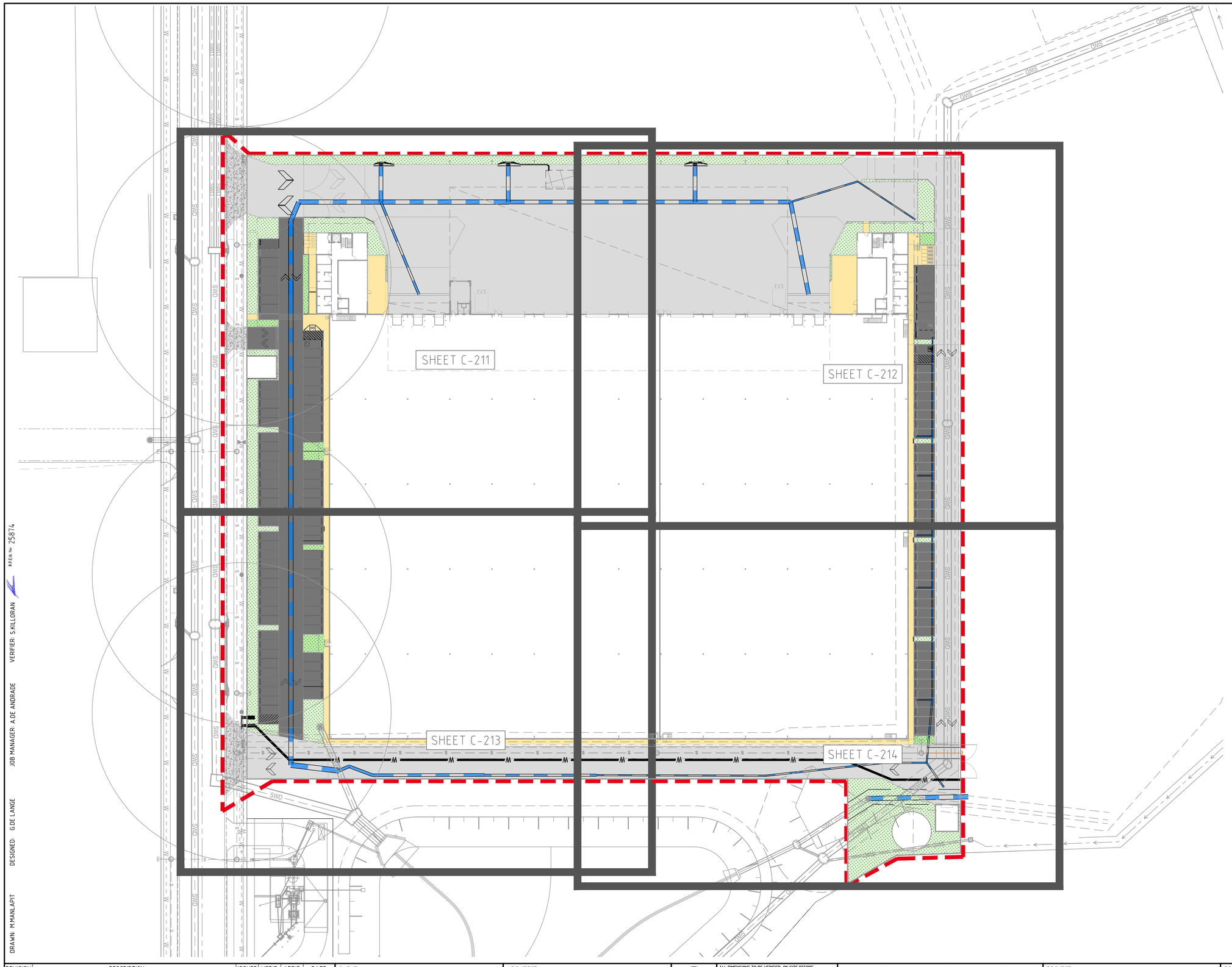
NORTHROP
Brisbane
Level 25, 12 Creek Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE
BULK EARTHWORKS SECTIONS

JOB NUMBER **26000287**
DRAWING NUMBER **DA-111**
REVISION **C**
DRAWING SHEET SIZE = A1

JOB No. 25874
VERIFIER: S.KILLORAN
JOB MANAGER: A.DE ANDRADE
DESIGNED: G.DE LANGE
DRAWN: M.MANLAPIT



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED INTEGRAL KERB
- PROPOSED KERB RAMP
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWERAGE RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED RETAINING WALL
- WORKS BOUNDARY
- PROPOSED LIGHT DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- PROPOSED LANDSCAPE AREA
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER INLET PIT

WARNING

UNDERGROUND SERVICES

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DRAWN: M.MANLAPIT
DESIGNED: G.DE LANGE
JOB MANAGER: A.DE ANDRADE
VERIFIER: S.KILLORAN
RPEQ No. 25814

NOT FOR CONSTRUCTION

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CLIENT
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ARCHITECT
watson young

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SCALE 1:500@A1 — 0 5 10 15 20 25m

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Brisbane
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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE
ROADWORKS & STORMWATER OVERALL LAYOUT PLAN

JOB NUMBER **26000287**
DRAWING NUMBER **DA-210**
REVISION
DRAWING SHEET SIZE = A1

EXISTING VALVE TO BE REMOVED AND SEALED AT TEE

PROVIDE 15.32m WIDE TYPE "GENERAL WIDE FLAIRED" HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA STD DRG RS-051

EXISTING "MIMIC BASIN" TO BE REMOVED.

EXISTING 150ø SEWER PROPERTY CONNECTION TO BE REUSED TO SERVICE THE PROPOSED DEVELOPMENT, SUBJECT TO CCTV INSPECTION

PROPOSED 75kL RAINWATER HARVESTING TANK TO CAPTURE 50% OF TOTAL ROOF AREA IN ACCORDANCE WITH NORTHROP STORMWATER MANAGEMENT PLAN 260000284_ SBSMP001 LOCATION SHOWN INDICATIVELY. FINAL LOCATION TO BE DETERMINED BY THE HYDRAULIC CONSULTANT IN DETAILED DESIGN

LOT 1

PROPOSED 6x BICYCLE PARKING BAYS

PROPOSED OFFICE
FFL26.000m

PROPOSED WAREHOUSE
FFL26.000m

PMT
FFL25.453m

ENTERPRISE DRIVE

PROVIDE 6.0m WIDE TYPE "GENERAL WIDE" HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA STD DRG RS-051

FOR CONTINUATION REFER TO SHEET C-212

FOR CONTINUATION REFER TO SHEET C-213

LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED INTEGRAL KERB
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWERAGE RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED RETAINING WALL
- WORKS BOUNDARY
- PROPOSED LIGHT DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- PROPOSED LANDSCAPE AREA
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER INLET PIT
- PROPOSED STRUCTURE NUMBER
- EXISTING STRUCTURE NUMBER

NOTES:

1. FOR FULL EXISTING FEATURE LEGENDS REFER TO C-020.
2. FOR ROADWORKS & STORMWATER DRAINAGE DETAILS REFER TO C-220 DRAWING.
3. ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.
4. FOR RETAINING WALL AND GUARDRAIL SPECIFICATION, REFER TO STRUCTURAL DRAWINGS.

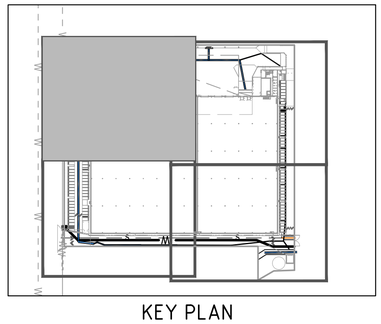
THRESHOLD NOTES:

1. PROVIDE A 50mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS AT ALL ROLLER SHUTTER DOORS UNDER AWNINGS.
2. PROVIDE A 100mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS OF THE WAREHOUSE ALONG OTHER EDGES.
3. PROVIDE A 30mm LEVEL DIFFERENCE BETWEEN THE INSIDE AND OUTSIDE SLABS AT THE OFFICES AND ALL DDA COMPLIANT DOORS.
4. REFER TO ARCHITECT DRAWINGS FOR LOCATION OF DDA COMPLIANT DOORS.

WARNING

UNDERGROUND SERVICES

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KEY PLAN
NTS

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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CLIENT: Charter Hall

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ARCHITECT: watson young

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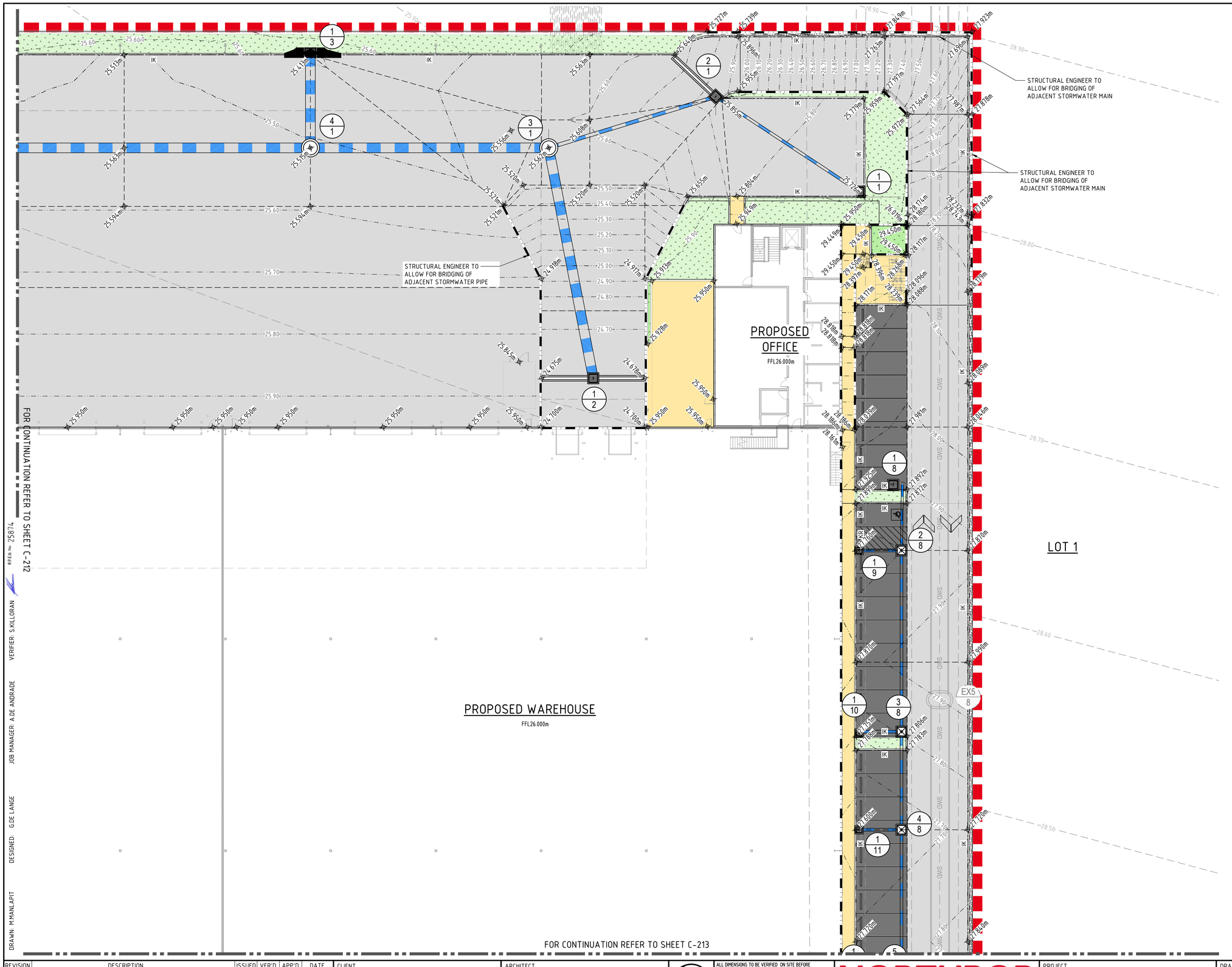
NORTHROP
Brisbane
Level 25, 12 Creek Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN SHEET 1 OF 4

JOB NUMBER: 26000287
DRAWING NUMBER: DA-211
REVISION:
DRAWING SHEET SIZE = A1

JOB NUMBER 25874
VERIFIER: S.KILLORAN
JOB MANAGER: A.DE ANDRADE
DESIGNED: G.DE LANGE
DRAWN: M.MANLAPIT



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED INTEGRAL KERB
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWERAGE RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED RETAINING WALL
- WORKS BOUNDARY
- PROPOSED LIGHT DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- PROPOSED LANDSCAPE AREA
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER INLET PIT
- PROPOSED STRUCTURE NUMBER
- EXISTING STRUCTURE NUMBER

NOTES:

1. FOR FULL EXISTING FEATURE LEGENDS REFER TO C-020.
2. FOR ROADWORKS & STORMWATER DRAINAGE DETAILS REFER TO C-220 DRAWING.
3. ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.
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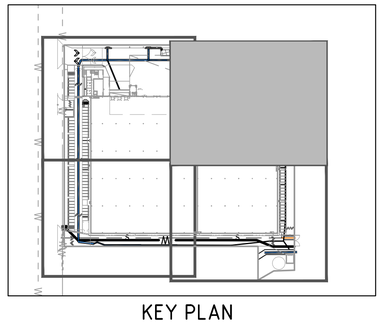
THRESHOLD NOTES:

1. PROVIDE A 50mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS AT ALL ROLLER SHUTTER DOORS UNDER AWNINGS.
2. PROVIDE A 100mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS OF THE WAREHOUSE ALONG OTHER EDGES.
3. PROVIDE A 30mm LEVEL DIFFERENCE BETWEEN THE INSIDE AND OUTSIDE SLABS AT THE OFFICES AND ALL DDA COMPLIANT DOORS.
4. REFER TO ARCHITECT DRAWINGS FOR LOCATION OF DDA COMPLIANT DOORS.

WARNING

UNDERGROUND SERVICES

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KEY PLAN
NTS

NOT FOR CONSTRUCTION

DRAWN: M.MANLAPIT
DESIGNED: G.DE LANGE
JOB MANAGER: A.DE ANDRADE
VERIFIER: S.KILLORAN
PLOT DATE: 25/8/26

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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CLIENT: Charter Hall

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ARCHITECT: watson young

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SCALE 1:200@A1 (0 2 4 6 8 10m)

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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN SHEET 2 OF 4

JOB NUMBER: 26000287
DRAWING NUMBER: DA-212
REVISION:
DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET C-213

FOR CONTINUATION REFER TO SHEET C-212

ENTERPRISE DRIVE

PROPOSED WAREHOUSE
FFL26.000m

LOT 900

REDUNDANT SEWER PROPERTY CONNECTION TO BE DEMOLISHED AND REMOVED FROM SITE

PROPOSED COMBINED FIRE AND DOMESTIC SERVICE TO SERVICE THE PROPOSED DEVELOPMENT. SIZING SUBJECT TO HYDRAULIC CONSULTANTS ASSESSMENT IN DETAILED DESIGN

PROPOSED COMBINED FIRE AND DOMESTIC SERVICE TO SERVICE UPSTREAM FUTURE DEVELOPMENT. SIZING SUBJECT TO HYDRAULIC CONSULTANTS ASSESSMENT IN DETAILED DESIGN.

EXISTING VALVE TO BE REMOVED AND SEALED AT TEE

PROVIDE 15.20m WIDE TYPE "GENERAL WIDE FLAIRED" HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA STD DRG RS-051

EXISTING REDUNDANT STORMWATER TO BE TAKEN UP AND REMOVED FROM SITE

CONSTRUCT PROPOSED 15/1 OVER EXISTING 1350ϕ RCP STORMWATER MAIN

EXISTING SEWER LINE DEPTH AND GRADE TO BE CONFIRMED TO SUIT UPSTREAM CONNECTION. LINE TO BE RELAYED AS REQUIRED

LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED INTEGRAL KERB
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWERAGE RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED RETAINING WALL
- WORKS BOUNDARY
- PROPOSED LIGHT DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- PROPOSED LANDSCAPE AREA
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER INLET PIT
- PROPOSED STRUCTURE NUMBER
- EXISTING STRUCTURE NUMBER

NOTES:

1. FOR FULL EXISTING FEATURE LEGENDS REFER TO C-020.
2. FOR ROADWORKS & STORMWATER DRAINAGE DETAILS REFER TO C-220 DRAWING.
3. ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.
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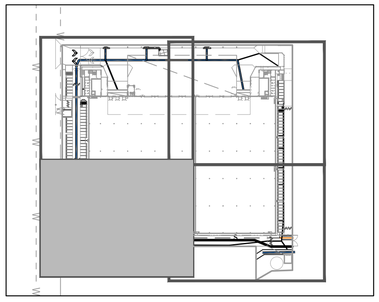
THRESHOLD NOTES:

1. PROVIDE A 50mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS AT ALL ROLLER SHUTTER DOORS UNDER AWNINGS.
2. PROVIDE A 100mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS OF THE WAREHOUSE ALONG OTHER EDGES.
3. PROVIDE A 30mm LEVEL DIFFERENCE BETWEEN THE INSIDE AND OUTSIDE SLABS AT THE OFFICES AND ALL DDA COMPLIANT DOORS.
4. REFER TO ARCHITECT DRAWINGS FOR LOCATION OF DDA COMPLIANT DOORS.

WARNING

UNDERGROUND SERVICES

UNDERGROUND SERVICES EXIST IN THIS AREA. UNDERGROUND SERVICE LOCATIONS AND DEPTHS TO BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.



KEY PLAN
NTS

NOT FOR CONSTRUCTION

JOB No: 25874
DESIGNED: G.DE LANGE
DRAWN: M.MANLAPIT
JOB MANAGER: A.DE ANDRADE
VERIFIER: S.KILLORAN

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	MM	SK	ADA	02.04.26
B	ISSUED FOR APPROVAL	MM	SK	ADA	21.04.26
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CLIENT: Charter Hall

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ARCHITECT: watson young

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SCALE 1:200@ A1 (0 2 4 6 8 10m)

NORTHROP
Brisbane
Level 25, 12 Creek Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT: **PROPOSED INDUSTRIAL DEVELOPMENT**
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: **ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN SHEET 3 OF 4**

JOB NUMBER: **26000287**
DRAWING NUMBER: **DA-213**
REVISION:
DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET C-213

FOR CONTINUATION REFER TO SHEET C-212

PROPOSED WAREHOUSE
FFL26.000m

LOT 1

PUMP ROOM
FFL27.660m

SPRINKLER TANK
FFL27.694m

EXISTING PROPERTY CONNECTION TO BE DISUSED

PROPOSED 150Φ SEWER PROPERTY CONNECTION TO SERVICE UPSTREAM LOT.
S.L. 27.200
I.L. 25.830
DEPTH 1.37m

PROPOSED 3m WIDE SEWER EASEMENT

CAPPED FIRE SERVICE FOR FUTURE EXTENSION. MARK LOCATION WITH HARDWOOD STAKE

CAPPED DOMESTIC SERVICE FOR FUTURE EXTENSION C/W ISOLATION VALVE IN TRAFFICABLE BOX.

PROPOSED 4m WIDE STORMWATER EASEMENT

EXISTING UPSTREAM LOT CONNECTION: 900X600GRATE ON 1200Φ MH.
S.L. 27.754
I.L. 25.206

PIT TO BE LOWERED TO SUIT PROPOSED FSL

300mm MIN. VERTICAL CLEARANCE. TO BE CONFIRMED IN DETAILED DESIGN

1050Φ RCP CL 3
USIL 25.450
DSIL 25.226
GRADE 0.8%
LENGTH 26.7m

PROPOSED UPSTREAM PROPERTY CONNECTION 1200Φ MH. CLASS 'D' LID.
S.L. 27.10
I.L. 25.450
DEPTH: 1.607m

STRUCTURAL ENGINEER TO ALLOW FOR BRIDGING OF ADJACENT STORMWATER PIPE

STRUCTURAL ENGINEER TO ALLOW FOR BRIDGING OF ADJACENT STORMWATER MAIN

LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED INTEGRAL KERB
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWERAGE RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED RETAINING WALL
- WORKS BOUNDARY
- PROPOSED LIGHT DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE FOOTPATH
- PROPOSED LANDSCAPE AREA
- PROPOSED STORMWATER HEADWALL
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER INLET PIT
- PROPOSED STRUCTURE NUMBER
- EXISTING STRUCTURE NUMBER

NOTES:

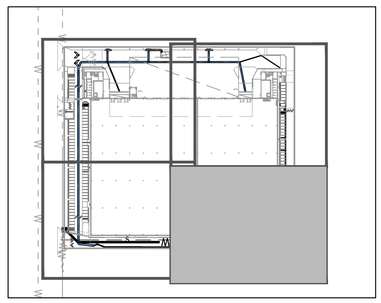
1. FOR FULL EXISTING FEATURE LEGENDS REFER TO C-020.
2. FOR ROADWORKS & STORMWATER DRAINAGE DETAILS REFER TO C-220 DRAWING.
3. ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.
4. FOR RETAINING WALL AND GUARDRAIL SPECIFICATION, REFER TO STRUCTURAL DRAWINGS.

THRESHOLD NOTES:

1. PROVIDE A 50mm LEVEL DIFFERENCE BETWEEN THE INTERNAL AND EXTERNAL SLABS AT ALL ROLLER SHUTTER DOORS UNDER AWNINGS.
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WARNING

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KEY PLAN
NTS

NOT FOR CONSTRUCTION

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ARCHITECT: watson young

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PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN SHEET 4 OF 4

JOB NUMBER: 26000287
DRAWING NUMBER: DA-214
REVISION:
DRAWING SHEET SIZE = A1

DRAWN: M.MANLAPIT
DESIGNED: G.DE LANGE
JOB MANAGER: A.DE ANDRADE
VERIFIER: S.KILLORAN

ROOFWATER CATCHMENTS 1/RW2,1/RW3,1/RW4, 1/RW5, TO BE DIRECTED TO THE 75kL RAINWATER HARVESTING TANK. TANK OVERFLOW TO DISCHARGE TO THE STORMWATER NETWORK.

1/4 0.0342ha
1/3 0.0385ha
2/1 0.0283ha
1/6 0.0229ha
8/1 0.0669ha
1/1 0.0270ha
1/2 0.0643ha
9/1 0.0397ha
1/RW6 0.0300ha
1/5 0.0565ha
1/RW1 0.0300ha
1/8 0.0366ha
1/RW5 0.3521ha
1/RW3 0.3521ha
1/9 0.0275ha
10/1 0.0547ha
1/RW4 0.2423ha
1/RW2 0.2423ha
1/10 0.0082ha
11/1 0.0556ha
1/11 0.0328ha
1/12 0.0047ha
12/1 0.0556ha
1/13 0.0372ha
1/RW10 0.2204ha
1/RW9 0.2204ha
1/RW8 0.2204ha
1/RW7 0.2204ha
13/1 0.0399ha
1/14 0.0390ha
1/7 0.0285ha
13/8 0.0319ha
12/8 0.0320ha
11/8 0.0848ha
9/8 0.0491ha
1/15 0.0446ha

LEGEND

- XX.XX — PROPOSED SURFACE CONTOURS
- XX.XX — EXISTING SURFACE CONTOURS
- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- W — EXISTING WATER MAIN
- SWD — PROPOSED STORMWATER DRAINAGE
- SWD — EXISTING STORMWATER DRAINAGE
- PROPOSED CATCHMENT BOUNDARY
- X/XX X.XXXXha — PROPOSED CATCHMENT IDENTIFIER AND AREA (ha)

DRAWN: M.MANLAPIT DESIGNED: G.DE LANGE JOB MANAGER: A.DE ANDRADE VERIFIER: S.KILLORAN AREA No: 25874

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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ARCHITECT
watson young
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SCALE 1:500@ A1 — 0 5 10 15 20 25m

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ABN 81 094 433 100

PROJECT
PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE
STORMWATER DRAINAGE CATCHMENT LAYOUT PLAN

JOB NUMBER **26000287**
DRAWING NUMBER **DA-311**
REVISION
DRAWING SHEET SIZE = A1

STRUCTURE NAME	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1	12/1	13/1	14/1	15/1	16/1	EX/1
STRUCTURE DESCRIPTION	FIELD INLET PIT – TYPE 2 900x600mm, CLASS D	GRATED TRENCH DRAIN 300mm WIDE CLASS D GRATE OVER 1050mm DIA MANHOLE	1500mm DIA MANHOLE CLASS D LID	1500mm DIA MANHOLE CLASS D LID	1500mm DIA MANHOLE CLASS D LID	1500mm DIA MANHOLE CLASS D LID	1800mm DIA MANHOLE CLASS D LID	1500mm DIA MANHOLE CLASS D LID	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1500mm DIA MANHOLE	1800mm DIA MANHOLE CLASS D LID	2100mm DIA MANHOLE CLASS D LID	CUSTOM STRUCTURE EXISTING CUSTOM STRUCTURE
PIPE SIZE (mm)		300	375	750	900	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1200
PIPE CLASS		HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	RCP2
PIPE GRADE (%)		2.00%	0.50%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.50%
PIPE SLOPE (1 in X)		50.0	200.0	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	199.6
PIPE FLOW (cumecs)		0.015	0.046	0.211	0.418	0.616	0.741	0.776	0.771	0.807	0.836	0.859	0.879	0.899	0.889	0.921	1.567
CAPACITY FLOW (cumecs)		0.140	0.131	0.617	0.979	1.621	1.621	1.621	1.621	1.621	1.621	1.621	1.621	1.621	1.621	1.621	2.990
FULL PIPE VELOCITY (m/s)		0.22	0.43	0.50	0.70	0.71	0.86	0.90	0.89	0.93	0.97	0.99	1.02	1.04	1.03	1.06	1.39
NORMAL DEPTH VELOCITY (m/s)		1.34	1.10	1.33	1.58	1.74	1.83	1.85	1.85	1.87	1.89	1.90	1.91	1.92	1.91	1.93	2.67
DATUM RL		9.000															
HGL ELEVATION	24.495	24.472 / 24.247 / 24.250	24.228	24.224 / 24.229	24.205	24.191	24.173	24.073	24.065	24.049	24.040	24.002	23.993	23.968 / 23.971	23.915	23.909	23.882	23.854	23.839	23.816	23.798	23.778	23.759	23.742	23.722	23.705	23.695	23.687 / 23.709	23.581	23.573 / 23.593	23.411	23.281
DEPTH TO INVERT	1.350	1.832	1.852	1.668	1.688	1.718	1.738	1.862	1.882	1.939	1.959	2.016	2.036	1.931	1.951	1.885	1.905	2.004	2.024	2.053	2.073	2.131	2.151	2.209	2.229	2.364	2.384	2.260	2.280	2.477	2.497	2.104	2.104
INVERT LEVEL OF DRAIN	24.380	24.007	23.987	23.893	23.873	23.797	23.777	23.627	23.607	23.560	23.540	23.484	23.464	23.398	23.378	23.365	23.345	23.283	23.263	23.187	23.167	23.080	23.060	22.973	22.953	22.865	22.845	22.805	22.785	22.746	22.726	22.664	22.664
DESIGN (& EXISTING) SURFACE LEVEL	25.731 (27.957)	25.839 (25.700)		25.562 (25.627)		25.515 (25.561)		25.489 (25.433)		25.499 (25.392)		25.500 (25.345)		25.329 (25.291)		25.250 (25.268)		25.287 (25.175)		25.240 (25.054)		25.211 (24.917)		25.182 (24.778)		25.229 (24.641)		25.065 (24.829)		25.223 (24.911)		24.768	
SETOUT COORDINATES	501810.729E 6929617.157N	501794.111E 6929608.786N		501789.884E 6929590.507N		501777.071E 6929568.361N		501752.035E 6929525.080N		501744.207E 6929511.548N		501734.978E 6929495.594N		501723.962E 6929476.551N		501726.362E 6929472.714N		501744.281E 6929462.349N		501766.267E 6929449.630N		501791.370E 6929435.109N		501816.472E 6929420.588N		501841.661E 6929406.017N		501853.347E 6929399.257N		501861.091E 6929409.601N		501873.356E 6929471.928N	
CHAINAGE	0.000	18.657 / 18.657	18.761	37.419	25.585	63.004	50.000	113.004	15.633	128.637	18.431	147.068	22.000	169.068	4.527	173.594	20.700	194.294	25.400	219.694	29.000	248.694	29.000	277.694	29.100	306.794	13.500	320.294	12.922	333.216	12.378	345.595	
LINE																1																	

STRUCTURE NAME	1/2	3/1
STRUCTURE DESCRIPTION	GRATED TRENCH DRAIN 300mm WIDE CLASS D GRATE OVER 900x600 INTEGRATED PIT	1500mm DIA MANHOLE CLASS D LID OVER 1800mm DIA MANHOLE
PIPE SIZE (mm)		375
PIPE CLASS		HDPE (SN8)
PIPE GRADE (%)		0.50%
PIPE SLOPE (1 in X)		200.0
PIPE FLOW (cumecs)		0.035
CAPACITY FLOW (cumecs)		0.131
FULL PIPE VELOCITY (m/s)		0.32
NORMAL DEPTH VELOCITY (m/s)		1.02
DATUM RL	8.000	
HGL ELEVATION	24.278	24.227 / 24.224 / 24.229 / 24.205
DEPTH TO INVERT	0.656	1.668 / 1.688
INVERT LEVEL OF DRAIN	24.019	23.893 / 23.873
DESIGN (& EXISTING) SURFACE LEVEL	24.675 (25.534)	25.562 (25.627)
SETOUT COORDINATES	501813.700E 6929582.253N	501789.884E 6929590.507N
CHAINAGE	0.000	25.212 / 25.212
LINE		2

STRUCTURE NAME	1/3	4/1
STRUCTURE DESCRIPTION	LIP IN LINE GULLY (SAG) 2.4m Lintel	1500mm DIA MANHOLE CLASS D LID OVER 1350mm DIA MANHOLE
PIPE SIZE (mm)		450
PIPE CLASS		HDPE (SN8)
PIPE GRADE (%)		1.00%
PIPE SLOPE (1 in X)		100.0
PIPE FLOW (cumecs)		0.212
CAPACITY FLOW (cumecs)		0.288
FULL PIPE VELOCITY (m/s)		1.41
NORMAL DEPTH VELOCITY (m/s)		2.09
DATUM RL	8.000	
HGL ELEVATION	24.489	24.225 / 24.191 / 24.173
DEPTH TO INVERT	1.515	1.718 / 1.738
INVERT LEVEL OF DRAIN	23.898	23.797 / 23.777
DESIGN (& EXISTING) SURFACE LEVEL	25.413 (25.606)	25.515 (25.561)
SETOUT COORDINATES	501768.258E 6929573.458N	501777.071E 6929568.361N
CHAINAGE	0.000	10.181 / 10.181
LINE		3

STRUCTURE NAME	1/4	5/1
STRUCTURE DESCRIPTION	LIP IN LINE GULLY (SAG) 2.4m Lintel	1500mm DIA MANHOLE CLASS D LID OVER 1500mm DIA MANHOLE
PIPE SIZE (mm)		450
PIPE CLASS		HDPE (SN8)
PIPE GRADE (%)		1.00%
PIPE SLOPE (1 in X)		100.0
PIPE FLOW (cumecs)		0.209
CAPACITY FLOW (cumecs)		0.288
FULL PIPE VELOCITY (m/s)		1.39
NORMAL DEPTH VELOCITY (m/s)		2.08
DATUM RL	8.000	
HGL ELEVATION	24.471	24.212 / 24.073 / 24.065
DEPTH TO INVERT	1.475	1.703 / 1.882
INVERT LEVEL OF DRAIN	23.888	23.786 / 23.607
DESIGN (& EXISTING) SURFACE LEVEL	25.363 (25.477)	25.489 (25.433)
SETOUT COORDINATES	501743.222E 6929530.178N	501752.035E 6929525.080N
CHAINAGE	0.000	10.181 / 10.181
LINE		4

STORMWATER GRATED PITS

DEPTH	MIN SIZE
0-0.9m	600x600 Grated Pit
0.9m-1.2m	900x600 Grated Pit
1.2-2m	900x900 Grated Pit
Over 2m	900x600 Grate over MH

NOTE

- ALL EXISTING SERVICES, LOCATION AND SIZES ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION.
- CONFIRM ANY POTENTIAL CLASHES PRIOR TO CONSTRUCTION AND NOTIFY SUPERINTENDENT.
- REFER TO BCC STD DRG BSD-8011, BSD-8021 & BSD-8091 AND MANUFACTURERS SPECIFICATIONS FOR FURTHER DETAILS.
- ALL MANHOLE CHAMBERS DEEPER THAN 1.20m TO HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH AS1657 AND BSD-8021.
- ALL GRATED INLETS TO BE FITTED WITH TRASH BASKETS

LEGEND

- 5% AEP HGL
- DESIGN SURFACE
- EXISTING SURFACE

NOT FOR CONSTRUCTION

RPEQ No. 25874

DRAWN: M.MANLAPIT DESIGNED: G.DE LANGE JOB MANAGER: A.DE ANDRADE VERIFIER: S.KILLORAN

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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ARCHITECT: watson young

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SCALE 1:100 @ A1
SCALE 1:1000 @ A1
0 1 2 3 4 5m
0 10 20 30 40 50m

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PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE
STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 4

JOB NUMBER: **26000287**
DRAWING NUMBER: **DA-321**
REVISION:
DRAWING SHEET SIZE = A1

STRUCTURE NAME	1/5	7/1	1/6	7/1	1/7	15/1	1/8	2/8	3/8	4/8	5/8	6/8	7/8	8/8	9/8	10/8	11/8	12/8	13/8	14/8	16/1	1/9	2/8
STRUCTURE DESCRIPTION	GRATED TRENCH DRAIN 300mm WIDE CLASS D GRATE OVER 900x600 INTEGRATED PIT	1800mm DIA MANHOLE CLASS D LID OVER 1800mm DIA MANHOLE	LIP IN LINE GULLY 2.4m Lintel	1800mm DIA MANHOLE CLASS D LID OVER 1800mm DIA MANHOLE	GRATED TRENCH DRAIN 300mm WIDE CLASS D GRATE OVER 900x900 INTEGRATED PIT	1800mm DIA MANHOLE CLASS D LID	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D CONCRETE INFILL	1050mm DIA MANHOLE CLASS D LID OVER 1200mm DIA MANHOLE	1050mm DIA MANHOLE CLASS D LID	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE	1200mm DIA MANHOLE CLASS D LID	2100mm DIA MANHOLE CLASS D LID	FIELD INLET PIT – TYPE 2 600x600mm; CLASS D	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE
PIPE SIZE (mm)	600		450		375		225	300	300	300	300	300	375	375	375	375	450	600	750	750	750		225
PIPE CLASS	HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)	HDPE (SN8)		HDPE (SN8)
PIPE GRADE (%)	0.50%		1.00%		1.00%		0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	3.00%	3.00%	0.50%	0.50%	0.50%	0.50%	0.50%		1.50%
PIPE SLOPE (1 in X)	200.0		100.0		100.0		200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	33.3	33.3	200.0	200.0	200.0	200.0	200.0		66.7
PIPE FLOW (cumecs)	0.031		0.010		0.037		0.020	0.035	0.039	0.056	0.059	0.078	0.098	0.121	0.146	0.259	0.414	0.541	0.553	0.666			0.015
CAPACITY FLOW (cumecs)	0.452		0.013		0.185		0.034	0.070	0.070	0.070	0.070	0.131	0.131	0.131	0.320	0.498	0.452	0.797	0.797	0.797			0.058
FULL PIPE VELOCITY (m/s)	0.11		0.66		0.34		0.51	0.51	0.57	0.83	0.86	0.72	0.91	1.12	1.35	1.72	1.51	1.29	1.32	1.59			0.38
NORMAL DEPTH VELOCITY (m/s)	0.94		0.97		1.34		0.90	1.03	1.06	1.15	1.16	1.26	1.33	1.37	2.89	3.34	1.87	2.04	2.05	2.12			1.25
DATUM RL	8.000		8.000		8.000		9.000															11.000	
HGL ELEVATION	24.008	24.002	24.462	24.341	24.234	24.002	23.750	23.692	23.687	23.709	23.581	26.699	26.607	26.584	26.574	26.475	26.473	26.469	26.453	26.439	26.385	26.377	26.342	26.335	26.296	26.284	26.237	26.266	26.114	26.074	25.978	25.203	25.093	24.056	23.959	23.833	23.805	23.762	23.723	23.710	23.714	23.579	23.573	23.593	23.411	26.690	26.617	26.584	26.574
DEPTH TO INVERT	1.057	2.016	1.146	1.355	1.473	1.936	1.413	1.351	1.371	1.476	1.496	1.391	1.411	1.571	1.591	1.521	1.541	1.631	1.651	1.831	1.851	1.823	1.843	2.107	2.127	1.836	1.856	1.946	1.966	2.066	2.086	2.237	2.257	2.276	2.497	1.237	1.351	1.371
INVERT LEVEL OF DRAIN	23.618	23.484	24.247	24.145	23.245	23.129	26.484	26.448	26.428	26.331	26.311	26.258	26.238	26.158	26.138	26.068	26.048	25.898	25.878	25.795	25.775	25.716	25.696	24.754	24.734	23.376	23.356	23.206	23.186	23.036	23.016	22.982	22.962	22.947	22.726	26.516	26.448	26.428
DESIGN (& EXISTING) SURFACE LEVEL	24.675 (25.263)	25.500 (25.345)	25.392 (25.389)	25.500 (25.345)	24.718 (24.791)	25.065 (24.829)	27.896 (27.571)	27.799 (27.515)	27.807 (27.417)	27.669 (27.365)	27.729 (27.284)	27.626 (27.081)	27.539 (27.188)	27.860 (26.395)	25.212 (25.548)	25.152 (25.252)	23.102 (24.957)	23.218 (24.972)	22.223 (24.911)	27.753 (27.804)	26.516	27.799 (27.515)
SETOUT COORDINATES	501761.361E 6929491.776N	501734.978E 6929495.594N	501726.164E 6929500.693N	501734.978E 6929495.594N	501850.389E 6929388.053N	501853.347E 6929399.257N	501839.71E 6929604.397N	501846.288E 6929601.641N	501863.135E 6929551.896N	501872.256E 6929586.619N	501886.076E 6929578.625N	501933.729E 6929547.024N	501932.157E 6929536.546N	501919.630E 6929507.748N	501896.962E 6929468.562N	501881.940E 6929442.594N	501866.935E 6929416.620N	501861.461E 6929412.577N	501861.991E 6929409.601N	501844.010E 6929597.703N	501846.288E 6929601.641N
CHAINAGE	0.000	26.711	26.711	10.183	10.183	11.587	11.587	0.000	7.107	7.107	19.462	26.569	10.538	37.107	15.965	53.073	14.035	67.107	30.000	97.107	16.569	113.676	11.867	125.544	31.405	156.949	45.270	202.218	30.000	232.218	30.006	262.224	6.789	269.013	2.999	272.012	0.000	4.550	4.550
LINE	5		6		7		8															9	

STORMWATER GRATED PITS

DEPTH	MIN SIZE
0-0.9m	600x600 Grated Pit
0.9m-1.2m	900x600 Grated Pit
1.2-2m	900x900 Grated Pit
Over 2m	900x600 Grate over MH

NOTE

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- CONFIRM ANY POTENTIAL CLASHES PRIOR TO CONSTRUCTION AND NOTIFY SUPERINTENDENT.
- REFER TO BCC STD DRG BSD-8011, BSD-8021 & BSD-8091 AND MANUFACTURERS SPECIFICATIONS FOR FURTHER DETAILS.
- ALL MANHOLE CHAMBERS DEEPER THAN 1.20m TO HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH AS1657 AND BSD-8021.
- ALL GRATED INLETS TO BE FITTED WITH TRASH BASKETS

LEGEND

- 5% AEP HGL
- DESIGN SURFACE
- EXISTING SURFACE

RPEQ No. 25874
VERIFIER: S.KILLORAN
JOB MANAGER: A.DE ANDRADE
DESIGNED: G.DE LANGE
DRAWN: M.MANLAPIT

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	MM	SK	ADA	02.04.26
B	ISSUED FOR APPROVAL	MM	SK	ADA	21.04.26
C	ISSUED FOR APPROVAL	MM	SK	ADA	26.04.26

CLIENT: Charter Hall

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ARCHITECT: watson young

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SCALE 1:100 @ A1
SCALE 1:1000 @ A1
0 1 2 3 4 5m
0 10 20 30 40 50m

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Brisbane
Level 25, 12 Creek Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT: PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 4

JOB NUMBER: 26000287
DRAWING NUMBER: DA-322
REVISION:
DRAWING SHEET SIZE = A1

STRUCTURE NAME	1/10	3/8	1/11	4/8	1/12	5/8	1/13	6/8	1/14	7/8	1/15	8/8
STRUCTURE DESCRIPTION	FIELD INLET PIT – TYPE 2 600x600mm, CLASS D	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 600x600mm, CLASS D	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 600x600mm, CLASS D	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 600x600mm, CLASS D	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 600x600mm, CLASS D	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D OVER 1200mm DIA MANHOLE	FIELD INLET PIT – TYPE 2 900x900mm, CLASS D	1050mm DIA MANHOLE CLASS D LID OVER 1200mm DIA MANHOLE
PIPE SIZE (mm)	225		225		225		225		225		300	
PIPE CLASS	HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)	
PIPE GRADE (%)	1.50%		1.50%		1.50%		1.50%		1.50%		1.50%	
PIPE SLOPE (1 in X)	66.7		66.7		66.7		66.7		66.7		66.7	
PIPE FLOW (cumecs)	0.004		0.018		0.003		0.020		0.021		0.024	
CAPACITY FLOW (cumecs)	0.058		0.058		0.058		0.058		0.058		0.122	
FULL PIPE VELOCITY (m/s)	0.11		0.46		0.07		0.52		0.54		0.36	
NORMAL DEPTH VELOCITY (m/s)	0.88		1.31		0.75		1.35		1.37		1.40	
DATUM RL	11.000		11.000		11.000		10.000		10.000		10.000	
HGL ELEVATION	26.581 26.576	26.496 26.473 26.469	26.579 26.477	26.453 26.439	26.488 26.486	26.409 26.385 26.377	26.551 26.424	26.342 26.335	26.504 26.367	26.296 26.284	26.607 26.561	26.407 26.266 26.114
DEPTH TO INVERT	1.237	1.353 1.496	1.237	1.351 1.411	1.237	1.352 1.591	1.237	1.351 1.541	1.237	1.351 1.651	1.060	1.309 1.851
INVERT LEVEL OF DRAIN	26.522	26.454 26.311	26.366	26.298 26.238	26.445	26.377 26.138	26.306	26.238 26.048	26.246	26.178 25.878	26.442	26.318 25.775
DESIGN (& EXISTING) SURFACE LEVEL	27.759 (27.703)	27.807 (27.417)	27.603 (27.650)	27.649 (27.365)	27.682 (27.567)	27.729 (27.284)	27.543 (27.496)	27.589 (27.214)	27.483 (27.342)	27.529 (27.064)	27.502 (27.303)	27.626 (27.081)
SETOUT COORDINATES	501860.986E 6929587.882N	501863.135E 6929591.896N	501869.978E 6929582.681N	501872.256E 6929586.619N	501883.927E 6929574.611N	501886.076E 6929578.625N	501895.946E 6929567.659N	501898.224E 6929571.597N	501921.914E 6929552.637N	501924.193E 6929556.575N	501946.003E 6929547.504N	501937.729E 6929547.024N
CHAINAGE	0.000	4.553 4.553	0.000	4.550 4.550	0.000	4.553 4.553	0.000	4.550 4.550	0.000	4.550 4.550	0.000	8.290 8.290
LINE	10		11		12		13		14		15	

STORMWATER GRATED PITS

DEPTH	MIN SIZE
0-0.9m	600x600 Grated Pit
0.9m-1.2m	900x600 Grated Pit
1.2-2m	900x900 Grated Pit
Over 2m	900x600 Grate over MH

NOTE

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- REFER TO BCC STD DRG BSD-8011, BSD-8021 & BSD-8091 AND MANUFACTURERS SPECIFICATIONS FOR FURTHER DETAILS.
- ALL MANHOLE CHAMBERS DEEPER THAN 1.20m TO HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH AS1657 AND BSD-8021.
- ALL GRATED INLETS TO BE FITTED WITH TRASH BASKETS

LEGEND

- 5% AEP HGL
- DESIGN SURFACE
- EXISTING SURFACE

RPEQ No. 25874
VERIFIER: S.KILLORAN
JOB MANAGER: A.DE ANDRADE
DESIGNED: G.DE LANGE
DRAWN: M.MANLAPIT

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	MM	SK	ADA	02.04.26
B	ISSUED FOR APPROVAL	MM	SK	ADA	21.04.26
C	ISSUED FOR APPROVAL	MM	SK	ADA	26.04.26

CLIENT: Charter Hall

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ARCHITECT: watson young

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SCALE 1:100 @ A1
SCALE 1:1000 @ A1
0 1 2 3 4 5m
0 10 20 30 40 50m

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ABN 81 094 433 100

PROJECT
PROPOSED INDUSTRIAL DEVELOPMENT
PROPOSED LOT 105
4499-4651 MT. LINDESAY HIGHWAY
NORTH MACLEAN, QLD 4280

DRAWING TITLE
STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 3 OF 4

JOB NUMBER: **26000287**
DRAWING NUMBER: **DA-323**
REVISION:
DRAWING SHEET SIZE = A1

STRUCTURE NAME	1/RW1	2/1	1/RW10	14/8	1/RW2	3/1	1/RW3	1/3	1/RW4	6/1	1/RW5	1/4	1/RW6	10/11	1/RW7	10/8	1/RW8	11/8	1/RW9	12/8
STRUCTURE DESCRIPTION	DOWNPIPE 100% CAPTURE	GRATED TRENCH DRAIN 300mm WIDE CLASS D GRATE OVER 1050mm DIA MANHOLE	DOWNPIPE 100% CAPTURE	1200mm DIA MANHOLE CLASS D LID	DOWNPIPE 100% CAPTURE	1500mm DIA MANHOLE CLASS D LID	DOWNPIPE 100% CAPTURE	LIP IN LINE GULLY (SAG) 2.4m Lintel	DOWNPIPE 100% CAPTURE	1500mm DIA MANHOLE CLASS D LID OVER 1500mm DIA MANHOLE	DOWNPIPE 100% CAPTURE	LIP IN LINE GULLY (SAG) 2.4m Lintel	DOWNPIPE 100% CAPTURE	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1500mm DIA MANHOLE	DOWNPIPE 100% CAPTURE	1050mm DIA MANHOLE CLASS D LID	DOWNPIPE 100% CAPTURE	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE	DOWNPIPE 100% CAPTURE	FIELD INLET PIT – TYPE 2 900x900mm; CLASS D OVER 1200mm DIA MANHOLE
PIPE SIZE (mm)	300		375		375		450		450		450		300		450		375		375	
PIPE CLASS	HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)		HDPE (SN8)	
PIPE GRADE (%)	0.50%		0.50%		0.50%		0.50%		0.50%		0.50%		0.50%		0.50%		0.50%		0.50%	
PIPE SLOPE (1 in X)	200.0		200.0		200.0		200.0		200.0		200.0		200.0		200.0		200.0		200.0	
PIPE FLOW (cumecs)	0.016		0.120		0.131		0.191		0.131		0.191		0.016		0.120		0.120		0.120	
CAPACITY FLOW (cumecs)	0.070		0.131		0.134		0.203		0.203		0.203		0.070		0.203		0.131		0.131	
FULL PIPE VELOCITY (m/s)	0.24		1.11		1.19		1.27		0.87		1.27		0.24		0.79		1.11		1.11	
NORMAL DEPTH VELOCITY (m/s)	0.84		1.37		1.39		1.53		1.43		1.53		0.84		1.40		1.37		1.37	
DATUM RL	9.000		8.000		8.000		8.000		8.000		8.000		8.000		9.000		8.000		8.000	
HGL ELEVATION	24.608	24.591	24.602	23.988	24.137	24.012	24.436	24.229	24.607	24.462	24.438	24.489	24.611	24.447	24.436	24.229	24.347	24.270	24.259	24.040	24.592	24.428	24.421	24.471	24.098	24.092	24.081	23.854	25.696	25.632	25.620	25.203	24.241	24.116	24.092	24.056	24.181	24.056	24.033	23.833	24.098	24.092	24.056	23.959	24.241	24.116	24.092	24.056	24.181	24.056	24.033	23.833	24.098	24.092	24.056	23.805
	24.602	24.250	24.012	23.714	24.462	24.229	24.447	24.489	24.270	24.259	24.428	24.471	24.092	24.092	25.632	25.203	24.270	24.259	24.040		24.428	24.421	24.471		24.092	24.056	23.854		25.632	25.620	25.203		24.116	24.092	24.056		24.056	24.033	23.833		24.092	24.056	23.959		24.116	24.092	24.056		24.056	24.033	23.833		24.092	24.056	23.805	
DEPTH TO INVERT	1.316	1.345	1.516	1.486	1.405	1.393	1.473	1.323	1.473	1.496	1.473	1.324	1.331	1.302	1.052	1.481	1.473	1.496	1.959		1.473	1.324	1.475		1.331	1.302	2.024		1.052	1.481	2.127		1.416	1.376	1.856		1.416	1.376	1.966		1.331	1.302	2.024		1.416	1.376	1.856		1.416	1.376	1.966		1.331	1.302	2.024	
	1.602	1.652	1.516	2.257	1.405	1.688	1.473	1.515	1.473	1.959	1.473	1.475	1.331	2.024	1.052	2.127	1.473	1.959	2.040		1.473	1.475	2.212		1.331	2.024	2.839		1.052	2.127	2.093		1.416	1.856	1.959		1.416	1.856	2.066		1.331	2.024	2.839		1.416	1.856	1.959		1.416	1.856	2.066		1.331	2.024	2.839	
INVERT LEVEL OF DRAIN	24.505	24.495	23.742	23.732	24.178	24.168	24.100	24.090	24.013	24.003	24.049	24.039	23.995	23.985	25.389	25.379	24.049	24.039	24.029		24.049	24.039	24.029		23.995	23.985	23.263		25.389	25.379	24.734		23.846	23.836	23.356		23.786	23.776	23.186		23.995	23.985	23.263		23.846	23.836	23.356		23.786	23.776	23.186		23.995	23.985	23.263	
	24.505	23.987	23.742	22.962	24.178	23.873	24.100	23.898	24.013	23.540	24.049	23.888	23.995	23.263	25.389	24.734	24.049	23.540	23.040		24.049	23.888	23.212		23.995	23.263	23.839		25.389	24.734	25.093		23.846	23.356	23.959		23.786	23.186	23.805		23.995	23.263	23.839		23.846	23.356	23.959		23.786	23.186	23.805		23.995	23.263	23.839	
DESIGN (& EXISTING) SURFACE LEVEL	25.821	25.839	25.258	25.218	25.583	25.562	25.574	25.413	25.486	25.499	25.522	25.363	25.326	25.287	26.441	25.860	25.262	25.212	25.202		25.522	25.363	25.303		25.326	25.287	25.175		26.441	25.860	26.395		25.262	25.212	25.548		25.202	25.152	25.252		25.326	25.287	25.175		25.262	25.212	25.548		25.202	25.152	25.252		25.326	25.287	25.175	
	(25.691)	(25.700)	(25.028)	(24.972)	(25.636)	(25.627)	(25.600)	(25.606)	(25.401)	(25.392)	(25.472)	(25.477)	(25.180)	(25.175)	(26.429)	(26.395)	(25.601)	(25.548)	(25.307)		(25.472)	(25.477)	(25.468)		(25.180)	(25.175)	(25.062)		(26.429)	(26.395)	(26.332)		(25.601)	(25.548)	(25.485)		(25.307)	(25.252)	(25.242)		(25.180)	(25.175)	(25.062)		(25.601)	(25.548)	(25.485)		(25.307)	(25.252)	(25.242)		(25.180)	(25.175)	(25.062)	
SETOUT COORDINATES	501795.842E 6929601.784N	501794.111E 6929608.786N	501859.730E 6929413.578N	501861.461E 6929412.577N	501788.154E 6929591.510N	501789.884E 6929590.507N	501767.257E 6929571.727N	501768.258E 6929573.458N	501742.476E 6929512.550N	501744.207E 6929511.548N	501742.220E 6929528.447N	501743.222E 6929530.178N	501745.284E 6929464.079N	501744.281E 6929462.349N	501917.899E 6929508.749N	501919.630E 6929507.748N	501895.231E 6929469.563N	501896.962E 6929468.562N	501880.209E 6929443.595N	501881.940E 6929442.594N		

Appendix B – Arcadis IFC Documentation

FLAGSTONE LOGISTICS ESTATE - STAGE 1

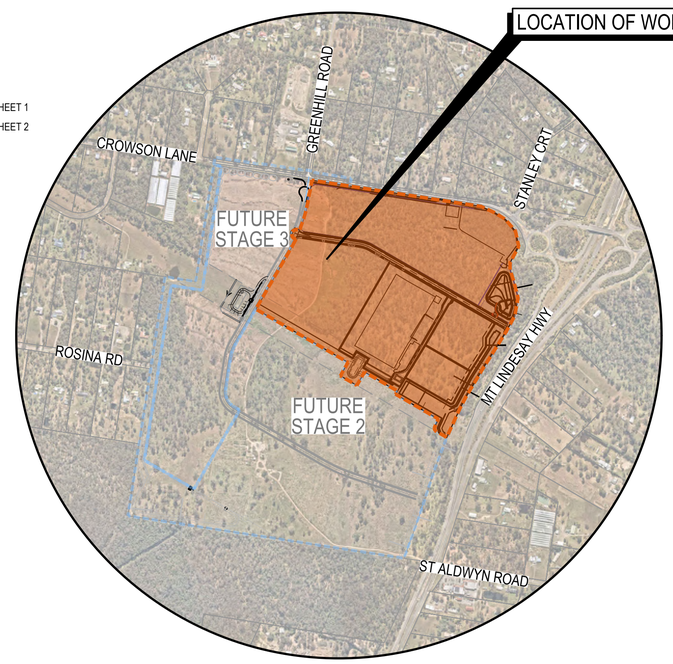
4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN
DETAILED DESIGN
ECONOMIC DEVELOPMENT QUEENSLAND (GREATER FLAGSTONE) & LOGAN CITY COUNCIL

DRAWING LIST

DRAWING NUMBER	DESCRIPTION
GENERAL	
30109334-AAP-P301OP-CV-DRG-0001	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
30109334-AAP-P301OP-CV-DRG-0010	EXISTING FEATURES SURVEY PLAN
30109334-AAP-P301OP-CV-DRG-0021	GENERAL NOTES
30109334-AAP-P301OP-CV-DRG-0041	SAFETY IN DESIGN
30109334-AAP-P301OP-CV-DRG-0061	OVERALL SITE LAYOUT PLAN
EARTHWORKS	
30109334-AAP-P301OP-CV-DRG-0101	EARTHWORKS PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0102	EARTHWORKS PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0103	EARTHWORKS PLAN SHEET 3
30109334-AAP-P301OP-CV-DRG-0104	EARTHWORKS PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0121	EARTHWORKS SITE SECTIONS SHEET 1
~~30109334-AAP-P301OP-CV-DRG-0122~~	~~EARTHWORKS SITE SECTIONS SHEET 2~~
30109334-AAP-P301OP-CV-DRG-0141	RETAINING WALL PLAN
30109334-AAP-P301OP-CV-DRG-0161	RETAINING WALL ELEVATIONS AND DETAILS SHEET 1
30109334-AAP-P301OP-CV-DRG-0162	RETAINING WALL ELEVATIONS AND DETAILS SHEET 2
30109334-AAP-P301OP-CV-DRG-0171	EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0172	EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0173	EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 3
30109334-AAP-P301OP-CV-DRG-0174	EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0191	EROSION AND SEDIMENT CONTROL DETAILS SHEET 1
30109334-AAP-P301OP-CV-DRG-0192	EROSION AND SEDIMENT CONTROL DETAILS SHEET 2
30109334-AAP-P301OP-CV-DRG-0193	EROSION AND SEDIMENT CONTROL DETAILS SHEET 3
ROAD WORKS	
30109334-AAP-P301OP-CV-DRG-0201	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0202	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0203	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 3
30109334-AAP-P301OP-CV-DRG-0204	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0205	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 5
30109334-AAP-P301OP-CV-DRG-0206	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 6
30109334-AAP-P301OP-CV-DRG-0207	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 7
30109334-AAP-P301OP-CV-DRG-0208	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 8
30109334-AAP-P301OP-CV-DRG-0209	STORMWATER OUTLET DETAILS LAYOUT PLAN
30109334-AAP-P301OP-CV-DRG-0215	ROADWORKS AND DRAINAGE DETAILS
30109334-AAP-P301OP-CV-DRG-0221	CONTROL LINE SETOUT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0222	CONTROL LINE SETOUT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0223	CONTROL LINE SETOUT PLAN SHEET 3
~~30109334-AAP-P301OP-CV-DRG-0224~~	~~CONTROL LINE SETOUT PLAN SHEET 4~~
30109334-AAP-P301OP-CV-DRG-0251	ROAD LONGITUDINAL SECTION SHEET 1
30109334-AAP-P301OP-CV-DRG-0252	ROAD LONGITUDINAL SECTION SHEET 2
30109334-AAP-P301OP-CV-DRG-0281	ROAD 1 CROSS SECTIONS SHEET 1
30109334-AAP-P301OP-CV-DRG-0282	ROAD 1 CROSS SECTIONS SHEET 2

DRAWING NUMBER	DESCRIPTION
30109334-AAP-P301OP-CV-DRG-0283	ROAD 1 CROSS SECTIONS SHEET 3
30109334-AAP-P301OP-CV-DRG-0284	ROAD 1 CROSS SECTIONS SHEET 4
~~30109334-AAP-P301OP-CV-DRG-0285~~	~~MC TEMP ACCESS CROSS SECTIONS SHEET 1~~
~~30109334-AAP-P301OP-CV-DRG-0286~~	~~MC TEMP ACCESS CROSS SECTIONS SHEET 2~~
30109334-AAP-P301OP-CV-DRG-0311	INTERSECTION LAYOUT PLAN
30109334-AAP-P301OP-CV-DRG-0341	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0342	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0343	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 3
~~30109334-AAP-P301OP-CV-DRG-0344~~	~~PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 4~~
~~30109334-AAP-P301OP-CV-DRG-0345~~	~~PAVEMENT, SIGNAGE AND LINEMARKING DETAILS~~
30109334-AAP-P301OP-CV-DRG-0346	PAVEMENT DESIGN LAYOUT PLAN
30109334-AAP-P301OP-CV-DRG-0347	PAVEMENT DETAILS
30109334-AAP-P301OP-CV-DRG-0348	PAVEMENT NOTES
D 30109334-AAP-P301OP-CV-DRG-0421	STORMWATER CATCHMENT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0422	STORMWATER CATCHMENT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0423	STORMWATER CATCHMENT PLAN SHEET 3
30109334-AAP-P301OP-CV-DRG-0424	STORMWATER CATCHMENT PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0441	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 1
30109334-AAP-P301OP-CV-DRG-0442	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 2
30109334-AAP-P301OP-CV-DRG-0443	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 3
30109334-AAP-P301OP-CV-DRG-0444	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 4
30109334-AAP-P301OP-CV-DRG-0445	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 5
30109334-AAP-P301OP-CV-DRG-0446	STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 6
~~30109334-AAP-P301OP-CV-DRG-0447~~	~~STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 7~~
30109334-AAP-P301OP-CV-DRG-0461	STORMWATER DRAINAGE CALCULATION TABLE SHEET 1
30109334-AAP-P301OP-CV-DRG-0462	STORMWATER DRAINAGE CALCULATION TABLE SHEET 2
30109334-AAP-P301OP-CV-DRG-0463	STORMWATER DRAINAGE CALCULATION TABLE SHEET 3
~~30109334-AAP-P301OP-CV-DRG-0464~~	~~STORMWATER DRAINAGE CALCULATION TABLE SHEET 4~~
~~30109334-AAP-P301OP-CV-DRG-0465~~	~~STORMWATER DRAINAGE CALCULATION TABLE SHEET 5~~
~~30109334-AAP-P301OP-CV-DRG-0466~~	~~STORMWATER DRAINAGE CALCULATION TABLE SHEET 6~~
30109334-AAP-P301OP-CV-DRG-0481	STORMWATER DRAINAGE DETAILS SHEET 1
30109334-AAP-P301OP-CV-DRG-0482	STORMWATER DRAINAGE DETAILS SHEET 2
30109334-AAP-P301OP-CV-DRG-0483	STORMWATER DRAINAGE DETAILS SHEET 3
30109334-AAP-P301OP-CV-DRG-0491	COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 1
30109334-AAP-P301OP-CV-DRG-0492	COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 2
30109334-AAP-P301OP-CV-DRG-0493	COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 3
30109334-AAP-P301OP-CV-DRG-0494	COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 4
30109334-AAP-P301OP-CV-DRG-0495	COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 5
SERVICES	
30109334-AAP-P301OP-CV-DRG-0521	SEWER RETICULATION LAYOUT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0522	SEWER RETICULATION LAYOUT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0523	SEWER RETICULATION LAYOUT PLAN SHEET 3

DRAWING NUMBER	DESCRIPTION
30109334-AAP-P301OP-CV-DRG-0524	SEWER RETICULATION LAYOUT PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0525	SEWER RETICULATION LAYOUT PLAN SHEET 5
30109334-AAP-P301OP-CV-DRG-0581	SEWER LONGITUDINAL SECTION SHEET 1
30109334-AAP-P301OP-CV-DRG-0582	SEWER LONGITUDINAL SECTION SHEET 2
30109334-AAP-P301OP-CV-DRG-0583	SEWER LONGITUDINAL SECTION SHEET 3
30109334-AAP-P301OP-CV-DRG-0584	SEWER LONGITUDINAL SECTION SHEET 4
30109334-AAP-P301OP-CV-DRG-0585	CUSTOM X TYPE MANHOLE STRUCTURE DETAILS SHEET 1
30109334-AAP-P301OP-CV-DRG-0586	CUSTOM X TYPE MANHOLE STRUCTURE DETAILS SHEET 2
30109334-AAP-P301OP-CV-DRG-0587	SEWER LONGITUDINAL SECTION SHEET 5
30109334-AAP-P301OP-CV-DRG-0621	WATER RETICULATION LAYOUT PLAN SHEET 1
30109334-AAP-P301OP-CV-DRG-0622	WATER RETICULATION LAYOUT PLAN SHEET 2
30109334-AAP-P301OP-CV-DRG-0623	WATER RETICULATION LAYOUT PLAN SHEET 3
30109334-AAP-P301OP-CV-DRG-0624	WATER RETICULATION LAYOUT PLAN SHEET 4
30109334-AAP-P301OP-CV-DRG-0625	WATER RETICULATION DETAILS



LOCALITY PLAN
SCALE 1:10000

LEVELS & GRID

LEVEL DATUM - AHD
ORIGIN - PM72575
R.L. - 10.664

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Issue	Description	DR	CH	VE	Date
D	UPDATED IFC - DWGS 0346 AND 0347 ADDED	A.O.	S.S.	B.K.	18.10.24
C	UPDATED IFC - DWGS 0483 AND 0587 ADDED	A.O.	S.S.	B.K.	03.09.24
B	UPDATED ISSUED FOR CONSTRUCTION	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 100 200 400 600 800 1000m

1 : 10000

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0001

Issue: D

100mm on Original

Date Plotted: 13 Mar 2025 - 08:59AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0001-Cover.dwg



LEGEND

- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING ROOFWATER DRAINAGE RETICULATION
- EXISTING SEWER RETICULATION
- EXISTING WATER RETICULATION
- EXISTING RECYCLED WATER RETICULATION

WARNING: EXISTING SERVICES

ABOVE AND UNDERGROUND SERVICES EXIST IN THIS VICINITY. THE CONTRACTOR IS TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM EXACT LOCATION OF SERVICES ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION COMMENCING.

SERVICE CONFLICT NOTES

1. THE EXISTING UTILITY SERVICES INFORMATION SHOWN HAS BEEN COMPILED FROM SURVEY INFORMATION SUPPLIED BY THE VARIOUS SERVICE AUTHORITIES.
2. THE INFORMATION IS NOT INTENDED TO PROVIDE THE CONTRACTOR WITH COMPLETE OR ACCURATE INFORMATION CONCERNING THE LOCATION AND EXTENT OF UTILITY SERVICES.
3. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ANY DAMAGE INCURRED TO EXISTING UTILITY SERVICES AS A RESULT OF THE EXECUTION OF WORK UNDER THE CONTRACT.
4. NO WORK SHALL BE CARRIED OUT WITHIN 3 METRES OF ANY EXISTING SERVICES WITHOUT PRIOR RECORDED CONSULTATION WITH THE RELEVANT AUTHORITY.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
6. ALL EXISTING SERVICES AND STRUCTURES ARE TO BE MAINTAINED IN GOOD ORDER FOR THE DURATION OF THE CONTRACT AND WHERE RELOCATION IS REQUIRED, REFER SPECIFICATION.

Issue	Description	DR	CH	VE	Date
B	UPDATED BOUNDARY	A.O.	S.S.	B.K.	10.03.25
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 40 80 120 160 200 250 300m

1 : 3000

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EXISTING FEATURES SURVEY PLAN

ARCADIS
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Level 35, 111 Eagle Street
BRISBANE QLD 4000
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www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0010

Issue: B

Date Plotted: 13 Mar 2025 - 09:00AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0010-ExistingFeaturesSurveyPlan.dwg

GENERAL NOTE:

ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH LOGAN CITY COUNCIL DESIGN GUIDELINES & WORKS SPECIFICATION.
WHERE DISCREPANCIES OCCUR THE MORE STRINGENT SPECIFICATION WILL TAKE PRECEDENCE.

EXISTING SURVEY PLAN:

1. THE EXISTING UTILITY SERVICES INFORMATION SHOWN HAS BEEN COMPILED FROM SURVEY INFORMATION.
2. THE INFORMATION IS NOT INTENDED TO PROVIDE THE CONTRACTOR WITH COMPLETE OR ACCURATE INFORMATION CONCERNING THE LOCATION & EXTENT OF UTILITY SERVICES.
3. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ANY DAMAGE INCURRED TO EXISTING UTILITY SERVICES AS A RESULT OF THE EXECUTION OF WORK UNDER THE CONTRACT.
4. NO WORK SHALL BE CARRIED OUT WITHIN 3 METRES OF ANY EXISTING SERVICES WITHOUT PRIOR RECORDED CONSULTATION WITH THE RELEVANT AUTHORITY.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
6. ALL EXISTING SERVICES & STRUCTURES ARE TO BE MAINTAINED IN GOOD ORDER FOR THE DURATION OF THE CONTRACT & WHERE RELOCATION IS REQUIRED, REFER SPECIFICATION.

RETAINING WALL NOTES:

1. CONCRETE SLEEPER WALL DETAILS ARE INDICATIVE ONLY. DETAILED DESIGN & CERTIFICATION TO BE PROVIDED BY CONTRACTORS RPEQ.
2. LAND SLIPS (e.g. SLIP CIRCLE FAILURE MECHANISMS) IS TO BE CONSIDERED IN THE RETAINING WALL DESIGN. THE DETERMINATION OF THE SITE SUSCEPTIBILITY TO SLIP IS THE RESPONSIBILITY OF THE CONTRACTOR AND THEIR GEOTECHNICAL CONSULTANT.
3. CONCRETE STANDARD - AS3600 STANDARD DESIGN EXPOSURE CLASSIFICATION SLEEPERS & POSTS - B1, FOOTINGS - A2
4. MINIMUM SURCHARGE LOAD OF 5 KPa TO BE USED FOR DESIGN U.N.O.
5. WALL TO BE DESIGNED TO BRIDGE ANY UNDERGROUND SERVICES SO AS NOT TO IMPOSE ANY ADDITIONAL LOADING ON SERVICES.
6. DESIGN DRAWINGS AND RPEQ CERTIFICATION TO BE PROVIDED TO SUPERINTENDENT 5 WORKING DAYS PRIOR TO COMMENCEMENT OF RETAINING WALL CONSTRUCTION.

BULK EARTHWORKS NOTES:

1. THE CONTRACTOR IS TO FENCE LIMIT OF WORKS PRIOR TO PRE START MEETING WITH COUNCIL.
2. SEDIMENT & EROSION CONTROL MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING & GRUBBING WORKS.
3. AN AUTHORISED SPOTTER-CATCHER IS TO BE ON SITE PRIOR TO THE COMMENCEMENT OF AND DURING THE CLEARING WORK.
4. ANY CLEARING REQUIRED TO BE UNDERTAKEN BY THE CONTRACTOR IS TO BE STRICTLY IN ACCORDANCE WITH THE COUNCIL APPROVED VEGETATION MANAGEMENT PLAN.
5. THE AREA WITHIN THE LIMITS OF CLEARING SHALL BE CLEARED OF ALL VEGETATION, ALL MINOR MAN-MADE STRUCTURES (SUCH AS FENCES, BUILDING MATERIAL AND EXISTING DRIVEWAYS), ALL RUBBISH AND OTHER MATERIALS WHICH, IN THE OPINION OF THE SUPERINTENDENT, ARE UNSUITABLE FOR USE IN THE WORKS WITH THE EXCEPTION OF CERTAIN TREES MARKED FOR PRESERVATION.
6. TREES ARE TO BE MULCHED & STOCKPILED ON SITE FOR USE IN LANDSCAPING.
7. WHERE PARTS OF TREES CANNOT BE MULCHED, THEY ARE TO BE DISPOSED OF OFF-SITE AT AN APPROVED FACILITY.
8. ALL TOPSOIL FROM EARTHWORKS AREA SHALL BE STRIPPED AND STOCKPILED PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OPERATIONS. A TOPSOIL DEPTH OF 100mm HAS BEEN USED TO DETERMINE TOPSOIL AND EARTHWORK QUANTITIES.
9. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE ENGINEER DURING CONSTRUCTION. FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION.
10. FILL AREAS SHALL BE CONSTRUCTED IN LAYERS NOT EXCEEDING 300mm LOOSE DEPTH. THE FILL MATERIAL SHALL BE COMPACTED TO 95% (MINIMUM) OF THE MAXIMUM DRY DENSITY. TESTING SHALL BE IN ACCORDANCE WITH A.S.1289 (MODIFIED COMPACTION). THE CONTRACTOR SHALL SUPPLY TO THE ENGINEER CERTIFICATION OF THE COMPACTION ACHIEVED.
11. ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798 UNDER LEVEL 1 SUPERVISION.
12. ALL FILL PLACED ON THE SITE IS TO COMPRISE OF ONLY NATURAL EARTH AND ROCK AND IS TO BE FREE OF ALL CONTAMINANTS (REFER TO THE ENVIRONMENTAL PROTECTION ACT 1994 SECTION 11). nOT DEMOLITION MATERIAL IS TO BE USED.
13. UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT ALL FILL SHALL BE PLACED AT BETWEEN +2% AND -2% OF OPTIMUM MOISTURE CONTENT.
14. DESIGN LEVELS GIVEN ARE FINISHED SURFACE LEVELS.
15. ALL NEW WORKS TO MATCH NEATLY WITH EXISTING. THE CONTRACTOR SHALL CONFIRM LOCATION OF ALL EXISTING SERVICES AND PROTECT THESE SERVICES DURING CONSTRUCTION. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
16. ALL OF THE SITE SHALL BE KEPT FREE DRAINING DURING ALL PHASES OF THE PROJECT.
17. REFER TO ROAD CROSS SECTIONS FOR BATTER GRADES. WHERE GRADES ARE NOT SPECIFIED:-

    FILL - 1 IN 4 CUT - 1 IN 4
18. ALL ALLOTMENTS TO BE GRASS SEEDED WITH MINIMUM 80% COVERAGE. SEEDING TO OCCUR WITHIN 7 DAYS OF COMPLETION OF EARTHWORKS.

LINEMARKING AND SIGNS NOTES:

1. ALL SIGNAGE, LINEMARKING & REFLECTORISED PAVEMENT MARKERS ARE TO BE IN ACCORDANCE WITH THE CURRENT DEPARTMENT OF TRANSPORT AND MAIN ROADS 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D).
2. ALL LINEMARKING TO BE REFLECTORISED WHITE.
3. FINAL SIGN LOCATIONS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT.
4. EXISTING LINEMARKING MADE REDUNDANT BY NEW LINEMARKING IS TO BE REMOVED BY ROUTING OR OTHER METHOD APPROVED BY DEPARTMENT OF TRANSPORT AND MAIN ROADS.
5. ALL TRAFFIC SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
6. FOR GUIDE POST INSTALLATION AND DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.1356
7. FOR TRAFFIC SIGN SUPPORT DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.'s 1360 & 1362.
8. ALL ROUTE NAMES ON NEW GUIDE SIGNS TO BE BLACK LETTERING ON WHITE BACKGROUND U.N.O.
9. ALL SIGN MATERIAL TO BE CLASS 1.
10. DIRECTION SIGNS ARE SHOWN INDICATIVE ONLY. DETAILED DESIGNS ARE TO BE USED FOR ORDERING.

ROADWORKS NOTES:

1. ALL DIMENSIONS ON THE DRAWINGS ARE IN METRES UNLESS SHOWN OTHERWISE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOGAN CITY COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & ARCADIS SPECIFICATIONS & PROJECT DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
4. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS PLANS, SPECIFICATIONS & OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY LOGAN CITY COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT MINIMUM SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OF RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER LOGAN CITY COUNCIL STANDARDS.
9. MITRE DRAIN LOCATION & EXTENTS SHALL BE CONFIRMED WITH THE SUPERINTENDENT ON SITE. THE CONTRACTOR SHALL ENSURE THAT ALL SUBSOIL & SIDE DRAINS ARE FREE DRAINING & CONNECTED TO A SUITABLE OUTLET STRUCTURE.

DRAINAGE NOTES:

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOGAN CITY COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & ARCADIS SPECIFICATIONS & PROJECT DRAWINGS.

CONSTRUCTION AND DESIGN LOADS:

1. PIPE CLASSES HAVE BEEN DESIGNED FOR A MINIMUM CONSTRUCTION TRENCH TYPE H2.
2. THE CONTRACTOR SHALL CONSIDER THE PIPE CLASS SPECIFIED IN THE DESIGN DRAWINGS AS WELL AS THEIR OWN PIPE LAYING/BACKFILILING METHODOLOGY TO ENSURE THAT THE MAXIMUM PERMISSIBLE CONSTRUCTION LOADS OF THE PIPES (AS SPECIFIED BY THE PIPE SUPPLIER) ARE NOT EXCEED DURING INSTALLATION AND/OR BACKFILLING OF THE PIPEWORK.

DISPERSIVE SOIL MANAGEMENT:

1. ALL TRENCHES, EXPOSED BATTERS AND RETAINING WALL EXCAVATIONS SHALL REQUIRE TREATMENT IN ACCORDANCE WITH THE DSMP PREPARED BY PSM CONSULT.

BIO-RETENTION AREA NOTES

1. THE BASIN SHALL BE PROVIDED WITH A BENTOFIX STANDARD GEOSYNTHETIC CLAY LINER (GCL). SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY AND TO FORM CONTINUOUS BED FREE OF VOIDS AND FREE OF SHARP OBJECTS TO PREVENT TEARING. SUBGRADE SHALL BE GRADED AS SHOWN ON THE DRAWINGS TO FORM ROUNDED BASE. LINER TO HAVE ALL WELDED JOINTS SEALED IN ACCORDANCE WITH PRODUCT SPECIFICATIONS TO ENSURE THE SYSTEM IS WATERTIGHT. LINER NEEDS TO BE APPROPRIATELY KEYED INTO THE BATTERS AND EMBANKMENTS AND WRAPPED UP AGAINST DRAINAGE PITS TO TOP OF SOIL LAYER WITH CONSIDERATION TO PROTRUSIONS THROUGH THE LINERS SUCH AS OUTLET PIPES.
2. THE UNDERDRAIN FOR THE BIORETENTION SYSTEM SHALL BE MIN.100mm SLOTTED PVC PIPE TO THE REQUIREMENTS OF AS2439 PART 1 ACCORDING TO THE FOLLOWING:
   - PIPE SPACING FOR SYSTEMS <100m² IS 1.5m AND FOR SYSTEMS >100m² IS 2.5m OR AS SHOWN ON DRAWINGS.
   - THE MINIMUM CLEAR OPENING FOR SLOTS SHOULD BE 1500mm²/m, WITH THE MAXIMUM SLOT WIDTH OF 1.5mm.
   - ALL PIPE JUNCTIONS AND CONNECTIONS TO THE OVERFLOW PIT SHALL BE SEALED TO PREVENT SOIL ENTERING THE PIPE NETWORK.
   - FILTER CLOTH WRAPPINGS OR SOCKS ARE NOT PERMITTED AROUND SLOTTED UNDERDRAINS.
   - AN INSPECTION RISER SHALL BE PROVIDED BY EXTENDING THE UNDERDRAIN VERTICALLY BEYOND THE SURFACE OF THE BIORETENTION SYSTEM BY A MINIMUM OF 150mm. ALL VERTICAL SECTIONS OF THE UNDERDRAIN SHALL NOT BE PERFORATED AND SHALL BE CAPPED WITH SECURED SCREWS TO REDUCE THE RISK OF VANDALISM. USE 45 DEGREE ELBOWS RATHER THAN 90 DEGREE ELBOWS TO FACILITATE ENTRY OF MAINTENANCE EQUIPMENT.
3. UNDERDRAINS SHALL BE LAID IN A DRAINAGE LAYER COMPRISED OF FINE GRAVEL (2-5mm), WITH <2% FINES AND HYDRAULIC CONDUCTIVITY OF 4000mm/hr. THE DRAINAGE LAYER DEPTH MUST ENSURE AT LEAST 50mm COVER OVER THE UNDERDRAIN. BRIDGING CRITERIA SHALL BE APPLIED TO AVOID MIGRATION OF THE ON-TOP LAYER INTO THE DRAINAGE LAYER. D15 (DRAINAGE LAYER) Ø5 x D85 (ON-TOP LAYER).
4. WHERE INDICATED ON THE DESIGN DRAWINGS A TRANSITION LAYER SHALL BE INCLUDED. THE TRANSITION LAYER MATERIAL SHALL BE CLEAN, WELL GRADED SAND MATERIAL (0.5-2mm) CONTAINING <2% FINES. THE PARTICLE SIZE DISTRIBUTION OF THE SAND SHALL BE ASSESSED TO MEET BRIDGING CRITERIA THAT THE SMALLEST 15% OF THE SAND PARTICLES BRIDGE WITH THE LARGEST 15% OF THE FILTER MEDIA. D15 (TRANSITION LAYER) Ø5 x D85 (FILTER MEDIA).
5. BIORETENTION FILTER MEDIA SHALL COMPLY WITH THE WATER BY DESIGN *BIORETENTION TECHNICAL GUIDELINES* AND THE CRC FOR WATER SENSITIVE CITIES APPENDIX C *GUIDELINES FOR FILTER MEDIA IN STORMWATER BIORETENTION SYSTEMS.*
6. THE BIORETENTION FILTER MEDIA SHALL BE TESTED TO DEMONSTRATE COMPLIANCE WITH THE ABOVE-MENTIONED REQUIREMENTS AT THE FOLLOWING FREQUENCIES:
   - FOR BIORETENTION SYSTEMS <500m², ONE SAMPLE PER 500m³ OF FILTER MEDIA.
   - FOR BIORETENTION SYSTEMS >500m², ONE SAMPLE PER 500m³ OF FILTER MEDIA FOR THE HYDRAULIC CONDUCTIVITY TEST PLUS ONE SAMPLE PER 2000m³ OF FILTER MEDIA FOR ALL OTHER REQUIRED TESTS.
7. TESTING SHALL BE UNDERTAKEN ON THE ACTUAL MATERIAL TO BE DELIVERED TO THE SITE. THE SUPPLIER AND CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THE FILTER MEDIA MEETS THE SPECIFICATIONS AND THE CORRECT MATERIAL IS DELIVERED TO THE SITE PRIOR TO INSTALLATION. THE SUPPLIER SHALL ARRANGE FOR THE FILTER MEDIA TO BE TESTED BY A CERTIFIED SOIL LABORATORY IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS. ON THE BASIS OF THE TESTING, THE SOIL LABORATORY AND SUPPLIER SHALL CERTIFY THAT THE MATERIAL MEETS THESE SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE SUPPLIER'S CERTIFICATION, TEST RESULTS AND SUPPLY DOCKET TO THE DESIGNER (THROUGH THE SITE SUPERINTENDENT) FOR REVIEW AND APPROVAL.
8. FIELD TESTING OF HYDRAULIC CONDUCTIVITY SHOULD BE CARRIED OUT BY THE RESPONSIBLE PARTY AT LEAST TWICE :
   - ONE MONTH FOLLOWING COMMENCEMENT OF OPERATION, AND
   - IN THE SECOND YEAR OF OPERATION TO ASSESS THE IMPACT OF VEGETATION ON HYDRAULIC CONDUCTIVITY. FOLLOWING THIS, HYDRAULIC CONDUCTIVITY TESTING SHOULD BE CONDUCTED EVERY TWO YEARS OR WHEN THERE HAS BEEN A SIGNIFICANT CHANGE IN CATCHMENT CHARACTERISTICS (e.g. CONSTRUCTION WITHOUT APPROPRIATE SEDIMENT CONTROL).

   THIS TESTING SHALL BE ACCORDING TO PRACTICE NOTE 1: IN-SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY (HATT AND LE COUSTUMER, 2009), WHICH CAN BE FOUND IN HTTP://WWW.MONASH.EDU.AU/FAWB/PUBLICATIONS/INDEX.HTML
9. THE FILTER MEDIA SHALL BE LIGHTLY COMPACTED DURING INSTALLATION TO PREVENT MIGRATION OF FINE PARTICLES. A SINGLE PASS OF COMPACTING MACHINERY (VIBRATING PLATE FOR SMALL SYSTEMS AND DRUM LAWN ROLLER FOR LARGER SYSTEMS) SHALL BE USED. NO HEAVY COMPACTION OR MULTI-PASS SHALL BE MADE.
10. FILTER MEDIA SHALL BE INSTALLED IN TWO LIFTS, EACH LESS THAN 500mm DEPTH.
11. THE BIORETENTION SYSTEMS SHALL BE CONSTRUCTED TO THE FOLLOWING TOLERANCES UNLESS OTHERWISE SPECIFIED IN THE LOCAL AUTHORITIES GUIDELINE:

BIO-RETENTION AREA NOTES CONT'D

BIORETENTION ELEMENT	TOLERANCE
HYDRAULIC STRUCTURES (OVERFLOW PIT, PIPE AND WEIRS)	+/-25mm
	WHERE SYSTEM INSTALLED IN STREETSCAPE THEN +/-15mm
UNDERDRAINS	+25mm BUT MIN 0.5% GRADE
EARTHWORKS (BASE OF BIORETENTION)	+/-50mm
DRAINAGE AND TRANSITION LAYERS	+/-25mm
SURFACE LEVEL (FILTER MEDIA SURFACE)	+/-25mm FOR BASINS <300m²
	+/-40mm FOR BASINS >300m²
EMBANKMENTS AND BUNDS	-25mm
	+50mm

12. CONTRACTOR TO INSTALL GEOFABRIC, LAY 50mm FILTER MEDIA AND TURF AFTER BASIN INTERNAL DRAINAGE AND FILTER MEDIA IS INSTALLED TO PROTECT FILTER MEDIA. TURF AND GEOFABRIC TO BE REMOVED AFTER 95% OF BUILDINGS ARE CONSTRUCTED.
13. THE CONSTRUCTION OF THE BIORETENTION SYSTEMS SHALL COMPLY WITH THE FOLLOWING STEPS AND HOLD POINTS UNLESS OTHERWISE SPECIFIED IN THE LOCAL AUTHORITIES GUIDELINE:

CONSTRUCTION STEP	HOLD POINT	SUBMISSION DETAILS	RELEASE OF HOLD POINT
BULK EARTHWORKS AND HYDRAULIC STRUCTURES. THIS INCLUDES SITE PREPARATION, INSTALLING OVERFLOW PIT AND OUTLET PIPE, UNDERTAKE BULK EARTHWORKS, TRIMMING AND PROFILING AND CONSTRUCT OVERFLOW WEIR	-INSPECTION AND SIGN OFF TO CONFIRM COMPLIANCE WITH DESIGN AND TOLERANCES.	-AS-CONSTRUCTED SURVEY OF THE SYSTEM AT THIS STAGE INCLUDING HYDRAULIC STRUCTURES.	THE DESIGNER (THROUGH THE SITE'S SUPERINTENDENT) SHALL INSPECT THE SYSTEM, REVIEW THE AS-CONSTRUCTED SURVEY AND TAKE PHOTOS. IF THE CONSTRUCTED SYSTEM CONFORMS TO THE DESIGN AND SPECIFICATIONS, A SIGN-OFF FORM SHALL BE COMPLETED WITH AS-CONSTRUCTED SURVEY AND PHOTOS AS ATTACHMENTS.
LINER AND UNDER-DRAINAGE. THIS INCLUDES INSTALLING HDPE LINER, UNDERDRAINS AND CLEANOUTS.	-INSPECTION AND SIGN OFF TO CONFIRM COMPLIANCE WITH DESIGN AND TOLERANCES.	-SITE INSPECTION	THE DESIGNER (THROUGH THE SITE'S SUPERINTENDENT) SHALL INSPECT THE SYSTEM AND TAKE PHOTOS. IF THE CONSTRUCTED SYSTEM CONFORMS TO THE DESIGN AND SPECIFICATIONS, A SIGN-OFF FORM SHALL BE COMPLETED WITH PHOTOS AS ATTACHMENTS.
SOURCE MATERIALS FOR BIORETENTION SYSTEM. THIS INCLUDES MATERIALS FOR DRAINAGE LAYER, SUBMERGED ZONE, TRANSITION LAYER AND FILTER MEDIA	-CERTIFICATION AND SIGN OFF OF MATERIALS TO CONFIRM COMPLIANCE WITH TESTING REQUIREMENTS	-SUPPLIER CERTIFICATION (THROUGH CERTIFIED SOIL LABORATORY) THAT MATERIALS COMPLY WITH TESTING REQUIREMENTS. -TEST RESULTS AND SUPPLY DOCKET.	THE DESIGNER (THROUGH THE SITE'S SUPERINTENDENT) SHALL REVIEW THE SUBMITTED DOCUMENTATION AND IF THE MATERIALS CONFORM TO THE TESTING SPECIFICATIONS, A SIGN-OFF FORM SHALL BE COMPLETED WITH THE SUBMITTED DOCUMENTATION AS ATTACHMENTS.
CONSTRUCTION OF DRAINAGE LAYER, SUBMERGED ZONE, TRANSITION LAYER AND FILTER MEDIA	-INSPECTION TO ENSURE BIORETENTION SYSTEM LAYERS ARE CONSTRUCTED TO DESIGN SPECIFICATIONS	-SITE INSPECTION -AS-CONSTRUCTED SURVEY OF LAYERS.	THE DESIGNER (THROUGH THE SITE'S SUPERINTENDENT) SHALL INSPECT THE SYSTEM AND TAKE PHOTOS. NO STOP TO CONSTRUCTION IS NEEDED
FINAL INSPECTION AND SIGN OFF	-INSPECTION AND SIGN OFF TO CONFIRM COMPLIANCE WITH DESIGN AND TOLERANCES	-AS-CONSTRUCTED SURVEY OF THE SYSTEM SURFACE AND SURROUNDING BUNDS.	THE DESIGNER (THROUGH THE SITE'S SUPERINTENDENT) SHALL INSPECT THE SYSTEM, REVIEW THE AS-CONSTRUCTED SURVEY AND TAKE PHOTOS. IF THE CONSTRUCTED SYSTEM CONFORMS TO THE DESIGN AND SPECIFICATIONS, A SIGN-OFF FORM SHALL BE COMPLETED WITH AS-CONSTRUCTED SURVEY AND PHOTOS AS ATTACHMENTS.

14. BIO BASIN TO BE CONSTRUCTED IN ACCORDANCE WITH THE PSM CONSULT DISPERSIVE SOIL MANAGEMENT PLAN.

B

Issue	Description	DR	CH	VE	Date
B	NOTES UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	T.FANNING	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: GENERAL NOTES

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0021

Issue: B

Date Plotted: 13 Mar 2025 - 09:00AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0021-GeneralNotes.dwg

SAFETY IN DESIGN	
PROJECT	FLAGSTONE LOGISTICS ESTATE - STAGE 1
LOCATION	4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN
PROJECT NUMBER	30109334
PROJECT DESCRIPTION	DETAILED DESIGN FOR STAGE 1 INTERNAL WORKS

A HAZARD is something with the potential to cause harm.
RISK is a combination of the likelihood of the harm occurring and the severity of the harm should it occur.
CONTROLS are measures to eliminate or reduce risk to an acceptable level.
ABNORMAL RISKS are aspects of our project, structure or materials as identified by our design which may present significant hazards that are unusual, not obvious or may be difficult to manage

Risk ID No	Project Phase	Hazard / Risk Description	Risk Manager	Consequence / Likely Harm	Likelihood	Severity	Initial Risk Rating = L x S	Treatment Option Mitigation Action Plan for Avoidance Controls to be Provided	Consequence / Likely Harm	Likelihood	Severity	Residual Risk Rating = L x S	- Treatment may be Adopted - Cost prohibitive but highly effected at reducing likelihood - Civil Contractor	Comment
1	Construction	Open excavation overnight. private site operators or others may fall into trenches.	Civil Contractor	Falling from heights / Major injury or death	3	4	12	Trench is backfilled each day before contractor leaves site	Trench is filled and therefore cannot be fallen into	0	4	0	Treatment may be Adopted - Cost prohibitive but highly effected at reducing likelihood - Civil Contractor	
								Contractor provides man-proof fencing around open benched areas with adequate warning of deep excavation as well as covering open trench with boards.	Adequate warning and protection provided to prevent non-intentional entry.	1	4	4	Treatment may be Adopted - Cost prohibitive but highly effected at reducing likelihood - Civil Contractor	
2	Design/ Construction	Works adjacent to existing services (underground & high voltage overhead electricity, optic fibre, gas and water etc.) / Damage to services, electrocution	Civil Contractor	Existing service is struck / Property damage, private property without services, physical injury or death (i.e. electrocution).	2	5	10	- Design considers clearances to mains as required by asset holders and has been approved by asset holders. -The principal contractor shall locate all existing services and ensure they are marked and protected appropriately onsite in accordance with the requirements of the respective asset holder and ensure safe work method statements are undertaken and approved by any asset holders as required.	Service is not struck/ No Harm	1	5	5	- Treatment adopted - Cost effective - Civil Contractor	
3	Construction/ Maintenance	Traffic and pedestrians / Collision with traffic or pedestrian during works.	Civil Contractor	Collision / Injury, death, property damage	3	5	15	Principal contractor shall implement and maintain a safe work method statement and ensure personal awareness. Appropriate traffic control is to be implemented by the contractor.	Collision/ Injury, death, property damage	2	5	10	- Treatment adopted - Cost effective - Civil Contractor	
4	Design/ Construction	Flood waters / Rainfall from upstream catchment may cause erosion and damage to drainage channels and may be prone to dangerous flood waters	Civil Contractor	Erosion / Damage to channel & drowning	3	5	15	Contractor to install and maintain erosion and sediment control devices and ensure extent of waterways are known to all site visitors and staff.	No erosion in channel and known areas of potential deep water zones.	1	5	5	- Treatment adopted - Cost and likelihood reduction effective - Civil Contractor	
5	Design & Construction	Batter and/or Wall Stability/Batters Collapse	Civil Contractor	Batter or retaining walls fails/death	3	5	15	Design and geotechnical reporting has been undertaken in accordance with Council requirements. The contractor shall implement a safe work method statement, design, undertake works with the required level of supervision from a geotechnical engineer and provide certifications as required.	No failure	1	5	5	- Treatment adopted - Required - Civil Contractor	
6	Design & Construction	Settlement of deep earthworks fill	Civil Contractor	Increased settlement of deep fill leading to failure of build structures	3	3	9	Geotechnical design and specification for placement and compaction of deep earthworks fill to be undertaken and implemented.	Reduced settlement	2	3	6	- Treatment adopted - Required - Civil Contractor	
7	Design & Construction	Test pressure exceeds 1200kPa generating forces larger than what is stipulated in the SEQ Code	Arcadis and Contractor	Injury / fatality and damage to infrastructure	4	5	20	- Increased design pressure to 1350kPa to remove risk if testing exceeds 1200kPa - Pressure test must be undertaken by NATA approved testing authority -Pressure gauge calibration must be presented to Arcadis 48hours prior to pressure test -Arcadis to witness pressure test. Arcadis must be notified 48hours prior to testing	Reduce risk of failure	1	5	5	- Civil Contractor	
8	Construct	Opens trenching	Civil Contractor	Death by suffocation - trench collapse	5	5	25	Noted on drawings that trenches greater than 1.5m in height must be supported to QLD government legislation.	Trench is supportes which reduces likely hood of trench collapsing	2	5	10	- Civil Contractor to provide support for trenches greater than 1.5m in height	Contractor to provide preferred management measure in safe work method statement
								It has been noted on the drawings that excavation should provide 1in1 batters oppose to using large/deep trenches	Removes the risks associated with trench collapsing. Does not entirly remove risk of earth subsidence.	2	5	10	- Civil Contractor to provide batters instead of trenches where possible	
9	Construct	Thrust block fails	Civil Contractor	Injury / fatality	3	5	15	Ensure adequate time for concrete to cure as per suppliers specifications	Adequate warning	1	5	5	- Civil Contractor	
10	Design	Insitu material cannot provide allowable horizontal bearing pressure for thrust blocks	Arcadis	Pipeline failure	4	5	20	Arcadis liaside with external RPEQ Geotechnical Engineer for ground improvement - Stabilised san or similar	As identified but lesser chance	1	5	5	- Arcadis	
11	Design	Deep sewer mains	Civil Contractor	Deep trench leading to increased risk for falling from heights	3	4	12	Deep sewer mains to be tunnel bored where feasible	Eliminate trench requirement but still require thrust and receiving pits	1	4	4	- Treatment adopted	
12	Design	Deep outlet / high structure >3.0m	Arcadis and Contractor	Risk for falling from heights / injury / fatality / drowning in flood waters	3	5	15	Install 1.80m high security fence and pedestrian gate around outlet structure (weir 01)	Outlet will be secured and therefore cannot be fallen into	1	5	5	- Treatment adopted	
13	Design	Stormwater inlet headwalls	Arcadis and Contractor	Risk being pulled into stormwater pipe / drowning in flood waters	3	5	15	Install inlet screens on all headwall inlets	Inlet will be secured and therefore cannot be trapped in stormwater pipe	1	5	5	- Treatment adopted	
14	Design	Stormwater headwalls	Arcadis and Contractor	Risk falling from heights	3	4	12	Install safety rail / fencing around stormwater headwalls >1.0m in height.	Reduce chance of falling from height	1	4	4	- Treatment adopted	

LIKELIHOOD	SCORE
OCCURRENCE VIRTUALLY INEVITABLE, MAY OCCUR MANY TIMES	5
OCCURRENCE NOT SURPRISING, MAY OCCUR MORE THAN ONCE	4
LIKELY TO OCCUR SOMETIMES	3
UNLIKELY TO OCCUR, THOUGH CONCEIVABLE	2
SO UNLIKELY THAT PROBABILITY IS CLOSE TO ZERO	1

SEVERITY	SCORE
FATALITY	5
MAJOR INJURY	4
SIGNIFICANT INJURY	3
FIRST AID INJURY	2
MINOR INJURY	1

SEVERITY

RISK RATING					
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

LIKELIHOOD

RISK RATING RESULTS		
15-25	VERY HIGH	THIS ACTIVITY MUST NOT BE UNDERTAKEN, OR SHOULD BE STOPPED, UNTIL ADDITIONAL MEASURES HAVE BEEN PUT IN PLACE TO REDUCE THE RISK
8-12	HIGH	ALL REASONABLY PRACTICABLE CONTROL MEASURES MUST BE PUT IN PLACE BEFORE THIS TASK MAY PROCEED
3-6	MEDIUM	CONTROL MEASURES MUST BE PUT IN PLACE TO REDUCE THIS RISK UNLESS IT WOULD INVOLVE EXCESSIVE COST FOR LITTLE BENEFIT
1-2	LOW	NO FURTHER ACTION REQUIRED UNLESS BENEFICIAL ACTION CAN BE EASILY UNDERTAKEN

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SAFETY IN DESIGN

Arcadis Australia Pacific Pty Limited
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BRISBANE QLD 4000
ABN 76 104 485 289

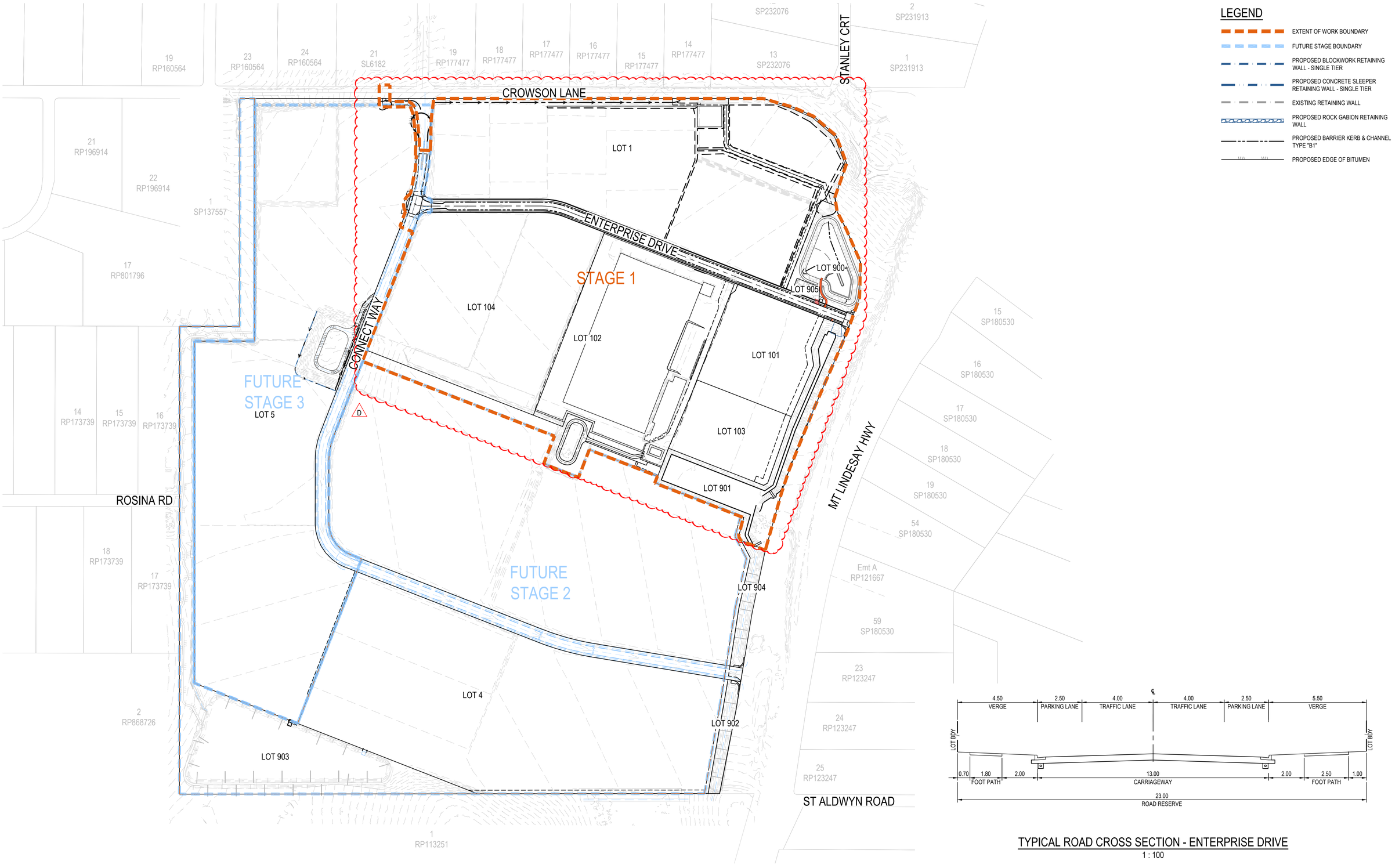
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0041

Issue: A

Date Plotted: 13 Mar 2025 - 09:00AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0041-SafetyInDesign.dwg



TYPICAL ROAD CROSS SECTION - ENTERPRISE DRIVE
1 : 100

Issue	Description	DR	CH	VE	Date
D	UPDATED BOUNDARIES AND LOT NUMBERS	A.O	S.S	B.K	10.03.25
C	UPDATED DESIGN	A.O	S.S.	B.K.	03.09.24
B	LAYOUT UPDATED TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 40 80 120 160 200 250 300m

1 : 3000

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: OVERALL SITE LAYOUT PLAN

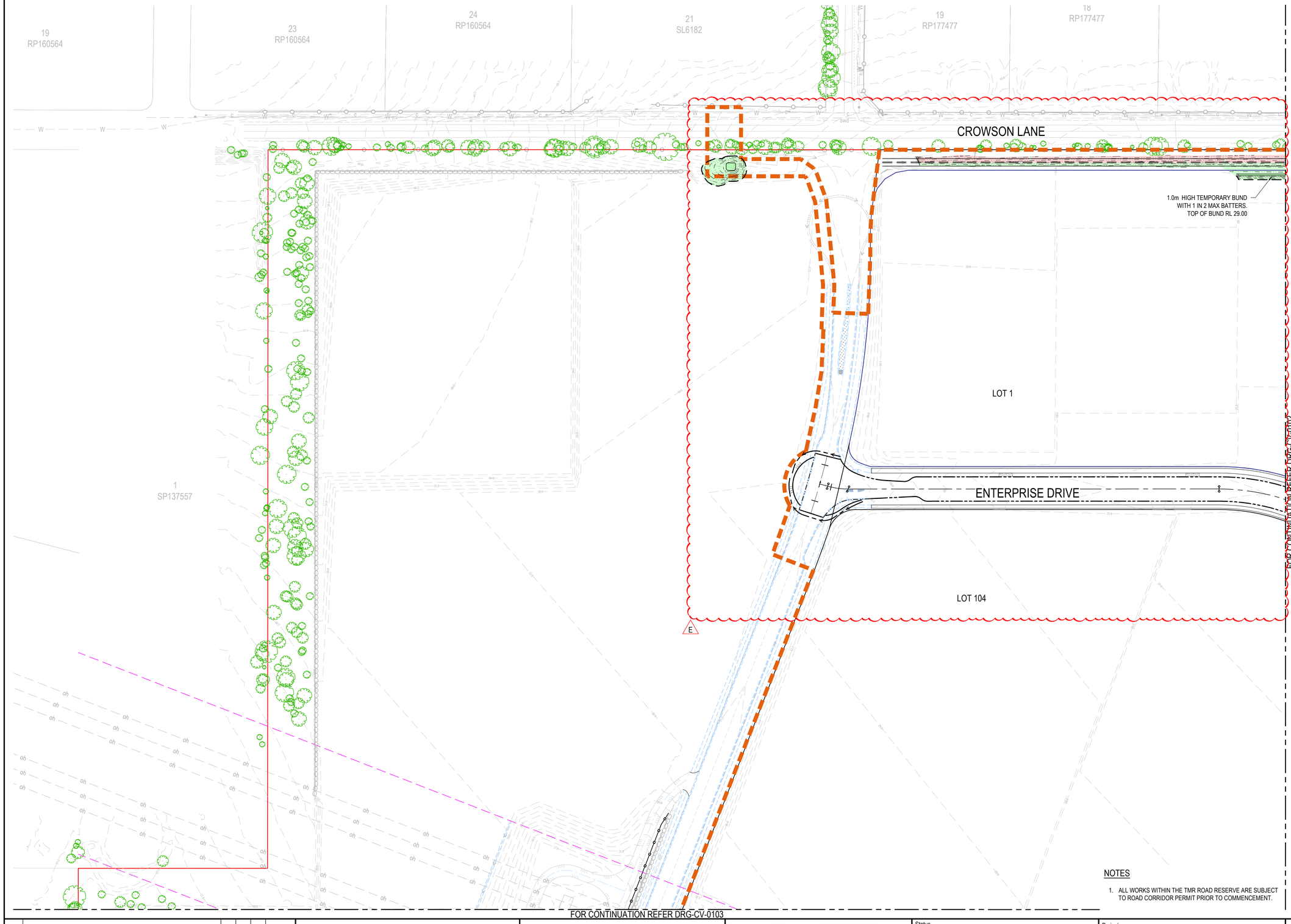
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0061

Issue: D

Date Plotted: 13 Mar 2025 - 09:00AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0061-OverallSiteLayoutPlan.dwg



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- EARTHWORKS BATTER
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- POWERLINK EASEMENT
- EXISTING TREES
- TREES TO BE REMOVED

STAGE 1 TOTAL VOLUMES

CUT	37,201m³
FILL	57,742m³
BALANCE (IMPORT)	20,541m³

NOTES

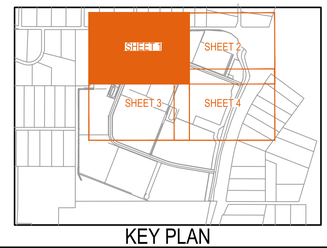
1. VOLUMES ARE COMPARED TO CURRENT BULK EARTHWORKS IFC DESIGN DATED 08.07.2024.
2. NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED.
3. REFER TO DRAWING No. 30109334-AAP-P301OP-CV-DRG-0021 FOR EARTHWORKS NOTES.

EARTHWORKS CUT & FILL

-8.00	to	-7.00	m
-7.00	to	-6.00	m
-6.00	to	-5.00	m
-5.00	to	-4.00	m
-4.00	to	-3.00	m
-3.00	to	-2.00	m
-2.00	to	-1.00	m
-1.00	to	0.00	m
0.00	to	1.00	m
1.00	to	2.00	m
2.00	to	3.00	m
3.00	to	4.00	m
4.00	to	5.00	m
5.00	to	6.00	m

NOTES

1. ALL WORKS WITHIN THE TMR ROAD RESERVE ARE SUBJECT TO ROAD CORRIDOR PERMIT PRIOR TO COMMENCEMENT.



KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED EWKS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
D	UPDATED EWKS	A.O	S.S.	B.K.	03.09.24
C	UPDATED LAYOUT AND VOLUMES	A.O	S.S.	B.K.	01.08.24
B	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EARTHWORKS PLAN SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0101

Issue: E

Date Plotted: 13 Mar 2025 - 09:13AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0101-EarthworksPlan.dwg

15
RP177477

13
SP232076

1
SP231913

CROWSON LANE

1.0m HIGH TEMPORARY BUND
WITH 1 IN 2 MAX BATTERS.
TOP OF BUND RL 29.00

0.5m HIGH TEMPORARY BUND
WITH 1 IN 2 BATTERS

LOT 1

ENTERPRISE DRIVE

LOT 102

F

FUTURE LOT 102 VOLUMES ONLY
CUT = 12,371 m³
FILL = 50,567 m³
BALANCE= 38,196 m³ (IMPORT)

LOT 1

PROPOSED BIO-RETENTION BASIN
FOR DETAILS REFER CV-DRG-0491

BASIN Q100
WSL - 24.48m

LOT 900

LOT 905

BASIN CREST
24.5m

CONTRACTOR TO ENSURE ADEQUATE ESC MEASURE
ARE IN PLACE TO DIVERT EXTERNAL CLEAN WATER.

Q100 FLOOD LEVELS:
REGIONAL (CC) = 24.2m
LOCAL = 24.46m
RW08 - REFER DRAWING 0141
FOR WALL SETOUT

2
0121

1

LOT 101

F

FOR CONTINUATION REFER DRG-CV-0104

FOR CONTINUATION REFER DRG-CV-0101

LEGEND

- DESIGN SURFACE CONTOUR (5.0)
- EXISTING SURFACE CONTOUR (5.0)
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- EARTHWORKS BATTER
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EXISTING OVERHEAD ELECTRICAL RETICULATION (oh)
- POWERLINK EASEMENT
- EXISTING TREES
- TREES TO BE REMOVED

STAGE 1 TOTAL VOLUMES

CUT	37,201m³
FILL	57,742m³
BALANCE (IMPORT)	20,541m³

E

NOTES

1. VOLUMES ARE COMPARED TO CURRENT BULK EARTHWORKS IFC DESIGN DATED 08.07.2024.
2. NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED.
3. REFER TO DRAWING No. 30109334-AAP-P301OP-CV-DRG-0021 FOR EARTHWORKS NOTES.

EARTHWORKS CUT & FILL

-8.00	to	-7.00	m
-7.00	to	-6.00	m
-6.00	to	-5.00	m
-5.00	to	-4.00	m
-4.00	to	-3.00	m
-3.00	to	-2.00	m
-2.00	to	-1.00	m
-1.00	to	0.00	m
0.00	to	1.00	m
1.00	to	2.00	m
2.00	to	3.00	m
3.00	to	4.00	m
4.00	to	5.00	m
5.00	to	6.00	m

NOTES

1. ALL WORKS WITHIN THE TMR ROAD RESERVE ARE SUBJECT TO ROAD CORRIDOR PERMIT PRIOR TO COMMENCEMENT.

SHEET 1 | SHEET 2 | SHEET 3 | SHEET 4

KEY PLAN

Issue	Description	DR	CH	VE	Date
F	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
E	UPDATED EWKS	A.O.	S.S.	B.K.	03.09.24
D	UPDATED VOLUMES	A.O.	S.S.	B.K.	01.08.24
C	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
B	EARTHWORKS UPDATED	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

EARTHWORKS PLAN SHEET 2

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0102

Issue: F

100mm on Original

Date Plotted: 13 Mar 2025 - 09:13AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0101-EarthworksPlan.dwg

FOR CONTINUATION REFER DRG-CV-0101

FUTURE LOT 102 VOLUMES ONLY
CUT = 12,371 m³
FILL = 50,567 m³
BALANCE= 38,196 m³ (IMPORT)

LEGEND

- DESIGN SURFACE CONTOUR (5.0)
- EXISTING SURFACE CONTOUR (5.0)
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- EARTHWORKS BATTER
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EXISTING OVERHEAD ELECTRICAL RETICULATION (oh)
- POWERLINK EASEMENT
- EXISTING TREES
- TREES TO BE REMOVED

STAGE 1 TOTAL VOLUMES

CUT	37,201m³
FILL	57,742m³
BALANCE (IMPORT)	20,541m³

NOTES

1. VOLUMES ARE COMPARED TO CURRENT BULK EARTHWORKS IFC DESIGN DATED 08.07.2024.
2. NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED.
3. REFER TO DRAWING No. 30109334-AAP-P301OP-CV-DRG-0021 FOR EARTHWORKS NOTES.

E

EARTHWORKS CUT & FILL

-8.00	to	-7.00	m	
-7.00	to	-6.00	m	
-6.00	to	-5.00	m	
-5.00	to	-4.00	m	
-4.00	to	-3.00	m	
-3.00	to	-2.00	m	
-2.00	to	-1.00	m	
-1.00	to	0.00	m	
0.00	to	1.00	m	
1.00	to	2.00	m	
2.00	to	3.00	m	
3.00	to	4.00	m	
4.00	to	5.00	m	
5.00	to	6.00	m	

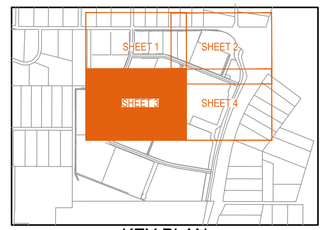
FOR CONTINUATION REFER DRG-CV-0104

CONTRACTOR TO TRIM EXISTING SURFACE AREA TO MATCH SURROUNDING ACCESS TRACK LEVEL

D

NOTES

1. ALL WORKS WITHIN THE TMR ROAD RESERVE ARE SUBJECT TO ROAD CORRIDOR PERMIT PRIOR TO COMMENCEMENT.



KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED EWKS	A.O	S.S.	B.K.	03.09.24
D	UPDATED VOLUMES	A.O	S.S.	B.K.	01.08.24
C	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
B	EARTHWORKS UPDATED	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 10 20 40 60 80 100m

1 : 1000

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EARTHWORKS PLAN SHEET 3

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0103

Issue: E

Date Plotted: 13 Mar 2025 - 09:13AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0101-EarthworksPlan.dwg

FOR CONTINUATION REFER DRG-CV-0102

FOR CONTINUATION REFER DRG-CV-0103

FUTURE LOT 102 VOLUMES ONLY
CUT = 12,371 m³
FILL = 50,567 m³
BALANCE= 38,196 m³ (IMPORT)

LOT 102

LOT 101

LOT 103

LOT 905

LOT 901

CONTRACTOR TO TRIM EXISTING SURFACE AREA TO MATCH SURROUNDING ACCESS TRACK LEVEL

EXISTING EARTHWORKS BUND LEVEL: 24.62m

Q100 FLOOD LEVELS:
REGIONAL (CC) = 24.2m
LOCAL = 24.46m

RW08 - REFER DRAWING 0141 FOR WALL SETOUT

RW08 - REFER DRAWING 0141 FOR WALL SETOUT

LOCALLY SHAPE 1:6 ACCESS TRACK. NEATLY TIE INTO EXISTING SURFACE.

LOCALLY SHAPE 1:6 ACCESS TRACK. NEATLY TIE INTO EXISTING SURFACE.

MT LINDESAY HWY

MT LINDESAY HWY

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- EARTHWORKS BATTER
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- POWERLINK EASEMENT
- EXISTING TREES
- TREES TO BE REMOVED

STAGE 1 TOTAL VOLUMES

CUT	37,201m³
FILL	57,742m³
BALANCE (IMPORT)	20,541m³

NOTES

1. VOLUMES ARE COMPARED TO CURRENT BULK EARTHWORKS IFC DESIGN DATED 08.07.2024.
2. NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED.
3. REFER TO DRAWING No. 30109334-AAP-P301OP-CV-DRG-0021 FOR EARTHWORKS NOTES.

EARTHWORKS CUT & FILL

-8.00	to	-7.00	m
-7.00	to	-6.00	m
-6.00	to	-5.00	m
-5.00	to	-4.00	m
-4.00	to	-3.00	m
-3.00	to	-2.00	m
-2.00	to	-1.00	m
-1.00	to	0.00	m
0.00	to	1.00	m
1.00	to	2.00	m
2.00	to	3.00	m
3.00	to	4.00	m
4.00	to	5.00	m
5.00	to	6.00	m

NOTES

1. ALL WORKS WITHIN THE TMR ROAD RESERVE ARE SUBJECT TO ROAD CORRIDOR PERMIT PRIOR TO COMMENCEMENT.

KEY PLAN

SHEET 1 | SHEET 2 | SHEET 3 | SHEET 4

Issue	Description	DR	CH	VE	Date
E	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
D	UPDATED EWKS	A.O	S.S.	B.K.	03.09.24
C	UPDATED VOLUMES	A.O	S.S.	B.K.	01.08.24
B	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EARTHWORKS PLAN SHEET 4

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0104

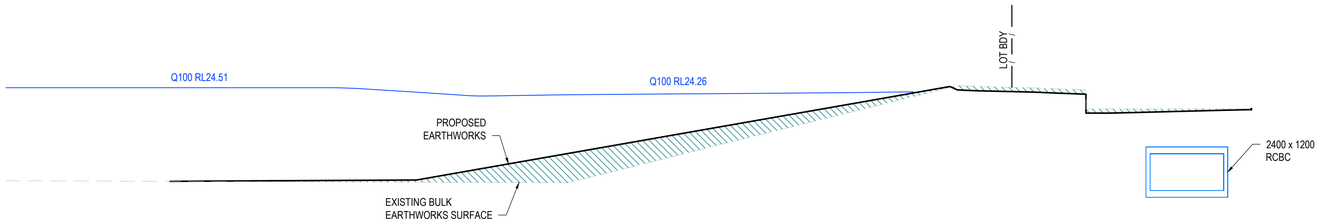
Issue: E

Date Plotted: 13 Mar 2025 - 09:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0101-EarthworksPlan.dwg

LEGEND

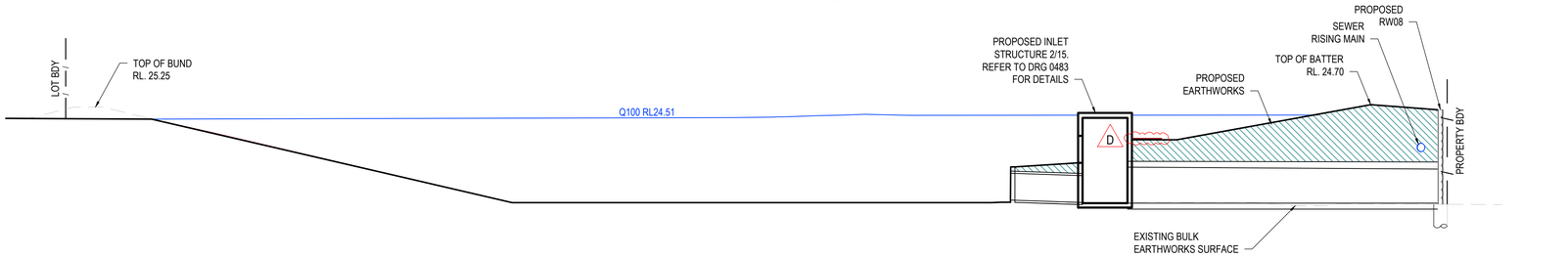
FILL AREA

CUT AREA



DATUM RL 19.25

SECTION 3
1 : 100
0102



DATUM RL 19.25

SECTION 2
1 : 100
0102



DATUM RL 19.50

SECTION 1
1 : 100
0102

Issue	Description	DR	CH	VE	Date
D	EARTHWORKS AROUND STRUCTURE 2/15 AMENDED	A.O	S.S.	B.K.	18.10.24
C	UPDATED REFERENCE DRAWING	A.O	S.S.	B.K.	03.09.24
B	UPDATED SECTIONS	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 1 2 4 6 8 10m

1 : 100

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EARTHWORKS SITE SECTIONS SHEET 1

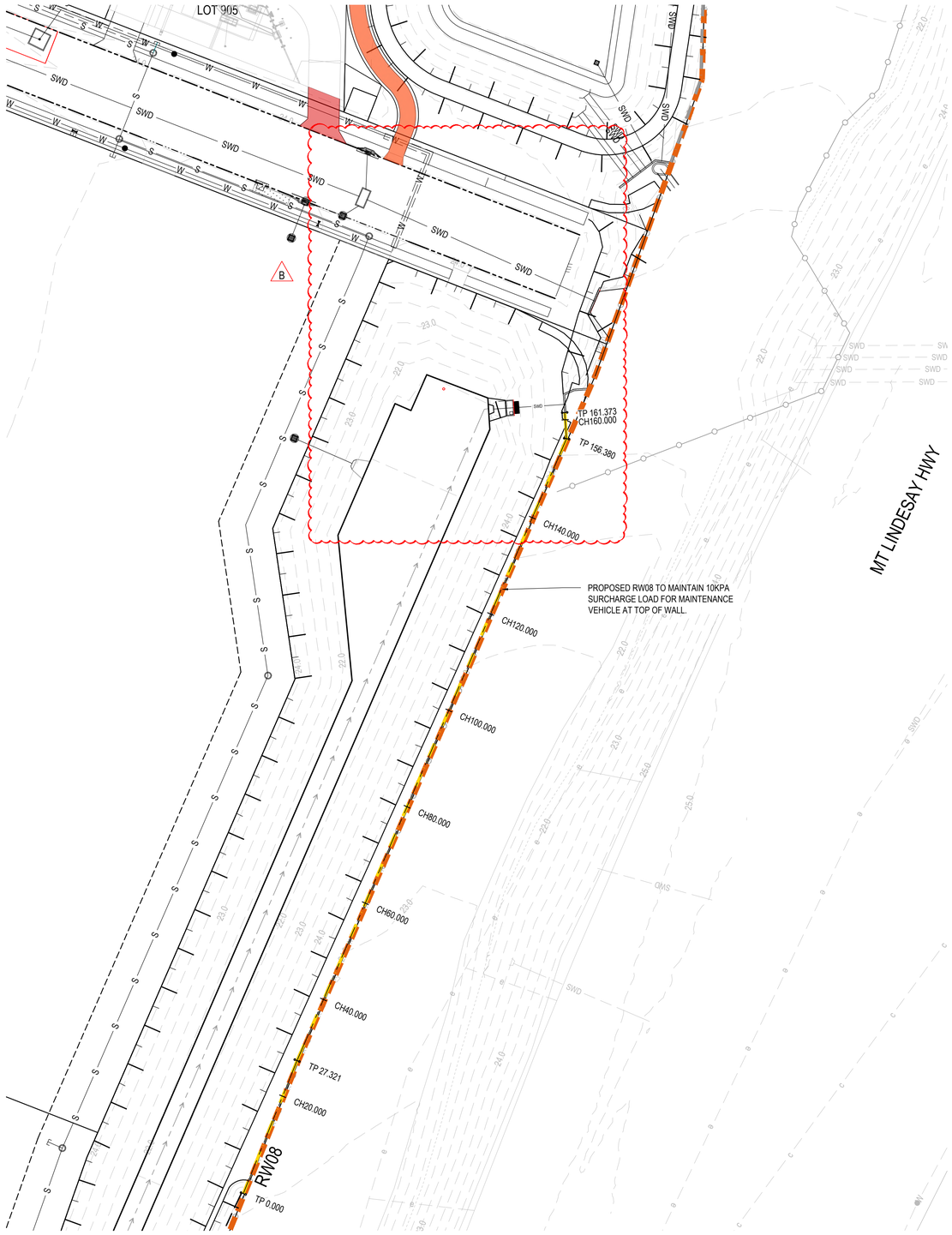
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0121

Issue: D

Date Plotted: 13 Mar 2025 - 09:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0121-EarthworksSiteSections.dwg



INSET 'A'
1 : 500

CONTROL LINE SETOUT - RW08					
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	501851.762	6929156.812	23.534	30°49'03.45"
IP 2	27.321	501865.759	6929180.276	24.716	
IP 3	156.380	501934.578	6929289.455	24.716	
IP 4	161.373	501934.981	6929294.432	24.716	4°37'30.74"

B

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- SITE BOUNDARY
- EARTHWORKS BATTER
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- POWERLINK EASEMENT



KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED LAYOUT AND RW08 SETOUT TABLE	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
0 5 10 20 30 40 50m
1 : 500

Surveyor
WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client
Charter Hall

Status
FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project
FLAGSTONE LOGISTICS ESTATE - STAGE 1

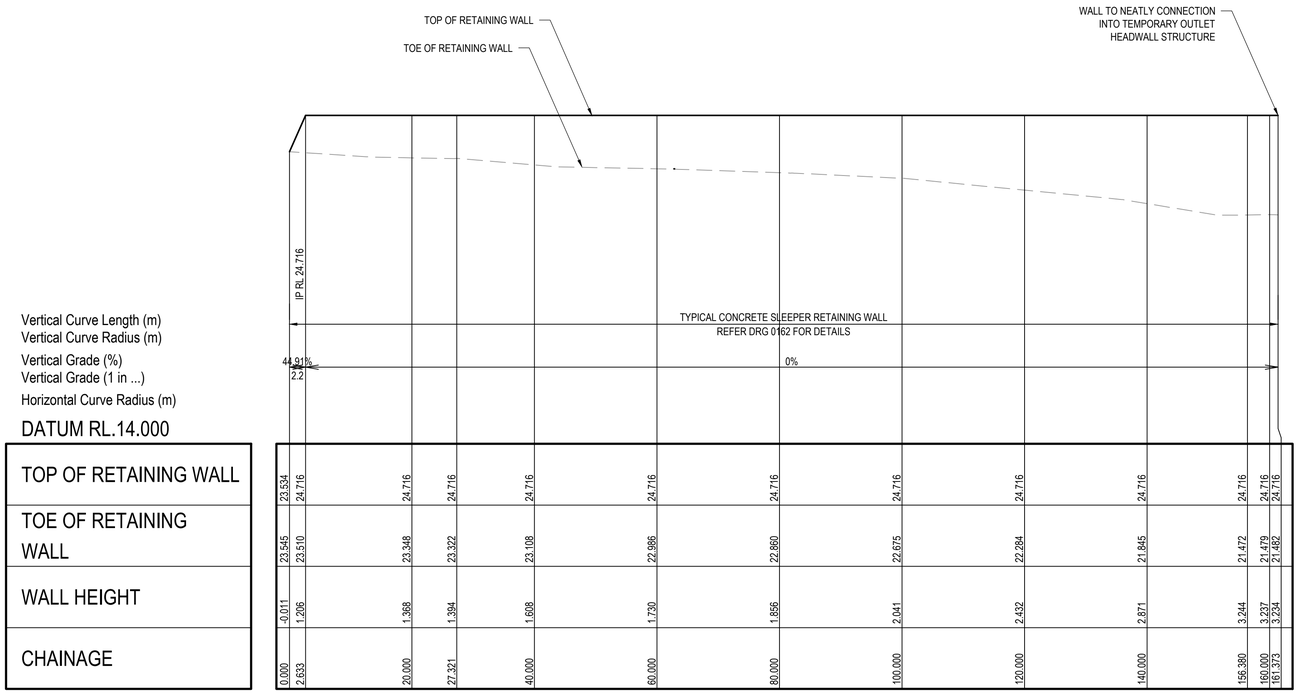
Title
RETAINING WALL PLAN

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0141 | Issue: B

Date Plotted: 13 Mar 2025 - 09:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0141-RetainingWallPlan.dwg



WALL 08 LONGITUDINAL SECTION

SCALE: HORIZONTAL - 1:500
VERTICAL - 1:100

Issue	Description	DR	CH	VE	Date
B	UPDATED LONGITUDINAL SECTION RW08, WEIR LS REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 1 2 4 6 8 10m

1 : 100

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: RETAINING WALL ELEVATIONS AND DETAILS SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0161

Issue: B

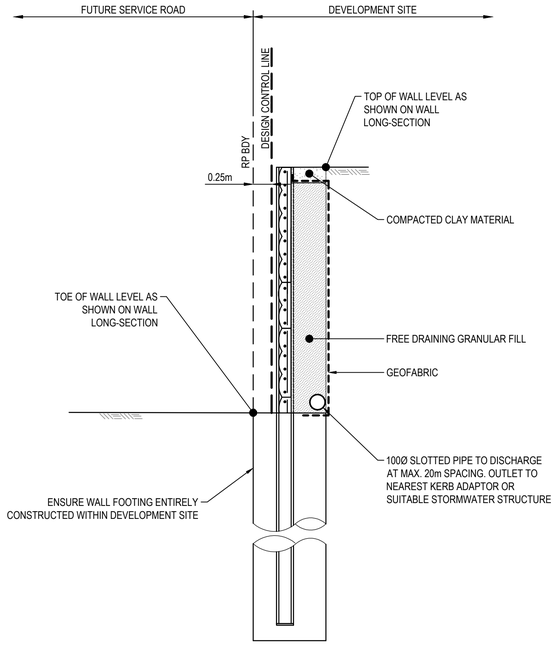
Date Plotted: 13 Mar 2025 - 09:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0161-RetainingWallElevations.dwg

NOTES:

1. RETAINING WALL DETAILS ARE INDICATIVE ONLY. DETAILED DESIGN & CERTIFICATION TO BE PROVIDED BY CONTRACTORS RPEQ.
2. RETAINING WALL DESIGN IS REQUIRED TO COMPLY WITH GLOBAL STABILITY ASSESSMENT ASSUMPTIONS TO ENSURE ADEQUATE LONG TERM FoS AGAINST SLIP FAILURE IS ACHIEVED. GLOBAL STABILITY ASSESSMENT BY OTHERS (PRINCIPAL APPOINTED GEOTECHNICAL ENGINEER).
3. CONTRACTOR TO PROVIDE GALVANIZED STEEL BRACKETS BOLTED TO CONCRETE SLEEPERRETAINING WALL TO FACILITATE CONSTRUCTION OF BOUNDARY FENCING.

DESIGN PARAMETERS:

1. REFER DESIGN CERTIFICATION FOR RETAINED AND FOUNDING SOIL DESIGN PARAMETERS, DESIGN SURCHARGE LOADS AND WALL DESIGN GEOMETRY.
2. CONCRETE STANDARD - AS3600 STANDARD DESIGN EXPOSURE CLASSIFICATION SLEEPERS & POSTS - B1, FOOTINGS - A2
3. WALL TO BE DESIGNED TO BRIDGE ANY UNDERGROUND SERVICES SO AS NOT TO IMPOSE ANY ADDITIONAL LOADING ON SERVICES.
4. DESIGN DRAWINGS AND RPEQ CERTIFICATION TO BE PROVIDED TO SUPERINTENDENT 5 WORKING DAYS PRIOR TO COMMENCEMENT OF RETAINING WALL CONSTRUCTION.



TYPICAL SLEEPER WALL DETAIL

N. T. S.

- CONCRETE SLEEPER RETAINING WALL 08 TO BE DESIGNED TO 10KPA SURCHARGE FOR MAINTENANCE VEHICLE AT TOP OF CHANNEL.
- REFER DESIGN PARAMETER NOTES FOR IMPORTANT RETAINING WALL DESIGN CONSIDERATION.

B

Issue	Description	DR	CH	VE	Date
B	DETAILS REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 10 20 40 60 80 100m

1 : 1000

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: RETAINING WALL ELEVATIONS AND DETAILS SHEET 2

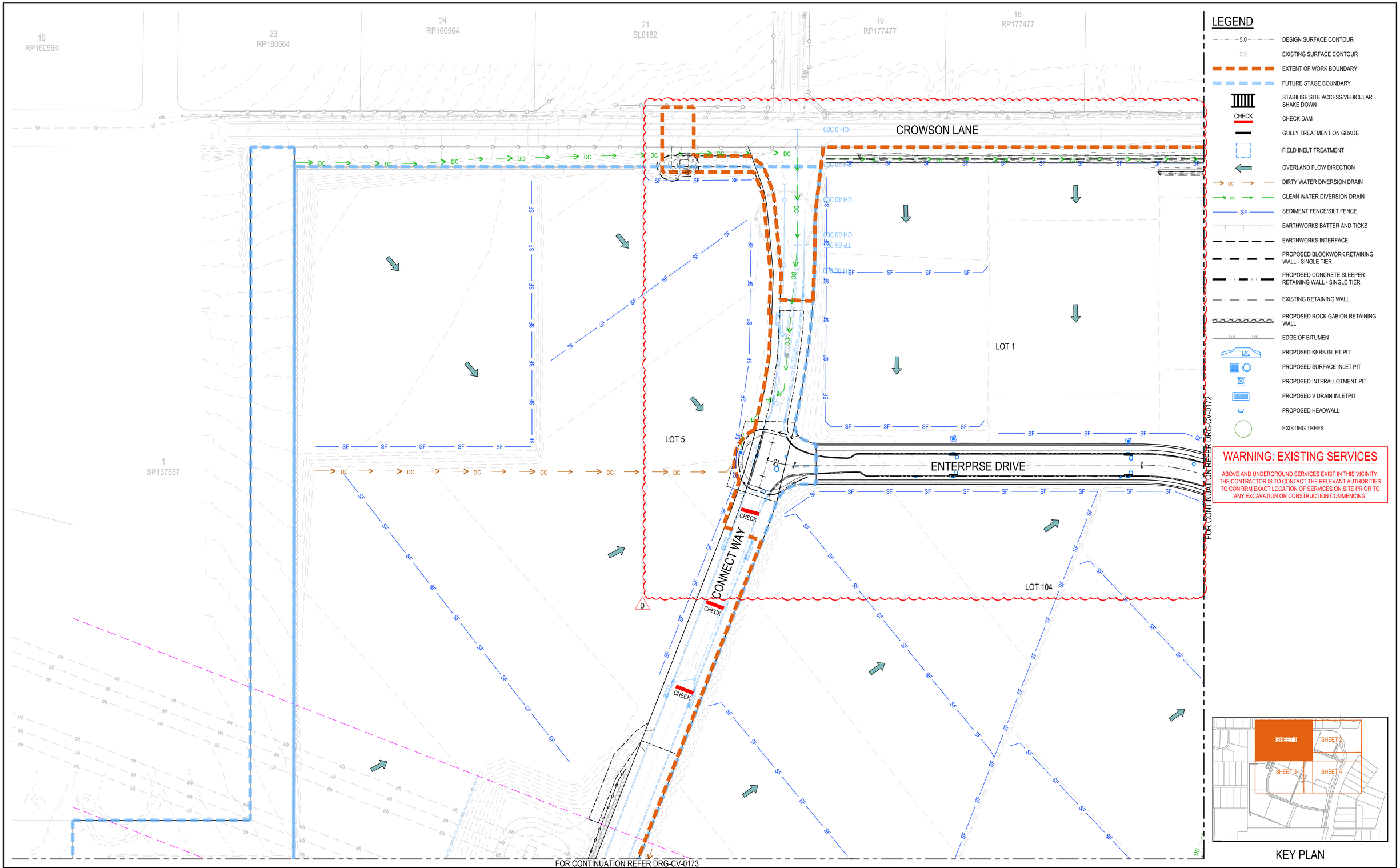
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0162

Issue: B

Date Plotted: 13 Mar 2025 - 09:15AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0161-RetainingWallElevations.dwg



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- STABILISE SITE ACCESS/VEHICULAR SHAKE DOWN
- CHECK DAM
- GULLY TREATMENT ON GRADE
- FIELD INLET TREATMENT
- OVERLAND FLOW DIRECTION
- DIRTY WATER DIVERSION DRAIN
- CLEAN WATER DIVERSION DRAIN
- SEDIMENT FENCE/SILT FENCE
- EARTHWORKS BATTER AND TICKS
- EARTHWORKS INTERFACE
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EDGE OF BITUMEN
- PROPOSED KERB INLET PIT
- PROPOSED SURFACE INLET PIT
- PROPOSED INTERALLOTMENT PIT
- PROPOSED V DRAIN INLETPIT
- PROPOSED HEADWALL
- EXISTING TREES

WARNING: EXISTING SERVICES

ABOVE AND UNDERGROUND SERVICES EXIST IN THIS VICINITY. THE CONTRACTOR IS TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM EXACT LOCATION OF SERVICES ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION COMMENCING.

KEY PLAN

Issue	Description	DR	CH	VE	Date
D	UPDATED BOUNDARIES AND LOT NUMBERS	A.O	S.S.	B.K.	10.03.25
C	UPDATED DESIGN	A.O	S.S.	B.K.	03.09.24
B	UPDATED LAYOUT	A.O.	S.S.	B.K.	01.08.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 1

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0171

Issue: D

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0171-ESCPlan.dwg

15
RP177477

13
SP232076

1
SP231913

CROWSON LANE

LOT 1

LOT 900

LOT 905

LOT 102

ENTERPRISE DRIVE

FOR CONTINUATION REFER DRG-CV-0171

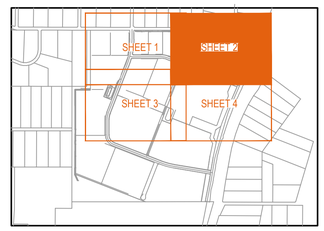
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LEGEND

- DESIGN SURFACE CONTOUR (5.0)
- EXISTING SURFACE CONTOUR (5.0)
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- STABILISE SITE ACCESS/VEHICULAR SHAKE DOWN
- CHECK DAM (CHECK)
- GULLY TREATMENT ON GRADE
- FIELD INLET TREATMENT
- OVERLAND FLOW DIRECTION
- DIRTY WATER DIVERSION DRAIN (DC)
- CLEAN WATER DIVERSION DRAIN (DC)
- SEDIMENT FENCE/SILT FENCE (SF)
- EARTHWORKS BATTER AND TICKS
- EARTHWORKS INTERFACE
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- EDGE OF BITUMEN
- PROPOSED KERB INLET PIT
- PROPOSED SURFACE INLET PIT
- PROPOSED INTERALLOTMENT PIT
- PROPOSED V DRAIN INLETPIT
- PROPOSED HEADWALL
- EXISTING TREES

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KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED BOUNDARIES AND LOT NUMBERS	A.O	S.S.	B.K.	10.03.25
D	UPDATED DESIGN	A.O	S.S.	B.K.	03.09.24
C	UPDATED LAYOUT	A.O	S.S.	B.K.	01.08.24
B	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 2

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0172

Issue: E

100mm on Original

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FOR CONTINUATION REFER DRG-CV-0171

LOT 5

I6
73739

B

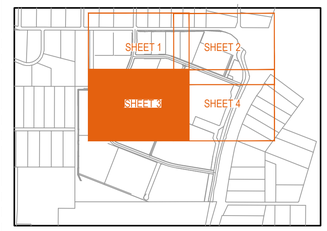
FOR CONTINUATION REFER DRG-CV-0174

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- STABILISE SITE ACCESS/VEHICULAR SHAKE DOWN
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- PROPOSED V DRAIN INLETPIT
- PROPOSED HEADWALL
- EXISTING TREES

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KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 10 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 3

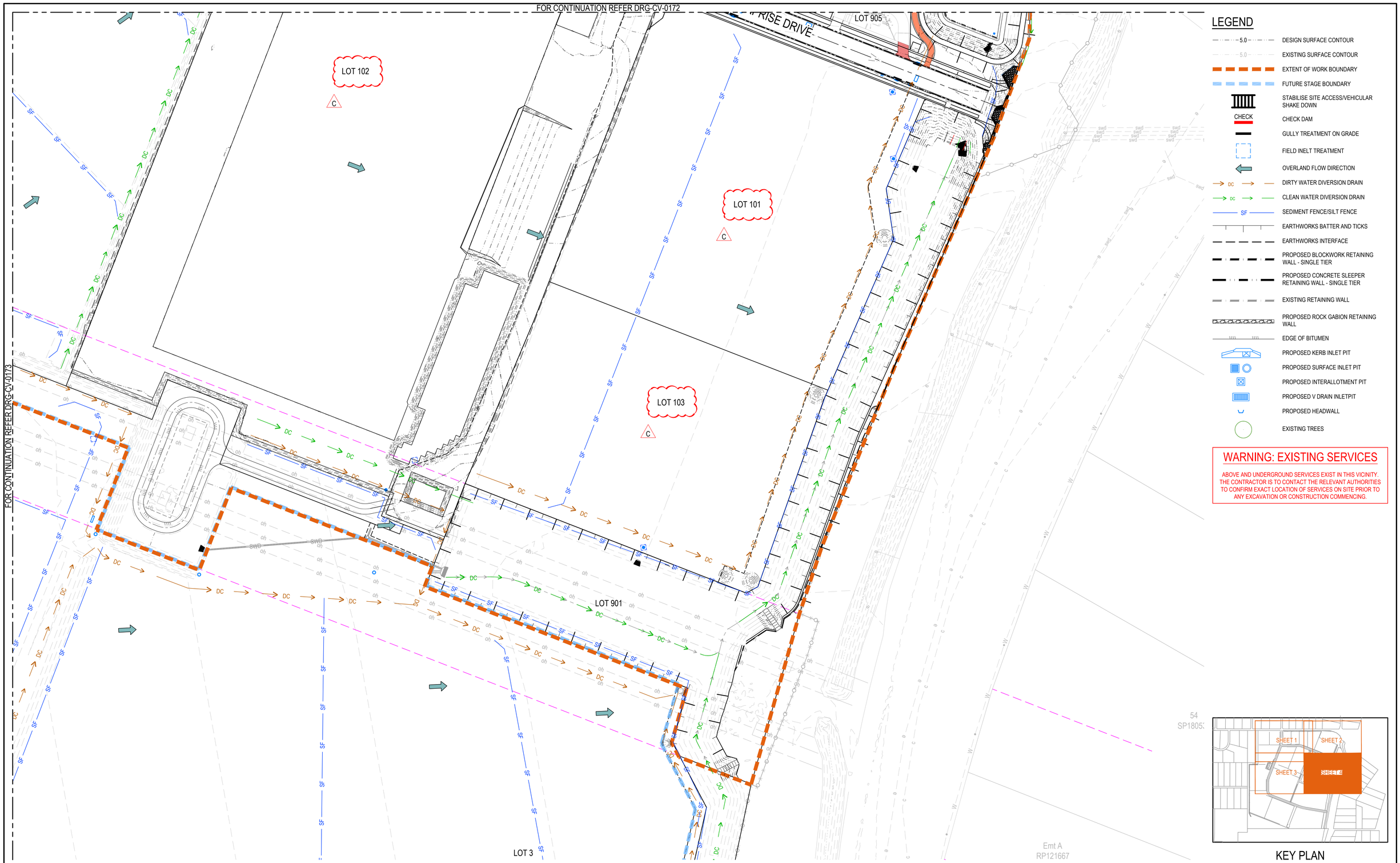
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0173

Issue: B

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0171-ESCPlan.dwg



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- STABILISE SITE ACCESS/VEHICULAR SHAKE DOWN
- CHECK DAM
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- PROPOSED HEADWALL
- EXISTING TREES

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KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED BOUNDARIES AND LOT NUMBERS	A.O	S.S.	B.K.	10.03.25
B	UPDATED LAYOUT	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 10 20 40 60 80 100m

1 : 1000

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL LAYOUT PLAN SHEET 4

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0174

Issue: C

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0171-ESCPlan.dwg

GENERAL

1. EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE DRAWINGS ARE MINIMUM REQUIREMENTS BASED ON THE UNDERSTOOD CONSTRUCTION SCOPE AND METHODOLOGY. IT IS THE CONTRACTORS RESPONSIBILITY AT ALL TIMES TO EMPLOY APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES BASED ON THE CONSTRUCTION METHODOLOGY, SEQUENCING OF WORKS AND LOCAL SITE CONDITIONS TO THE APPROVAL OF THE AUTHORISING AUTHORITY
2. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE INSPECTION, MAINTENANCE & TESTING OF ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES ARE UNDERTAKEN ON SITE.
3. ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE APPLIED & MAINTAINED IN ACCORDANCE WITH THE LATEST INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) AUSTRALASIA BEST PRACTICE EROSION & SEDIMENT CONTROL (BPESC) DOCUMENT.
4. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, & CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
5. ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED & A REVISED EROSION & SEDIMENT CONTROL PLAN (ESCP) MUST BE SUBMITTED FOR APPROVAL IN THE EVENT THAT SITE CONDITIONS CHANGE SIGNIFICANTLY FROM THOSE CONSIDERED WITHIN THIS ESCP.
6. IN CIRCUMSTANCES WHERE IT IS CONSIDERED NECESSARY TO PREPARE AN AMENDED EROSION & SEDIMENT CONTROL PLAN (ESCP), & WHERE THE DELIVERY OF SUCH AN AMENDED ESCP IS NOT IMMINENT, THEN ALL NECESSARY NEW OR MODIFIED EROSION & SEDIMENT CONTROL WORKS MUST BE IN ACCORDANCE WITH THE LATEST VERSION OF THE IECA BPESC DOCUMENT. UPON APPROVAL OF THE AMENDED ESCP, ALL WORKS MUST BE IMPLEMENTED IN ACCORDANCE WITH THE AMENDED PLAN.
7. WHERE THERE IS A HIGH PROBABILITY THAT SERIOUS OR MATERIAL ENVIRONMENTAL HARM MAY OCCUR AS A RESULT OF SEDIMENT LEAVING THE SITE, APPROPRIATE ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED SUCH THAT ALL REASONABLE & PRACTICABLE MEASURES ARE BEING TAKEN TO PREVENT OR MINIMISE SUCH HARM. ONLY THOSE WORKS NECESSARY TO MINIMISE OR PREVENT ENVIRONMENTAL HARM SHALL BE CONDUCTED ON-SITE PRIOR TO APPROVAL OF THE AMENDED EROSION & SEDIMENT CONTROL PLAN (ESCP).
8. AT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS & PROTECT ANY DOWNSTREAM CONSTRUCTION OR RECEIVING ENVIRONMENTS.
9. WORKS SHALL BE COMPLETED ON SITE GENERALLY IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
   (i) PRE CONSTRUCTION - CONSTRUCT SILT FENCES PRIOR TO PRE-START MEETING, WHICH WILL PROTECT EXISTING DOWNSTREAM PROPERTIES, PARKS OR ROAD RESERVES FROM SEDIMENTATION & EROSION.
   (ii) CLEARING & BULK EARTHWORKS - CONSTRUCT & MAINTAIN SILT FENCES WHICH CONTROL SEDIMENTATION & EROSION DURING CLEARING & BULK EARTHWORKS. ALL DISTURBED AREAS TO BE EITHER GRASS SEEDED OR TURFED, AS SPECIFIED, AS SOON AS POSSIBLE OR WITHIN 7 DAYS OF FINAL TRIMMING OF EARTHWORKS.
   (iii) MAINTENANCE PERIOD - CONSTRUCT & MAINTAIN SILT MANAGEMENT CONTROLS WHICH CONTROL SEDIMENTATION & EROSION PRIOR TO THE ESTABLISHMENT OF GRASS COVER & REHABILITATION. PROVIDE GRASS FILTER STRIPS IN LOCATIONS AS SHOWN ON EROSION & SEDIMENT CONTROL PLANS.
10. EROSION & SEDIMENT CONTROL PROTECTION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONTRACT.

RECOMMENDED IMPLEMENTATION SEQUENCE

1 ALL EROSION & SEDIMENT CONTROL MEASURES SHALL BE INSTALLED & FUNCTIONAL PRIOR TO WORKS COMMENCING & IN THE FOLLOWING SEQUENCE:
   a. CONSTRUCT TEMPORARY STABILISED SITE ACCESS
   b. PROVIDE INLET PROTECTION TO STORMWATER INLETS & GULLIES ON ALL ROADS ADJOIN THE SITE.
   c. CONSTRUCT BARRIER FENCING AROUND RESTRICTED 'NO-GO' ZONES OF THE RETAINED VEGETATION & AREAS NOT TO BE DISTURBED & AREAS WHICH REMAIN UN-WORKED.
   d. INSTALL ALL TEMPORARY SEDIMENT FENCES
   e. CONSTRUCT DIVERSION BANKS AS NECESSARY (PARALLEL TO CONTOURS) TO DIVERT RUNOFF FROM DISTURBED AREAS INTO THE SEDIMENT PONDS/BASINS
   f. WORK AREAS TO BE DELINEATED BY BARRIER FENCING & DIVERSION CHANNEL UPSLOPE & SEDIMENT FENCING DOWNSLOPE.
   g. MAINTAIN EXISTING SEDIMENT PONDS/BASINS AS LONG AS PRACTICALLY POSSIBLE
   h. STABILISE ALL DISTURBED AREAS ASAP & PROGRESSIVELY AS WORKS ARE COMPLETED.
   i. TEMPORARY STABILISATION TO BE DONE USING MULCHING, HYDROMULCHING, HYDROSEEDING OR DIRECT SEEDING TO GIVE A 70% COVERAGE OF GROUND SURFACE WITHIN 14 DAYS OF WORKS COMPLETING (EVEN IF WORKS MAY CONTINUE LATER)
2 EROSION & SEDIMENT CONTROL PROTECTION MEASURES MAY NEED TO BE REVISED & UPDATED TO REFLECT THE SITE CONDITIONS & PROGRESSION OF THE WORKS, I.E. MEASURES INCLUDING SEDIMENT FENCES SHOULD BE MOVED & REINSTATED AS WORKS PROGRESS.

SITE MANAGEMENT

1. ALL OFFICE FACILITIES & OPERATIONAL ACTIVITIES MUST BE LOCATED SUCH THAT ANY LIQUID EFFLUENT (E.G. PROCESS WATER, WASH-DOWN WATER, EFFLUENT FROM EQUIPMENT CLEANING, OR PLANT WATERING), CAN BE TOTALLY CONTAINED & TREATED WITHIN THE SITE.
2. THE CONSTRUCTION SCHEDULE MUST AIM TO MINIMISE THE DURATION THAT ANY & ALL AREAS OF SOIL ARE EXPOSED TO THE EROSIVE EFFECTS OF WIND, RAIN & SURFACE WATER.
3. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN ACCORDANCE WITH THE ESCP & ASSOCIATED DEVELOPMENT CONDITIONS.
4. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN SUCH A MANNER THAT ALLOWS ALL REASONABLE & PRACTICABLE MEASURES TO BE UNDERTAKEN TO:
   (i) ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER & AT NON-EROSIVE FLOW VELOCITIES UP TO THE SPECIFIED DESIGN STORM DISCHARGE;
   (ii) MINIMISE SOIL EROSION RESULTING FROM RAIN, WATER FLOW &/OR WIND;
   (iii) MINIMISE ADVERSE EFFECTS OF SEDIMENT RUNOFF, INCLUDING SAFETY ISSUES;
   (iv) PREVENT, OR AT LEAST MINIMISE, ENVIRONMENTAL HARM RESULTING FROM WORK-RELATED SOIL EROSION & SEDIMENT RUNOFF;
   (v) ENSURE THAT THE VALUE & USE OF LAND/PROPERTIES ADJACENT TO THE DEVELOPMENT (INCLUDING ROADS) ARE NOT DIMINISHED AS A RESULT OF THE ADOPTED EROSION & SEDIMENT CONTROL MEASURES.
5. ALL EROSION & SEDIMENT CONTROL MEASURES MUST CONFORM TO THE STANDARDS & SPECIFICATIONS CONTAINED IN:
   (i) THE DEVELOPMENT APPROVAL CONDITION ISSUED BY THE RELEVANT REGULATORY AUTHORITY; &
   (ii) THE APPROVED ESCP & SUPPORTING DOCUMENTATION; OR
   (iii) THE LATEST VERSION OF THE IECA BPESC DOCUMENT, IF THE STANDARDS & SPECIFICATIONS ARE NOT CONTAINED IN THE APPROVED ESCP.
6. ANY WORKS THAT MAY CAUSE SIGNIFICANT SOIL DISTURBANCE & ARE ANCILLARY TO ANY ACTIVITY FOR WHICH REGULATORY BODY APPROVAL IS REQUIRED, MUST NOT COMMENCE BEFORE THE ISSUE OF THAT APPROVAL.
7. ADDITIONAL &/OR ALTERNATIVE EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED IN THE EVENT THAT SITE INSPECTIONS, THE SITE'S MONITORING & MAINTENANCE PROGRAM, OR THE REGULATORY AUTHORITY, IDENTIFIES THAT UNACCEPTABLE OFF-SITE SEDIMENTATION IS OCCURRING AS A RESULT OF THE WORK ACTIVITIES.
8. LAND-DISTURBING ACTIVITIES MUST NOT CAUSE UNNECESSARY SOIL DISTURBANCE IF AN ALTERNATIVE CONSTRUCTION PROCESS IS AVAILABLE THAT ACHIEVES THE SAME OR EQUIVALENT OUTCOMES AT AN EQUIVALENT COST.
9. SEDIMENT (INCLUDING CLAY, SILT, SAND, GRAVEL, SOIL, MUD, CEMENT & CERAMIC WASTE) DEPOSITED OFF THE SITE AS A DIRECT RESULT OF AN ON-SITE ACTIVITY, MUST BE COLLECTED & THE AREA APPROPRIATELY CLEANED/REHABILITATED AS SOON AS REASONABLE & PRACTICABLE, & IN A MANNER THAT GIVES APPROPRIATE CONSIDERATION TO THE SAFETY & ENVIRONMENTAL RISKS ASSOCIATED WITH THE SEDIMENT DEPOSITION.
10. WHEREVER REASONABLE & PRACTICABLE, BRICK, TILE & MASONRY CUTTING MUST BE CARRIED OUT ON A PERVIOUS SURFACE, SUCH AS GRASS, OR OPEN SOIL, OR IN SUCH A MANNER THAT ALL SEDIMENT-LADEN RUNOFF IS PREVENTED FROM DISCHARGING INTO A GUTTER, DRAIN, OR WATER BODY.
11. ADEQUATE WASTE COLLECTION BINS MUST BE PROVIDED ON-SITE & MAINTAINED SUCH THAT POTENTIAL & ACTUAL ENVIRONMENTAL HARM RESULTING FROM SUCH MATERIAL WASTE IS MINIMISED.
12. CONCRETE WASTE & CHEMICAL PRODUCTS, INCLUDING PETROLEUM & OIL-BASED PRODUCTS, MUST BE PREVENTED FROM ENTERING AN INTERNAL WATER BODY, OR AN EXTERNAL DRAIN, STORMWATER SYSTEM, OR WATER BODY.
13. ALL FLAMMABLE & COMBUSTIBLE LIQUIDS, INCLUDING ALL LIQUID CHEMICALS IF SUCH CHEMICALS COULD POTENTIALLY BE WASHED OR DISCHARGED FROM THE SITE, ARE STORED & HANDLED ON-SITE IN ACCORDANCE WITH RELEVANT STANDARDS SUCH AS AS1940 THE STORAGE & HANDLING OF FLAMMABLE & COMBUSTIBLE LIQUIDS.
14. TRENCHES NOT LOCATED WITHIN ROADWAYS MUST BE BACKFILLED, CAPPED WITH TOPSOIL, & COMPACTED TO A LEVEL AT LEAST 75mm ABOVE ADJOINING GROUND LEVEL & APPROPRIATELY STABILISED.
15. ALL STORMWATER, SEWER LINE & OTHER SERVICE TRENCHES, NOT LOCATED WITHIN ROADWAYS, MUST BE MULCHED & SEEDED, OR OTHERWISE APPROPRIATELY STABILISED WITHIN 7 DAYS AFTER BACKFILL.
16. NO MORE THAN 150m OF A STORMWATER, SEWER LINE OR OTHER SERVICE TRENCH MUST TO BE OPEN AT ANY ONE TIME.
17. SITE SPOIL MUST BE LAWFULLY DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
18. ALL FILL MATERIAL PLACED ON SITE MUST COMPRISE ONLY NATURAL EARTH & ROCK, & IS TO BE FREE OF CONTAMINANTS, BE FREE DRAINING, & BE COMPACTED IN LAYERS NOT EXCEEDING 300mm TO 95% STANDARD RELATIVE DRY DENSITY IN ACCORDANCE WITH AS1289.
19. FOOT & VEHICULAR TRAFFIC WILL BE RESTRICTED IN RECENTLY STABILISED AREAS INCLUDING THOSE HYDROSEEDED, TURFED OR GRASS SEEDED.
20. TEMPORARY SITE STABILISATION PROCEDURES MUST COMMENCE AT LEAST 30 DAYS PRIOR TO THE NOMINATED SITE SHUTDOWN DATE. AT LEAST 70% STABLE COVER OF ALL UNSTABLE &/OR DISTURBED SOIL SURFACES MUST BE ACHIEVED PRIOR TO SHUTDOWN. THE STABILISATION WORKS MUST NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.
21. IF BIO-RETENTION FILTER MEDIA IS INSTALLED PRIOR TO 80% OF THE UPSTREAM CATCHMENT BEING FULLY DEVELOPED, THE FILTER MEDIA SHALL BE PROTECTED WITH A LAYER OF GEOFABRIC WITH TURF ON TOP.

LAND CLEARING

1. LAND CLEARING MUST BE DELAYED AS LONG AS PRACTICABLE & MUST BE UNDERTAKEN IN CONJUNCTION WITH DEVELOPMENT OF EACH STAGE OF WORKS, UNLESS OTHERWISE APPROVED BY SUPERINTENDENT.
2. ALL REASONABLE & PRACTICABLE EFFORTS MUST BE TAKEN TO DELAY THE REMOVAL OF, OR DISTURBANCE TO, EXISTING GROUND COVER (ORGANIC OR INORGANIC) PRIOR TO LAND-DISTURBING ACTIVITIES.
6. BULK TREE CLEARING MUST OCCUR IN A MANNER THAT MINIMISES DISTURBANCE TO EXISTING GROUND COVER (ORGANIC OR INORGANIC).
7. BULK TREE CLEARING & GRUBBING OF THE SITE MUST BE IMMEDIATELY FOLLOWED BY SPECIFIED TEMPORARY STABILISATION MEASURES (E.G. TEMPORARY GRASSING, OR MULCHING) PRIOR TO COMMENCEMENT OF EACH STAGE OF CONSTRUCTION WORKS.
8. DISTURBANCE TO NATURAL WATERCOURSES (INCLUDING BED & BANKS) & THEIR ASSOCIATED RIPARIAN ZONES MUST BE LIMITED TO THE MINIMUM PRACTICABLE.
9. NO LAND CLEARING SHALL BE UNDERTAKEN UNLESS PRECEDED BY THE INSTALLATION OF ADEQUATE DRAINAGE & SEDIMENT CONTROL MEASURES, UNLESS SUCH CLEARING IS REQUIRED FOR THE PURPOSE OF INSTALLING SUCH MEASURES, IN WHICH CASE, ONLY THE MINIMUM CLEARING REQUIRED TO INSTALL SUCH MEASURES SHALL OCCUR.
10. LAND CLEARING MUST BE LIMITED TO 5M FROM THE EDGE OF PROPOSED CONSTRUCTED WORKS, 2M OF ESSENTIAL CONSTRUCTION TRAFFIC ROUTES, & A TOTAL OF 10M WIDTH FOR CONSTRUCTION ACCESS, UNLESS OTHERWISE APPROVED BY SUPERINTENDENT.
11. PRIOR TO LAND CLEARING, AREAS OF PROTECTED VEGETATION, & SIGNIFICANT AREAS OF RETAINED VEGETATION MUST BE CLEARLY IDENTIFIED (E.G. WITH HIGH-VISIBILITY TAPE, OR LIGHT FENCING) FOR THE PURPOSES OF MINIMISING THE RISK OF UNNECESSARY LAND CLEARING.
12. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO MINIMISE THE REMOVAL OF, OR DISTURBANCE TO, THOSE TREES, SHRUBS & GROUND COVERS (ORGANIC OR INORGANIC) THAT ARE INTENDED TO BE RETAINED.
13. ALL LAND CLEARING MUST BE IN ACCORDANCE WITH THE FEDERAL, STATE & LOCAL GOVERNMENT VEGETATION PROTECTION/PRESERVATION REQUIREMENTS &/OR POLICIES.
14. LAND CLEARING IS LIMITED TO THE MINIMUM PRACTICABLE DURING THOSE PERIODS WHEN SOIL EROSION DUE TO WIND, RAIN OR SURFACE WATER IS POSSIBLE.
15. LAND CLEARING MUST NOT EXTEND BEYOND THAT NECESSARY TO PROVIDE UP TO EIGHT (8) WEEKS OF SITE ACTIVITY DURING THOSE MONTHS WHEN THE ACTUAL OR AVERAGE RAINFALL IS LESS THAN 45mm, SIX (6) IF BETWEEN 45 & 100mm, FOUR (4) WEEKS IF BETWEEN 100 & 225mm, & TWO (2) WEEKS IF GREATER THAN 225mm.
16. NATIVE SITE VEGETATION REQUIRED & APPROVED FOR CLEARING SHOULD BE MULCHED & STOCKPILED FOR LATER USE IN LANDSCAPING, STABILISATION &/OR SITE REHABILITATION WORKS.

SITE ACCESS

1. PRIOR TO THE COMMENCEMENT OF SITE WORKS, THE LOCATION OF THE SITE ACCESS POINT(S) MUST BE VERIFIED WITH THE RELEVANT REGULATORY AUTHORITY.
2. SITE ACCESS MUST BE RESTRICTED TO THE MINIMUM PRACTICAL NUMBER OF LOCATIONS.
3. SITE EXIT POINTS MUST BE APPROPRIATELY MANAGED TO MINIMISE THE RISK OF SEDIMENT BEING TRACKED ONTO SEALED, PUBLIC ROADWAYS.
5. INSTALL SEDIMENT FENCING &/OR BARRIER FENCING TO CONFINE INGRESS TO & EGRESS FROM THE SITE TO STABILISED ACCESS POINTS ONLY.
4. STORMWATER RUNOFF FROM ACCESS ROADS & STABILISED ENTRY/EXIT POINTS MUST DRAIN TO AN APPROPRIATE SEDIMENT CONTROL DEVICE.

CONSTRUCTION EXIT - ROCK PAD

MATERIALS:

1. ROCK: WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 50 TO 75mm (SMALL DISTURBANCES) OR 100 TO 150mm (LARGE DISTURBANCES). ALL REASONABLE MEASURES MUST BE TAKEN TO OBTAIN ROCK OF NEAR UNIFORM SIZE.
2. FOOTPATH STABILISING AGGREGATE: 25 TO 50mm GRAVEL OR AGGREGATE.
3. GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE -PUNCHED, NON-WOVEN FILTER CLOTH ('BIDIM' A24 OR EQUIVALENT).

INSTALLATION:

1. CLEAR THE LOCATION OF THE ROCK PAD, REMOVING STUMPS, ROOTS & OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR THE EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION & SEDIMENT CONTROL DEVICES ARE IN PLACE.
2. IF THE EXPOSED SOIL IS SOFT, PLASTIC OR CLAYEY, PLACE A SUB-BASE OF CRUSHED ROCK OR A LAYER OF HEAVY-DUTY FILTER CLOTH TO PROVIDE A FIRM FOUNDATION.
3. PLACE THE ROCK PAD FORMING A MINIMUM 200mm THICK LAYER OF CLEAN, OPEN-VOID ROCK.
4. IF THE ASSOCIATED CONSTRUCTION SITE IS UP-SLOPE OF THE ROCKPAD, THUS CAUSING STORMWATER RUNOFF TO FLOW TOWARD THE ROCK PAD, THEN FORM A MINIMUM 300mm HIGH FLOW CONTROL BERM ACROSS THE ROCK PAD TO DIVERT SUCH RUNOFF TO A SUITABLE SEDIMENT TRAP.
5. THE LENGTH OF THE ROCK PAD SHOULD BE AT LEAST 15m WHERE PRACTICABLE, & AS WIDE AS THE FULL WIDTH OF THE ENTRY OR EXIT & AT LEAST 3m. THE ROCK PAD SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.
6. FLARE THE END THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED SOIL.
7. IF THE FOOTPATH IS OPEN TO PEDESTRIAN MOVEMENT, THEN COVER THE COARSE ROCK WITH FINE AGGREGATE OR GRAVEL, OR OTHERWISE TAKE WHATEVER MEASURES ARE NEEDED TO MAKE THE AREA SAFE.

SOIL & STOCKPILE MANAGEMENT

1. TOPSOIL SHALL BE STRIPPED & STOCKPILED FOR LATER USE ONSITE.
2. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO OBTAIN THE MAXIMUM BENEFIT FROM EXISTING TOPSOIL, INCLUDING:
   (i) WHERE THE PROPOSED AREA OF SOIL DISTURBANCE DOES NOT EXCEED 2500m², & THE TOPSOIL DOES NOT CONTAIN UNDESIRABLE WEED SEED, THE TOP 100mm OF SOIL LOCATED WITHIN AREAS OF PROPOSED SOIL DISTURBANCE (INCLUDING STOCKPILE AREAS) MUST BE STRIPPED & STOCKPILED SEPARATELY FROM THE REMAINING SOIL.
   (ii) WHERE THE PROPOSED AREA OF SOIL DISTURBANCE EXCEEDS 2500m², & THE TOPSOIL DOES NOT CONTAIN UNDESIRABLE WEED SEED, THE TOP 50mm OF SOIL MUST BE STRIPPED & STOCKPILED SEPARATELY FROM THE REMAINING TOPSOIL, & SPREAD AS A FINAL SURFACE SOIL.
   (iii) IN AREAS WHERE THE TOPSOIL CONTAINS UNDESIRABLE WEED SEED, THE AFFECTED SOIL MUST BE SUITABLY BURIED OR REMOVED FROM THE SITE.
3. STOCKPILES OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, MUST BE:
   (i) APPROPRIATELY PROTECTED FROM WIND, RAIN, CONCENTRATED SURFACE FLOW & EXCESSIVE UP-SLOPE STORMWATER SURFACE FLOWS.
   (ii) LOCATED AT LEAST 2M (PREFERABLY 5M) FROM ANY HAZARDOUS AREA, RETAINED VEGETATION, ROADS & CONCENTRATED WATER FLOW.
   (iii) LOCATED UP-SLOPE OF AN APPROPRIATE SEDIMENT CONTROL SYSTEM.
   (iv) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 28 DAYS.
   (v) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 10 DAYS DURING THOSE MONTHS THAT HAVE A HIGH EROSION RISK.
   (vi) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 5 DAYS DURING THOSE MONTHS THAT HAVE AN EXTREME EROSION RISK.
4. A SUITABLE FLOW DIVERSION SYSTEM MUST BE ESTABLISHED IMMEDIATELY UP-SLOPE OF A STOCKPILE OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, IF THE UP-SLOPE CATCHMENT AREA DRAINING TO THE STOCKPILE EXCEEDS 1500m².

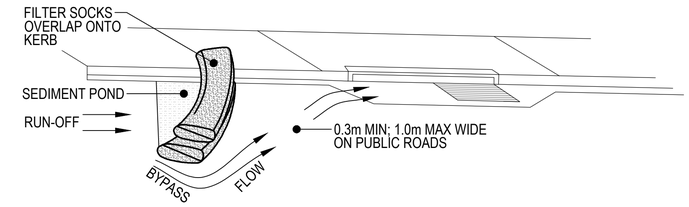
FILTER SOCKS-CONCENTRATED FLOW

MATERIALS:

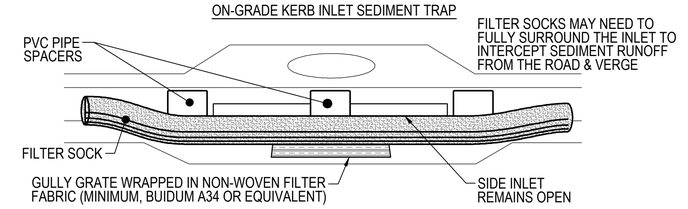
1. SOCKS: MINIMUM Ø200mm SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE "FILTRATION" OF COURSE SEDIMENT.
2. FILL MATERIALS: STRAW, CANE MULCH, COMPOSTED MATERIAL (AS4454), COARSE SAND, OR CLEAN AGGREGATE

INSTALLATION:

1. ENSURE THE SOCKS ARE PLACED INDIVIDUALLY OR COLLECTIVELY (AS A SINGLE SEDIMENT TRAP) SUCH THAT:
   i) LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED;
   ii) ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm.
   iii) THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED.
   iv) TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.

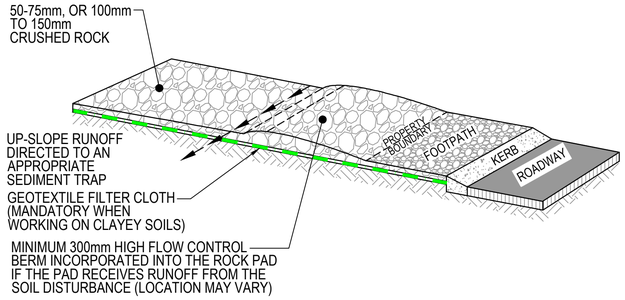


ON-GRADE KERB INLET SEDIMENT TRAP

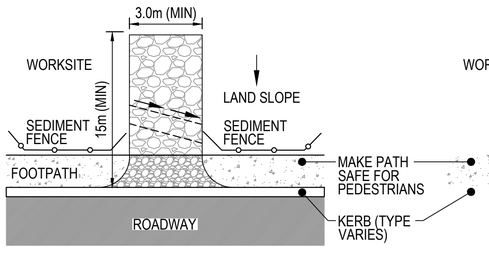


SAG INLET SEDIMENT TRAP

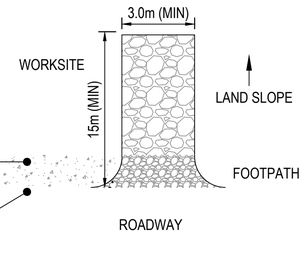
FILTER SOCKS - CONCENTRATED FLOWS



ROCK ENTRY/EXIT PAD FOR CONSTRUCTION SITES

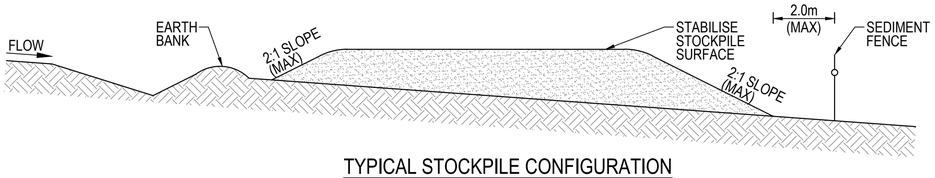


ROCK PAD SLOPING TOWARDS THE ROAD



ROCK PAD SLOPING AWAY FROM ROAD

CONSTRUCTION EXIT - ROCK PAD
(CONSTRUCTION SITES ONLY)



TYPICAL STOCKPILE CONFIGURATION

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL DETAILS SHEET 1

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0191

Issue: A

100mm on Original

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0191-ESCNotes.dwg

DRAINAGE CONTROL

1. WHEREVER REASONABLE & PRACTICABLE, STORMWATER RUNOFF ENTERING THE SITE FROM EXTERNAL AREAS, & NON-SEDIMENT LADEN (CLEAN) STORMWATER RUNOFF ENTERING A WORK AREA OR AREA OF SOIL DISTURBANCE, MUST BE DIVERTED AROUND OR THROUGH THAT AREA IN A MANNER THAT MINIMISES SOIL EROSION & THE CONTAMINATION OF THAT WATER FOR ALL DISCHARGES UP TO THE SPECIFIED DESIGN STORM DISCHARGE.
2. DURING THE CONSTRUCTION PERIOD, ALL REASONABLE & PRACTICABLE MEASURES MUST BE IMPLEMENTED TO CONTROL FLOW VELOCITIES IN SUCH A MANNER THAT PREVENTS SOIL EROSION ALONG DRAINAGE PATHS & AT THE ENTRANCE & EXIT OF ALL DRAINS & DRAINAGE PIPES DURING ALL STORMS UP TO THE RELEVANT DESIGN STORM DISCHARGE.
3. TO THE MAXIMUM DEGREE REASONABLE & PRACTICABLE, ALL WATERS DISCHARGED DURING THE CONSTRUCTION PHASE MUST DISCHARGE ONTO STABLE LAND, IN A NON-EROSIVE MANNER, & AT A LEGAL POINT OF DISCHARGE.
4. DURING THE CONSTRUCTION PERIOD, ROOF WATER MUST BE MANAGED IN A MANNER THAT MINIMISES SOIL EROSION THROUGHOUT THE SITE, & SITE WETNESS WITHIN ACTIVE WORK AREAS.

DIVERSION CHANNELS & CATCH DRAINS

1. CLEAR THE LOCATION FOR THE CHANNEL, CLEARING ONLY WHAT IS NEEDED TO PROVIDE ACCESS FOR PERSONNEL & CONSTRUCTION EQUIPMENT.
2. REMOVE ROOTS, STUMPS, & OTHER DEBRIS & DISPOSE OF THEM PROPERLY. DO NOT USE DEBRIS TO BUILD ANY ASSOCIATED EMBANKMENTS.
3. EXCAVATE THE CHANNEL TO THE SPECIFIED SHAPE, ELEVATION & GRADIENT (1% MIN). THE SIDES OF THE CHANNEL SHOULD BE NO STEEPER THAN A 2:1 (H:V) IF CONSTRUCTED IN EARTH, UNLESS SPECIFICALLY DIRECTED WITHIN THE APPROVED PLANS.
4. STABILISE THE CHANNEL & BANKS IMMEDIATELY UNLESS IT WILL OPERATE FOR LESS THAN 30 DAYS. IN EITHER CASE, TEMPORARY EROSION PROTECTION (MATTING, ROCK, TURF, ETC.) WILL BE REQUIRED AS SPECIFIED WITHIN THE APPROVED PLANS OR AS DIRECTED.
5. IF THE CHANNEL IS CUT INTO A DISPERSIVE (SODIC) SOIL, THE EXPOSED DISPERSIVE SOIL MUST BE COVERED & MAINTAINED WITH A MINIMUM 200mm THICK LAYER OF NON-DISPERSIVE SOIL PRIOR TO PLACEMENT OF EROSION PROTECTION MEASURES.
6. ENSURE THE CHANNEL DISCHARGES TO A STABLE AREA SUCH THAT SOIL EROSION WILL BE PREVENTED. SPECIFICALLY, ENSURE THE DRAIN DOES NOT DISCHARGE TO AN UNSTABLE FILL SLOPE.

EROSION CONTROL

1. THE APPLICATION OF LIQUID-BASED DUST SUPPRESSION MEASURES MUST ENSURE THAT SEDIMENT-LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD.
2. ALL TEMPORARY EARTH BANKS, FLOW DIVERSION SYSTEMS, & EMBANKMENTS ASSOCIATED WITH CONSTRUCTED SEDIMENT BASINS MUST BE MACHINE-COMPACTED, SEEDED & MULCHED FOR THE PURPOSE OF ESTABLISHING A TEMPORARY VEGETATIVE COVER WITHIN 10 DAYS AFTER GRADING.
3. UNPROTECTED SLOPE LENGTHS MUST NOT EXCEED 80M, OR AN EQUIVALENT VERTICAL FALL OF 3M.
4. THE CONSTRUCTION & STABILISATION OF EARTH BATTERS STEEPER THAN 6:1 (H:V) MUST BE STAGED SUCH THAT NO MORE THAN 3 VERTICAL-METRES OF ANY BATTER IS EXPOSED TO RAINFALL AT ANY INSTANT.
5. SYNTHETIC REINFORCED EROSION CONTROL MATS & BLANKETS MUST NOT BE PLACED WITHIN, OR ADJACENT TO, RIPARIAN ZONES & WATERCOURSES IF SUCH MATERIALS ARE LIKELY TO CAUSE ENVIRONMENTAL HARM TO WILDLIFE OR WILDLIFE HABITATS.
6. A MINIMUM 60% GROUND COVER MUST BE ACHIEVED ON ALL NON-COMPLETED EARTHWORKS EXPOSED TO ACCELERATED SOIL EROSION IF FURTHER CONSTRUCTION ACTIVITIES OR SOIL DISTURBANCES ARE LIKELY TO BE SUSPENDED FOR MORE THAN 30 DAYS DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL IS LESS THAN 30mm; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 30 & 45mm; MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 45 & 100mm; MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 100 & 225mm; & MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 225mm. (ALTERNATIVE TO ABOVE)

EROSION CONTROL MAT LINING

1. EROSION CONTROL MATS MUST BE STORED AWAY FROM DIRECT SUNLIGHT OR COVERED WITH ULTRAVIOLET PROTECTIVE SHEETING UNTIL THE SITE IS READY FOR THEIR INSTALLATION.
2. VEHICLES & CONSTRUCTION EQUIPMENT MUST NOT BE PERMITTED TO MANEUVER OVER THE MATTING UNLESS IT HAS BEEN COVERED WITH A LAYER OF SOIL OR GRAVEL AT LEAST 150mm THICK.
3. IF THE CHANNEL IS TO BE GRASSED, PREPARE A SMOOTH SEED BED OF APPROXIMATELY 75mm OF TOPSOIL, SEED, FERTILISE, WATER & RAKE TO REMOVE ANY REMAINING SURFACE IRREGULARITIES.
4. EXCAVATE A 300mm DEEP BY 150mm WIDE ANCHOR TRENCH ALONG THE FULL WIDTH OF THE UPSTREAM END OF THE AREA TO BE TREATED.
5. AT LEAST 300mm OF THE MAT MUST BE ANCHORED INTO THE TRENCH WITH THE ROLL OF MATTING RESTING ON THE GROUND UP-SLOPE OF THE TRENCH.
6. WHEN SPREADING THE MATS, AVOID STRETCHING THE FABRIC. THE MATS SHOULD REMAIN IN GOOD CONTACT WITH THE SOIL.
7. THE INSTALLATION PROCEDURE MUST ENSURE THAT THE MAT ACHIEVES & RETAINS GOOD CONTACT WITH THE SOIL.
8. DAMAGED MATTING MUST BE REPAIRED OR REPLACED.

TURF LINED

1. TURF SHOULD BE USED WITHIN 12 HOURS OF DELIVERY, OTHERWISE ENSURE THE TURF IS STORED IN CONDITIONS APPROPRIATE FOR THE WEATHER CONDITIONS (e.g. A SHADED AREA).
2. MOISTENING THE TURF AFTER IT IS UNROLLED WILL HELP MAINTAIN ITS VIABILITY.
3. TURF SHOULD BE LAID ON A MINIMUM 75mm BED OF ADEQUATELY FERTILISED TOPSOIL. RAKE THE SOIL SURFACE TO BREAK THE CRUST JUST BEFORE LAYING THE TURF.
4. DURING THE WARMER MONTHS, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY BEFORE LAYING THE TURF.
5. ENSURE THE TURF IS NOT LAID ON GRAVEL, HEAVILY COMPACTED SOILS, OR SOILS THAT HAVE BEEN RECENTLY TREATED WITH HERBICIDES.
6. ENSURE THE TURF EXTENDS UP THE SIDES OF THE DRAIN AT LEAST 100mm ABOVE THE ELEVATION OF THE CHANNEL INVERT, OR AT LEAST TO A SUFFICIENT ELEVATION TO FULLY CONTAIN EXPECTED CHANNEL FLOW.
7. ON CHANNEL GRADIENTS OF 3:1(H:V) OR STEEPER, OR IN SITUATIONS WHERE HIGH FLOW VELOCITIES (i.e. VELOCITY >1.5m/s) ARE LIKELY WITHIN THE FIRST TWO WEEK FOLLOWING PLACEMENT, SECURE THE INDIVIDUAL TURF STRIPS WITH WOODEN OR PLASTIC PEGS.
8. ENSURE THAT INTIMATE CONTACT IS ACHIEVED & MAINTAINED BETWEEN THE TURF & THE SOIL SUCH THAT SEEPAGE FLOW BENEATH THE TURF IS AVOIDED.
9. WATER UNTIL THE SOIL IS WET 100mm BELOW THE TURF. THEREAFTER, WATERING SHOULD BE SUFFICIENT TO MAINTAIN & PROMOTE HEALTHY GROWTH.

ROCK-LINED

1. ALL ROCK MUST BE HARD, WEATHER RESISTANT, & DURABLE AGAINST DISINTEGRATION UNDER CONDITIONS TO BE MET IN HANDLING, PLACEMENT & OPERATION.
2. ALL ROCK MUST HAVE ITS GREATEST DIMENSION NOT GREATER THAN 3 TIMES ITS LEAST DIMENSIONS.
3. THE ROCK USED IN FORMATION OF THE DRAIN MUST BE EVENLY GRADED WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL ROCK SIZE & HAVE SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN THE LARGER ROCK. DIRT, FINES, & SMALLER ROCK MUST NOT EXCEED 5% BY WEIGHT.
4. THE DIAMETER OF THE LARGEST ROCK SIZE SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE. SPECIFIC GRAVITY TO BE AT LEAST 2.5.
5. FILTER CLOTH GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH, MINIMUM 'BIDIM' A24 OR EQUIVALENT.
6. PRIOR TO PLACEMENT, ALL ROCKS MUST BE VISUALLY CHECKED FOR SIZE, ELONGATION, CRACKS, DETERIORATION & OTHER VISIBLE DEFECTS. THE DEGREE & THOROUGHNESS OF SUCH CHECKING MUST BE APPROPRIATE FOR THE POTENTIAL CONSEQUENCES ASSOCIATED WITH FAILURE OF THE STRUCTURE OR PURPOSE FOR WHICH THE MATERIAL WILL BE USED.
7. IF A FILTER CLOTH UNDERLAY IS SPECIFIED, PLACE THE FILTER FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN ONE SHEET OF FILTER CLOTH IS REQUIRED OVER THE AREA, OVERLAP THE EDGE OF EACH SHEET AT LEAST 300mm, & SECURE ANCHOR PINS AT MINIMUM 1M SPACING ALONG THE OVERLAP.
8. ENSURE THE FILTER CLOTH IS PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION OF THE FABRIC & THE ROCK. REPAIR ANY DAMAGE BY REMOVING THE ROCK & REPLACING WITH ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA OVERLAPPING THE EXISTING FABRIC A MINIMUM OF 300mm.
9. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER LAYER. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS.
10. PLACE ROCK LINING TO THE EXTENT & DEPTH INDICATED WITHIN THE APPROVED PLANS.
11. ENSURE THE ROCK IS PLACED IN AN APPROPRIATE MANNER TO AVOID DISPLACING UNDERLYING MATERIALS OR PLACING UNDUE IMPACT FORCE ON THE BEDDING MATERIALS.
12. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50).
13. ENSURE MATERIALS THAT ARE D50 & LARGER ARE POSITIONED FLUSH WITH THE TOP SURFACE WITH FACES & SHAPES MATCHED TO MINIMISE VOIDS.
14. ENSURE PROJECTIONS ABOVE OR DEPRESSIONS UNDER THE SPECIFIED TOP SURFACE ARE LESS THAN 20% OF THE ROCK LAYER THICKNESS. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS WOULD CONTACT.
15. ENSURE THE COMPLETED CHANNEL HAS SUFFICIENT DEPTH (AS SPECIFIED FOR THE TYPE OF CHANNEL) MEASURED FROM THE CHANNEL INVERT (AVERAGE SURFACE PLANE ALONG CHANNEL INVERT) TO THE TOP OF THE EMBANKMENT. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS WOULD CONTACT.
16. TO THE MAXIMUM DEGREE PRACTICABLE, THE MATERIAL BETWEEN LARGER ROCK MUST NOT BE LOOSE OR EASILY DISPLACED BY THE EXPECTED FLOW.
17. AFTER PLACEMENT OF THE ROCK LINING, ENSURE THE DRAIN HAS A CONSTANT FALL IN THE DESIRED DIRECTION FREE OF OBSTRUCTIONS.

CHECK DAMS

1. CHECK DAMS CAN BE BUILT WITH VARIOUS MATERIALS INCLUDING ROCKS & SANDBAGS.

MATERIALS:

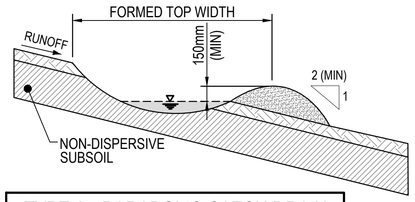
1. ROCK: 150 TO 300mm EQUIVALENT DIAMETER HARD EROSION RESISTANT ROCK.
2. RECYCLED CONCRETE: 150 TO 300mm EQUIVALENT DIAMETER FREE FROM FINES & CEMENT DUST.
3. SANDBAGS: GEOTEXTILE BAGS (WOVEN SYNTHETIC, OR NON-WOVEN BIODEGRADABLE) FILLED WITH CLEAN COARSE SAND, CLEAN AGGREGATE, OR COMPOST.

INSTALLATION:

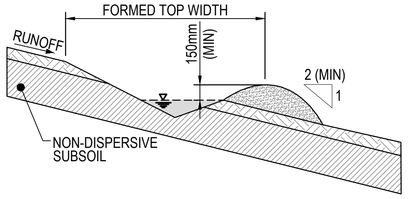
1. PRIOR TO PLACEMENT OF THE SEDIMENT TRAP, ENSURE THE DRAINAGE CHANNEL IS DEEP ENOUGH TO PREVENT WATER BEING UNSAFELY DIVERTED OUT OF THE DRAIN ONCE THE CHECK DAMS ARE INSTALLED.
2. LOCATE EACH CHECK DAM SEDIMENT TRAP AS DIRECTED WITHIN THE APPROVED PLANS, OR OTHERWISE AT SUCH A SPACING TO ACHIEVE THE REQUIRED SEDIMENT TRAPPING OUTCOMES. REFER DETAIL.
3. PLACE EACH CHECK DAM SEDIMENT TRAP TO THE LINES & PROFILE SHOWN IN THE APPROVED PLAN OR AS DIRECTED BY THE SITE SUPERVISOR.

LEVEL SPREADER INSTALLATION:

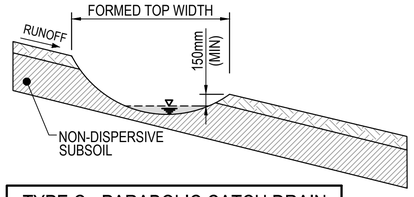
1. THE OUTLET SILL OF THE SPREADER SHOULD BE PROTECTED WITH EROSION CONTROL MATTING TO PREVENT EROSION DURING THE ESTABLISHMENT OF VEGETATION. THE MATTING SHOULD BE A MINIMUM OF 1200mm WIDE EXTENDING AT LEAST 300mm UPSTREAM OF THE EDGE OF THE OUTLET CREST & BURIED AT LEAST 150mm IN A VERTICAL TRENCH. THE DOWNSTREAM EDGE SHOULD BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY-DUTY WIRE STAPLES AT LEAST 150mm LONG.
2. ENSURE THAT THE OUTLET SILL (CREST) IS LEVEL FOR THE SPECIFIED LENGTH.
3. IMMEDIATELY AFTER CONSTRUCTION, TURF, OR SEED & MULCH WHERE APPROPRIATE, THE LEVEL SPREADER.



TYPE A - PARABOLIC CATCH DRAIN WITH DOWN-SLOPE BANK



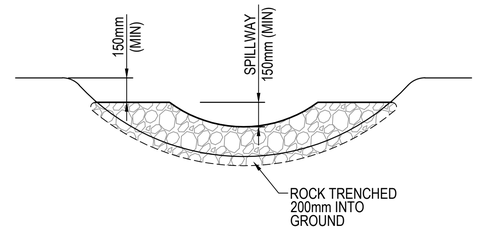
TYPE B - TRIANGULAR V-DRAIN CATCH DRAIN WITH DOWN-SLOPE BANK



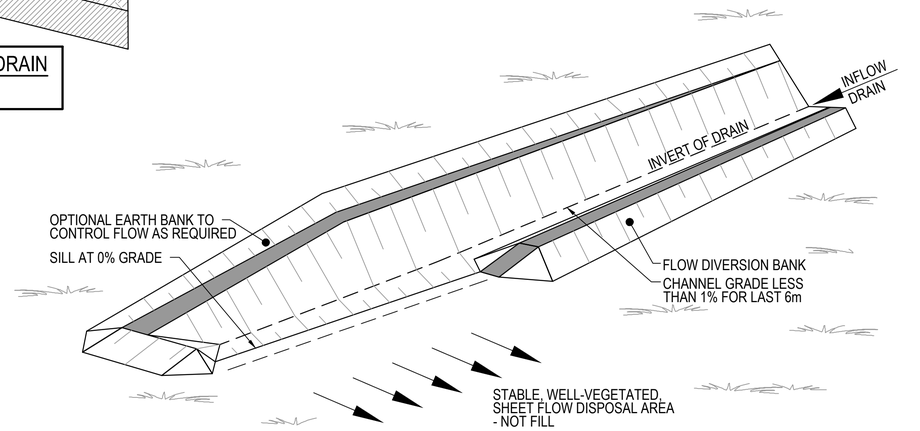
TYPE C - PARABOLIC CATCH DRAIN WITH BANK

CONSTRUCTED DIMENSIONS OF PARABOLIC CATCH DRAINS		
DRAIN TYPE	FORMED WIDTH WITH OR WITHOUT BANK	FORMED DEPTH WIDTH OR WITHOUT BANK
TYPE-A TYPE-B TYPE-C	1.6m 2.4m 3.6m	0.30m 0.45m 0.65m

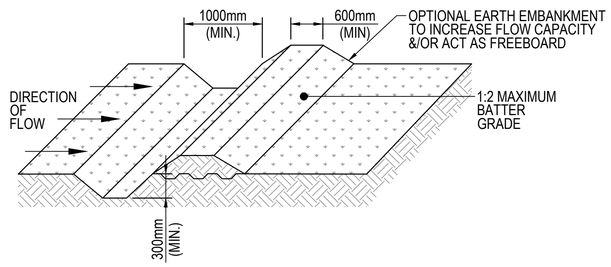
CONSTRUCTED DIMENSIONS OF TRIANGULAR V-DRAINS		
DRAIN TYPE	FORMED WIDTH WITH OR WITHOUT BANK	FORMED DEPTH WIDTH OR WITHOUT BANK
TYPE-AV TYPE-BV TYPE-CV	2.0m 2.7m 3.9m	0.30m 0.45m 0.65m



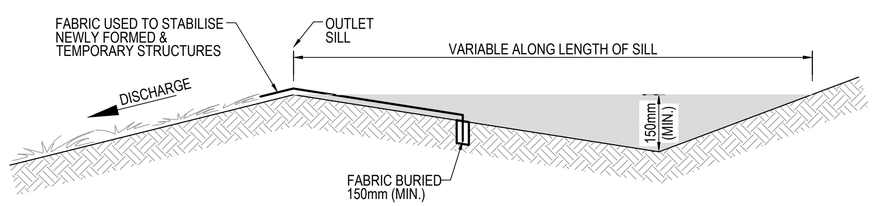
CHECK DAMS



TYPICAL LAYOUT OF LEVEL SPREADER



DIVERSION CHANNEL



TYPICAL PROFILE OF THE OUTLET WEIR

LEVEL SPREADER

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL DETAILS SHEET 2

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0192

Issue: A

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0191-ESCNotes.dwg

SEDIMENT CONTROL

1. OPTIMUM BENEFIT MUST BE MADE OF EVERY OPPORTUNITY TO TRAP SEDIMENT WITHIN THE WORK SITE, & AS CLOSE AS PRACTICABLE TO ITS SOURCE.
2. SEDIMENT TRAPS MUST BE INSTALLED & OPERATED TO BOTH COLLECT & RETAIN SEDIMENT.
3. THE POTENTIAL SAFETY RISK OF A PROPOSED SEDIMENT TRAP TO SITE WORKERS & THE PUBLIC MUST BE GIVEN APPROPRIATE CONSIDERATION, ESPECIALLY THOSE DEVICES LOCATED WITHIN PUBLICLY ACCESSIBLE AREAS.
4. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT FROM THE SITE.
5. SUITABLE ALL-WEATHER MAINTENANCE ACCESS MUST BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.

SEDIMENT FENCE

1. SEDIMENT FENCE TO BE INSTALLED ALONG A LINE OF CONSTANT GROUND ELEVATION WHEREVER PRACTICAL.
2. BOTH ENDS OF THE SEDIMENT FENCE TO EXTEND UP THE SLOPE AT LEAST 1m.
3. SUPPORT POST TO BE SPACED A MAXIMUM 2m UNLESS THE FENCE IS SUPPORTED BY A TOP WIRE OR MESH BACKING, IN WHICH CASE 3m MAXIMUM SPACING.
4. FENCE 'RETURNS' SHALL BE INSTALLED AT MAXIMUM 20m SPACING IF FENCE IS INSTALLED ALONG THE CONTOUR, OTHERWISE 5 TO 10m MAXIMUM SPACING DEPENDING ON SLOPE.
5. MINIMUM 4 STAPLES OR TIE WIRES PER STAKE.

MATERIALS:

1. FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH & A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS & STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).
2. FABRIC REINFORCEMENTS: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.
3. SUPPORT POSTS/STAKES: 1500mm² (MIN.) HARDWOOD, 2500mm² (MIN.) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

INSTALLATION OF A SPILL-THROUGH WEIR:

1. LOCATE THE SPILL-THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.
2. ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm ABOVE THE GROUND ELEVATION.
3. SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST & FOLD THE FABRIC OVER THE CROSS MEMBER & APPROPRIATELY SECURE THE FABRIC.
4. INSTALL A SUITABLE SPLASH PAD &/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION & APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

INSTALLATION FABRIC DROP INLET PROTECTION:

1. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.
2. WHERE POSSIBLE, EXCAVATE A 200x200mm TRENCH AROUND THE INLET STRUCTURE.
3. SPACE STAKES EVENLY AROUND THE PERIMETER OF THE STORMWATER INLET AT A MAXIMUM 1m SPACING & SECURELY DRIVE THEM INTO THE GROUND.
4. WHERE NECESSARY, INSTALL A HORIZONTAL SPILL-THROUGH WEIR TO LIMIT THE MAXIMUM HEIGHT WATER PONDING AROUND THE STRUCTURE.
5. ENSURE THE MAXIMUM POND HEIGHT WILL NOT CAUSE A SAFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY. WHEREVER PRACTICAL, THE SPILL-THROUGH WEIR SHOULD BE AT LEAST 300mm ABOVE GROUND LEVEL.
6. IF A SPILL THROUGH WEIR IS NOT INSTALLED, THEN FRAME THE TOP OF THE STAKES WITH HORIZONTAL CROSS MEMBERS.
7. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS.
8. PLACE THE BOTTOM 300mm OF FABRIC IN THE EXCAVATED TRENCH
9. SECURELY FASTEN THE FABRIC TO THE STAKES & CROSS MEMBERS AT THE FABRIC JOINT, OVERLAP THE FABRIC TO THE NEXT STAKE.
10. BACKFILL THE TRENCH WITH AT LEAST 200mm OF AGGREGATE OR COMPACTED SOIL. IF A TRENCH CANNOT BE EXCAVATED, LAY THE BOTTOM 300mm OF FABRIC EVENLY ON THE GROUND SURFACE & COVER WITH A 300mm LAYER OF AGGREGATE, NOT EARTH OR SOIL.
11. WHERE REQUIRED, INSTALL A FLOW CONTROL BUND TO MAINTAIN THE SPECIFIED POOL DEPTH & CONTROL THE MOVEMENT OF WATER.
12. TAKE ALL NECESSARY MEASURES TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE & TO PREVENT UNSAFE ENTRY INTO THE STORMWATER INLET.

SEDIMENT BASIN

1. REMOVE ALL VEGETATION & TOPSOIL FROM UNDER THE DAM WALL & FROM WITHIN THE STORAGE AREA.
2. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
3. FOR EARTH EMBANKMENT MATERIAL TYPE & COMPACTION REFER TO DTMR SPECIFICATION MRTS04 SECTION14.2.6 - WATER RETAINING EMBANKMENTS.
4. CONSTRUCT EMERGENCY SPILLWAY.
5. INSTALL MARKER POST SHOWING MAXIMUM STORAGE & SETTLING ZONE VOLUMES.
6. AS-CONSTRUCTED PLANS MUST BE PREPARED FOR ALL CONSTRUCTED SEDIMENT BASINS & ASSOCIATED EMERGENCY SPILLWAYS. SUCH PLANS MUST APPROPRIATELY VERIFY THE BASIN'S DIMENSIONS, LEVELS & VOLUMES, & MUST BE SUBMITTED TO THE RELEVANT REGULATORY AUTHORITY WITHIN 14 CALENDAR DAYS OF THE CONSTRUCTION OF EACH BASIN.
7. BASINS SHOULD BE APPROPRIATELY FENCED & MARKED BY WARNING SIGNS IF UNSUPERVISED PUBLIC ACCESS IS LIKELY & PUBLIC SAFETY IS AT RISK.

SITE MONITORING & MAINTENANCE

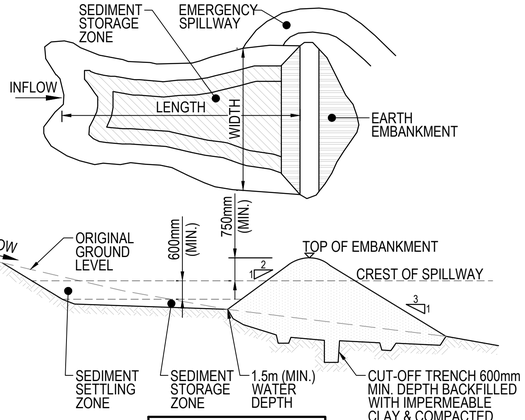
1. ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE INSPECTED:
   - (i) AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE);
   - (ii) AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE);
   - (iii) WITHIN 24 HOURS OF EXPECTED RAINFALL; &
   - (iv) WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY & DURATION TO CAUSE RUNOFF ON-SITE).
2. INSPECTION SHALL BE CONDUCTED IN LINE WITH THE FOLLOWING AS A MINIMUM:
   - i) RECORD TYPE OF DEVICE/CONTROL MEASURE BEING INSPECTED & ITS LOCATION;
   - ii) RECORD THE CONDITION OF EACH DEVICE/CONTROL MEASURE BEING INSPECTED;
   - iii) RECORD MAINTENANCE REQUIREMENTS FOR DEVICE/CONTROL MEASURE BEING INSPECTED;
   - iv) RECORD SEDIMENT VOLUMES REMOVED FROM DEVICE/CONTROL MEASURE BEING INSPECTED;
   - v) RECORD DETAILS OF SEDIMENT BASIN TREATMENT, FLOCULANT DOSAGE & CLEANOUTS;
   - vi) RECORD SEDIMENT DISPOSAL PROCEDURES & LOCATION;
2. ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES.
4. SEDIMENT CONTROL DEVICES MUST BE DE-SILTED & MADE FULLY OPERATIONAL AS SOON AS REASONABLE & PRACTICABLE AFTER A SEDIMENT-PRODUCING EVENT, WHETHER NATURAL OR ARTIFICIAL, IF THE DEVICE'S SEDIMENT RETENTION CAPACITY FALLS BELOW 75% OF ITS DESIGN RETENTION CAPACITY. DE-SILT SEDIMENT TRAP IF THE SEDIMENT LEVEL EXCEEDS 1/3 OF THE CREST HEIGHT.
5. MATERIALS, WHETHER LIQUID OR SOLID, REMOVED FROM SEDIMENT CONTROL DEVICES DURING MAINTENANCE OR DECOMMISSIONING, MUST BE DISPOSED OF IN A MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
7. ALL WATER QUALITY DATA, INCLUDING DATES OF RAINFALL, DATES OF TESTING, TESTING RESULTS & DATES OF WATER RELEASE, MUST BE KEPT IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED UP TO DATE FOR THE DURATION OF THE APPROVED WORKS & BE AVAILABLE ON-SITE FOR INSPECTION BY THE RELEVANT REGULATORY AUTHORITY ON REQUEST.
8. AT NOMINATED INSTREAM WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES MUST BE TAKEN & ANALYSED, & THE AVERAGE RESULT USED TO DETERMINE QUALITY.
9. ALL ENVIRONMENTALLY RELEVANT INCIDENTS MUST BE RECORDED IN A FIELD LOG THAT MUST REMAIN ACCESSIBLE TO ALL RELEVANT REGULATORY AUTHORITIES.
10. WASHING/FLUSHING OF SEALED ROADWAYS MUST ONLY OCCUR WHERE SWEEPING HAS FAILED TO REMOVE SUFFICIENT SEDIMENT & THERE IS A COMPELLING NEED TO REMOVE THE REMAINING SEDIMENT (E.G. FOR SAFETY REASONS). IN SUCH CIRCUMSTANCES, ALL REASONABLE & PRACTICABLE SEDIMENT CONTROL MEASURES MUST BE USED TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT INTO RECEIVING WATERS. ONLY THOSE MEASURES THAT WILL NOT CAUSE SAFETY & PROPERTY FLOODING ISSUES SHALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
11. ALL SEEDING, HYDROSEEDING & TURFING REQUIRES REGULAR WATERING UNTIL EFFECTIVE COVER IS ESTABLISHED & PLANTS ARE GROWING VIGOROUSLY. WATERING SHOULD DEPEND ON WEATHER & SOIL CONDITIONS. WATERING SHOULD START IMMEDIATELY AFTER PLANTING & SHOULD COMPLY WITH THE FOLLOWING AS A MINIMUM:
    - i) WEEK 1 — 3 WATERINGS PER WEEK
    - ii) WEEK 2-6 — 2 WATERINGS PER WEEK
    - iii) WEEK 7-12 — 1 WATERING PER WEEK
11. MAINTENANCE MOWING OF ALL ROAD SHOULDERS, TABLE DRAINS, BATTERS & OTHER SURFACES LIKELY TO EXPERIENCE ACCELERATED SOIL EROSION MUST AIM TO LEAVE THE GRASS LENGTH NO SHORTER THAN 50mm WHERE REASONABLE & PRACTICABLE.
12. MAINTENANCE MOWING MUST BE DONE IN A MANNER THAT WILL NOT DAMAGE THE PROFILE OF FORMED, SOFT EDGES, SUCH AS THE CREST OF EARTH EMBANKMENTS.

SEDIMENT BASIN

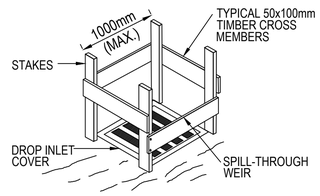
1. CONSTRUCTED SEDIMENT BASINS MUST BE MAINTAINED & FULLY OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD & UNTIL EACH BASIN'S CATCHMENT AREA ACHIEVES 80% GROUND COVER ON ALL SOIL SURFACES.
2. SETTLED SEDIMENT MUST BE REMOVED FROM SEDIMENT BASINS WHEN THE VOLUME OF THE SEDIMENT EXCEEDS THE DESIGNATED SEDIMENT STORAGE VOLUME, OR THE DESIGN MAXIMUM SEDIMENT STORAGE ELEVATION.
3. SEDIMENT BASIN WATER QUALITY SAMPLES MUST BE TAKEN AT A DEPTH NO GREATER THAN 200mm ABOVE THE LEVEL OF SETTLED SEDIMENT BY A SUITABLY QUALIFIED PERSON. WATER TESTING TO BE UNDERTAKEN USING EITHER A HANDHELD PH/TURBIDITY METER OR SAMPLES COLLECTED FOR LABORATORY TESTING PRIOR TO BASIN DEWATERING. ALL LABORATORY TESTING TO BE UNDERTAKEN BY A NATA ACCREDITED LABORATORY.
4. ALL WATER PUMPED FROM THE SEDIMENT BASIN SHALL BE TESTED FOR ENVIRONMENTAL COMPLIANCE AGAINST THE RELEASE CRITERIA IN THE TABLE BELOW (AS A MINIMUM), UNLESS ALTERNATIVE (MORE STRINGENT) STANDARDS ARE SPECIFIED BY THE LOCAL AUTHORITY PRIOR TO RELEASE.
5. THE SEDIMENT BASIN SHALL BE TREATED BY FLOCCULATION AFTER ALL RAINFALL EVENTS (> 5mm) USING GYPSUM OR ALUM. MANUAL DOSAGE OF BASIN SHALL BE UNDERTAKEN USING A MINIMUM RATE OF 32kg/100m³ FOR GYPSUM & 1.5-8kg/100m³ FOR ALUM. HIGHER DOSAGE MAY BE REQUIRED DEPENDING ON SOIL TYPE & APPLICATION TECHNIQUE. ALUM SHALL NOT BE USED WHERE THE CATCHMENT DISCHARGES DIRECTLY TO A WATERWAY.
6. THE CHOSEN FLOCCULENT SHALL BE SPREAD EVENLY OVER THE BASIN SURFACE AREA. THE BASIN WILL REQUIRE A PUMP SYSTEM TO SPRAY SLURRY OF FLOCCULANTS OVER SURFACE AT AN ANGLE OF 10°-20°.
7. THE TREATED BASIN SHALL BE DEWATERED WITH A PUMP SYSTEM WITH A FLOATING INLET TO ENSURE SETTLED SEDIMENT IS NOT ENTRAINED & DISCHARGED. BASIN DEWATERING SHALL OCCUR WITHIN 5 DAYS FROM CONCLUSION OF RAINFALL EVENT.

SITE REHABILITATION

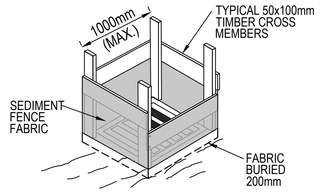
1. ALL DISTURBED AREAS IDENTIFIED AS VERY LOW, LOW, MEDIUM, HIGH, OR EXTREME EROSION RISK MUST BE SUITABLY STABILISED WITHIN 60, 30, 20, 10 OR 5 DAYS RESPECTIVELY, OR PRIOR TO ANTICIPATED RAINFALL, WHICHEVER IS THE GREATER, FROM THE DAY THAT SOIL DISTURBANCES ON THE AREA HAVE BEEN FINALISED.
2. THE TYPE OF GROUND COVER APPLIED TO COMPLETED EARTHWORKS SHOULD BE COMPATIBLE WITH THE ANTICIPATED LONG-TERM LAND USE, ENVIRONMENTAL RISK, & SITE REHABILITATION MEASURES.
3. UNLESS OTHERWISE DIRECTED BY SUPERINTENDENT OR WHERE DIRECTED BY THE APPROVED REVEGETATION PLAN, TOPSOIL MUST BE PLACED AT A MINIMUM DEPTH OF 75mm ON SLOPES 4:1 (H:V) OR FLATTER, & 50mm ON SLOPES STEEPER THAN 4:1.
4. THE PH LEVEL (SOIL:WATER 1:5) OF TOPSOIL MUST BE ADEQUATE TO ENABLE ESTABLISHMENT & GROWTH OF THE SPECIFIED VEGETATION.
5. SOIL AMELIORANTS MUST BE ADDED TO THE SOIL IN ACCORDANCE WITH THE APPROVED LANDSCAPE/REVEGETATION PLANS &/OR SOIL ANALYSIS.
6. SOIL DENSITY/COMPACTION MUST BE ADJUSTED PRIOR TO SEEDING/PLANTING IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS, SOIL REPORT &/OR APPROPRIATE REFERENCE PLANS.
7. ALL UNSTABLE OR DISTURBED SOIL SURFACES MUST BE ADEQUATELY STABILISED AGAINST EROSION (MINIMUM 80%) PRIOR TO COMMENCEMENT OF USE, OR SURVEY PLAN ENDORSEMENT.
8. ALL TEMPORARY DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE REMOVED AFTER ACHIEVING A SATISFACTORY "OFF-MAINTENANCE INSPECTION" BY THE RELEVANT REGULATORY AUTHORITY.
9. DISPOSE OF ANY COLLECTED SEDIMENT OR FILL IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
10. IMMEDIATELY PRIOR TO THE CONSTRUCTION OF THE PERMANENT STORMWATER TREATMENT DEVICE, APPROPRIATE FLOW BYPASS CONDITIONS MUST BE ESTABLISHED TO PREVENT SEDIMENT-LADEN WATER ENTERING THE DEVICE.
11. IMMEDIATELY FOLLOWING THE CONSTRUCTION OF THE FILTER MEDIA OF THE PERMANENT STORMWATER TREATMENT DEVICE, THE FILTER MEDIA MUST BE COVERED BY HEAVY-DUTY FILTER CLOTH (MINIMUM BIDUM A44 OR EQUIVALENT) & A MINIMUM 200mm LAYER OF EARTH OR SACRIFICIAL FILTER MEDIA. SUCH EARTH & FILTER CLOTH MUST NOT BE REMOVED FROM THE DEVICE UNTIL SUITABLE SURFACE CONDITIONS BEING ACHIEVED WITHIN THE BASIN'S CATCHMENT AREA.
12. IMMEDIATELY FOLLOWING THE CONSTRUCTION OF THE PERMANENT STORMWATER TREATMENT DEVICE AN APPROPRIATE TYPE 2 SEDIMENT TRAP MUST BE INSTALLED IN A MANNER TO PREVENT SEDIMENT INTRUSION INTO THE DEVICE.
13. THE MINIMUM SEDIMENT CONTROL STANDARD FOR THE PROTECTION OF THE PERMANENT STORMWATER TREATMENT DEVICE DURING THE CONSTRUCTION & MAINTENANCE PHASES IS A TYPE 2 SEDIMENT TRAP. (ALTERNATIVE TO ABOVE)
14. PLANT ESTABLISHMENT WITHIN THE PERMANENT STORMWATER TREATMENT DEVICE MUST BE DELAYED UNTIL SEDIMENT INTRUSION INTO THE DEVICE IS SUITABLY UNDER CONTROL.
15. UPON SUITABLE CONDITIONS BEING ACHIEVED WITHIN THE BASIN'S CATCHMENT AREA, THE OPERATIONAL FEATURES OF THE PERMANENT STORMWATER TREATMENT SYSTEM MUST BE MADE FULLY OPERATIONAL (I.E. MAINTENANCE &/OR RECONSTRUCTION AS REQUIRED).
16. THE PERMANENT STORMWATER TREATMENT FEATURES OF THE REHABILITATED BASIN MUST NOT BE MADE OPERATIONAL UNTIL ALL UP-SLOPE SITE STABILISATION MEASURES HAVE BEEN IMPLEMENTED & ARE APPROPRIATELY WORKING TO CONTROL SOIL EROSION & SEDIMENT RUNOFF IN ACCORDANCE WITH THE SPECIFIED EROSION & SEDIMENT CONTROL STANDARD. (ALTERNATIVE TO ABOVE).



SEDIMENT BASIN

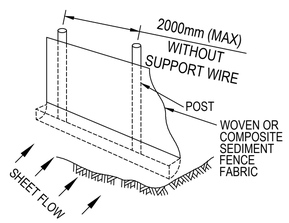


DETAILS OF SUPPORT FRAME WITH SPILL-THROUGH WEIR

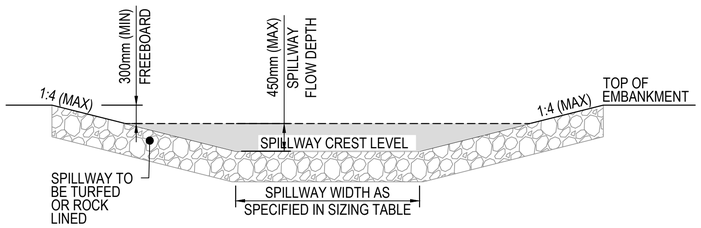


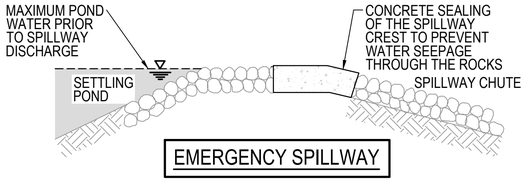
FABRIC DROP INLET PROTECTION WITH SPILL-THROUGH WEIR

FABRIC DROP INLET PROTECTION

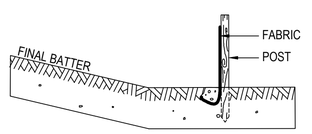


INSTALLATION WITHOUT BACKING SUPPORT

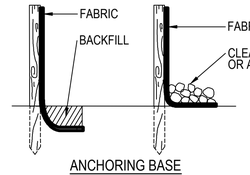




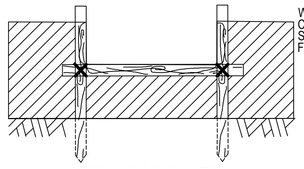
EMERGENCY SPILLWAY



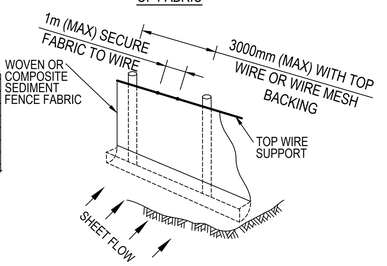
LOCATION OF FENCE RELATIVE TO BASE OF SLOPE



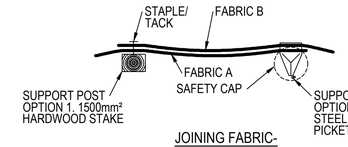
ANCHORING BASE OF FABRIC



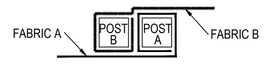
SPILL THROUGH WEIR



INSTALLATION WITH TOP WIRE SUPPORT

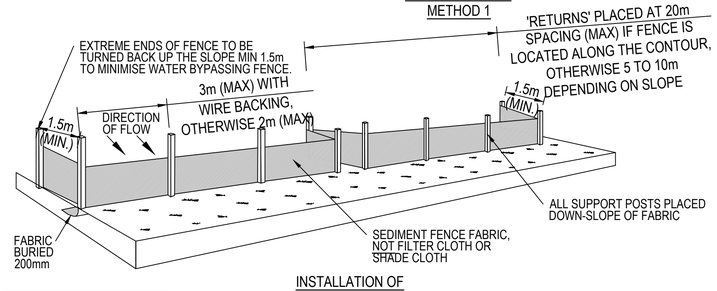


JOINING FABRIC- METHOD 2



FABRIC TO FOLD AROUND EACH STAKE ONE FULL TURN. STAKE B TO BE DRIVEN TIGHTLY AGAINST STAKE A. THE TOPS OF BOTH STAKES TO BE SECURED WITH WIRE.

JOINING FABRIC - METHOD 1



INSTALLATION OF SEDIMENT FENCE

SEDIMENT FENCE

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: EROSION AND SEDIMENT CONTROL DETAILS SHEET 3

ARCADIS
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0193

Issue: A

100mm on Original

Date Plotted: 13 Mar 2025 - 09:21AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0191-ESCNotes.dwg

FOR CONTINUATION REFER DRG-CV-0204

FOR CONTINUATION REFER DRG-CV-0202

FOR CONTINUATION REFER DRG-CV-0207

ENTERPRISE DRIVE

MT LINDESAY HWY

LOT 1

LOT 900

LOT 905

LOT 101

PROPOSED BIO-RETENTION BASIN
FOR DETAILS REFER CV-DRG-0491

PROPOSED 2.5m WIDE CONCRETE FOOTPATH, REFER IPWEAQ STD. DWG. RS-065 FOR DETAILS

REFER TYPICAL ALLOTMENT GRATED PIT ON MANHOLE CONNECTION DETAIL ON DRG-0215.

PROPOSED 1.8m WIDE CONCRETE FOOTPATH, REFER IPWEAQ STD. DWG. RS-065 FOR DETAILS.

PROPOSED 6.0m WIDE HEAVY DUTY DRIVEWAY CROSS-OVERS IN ACCORDANCE WITH IPWEAQ RS-051. CONTRACTOR TO DOWEL INTO EXISTING INTERNAL SPS DRIVEWAY WITH R24 GALVANIZED, 400 LONG BARS @ 300 CRS AND EPOXY BONDED

PROPOSED 3.0m WIDE HEAVY DUTY CONCRETE CROSSOVER 175mm DEPTH

TYPICAL BOLLARDS TO DRAINAGE LOT ALONG ROAD RESERVE - REFER LANDSCAPE ARCHITECT FOR DETAILS.

PROVIDE LOCKABLE GATE AT BOUNDARY IN ACCORDANCE WITH IPWEAQ GS-043

LOCALLY GRADE CHANNEL BASE AT MIN. 0.5% TO LOW FLOW INLET

EXISTING 900mm CONCRETE INVERT CHANNEL

FUTURE ROAD EXTENSION TO MT LINDESAY HWY SERVICE ROAD COMPLETED UNDER SEPARATE APPLICATION.

REFER DETAIL 'B' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

HYDROMULCHING TO STABILIZE WORKS. CHANNEL SUBJECT TO FINAL LANDSCAPE ARCHITECT SPECIFICATION

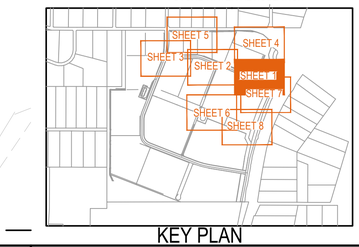
REFER DETAIL 'A' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

EXTEND EXISTING 900mm CONCRETE INVERT CHANNEL TO MATCH NEW INLET HEADWALL

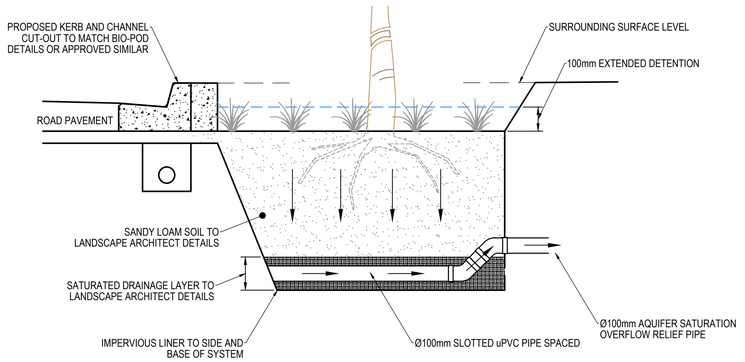
REFER DETAIL 'C' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- 1/A1 PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- SWD PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- S PROPOSED SEWER RETICULATION
- W PROPOSED WATER RETICULATION
- POWERLINK EASEMENT
- 1/A1 EXISTING STORMWATER DRAINAGE STRUCTURE NAME
- swd EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- s EXISTING SEWER RETICULATION
- w EXISTING WATER RETICULATION
- oh EXISTING OVERHEAD ELECTRICAL RETICULATION
- 1/A1 FUTURE STORMWATER DRAINAGE STRUCTURE NAME
- FUTSWD FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTS FUTURE SEWER RETICULATION
- FUTW FUTURE WATER RETICULATION



KEY PLAN



NOTE: TYPICAL DETAIL ONLY REFER TO LANDSCAPE ARCHITECT FOR DETAILS AND SPECIFICATIONS.

LANDSCAPE POD TYPICAL DETAIL
NTS

Issue	Description	DR	CH	VE	Date
H	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O	S.S.	B.K	10.03.25
G	UPDATED SWD STRUCTURES AND 2/15 SAFETY UPDATE	A.O.	S.S.	B.K.	18.10.24
F	UPDATED SWD STRUCTURES AND SEWER LINE	A.O.	S.S.	B.K.	03.09.24
E	UPDATED LAYOUT	A.O.	S.S.	B.K.	01.08.24
D	UPDATED LAYOUT TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
C	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 1

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www.arcadis.com/au

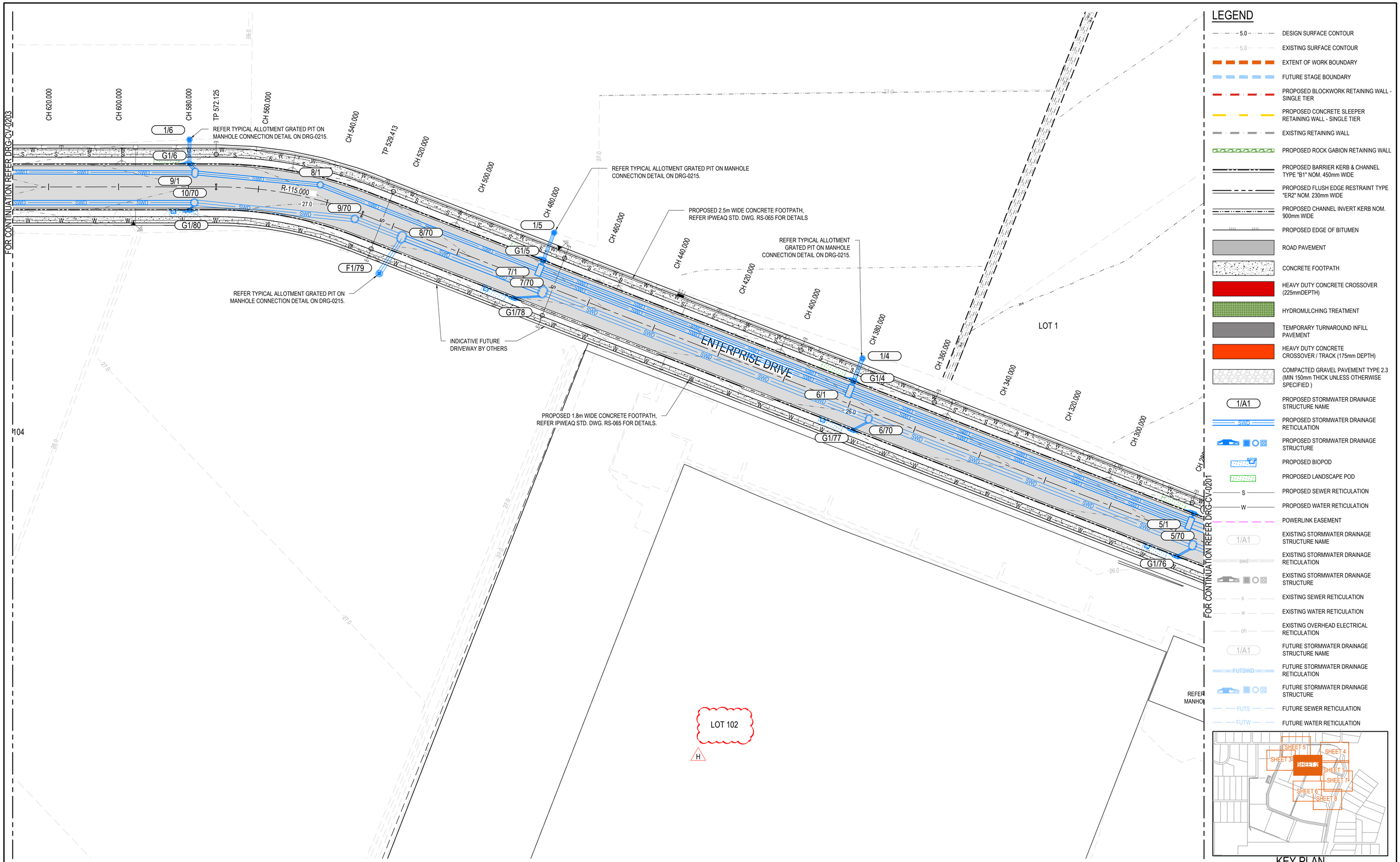
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0201

Issue: H

100mm on Original

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- PROPOSED SEWER RETICULATION
- PROPOSED WATER RETICULATION
- POWERLINK EASEMENT
- EXISTING STORMWATER DRAINAGE STRUCTURE NAME
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- EXISTING SEWER RETICULATION
- EXISTING WATER RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE NAME
- FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTURE SEWER RETICULATION
- FUTURE WATER RETICULATION

KEY PLAN

Issue	Description	DR	CH	VE	Date
H	UPDATED BOUNDARIES AND LOT NUMBERS	A.O	S.S.	B.K	10.03.25
G	UPDATED SWD LAYOUT AND DRIVEWAYS	A.O.	S.S.	B.K.	18.10.24
F	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
E	UPDATED LAYOUT, CROSSOVER REMOVED	A.O.	S.S.	B.K.	15.07.24
D	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
C	PCN17 AMENDMENTS TO SWD LINES 60, 65 & 79	G.P.	T.F.	G.E.	25.06.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 2

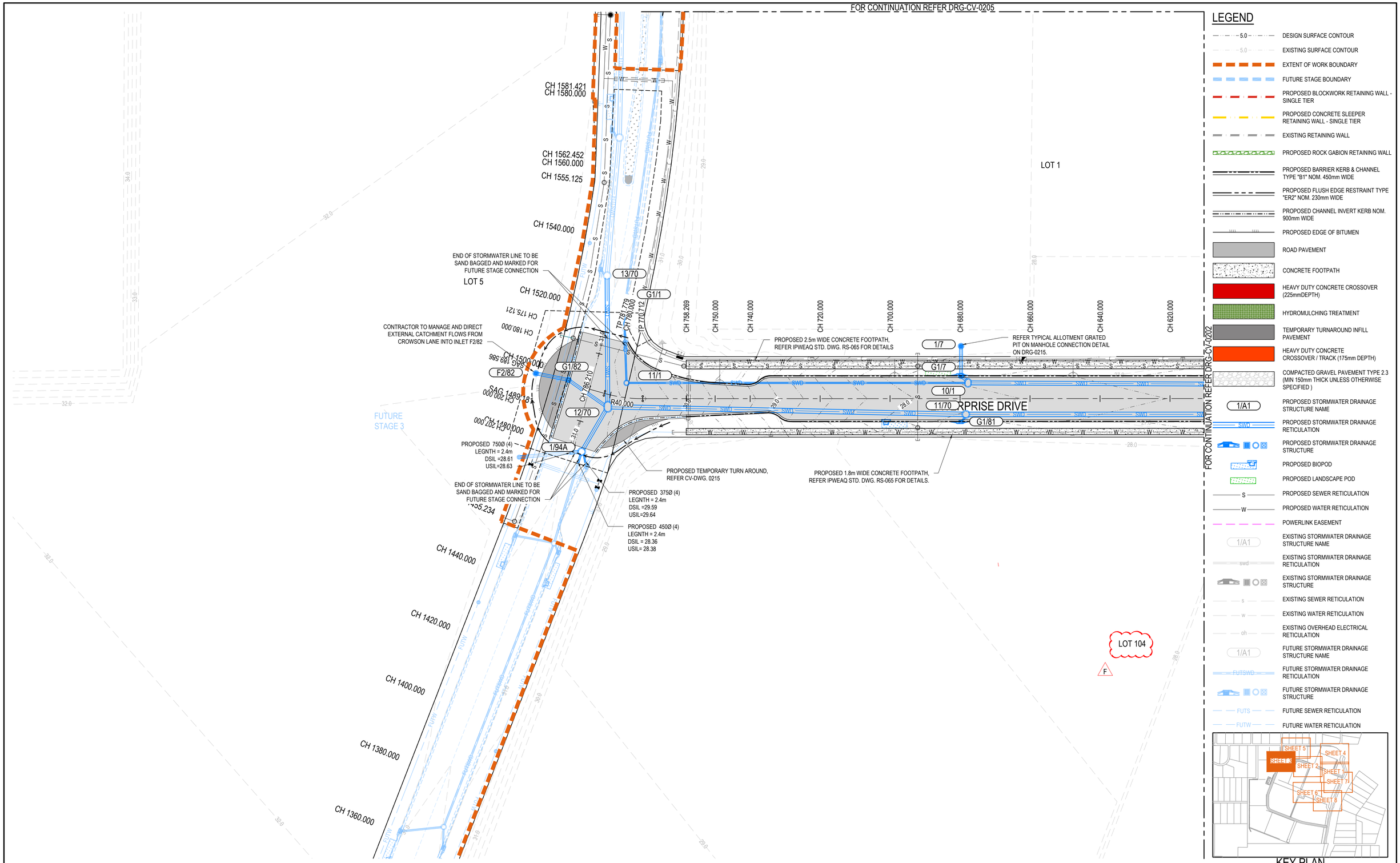
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www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0202

Issue: H

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg



Issue	Description	DR	CH	VE	Date
F	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
E	UPDATED DRIVEWAYS	A.O.	S.S.	B.K.	18.10.24
D	SWD STRUCTURE TO BE CONSTRUCTED	A.O.	S.S.	G.E.	03.09.24
C	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 3

ARCADIS

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0203

Issue: F

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg

FOR CONTINUATION REFER DRG-CV-0205 INSET 'A'

CROWSON LANE

2 0215 | 3 0215 | 4 0215 | 5 0215

8/8 | 7/8 | 6/8 | 5/8 | 4/8 | 3/8 | 2/9 | 1/9 | F1/16 | F1/9

TEMPORARY BUND MAX BATTERS. TOP RL 29.10

OPEN DRAIN TO BE TURFED UNDER BEW WORKS.

CHANNEL GRADE: 0.5% VELOCITY AT CAPACITY: 1.70 (m/s)

REFER TO DWG 0483 FOR STRUCTURE 8/8.

CHANNEL GRADE: 0.5% VELOCITY AT CAPACITY: 0.50 (m/s)

EXISTING 4.0m WIDE TURFED DIVERSION DRAIN TO FOLLOW EXISTING SURFACE PROFILE AT TOE OF BATTER. MAINTAIN 0.5% MIN FREE-DRAINING.

SWALE TO BE STONE PITCHED AS VELOCITY EXCEEDS 1.5m/s

CHANNEL GRADE: 3% VELOCITY AT CAPACITY: 1.70 (m/s)

6.00m EASEMENT OVER STORMWATER LINE.

0.5m HIGH TEMPORARY BUND WITH 1 IN 2 BATTERS

EXISTING TYPICAL 3.0m WIDE TURFED DIVERSION DRAIN TO FOLLOW EXISTING SURFACE PROFILE AT TOP OF BATTER. MAINTAIN 0.5% MIN FREE-DRAINING.

SWALE TO BE STONE PITCHED AS VELOCITY EXCEEDS 1.5m/s

0.5m HIGH TEMPORARY BUND WITH 1 IN 2 BATTERS

CHANNEL GRADE: 6% VELOCITY AT 50yr STORM EVENT : 2.42 (m/s)

0.5m HIGH TEMPORARY BUND WITH 1 IN 2 BATTERS

REFER TYPICAL ALLOTMENT GRATED PIT ON MANHOLE CONNECTION DETAIL ON DRG-0215.

SWD LINE 1/8A(Q3 MONTH BYPASS)

CONTRACTOR TO INSTALL NO-RETURN VALVE TO SUIT PROPOSED 0.45m RCP

FOR CONTINUATION REFER DRG-CV-0201

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- PROPOSED STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- PROPOSED STORMWATER DRAINAGE RETICULATION (SWD)
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- PROPOSED SEWER RETICULATION (S)
- PROPOSED WATER RETICULATION (W)
- POWERLINK EASEMENT
- EXISTING STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- EXISTING STORMWATER DRAINAGE RETICULATION (swd)
- EXISTING STORMWATER DRAINAGE STRUCTURE
- EXISTING SEWER RETICULATION (s)
- EXISTING WATER RETICULATION (w)
- EXISTING OVERHEAD ELECTRICAL RETICULATION (oh)
- FUTURE STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- FUTURE STORMWATER DRAINAGE RETICULATION (FUTSWD)
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTURE SEWER RETICULATION (FUTS)
- FUTURE WATER RETICULATION (FUTW)

KEY PLAN

SHEET 1 | SHEET 2 | SHEET 3 | SHEET 4 | SHEET 5 | SHEET 6 | SHEET 7 | SHEET 8

Issue	Description	DR	CH	VE	Date
F	UPDATED SWD ALIGNMENT	A.O.	S.S.	B.K.	03.09.24
E	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
D	UPDATED LAYOUT	A.O.	S.S.	B.K.	01.08.24
C	UPDATED LAYOUT TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 4

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0204

Issue: F

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg

19
RP177477

18
RP177477

17
RP177477

16
RP177477

CROWSON LANE

LOT 1

EXISTING TYPICAL 4.5m WIDE TURFED DIVERSION DRAIN TO FOLLOW EXISTING SURFACE PROFILE AT TOE OF BATTER. MAINTAIN 0.5% MIN FREE-DRAINING.

CHANNEL GRADE: 0.5%
VELOCITY AT CAPACITY: 0.75 (m/s)

1.0m HIGH TEMPORARY BUND WITH 1 IN 2 MAX BATTERS. TOP OF BUND RL 29.10

FOR CONTINUATION REFER INSET 'A'

FOR CONTINUATION REFER DRG-CV-0203

FOR CONTINUATION REFER DRG-CV-0204

FOR CONTINUATION REFER DRG-CV-0205

1
0215

1.0m HIGH TEMPORARY BUND WITH 1 IN 2 MAX BATTERS. TOP OF BUND RL 29.10

INSET 'A'
1 : 500

KEY PLAN

SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- PROPOSED SEWER RETICULATION
- PROPOSED WATER RETICULATION
- POWERLINK EASEMENT
- EXISTING STORMWATER DRAINAGE STRUCTURE NAME
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- EXISTING SEWER RETICULATION
- EXISTING WATER RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE NAME
- FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTURE SEWER RETICULATION
- FUTURE WATER RETICULATION

Issue	Description	DR	CH	VE	Date
D	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
C	UPDATED DESIGN	A.O.	S.S.	B.K.	03.09.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status
FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project
FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title
ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 5

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0205

Issue: D

100mm on Original

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg

FOR CONTINUATION REFER DRG-CV-0202

TOWER SURROUNDS
100mm THICK

CONTRACTOR TO ENSURE THAT
TOWER AREA AND SURROUNDS ARE
FREE DRAINING WITH NO PONDING

REFER TYPICAL ALLOTMENT GRATED PIT ON
MANHOLE CONNECTION DETAIL ON DRG-0215.
ENSURE MIN 0.55m PONDING DEPTH

CONTRACTOR TO PROOF ROLL
POWERLINK TOWER MAINTENANCE
ACCESS TRACK SUBGRADE IN PRESENCE
OF SUPERVISING ENGINEER PRIOR TO
INSTALLATION OF COMPACTED GRAVEL

DRAINAGE FLOOR AREA
100mm THICK

REFER TYPICAL ALLOTMENT GRATED PIT ON
MANHOLE CONNECTION DETAIL ON DRG-0215.

JOIN TO EXISTING STUB

225 DIA PVC

JOIN TO EXISTING STUB

F1/60
4/60
3/60
F1/61
2/65
3/65
2/60
1/65
1/60
H

FUTURE
STAGE 2

6m

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- PROPOSED STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- PROPOSED STORMWATER DRAINAGE RETICULATION (SWD)
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- PROPOSED SEWER RETICULATION (S)
- PROPOSED WATER RETICULATION (W)
- POWERLINK EASEMENT
- EXISTING STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- EXISTING STORMWATER DRAINAGE RETICULATION (swd)
- EXISTING STORMWATER DRAINAGE STRUCTURE
- EXISTING SEWER RETICULATION (s)
- EXISTING WATER RETICULATION (w)
- EXISTING OVERHEAD ELECTRICAL RETICULATION (oh)
- FUTURE STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- FUTURE STORMWATER DRAINAGE RETICULATION (FUTSWD)
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTURE SEWER RETICULATION (FUTS)
- FUTURE WATER RETICULATION (FUTW)

FOR CONTINUATION REFER DRG-CV-0208

KEY PLAN
SHEET 1, SHEET 2, SHEET 3, SHEET 4, SHEET 5, SHEET 6, SHEET 7, SHEET 8

Issue	Description	DR	CH	VE	Date
H	UPDATED SWD - NEW F1/61 SUMP LINE	A.O.	S.S.	B.K	28.03.25
G	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
F	UPDATED LAYOUT	A.O.	S.S.	B.K.	01.08.24
E	UPDATED LAYOUT	A.O.	S.S.	B.K.	15.07.24
D	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
C	PCN17 AMENDMENTS TO SWD LINES 60, 65 & 79	G.P.	T.F.	G.E.	25.06.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 04.04.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 6

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0206 | Issue: H

Date Plotted: 4 Apr 2025 - 03:10PM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg

FOR CONTINUATION REFER DRG-CV-0201

FOR CONTINUATION REFER DRG-CV-0208

PROPOSED 1.8m WIDE CONCRETE FOOTHPATH, REFER IPWEAQ STD. DWG. RS-065 FOR DETAILS.

PROPOSED 6.0m WIDE HEAVY DUTY DRIVEWAY CROSS-OVERS IN ACCORDANCE WITH IPWEAQ RS-051. CONTRACTOR TO DOWEL INTO EXISTING INTERNAL SPS DRIVEWAY WITH R24 GALVANIZED, 400 LONG BARS @ 300 CRS AND EPOXY BONDED

REFER TYPICAL ALLOTMENT GRATED PIT ON MANHOLE CONNECTION DETAIL ON DRG-0215.

PROPOSED 3.0m WIDE HEAVY DUTY CONCRETE CROSSOVER 175mm DEPTH

TYPICAL BOLLARDS TO DRAINAGE LOT ALONG ROAD RESERVE - REFER LANDSCAPE ARCHITECT FOR DETAILS.

PROVIDE LOCKABLE GATE AT BOUNDARY IN ACCORDANCE WITH IPWEAQ GS-043

LOCALLY GRADE CHANNEL BASE AT MIN. 0.5% TO LOW FLOW INLET

REFER TYPICAL ALLOTMENT GRATED PIT ON MANHOLE CONNECTION DETAIL ON DRG-0215.

EXISTING 900mm CONCRETE INVERT CHANNEL

REFER DETAIL 'C' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

FUTURE ROAD EXTENSION TO MT LINDESAY HWY SERVICE ROAD COMPLETED UNDER SEPARATE APPLICATION.

REFER DETAIL 'B' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

HYDROMULCHING TO STABILIZE WORKS. CHANNEL SUBJECT TO FINAL LANDSCAPE ARCHITECT SPECIFICATION

REFER DETAIL 'A' ON DRG 0209 FOR OUTLET DETAILS AND SETOUT.

EXTEND EXISTING 900mm CONCRETE INVERT CHANNEL TO MATCH NEW INLET HEADWALL

HYDROMULCHING TO STABILIZE WORKS. CHANNEL SUBJECT TO FINAL LANDSCAPE ARCHITECT SPECIFICATION

LOT 101

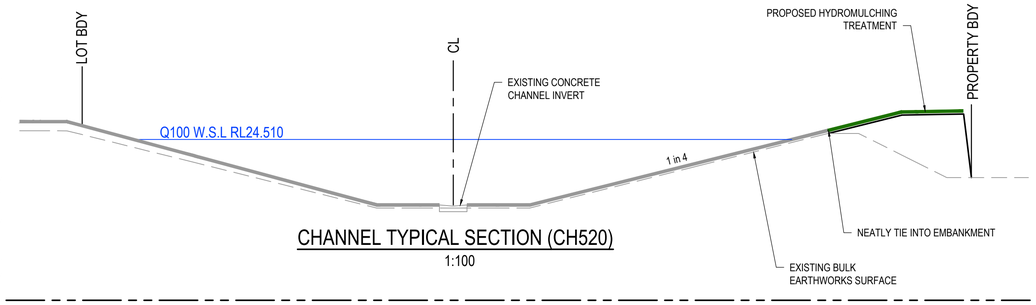
LOT 103

MT LINDESAY HWY

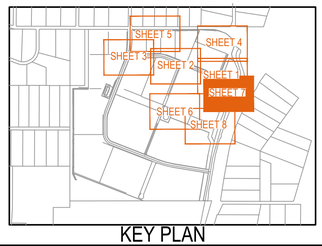
Wall 8

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- EXISTING RETAINING WALL
- PROPOSED ROCK GABION RETAINING WALL
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1" NOM. 450mm WIDE
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2" NOM. 230mm WIDE
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- HYDROMULCHING TREATMENT
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)
- COMPACTED GRAVEL PAVEMENT TYPE 2.3 (MIN 150mm THICK UNLESS OTHERWISE SPECIFIED)
- 1/A1 — PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- SWD — PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- PROPOSED BIOPOD
- PROPOSED LANDSCAPE POD
- S — PROPOSED SEWER RETICULATION
- W — PROPOSED WATER RETICULATION
- POWERLINK EASEMENT
- 1/A1 — EXISTING STORMWATER DRAINAGE STRUCTURE NAME
- swd — EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- s — EXISTING SEWER RETICULATION
- w — EXISTING WATER RETICULATION
- oh — EXISTING OVERHEAD ELECTRICAL RETICULATION
- 1/A1 — FUTURE STORMWATER DRAINAGE STRUCTURE NAME
- FUTSWD — FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTS — FUTURE SEWER RETICULATION
- FUTW — FUTURE WATER RETICULATION



CHANNEL TYPICAL SECTION (CH520)
1:100



KEY PLAN

Issue	Description	DR	CH	VE	Date
F	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
E	STRUCTURE 2/15 SAFETY UPDATE	A.O.	S.S.	B.K.	18.10.24
D	UPDATED LAYOUT, SWD LINE 15 UPDATED	A.O.	S.S.	B.K.	15.07.24
C	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m
1 : 500

0 1 2 4 6 8 10m
1 : 100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 7

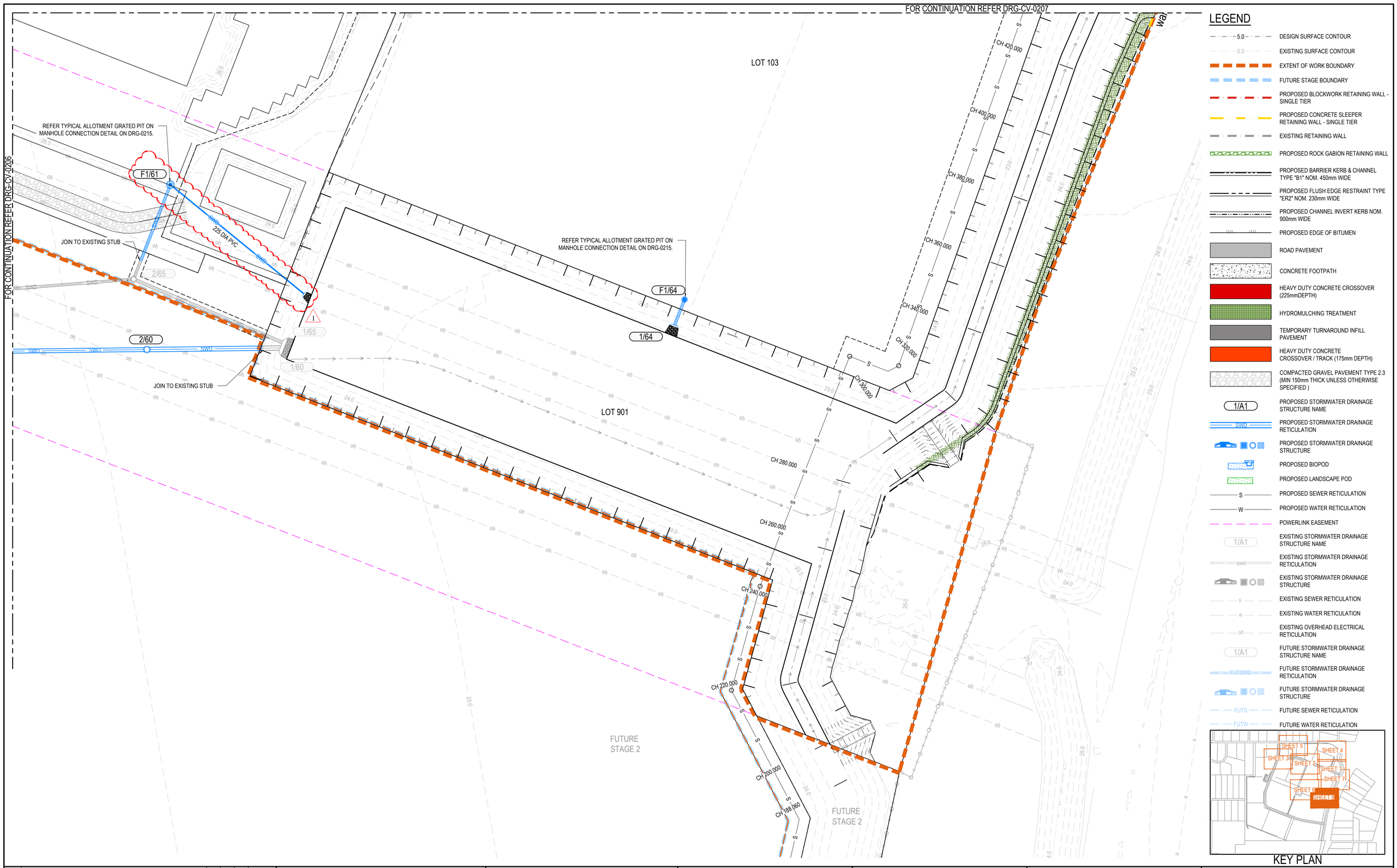
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0207

Issue: F

Date Plotted: 13 Mar 2025 - 09:37AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0201-CivilWorksPlan.dwg



Issue	Description	DR	CH	VE	Date
I	UPDATED SWD - NEW F1/61 SUMP LINE	A.O.	S.S.	B.K	28.03.25
H	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K	10.03.25
G	SEWER LINE 4 ADDED	A.O.	S.S.	B.K.	03.09.24
F	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
E	UPDATED LAYOUT	A.O.	S.S.	B.K.	15.07.24
D	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
C	PCN17 AMENDMENTS TO SWD LINES 60, 65 & 79	G.P.	T.F.	G.E.	25.06.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

0 5 10 15 20 25m

1 : 250

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 04.04.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 8

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289

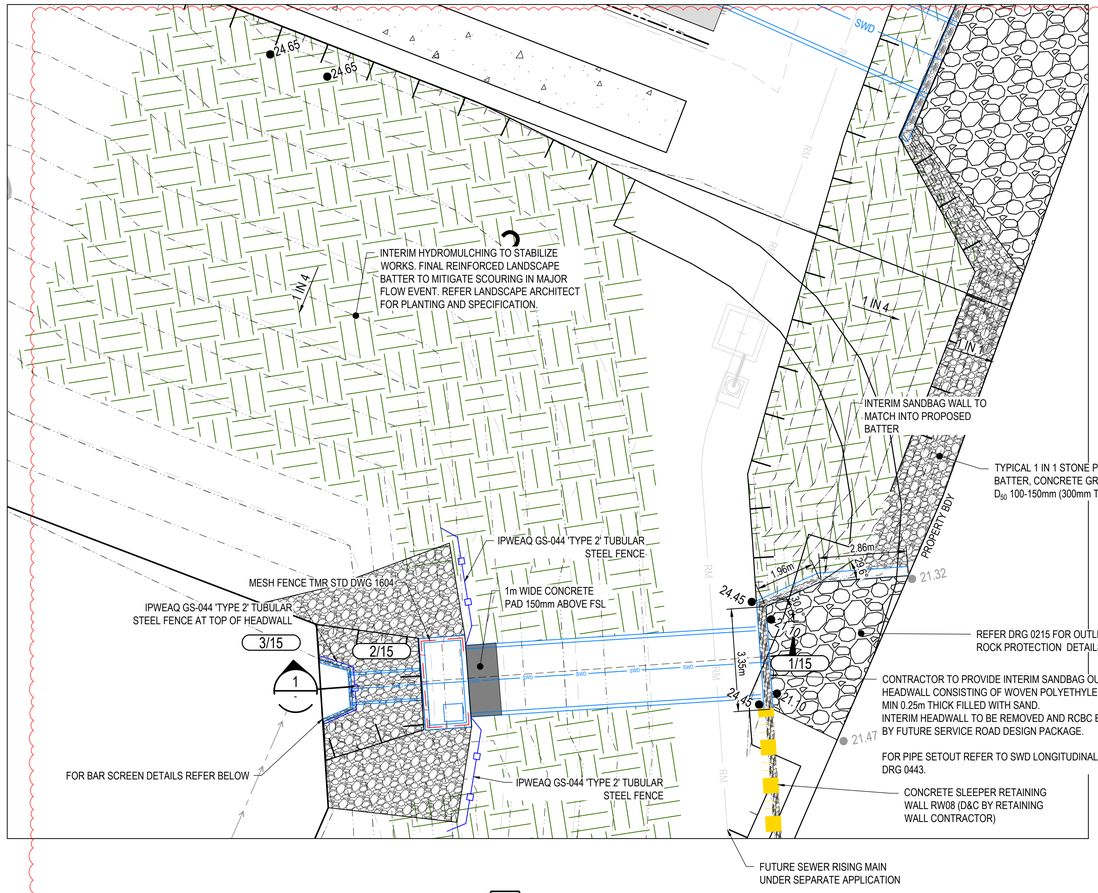
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

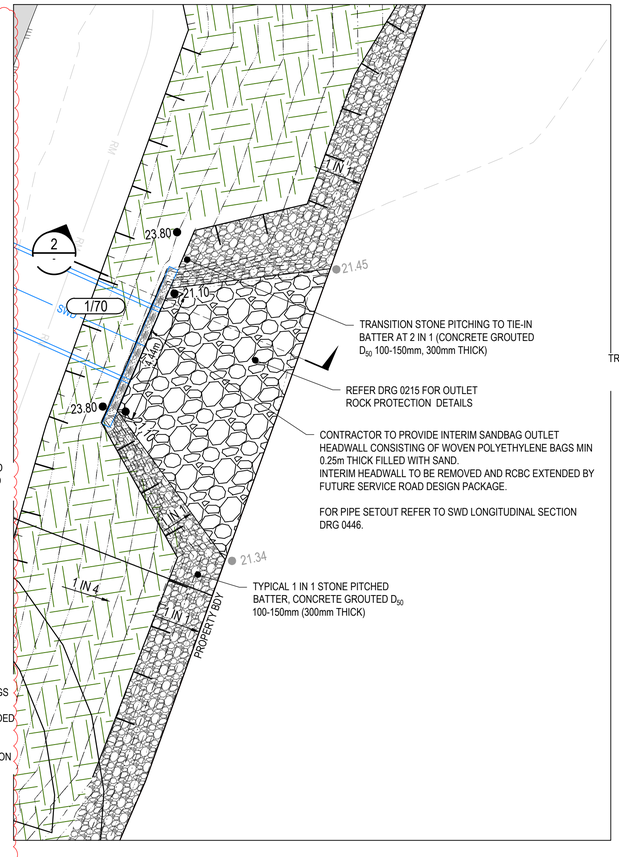
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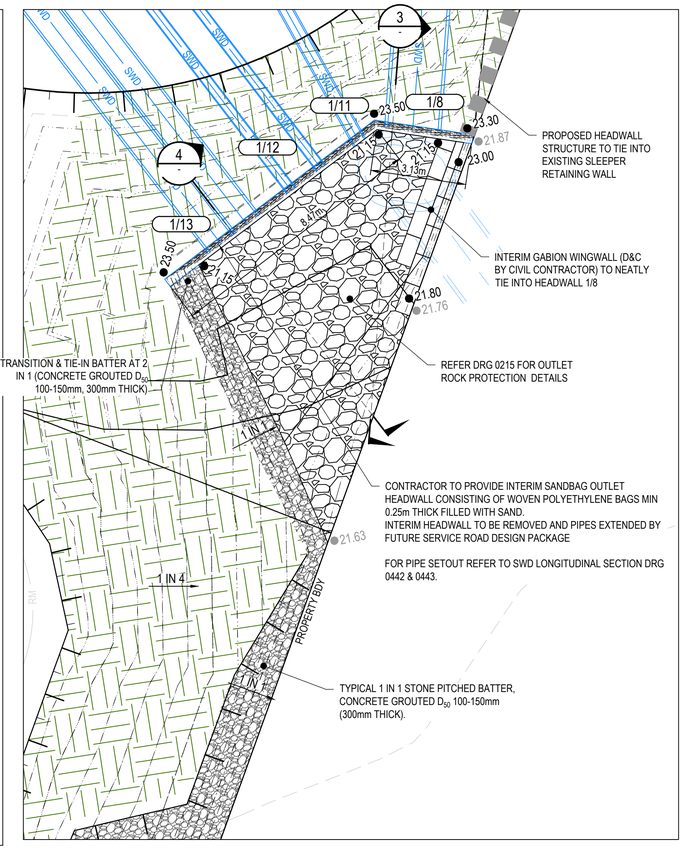
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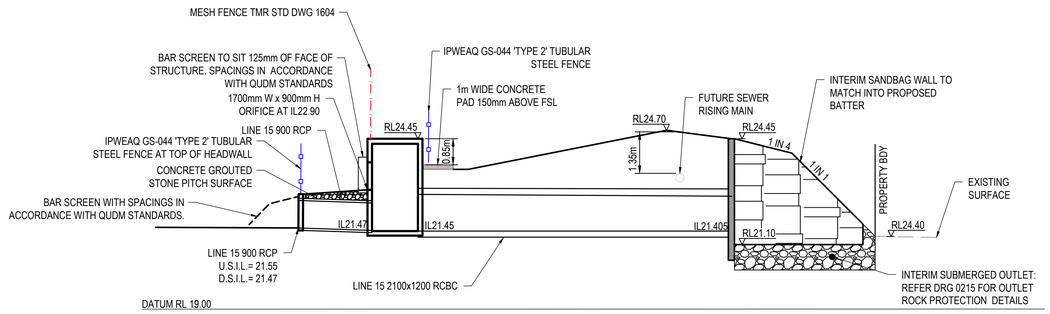
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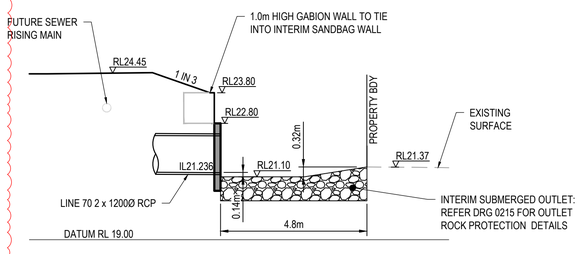
DETAIL B 0201
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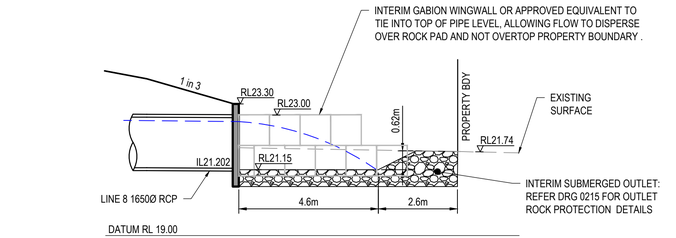
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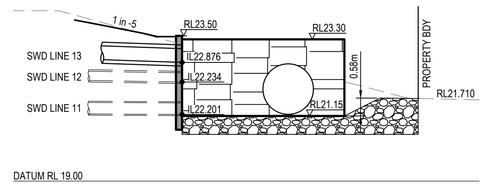
SECTION 1
1 : 100



SECTION 2
1 : 100



SECTION 3
1 : 100



SECTION 4
1 : 100

E

Issue	Description	DR	CH	VE	Date
E	STRUCTURE 2/15 AND SECTION 1 AMENDED	A.O.	S.S.	B.K.	18.10.24
D	UPDATED DETAILS AND SECTION	A.O.	S.S.	B.K.	15.07.24
C	AMENDMENTS TO SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
B	SEEDED TREATMENT AMENDED TO HYDROMULCH	J.B.	T.F.	G.E.	19.03.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales
0 5 10 20 30 40 50m
1 : 500
0 1 2 4 6 8 10m
1 : 100

Surveyor
WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client
Charter Hall

Status
FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project
FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title
STORMWATER OUTLET DETAILS LAYOUT PLAN

ARCADIS
Arcadis Australia Pacific Pty Limited
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ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

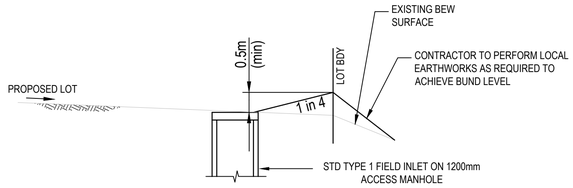
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0209

Issue: E

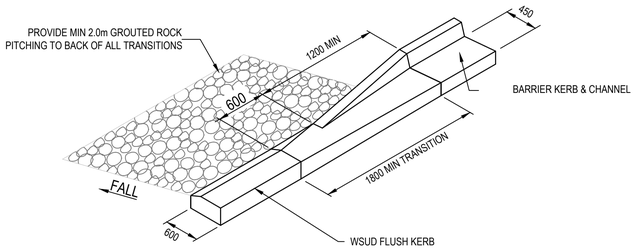
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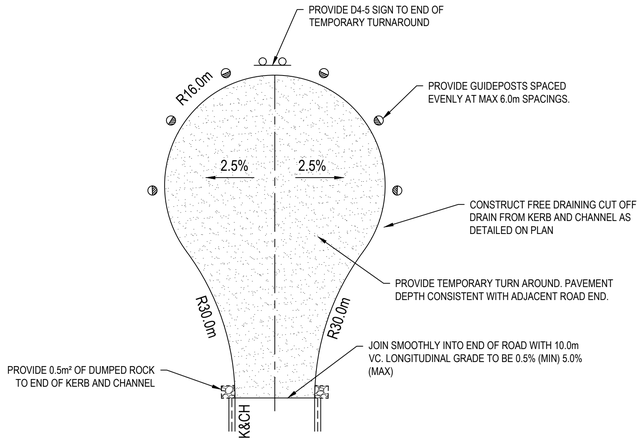
TYPICAL ALLOTMENT FIELD INLET ON MANHOLE CONNECTION DETAIL

SCALE 1:100



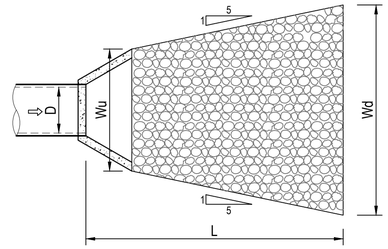
KERB TRANSITION DETAIL

SCALE 1:25



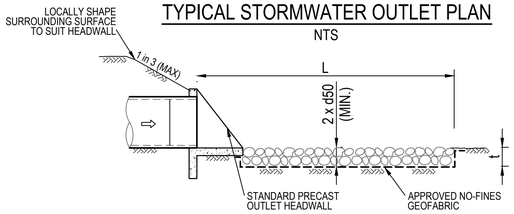
TYPICAL TEMPORARY TURN AROUND DETAIL

NOT TO SCALE



TYPICAL STORMWATER OUTLET PLAN

NTS



TYPICAL STORMWATER OUTLET SECTION

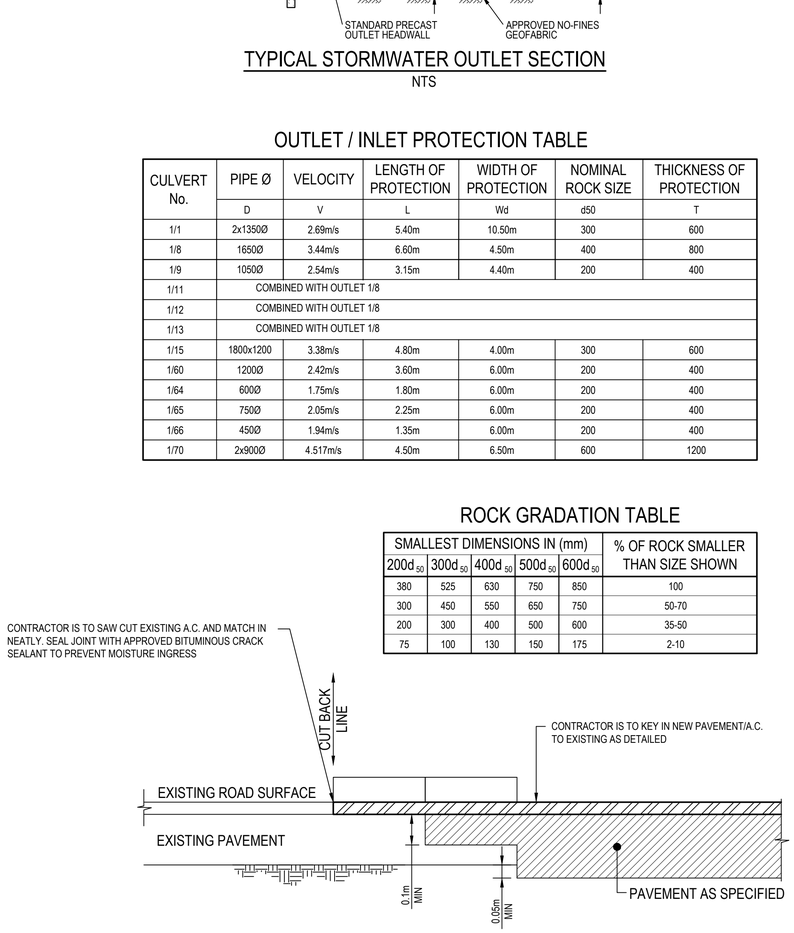
NTS

OUTLET / INLET PROTECTION TABLE

CULVERT No.	PIPE Ø	VELOCITY	LENGTH OF PROTECTION	WIDTH OF PROTECTION	NOMINAL ROCK SIZE	THICKNESS OF PROTECTION
	D	V	L	Wd	d50	T
1/1	2x1350Ø	2.69m/s	5.40m	10.50m	300	600
1/8	1650Ø	3.44m/s	6.60m	4.50m	400	800
1/9	1050Ø	2.54m/s	3.15m	4.40m	200	400
1/11	COMBINED WITH OUTLET 1/8					
1/12	COMBINED WITH OUTLET 1/8					
1/13	COMBINED WITH OUTLET 1/8					
1/15	1800x1200	3.38m/s	4.80m	4.00m	300	600
1/60	1200Ø	2.42m/s	3.60m	6.00m	200	400
1/64	600Ø	1.75m/s	1.80m	6.00m	200	400
1/65	750Ø	2.05m/s	2.25m	6.00m	200	400
1/66	450Ø	1.94m/s	1.35m	6.00m	200	400
1/70	2x900Ø	4.517m/s	4.50m	6.50m	600	1200

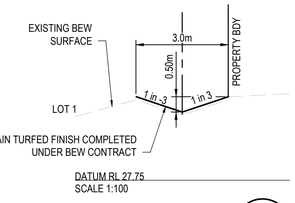
ROCK GRADATION TABLE

SMALLEST DIMENSIONS IN (mm)					% OF ROCK SMALLER THAN SIZE SHOWN
$200d_{50}$	$300d_{50}$	$400d_{50}$	$500d_{50}$	$600d_{50}$	
380	525	630	750	850	100
300	450	550	650	750	50-70
200	300	400	500	600	35-50
75	100	130	150	175	2-10

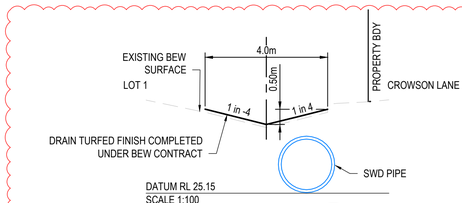


CONNECTION TO EXISTING PAVEMENT

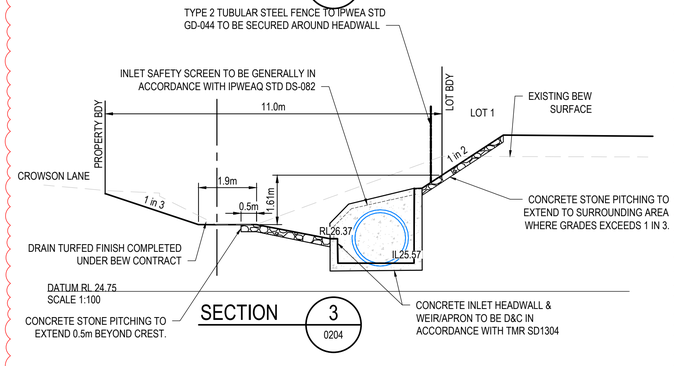
TYPICAL DETAIL
SHOWING LONGITUDINAL CONSTRUCTION DETAIL FOR CONNECTION TO EXISTING PAVEMENT/A.C.
N.T.S



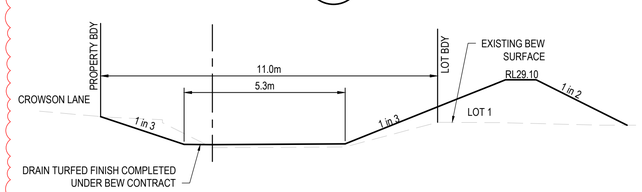
SECTION 5 / 0204



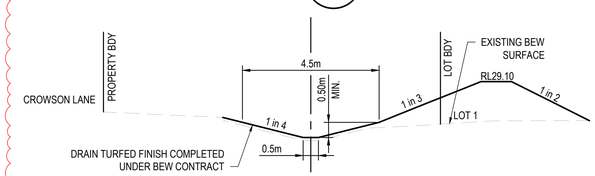
SECTION 4 / 0204



SECTION 3 / 0204



SECTION 2 / 0204



SECTION 1 / 0205

F

Issue	Description	DR	CH	VE	Date
F	SECTIONS UPDATED	A.O.	S.S.	B.K.	03.09.24
E	UPDATED NOTE	A.O.	S.S.	B.K.	09.08.24
D	SECTIONS UPDATED	A.O.	S.S.	B.K.	01.08.24
C	DETAIL UPDATED, CULVERT 1/14 REMOVED FROM TABLE	A.O.	S.S.	B.K.	15.07.24
B	DETAIL UPDATED	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 1 2 4 6 8 10m

1 : 100

0 0.5 1 1.5 2 2.5m

1 : 25

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROADWORKS AND DRAINAGE DETAILS

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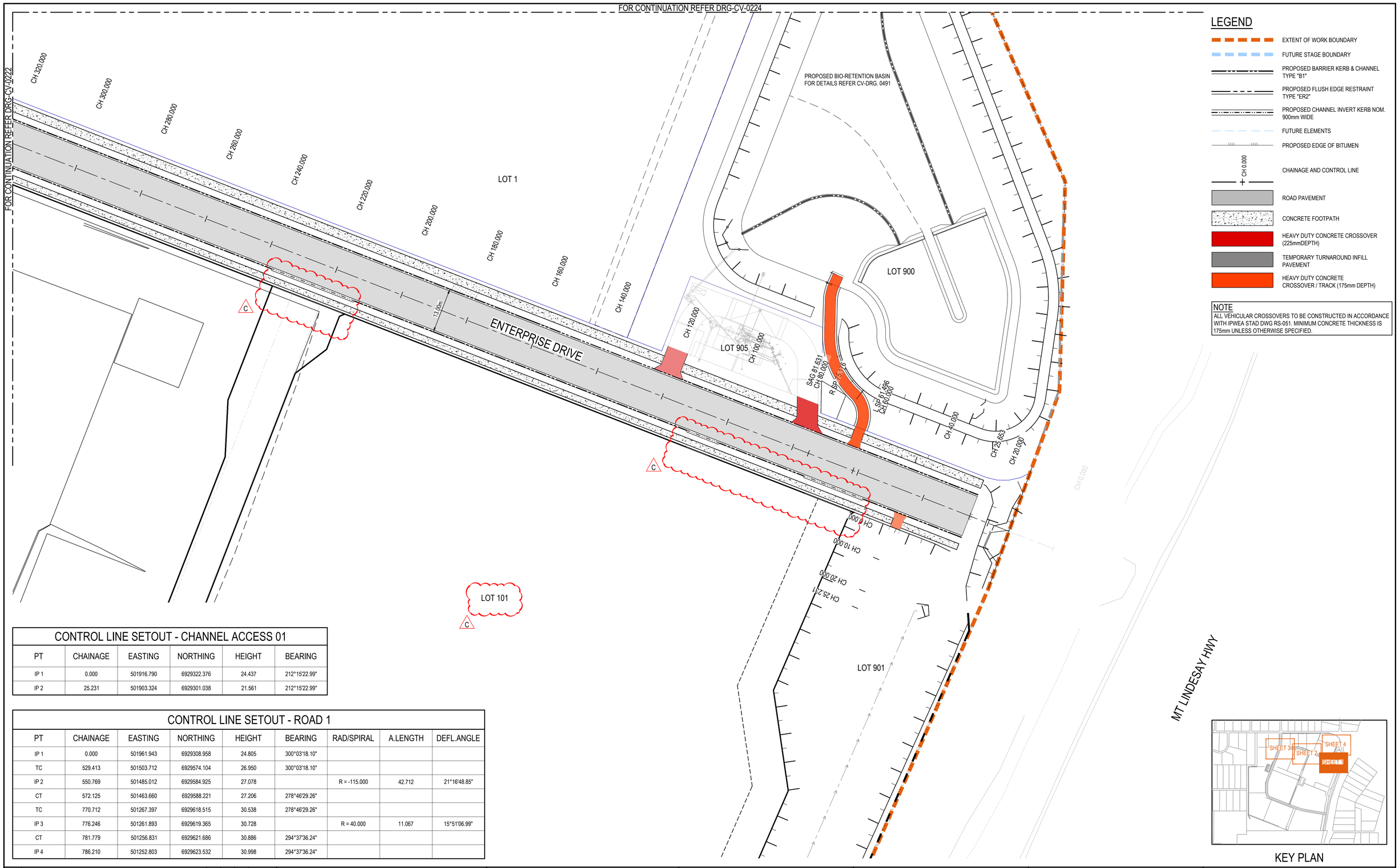
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0215

Issue: F

100mm on Original

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LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- CH 0.000 — CHAINAGE AND CONTROL LINE
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.

CONTROL LINE SETOUT - CHANNEL ACCESS 01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	501916.790	6929322.376	24.437	212°15'22.99"
IP 2	25.231	501903.324	6929301.038	21.561	212°15'22.99"

CONTROL LINE SETOUT - ROAD 1

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	501961.943	6929308.958	24.805	300°03'18.10"			
TC	529.413	501503.712	6929574.104	26.950	300°03'18.10"			
IP 2	550.769	501485.012	6929584.925	27.078		R = -115.000	42.712	21°16'48.85"
CT	572.125	501463.660	6929588.221	27.206	278°46'29.26"			
TC	770.712	501267.397	6929618.515	30.538	278°46'29.26"			
IP 3	776.246	501261.893	6929619.365	30.728		R = 40.000	11.067	15°51'06.99"
CT	781.779	501256.831	6929621.686	30.886	294°37'36.24"			
IP 4	786.210	501252.803	6929623.532	30.998	294°37'36.24"			

KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
B	LAYOUT UPDATED TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: CONTROL LINE SETOUT PLAN SHEET 1

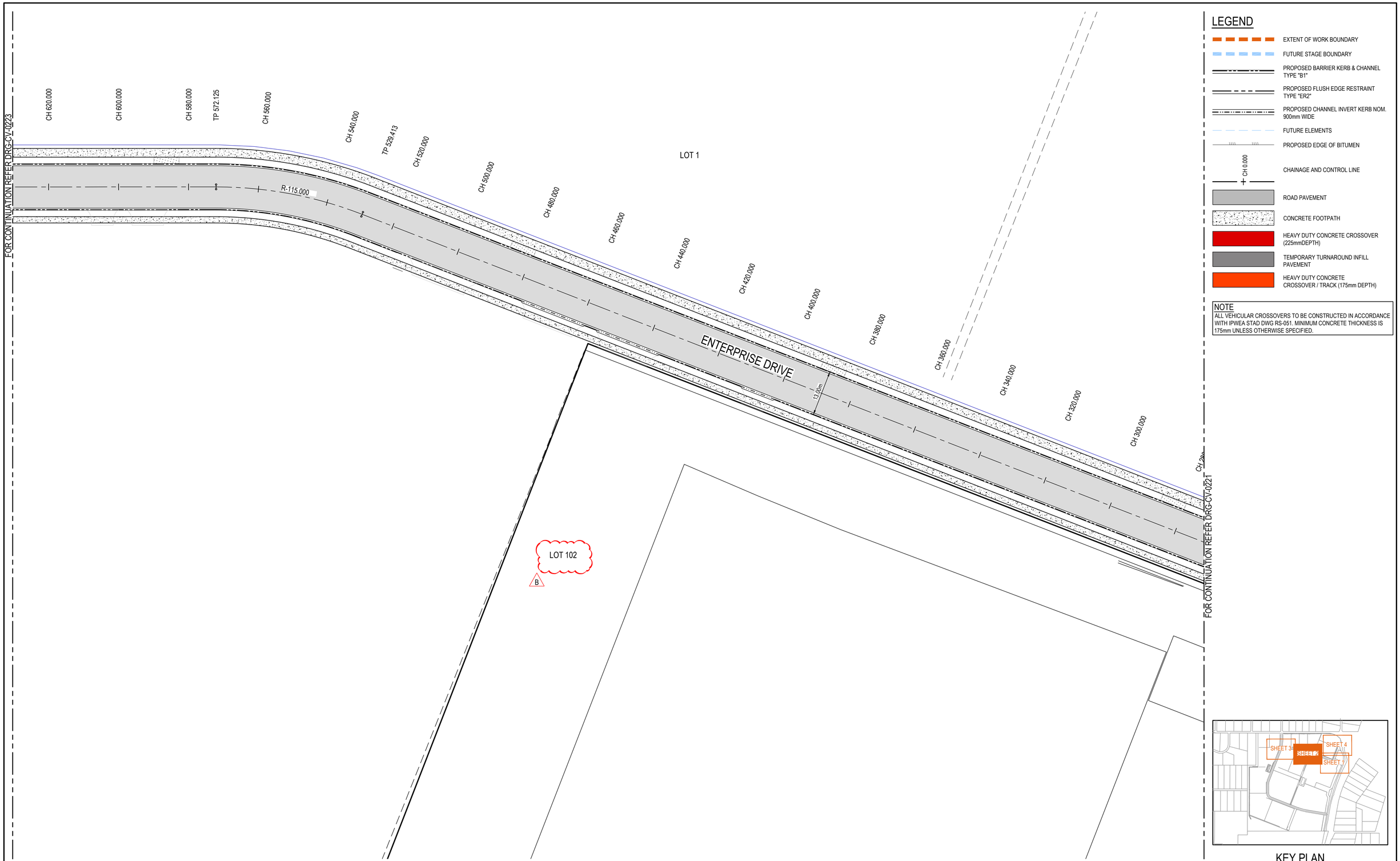
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0221 | Issue: C

100mm on Original

Date Plotted: 13 Mar 2025 - 09:48AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0221-ControlSetoutPlan.dwg



LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- CH 0.000 — CHAINAGE AND CONTROL LINE
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.

KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K	10.03.25
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: CONTROL LINE SETOUT PLAN SHEET 2

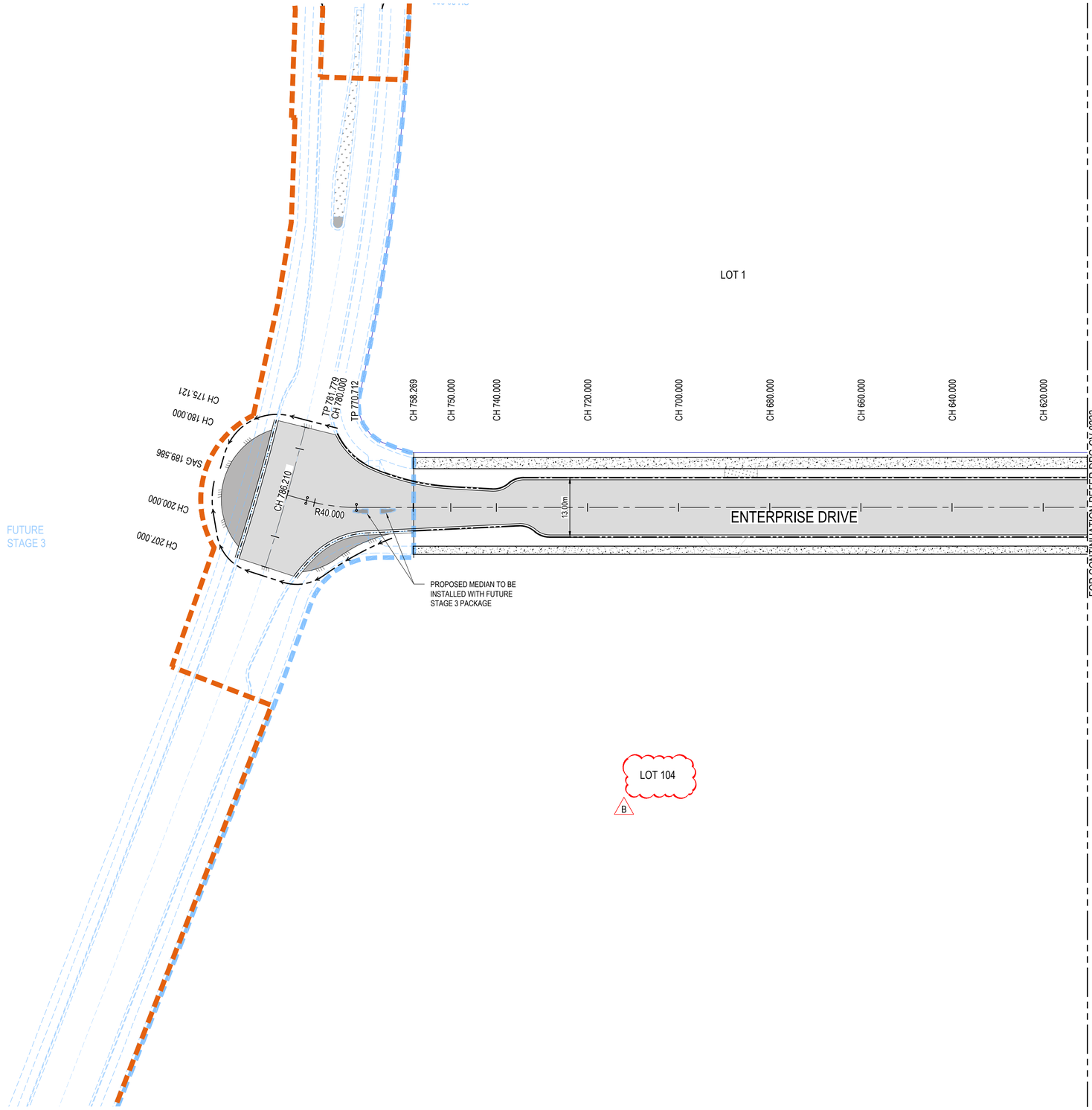
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0222

Issue: B

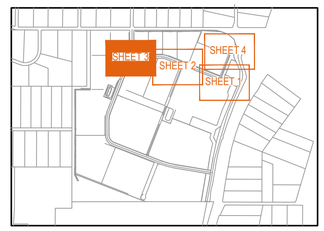
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LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- CH 0.000 — CHAINAGE AND CONTROL LINE
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- TEMPORARY TURNAROUND INFILL PAVEMENT
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.



KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales
0 5 10 20 30 40 50m
1 : 500

Surveyor
WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client
Charter Hall

Status
FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project
FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title
CONTROL LINE SETOUT PLAN SHEET 3

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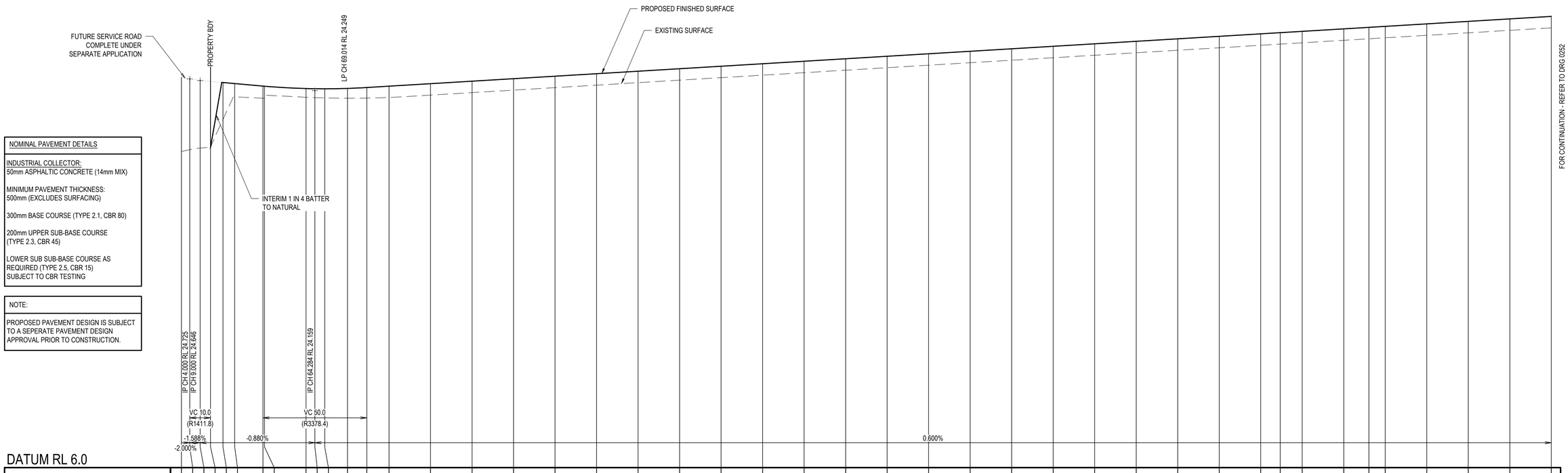
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0223

Issue: B

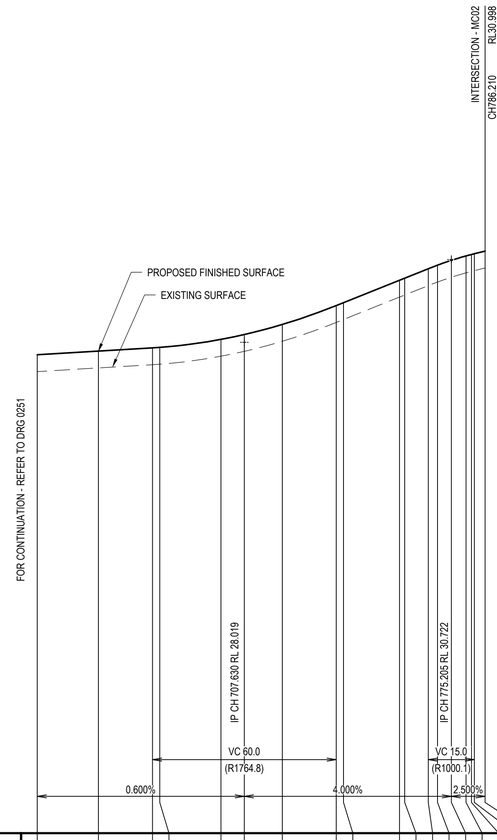
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Date Plotted: 13 Mar 2025 - 09:49AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0221-ControlSetoutPlan.dwg


FUTURE SERVICE ROAD
COMPLETE UNDER
SEPARATE APPLICATION
PROPERTY BDY
LP CH 69.014 RL 24.249
PROPOSED FINISHED SURFACE
EXISTING SURFACE
INTERIM 1 IN 4 BATTER
TO NATURAL
FOR CONTINUATION - REFER TO DRG 0252
IP CH 4.000 RL 24.725
IP CH 9.000 RL 24.646
IP CH 64.284 RL 24.159
VC 10.0
(R1411.8)
VC 50.0
(R3378.4)
-1.588%
-2.000%
-0.880%
0.600%

DATUM RL 6.0

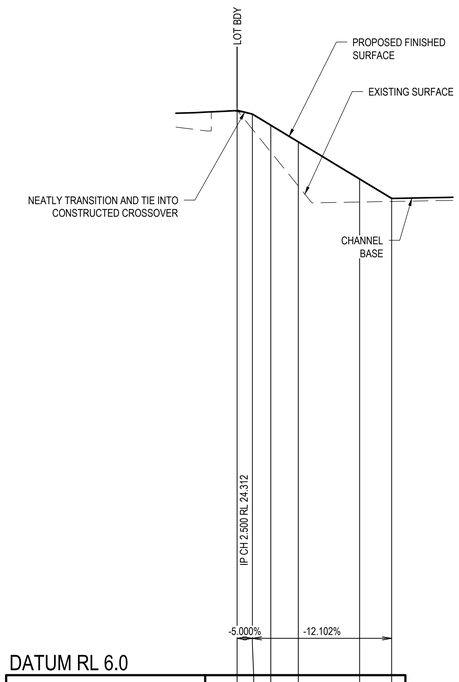
| | | |



DATUM RL 12.0

CUT (-) / FILL	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550
LHS LIP LEVEL	27.462	27.562	27.688	27.704	27.964	28.124	28.451	29.127	29.219	29.928	29.996	30.295							
RHS LIP LEVEL	27.462	27.562	27.688	27.704	27.964	28.124	28.451	29.108	29.224										
DESIGN SURFACE	27.614	27.734	27.839	27.855	28.116	28.274	28.602	29.219	29.314	30.045	30.114	30.422	30.538	30.694	30.839	30.886	30.910	30.998	
EXISTING SURFACE	27.064	27.184	27.289	27.305	27.566	27.725	28.052	28.669	28.764	29.495	29.564	29.872	29.988	30.144	30.289	30.336	30.360	30.448	
CHAINAGES	640.000	660.000	677.630	680.000	700.000	707.630	720.000	737.630	740.000	758.269	760.000	767.705	770.712	775.205	780.000	781.779	782.705	786.210	
HORIZONTAL CURVES																			R40.000

ROAD 1 - ENTERPRISE DRIVE * REFER TO KERB DETAILS FOR INTERSECTION LIP LEVELS



DATUM RL 6.0

CUT (-) / FILL	-0.083	0.428	0.827	1.426		0.753	0.101
LHS LIP LEVEL	24.437	24.312	23.949	23.405		22.194	21.561
RHS LIP LEVEL	24.437	24.312	23.949	23.405		22.194	21.561
DESIGN SURFACE	24.437	24.312	23.949	23.405		22.194	21.561
EXISTING SURFACE	24.520	23.885	23.122	21.978		21.442	21.460
CHAINAGES	0.000	2.500	5.500	10.000		20.000	25.231
HORIZONTAL CURVES							

CHANNEL ACCESS 01

B

Issue	Description	DR	CH	VE	Date
B	TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

HORZ 0 10 20 40 60 80 100m
1:1000

VERT 0 1 2 4 6 8 10m
1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROAD LONGITUDINAL SECTION SHEET 2

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Tel No: +61 7 3337 0000
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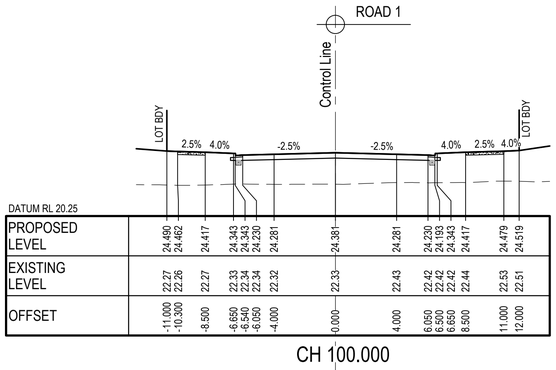
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0252

Issue: B

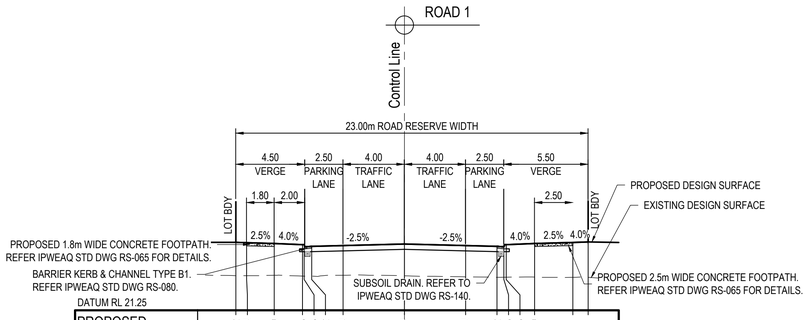
100mm on Original

Date Plotted: 13 Mar 2025 - 09:49AM File Name: C:\Users\ao67297\DCACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0251-LX.dwg



DATUM RL 20.25

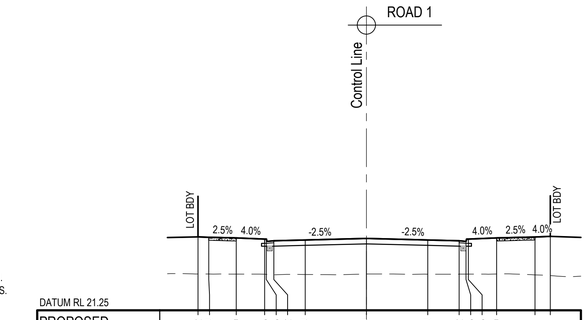
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DATUM RL 21.25

PROPOSED LEVEL	25.682	25.624	25.609	25.535	25.535	25.422	25.474	25.574	25.474	25.422	25.365	25.365	25.609	25.671	25.711								
EXISTING LEVEL	23.51	23.50	23.53	23.48	23.47	23.48	23.53	23.50	23.43	23.40	23.41	23.41	23.41	23.40	23.40								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

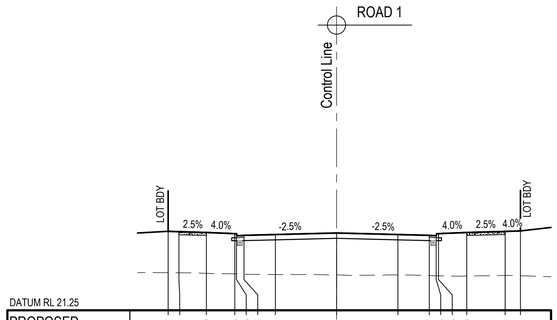
CH 300.000



DATUM RL 21.25

PROPOSED LEVEL	26.042	26.014	25.969	25.895	25.895	25.782	25.834	25.934	25.834	25.782	25.745	25.895	25.969	26.031	26.071								
EXISTING LEVEL	23.62	23.61	23.61	23.60	23.59	23.57	23.59	23.62	23.60	23.60	23.61	23.61	23.61	23.56	23.51								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

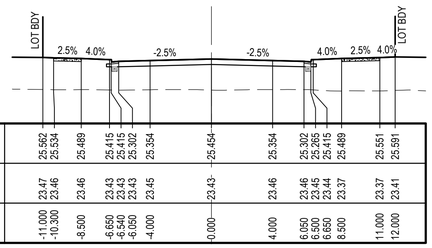
CH 360.000



DATUM RL 21.25

PROPOSED LEVEL	26.402	26.374	26.329	26.255	26.255	26.142	26.194	26.294	26.194	26.142	26.105	26.255	26.329	26.381	26.431								
EXISTING LEVEL	23.70	23.70	23.66	23.62	23.62	23.61	23.57	23.56	23.55	23.51	23.50	23.50	23.48	23.52	23.50								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

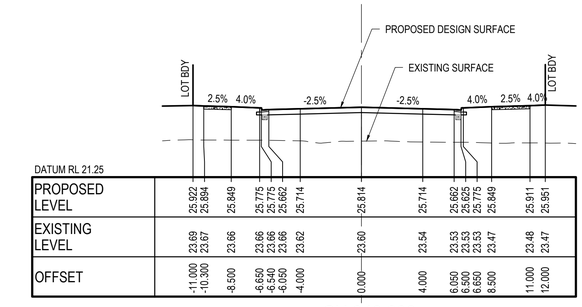
CH 420.000



DATUM RL 21.25

PROPOSED LEVEL	25.562	25.534	25.489	25.415	25.415	25.302	25.354	25.454	25.354	25.302	25.245	25.415	25.489	25.551	25.591								
EXISTING LEVEL	23.47	23.46	23.46	23.43	23.43	23.43	23.45	23.43	23.46	23.46	23.45	23.44	23.37	23.37	23.41								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

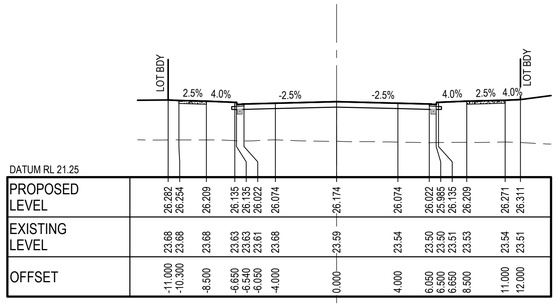
CH 280.000



DATUM RL 21.25

PROPOSED LEVEL	25.922	25.894	25.849	25.775	25.775	25.662	25.714	25.814	25.714	25.662	25.625	25.775	25.849	25.911	25.951								
EXISTING LEVEL	23.69	23.67	23.66	23.66	23.66	23.66	23.62	23.60	23.54	23.53	23.53	23.53	23.47	23.48	23.47								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

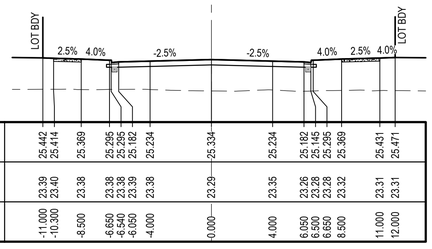
CH 340.000



DATUM RL 21.25

PROPOSED LEVEL	26.282	26.254	26.209	26.135	26.135	26.022	26.074	26.174	26.074	26.022	25.985	26.135	26.209	26.271	26.311								
EXISTING LEVEL	23.68	23.68	23.68	23.63	23.63	23.61	23.68	23.59	23.54	23.50	23.50	23.51	23.53	23.54	23.51								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

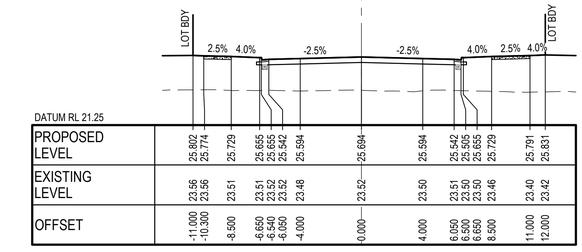
CH 400.000



DATUM RL 21.25

PROPOSED LEVEL	25.442	25.414	25.369	25.295	25.295	25.182	25.234	25.334	25.234	25.182	25.145	25.295	25.369	25.431	25.471								
EXISTING LEVEL	23.39	23.40	23.38	23.38	23.38	23.39	23.38	23.29	23.35	23.26	23.28	23.25	23.32	23.31	23.31								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

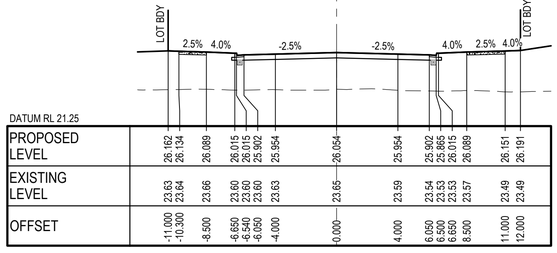
CH 260.000



DATUM RL 21.25

PROPOSED LEVEL	25.802	25.774	25.729	25.655	25.655	25.542	25.594	25.694	25.594	25.542	25.505	25.655	25.729	25.791	25.831								
EXISTING LEVEL	23.56	23.56	23.51	23.51	23.52	23.52	23.48	23.52	23.50	23.51	23.50	23.50	23.46	23.40	23.42								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

CH 320.000



DATUM RL 21.25

PROPOSED LEVEL	26.162	26.134	26.089	26.015	26.015	25.902	25.954	26.054	25.954	25.902	25.865	26.015	26.089	26.151	26.191								
EXISTING LEVEL	23.63	23.64	23.66	23.60	23.60	23.60	23.63	23.65	23.59	23.54	23.53	23.53	23.57	23.49	23.49								
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000								

CH 380.000

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 15 20m

1 : 200

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROAD 1 CROSS SECTIONS SHEET 2

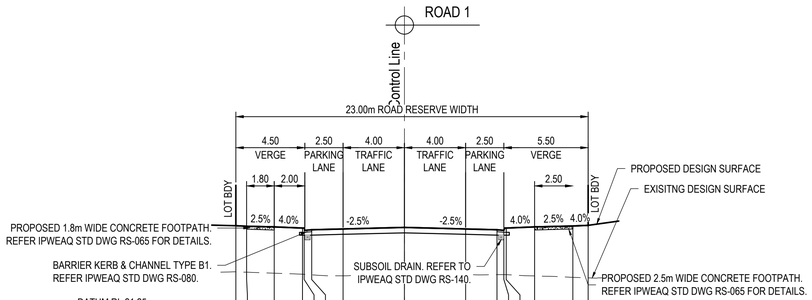
ARCADIS
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BRISBANE QLD 4000
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0282

Issue: A

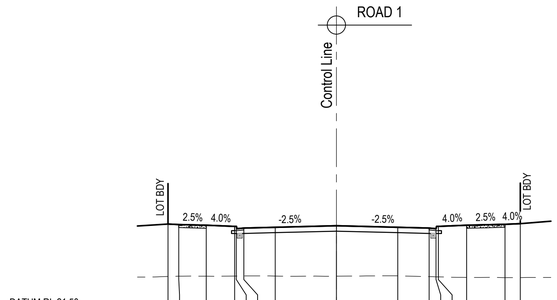
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DATUM RL 21.25

PROPOSED LEVEL	26.762	26.734	26.689	26.615	26.615	26.502	26.554	26.654	26.554	26.502	26.495	26.615	26.689	26.751	26.791									
EXISTING LEVEL	23.76	23.73	23.67	23.60	23.59	23.56	23.50	23.60	23.58	23.57	23.57	23.57	23.49	23.40	23.36									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

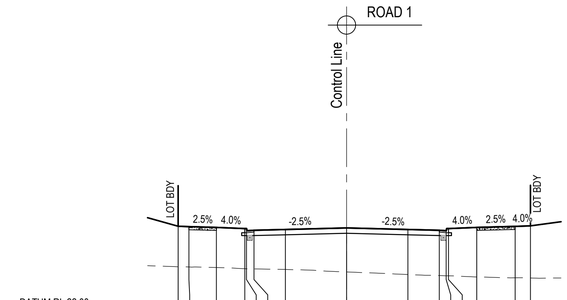
CH 480.000



DATUM RL 21.50

PROPOSED LEVEL	27.122	27.094	27.049	26.975	26.975	26.862	26.914	27.014	26.914	26.862	26.825	26.915	27.049	27.111	27.151									
EXISTING LEVEL	23.70	23.72	23.72	23.73	23.73	23.74	23.73	23.72	23.75	23.69	23.68	23.68	23.64	23.63	23.63									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

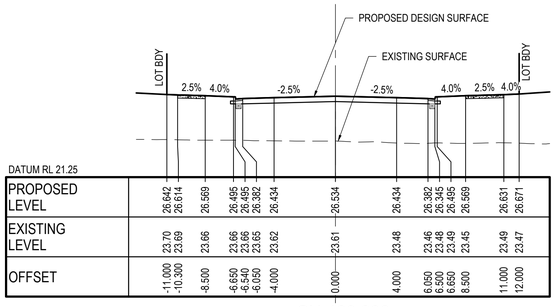
CH 540.000



DATUM RL 22.00

PROPOSED LEVEL	27.482	27.454	27.409	27.335	27.335	27.222	27.274	27.374	27.274	27.222	27.185	27.335	27.409	27.471	27.511									
EXISTING LEVEL	24.84	24.83	24.79	24.71	24.71	24.69	24.66	24.50	24.33	24.27	24.25	24.25	24.17	24.12	24.11									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

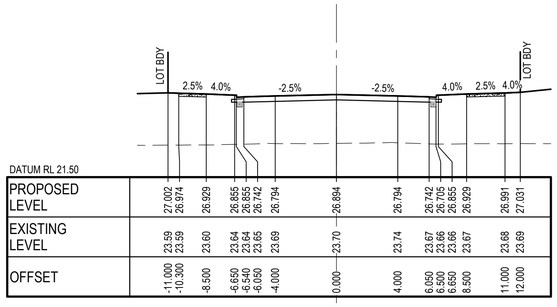
CH 600.000



DATUM RL 21.25

PROPOSED LEVEL	26.642	26.614	26.569	26.495	26.495	26.382	26.434	26.534	26.434	26.382	26.345	26.495	26.569	26.631	26.671									
EXISTING LEVEL	23.70	23.69	23.66	23.66	23.66	23.65	23.62	23.61	23.48	23.46	23.48	23.48	23.45	23.49	23.47									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

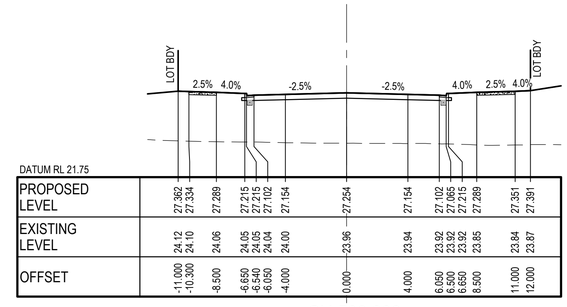
CH 460.000



DATUM RL 21.50

PROPOSED LEVEL	27.002	26.974	26.929	26.855	26.855	26.742	26.794	26.894	26.794	26.742	26.705	26.855	26.929	26.991	27.031									
EXISTING LEVEL	23.59	23.59	23.60	23.64	23.64	23.65	23.69	23.70	23.74	23.67	23.66	23.66	23.67	23.68	23.69									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

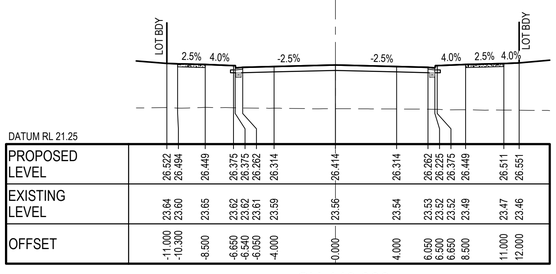
CH 520.000



DATUM RL 21.75

PROPOSED LEVEL	27.362	27.334	27.289	27.215	27.215	27.102	27.154	27.254	27.154	27.102	27.065	27.215	27.289	27.351	27.391									
EXISTING LEVEL	24.12	24.10	24.06	24.05	24.05	24.04	24.00	23.96	23.94	23.92	23.92	23.92	23.85	23.84	23.87									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

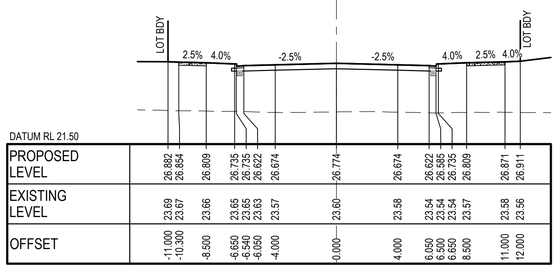
CH 580.000



DATUM RL 21.25

PROPOSED LEVEL	26.522	26.494	26.449	26.375	26.375	26.262	26.314	26.414	26.314	26.262	26.225	26.375	26.449	26.511	26.551									
EXISTING LEVEL	23.64	23.60	23.65	23.62	23.62	23.61	23.59	23.56	23.54	23.53	23.52	23.52	23.49	23.47	23.46									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

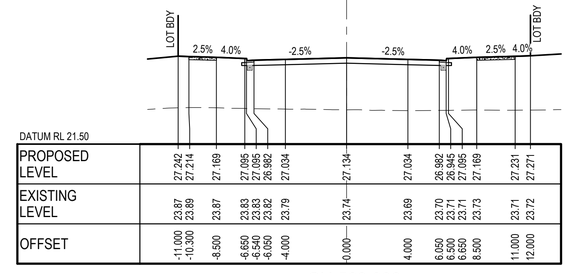
CH 440.000



DATUM RL 21.50

PROPOSED LEVEL	26.882	26.854	26.809	26.735	26.735	26.622	26.674	26.774	26.674	26.622	26.585	26.735	26.809	26.871	26.911									
EXISTING LEVEL	23.69	23.67	23.66	23.65	23.65	23.63	23.57	23.60	23.58	23.54	23.54	23.54	23.57	23.58	23.56									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

CH 500.000



DATUM RL 21.50

PROPOSED LEVEL	27.242	27.214	27.169	27.095	27.095	26.982	27.034	27.134	27.034	26.982	26.945	27.095	27.169	27.231	27.271									
EXISTING LEVEL	23.87	23.89	23.87	23.83	23.83	23.82	23.79	23.74	23.69	23.70	23.71	23.71	23.73	23.71	23.72									
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000									

CH 560.000

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 15 20m

1 : 200

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: ROAD 1 CROSS SECTIONS SHEET 3

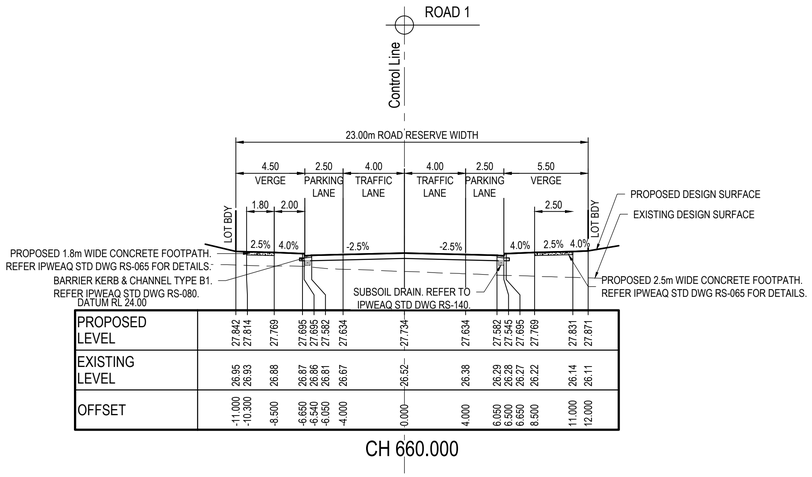
ARCADIS
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Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0283

Issue: A

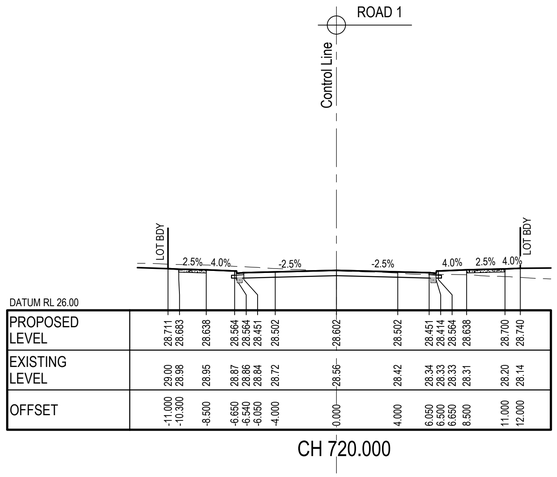
Date Plotted: 13 Mar 2025 - 09:49AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0281-XS.dwg



DATUM RL 24.00

PROPOSED LEVEL	27.842	27.814	27.769	27.695	27.695	27.582	27.634	27.734	27.634	27.582	27.545	27.495	27.769	27.831	27.871
EXISTING LEVEL	26.95	26.93	26.88	26.87	26.86	26.81	26.67	26.52	26.38	26.29	26.28	26.27	26.22	26.14	26.11
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000

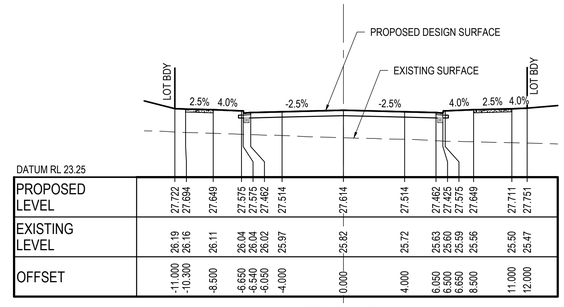
CH 660.000



DATUM RL 26.00

PROPOSED LEVEL	28.711	28.683	28.638	28.564	28.564	28.451	28.502	28.602	28.502	28.451	28.414	28.364	28.638	28.700	28.740
EXISTING LEVEL	29.00	28.98	28.95	28.87	28.86	28.84	28.72	28.56	28.42	28.34	28.33	28.33	28.31	28.20	28.14
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000

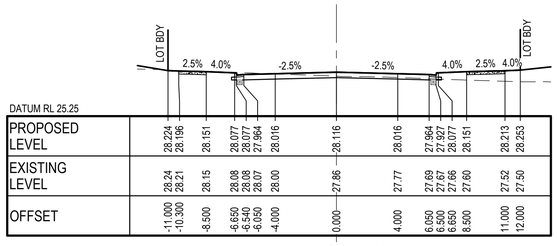
CH 720.000



DATUM RL 23.25

PROPOSED LEVEL	27.722	27.694	27.649	27.575	27.575	27.462	27.514	27.614	27.514	27.462	27.425	27.375	27.649	27.711	27.751
EXISTING LEVEL	26.19	26.16	26.11	26.04	26.04	26.02	25.97	25.82	25.72	25.63	25.59	25.57	25.56	25.50	25.47
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000

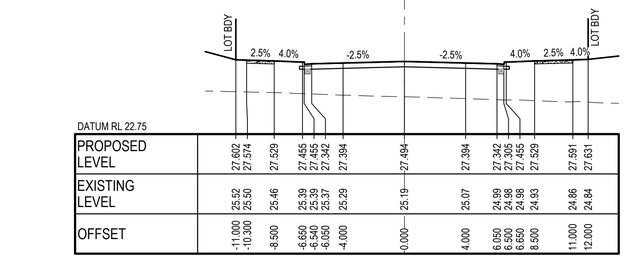
CH 640.000



DATUM RL 25.25

PROPOSED LEVEL	28.224	28.196	28.151	28.077	28.077	27.964	28.016	28.116	28.016	27.864	27.827	27.777	27.649	27.864	27.827	28.151	28.213	28.253
EXISTING LEVEL	28.24	28.21	28.15	28.08	28.08	28.07	28.00	27.86	27.77	27.69	27.67	27.66	27.60	27.67	27.66	27.60	27.52	27.50
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	6.050	6.500	6.650	8.500	11.000	12.000

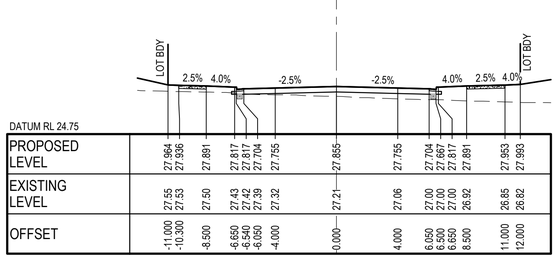
CH 700.000



DATUM RL 22.75

PROPOSED LEVEL	27.602	27.574	27.529	27.455	27.455	27.342	27.394	27.494	27.394	27.342	27.455	27.455	27.529	27.591	27.631
EXISTING LEVEL	25.52	25.50	25.46	25.39	25.39	25.37	25.29	25.19	25.07	24.99	24.98	24.96	24.93	24.86	24.84
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000

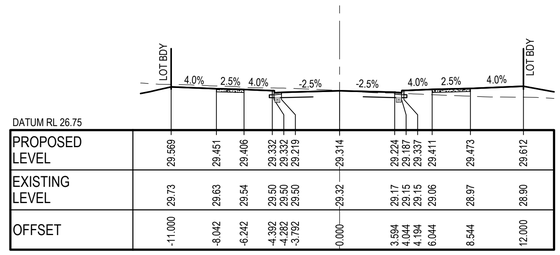
CH 620.000



DATUM RL 24.75

PROPOSED LEVEL	27.964	27.936	27.891	27.817	27.817	27.704	27.755	27.855	27.755	27.704	27.667	27.617	27.891	27.953	27.993
EXISTING LEVEL	27.55	27.53	27.50	27.43	27.42	27.39	27.32	27.21	27.06	27.00	27.00	27.00	26.92	26.85	26.82
OFFSET	-11.000	-10.300	-8.500	-6.650	-6.540	-6.050	-4.000	0.000	4.000	6.050	6.500	6.650	8.500	11.000	12.000

CH 680.000



DATUM RL 26.75

PROPOSED LEVEL	29.569	29.451	29.406	29.332	29.332	29.219	29.314	29.224	29.187	29.337	29.411	29.473	29.612
EXISTING LEVEL	29.73	29.63	29.54	29.50	29.50	29.50	29.32	29.17	29.15	29.15	29.06	28.97	28.90
OFFSET	-11.000	-8.042	-6.242	-4.392	-4.292	-3.792	0.000	3.594	4.044	4.194	6.044	8.544	12.000

CH 740.000

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 15 20m

1 : 200

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

ROAD 1 CROSS SECTIONS SHEET 4

ARCADIS
Arcadis Australia Pacific Pty Limited
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Project Number 30109334

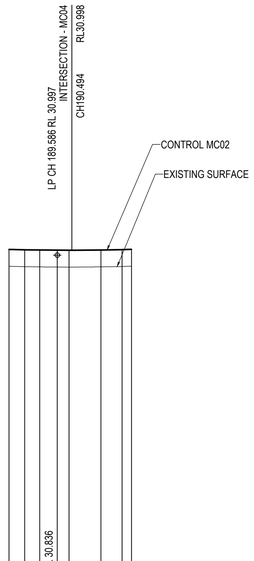
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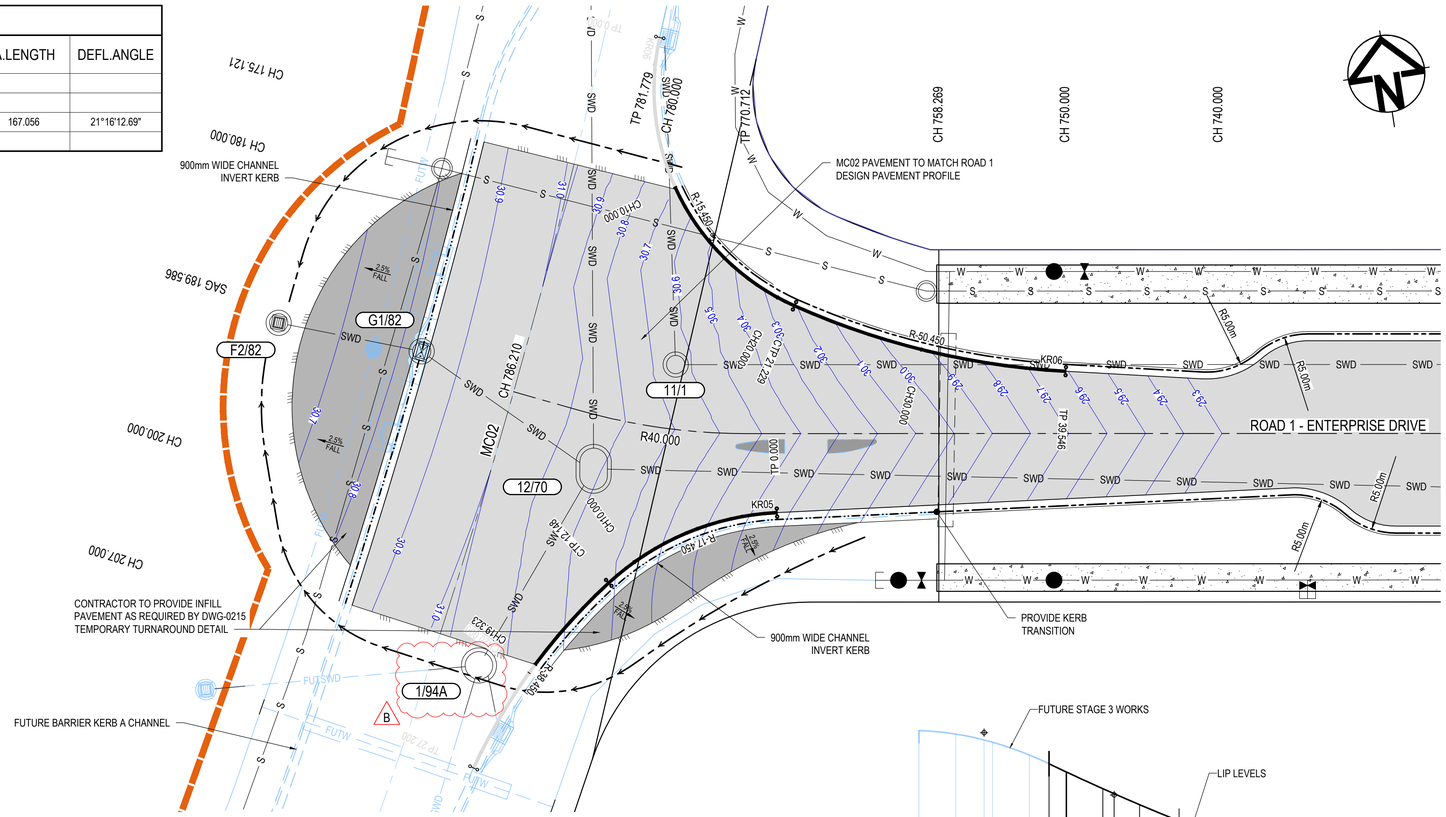
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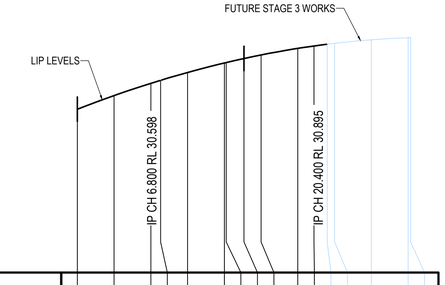
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CONTROL LINE SETOUT - MC02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	501298.545	6929807.621	32.522	188°47'02.28"			
TC	66.066	501288.456	6929742.330	31.674	188°47'02.28"			
IP 2	149.593	501275.552	6929658.821	31.101		R = 450.000	167.056	21°16'12.69"
CT	233.121	501233.233	6929585.681	31.121	210°03'14.97"			









LEGEND

- 5.0 — DESIGN SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- PROPOSED EDGE OF BITUMEN
- INDICATIVE DRIVE WAY LOCATION
- CH 0.000 — CHAINAGE AND CONTROL LINE
- ROAD PAVEMENT
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mmDEPTH)
- TEMPORARY TURNAROUND INFILL PAVEMENT
- SWD — PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- S — PROPOSED SEWER RETICULATION
- W — PROPOSED WATER RETICULATION
- FUTSWD — FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTS — FUTURE SEWER RETICULATION
- FUTW — FUTURE WATER RETICULATION

DATUM RL 15.0

CUT (-) / FILL	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550
LHS LIP LEVEL	30.853	30.641	30.177			30.652	30.807	30.848	
RHS LIP LEVEL	30.840	30.822	30.815	30.810	30.809	30.816	30.828	30.836	
DESIGN SURFACE	31.022	31.011	31.003	30.998	30.997	31.005	31.017	31.025	
EXISTING SURFACE	30.472	30.461	30.453	30.448	30.447	30.455	30.467	30.475	
CHAINAGES	170.000	175.121	180.000	185.739	189.586	200.000	206.874	210.000	
HORIZONTAL CURVES	R450.000								

DATUM RL 29.0

LIP LEVEL	30.333	30.444	30.544	30.633	30.710	30.714	30.747	30.776	30.829	30.849	30.864	30.871	30.900	30.917	30.917
NORTHING	6929613.111	6929613.170	6929612.715	6929612.508	6929611.760	6929610.334	6929610.252	6929609.421	6929608.577	6929606.637	6929606.466	6929604.959	6929604.523	6929602.251	6929599.832	6929599.667
EASTING	501268.587	501265.592	501262.630	501261.857	501259.790	501257.155	501257.031	501255.841	501254.724	501252.437	501252.253	501250.721	501250.309	501248.352	501246.578	501246.466
CHAINAGES	0.000	3.000	6.000	6.800	9.000	12.000	12.148	13.600	15.000	18.000	19.323	20.400	21.000	24.000	27.000	27.200
HORIZONTAL CURVES	R-17.450					R-38.450										

DATUM RL 28.0

LIP LEVEL	30.945	30.917	30.870	30.851	30.747	30.675	30.609	30.607	30.472	30.431	30.341	30.217	30.208	30.103	30.041	30.003	29.918	29.908	29.835	29.774	29.739	29.628	29.607
NORTHING	6929644.928	6929642.048	6929639.756	6929639.063	6929636.086	6929634.526	6929633.229	6929633.183	6929630.598	6929629.851	6929628.294	6929626.402	6929626.276	6929624.842	6929623.977	6929623.438	6929622.194	6929622.045	6929621.115	6929620.498	6929620.203	6929619.463	6929619.347
EASTING	501265.767	501264.945	501264.701	501264.694	501265.024	501265.439	501265.923	501265.942	501267.356	501267.895	501269.269	501271.591	501271.783	501274.153	501275.741	501276.804	501279.533	501279.891	501282.332	501284.200	501285.190	501288.097	501288.630
CHAINAGES	0.000	3.000	5.307	6.000	9.000	10.000	12.000	12.048	15.000	15.922	18.000	21.000	21.229	24.000	25.808	27.000	30.000	30.388	33.000	34.967	36.000	39.000	39.946
HORIZONTAL CURVES	R-15.450								R-50.450														

Issue	Description	DR	CH	VE	Date
B	SWD STRUCTURE TO BE CONSTRUCTED	A.O.	S.S.	G.E.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
1 : 1000 (0 10 20 40 60 80 100m)
1 : 100 (0 1 2 4 6 8 10m)
1 : 200 (0 5 10 15 20m)
1 : 25 (0 0.5 1 1.5 2 2.5m)

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: INTERSECTION LAYOUT PLAN

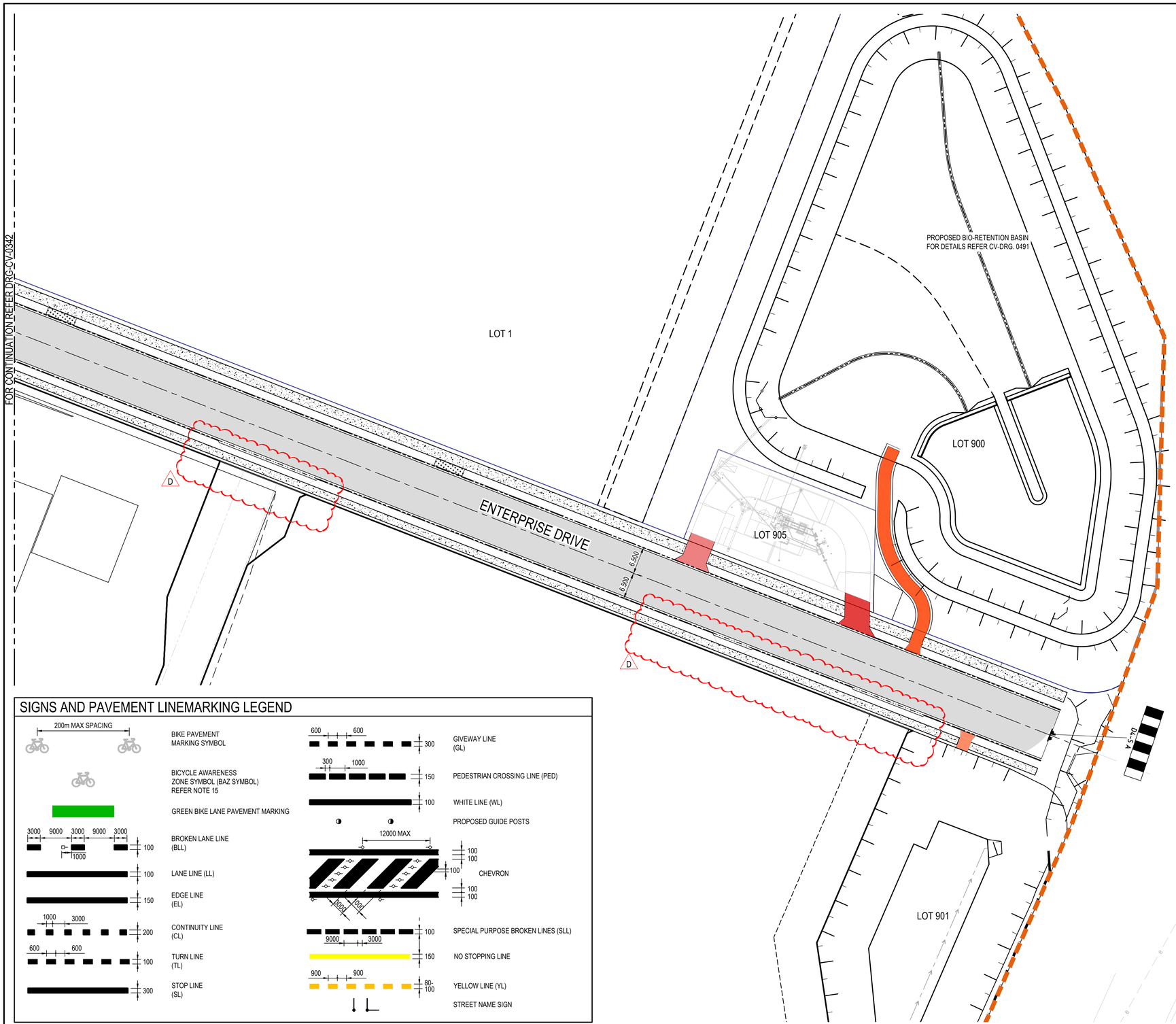
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0311

Issue: B

Date Plotted: 13 Mar 2025 - 09:55AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0311-IntersectionLayoutPlan.dwg



ESTATE ROAD NAMING:

ROAD 1 - ENTERPRISE DRIVE
ROAD 2 - LOGISTICS ROAD
ROAD 3 - CONNECT WAY

LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- INDUSTRIAL COLLECTOR ROAD (340mm PAVEMENT DEPTH AGA1)
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mm PAVEMENT DEPTH)
- FULL DEPTH PAVEMENT TMR SPEC (1215mm PAVEMENT DEPTH)
- LOCAL ACCESS STREET (285mm PAVEMENT DEPTH)
- ULTIMATE TRANSITION (570mm PAVEMENT DEPTH)
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

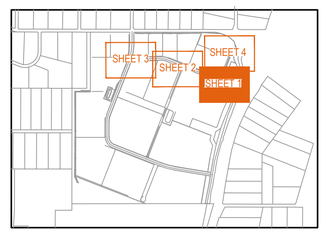
NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.

LINEMARKING NOTES

1. ALL LINEMARKING TO BE REFLECTORISED WHITE.
2. FINAL SIGN LOCATIONS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT.
3. EXISTING LINEMARKING SUPERSEDED BY NEW LINEMARKING IS TO BE REMOVED BY ROUTING OR OTHER METHOD APPROVED BY QUEENSLAND TRANSPORT.
4. ALL TRAFFIC SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
5. FOR TRAFFIC SIGN SUPPORT DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.'s 1360 & 1362.
6. ALL ROUTE NAMES ON NEW GUIDE SIGNS TO BE BLACK LETTERING ON WHITE BACKGROUND U.N.O.
7. ALL SIGN MATERIAL TO BE CLASS 1.
8. DIRECTION SIGNS ARE SHOWN INDICATIVE ONLY. DETAILED DESIGNS ARE TO BE USED FOR ORDERING.
9. ALL SIGNAGE, LINEMARKING & RRPMs ARE TO BE PREPARED IN ACCORDANCE WITH THE CURRENT QUEENSLAND TRANSPORT 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D).
10. ALL TURN SIGNAL PAVEMENT MARKINGS TO BE PREPARED IN ACCORDANCE WITH THE CURRENT QUEENSLAND TRANSPORT 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D).
11. RRPMs TO BE INSTALLED EVERY SECOND GAP IN THE MEDIAN.
12. THE NOSE OF ALL ISLANDS ARE TO BE PAINTED WITH WHITE REFLECTORISED PAINT.
13. INSTALL TGSI's ON RAMPED CROSSINGS AND CUT THROUGH TREATMENTS. REFER IPWEAQ STD DWG's RS-091 AND RS-092 FOR DETAILS.

NOTES

1. ALL EXISTING TMR SIGNS IN THE VICINITY TO BE UPDATE INTO INCLUDE PROPOSED SERVICE ROAD.



KEY PLAN

SIGNS AND PAVEMENT LINEMARKING LEGEND

Issue	Description	DR	CH	VE	Date
D	UPDATED DRIVEWAYS	A.O.	S.S.	B.K.	10.03.25
C	NOTE ADDED	A.O.	S.S.	B.K.	01.08.24
B	TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 1

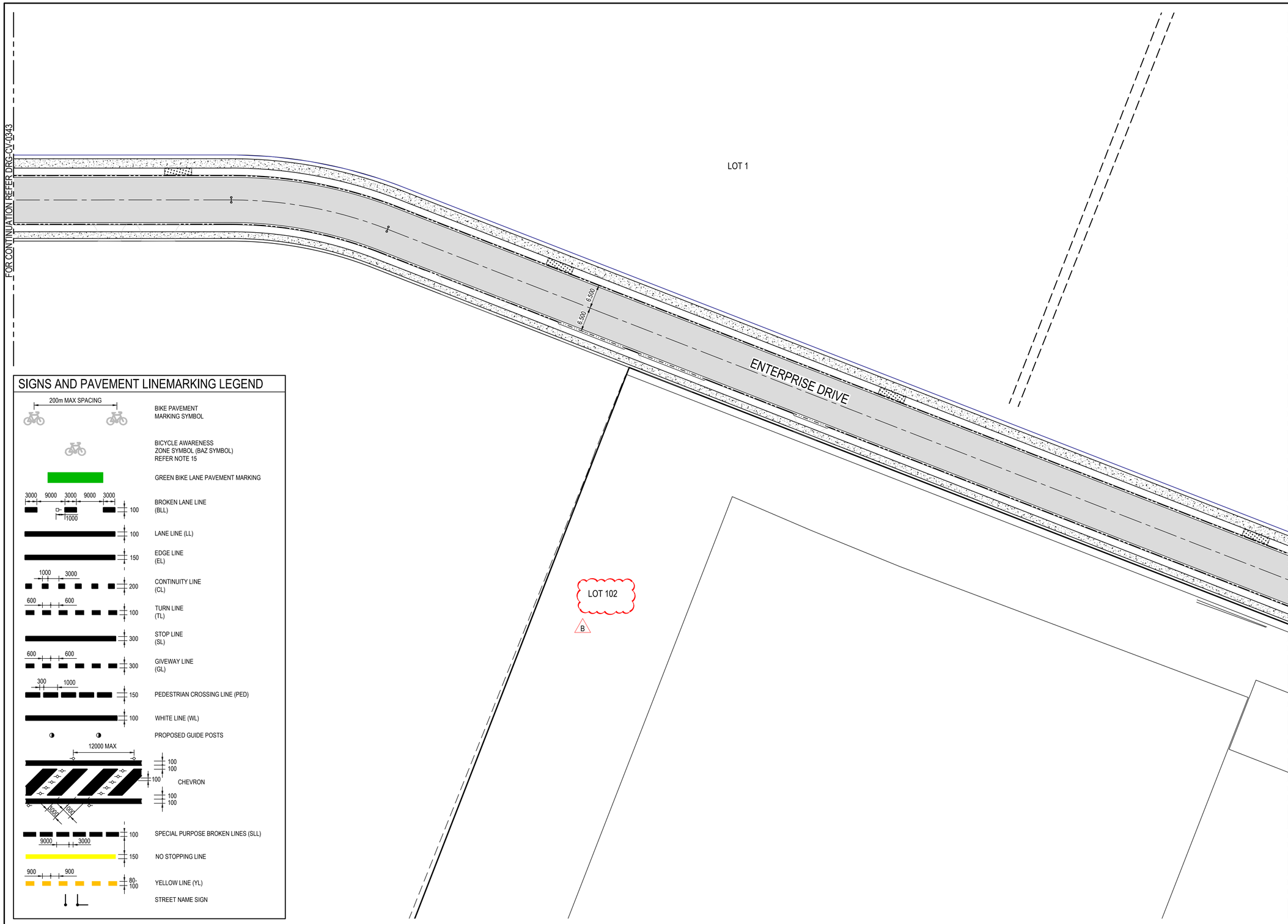
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0341

Issue: D

Date Plotted: 13 Mar 2025 - 11:01AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0341-PavementSignageandLinemarkingPlan.dwg



LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- INDUSTRIAL COLLECTOR ROAD (340mm PAVEMENT DEPTH AGA1)
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mm PAVEMENT DEPTH)
- FULL DEPTH PAVEMENT TMR SPEC (1215mm PAVEMENT DEPTH)
- LOCAL ACCESS STREET (285mm PAVEMENT DEPTH)
- ULTIMATE TRANSITION (570mm PAVEMENT DEPTH)
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.

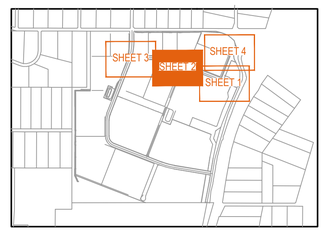
SIGNS AND PAVEMENT LINEMARKING LEGEND

LINEMARKING NOTES

1. ALL LINEMARKING TO BE REFLECTORISED WHITE.
2. FINAL SIGN LOCATIONS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT.
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6. ALL ROUTE NAMES ON NEW GUIDE SIGNS TO BE BLACK LETTERING ON WHITE BACKGROUND U.N.O.
7. ALL SIGN MATERIAL TO BE CLASS 1.
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11. RRPMs TO BE INSTALLED EVERY SECOND GAP IN THE MEDIAN.
12. THE NOSE OF ALL ISLANDS ARE TO BE PAINTED WITH WHITE REFLECTORISED PAINT.
13. INSTALL TGSI's ON RAMPED CROSSINGS AND CUT THROUGH TREATMENTS. REFER IPWEAQ STD DWG's RS-091 AND RS-092 FOR DETAILS.

NOTES

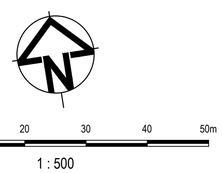
1. ALL EXISTING TMR SIGNS IN THE VICINITY TO BE UPDATE INTO INCLUDE PROPOSED SERVICE ROAD.



KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales



Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 2

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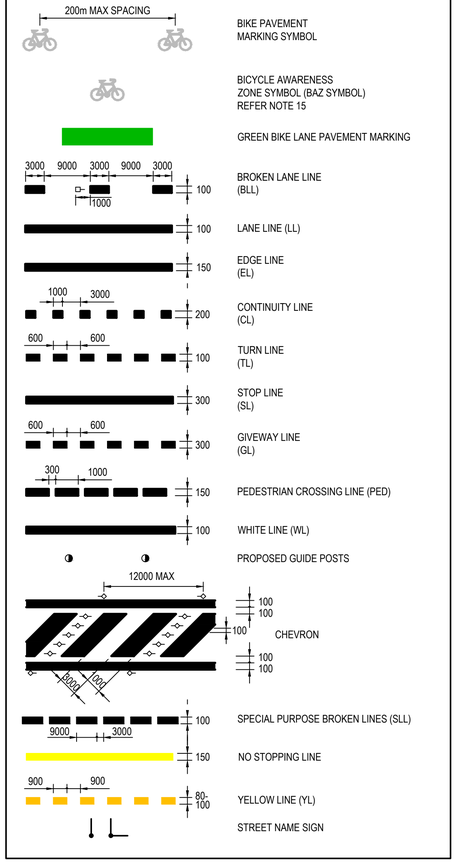
Project Number: 30109334

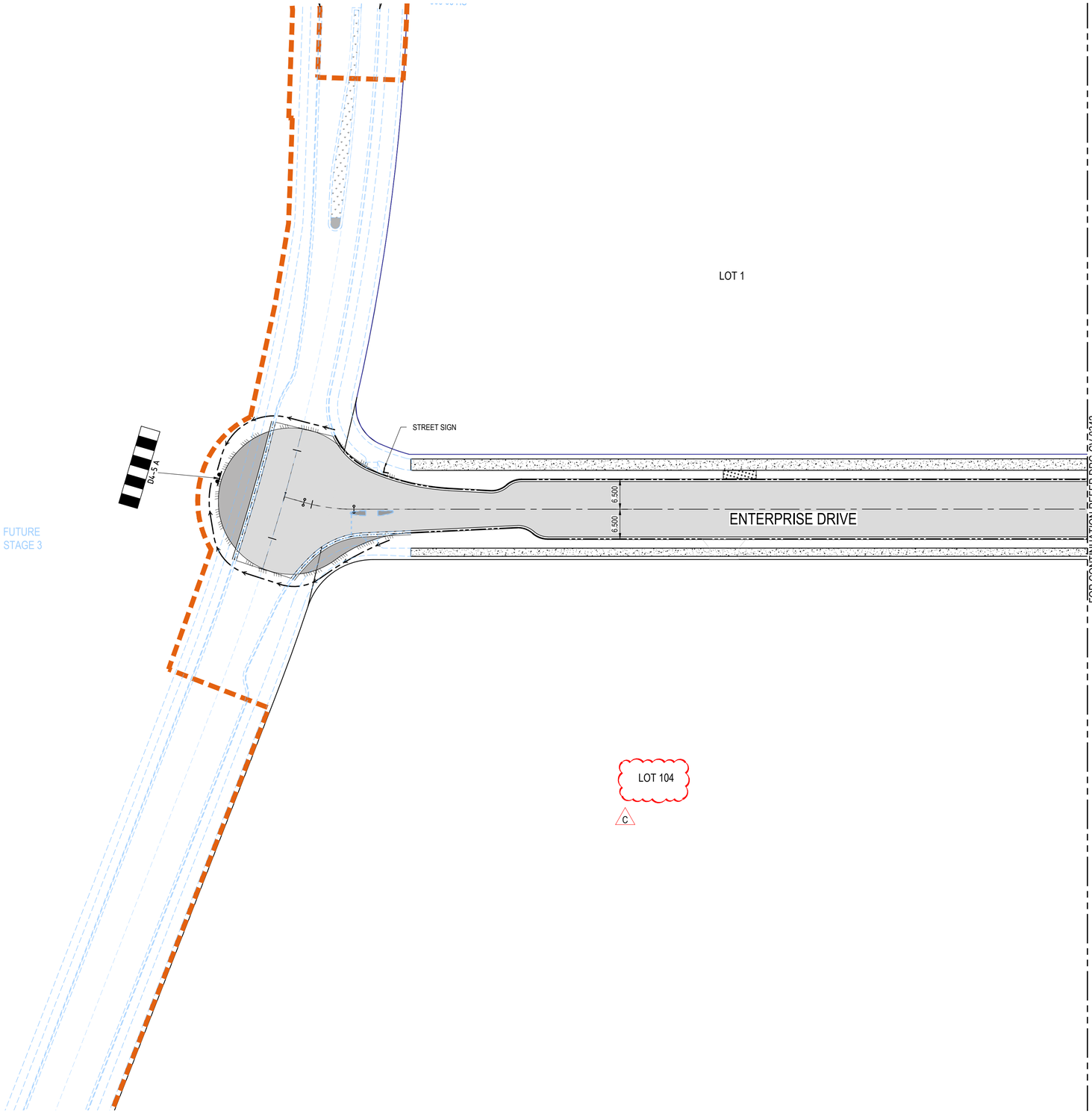
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0342 | Issue: B

100mm on Original

Date Plotted: 13 Mar 2025 - 09:56AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0341-PavementSignageandLinemarkingPlan.dwg

SIGNS AND PAVEMENT LINEMARKING LEGEND





LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- INDUSTRIAL COLLECTOR ROAD (340mm PAVEMENT DEPTH AGA1)
- CONCRETE FOOTPATH
- HEAVY DUTY CONCRETE CROSSOVER (225mm PAVEMENT DEPTH)
- FULL DEPTH PAVEMENT TMR SPEC (1215mm PAVEMENT DEPTH)
- LOCAL ACCESS STREET (285mm PAVEMENT DEPTH)
- ULTIMATE TRANSITION (570mm PAVEMENT DEPTH)
- HEAVY DUTY CONCRETE CROSSOVER / TRACK (175mm DEPTH)

NOTE
ALL VEHICULAR CROSSOVERS TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEA STAD DWG RS-051. MINIMUM CONCRETE THICKNESS IS 175mm UNLESS OTHERWISE SPECIFIED.

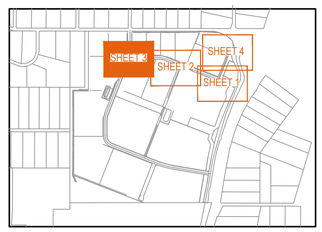
FOR CONTINUATION REFER DRG-CV-0342

LINEMARKING NOTES

1. ALL LINEMARKING TO BE REFLECTORISED WHITE.
2. FINAL SIGN LOCATIONS TO BE DETERMINED ON SITE BY THE SUPERINTENDENT.
3. EXISTING LINEMARKING SUPERSEDED BY NEW LINEMARKING IS TO BE REMOVED BY ROUTING OR OTHER METHOD APPROVED BY QUEENSLAND TRANSPORT.
4. ALL TRAFFIC SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
5. FOR TRAFFIC SIGN SUPPORT DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.'s 1360 & 1362.
6. ALL ROUTE NAMES ON NEW GUIDE SIGNS TO BE BLACK LETTERING ON WHITE BACKGROUND U.N.O.
7. ALL SIGN MATERIAL TO BE CLASS 1.
8. DIRECTION SIGNS ARE SHOWN INDICATIVE ONLY. DETAILED DESIGNS ARE TO BE USED FOR ORDERING.
9. ALL SIGNAGE, LINEMARKING & RRPMs ARE TO BE PREPARED IN ACCORDANCE WITH THE CURRENT QUEENSLAND TRANSPORT 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D).
10. ALL TURN SIGNAL PAVEMENT MARKINGS TO BE PREPARED IN ACCORDANCE WITH THE CURRENT QUEENSLAND TRANSPORT 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D).
11. RRPMs TO BE INSTALLED EVERY SECOND GAP IN THE MEDIAN.
12. THE NOSE OF ALL ISLANDS ARE TO BE PAINTED WITH WHITE REFLECTORISED PAINT.
13. INSTALL TGSI's ON RAMPED CROSSINGS AND CUT THROUGH TREATMENTS. REFER IPWEAQ STD DWG's RS-091 AND RS-092 FOR DETAILS.

NOTES

1. ALL EXISTING TMR SIGNS IN THE VICINITY TO BE UPDATE INTO INCLUDE PROPOSED SERVICE ROAD.



KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
B	SIGN ADDED	A.O.	S.S.	B.K.	01.08.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 3

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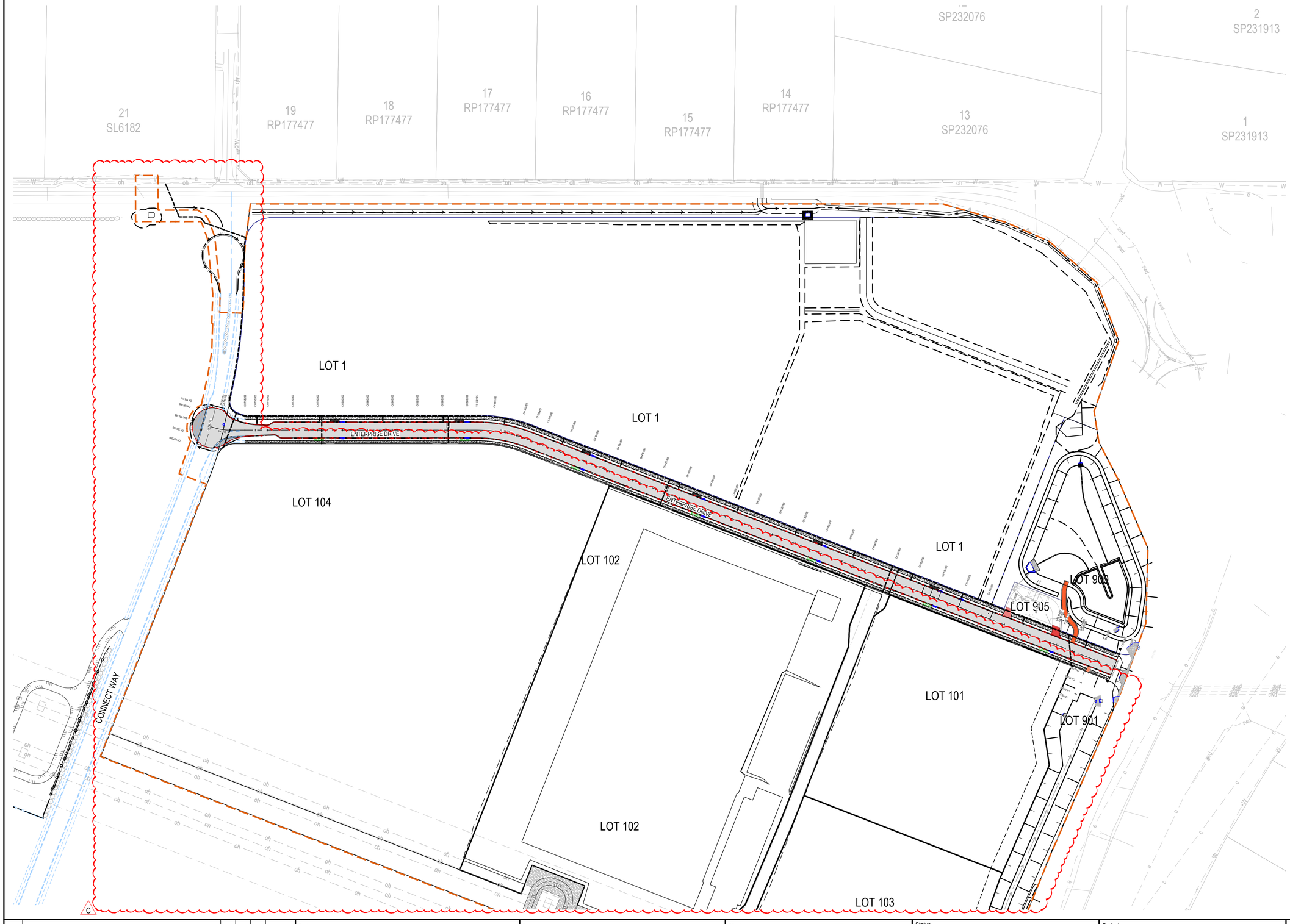
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0343

Issue: C

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LEGEND

- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BARRIER KERB & CHANNEL TYPE "B1"
- PROPOSED FLUSH EDGE RESTRAINT TYPE "ER2"
- PROPOSED CHANNEL INVERT KERB NOM. 900mm WIDE
- FUTURE ELEMENTS
- PROPOSED EDGE OF BITUMEN
- INDUSTRIAL COLLECTOR ROAD (340mm PAVEMENT DEPTH AGA1)
- CONCRETE FOOTPATH
- PAVEMENT EDGE (SUBSOIL) DRAIN
- PAVEMENT INTERFACE DRAIN
- SUBSOIL DRAIN CLEANOUT
- SUBSOIL DRAIN OUTLET
- KERB INLET

NOTE:

1. REFER DRG 30109334-AAP-P301OP-CV-DRG-0348 FOR PAVEMENT NOTES.
2. PAVEMENT EDGE DRAINS, SETOUT, LOCATIONS AND EXTENTS SHALL BE CONFIRMED ON-SITE FOLLOWING CONFIRMATION OF ACTUAL SUBGRADE CONDITIONS AND IT IS TO THE ADMINISTRATOR'S DISCRETION WHETHER ADDITIONAL DRAINS ARE REQUIRED IF UNEXPECTED SOURCES OF MOISTURE ARE ENCOUNTERED DURING CONSTRUCTION.
3. FOR DETAILS OF PAVEMENT EDGE DRAINS, OUTLETS AND CLEANOUT, REFER TO IPWEA STD. DRG. RS-140 AND RS-142-SUBSOIL DRAIN TYPE B/C.
4. FOR DETAILS OF PAVEMENT INTERFACE DRAINS, REFER TO MRTS38. FOR DETAILS OF PAVEMENT INTERFACE DRAIN OUTLETS AND CLEANOUTS, REFER TO IPWEA STANDARD DRAWINGS RS-140 AND RS-142.

NOTE:

APPLIES TO ALL EMBANKMENT FILL
- CLASS B MATERIAL IN ACCORDANCE WITH MRTS04
- SHRINK/SWELL FACTOR 2%

WHERE LOCATED WITHIN 1.5m BELOW SUBGRADE (IE BOTTOM OF PAVEMENT) LEVEL;
- 4-DAY SOAKED - CBR VALUE MIN 7%
- CBR SWELL <2.5%

ENSURE THE ENTIRE EMBANKMENT CROSS SECTION (IE INCLUDING OUTER ZONE) IS COMPACTED IN ACCORDANCE WITH MRTS04

Issue	Description	DR	CH	VE	Date
C	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	A.N.	10.03.25
B	CROSS DRAIN REMOVED	A.O.	S.S.	A.N.	21.11.24
A	ORIGINAL ISSUE	A.O.	S.S.	A.N.	18.10.24

100mm on Original

Scales

0 20 40 60 80 100 125 150m

1 : 1500

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	A.NANOO	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	A. NANOO	R.P.E.Q. No: 18539 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT DESIGN LAYOUT PLAN

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Project Number: 30109334

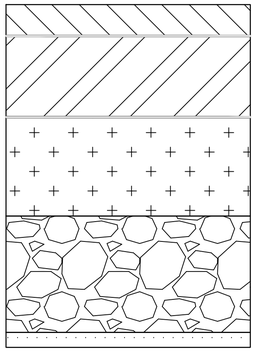
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Issue: C

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AGA1: ASPHALT OVER GRANULAR; ENTERPRISE DRIVE CH. 25.653- CH.786.210 CONNECT WAY CH. 175.121- CH.207.000

NORTH MACLEAN STAGE 1 ASPHALT, OVER GRANULAR, SUBGRADE DESIGN CBR 15%



50 mm Surfacing: AC14H (A15E) (MRTS30)
WPA Seal S25E @ 1.5 l/m2, 6 mm @ 160 m2/m3 (Provisional) (MRTS11)

130 mm Base: EME2 (MRTS32)

Single Seal C170 @ 1.6 l/m2, 6 mm @ 140 m2/m3 (MRTS11)
Prime AMC00 @ 0.9 l/m2 (MRTS11)

160 mm Lightly Bound Improved (MRTS10)

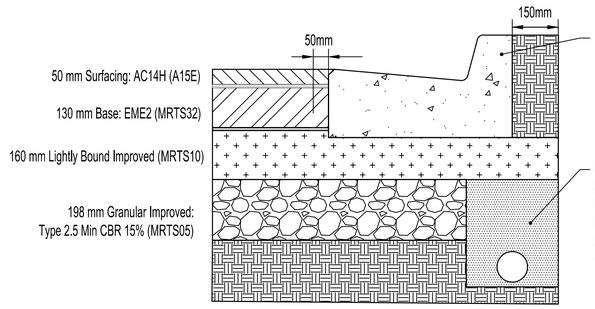
198 mm Granular Improved: Type 2.5 Min CBR 15% (MRTS05)

Design Subgrade CBR 15
Design Subgrade CBR-Swell < 2.5%

Ndt = 2.02E+07 HVAG; 3.60E+07 ESA

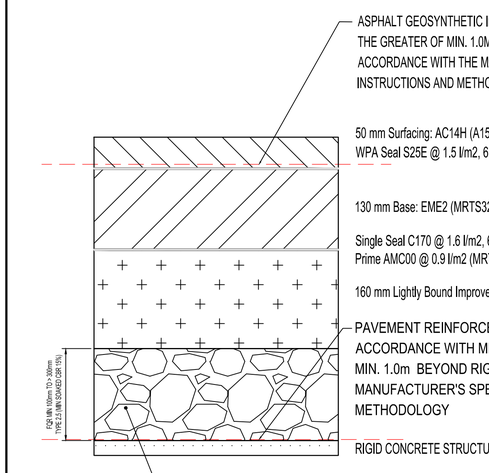
TOTAL PAVEMENT DEPTH 550 mm (Including Seals)

Binder spray and aggregate spread rates are indicative /for estimation purposes only. The Contractor shall undertake spray seal design and get Approval from the Administrator prior to application/construction in accordance with MRTS11



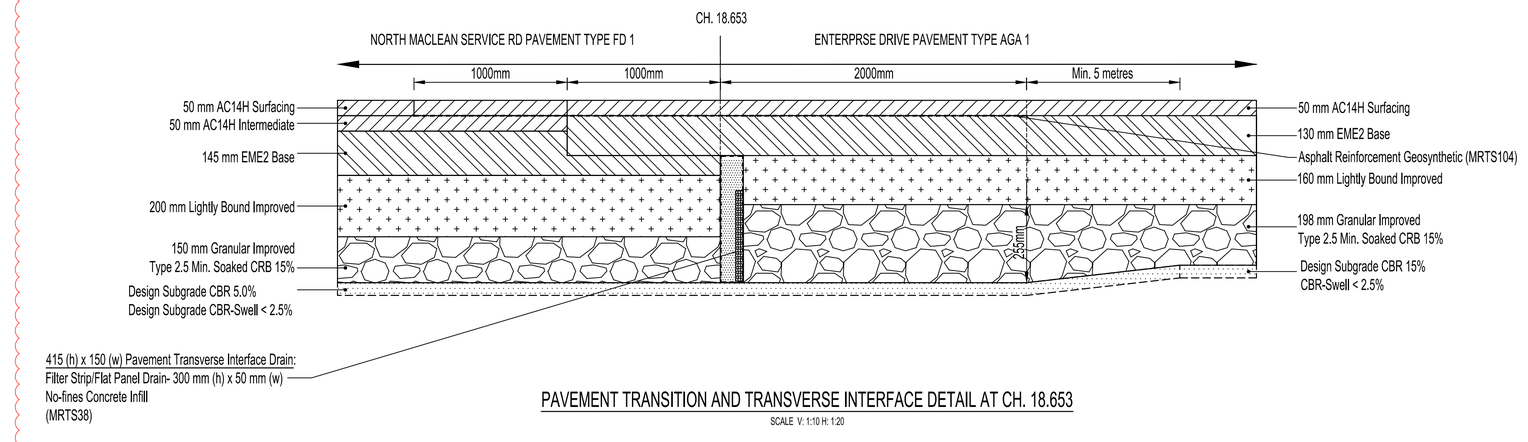
EDGE DETAIL AGA1 (ASPHALT OVER GRANULAR 1: ENTERPRISE DRIVE CH. 25.653 - CH.786.210 CONNECT WAY CH. 175.121- CH.207.000)

SCALE 1:10



RIGID STRUCTURE BRIDGING DETAIL

SCALE 1:5



PAVEMENT TRANSITION AND TRANSVERSE INTERFACE DETAIL AT CH. 18.653

SCALE V: 1:10 H: 1:20

D

Issue	Description	DR	CH	VE	Date
D	UPDATED PAVEMENT TRANSITION DETAIL	A.O.	S.S.	A.N.	21.11.24
C	UPDATED ISSUE	A.O.	S.S.	A.N.	06.11.24
B	UPDATED ISSUE	A.O.	S.S.	A.N.	23.10.24
A	ORIGINAL ISSUE	A.O.	S.S.	A.N.	18.10.24

100mm on Original

Scales

0 50 100 200 300 400 500mm
1 : 5

0 100 200 400 600 800 1000mm
1 : 10

0 0.5 1 1.5 2m
1 : 20

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
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Project Manager	B.KITSON	Grid	LOCAL
Verified	A. NANOO	R.P.E.Q. No: 18539 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT DETAILS

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0347

Issue: D

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GENERAL

1. These pavement drawings shall be read in conjunction with the relevant current MRTS Specifications and Specification Annexures. This includes all other engineering/other consultants drawings and specifications and written instructions as may be issued by the Administrator.
2. Unless drawings are identified as "For Construction", they shall not be used for construction purposes.
3. All locations, orientations and levels shall be verified on site prior to commencing any asphalt profiling and pavement boxout and discrepancies shall be referred to the Administrator.
4. Nomination of a proprietary item does not indicate exclusive preference but indicates the required properties of the item. Similar alternatives having the required properties may be offered for approval by the Administrator.
5. Do not obtain dimensions by scaling from the drawings unless stated otherwise.
6. The Contractor shall verify setting out dimensions shown on the drawings before any construction or fabrication commences.
7. During construction, the Contractor shall ensure that the pavements are maintained in a stable condition and no part shall be overstressed. Provide temporary bracing as required to keep the works and excavations stable at all times.
8. Adequate drainage shall be provided at all times during construction.
9. Pavement profiles are not to scale.

ASPHALT

1. AC14H Wearing and Intermediate course: AC14H mix - dense graded asphalt - 14 mm nominal size aggregate - Class A15E binder - mix shall conform with MRTS30.
2. EME2 Base course: EME2 mix shall conform with MRTS32.
3. The longitudinal 'joint' between asphalt paver runs for the surfacing layer must coincide with traffic lane lines.
4. Unless noted otherwise longitudinal interface joints shall always be on lane lines, centrally located in trafficked lanes or anywhere in shoulders.
5. At all pavement joints the existing pavement shall be saw cut in accordance with the pavement cutback and interface detail
6. Any changes to the pavement joint details or locations are to be approved by the Administrator.
7. Asphalt corrector layers shall be placed if required to correct surface defects.

PRIME AND SPRAY SEALS

1. The Contractor shall undertake designs appropriate for the conditions at the time of placement and submit details in writing to the Administrator for approval prior to undertaking works.
2. Size 10 WPA single seal - waterproofing interlayer seal, provisional, if ordered - 10 mm precoated aggregates, class S25E binder - seal shall conform with MRTS18.
3. Prime: AMC00 conforming with MRTS20.
4. Size 10 single seal: 10 mm pre-coated aggregates, Class 170 binder - seal shall conform to MRTS11 and MRTS22.
5. The 'curing' time of AMC00 prime is to be a minimum of 3 days unless otherwise stated by the Administrator depending on prevailing weather conditions.
6. Gravel surfaces shall be primed prior to placement of asphalt and a single coat seal shall be applied where gravel surfaces are trafficked (including construction traffic) prior to placing asphalt, where shown on the plans and details.

SUBGRADE REPLACEMENT

1. Subgrade replacement under new full depth pavements: the Administrator shall direct additional testing of the subgrade prior to the excavation/boxout to subgrade level and prior to placement of any pavement layers. Once the subgrade has been inspected and subgrade test results are received by the Administrator, the need for any subgrade replacement and/or treatment and/or adjustment to the pavement thickness, types and extents will be confirmed by the Administrator in accordance with MRTS04.
2. Subgrade replacement material shall conform with the material and construction requirements of MRTS04, clause 18.2.2, with geotextile-wrapped Type 2.4 material for wet conditions and Type 2.3 material for all other locations, where subgrade CBR is < 2% The following treatment may be adopted: remove and replace material, to the depth specified in table 5.9 of the Queensland Department of Transport and Main Roads Pavement Design Supplement to AGPT02/17, below subgrade level with subgrade replacement material that conforms to the material and construction requirements of MRTS04, clause 18.2.2, Type 2.4/Type 2.3 subgrade replacement to be placed and compacted in layers no greater than 150 mm.

SUBGRADE AT TIME OF CONSTRUCTION (CBR%)	ADDITIONAL MINIMUM DEPTH OF SUBGRADE REPLACMENT/COVER (MRTS 04, CLAUSE 18.2.2.) (mm)
<3.0% ; ≥2.5%	150
<2.5% ; ≥2.0%	200
<2.0% ; ≥1.5%	300
<1.5% ; ≥1.0%	400
<1.0%	SPECIFIC GEOTECHNICAL ASSESSMENT REQUIRED

3. Where expansive subgrades are found (CBR-SWELL >2.5%), additional cover material will be required to satisfy the requirements of table 5.3.5 and figure 5.3.5 of the Queensland Department of Transport and Main Roads Pavement Design Supplement to AGPT02/17, below subgrade level with subgrade replacement material that conforms with the material and construction requirements of MRTS04, clause 18.2.2, Type 2.3 subgrade replacement to be placed and compacted in accordance with MRTS05.
4. For low strength subgrades where a subgrade treatment is used, the use of geofabric or geogrid to aid construction may be considered at the discretion of the Administrator.

PAVEMENT DRAINS

1. For details on pavement edge drains, outlets and cleanout points refer to IPWEA Std. Drg. RS-140 and RS-142 - subsoil drain type B/C.
2. For details on pavement interface drains refer to TMR Std Dwg SD1116 and MRTS 38 - Subsoil drain Type A.
3. Pavement edge and interface drains are to be graded at 1% nominal (desirable) and at 0.5% (absolute minimum).
4. Unless noted or otherwise shown, pavement edge and interface drainage cleanout points are to be placed at a maximum distance of 60 m.
5. Unless noted or otherwise shown, pavement drainage outlets shall be at 60 m maximum spacing.
6. Any existing pavement drains and drainage layers encountered during construction shall be connected to outlets as directed and approved by the Administrator.
7. Pavement drains along road edges and medians shall outlet to a kerb inlet or stormwater drainage chamber.
8. Pavement edge and interface drains have been shown on the drawings however, setout, locations and extents of the pavement drains shall be confirmed on-site following confirmation of actual subgrade conditions and it is to the Administrator's discretion whether additional drains are required if unexpected sources of moisture are encountered during construction.

GRANULAR MATERIAL

1. Unbound granular material shall conform with the material and construction requirements of MRTS05.

LIGHTLY BOUND MATERIAL

1. Lightly bound material shall conform with the material and construction requirements of MRTS10.

IN-SITU LIME STABILISED SUBGRADE

1. In-situ lime stabilised subgrade material shall conform with the material and construction requirements of MRTS07A.

CONCRETE:

1. Concrete elements shall conform with the material and construction requirments of MRTS70

REINFORCEMENT

1. Steel reinforcement shall conform with the material and construction requirements of MRTS71.

Issue	Description	DR	CH	VE	Date
A	ORIGINAL ISSUE	A.O.	S.S.	A.N.	18.10.24

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	A. NANOO	R.P.E.Q. No: 18539 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: PAVEMENT NOTES

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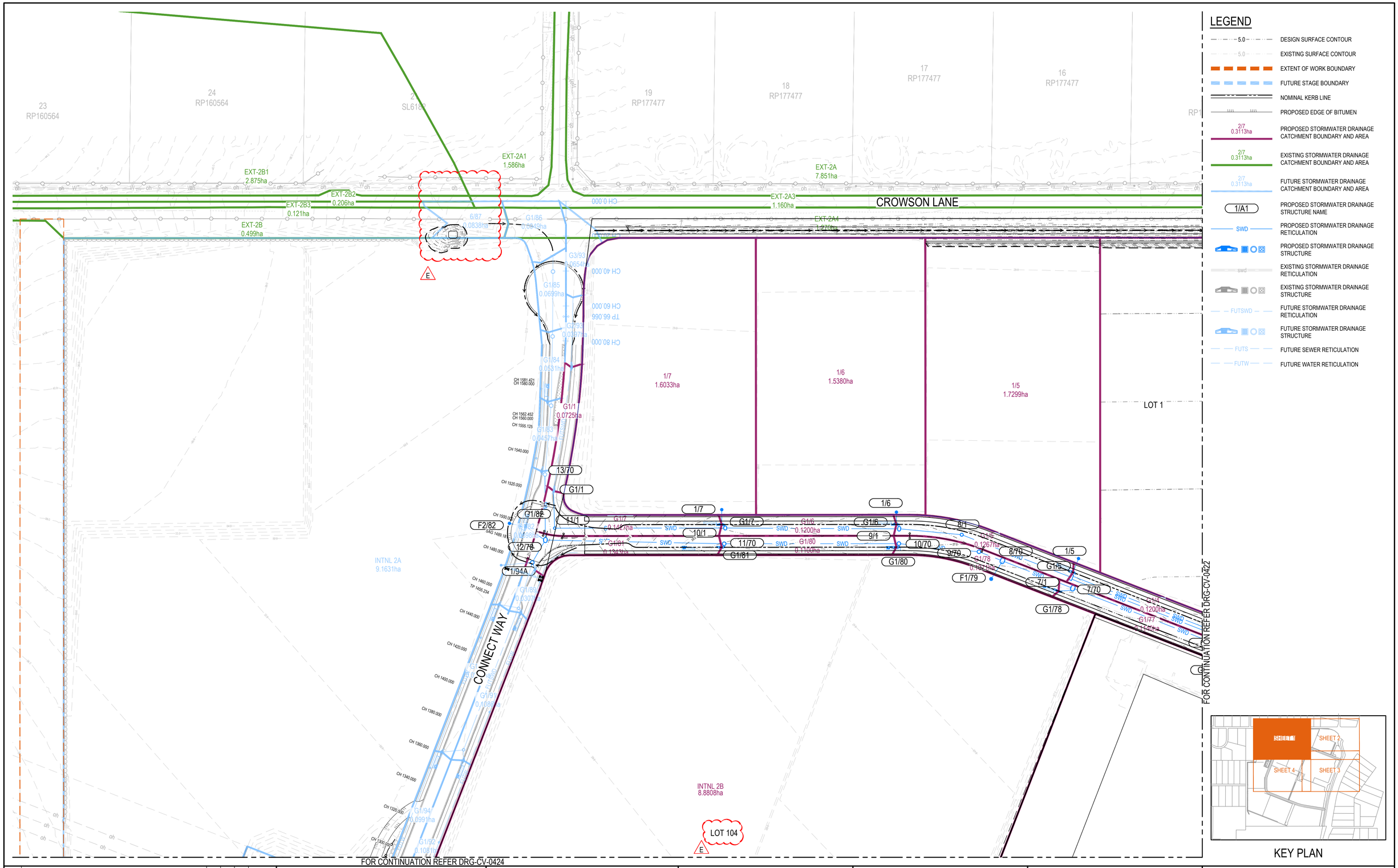
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0348

Issue: A

100mm on Original

Date Plotted: 13 Mar 2025 - 09:28AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0346-Pavement Design Notes And Details.dwg



Issue	Description	DR	CH	VE	Date
E	UPDATED DESIGN	A.O.	S.S.	B.K.	10.03.25
D	CATCHMENTS UPDATED - G1/77, G1/78	A.O.	S.S.	B.K.	18.10.24
C	SWD STRUCTURE TO BE CONSTRUCTED	A.O.	S.S.	G.E.	03.09.24
B	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER CATCHMENT PLAN SHEET 1

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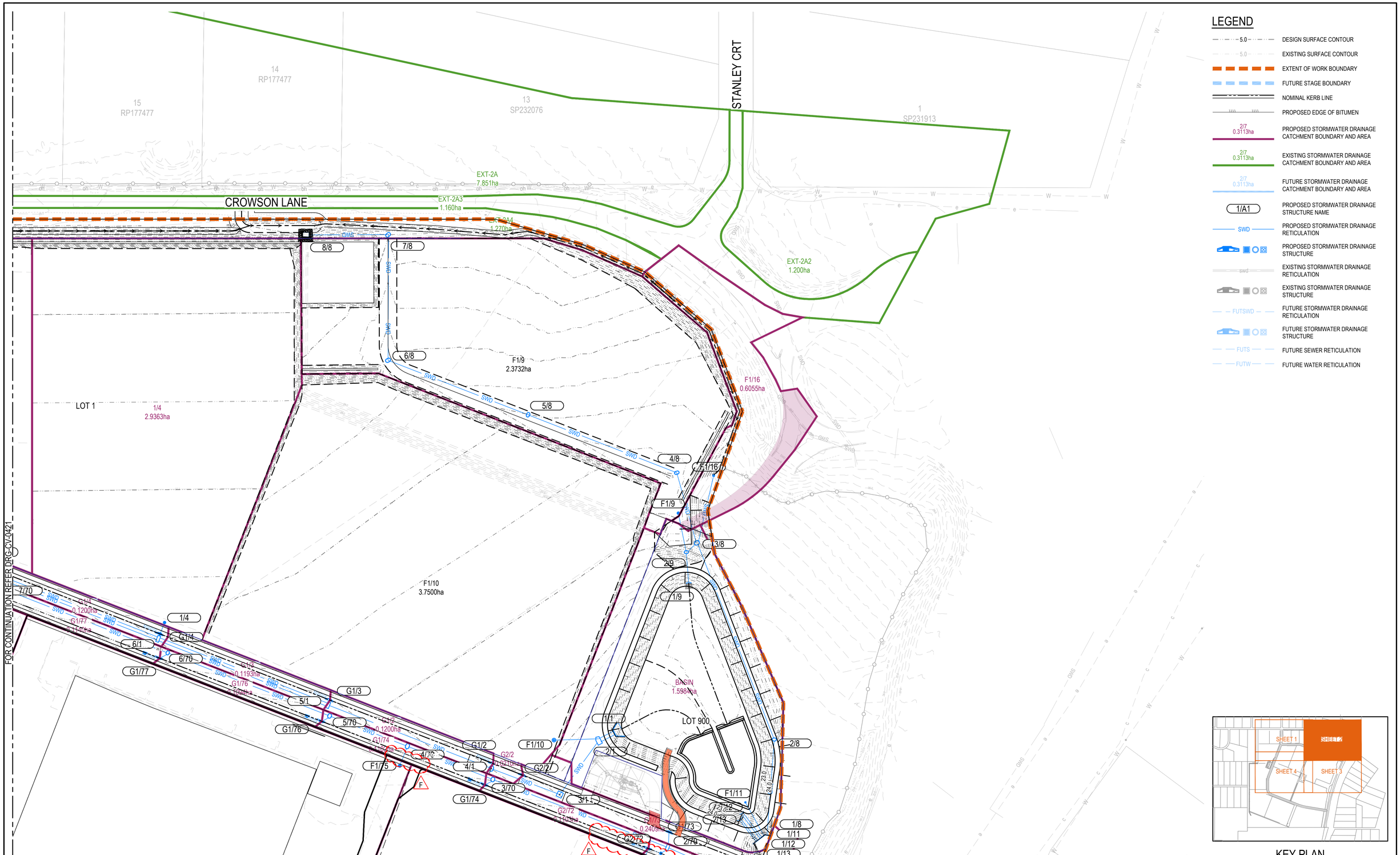
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Drawing No. 30109334-AAP-P301OP-CV-DRG-0421

Issue E

100mm on Original

Date Plotted: 13 Mar 2025 - 10:02AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0421-CatchmentPlan.dwg



Issue	Description	DR	CH	VE	Date
F	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
E	CATCHMENTS UPDATED - G1/77, G1/78	A.O.	S.S.	B.K.	18.10.24
D	CATCHMENTS UPDATED	A.O.	S.S.	B.K.	03.09.24
C	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
B	LAYOUT UPDATED TEMPORARY ACCESS ROAD REMOVED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 20 40 60 80 100m

1 : 1000

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER CATCHMENT PLAN SHEET 2

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number 30109334

Drawing No. 30109334-AAP-P301OP-CV-DRG-0422 Issue F

Date Plotted: 13 Mar 2025 - 10:02AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0421-CatchmentPlan.dwg

FOR CONTINUATION REFER DRG-CV-0422

FOR CONTINUATION REFER DRG-CV-0424

LOT 102

INTNL 2C WEST
7.5559ha

LOT 101

INTNL 2C EAST 1
2.9479ha

INTNL 2C EAST 2
2.1702ha

LOT 103

LOT 901

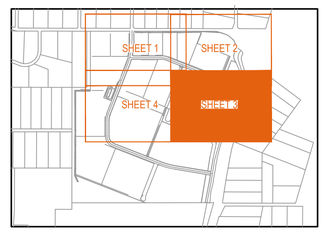
MT LINDESAY HWY

F1/75 4/72 4/1 3/70 G1/74 G2/2 0.5210ha G2/27 3/71 G2/72 0.1410ha F1/72 0.2405ha G1/73 2/70 F1/11 F23/22 2/13 1/8 1/11 1/12 1/13 F3/72 F1/72 0.0511ha 1/70 2/14 3/15 2/15 1/14 1/15 F1/66 1/66 F1/61 0.5098ha F1/60 4/60 3/65 2/65 2/60 0.9223ha 3/60 2/60 1/65 1/60 F1/64 E

SWD

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- 2/7 0.3113ha — PROPOSED STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 2/7 0.3113ha — EXISTING STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 2/7 0.3113ha — FUTURE STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 1/A1 — PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- SWD — PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- swd — EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- FUTSWD — FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTS — FUTURE SEWER RETICULATION
- FUTW — FUTURE WATER RETICULATION



KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED SWD - NEW F1/61 SUMP LINE	A.O.	S.S.	B.K.	
D	UPDATED DRIVEWAYS, BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
C	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
B	LAYOUT UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 28.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER CATCHMENT PLAN SHEET 3

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
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Tel No: +61 7 3337 0000
www.arcadis.com/au

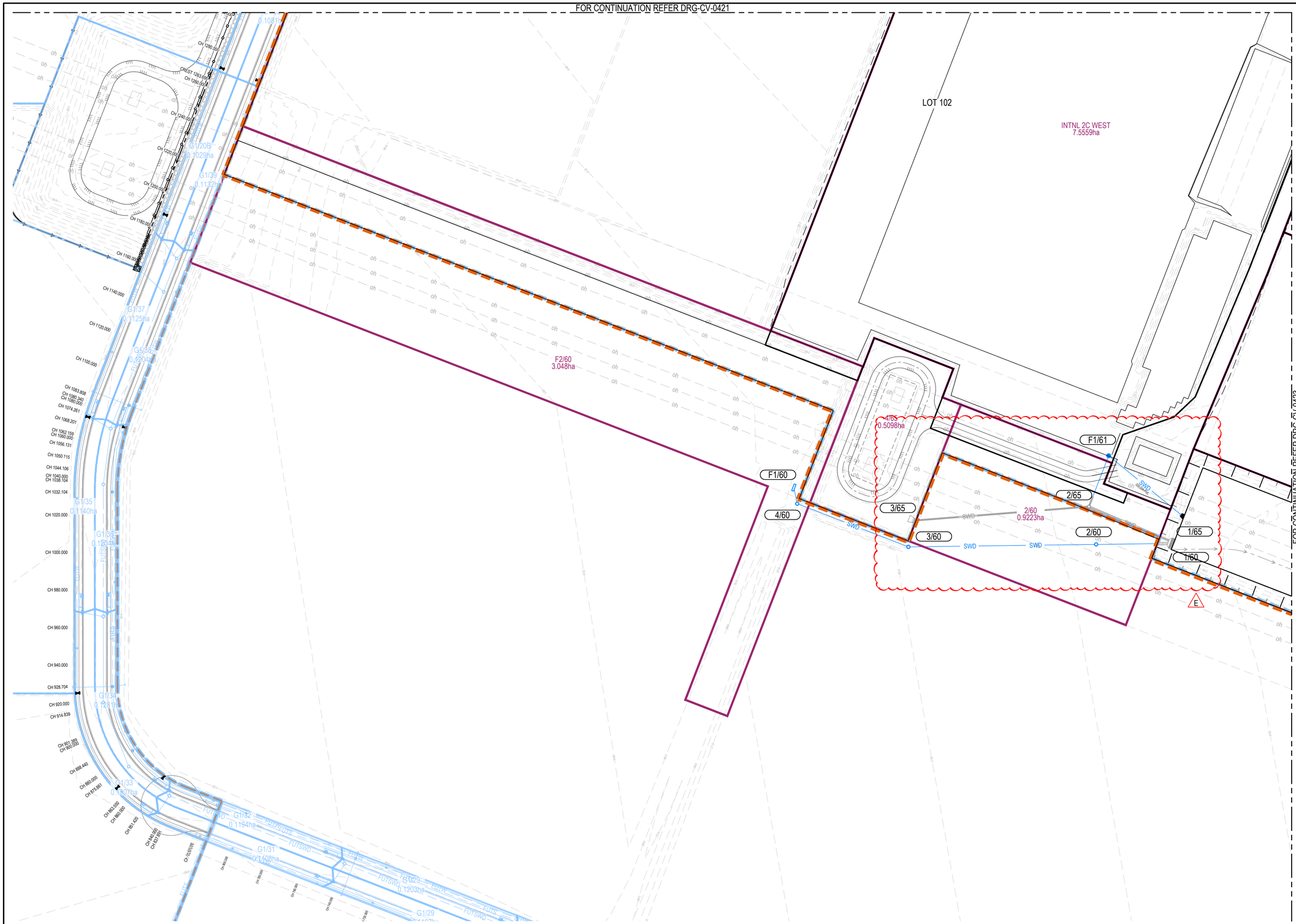
Project Number 30109334

Drawing No. 30109334-AAP-P301OP-CV-DRG-0423

Issue E

Date Plotted: 28 Mar 2025 - 05:11PM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0421-CatchmentPlan.dwg

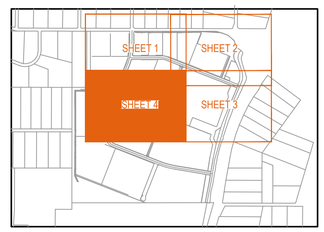
FOR CONTINUATION REFER DRG-CV-0421



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- 2/7 0.3113ha — PROPOSED STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 2/7 0.3113ha — EXISTING STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 2/7 0.3113ha — FUTURE STORMWATER DRAINAGE CATCHMENT BOUNDARY AND AREA
- 1/A1 — PROPOSED STORMWATER DRAINAGE STRUCTURE NAME
- SWD — PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED STORMWATER DRAINAGE STRUCTURE
- swd — EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING STORMWATER DRAINAGE STRUCTURE
- FUTSWD — FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE STORMWATER DRAINAGE STRUCTURE
- FUTS — FUTURE SEWER RETICULATION
- FUTW — FUTURE WATER RETICULATION

FOR CONTINUATION REFER DRG-CV-0423



KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED SWD - NEW F1/61 SUMP LINE	A.O.	S.S.	B.K.	28.03.25
D	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
C	STRUCTURE LABEL REVISED	A.O.	S.S.	B.K.	06.08.24
B	LAYOUT UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 20 40 60 80 100m

1 : 1000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 28.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER CATCHMENT PLAN SHEET 4

ARCADIS

Arcadis Australia Pacific Pty Limited
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BRISBANE QLD 4000
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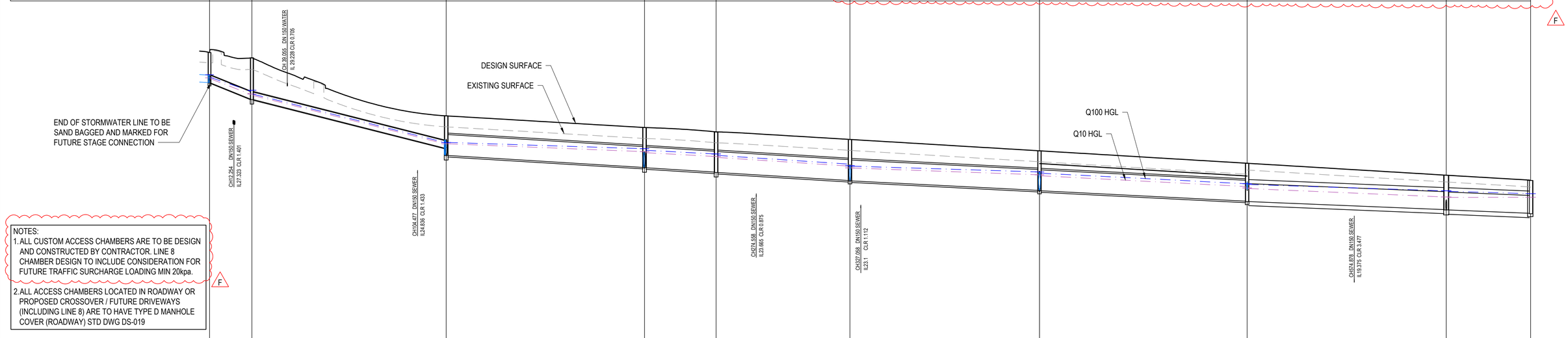
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0424

Issue: E

Date Plotted: 28 Mar 2025 - 05:11PM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0421-CatchmentPlan.dwg

CO-ORDINATES	501286.185E 6929644.763N	501263.522E 6929623.667N	501359.976E 6929608.778N	501458.310E 6929593.094N	501493.175E 6929584.245N	501551.366E 6929550.574N	501633.736E 6929502.912N	501723.991E 6929450.688N	501810.546E 6929400.605N	501846.972E 6929379.946N
STRUCTURE NAME	G1/1	11/1	10/1	9/1	8/1	7/1	6/1	5/1	4/1	3/1
STRUCTURE DESCRIPTION	FUTURE STAGE 3 STD TYPE A GULLY LIL: 2.4m LINTEL, TYPE S ON 1200Ø MH	STD MANHOLE 1200mm DIA	STD MANHOLE 1500mm DIA; EXT 600mm	STD MANHOLE 1500mm DIA; EXT 900mm	STD MANHOLE 1500mm DIA	RECTANGULAR MANHOLE CUSTOM STRUCTURE 3200mm X 1500mm	RECTANGULAR MANHOLE CUSTOM STRUCTURE 3500mm X 1500mm	RECTANGULAR MANHOLE CUSTOM STRUCTURE 3500mm X 1500mm	CUSTOM MANHOLE 2100mm DIA; EXT 900mm	MANHOLE CUSTOM STRUCTURE 3000mm X 3000mm



NOTES:
1. ALL CUSTOM ACCESS CHAMBERS ARE TO BE DESIGN AND CONSTRUCTED BY CONTRACTOR. LINE 8 CHAMBER DESIGN TO INCLUDE CONSIDERATION FOR FUTURE TRAFFIC SURCHARGE LOADING MIN 20kpa.
2. ALL ACCESS CHAMBERS LOCATED IN ROADWAY OR PROPOSED CROSSOVER / FUTURE DRIVEWAYS (INCLUDING LINE 8) ARE TO HAVE TYPE D MANHOLE COVER (ROADWAY) STD DWG DS-019

F

PIPE SIZE (mm)	375	375	1050	1050	1050	(2x)1050	(2x)1050	2100x900	2400x900
PIPE CLASS	4	4	3	3	3	3	3	BC	BC
PIPE GRADE (%)	3.82%	2.50%	0.60%	0.60%	0.60%	0.50%	0.50%	0.40%	0.40%
PIPE SLOPE (1 in X)	26.2	40.0	166.7	166.7	166.7	200.0	200.0	250.0	250.0
FULL PIPE FLOW VELOCITY (m/s)	0.73	0.72	1.26	2.04	2.02	1.51	1.93	1.84	1.74
PART PIPE FLOW VELOCITY (m/s)	2.53	2.17	2.46	2.73	2.73	2.40	2.51	2.62	2.63
DATUM RL	11.000								
HYDRAULIC GRADE LEVEL	29.638 / 29.587 / 28.809 / 28.823	28.754	26.327	25.934 / 25.877	25.691 / 25.639	25.210 / 25.116	25.110 / 24.770	24.720 / 24.181 / 24.108	24.078 / 23.656	23.633 / 23.642
PIPE FLOW (cumecs)	0.080	0.080	1.088	1.766	1.753	2.618	3.346	3.483	3.759	
PIPE CAPACITY AT GRADE (cumecs)	0.343	0.277	2.116	2.116	2.116	3.863	3.863	4.257	4.991	
DEPTH TO INVERT	1.527 / 2.075	2.095 / 1.619	1.990 / 2.002	2.022 / 2.019	2.039 / 2.064	2.084 / 1.988	2.008 / 1.904	1.924 / 1.724	1.744 / 1.653	
INVERT LEVEL OF DRAIN	29.380 / 28.568	28.548 / 26.108	25.737 / 25.140	25.120 / 24.904	24.884 / 24.480	24.460 / 23.985	23.965 / 23.443	23.423 / 23.023	23.003 / 22.834	
DESIGN (& EXISTING) SURFACE LEVEL	30.907	30.643	27.727	27.142	26.923	26.544	25.973	25.347	24.747	24.487
CHAINAGES	0.000	21.264 / 21.264	97.596 / 118.860	99.577 / 218.438	35.970 / 254.408	67.230 / 321.638	95.166 / 416.804	104.275 / 521.079	100.000 / 621.079	42.366 / 663.445
LINE					1					

Issue	Description	DR	CH	VE	Date
F	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	05.09.24
E	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	03.09.24
D	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	01.08.24
C	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	15.07.24
B	AMENDMENTS TO CHANNEL AND SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales
HORZ 0 10 20 40 60 80 100m
1:1000
VERT 0 1 2 4 6 8 10m
1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

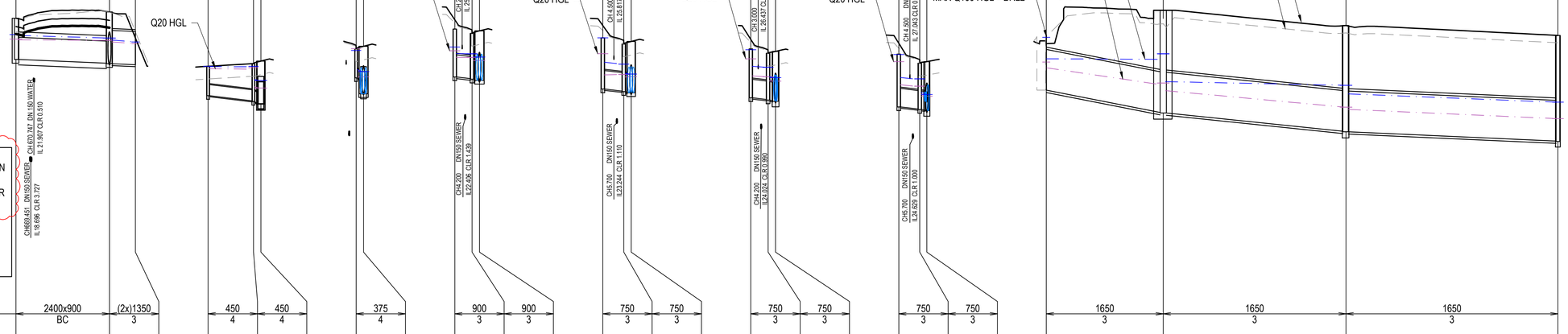
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0441

Issue: F

100mm on Original

Date Plotted: 13 Mar 2025 - 10:02AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0441-SWDLS.dwg

CO-ORDINATES	501846.972E 6923379.946N		501873.492E 6929406.704N		501883.432E 6929410.086N		501827.971E 6929393.988N		501812.048E 6929403.201N		501810.546E 6929400.605N		501725.494E 6929453.284N		501723.991E 6929450.688N		501638.745E 6929511.567N		501635.239E 6929505.509N		501633.736E 6929502.912N		501557.125E 6929560.528N		501552.868E 6929553.171N		501551.366E 6929550.574N		501458.202E 6929602.723N		501457.134E 6929595.805N		501458.310E 6929593.094N		501359.601E 6929619.461N		501358.304E 6929611.060N		501359.976E 6929608.778N		501754.438E 6929717.863N		501798.829E 6929711.000N		501797.879E 6929640.174N		501862.221E 6929597.153N	
STRUCTURE NAME	3/1		2/1		1/1		G2/2		G1/2		4/1		G1/3		5/1		1/4		G1/4		6/1		1/5		G1/5		7/1		1/6		G1/6		9/1		1/7		G1/7		10/1		8/8		7/8		6/8		5/8	
STRUCTURE DESCRIPTION	MANHOLE	CUSTOM STRUCTURE 3000mm X 3000mm	RECTANGULAR MANHOLE	CUSTOM STRUCTURE REFER DRG 0482 FOR SETOUT	OUTLET		STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S	CUSTOM MANHOLE	2100mm DIA; EXT 900mm	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S	RECTANGULAR MANHOLE	CUSTOM STRUCTURE 3500mm X 1500mm	FIELD INLET	1200x1200 RAISED GRATE	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S ON 1200Ø MH	RECTANGULAR MANHOLE	CUSTOM STRUCTURE 3500mm X 1500mm	FIELD INLET	1200x1200 RAISED GRATE	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S ON 1200Ø MH	RECTANGULAR MANHOLE	CUSTOM STRUCTURE 3200mm X 1500mm	FIELD INLET	1200x1200 RAISED GRATE	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S ON 1200Ø MH	STD MANHOLE	1500mm DIA; EXT 900mm	FIELD INLET	1200x1200 RAISED GRATE	STD TYPE A GULLY	LIL: 2.4m LINTEL: TYPE S ON 1200Ø MH	STD MANHOLE	1500mm DIA; EXT 600mm	CUSTOM RECTANGULAR STRUCTURE 4m x 2m		CUSTOM MANHOLE	1800mm DIA; EXT 900mm	CUSTOME MANHOLE	1800mm DIA; EXT 900mm	CUSTOME MANHOLE	1500mm DIA; EXT 900mm	
	F			F								F				F						F						F																			



NOTES:
1. ALL CUSTOM ACCESS CHAMBERS ARE TO BE DESIGN AND CONSTRUCTED BY CONTRACTOR. LINE 8 CHAMBER DESIGN TO INCLUDE CONSIDERATION FOR FUTURE TRAFFIC SURCHARGE LOADING MIN 20kpa.
2. ALL ACCESS CHAMBERS LOCATED IN ROADWAY OR PROPOSED CROSSOVER / FUTURE DRIVEWAYS (INCLUDING LINE 8) ARE TO HAVE TYPE D MANHOLE COVER (ROADWAY) STD DWG DS-019

PIPE SIZE (mm)		2400x900		(2x)1350				450	450					375				900	900					750	750					750	750					750	750					1650	1650			1650		
PIPE CLASS		BC		3				4	4					4				3	3					3	3					3	3					3	3					3	3			3		
PIPE GRADE (%)		0.40%		0.40%				1.16%	3.00%					2.00%				1.00%	1.00%					1.00%	1.00%					1.00%	1.00%					1.00%	1.00%					1.91%	1.00%			0.44%		
PIPE SLOPE (1 in X)		250.0		250.0				86.0	33.3					50.0				100.0	100.0					100.0	100.0					100.0	100.0					100.0	100.0					52.3	100.0			228.4		
FULL PIPE FLOW VELOCITY (m/s)		1.72		1.81				0.67	2.37					2.14				0.87	1.27					1.94	2.04					1.72	1.83					2.19	2.33					1.51	1.51			1.51		
PART PIPE FLOW VELOCITY (m/s)		2.62		2.60				1.76	3.42					2.56				2.50	2.77					2.78	2.81					2.71	2.75					2.84	2.86					4.93	3.90			2.87		
DATUM RL		8.000						10.000						10.000				10.000						11.000						12.000						13.000						12.000						
HYDRAULIC GRADE LEVEL	23.642	23.612		23.588	23.526	23.460	24.525	24.443	24.417	24.481	23.708	23.656	23.633	25.246	24.415	24.304	24.108	24.078	25.167	24.898	24.897	24.769	24.770	24.720	26.048	25.188	25.207	25.098	25.116	25.110	26.839	26.146	26.114	25.950	25.934	25.877	27.727	26.785	26.721	26.730	26.409	26.327	26.708	26.476	25.792	25.858	25.550	24.881	24.789	24.416
PIPE FLOW (cumecs)		3.723			5.186			0.106		0.376				0.236				0.551		0.810				0.855		0.903				0.761		0.809				0.967		1.029				3.222			3.222			3.222	
PIPE CAPACITY AT GRADE (cumecs)		4.991			6.780			0.308		0.494				0.248				1.811		1.811				1.114		1.114				1.114		1.114				1.114		1.114				12.605			9.118			6.034	
DEPTH TO INVERT	1.653	1.673		2.078	2.098	1.350	1.350	1.189		1.513	1.533	1.724	1.744	1.175		1.336		1.924	1.942		1.837	1.857	1.988	2.008	2.078		1.913	1.933	2.064	2.084	1.981		1.873	1.893	2.002	2.022	2.139		1.858	1.878	1.970	1.990	2.227			3.810	4.165		4.288	4.308	4.283
INVERT LEVEL OF DRAIN	22.834	22.814		22.662	22.642	22.600	22.600	23.347		23.133	23.113	23.023	23.003	24.071		24.011		23.423	24.105		24.035	24.015	23.985	23.965	24.615		24.530	24.510	24.480	24.460	25.260		25.190	25.170	25.140	25.120	25.891		25.806	25.786	25.757	25.737	25.570			24.664	24.644		23.903	23.883	23.507
DESIGN (& EXISTING) SURFACE LEVEL	24.487			24.740		23.950	24.536		24.646		24.747		25.246		25.347			26.047		25.872			25.973	26.693		26.443		26.544		27.241		27.063		27.142		28.030		27.664		27.727		27.797			28.809			28.191		27.790
CHAINAGES	663.445	37.917		701.362	10.500	711.862	0.000	18.396	18.396		3.000	21.396	0.000	3.000	3.000			0.000	7.000	7.000		3.000	10.000	0.000	8.500	8.500		3.000	11.500	0.000	7.000	7.000		3.026	10.026	0.000	8.500	8.500		2.863	11.363	0.000			47.424	47.424		74.104	121.528	85.892	207.420
LINE		1						2						3				4						5						6						7						8						

Issue	Description	DR	CH	VE	Date
F	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	05.09.24
E	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	03.09.24
D	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	01.08.24
C	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	15.07.24
B	AMENDMENTS TO CHANNEL AND SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

HORZ 0 10 20 40 60 80 100m
1:1000

VERT 0 1 2 4 6 8 10m
1:100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 2

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Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

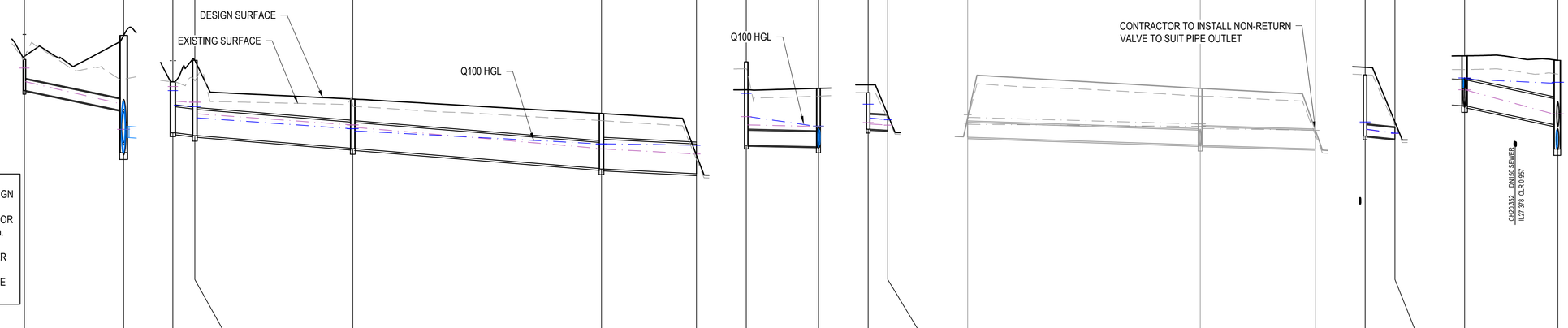
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0442

Issue: F

Date Plotted: 13 Mar 2025 - 10:02AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0441-SWDLS.dwg

| | | |

CO-ORDINATES	501961.781E 6929546.704N		501946.371E 6929510.100N	501399.504E 6929164.008N	501399.939E 6929155.198N		501454.882E 6929123.367N		501553.881E 6929109.257N	501591.702E 6929103.867N	501567.773E 6929154.884N	501553.226E 6929129.745N	501708.277E 6929098.898N	501704.337E 6929093.090N	501459.989E 6929136.742N		501553.226E 6929129.745N	501592.549E 6929105.344N	501883.352E 6929297.455N	501893.500E 6929291.050N	501262.716E 6929654.827N		501257.194E 6929617.761N
STRUCTURE NAME	F1/16		3/8	F1/60	4/60		3/60		2/60	1/60	F1/61	2/65	F1/64	1/64	3/65		2/65	1/65	F1/66	1/66	13/70		12/70
STRUCTURE DESCRIPTION	STD FIELD INLET TYPE 1 AND CONCRETE APRON		CUSTOM MANHOLE 2100mm DIA; EXT 600mm REFER DRG 0482 FOR Q3MONTH BYPASS WEIR DETAILS 4 X 900x900 FIELD INLET TYPE 1 GRATES WITH CONCRETE APRON OVER CUSTOM 1000mm X 3600mm CHAMBER		DTMR STD MANHOLE 1500mm DIA		STD MANHOLE 1500mm DIA		STD MANHOLE 1500mm DIA	OUTLET	STD FIELD INLET TYPE 2 900x600 ON A 18000 MH	STD MANHOLE 1200mm DIA	STD FIELD INLET TYPE 2 900x600 ON A 12000 MH	OUTLET	HEADWALL		STD MANHOLE 1200mm DIA	OUTLET	STD FIELD INLET TYPE 2 900x600 ON A 12000 MH	OUTLET	STD MANHOLE 1800mm DIA		CUSTOM MANHOLE 1800mm DIA; EXT 900mm
PIPE SIZE (mm)	450			1050	1050		1050			1200	600		600		600		750		450		1050		
PIPE CLASS	4			3	3		3			3	3		3		4		3		4		3		
PIPE GRADE (%)	1.99%			1.00%	0.80%		0.80%			0.50%	0.21%		0.50%		0.33%		0.30%		1.00%		2.00%		
PIPE SLOPE (1 in X)	50.1			100.0	125.0		125.0			200.0	483.1		200.0		300.3		333.3		100.0		50.0		
FULL PIPE FLOW VELOCITY (m/s)	1.58			2.76	2.75		2.65			1.90	2.54		0.40		0.70		1.09		0.87		1.45		
PART PIPE FLOW VELOCITY (m/s)	2.67			3.56	3.21		3.21			2.70	2.54		1.29		1.29		1.53		1.78		3.99		
DATUM RL	10.000			12.000							11.000		10.000		11.000				9.000		15.000		
HYDRAULIC GRADE LEVEL	25.505	24.953	24.061 23.039 23.011	26.761	26.176 26.109 26.127	25.662		25.215 25.119	24.269	24.249 24.048	25.484	24.553 24.155 24.167 24.071	23.309	23.253 23.208	24.285	24.241 24.153 24.157 24.070 24.000			22.287	22.030 21.871	29.629	29.606 28.632 28.658	
PIPE FLOW (cumecs)		0.252			2.394		2.381		2.293	2.153		0.719		0.112		0.198		0.481		0.138		1.258	
PIPE CAPACITY AT GRADE (cumecs)		0.403			2.732		2.443		2.443	2.769		0.279		0.436		0.354		0.612		0.291		3.863	
DEPTH TO INVERT	1.250		3.011 4.715	2.052	3.006 3.026		1.977 1.997		2.213	2.233 1.200 1.200	3.351	2.344 2.364	1.473	0.600 0.600	0.600		2.275 2.295	0.750 0.750	2.462	0.449 0.449	2.023		2.595
INVERT LEVEL OF DRAIN	24.600		23.804 22.100	24.897	24.809 24.789		24.281 24.261		23.461	23.441 23.250 23.250	23.400	23.340 23.320	23.039	23.000 23.000	23.720		23.409 23.389	23.250 23.250	21.770	21.650 21.650	28.969		28.219
DESIGN (& EXISTING) SURFACE LEVEL	25.850		26.815	26.949	27.815		26.258		25.674	24.450	26.751	25.684	24.512	23.600	24.320		25.684	24.000	24.232	22.099	30.992		30.814
CHAINAGES	0.000	39.933	39.933	0.000	8.821 8.821	63.497		72.318	100.000	172.318 38.203	0.000	29.044 29.044	0.000	7.866 7.866	0.000	93.500	93.500	46.279 139.779	0.000	12.000 12.000	0.000	37.476	37.476
LINE	16			60							61		64		65				66		70		



NOTES:
1. ALL CUSTOM ACCESS CHAMBERS ARE TO BE DESIGN AND CONSTRUCTED BY CONTRACTOR. LINE 8 CHAMBER DESIGN TO INCLUDE CONSIDERATION FOR FUTURE TRAFFIC SURCHARGE LOADING MIN 20kpa.
2. ALL ACCESS CHAMBERS LOCATED IN ROADWAY OR PROPOSED CROSSOVER / FUTURE DRIVEWAYS (INCLUDING LINE 8) ARE TO HAVE TYPE D MANHOLE COVER (ROADWAY) STD DWG DS-019

Issue	Description	DR	CH	VE	Date
J	SWD STRUCTURE F1/61 UPDATED	A.O.	S.S.	B.K.	28.03.25
I	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	18.10.24
H	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	05.09.24
G	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	03.09.24
F	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	09.08.24
E	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	01.08.24
D	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	15.07.24
C	AMENDMENTS TO CHANNEL AND SWD DESIGN	A.O.	S.S.	B.K.	03.07.24
B	PCN17 AMENDMENTS TO SWD LINES 60, 65 & 79	G.P.	T.F.	G.E.	25.06.24

Scales

HORZ 0 10 20 40 60 80 100m — 1:1000

VERT 0 1 2 4 6 8 10m — 1:100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 04.04.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 4

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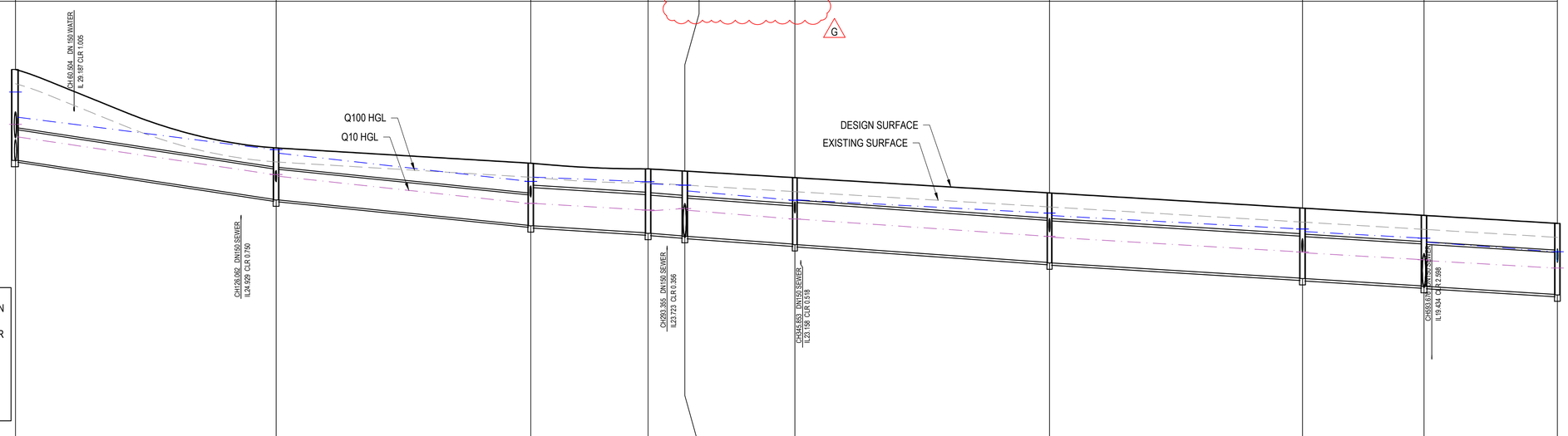
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0444

Issue: J

Date Plotted: 4 Apr 2025 - 03:10PM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0441-SWDLS.dwg

CO-ORDINATES	501257.194E 6926617.761N		501357.991E 6926599.978N		501456.820E 6926584.723N		501501.420E 6926573.121N	501513.888E 6926565.906N	501551.301E 6926544.259N		501637.855E 6926494.175N		501723.834E 6926444.425N		501765.134E 6926420.528N		501810.481E 6926394.289N						
STRUCTURE NAME	12/70		11/70		10/70		9/70	8/70	7/70		6/70		5/70		4/70		3/70						
STRUCTURE DESCRIPTION	CUSTOM MANHOLE 1800mm DIA; EXT 900mm		STD MANHOLE 1800mm DIA		STD MANHOLE 1800mm DIA		STD MANHOLE 1800mm DIA	STD MANHOLE 2100mm DIA; EXT 900mm	STD MANHOLE 2100mm DIA; EXT 900mm		CUSTOM MANHOLE 1800mm DIA; EXT 900mm		CUSTOM MANHOLE 1800mm DIA; EXT 900mm		CUSTOM MANHOLE 1800mm DIA; EXT 900mm		CUSTOM MANHOLE 1800mm DIA; EXT 900mm						
PIPE SIZE (mm)		1200		1200		1500	1500		1500		1650		1650		1650		1650						
PIPE CLASS		3		3		3	3		3		3		3		3		3						
PIPE GRADE (%)		1.50%		1.00%		0.60%	0.70%		0.70%		0.70%		0.60%		0.60%		0.60%						
PIPE SLOPE (1 in X)		66.7		100.0		166.7	142.9		142.9		142.9		166.7		166.7		166.7						
FULL PIPE FLOW VELOCITY (m/s)		2.48		2.52		1.63	1.63		2.20		1.84		1.85		1.86		1.87						
PART PIPE FLOW VELOCITY (m/s)		4.39		3.76		3.14	3.32		3.57		3.59		3.40		3.40		3.40						
DATUM RL	11.000																						
HYDRAULIC GRADE LEVEL	28.632	28.658	28.166	26.685	26.618	25.554	25.290	25.256	25.348	25.283	24.938	24.257	24.222	23.645	23.609	23.341	23.305	23.012					
PIPE FLOW (cumecs)			2.806		2.851		2.887	2.881		3.889	3.929		3.958		3.985		4.000						
PIPE CAPACITY AT GRADE (cumecs)			4.777		3.900		5.478	5.917		5.917	7.629		7.063		7.063		7.063						
DEPTH TO INVERT	2.595	3.570		2.023	2.043	2.443	2.458	2.513	2.533	2.547	2.567	2.610	2.630	2.730	2.750	2.750	2.770	2.771	2.791	2.790			
INVERT LEVEL OF DRAIN	28.219	27.244		25.708	25.688	24.688	24.673	24.396	24.376	24.275	24.255	23.953	23.933	23.233	23.213	22.617	22.597	22.310	22.290	21.976			
DESIGN (& EXISTING) SURFACE LEVEL	30.814			27.731		27.131		26.909		26.822	26.563		25.963			25.367		25.081		24.766			
CHAINAGES	37.476		102.353	139.829	100.000	239.829	46.084	285.913	14.405	300.318	43.224	343.542	100.000	443.542	99.335	542.877	47.716	590.593	52.391	642.983			
LINE										70													



NOTES:
1. ALL CUSTOM ACCESS CHAMBERS ARE TO BE DESIGN AND CONSTRUCTED BY CONTRACTOR. LINE 8 CHAMBER DESIGN TO INCLUDE CONSIDERATION FOR FUTURE TRAFFIC SURCHARGE LOADING MIN 20kpa.
2. ALL ACCESS CHAMBERS LOCATED IN ROADWAY OR PROPOSED CROSSOVER / FUTURE DRIVEWAYS (INCLUDING LINE 8) ARE TO HAVE TYPE D MANHOLE COVER (ROADWAY) STD DWG DS-019

Issue	Description	DR	CH	VE	Date
G	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	18.10.24
F	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	05.09.24
E	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	03.09.24
D	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	01.08.24
C	SWD LONG SECTIONS UPDATED	A.O.	S.S.	B.K.	15.07.24
B	AMENDMENTS TO CHANNEL AND SWD DESIGN	A.O.	S.S.	G.E.	03.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales
HORZ 0 10 20 40 60 80 100m — 1:1000
VERT 0 1 2 4 6 8 10m — 1:100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE LONGITUDINAL SECTION SHEET 5

ARCADIS
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0445 | Issue: G

Date Plotted: 13 Mar 2025 - 10:02AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0441-SWDLS.dwg

| | | |

LOCATION				TIME		SUB-CATCHMENT RUNOFF							INLET DESIGN						DRAIN DESIGN											HEADLOSSES						PART FULL PIPE			DESIGN LEVELS					
DESIGN EVENT (ARI)	STRUCTURE NAME	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY (mm/hr)	CO-EFFICIENT OF RUNOFF	10yr RUNOFF CO-EFFICIENT (IMPERVIOUS AREA)	10yr RUNOFF CO-EFFICIENT (PERVIOUS AREA)	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	MINOR FLOW WIDTH	INLET TYPE	INLET DESCRIPTION	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE NAME	CRITICAL TIME OF CONC.	CRITICAL RAINFALL INTENSITY	CRITICAL EFFECTIVE AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE/BOX DIMENSIONS	PIPE TYPE (CLASS)	FLOW VELOCITY FULL (PIPE GRADE CAPACITY)	STRUCTURE Ku CHART	STRUCTURE Ku METHOD	STRUCTURE Ku	STRUCTURE Kw	STRUCTURE SUBMERGENCE RATIO	STRUCTURE GRATE FLOW RATIO	STRUCTURE W.S.E LOSS	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	PIPE VELOCITY HEAD	PART FULL FLOW DEPTH	PART FULL FLOW VELOCITY	PIPE UPSTREAM HGL	PIPE DOWNSTREAM HGL	UPSTREAM STRUCTURE HGL	STRUCTURE SETOUT LEVEL	FREEBOARD	STRUCTURE NAME
				Tc	I	C	C10	C10	A	C*A	Q	Qa					Qi	Qb		Iv	I	A	Q								Ku	Kw		Hw	Sf	Hf	V/20g	D	Vp						
				(mins)	(mm/hr)				(ha)	(ha)	(m^3/s)	(m^3/s)	(%)	(m^3/s)	(m)			(m^3/s)	(m^3/s)		(mins)	(mm/hr)	(ha)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m)	(%)			(m/s)			(m)	(%)	(m)	(m/s)	(m)	(m/s)	(m AHD)	(m AHD)	(m AHD)	(m AHD)	(m)	
10 yr	G1/1	G1/1 to 11/1	G2/93 G1/93	5.0	187.000	0.900			0.90	0.073	0.065	0.034	0.034	0.631	0.105		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.034	0.000	G1/7	5.929	187.000	0.065					0.080	21.264	3.820	0.375	4	0.726	T1/12	Ku,Kw - Missouri/Hare Charts	1.868	1.870	1.134	0.411	0.050	3.682	0.804	0.027	0.123	2.532	29.587	28.809	29.638	30.907	1.269	G1/1
100 yr				5.0	286.000	1.000			1.00	0.073	0.073	0.058			0.105				0.058	0.000		5.929	286.000	0.073	0.135	1.602	0.058	0.135			1.220	T1/12		1.871	1.870	1.378	0.412	0.142	3.201	0.732	0.076	0.163	2.916	29.651	28.970	28.793			
10 yr	11/1	11/1 to 10/1	G2/93 G1/93 G1/1						0.90								STD MANHOLE	1200mm DIA				6.106						0.080	97.596	2.500	0.375	4	0.721	T8/T10	Ku,Kw - Missouri/Hare Charts	2.049	2.05(2.59)	1.183	0.000	0.069	2.490	2.439	0.027	0.138	2.168	28.754	26.324	28.823	30.643	1.820	11/1
100 yr									1.00													6.106			0.134			0.134			1.209	T8/T10		2.048	2.05(2.58)	1.513	0.000	0.193	2.499	2.440	0.075	0.183	2.487	28.818	26.379	29.010			
10 yr	10/1	10/1 to 9/1	1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1500mm DIA; EXT 600mm				6.920						1.088	99.577	0.600	1.050	3	1.256	T2/T5	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000	0.395	0.512	0.081	0.534	2.460	28.324	25.931	28.324	27.727	1.403	10/1
100 yr									1.00													6.920			1.289			1.289			1.488	T2/T5		0.000	0.000	1.000	0.000	0.000	0.313	0.455	0.113	0.592	2.582	28.379	26.067	28.379			
10 yr	9/1	9/1 to 8/1	1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1500mm DIA; EXT 900mm				10.084						1.766	35.970	0.600	1.050	3	2.040	T1/12	Ku,Kw - Missouri/Hare Charts	0.266	0.270	1.054	0.000	0.056	0.518	0.214	0.212	0.734	2.734	25.875	25.688	25.931	27.142	1.211	9/1
100 yr									1.00													10.084			2.114			2.114			2.442	T2		0.269	0.270	1.078	0.000	0.082	0.499	0.206	0.304	0.860	2.785	25.986	25.806	26.067			
10 yr	8/1	8/1 to 7/1	1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1500mm DIA				10.383						1.753	67.230	0.600	1.050	3	2.025	T1/12	Ku,Kw - Missouri/Hare Charts	0.249	0.250	1.050	0.000	0.052	0.638	0.402	0.209	0.729	2.731	25.636	25.207	25.688	26.923	1.235	8/1
100 yr									1.00													10.383			2.093			2.093			2.418	T1/12		0.249	0.250	1.071	0.000	0.074	0.641	0.405	0.298	0.851	2.785	25.732	25.301	25.806			
10 yr	7/1	7/1 to 6/1	1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				10.944						2.818	95.166	0.500	1.050	3	1.512	T2/T5	Ku,Kw - Missouri/Hare Charts	0.048	0.050	1.005	0.000	0.006	0.357	0.435	0.117	0.634	2.396	25.107	24.767	25.113	26.544	1.431	7/1
100 yr									1.00													10.944			3.212			3.212			1.854	T2/T5		0.088	0.090	1.015	0.000	0.015	0.307	0.405	0.175	0.731	2.494	25.189	24.896	25.204			
10 yr	6/1	6/1 to 5/1	1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				11.737						3.346	104.275	0.500	1.050	3	1.932	T1/12	Ku,Kw - Missouri/Hare Charts	0.266	0.270	1.048	0.000	0.051	0.517	0.522	0.191	0.755	2.511	24.717	24.178	24.767	25.973	1.206	6/1
100 yr									1.00													11.737			3.880			3.880			2.241	T1/T2		0.256	0.260	1.062	0.000	0.066	0.451	0.501	0.256	0.865	2.542	24.831	24.360	24.896			
10 yr	5/1	5/1 to 4/1	G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				12.606						3.483	100.000	0.400	0.900	BC	1.843	T1/12	Ku,Kw - Missouri/Hare Charts	0.175	0.180	1.034	0.000	0.030	0.402	0.400	0.173	0.633	2.619	24.075	23.673	24.105	25.347	1.242	5/1
100 yr									1.00													12.606			3.938			3.938			2.084	T1/T2		0.171	0.170	1.044	0.000	0.038	0.342	0.342	0.221	0.691	2.714	24.323	23.980	24.360			
10 yr	4/1	4/1 to 3/1	G2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	2100mm DIA; EXT 900mm				13.439						3.759	41.884	0.400	0.900	BC	1.740	T1/T2	Ku,Kw - Missouri/Hare Charts	0.148	0.150	1.025	0.000	0.023	-0.100	0.085	0.155	0.595	2.632	23.650	23.692	23.673	24.747	1.074	4/1
100 yr									1.00													13.439			4.084			4.084			1.891	T1/T2		0.137	0.140	1.089	0.000	0.025	0.288	0.112	0.182	0.630	2.699	23.955	23.843	23.980			
10 yr	3/1	3/1 to 2/1	C2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				13.788						3.723	37.696	0.400	0.900	BC	1.724		Direct	0.200	0.200			0.030	0.142	0.073	0.152	0.591	2.624	23.661	23.608	23.692	24.487	0.795	3/1
100 yr									1.00													13.788			4.026			4.026			1.864			0.200	0.200			0.035	0.260	0.098	0.177	0.624	2.688	23.808	23.709	23.843			
10 yr	2/1	2/1 to 1/1	F1/10 C2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 C2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				14.102						5.365	10.500	0.400	1.350	3	1.874	T2/T5	Ku,Kw - Missouri/Hare Charts	0.347	0.350	1.046	0.000	0.062	0.671	0.044	0.179	0.909	2.817	23.546	23.475	23.808	24.737	1.128	2/1
100 yr									1.00													14.102			6.150			6.150			2.148	T2/T5		0.347	0.350	1.061	0.000	0.082	0.849	0.046	0.235	1.012	2.673	23.628	23.539	23.709			
10 yr	1/1		F1/10 C2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								OUTLET																												23.475	23.695	0.220	1/1
100 yr									1.00																																		23.539			
10 yr	C2/2	C2/2 to G1/2		5.0	187.000	0.900			0.90	0.021	0.019	0.010	0.302	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.106	0.196	G1/73	5.000	187.000	0.019					0.106	18.396	1.178	0.450	4	0.668	G1	Ku,Kw - Missouri/Hare Charts	3.579	3.580	2.642	1.000	0.081	0.138	0.025	0.023	0.182	1.764	24.455	24.429	24.536	24.536	0.000	C2/2
100 yr				5.0	286.000	1.000			1.00	0.021	0.021	0.017			0.505				0.042	1.015		5.000	286.000	0.021	1.058	1.563	1.058	0.042			0.266	G1		3.579	3.580	2.642	1.000	0.013	0.022	0.004	0.004	0.112	1.363	24.523	24.519	24.536			
10 yr	G1/2	G1/2 to 4/1	G2/2	5.0	187.000	0.900			0.90	0.120	0.108	0.056	0.562	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.270	0.292	G2/2	5.153	187.000	0.108					0.376	3.000	3.000	0.450	4	2.364	G2/T10	Ku,Kw - Missouri/Hare Charts	2.470	2.47(2.69)	3.070	0.718	0.767	1.737	0.052	0.285	0.294	3.418	23.725	23.673	24.492	24.646	0.154	G1/2
100 yr				5.0	286.000	1.000			1.00	0.120	0.120	0.095			0.505				0.270	1.041		5.153	286.000	0.120	1.353	1.563	1.311	0.312			1.961	G2/T10		3.043	3.04(3.14)	3.168	0.864	0.525	1.018	0.031	0.167	0.259	3.284	24.011	23.980	24.536			
10 yr	4/1		C2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1800mm DIA; EXT 900mm																T1/T2	Ku,Kw - Missouri/Hare Charts	0.148	0.150	1.025	0.000	0.023								23.673	24.747	1.074	4/1
100 yr									1.00																																		23.980			
10 yr	G1/3	G1/3 to 5/1		5.0	187.000	0.900			0.90	0.119	0.107	0.056	0.742	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.236	0.506	G1/2	5.000	187.000	0.107					0.236	3.000	2.000	0.375	4	2.138	G2	Ku,Kw - Missouri/Hare Charts	3.565	3.570	3.217	1.000	0.831	3.692	0.031	0.233	0.292	2.555	24.415	24.304	25.246	25.246	0.000	G1/3
100 yr				5.0	286.000	1.000			1.00	0.119	0.119	0.095			0.505				0.221	1.216		5.000	286.000	0.119	1.437	1.563	1.437	0.221			2.004	G2		3.748	3.750	3.049	1.000	0.768	1.583	0.059	0.205	0.276	2.538	24.408	24.360	25.176			
10 yr	5/1		G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE																T1/T2	Ku,Kw - Missouri/Hare Charts	0.175	0.180	1.034	0.000	0.030								24.105	25.347	1.242	5/1
100 yr									1.00																																		24.360			
10 yr	1/4	1/4 to G1/4		10.0	155.000	0.900			0.90	2.936	2.643	1.138	1.452		0.552		FIELD INLET	1200x1200 RAISED GRATE	0.552	0.900	G1/4	10.000	155.000	2.643					0.552	7.000	1.000	0.900	3	0.867	G1	Ku,Kw - Missouri/Hare Charts	7.000	7.000	1.298	1.000	0.268	0.016	0.006	0.038	0.341	2.498	24.895	24.894	25.164	26.047	0.883	1/4
100 yr				10.0	231.000	1.000			1.00	2.936	2.936	1.884			0.552				0.552	1.333		10.000	231.000	2.936	1.884		1.884	0.552			0.867	G1		7.000	7.000	1.332	1.000	0.268	0.093	0.006	0.038	0.341	2.498	25.632	25.026	25.300			
10 yr	G1/4	G1/4 to 6/1	1/4	5.0	187.000	0.900			0.90	0.120	0.108	0.056	0.956	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.270	0.686	G1/3	10.058	187.000	0.108					0.810	3.000	1.000	0.900	3	1.273	T1	Ku,Kw - Missouri/Hare Charts	1.548	1.550	1.142	0.329	0.128	-0.039	0.006	0.083	0.422	2.766	24.766	24.767	24.894	25.872	0.978	G1/4
100 yr				5.0	286.000	1.000			1.00	0.120	0.120	0.095			0.505				0.270	1.342		10.058	286.000	0.120	2.142	1.563	1.612	0.800			1.257	T1		1.548	1.550	1.139	0.329	0.125	0.149	0.005	0.081	0.419	2.757	24.901	24.896	25.026			
10 yr	6/1		1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 C2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE																T1/T2	Ku,Kw - Missouri/Hare Charts	0.266	0.270	1.048	0.000	0.051								24.767	25.973	1.206	6/1
100 yr									1.00																																		24.896			
10 yr	1/5	1/5 to G1/5		10.0	155.000	0.900			0.90	1.730	1.557	0.670	0.855		1.103		FIELD INLET	1200x1200 RAISED GRATE	0.855	0.000	G1/5	10.000	155.000	1.557					0.855	8.500	1.000	0.750	3	1.936	G1	Ku,Kw - Missouri/Hare Charts	4.494	4.490	2.146	1.000	0.859	-0.213	0.054	0.191	0.493	2.779	25.186	25.204	26.045	26.893	0.848	1/5
100 yr				10.0	231.000	1.000			1.00	1.730	1.730	1.110			0.961				0.961	0.149		10.000	231.000	1.730	1.110		1.110	0.961			2.176	G1		3.622	3.620	2.606	1.000	0.875	0.745	0.063	0.242	0.538	2.836	25.682	25.829	26.567			
10 yr	G1/5	G1/5 to 7/1	1/5	5.0	187.000	0.900			0.90	0.127	0.114	0.059	0.059	0.586	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.059	0.000	G1/4	10.071	187.000	0.114					0.903	3.000	1.000	0.750	3	2.044	T1	Ku,Kw - Missouri/Hare Charts	0.507	0.510	1.144	0.065	0.108	-0.579	0.023	0.213	0.513	2.808	25.098	25.113	25.204	26.443	1.239	G1/5
100 yr				5.0	286.000	1.000			1.00	0.127	0.127	0.101			0.505				0.243	0.184		10.071	286.000	0.127	1.367	1.545	0.427	1.182			2.877	T1		1.081	1.080	1.527	0.202	0.395	0.985	0.030	0.365	0.670	2.840	25.234	25.204	25.629			
10 yr	7/1		1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE																T2/T5	Ku,Kw - Missouri/Hare Charts	0.048	0.050	1.005	0.000	0.006								25.113	26.544	1.431	7/1
100 yr									1.00																																		25.204			
10 yr	1/6	1/6 to G1/6		10.0	155.000	0.900			0.90	1.538	1.384	0.596	0.761		1.103		FIELD INLET	1200x1200 RAISED GRATE	0.761	0.000	G1/6	10.000	155.000	1.384					0.761	7.000	1.000	0.750	3	1.722	G1	Ku,Kw - Missouri/Hare Charts	4.578	4.580	2.106	1.000	0.693	0.487	0.033	0.151	0.455	2.713	26.143	26.111	26.838	27.241	0.405	1/6
100 yr				10.0	231.000	1.000			1.00	1.538	1.538	0.987			0.859				0.859	0.128		10.000	231.000	2.936	1.538	0.987		0.859			1.944	G1		3.580	3.580	2.641	1.000	0.690	0.595	0.042	0.193	0.494	2.781	26.548	26.506	27.238			
10 yr	G1/6	G1/6 to 9/1	1/6	5.0	187.000	0.900			0.90	0.120	0.108	0.056	0.059	0.601	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.059	0.000	G1/5	10.058	187.000	0.108					0.809	3.026	1.000	0.750	3	1.831	T2/T5	Ku,Kw - Missouri/Hare Charts	0.958	0.960	1.258	0.072	0.164	0.527	0.016	0.171	0.474	2.748	25.947	25.931	26.111	27.063	0.952	G1/6
100 yr				5.0	286.000	1.000			1.00	0.120	0.120	0.095			0.505				0.239	0.178		10.058	286.000	0.120	1.256	1.584	0.417	1.078			2.440	T2/T5		1.352	1.350	1.786	0.218	0.410	0.936	0.028	0.304	0.594	2.871	26.096	26.067	26.506			
10 yr	9/1		1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1500mm DIA; EXT 900mm																T1/T2	Ku,Kw - Missouri/Hare Charts	0.266	0.270	1.054	0.000	0.056								25.931	27.142	1.211	9/1
100 yr									1.00																																		26.067			
10 yr	1/7	1/7 to G1/7		5.0	187.000	0.900			0.90	1.603	1.443	0.750	0.967		1.103		FIELD INLET	1200x1200 RAISED GRATE	0.967	0.000	G1/7	5.000	187.000	1.443					0.967	8.500	1.000	0.750	3	2.188	G1	Ku,Kw - Missouri/Hare Charts	3.858	3.860	2.448	1.000	0.942	0.753	0.064	0.244	0.540	2.838	26.782	26.718	27.724	28.030	0.306	1/7
100 yr				5.0	286.000	1.000			1.00	1.603	1.603	1.274			0.971				0.971	0.303		5.000	286.000	1.603	1.274		1.274	0.971			2.198	G1		3.519	3.520	2.893	1.000	0.867	0.760	0.065	0.246	0.542	2.840	27.040	26.978	27.907			
10 yr	G1/7	G1/7 to 10/1	1/7	5.0	187.000	0.900			0.90	0.143	0.128	0.067	0.067	2.961	0.532		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.064	0.003	G1/6	5.071	187.000	0.128					1.029	2.863	1.000	0.750	3	2.328	T5/T8	Ku,Kw - Missouri/Hare Charts	1.126	1.13(1.16)	1.428	0.062	0.321	2.878	0.017	0.277	0.589	2.880	26.407	26.324	26.727	27.664	0.937	G1/7
100 yr				5.0	286.000	1.000			1.00	0.143	0.143	0.113			0.532				0.222	0.194		5.071	286.000	0.143	1.382	3.471	0.416	1.189			2.690	T5/T8		1.414	1.41(1.46)	1.719	0.186	0.540	1.351	0.029	0.369	0.678	2.829	26.454	26.415	26.993			
10 yr	10/1		1/7 G1/7 G2/93 G1/93 G1/1						0.90								STD MANHOLE	1500mm DIA; EXT 600mm																T2/T5	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000								26.324	27.727	1.403	10/1
100 yr									1.00																																		26.379			
10 yr	8/8	8/8 to 7/8		5.0	0.000				0.90	0.000	0.000	3.222					OPEN CHANNEL		3.222	0.000		1.000	0.000	0.000				3.222	47.424	1.911	1.650	3	1.507		Direct	2.000	2.000			0.232	1.443	0.832	0.116	0.589	4.929	26.476	25.792	26.708	25.570	-1.138	8/8
100 yr				5.0	0.000				1.00	0.000	0.000								6.250	0.000		1.000	0.000	0.000	6.250		6.250	6.250			2.923			2.000	2.000			0.872	0.049	0.225	0.436	0.821	5.881	26.842	26.818	27.713			
10 yr	7/8	7/8 to 6/8							0.90								STD MANHOLE	1800mm DIA; EXT 900mm										1.395								3.222	74.104	1.000	1.650	3	1.507	T10	Ku,Kw - Missouri/Hare Charts	2.090	2.09(2.66)	1.187	0.000	0.308	0.902	0.731	0.116	0.678	3.895	25.550	24.881	25.858	28.474	2.616	7/8
100 yr									1.00																			1.395			6.250			6.250			2.923	T10		2.072	2.07(2.59)	1.884	0.000	1.129	0.200	0.350	0.436	1.003	4.592	25.915	25.767	27.044			
10 yr	6/8	6/8 to 5/8							0.90								STD MANHOLE	1800mm DIA; EXT 900mm										2.013								3.222	85.892	0.438	1.650	3	1.507		Direct	0.800	0.800			0.093	0.434	0.376	0.116	0.858	2.867	24.789	24.416	24.881	28.191	3.310	6/8
100 yr									1.00																			2.013			6.250			6.250			2.923			0.800	0.800			0.349	0.391	0.349	0.436	1.413	3.205	25.418	25.082	25.767			
10 yr	5/8	5/8 to 4/8							0.90								STD MANHOLE	1500mm DIA; EXT 900mm										2.729								3.222	91.195	0.428	1.650	3	1.507	T1	Ku,Kw - Missouri/Hare Charts	0.200	0.200	1.014	0.000	0.023	0.474	0.386	0.116	0.884	2.842	24.383	23.960	24.416	27.790	3.374	5/8
100 yr									1.00																			2.729			6.250			6.250			2.923	T1		0.200	0.200	1.053	0.000	0.087	0.394	0.372	0.436	1.438	3.160	24.985	24.635	25.082			
10 yr	4/8	4/8 to 3/8							0.90								STD MANHOLE	1500mm DIA; EXT 900mm										3.488								3.222	41.755	1.000	1.650	3	1.507	T5/T8	Ku,Kw - Missouri/Hare Charts	1.023	1.02(1.06)	1.074	0.000	0.122	1.547	0.238	0.116	0.678	3.895	23.824	23.178	23.946	27.396	3.450	4/8
100 yr									1.00																			3.488			6.250			6.250			2.923	T5/T8		1.023	1.02(1.06)	1.279	0.000	0.460	0.634	0.385	0.436	1.003	4.592	24.189	23.925

LOCATION				TIME		SUB-CATCHMENT RUNOFF						INLET DESIGN					DRAIN DESIGN										HEADLOSSES						PART FULL PIPE			DESIGN LEVELS				
				tc	I	C	C10	C10	A	C*A	Q	Qas				Qi	Qb		tv	I	A	Q			Qp	L				Vf			Ku	Kw			Hw	Sf	Hf	V2/2g	D	Vp					
DESIGN EVENT (ARI)	STRUCTURE NAME	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY (mm/hr)	CO-EFFICIENT OF RUNOFF	10yr RUNOFF CO-EFFICIENT (IMPERVIOUS AREA)	10yr RUNOFF CO-EFFICIENT (PERVIOUS AREA)	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW/ROAD CAPACITY	MINOR FLOW WIDTH	INLET TYPE	INLET DESCRIPTION	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE NAME	CRITICAL TIME OF CONC.	CRITICAL RAINFALL INTENSITY	CRITICAL EFFECTIVE AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE/BOX DIMENSIONS	PIPE TYPE (CLASS)	FLOW VELOCITY FULL (PIPE GRADE CAPACITY)	STRUCTURE Ku CHART	STRUCTURE Ku METHOD	STRUCTURE Ku	STRUCTURE Kw	STRUCTURE SUBMERGENCE RATIO	STRUCTURE GRATE FLOW RATIO	STRUCTURE W.S.E LOSS	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	PIPE VELOCITY HEAD	PART FULL PIPE DEPTH	PART FULL PIPE VELOCITY	PIPE UPSTREAM HGL	PIPE DOWNSTREAM HGL	UPSTREAM STRUCTURE HGL	STRUCTURE SETOUT LEVEL	FREEBOARD	STRUCTURE NAME
10 yr	2/1		F1/10 G2/2 G1/2 G1/3 1/4 G1/4 1/5 G1/5 1/6 G1/6 1/7 G1/7 G2/93 G1/93 G1/1						0.90							RECTANGULAR MANHOLE	CUSTOM STRUCTURE													T2/T5	Ku,Kw - Missouri/Hare Charts	0.347	0.350	1.046	0.000	0.062							23.608	24.737	1.129	2/1
100 yr									1.00																					T2/T5		0.347	0.350	1.061	0.000	0.082							23.709			
10 yr	F1/11	F1/11 to 1/11		0.0	0.000				0.90		0.000	0.000	0.000			STD FIELD INLET TYPE 2	600x600	0.000	0.000		1.000	0.000	0.000				0.000	21.784	0.500	0.375	4	0.000		Direct	0.000	0.000			0.000	0.500	0.109	0.000	0.000	0.000	21.310	21.201	21.310	22.239	0.929	F1/11
100 yr				0.0	0.000				1.00		0.000	0.000						0.000	0.000		1.000	0.000	0.000				0.000					0.000			0.000	0.000			0.000	0.500	0.109	0.000	0.000	0.000	21.310	21.201	21.310			
10 yr	1/11								0.90							HEADWALL																												21.201	21.181	-0.020	1/11
100 yr									1.00																																		21.201			
10 yr	2/12	2/12 to 1/12		0.0	0.000				0.90		0.000	0.000	0.000			HEADWALL		0.000	0.000		1.000	0.000	0.000				0.960	17.732	1.718	0.300	4	6.791		Direct	2.000	2.000			0.096	1.179	0.253	0.048	0.157	12.803	22.744	22.535	22.840	22.540	-0.300	2/12
100 yr				0.0	0.000				1.00		0.000	0.000						0.000	0.000		1.000	0.000	0.000	0.960		0.000	0.960				6.791			2.000	2.000			0.096	1.179	0.253	0.048	0.157	12.803	22.744	22.535	22.840			
10 yr	1/12								0.90							HEADWALL																												22.535	22.235	-0.300	1/12
100 yr									1.00																																		22.535			
10 yr	2/13	2/13 to 1/13		0.0	0.000				0.90		0.000	0.000	0.000			HEADWALL		0.000	0.000		1.000	0.000	0.000				0.370	15.753	3.327	0.450	BC	0.458		Direct	2.000	2.000			0.021	3.820	0.385	0.011	0.085	2.417	23.563	22.961	23.584	23.400	-0.184	2/13
100 yr				0.0	0.000				1.00		0.000	0.000						0.000	0.000		1.000	0.000	0.000	0.370		0.000	0.370				0.458			2.000	2.000			0.021	3.820	0.385	0.011	0.085	2.417	23.563	22.961	23.584			
10 yr	1/13								0.90							HEADWALL																												22.961	22.875	-0.086	1/13
100 yr									1.00																																		22.961			
10 yr	3/15	3/15 to 2/15		0.0	0.000				0.90		0.000	0.000	0.000			HEADWALL		0.000	0.000		1.000	0.000	0.000				0.000	3.150	2.540	0.900	4	0.000	Outlet Control	Ku - 101 Pipe Culvert Inlet - Concrete; Square Edge with Headwall	0.000	0.000	1.422		0.000	0.000	0.000	0.000	0.000	0.000	22.830	22.830	22.830	21.550	-1.280	3/15
100 yr				0.0	0.000				1.00		0.000	0.000						0.000	0.000		1.000	0.000	0.000	0.000		0.000	0.000				0.000	Outlet Control		0.000	0.000	1.422		0.000	0.000	0.000	0.000	0.000	0.000	22.830	22.830	22.830			
10 yr	2/15	2/15 to 1/15							0.90							DETENTION TANK					1.026						7.300	10.342	1.185	1.200	BC	2.897		Direct	2.000	2.000			0.490	2.748	0.065	0.245	0.729	4.771	22.340	22.056	22.830	23.087	0.257	2/15
100 yr									1.00												1.026			7.300			7.300				2.897			2.000	2.000			0.490	2.748	0.065	0.245	0.729	4.771	22.340	22.056	22.830			
10 yr	1/15								0.90							HEADWALL																												22.056	21.327	-0.729	1/15
100 yr									1.00																																		22.056			
10 yr	F1/16	F1/16 to 3/8		5.0	187.000	0.800			0.80	0.606	0.484	0.252	0.252	2.894	0.810	STD FIELD INLET TYPE 1	AND CONCRETE APRON	0.252	0.000	2/BP7	5.000	187.000	0.484				0.252	39.933	1.994	0.450	4	1.582	G1	Ku,Kw - Missouri/Hare Charts	4.323	4.320	2.227	1.000	0.552	2.232	0.708	0.128	0.258	2.671	24.953	24.061	25.505	25.850	0.345	F1/16
100 yr				5.0	286.000	1.000			1.00	0.606	0.606	0.481			0.810			0.481	0.000		5.000	286.000	0.606	0.481	3.432	0.481	0.481				3.025	G1		2.378	2.380	4.207	1.000	1.110	2.868	1.135	0.467	0.450	3.025	25.383	24.238	26.493			
10 yr	3/8		F1/16						0.90							STD MANHOLE	2100mm DIA; EXT 600mm														T1/T2	Ku,Kw - Missouri/Hare Charts	0.234	0.230	1.017	0.000	0.028							23.039	26.815	3.776	3/8
100 yr									1.00																							T1/T2		0.233	0.230	1.106	0.000	0.110							23.925			
10 yr	F1/60	F1/60 to 4/60		8.0	167.000	0.900			0.90	11.167	10.051	4.662	4.662	0.518	2.394	QUAD STD FIELD INLET TYPE 1	900x900 WITH CONCRETE APRON	2.394	2.269	2/BP8	8.000	167.000	10.051				2.394	8.821	1.000	1.050	3	2.764	Outlet Control	Ku - 101 Pipe Culvert Inlet - Concrete; Square Edge with Headwall	1.500	1.500	1.775		0.585	0.768	0.068	0.390	0.762	3.556	26.176	26.109	26.761	24.897	-1.864	F1/60
100 yr				8.0	250.000	1.000			1.00	11.167	11.167	7.755			2.394			2.394	5.362		8.000	250.000	11.167	7.755	1.452	7.755	2.394				2.764	Outlet Control		1.500	1.500	1.770		0.585	0.768	0.068	0.390	0.762	3.556	26.171	26.103	26.755			
10 yr	4/60	4/60 to 3/60	F1/60						0.90							STD MANHOLE	1500mm DIA				8.074						2.381	63.497	0.800	1.050	3	2.750	T5/T8	Ku,Kw - Missouri/Hare Charts	1.158	1.16(1.21)	1.443	0.000	0.466	0.703	0.499	0.386	0.838	3.215	25.662	25.215	26.127	27.815	1.688	4/60
100 yr									1.00												8.074			2.371			2.371				2.738	T5/T8		1.158	1.16(1.21)	1.439	0.000	0.461	0.735	0.504	0.382	0.834	3.214	25.660	25.194	26.121			
10 yr	3/60	3/60 to 2/60	F1/60						0.90							STD MANHOLE	1500mm DIA				8.603						2.293	100.000	0.800	1.050	3	2.648	T2	Ku,Kw - Missouri/Hare Charts	0.268	0.270	1.091	0.000	0.096	0.850	0.793	0.358	0.808	3.207	25.119	24.269	25.215	26.258	1.043	3/60
100 yr									1.00												8.603			2.207			2.207				2.548	T2		0.268	0.270	1.085	0.000	0.089	0.650	0.751	0.331	0.781	3.194	25.105	24.455	25.194			
10 yr	2/60	2/60 to 1/60	F1/60						0.90							STD MANHOLE	1500mm DIA				9.436						2.153	38.203	0.500	1.200	3	1.904	T1	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000	0.528	0.191	0.185	0.798	2.696	24.249	24.048	24.249	25.674	1.425	2/60
100 yr									1.00												9.436			1.962			1.962				1.734	T1		0.000	0.000	1.000	0.000	0.000	0.144	0.086	0.153	0.748	2.647	24.455	24.400	24.455			
10 yr	1/60		F1/60						0.90							OUTLET																												24.048	23.993	-0.055	1/60
100 yr									1.00																																		24.400			
10 yr	F1/61	F1/61 to 2/65		5.0	0.000				0.90		0.000	0.000	0.288			STD FIELD INLET TYPE 2	900x600 ON A 1200Ø MH	0.288	0.000		1.000	0.000	0.000				0.288	29.044	0.500	0.600	3	1.019	G1	Ku,Kw - Missouri/Hare Charts	6.250	6.250	1.670	1.000	0.331	0.220	0.064	0.053	0.357	1.642	24.217	24.153	24.548	26.800	2.252	F1/61
100 yr				5.0	0.000				1.00		0.000	0.000						0.314	0.000		1.000	0.000	0.000	0.314		0.314	0.314				1.111	G1		5.368	5.370	1.871	1.000	0.338	0.261	0.076	0.063	0.378	1.673	24.330	24.254	24.668			
10 yr	2/65		3/65						0.90							STD MANHOLE	1200mm DIA														T5/T8	Ku,Kw - Missouri/Hare Charts	1.376	1.38(1.45)	1.117	0.000	0.088							24.157	25.684	1.527	2/65
100 yr									1.00																							T5/T8		1.164	1.16(1.21)	1.160	0.000	0.119							24.259			
10 yr	F1/64	F1/64 to 1/64		5.0	0.000				0.90		0.000	0.000	0.112			STD FIELD INLET TYPE 2	900x600 ON A 1200ø MH	0.112	0.000		1.000	0.000	0.000				0.112	7.866	0.500	0.600	3	0.396	G1	Ku,Kw - Missouri/Hare Charts	7.000	7.000	1.093	1.000	0.056	0.573	0.039	0.008	0.208	1.288	23.253	23.208	23.309	24.512	1.203	F1/64
100 yr				5.0	0.000				1.00		0.000	0.000						0.413	0.000		1.000	0.000	0.000	0.413		0.413	0.413				1.461	G1		5.116	5.120	1.928	1.000	0.557	0.924	0.044	0.109	0.467	1.748	23.494	23.421	24.051			
10 yr	1/64								0.90							OUTLET																												23.208	23.622	0.414	1/64
100 yr									1.00																																		23.421			
10 yr	3/65	3/65 to 2/65		10.0	155.000	0.900			0.90	0.510	0.459	0.198	0.198			HEADWALL		0.198	0.000		10.000	155.000	0.459				0.198	93.500	0.333	0.600	4	0.699	Outlet Control	Ku - 101 Pipe Culvert Inlet - Concrete; Square Edge with Headwall	1.765	1.760	0.941		0.044	0.094	0.093	0.025	0.320	1.287	24.241	24.153	24.285	23.720	-0.565	3/65
100 yr				10.0	231.000	1.000			1.00	0.510	0.510	0.327						0.327	0.000		10.000	231.000	0.510	0.327		0.327	0.327				1.157	Outlet Control		1.500	1.500	1.502		0.102	0.284	0.265	0.068	0.455	1.422	24.519	24.254	24.622			
10 yr	2/65	2/65 to 1/65	3/65						0.90							STD MANHOLE	1200mm DIA				10.779						0.481	46.279	0.300	0.750	3	1.088	T5/T8	Ku,Kw - Missouri/Hare Charts	1.376	1.38(1.45)	1.117	0.000	0.088	0.151	0.076	0.060	0.502	1.529	24.070	24.000	24.157	25.684	1.527	2/65
100 yr									1.00												10.779			0.633			0.633				1.434	T5/T8		1.164	1.16(1.21)	1.160	0.000	0.119	0.302	0.140	0.098	0.645	1.568	24.140	24.000	24.259			
10 yr	1/65		3/65						0.90							OUTLET																												24.000	24.001	0.001	1/65
100 yr									1.00																																		24.000			
10 yr	F1/66	F1/66 to 1/66		5.0	0.000				0.90		0.000	0.000	0.138			STD FIELD INLET TYPE 2	900x600 ON A 1200Ø MH	0.138	0.000		1.000	0.000	0.000				0.138	12.000	1.000	0.450	4	0.868	G1	Ku,Kw - Missouri/Hare Charts	6.687	6.690	1.571	1.000	0.257	1.328	0.105	0.038	0.221	1.778	22.030	21.871	22.287	24.232	1.945	F1/66
100 yr				5.0	0.000				1.00		0.000	0.000						0.151	0.000		1.000	0.000	0.000	0.151		0.151	0.151				0.950	G1		6.346	6.350	1.649	1.000	0.292	1.331	0.106	0.046	0.233	1.818	22.043	21.883	22.335			
10 yr	1/66								0.90							OUTLET																												21.871	22.330	0.459	1/66
100 yr									1.00																																		21.883			
10 yr	13/70	13/70 to 12/70	G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA				6.042						1.258	37.476	2.000	1.050	3	1.453	T1/T2	Ku,Kw - Missouri/Hare Charts	0.218	0.220	1.022	0.000	0.024	2.599	0.430	0.108	0.412	3.987	29.606	28.632	29.629	30.992	1.363	13/70
100 yr									1.00												6.042			1.815			1.815				2.096	T1/T2		0.219	0.220	1.080	0.000	0.049	0.441	0.165	0.224	0.506	4.391	30.054	29.889	30.103			
10 yr	12/70	12/70 to 11/70	G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				6.354						2.806	102.353	1.500	1.200	3	2.481	T8	Ku,Kw - Missouri/Hare Charts	1.480	1.48(1.57)	1.410	0.000	0.492	1.447	1.529	0.314	0.661	4.391	28.166	26.685	28.658	30.814	2.156	12/70
100 yr									1.00												6.354			4.353			4.353				3.849	T5/T8		1.257	1.26(1.31)	2.238	0.000	0.991	1.246	1.275	0.756	0.900	4.785	28.939	27.664	29.930			
10 yr	11/70	11/70 to 10/70	G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA				7.207						2.851	100.000	1.000	1.200	3	2.521	T1/T2	Ku,Kw - Missouri/Hare Charts	0.207	0.210	1.056	0.000	0.067	1.065	0.990	0.324	0.762	3.764	26.618	25.554	26.685	27.731	1.046	11/70
100 yr									1.00												7.207			4.322			4.322				3.822	T1/T2		0.204	0.200	1.646	0.000	0.137	1.109	1.109	0.673	1.200	3.822	27.527	26.418	27.664			
10 yr	10/70	10/70 to 9/70	G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA				8.040						2.887	46.084	0.600	1.500	3	1.633	T1/T2	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000	0.572	0.276	0.136	0.774	3.139	25.554	25.290	25.554	27.131	1.577	10/70
100 yr									1.00												8.040			4.431			4.431				2.507	T1/T2		-0.521	-0.520	1.163	0.000	-0.167	0.393	0.181	0.321	1.023	3.450	26.585	26.404	26.418			
10 yr	9/70	9/70 to 8/70	G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA				8.424						2.881	14.405	0.700	1.500	3	1.630	T1/T2	Ku,Kw - Missouri/Hare Charts	0.248	0.250	1.022	0.000	0.034	-0.641	0.041	0.136	0.739	3.325	25.256	25.348	25.290	26.909	1.619	9/70
100 yr									1.00												8.424			4.420			4.420				2.501	T1/T2		0.248	0.250	1.352	0.000	0.079	0.391	0.056	0.319	0.967	3.670	26.325	26.269	26.404			
10 yr	8/70	8/70 to 7/70	G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				8.544						3.889	43.224	0.700	1.500	3	2.201	T1/T2	Ku,Kw - Missouri/Hare Charts	0.264	0.260	1.043	0.000	0.065	0.799	0.299	0.247	0.887	3.572	25.283	24.938	25.348	26.822	1.474	8/70
100 yr									1.00												8.544			6.496			6.496				3.676	T2/T5		0.329	0.330	1.342	0.000	0.227	0.844	0.365	0.690	1.500	3.676	26.042	25.677	26.269			
10 yr	7/70	7/70 to 6/70	G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	2100mm DIA; EXT 900mm				8.905						3.929	100.000	0.700	1.650	3	1.838	T1	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000	0.681	0.699	0.172	0.840	3.593	24.938	24.257	24.938	26.563	1.625	7/70
100 yr									1.00												8.905			6.586			6.586				3.080	T1/T2		-0.035	-0.030	1.057	0.000	-0.017	0.522	0.522	0.484	1.183	4.013	25.694	25.172	25.677			
10 yr	6/70	6/70 to 5/70	G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				9.738						3.958	99.335	0.600	1.650	3	1.851	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.021	0.000	0.035	0.580	0.595	0.175	0.883	3.396	24.222	23.645	24.257	25.963	1.706	6/70
100 yr									1.00												9.738			6.642			6.642				3.106	T1		0.202	0.200	1.187	0.000	0.100	0.531	0.527	0.492	1.272	3.754	25.072	24.545	25.172			
10 yr	5/70	5/70 to 4/70	G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				10.566						3.985	47.716	0.600	1.650	3	1.864	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.022	0.000	0.036	0.563	0.286	0.177	0.887	3.401	23.609	23.341	23.645	25.367	1.722	5/70
100 yr									1.00												10.566			6.692			6.692				3.130	T1		0.202	0.200	1.181	0.000	0.101	0.539	0.257	0.500	1.281	3.757	24.444	24.187	24.545			
10 yr	4/70	4/70 to 3/70	G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				10.963						4.000	52.391	0.600	1.650	3	1.870	T1	Ku,Kw - Missouri/Hare Charts	0.201	0.200	1.022	0.000	0.036	0.560	0.314	0.179	0.889	3.404	23.305	23.012	23.341	25.081	1.740	4/70
100 yr									1.00												10.963			7.724			7.724				3.612	T1/T2		0.238	0.240	1.150	0.000	0.158	0.718	0.376	0.666	1.650	3.612	24.029	23.653	24.187			
10 yr	3/70	3/70 to 2/70	G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83						0.90							STD MANHOLE	1800mm DIA; EXT 900mm				11.400						4.034	107.170	0.600	1.650	RCP	1.886	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.022	0.000	0.037	0.475	0.615	0.182	0.894	3.411	22.975	22.466	23.012	24.766	1.754	3/70
100 yr									1.00												11.400			7.782			7.782				3.639	T1		0.202	0.200	1.083	0.000	0.136	0.722	0.682	0.676	1.650	3.639	23.517	22.743	23.653			

Issue	Description	DR	CH	VE	Date
E	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	18.10.24
D	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	03.09.24
C	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	01.08.24
B	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER DRAINAGE CALCULATION TABLE SHEET 2

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0462

Issue: E

100mm on Original

Date Plotted: 13 Mar 2025 - 10:31AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0461-SWDCalcs.dwg

LOCATION				TIME		SUB-CATCHMENT RUNOFF								INLET DESIGN					DRAIN DESIGN										HEADLOSSES							PART FULL PIPE			DESIGN LEVELS			
				tc	I	C	C10	C10	A	C*A	Q	Qa						Qi	Qb		tv	I	A	Q			Qp	L				Vf				Ku	Kw		Hw	Sf	Hf	V2/2g	D	Vp					
DESIGN EVENT (ARI)	STRUCTURE NAME	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY (mm/hr)	CO-EFFICIENT OF RUNOFF	10yr RUNOFF CO-EFFICIENT (IMPERVIOUS AREA)	10yr RUNOFF CO-EFFICIENT (PERVIOUS AREA)	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW/ROAD CAPACITY	MINOR FLOW WIDTH	INLET TYPE	INLET DESCRIPTION	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE NAME	CRITICAL TIME OF CONC.	CRITICAL RAINFALL INTENSITY	CRITICAL EFFECTIVE AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE/BOX DIMENSIONS	PIPE TYPE (CLASS)	FLOW VELOCITY FULL (PIPE GRADE CAPACITY)	STRUCTURE Ku CHART	STRUCTURE Ku METHOD	STRUCTURE Ku	STRUCTURE Kw	STRUCTURE SUBMERGENCE RATIO	STRUCTURE GRATE FLOW RATIO	STRUCTURE W.S.E LOSS	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L x Sf)	PIPE VELOCITY HEAD	PART FULL PIPE DEPTH	PART FULL PIPE VELOCITY	PIPE UPSTREAM HGL	PIPE DOWNSTREAM HGL	UPSTREAM STRUCTURE HGL	STRUCTURE SETOUT LEVEL	FREEBOARD	STRUCTURE NAME
10 yr	2/70	2/70 to 1/70	G1/73 G2/72 F1/72 G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE				12.293						4.371	48.264	0.400	1.200	BC	1.518	T1/72	Ku,Kw - Missouri/Hare Charts	0.152	0.150	1.015	0.000	0.018	0.099	0.057	0.118	0.661	2.755	22.448	22.400	22.466	24.193	1.727	2/70
100 yr								1.00													12.293			8.901			8.901				3.091	T1/72			0.161	0.160	1.208	0.000	0.078	0.548	0.264	0.487	1.103	3.363	22.664	22.400	22.743			
10 yr	1/70		G1/73 G2/72 F1/72 G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								HEADWALL																														22.400	21.100	-1.300	1/70
100 yr								1.00																																		22.400			
10 yr	F3/72	F3/72 to G2/72		0.0	0.000			0.90		0.000	0.000	0.000				STD FIELD INLET TYPE 2	900x600 ON A 1200Ø MH	0.000	0.000		1.000	0.000	0.000			0.000	7.500	1.000	0.600	4	0.000		Direct	0.000	0.000			0.000	0.000	0.000	0.000	0.000	0.000	22.481	22.481	22.481	24.599	2.118	F3/72
100 yr				5.0	0.000			1.00		0.000	0.000							0.462	0.000		1.000	0.000	0.000	0.462		0.462	7.500	1.000	0.600	4	1.634	G1		2.608	2.610	3.774	1.000	0.355	0.566	0.042	0.135	0.389	2.385	23.467	23.424	23.822			
10 yr	G2/72	G2/72 to F1/72		5.0	187.000	0.900		0.90	0.110	0.099	0.052	0.052	0.579	0.357		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.052	0.000	F1/72	5.000	187.000	0.099				0.052	7.588	1.000	0.600	4	0.182	G1	Ku,Kw - Missouri/Hare Charts	6.134	6.130	1.697	1.000	0.010	0.007	0.001	0.002	0.118	1.319	22.471	22.470	22.481	24.086	1.585	G2/72
100 yr				5.0	286.000	1.000		1.00	0.110	0.110	0.088			0.357				0.088	0.012		5.000	286.000	0.110	0.582	1.534	0.100	0.550					1.946	T10		1.578	1.58(1.92)	3.378	0.160	0.370	0.802	0.061	0.193	0.443	2.458	23.120	23.059	23.490			
10 yr	F1/72	F1/72 to 2/70	G2/72	5.0	187.000	0.900		0.90	0.082	0.074	0.038	0.038	0.000	0.320		V-GRATE CLASS D	900x600 ON A 1200Ø MH	0.038	0.000	2/BP3	5.063	187.000	0.074				0.090	5.388	1.000	0.750	3	0.203	T5/T8	Ku,Kw - Missouri/Hare Charts	1.882	1.88(1.94)	1.471	0.426	0.004	0.008	0.000	0.002	0.144	1.512	22.468	22.468	22.470	24.053	1.583	F1/72
100 yr				5.0	286.000	1.000		1.00	0.082	0.082	0.065			0.320				0.320	0.606		5.063	286.000	0.082	1.476	0.006	0.926	0.870					1.968	T5/T8		1.433	1.43(1.47)	2.265	0.368	0.290	0.610	0.033	0.198	0.499	2.787	22.776	22.743	23.066			
10 yr	2/70		G1/73 G2/72 F1/72 G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE																	T1/72	Ku,Kw - Missouri/Hare Charts	0.152	0.150	1.015	0.000	0.018						22.466	24.193	1.727	2/70
100 yr								1.00																									T1/72		0.161	0.160	1.208	0.000	0.078						22.743			
10 yr	G1/73	G1/73 to 2/70		5.0	187.000	0.900		0.90	0.241	0.217	0.113	0.308	0.539	0.391		STD TYPE A GULLY (SAG)	LIL; 2.4m LINTEL; TYPE S	0.308	0.000	F1/72	5.000	187.000	0.217				0.308	8.810	2.000	0.450	4	1.939	G2	Ku,Kw - Missouri/Hare Charts	4.232	4.230	2.804	1.000	0.812	3.032	0.100	0.192	0.295	2.793	23.082	22.815	23.894	24.053	0.159	G1/73
100 yr				5.0	286.000	1.000		1.00	0.241	0.241	0.191			0.358				0.358	0.849		5.000	286.000	0.241	1.207	1.481	1.207	0.358					2.249	G2		3.681	3.680	3.110	1.000	0.950	2.875	0.120	0.258	0.330	2.864	23.103	22.850	24.053			
10 yr	2/70		G1/73 G2/72 F1/72 G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								RECTANGULAR MANHOLE	CUSTOM STRUCTURE																	T1/72	Ku,Kw - Missouri/Hare Charts	0.152	0.150	1.015	0.000	0.018						22.466	24.193	1.727	2/70
100 yr								1.00																									T1/72		0.161	0.160	1.208	0.000	0.078						22.743			
10 yr	G1/74	G1/74 to 3/70		5.0	187.000	0.900		0.90	0.110	0.099	0.052	0.052	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.052	0.000	G2/72	5.000	187.000	0.099				0.052	5.652	2.000	0.450	4	0.324	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.115	1.000	0.052	2.830	0.062	0.005	0.109	1.741	23.543	23.383	23.595	24.646	1.051	G1/74
100 yr				5.0	286.000	1.000		1.00	0.110	0.110	0.088			0.505				0.089	0.013		5.000	286.000	0.110	0.101	1.563	0.101	0.089					0.559	G2		9.700	9.700	1.343	1.000	0.154	-0.442	0.009	0.016	0.144	2.034	23.628	23.653	23.783			
10 yr	3/70		G1/74 G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA; EXT 900mm																	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.022	0.000	0.037						23.012	24.766	1.754	3/70
100 yr								1.00																									T1		0.202	0.200	1.083	0.000	0.136						23.653			
10 yr	F1/75	F1/75 to 4/70		5.0	0.000			0.90		0.000	0.000	0.021				STD FIELD INLET TYPE 2	900x600 ON A 1500 Ø MH	0.021	0.000		1.000	0.000	0.000			0.021	12.001	0.600	1.200	3	0.019	G1	Ku,Kw - Missouri/Hare Charts	7.000	7.000	1.000	1.000	0.000	0.000	0.000	0.000	0.071	0.768	23.341	23.341	23.341	25.041	1.700	F1/75
100 yr				5.0	0.000			1.00		0.000	0.000							1.043	0.000		1.000	0.000	0.000	1.043		1.043	1.043					0.922	G1		5.996	6.000	1.728	1.000	0.260	0.072	0.009	0.043	0.487	2.425	24.198	24.187	24.456			
10 yr	4/70		G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA; EXT 900mm																	T1	Ku,Kw - Missouri/Hare Charts	0.201	0.200	1.022	0.000	0.036						23.341	25.081	1.740	4/70
100 yr								1.00																									T1/72		0.238	0.240	1.150	0.000	0.158						24.187			
10 yr	G1/78	G1/78 to 5/70		5.0	187.000	0.900		0.90	0.109	0.098	0.051	0.051	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.051	0.000	G1/74	5.000	187.000	0.098				0.051	5.553	2.000	0.450	4	0.322	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.114	1.000	0.051	2.841	0.060	0.005	0.108	1.737	23.942	23.784	23.993	25.246	1.253	G1/76
100 yr				5.0	286.000	1.000		1.00	0.109	0.109	0.087			0.505				0.091	0.014		5.000	286.000	0.109	0.105	1.563	0.105	0.091					0.571	G2		7.198	7.200	1.963	1.000	0.120	0.101	0.006	0.017	0.145	2.047	24.551	24.545	24.671			
10 yr	5/70		G1/76 G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA; EXT 900mm																	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.022	0.000	0.036						23.645	25.367	1.722	5/70
100 yr								1.00																									T1		0.202	0.200	1.181	0.000	0.101						24.545			
10 yr	G1/77	G1/77 to 6/70		5.0	187.000	0.900		0.90	0.114	0.097	0.050	0.050	0.600	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.050	0.000	G1/76	5.000	187.000	0.097				0.050	5.643	2.000	0.450	4	0.317	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.110	1.000	0.050	2.821	0.063	0.005	0.107	1.730	24.738	24.578	24.787	25.843	1.056	G1/77
100 yr				5.0	286.000	1.000		1.00	0.114	0.108	0.086			0.505				0.097	0.018		5.000	286.000	0.108	0.115	1.563	0.115	0.097					0.608	G2		8.696	8.700	1.686	1.000	0.164	0.115	0.006	0.019	0.150	2.083	25.178	25.172	25.343			
10 yr	6/70		G1/77 G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA; EXT 900mm																	T1	Ku,Kw - Missouri/Hare Charts	0.202	0.200	1.021	0.000	0.035						24.257	25.963	1.706	6/70
100 yr								1.00																									T1		0.202	0.200	1.187	0.000	0.100						25.172			
10 yr	G1/78	G1/78 to 7/70		5.0	187.000	0.900		0.90	0.107	0.102	0.053	0.053	0.614	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.053	0.000	G1/77	5.000	187.000	0.102				0.053	4.647	2.000	0.375	4	0.481	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.305	1.000	0.115	3.056	0.043	0.012	0.118	1.787	25.468	25.326	25.582	26.430	0.848	G1/78
100 yr				5.0	286.000	1.000		1.00	0.107	0.114	0.090			0.505				0.113	0.029		5.000	286.000	0.114	0.142	1.581	0.142	0.113					1.024	G2		6.881	6.880	2.033	1.000	0.367	0.416	0.019	0.053	0.178	2.193	25.696	25.677	26.063			
10 yr	7/70		G1/78 G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	2100mm DIA; EXT 900mm																	T1	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000						24.938	26.563	1.625	7/70
100 yr								1.00																									T1/T2		-0.035	-0.030	1.057	0.000	-0.017						25.677			
10 yr	F1/79	F1/79 to 8/70		5.0	0.000			0.90		0.000	0.000	1.010				STD FIELD INLET TYPE 2	900x600 ON A 1500 Ø MH	1.010	0.000		1.000	0.000	0.000			1.010	12.209	0.800	1.200	3	0.893	G1	Ku,Kw - Missouri/Hare Charts	7.000	7.000	1.237	1.000	0.285	-0.002	0.008	0.041	0.442	2.669	25.348	25.348	25.633	26.928	1.295	F1/79
100 yr				5.0	0.000			1.00		0.000	0.000							2.080	0.000		1.000	0.000	0.000	2.080		2.080					1.839	G1		4.529	4.530	2.129	1.000	0.631	0.230	0.028	0.139	0.667	3.218	26.297	26.269	26.928			
10 yr	8/70		G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	2100mm DIA; EXT 900mm																	T1/T2	Ku,Kw - Missouri/Hare Charts	0.264	0.260	1.043	0.000	0.065						25.348	26.822	1.474	8/70
100 yr								1.00																									T2/T5		0.329	0.330	1.342	0.000	0.227						26.269			
10 yr	G1/80	G1/80 to 10/70		5.0	187.000	0.900		0.90	0.110	0.099	0.051	0.052	0.601	0.505		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.052	0.000	G1/78	5.000	187.000	0.099				0.052	2.576	2.000	0.375	4	0.475	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.298	1.000	0.112	3.892	0.002	0.012	0.117	1.781	26.051	25.950	26.162	27.063	0.901	G1/80
100 yr				5.0	286.000	1.000		1.00	0.110	0.110	0.087			0.505				0.141	0.052		5.000	286.000	0.110	0.193	1.564	0.193	0.141					1.276	G2		4.823	4.820	2.535	1.000	0.401	0.646	0.017	0.083	0.203	2.317	26.435	26.418	26.835			
10 yr	10/70		G1/80 G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA																	T1/T2	Ku,Kw - Missouri/Hare Charts	0.000	0.000	1.000	0.000	0.000						25.554	27.131	1.577	10/70
100 yr								1.00																									T1/T2		-0.521	-0.520	1.163	0.000	-0.167						26.418			
10 yr	G1/81	G1/81 to 11/70		5.0	187.000	0.900		0.90	0.134	0.121	0.063	0.063	2.820	0.532		STD TYPE A GULLY	LIL; 2.4m LINTEL; TYPE S	0.062	0.001	G1/80	5.000	187.000	0.121				0.062	2.538	2.000	0.375	4	0.559	G2	Ku,Kw - Missouri/Hare Charts	9.700	9.700	1.412	1.000	0.155	-0.710	0.020	0.016	0.128	1.864	26.667	26.685	26.822	27.664	0.842	G1/81
100 yr				5.0	286.000	1.000		1.00	0.134	0.134	0.107			0.532				0.001	0.105		5.000	286.000	0.134	0.107	3.388	0.107	0.001					0.013	G2		3.649	3.650	3.140	1.000	0.000	0.000	0.000	0.000	0.020	0.504	27.664	27.664	27.664			
10 yr	11/70		G1/81 G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA																	T1/T2	Ku,Kw - Missouri/Hare Charts	0.207	0.210	1.056	0.000	0.067						26.685	27.731	1.046	11/70
100 yr								1.00																									T1/T2		0.204	0.200	1.646	0.000	0.137						27.664			
10 yr	F2/82	F2/82 to G1/82		5.0	0.000			0.90		0.000	0.000	0.655		0.320		STD FIELD INLET TYPE 2	900x600 ON A 1200Ø MH	0.655	0.000		1.000	0.000	0.000			0.655	9.524	1.000	0.750	3	1.483	G1	Ku,Kw - Missouri/Hare Charts	4.626	4.630	2.083	1.000	0.519	0.346	0.033	0.112	0.414	2.622	28.788	28.756	29.307	31.900	2.593	F2/82
100 yr				5.0	0.000			1.00		0.000	0.000			0.320				1.070	0.000		1.000	0.000	0.000	1.070		1.070					2.422	G1		2.335	2.330	4.329	1.000	0.699	0.923	0.088	0.299	0.590	2.870	30.293	30.205	30.992			
10 yr	G1/82	G1/82 to 12/70		5.0	187.000	0.900		0.90	0.090	0.081	0.042	0.042	0.314	0.331		STD TYPE A GULLY (SAG)	LIL; 2.4m LINTEL; TYPE S	0.042	0.000	LOST	5.000	187.000	0.081				0.697	13.615	1.000	0.750	3	1.578	T2/T5	Ku,Kw - Missouri/Hare Charts	0.560	0.560	1.808	0.060	0.071	0.392	0.053	0.127	0.430	2.660	28.684	28.631	28.756	30.808	2.052	G1/82
100 yr				5.0	286.000	1.000		1.00	0.090	0.090	0.071			0.331				0.079	0.000		5.000	286.000	0.090	1.149	1.130	0.079	1.149					2.600	T2/T5		0.497	0.500	3.740	0.069	0.171	1.064	0.145	0.345	0.839	2.866	30.034	29.889	30.205			
10 yr	12/70		G1/91 G1/90 G1/92 G1/94 G1/89 G1/82 G1/84 G1/85 G1/86 G1/83					0.90								STD MANHOLE	1800mm DIA; EXT 900mm																	T8	Ku,Kw - Missouri/Hare Charts	1.480	1.48(1.57)	1.410	0.000	0.492						28.658	30.814	2.156	12/70
100 yr								1.00																									T5/T8		1.257	1.26(1.31)	2.238	0.000	0.991						29.930			

Issue	Description	DR	CH	VE	Date
E	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	18.10.24
D	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	03.09.24
C	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	01.08.24
B	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE CALCULATION TABLE SHEET 3

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
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www.arcadis.com/au

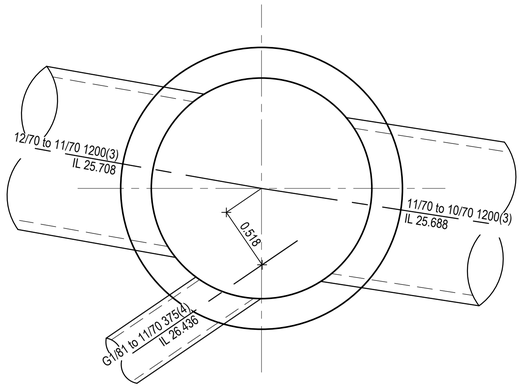
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0463

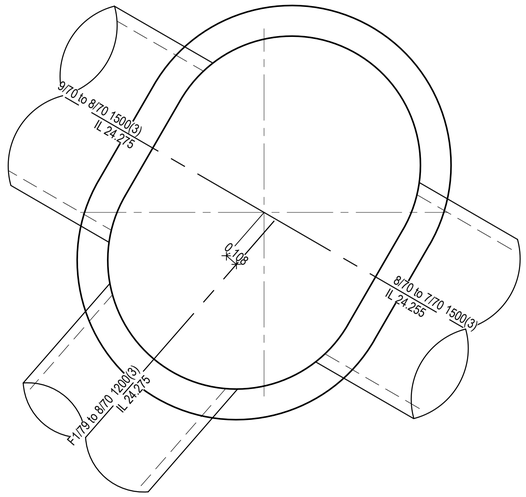
Issue: E

100mm on Original

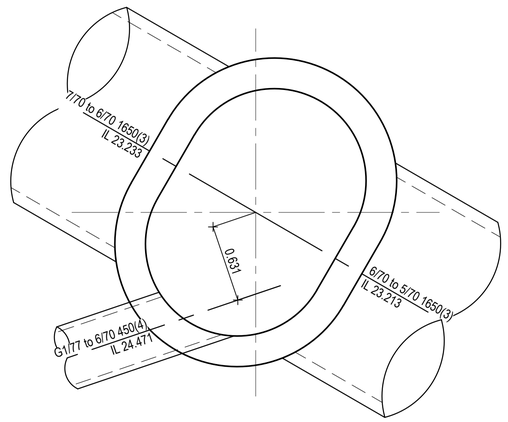
Date Plotted: 13 Mar 2025 - 10:31AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0461-SWDCalcs.dwg



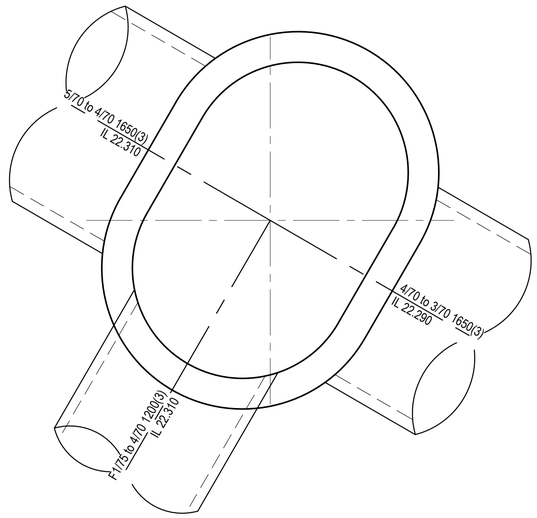
11/70 - 1800 DIA



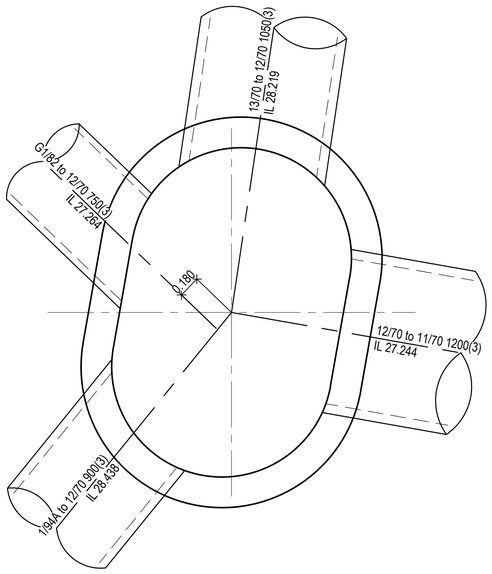
8/70 - 2100 DIA EXTENDED 900



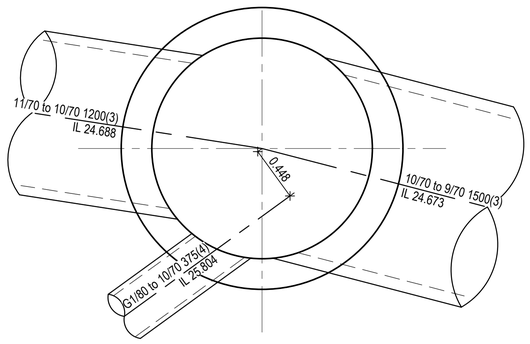
6/70 - 1500 DIA EXTENDED 600



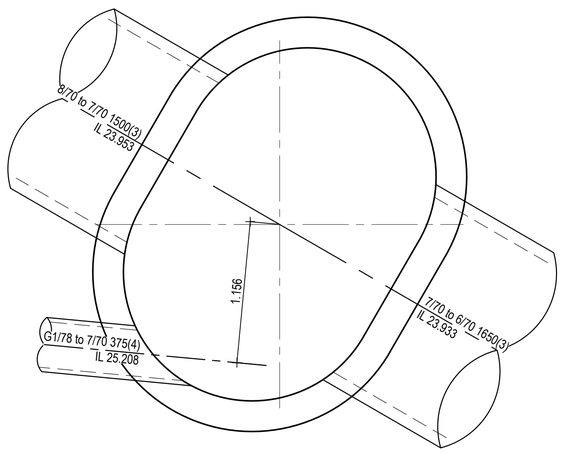
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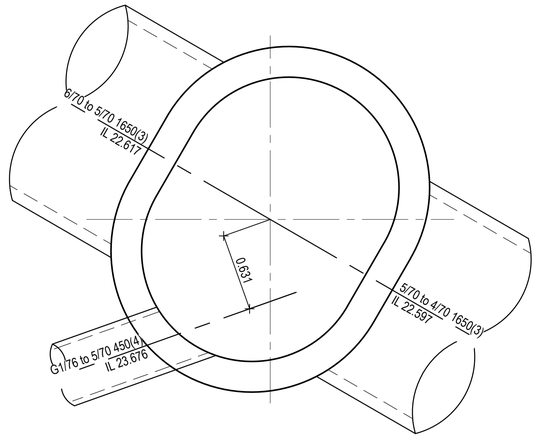
12/70 - 1800 DIA EXTENDED 900



10/70 - 1800 DIA



7/70 - 2100 DIA EXTENDED 900



5/70 - 1800 DIA EXTENDED 600

C

Issue	Description	DR	CH	VE	Date
C	SWD DETAILS UPDATED	A.O.	S.S.	B.K.	18.10.24
B	SWD DETAILS UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 0.5 1 1.5 2 2.5m

1 : 25

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: STORMWATER DRAINAGE DETAILS SHEET 1

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289

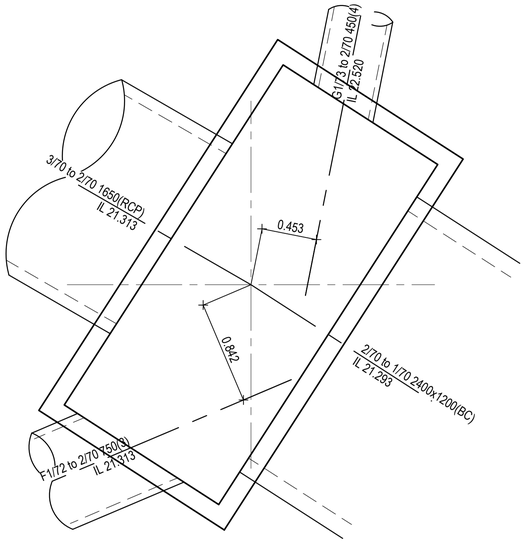
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

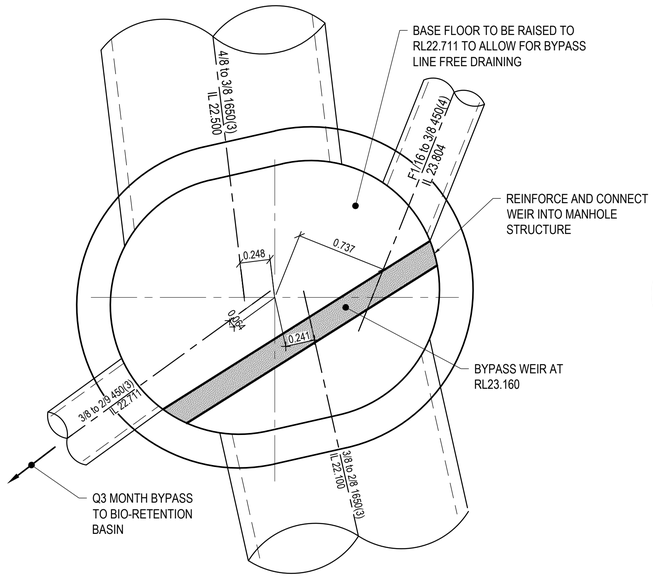
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0481

Issue: C

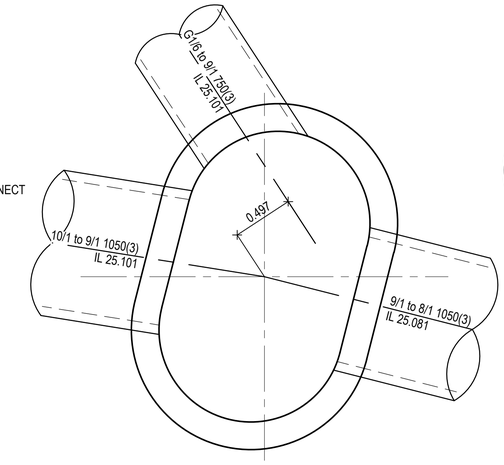
Date Plotted: 13 Mar 2025 - 10:06AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0481-SWDDetails.dwg



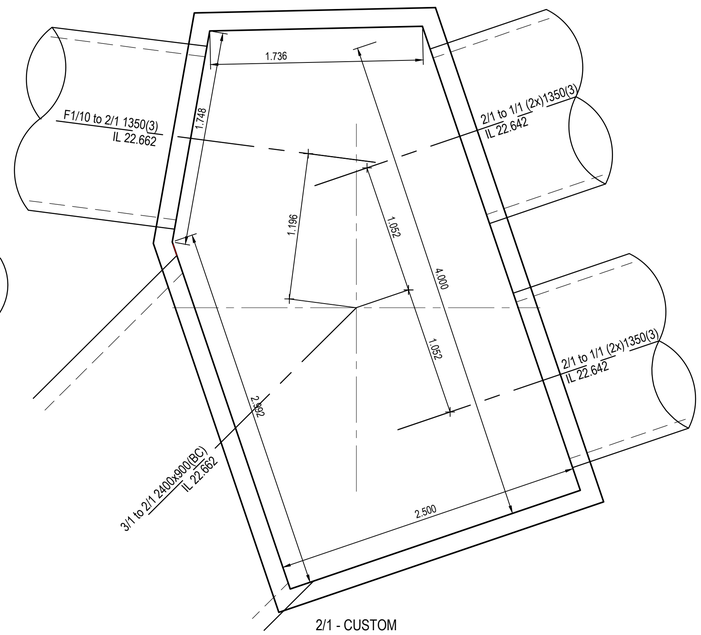
2/70 - 1500 x 3300



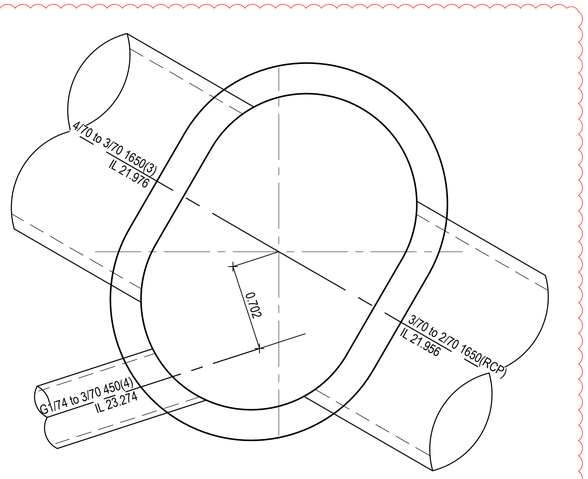
3/8 - 2100 DIA EXTENDED 600



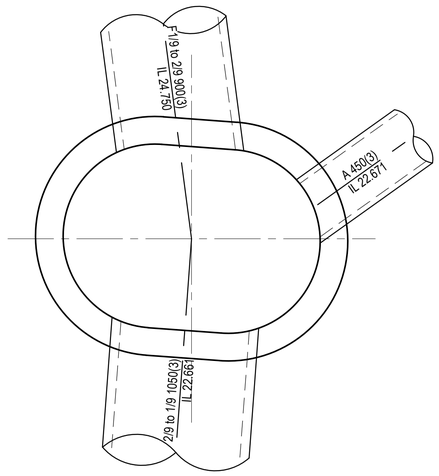
9/1 - 1500 DIA EXTENDED 900



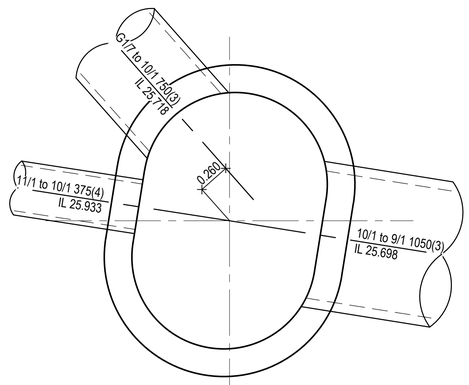
2/1 - CUSTOM



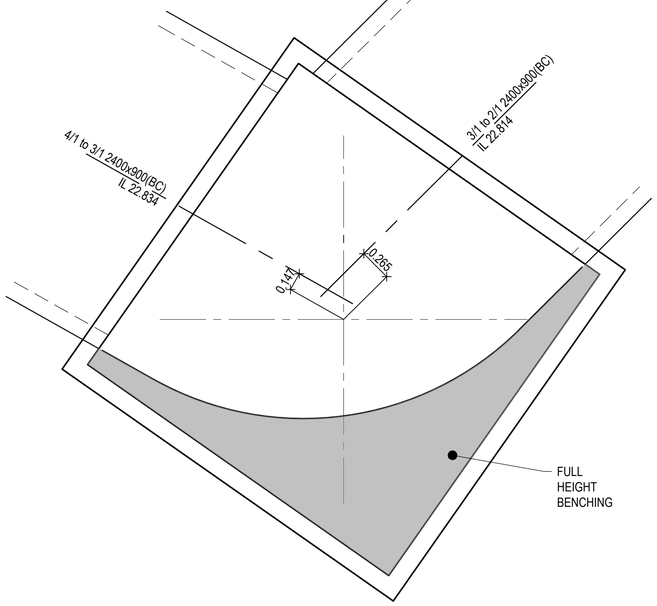
3/70 - 1800 DIA EXTENDED 900



2/9 - 1500 DIA EXTENDED 600



10/1 - 1500 DIA EXTENDED 600



3/1 - 3000 x 3000

E

Issue	Description	DR	CH	VE	Date
E	SWD DETAILS UPDATED	A.O.	S.S.	B.K.	18.10.24
D	SWD DETAILS UPDATED	A.O.	S.S.	B.K.	03.09.24
C	DETAIL 3/8, 3/1 UPDATED	A.O.	S.S.	B.K.	01.08.24
B	SWD DETAILS UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 0.5 1 1.5 2 2.5m

1 : 25

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

STORMWATER DRAINAGE DETAILS SHEET 2

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289

Tel No: +61 7 3337 0000
www.arcadis.com/au

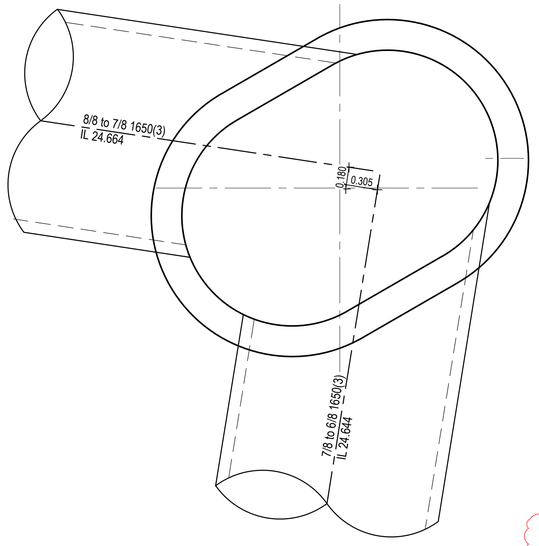
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0482

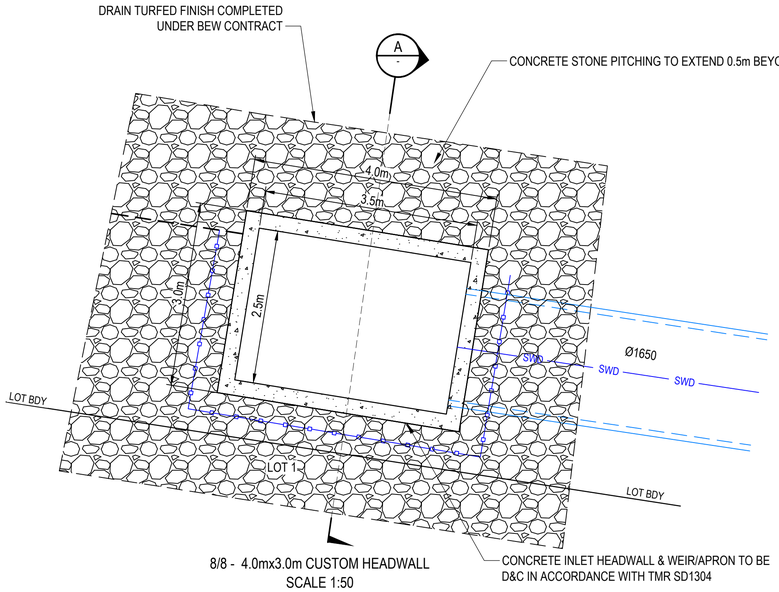
Issue: E

100mm on Original

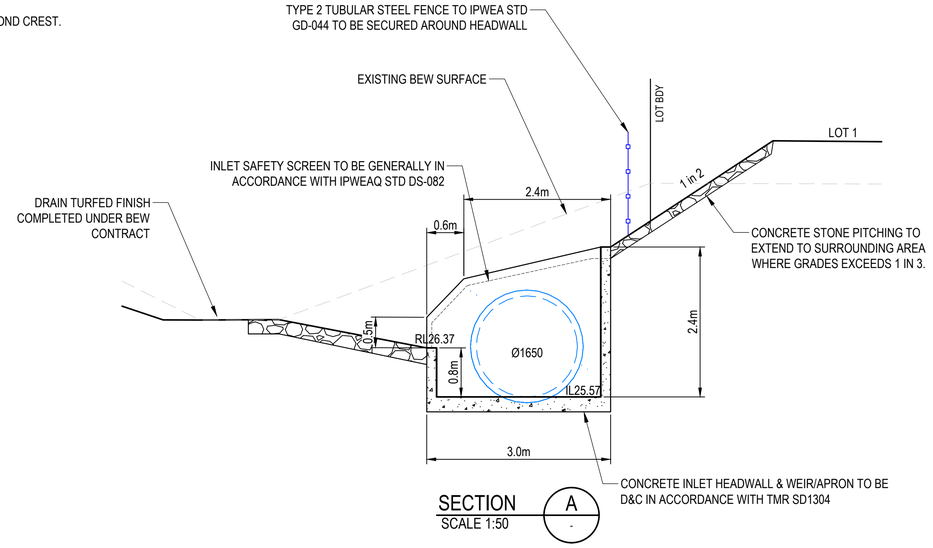
Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0481-SWDDetails.dwg



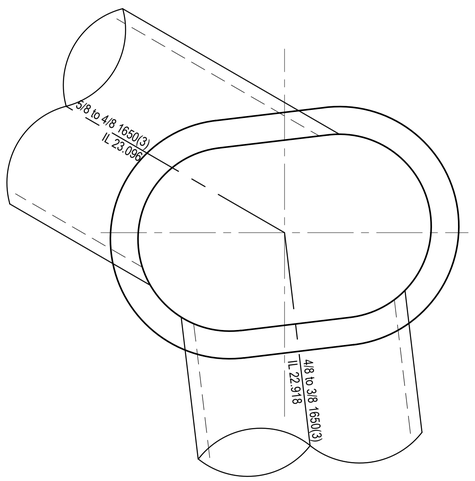
7/8 - 1800 DIA EXTENDED 900



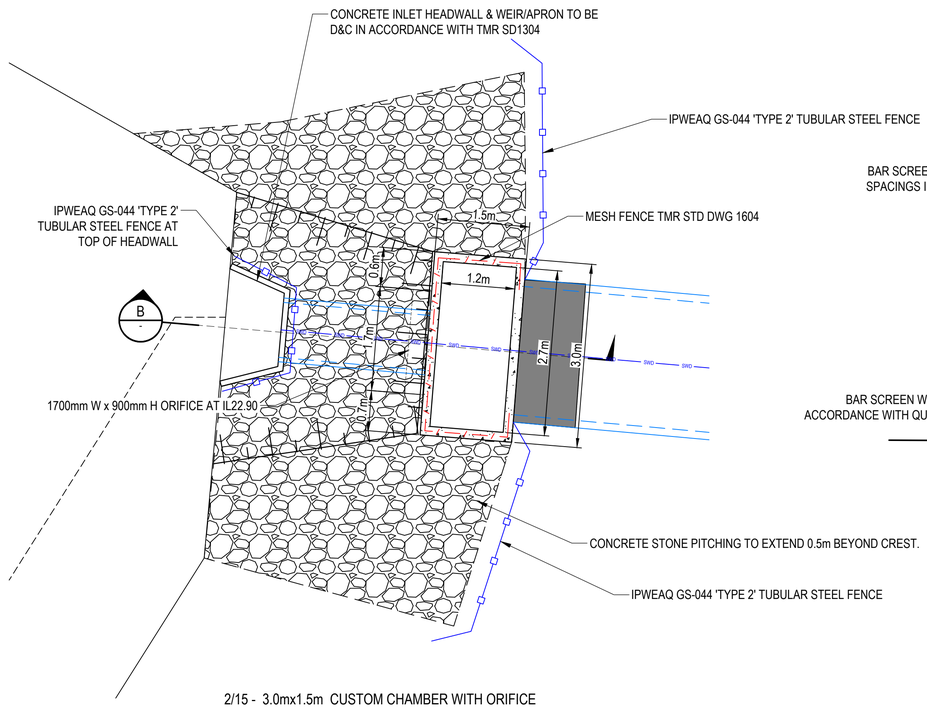
8/8 - 4.0mx3.0m CUSTOM HEADWALL
SCALE 1:50



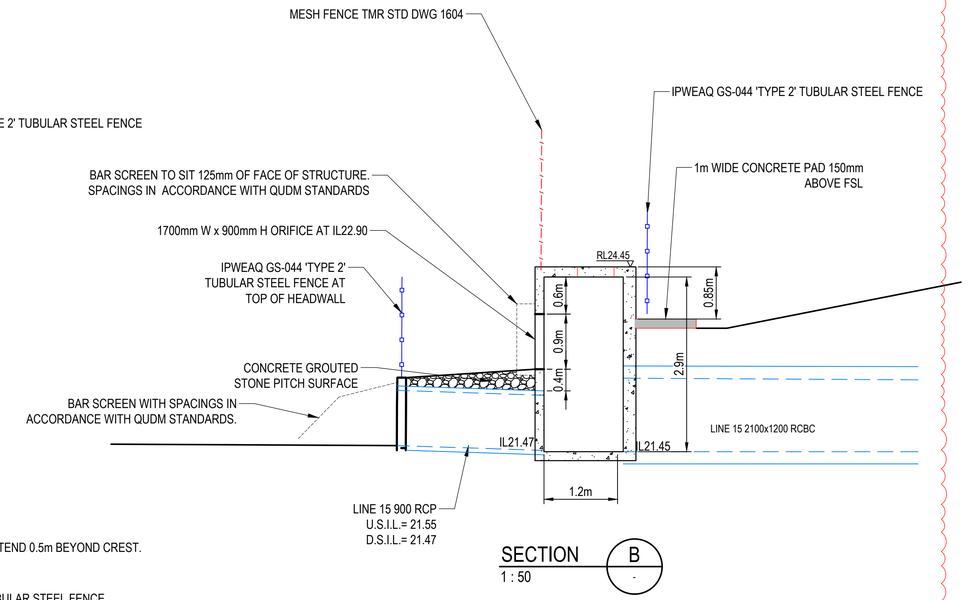
SECTION A
SCALE 1:50



4/8 - 1500 DIA EXTENDED 900



2/15 - 3.0mx1.5m CUSTOM CHAMBER WITH ORIFICE
SCALE 1:50



SECTION B
1 : 50

B

Issue	Description	DR	CH	VE	Date
B	UPDATED STRUCTURE 2/15	A.O.	S.S.	B.K.	18.10.24
A	ISSUED FOR CONSTRUCTION - DETAILS ADDED	A.O.	S.S.	B.K.	03.09.24

Scales
0 0.5 1 1.5 2 2.5m
1 : 25

Surveyor
WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client
Charter Hall

Status
FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project
FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title
STORMWATER DRAINAGE DETAILS SHEET 3

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 35, 111 Eagle Street
BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number 30109334

Drawing No. 30109334-AAP-P301OP-CV-DRG-0483

Issue B

100mm on Original

Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0481-SWDDetails.dwg

BIO / DETENTION BASIN

DETENTION BASE LEVEL: RL 22.550
DETENTION BUND LEVEL: RL 24.664
FILTER LEVEL: RL 22.25
BIO-AREA: 1200m^2
Q100 W.L.: RL 24.48
Q100 DEPTH: 1.93m

BASIN SETOUT TABLE

POINT No.	EASTING	NORTHING
01	501944.730	6929478.701
02	501963.329	6929392.366
03	501962.670	6929377.210
04	501955.822	6929354.996
05	501950.724	6929352.998
06	501925.894	6929367.365
07	501921.355	6929376.825
08	501914.867	6929391.078
09	501892.710	6929403.901
10	501889.027	6929417.178
11	501907.158	6929448.524
12	501926.299	6929481.604
13	501952.945	6929478.556
14	501971.208	6929393.775
15	501970.315	6929374.853
16	501963.466	6929352.639
17	501946.718	6929346.074
18	501921.704	6929360.546
19	501913.477	6929378.215
20	501912.266	6929383.115
21	501904.975	6929387.560
22	501890.087	6929396.174
23	501882.273	6929421.491
24	501919.375	6929485.610
26	501959.712	6929391.587
27	501959.135	6929378.300
28	501952.360	6929356.326
29	501927.564	6929370.673
30	501925.025	6929376.318
31	501919.283	6929392.537
32	501921.611	6929396.188
33	501925.976	6929399.223
34	501938.363	6929401.891
35	501943.378	6929378.614
36	501947.582	6929379.519
37	501942.567	6929402.797
38	501956.644	6929405.830
40	501930.325	6929425.288
41	501913.130	6929444.994
42	501947.771	6929404.941
43	501937.651	6929451.917
44	501936.665	6929466.123
45	501938.023	6929484.539
46	501931.759	6929401.492
47	501905.478	6929417.579
48	501892.744	6929413.251

LOT 905
PROPOSED SEWER PUMP STATION BY LOGAN WATER

PMT

DETENTION BASIN

IPWEAQ GS-044 'TYPE 2' TUBULAR STEEL FENCE AT TOP OF HEADWALL

IPWEAQ 0.60m WIDE CHANNEL TYPE KERB INVERT AT 0.5% FALL.

3.0m CONCRETE ACCESS TRACK - MAX 1 IN 6 GRADE.

FOR PLANTING DETAILS REFER TO LANDSCAPE ARCHITECT DETAILS

0.6m WIDE INVERT CHANNEL TO IPWEAQ STD RS-080 - 0.35% MIN FALL REQUIRED.

FOR PLANTING DETAILS REFER TO LANDSCAPE ARCHITECT DETAILS

300mm HIGH LEVEL SPREADER WITH 50mm SLOTS AT 2m CRS. REFER DWG 492 FOR TYPICAL DETAILS.

TYPICAL FLUSHING POINT

Ø100mm uPVC SUBSOIL SLOTTED PIPE AT 0.5% FALL AT TYP. 2.5m SPACING

INSTALL CULVERT INLET SCREEN TO IPWEAQ STD DS-083

PRECAST HEADWALL TO SUIT 2x900x450 RCBC. INSTALL CULVERT INLET SCREEN TO IPWEAQ STD DS-083

2.50m WIDE GRAVEL ACCESS TRACK TYPE 2.3

Ø225mm uPVC COLLECTOR PIPE AT 0.5% FALL

CLEAN OUT POINTS MAXIMUM SPACING 20m

EMBANKMENT CREST WEIR FSL RL 24.564m

LINE 11
LINE 12
LINE 13

Q3 MONTH BYPASS LINE 9B TO HAVE A NO-RETURN VALVE INSTALLED.

EXTERNAL SERVICE ROAD DESIGN UNDER SEPARATE APPLICATION

STONE PITCHING TO TIE INTO TOP OF CULVERTS AT 1 IN 2 MAX

RL23.24
RL23.40
RL22.54

TRANSITION INTO 1:4 BATTER AT MAX 1:1

TIE INTO SURROUNDING BATTERS AND INLET HEADWALLS WITH CONCRETE GROUTED STONE PITCHING D50 100-150mm (300mm THICK)

SECTION 4 - 1 : 100

NOTES

1. FILTER MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1". THE MINIMUM ORGANIC CONTENT OF THE FILTER MEDIA SHALL BE 3%.
1. TRANSITION & DRAINAGE MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1".
2. THE CONTRACTOR IS RESPONSIBLE FOR UNDERTAKING DETAILED SURVEY OF EACH LAYER OF THE MEDIA INSTALLED INCLUDING THE SUBGRADE & FINISHED LEVEL SURVEYS. THE DIGITAL SURVEY DATA FOR EACH LAYER IS TO BE ISSUED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO THE SUBSEQUENT LAYER BEING INSTALLED. THE REQUIRED TOLERANCES FOR CONSTRUCTION OF THE MEDIA LAYERS IS INCLUDED IN THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1). ALL COSTS ASSOCIATED WITH THE DETAILED SURVEY OF THE BIORETENTION SYSTEMS, THE STAGED CONSTRUCTION APPROACH DUE TO THE SURVEY REVIEW PROCESS, & ANY REWORKS REQUIRED AS A RESULT OF THE SURVEY REVIEWS ARE DEEMED INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR THE PROJECT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-SIGNING THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1) AT THE TIME OF CONSTRUCTION OF THE BIORETENTION SYSTEMS AS WELL AS MANAGING & COMPLYING WITH THE RELEVANT HOLD & WITNESS POINTS SPECIFIED IN THESE FORMS.
4. THE MINIMUM HYDRAULIC CONDUCTIVITY OF ANY LAYER OF BIO BASIN MEDIA SHALL BE 200mm/h.
5. OUTLET AND OVERLAND FLOW PATH ARE TO BE MONITORED FOR ANY ADVERSE IMPACT INCLUDING EROSION, SCOURING TREE HEALTH ETC. DURING CONSTRUCTION AND MAINTENANCE PERIOD. RECTIFICATION MUST BE CARRIED OUT IF WARRANTED.

LEGEND

- EXISTING SURFACE CONTOUR (5.0)
- EARTHWORKS BATTER
- REINFORCED CONCRETE ACCESS DRIVEWAY
- BIO-BASIN FILTER MEDIA
- PROPOSED 2.50m WIDE GRAVEL ACCESS TRACK TYPE 2.3
- PROPOSED STORMWATER DRAINAGE RETICULATION (SWD)
- PROPOSED STORMWATER DRAINAGE STRUCTURE NAME (1/A1)
- SETOUT POINT LABEL (13)
- WARNING SIGN (X)

Issue	Description	DR	CH	VE	Date
D	SWD DESIGN UPDATED	A.O.	S.S.	B.K.	03.09.24
C	NOTES AND EMBANKMENT CREST UPDATED	A.O.	S.S.	B.K.	01.08.24
B	CROSSOVER UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales: 0 5 10 15 20 25m — 1 : 250

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 1

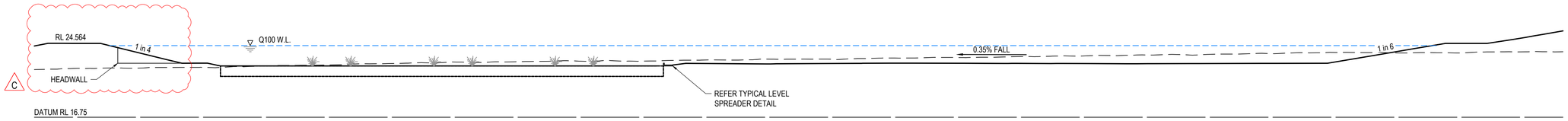
ARCADIS
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Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

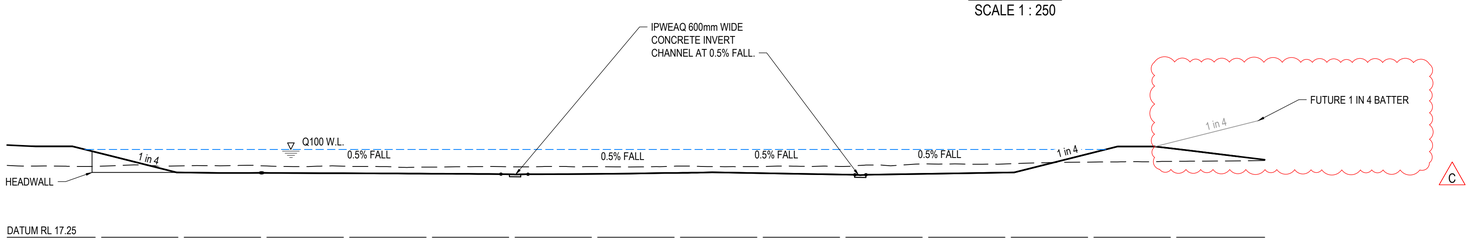
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0491 | Issue: D

100mm on Original

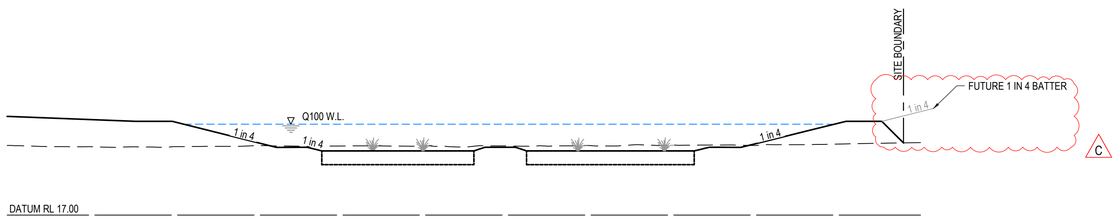
Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0491-BioPodDetails.dwg



SECTION 3
SCALE 1 : 250



SECTION 2
SCALE 1 : 250

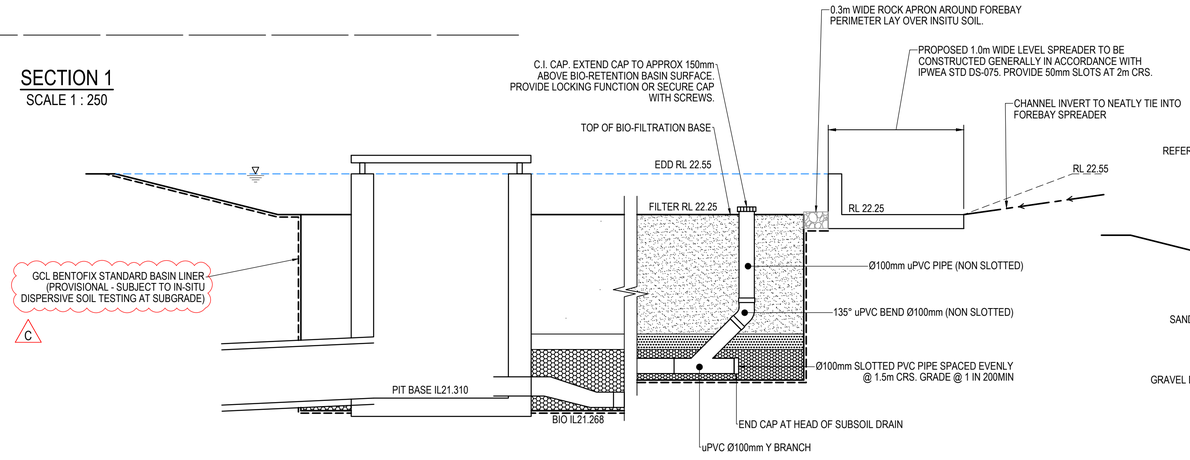


SECTION 1
SCALE 1 : 250

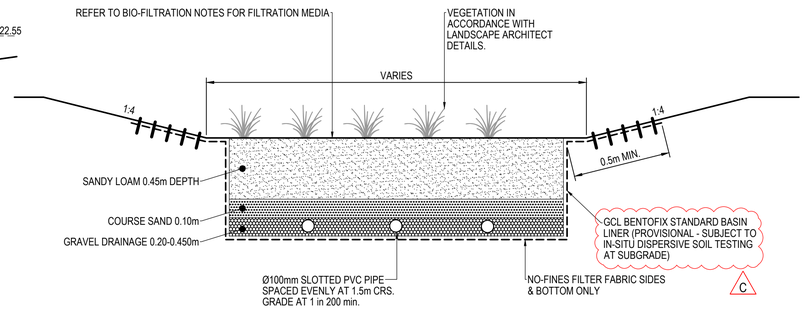
BIO-FILTRATION NOTES

BIO BASIN IS TO CONSIST OF THE FOLLOWING MEDIA (ALSO REFER TO NOTES):

- 450mm OF LOAMY SANDY MATERIAL WITH A HYDRAULIC CONDUCTIVITY OF 200mm/h AND A PARTICLE SIZE OF 0.45-0.50mm AT 90% COMPACTION 1.0m
- 100mm TRANSITION LAYER - COARSE SAND, CONSTENT DEPTH, NOM. SIZE 0.5-2.0
- 200-450mm DRAINAGE LAYER - FINE AGGREGATE, CONSTENT DEPTH, NOM. SIZE 2-5
- CONTRACTOR TO ERECT SIGNAGE IDENTIFYING THE PURPOSE OF THE BIO-RETENTION BASIN AS PER COUNCIL REQUIREMENTS.



TYPICAL FLUSHING END AND TYPICAL LEVEL SPREADER DETAIL
NTS



TYPICAL BIO-RETENTION/DETENTION BASIN SECTION
NTS

Issue	Description	DR	CH	VE	Date
C	UPDATED NOTES AND DETAILS	A.O.	S.S.	B.K.	01.08.24
B	DETAILS UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales: 0 5 10 15 20 25m — 1 : 250

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 2

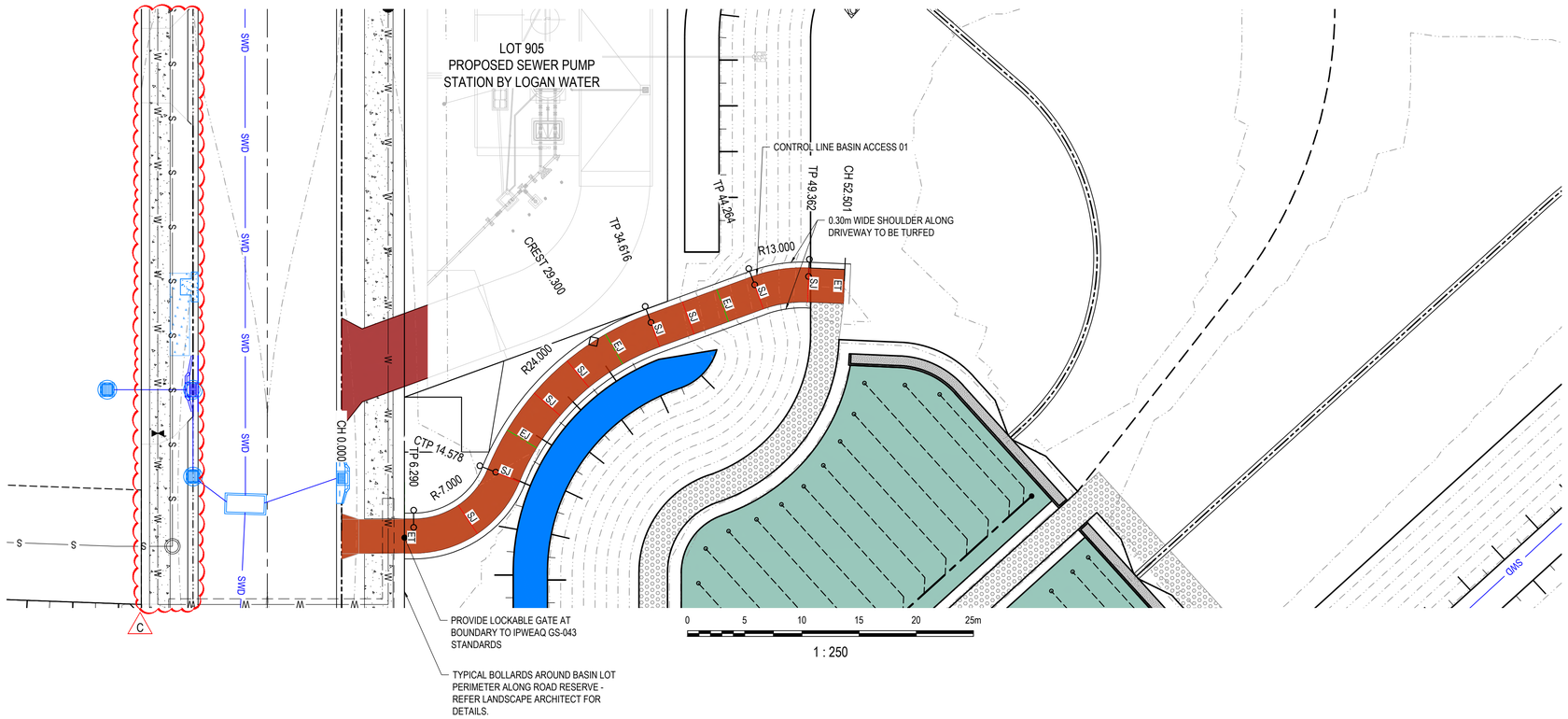
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0492

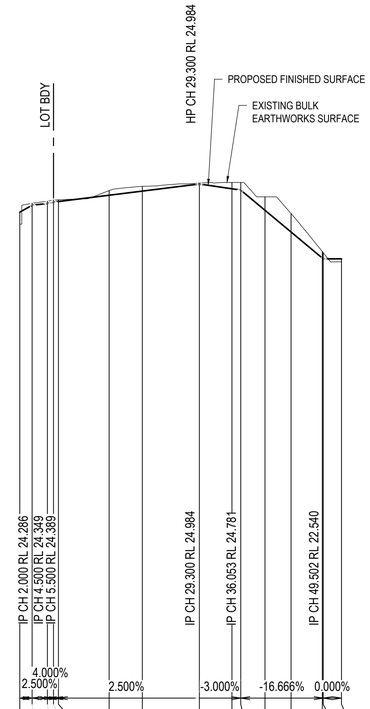
Issue: C

Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0491-BioPodDetails.dwg



LEGEND

- 5.0 — EXISTING SURFACE CONTOUR
- EARTHWORKS BATTER
- REINFORCED CONCRETE ACCESS DRIVEWAY
- BIO-BASIN FILTER MEDIA
- PROPOSED 2.50m WIDE GRAVEL ACCESS TRACK TYPE 2.3
- SWD — PROPOSED STORMWATER DRAINAGE
- S — PROPOSED SEWER
- W — PROPOSED WATER

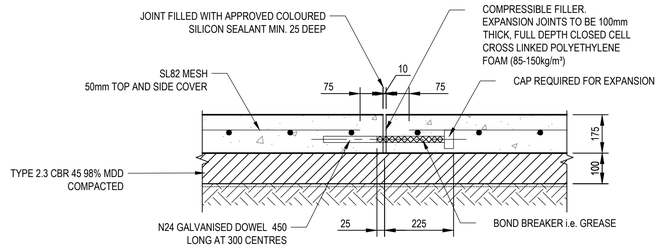


DATUM RL 7.0

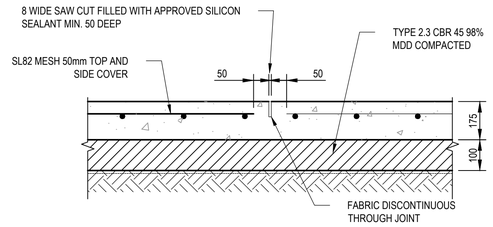
CUT (-) / FILL			-0.069	-0.069	-0.069	-0.057	-0.150	-0.154	-0.030	-0.210	-0.254	-0.441	-0.605	-0.212	-0.201	0.098						
LHS LIP LEVEL					24.314	24.334	24.541	24.676	24.909	24.749	24.706	24.049	23.338	22.488	22.465	22.540						
RHS LIP LEVEL					24.389	24.409	24.616	24.751	24.984	24.824	24.781	24.124	23.413	22.563	22.540	22.540						
DESIGN SURFACE	24.062	24.286	24.349	24.389	24.409	24.616	24.751	24.984	24.824	24.781	24.124	23.413	22.563	22.540	22.540							
EXISTING SURFACE		24.355	24.418	24.458	24.465	24.765	24.906	25.014	25.035	25.035	24.564	24.018	22.775	22.741	22.442							
CHAINAGES	0.000	2.000	4.500	5.500	6.290	14.578	20.000	29.300	34.616	36.053	40.000	44.264	49.362	49.502	52.501							
HORIZONTAL CURVES						R-7.000		R24.000					R13.000									

HORIZ SCALE: 500
VERTICAL SCALE: 100

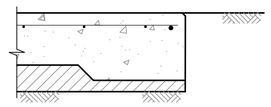
BASIN ACCESS 01



EXPANSION JOINT (EJ)
SCALE 1 : 10



SAW CUT (SJ)
SCALE 1 : 10



SLAB EDGE THICKENING (ET)
SCALE 1 : 10

0 100 200 400 600 800 1000mm
1 : 10

Issue	Description	DR	CH	VE	Date
C	UPDATED DRIVEWAYS	A.O.	S.S.	B.K.	10.03.25
B	DETAILS UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
0 5 10 20 30 40 50m
1 : 500
0 1 2 4 6 8 10m
1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

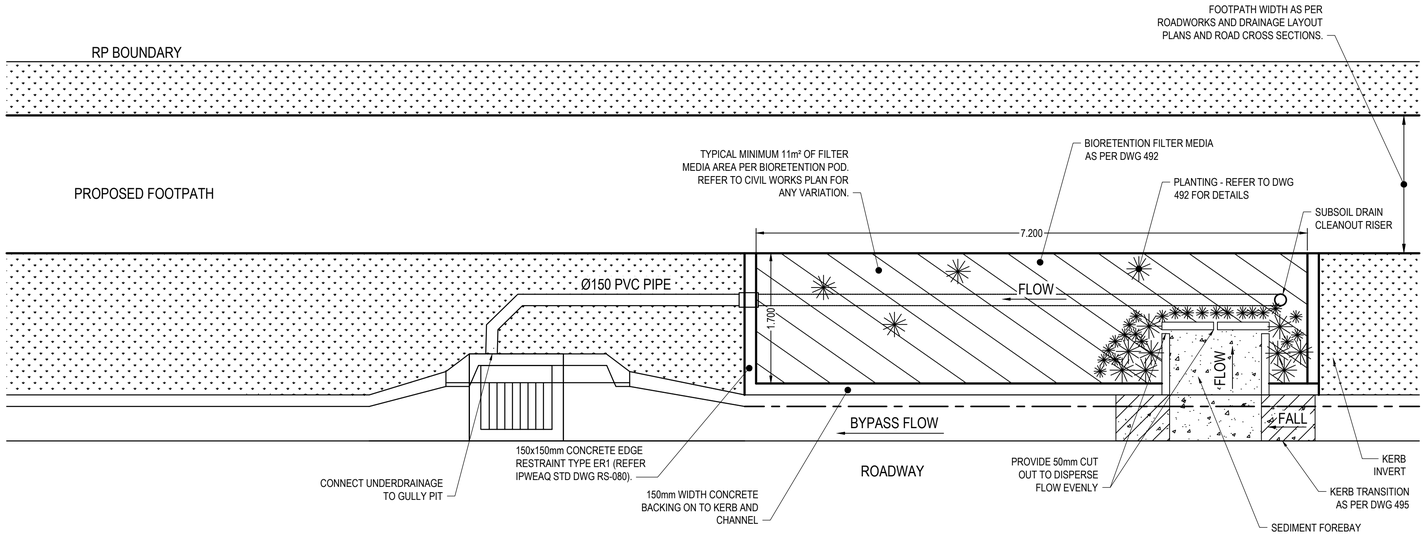
Title: COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 3

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Project Number: 30109334

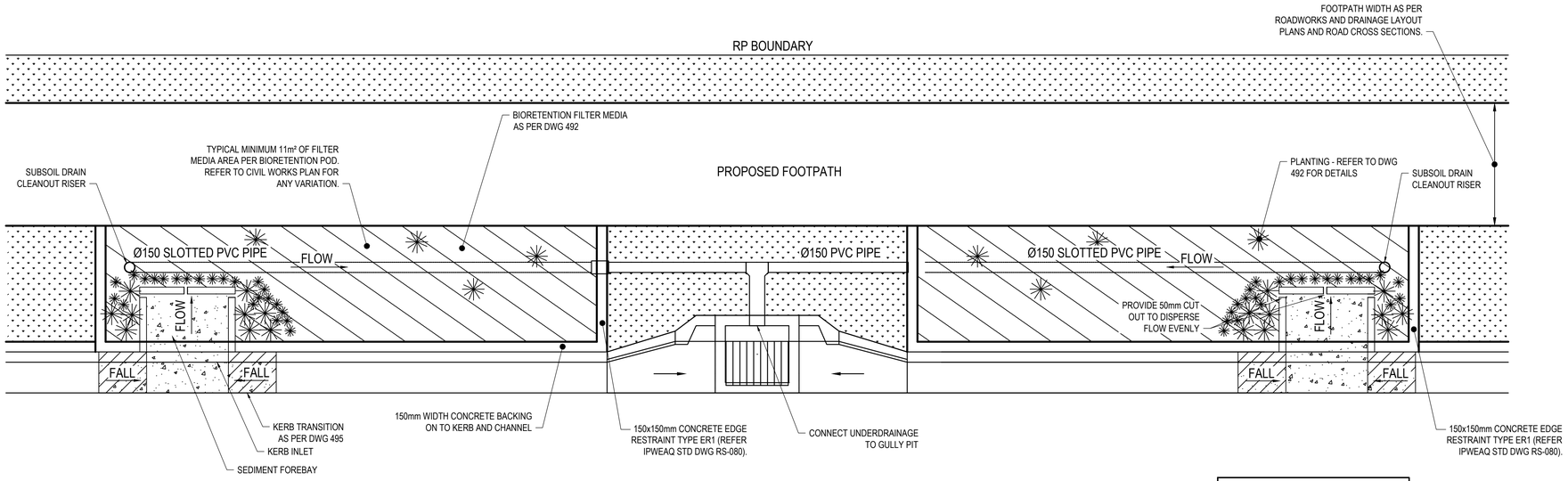
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0493 Issue: C

Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0491-BioPodDetails.dwg



STREETSCAPE BIORETENTION POD (ON GRADE PIT) - TYPICAL LAYOUT

NTS



STREETSCAPE BIORETENTION POD (SAG PIT)

NTS

VERIFY LOCATION OF SERVICES PRIOR TO EXCAVATION.

SOIL FILTER MEDIA NOTES

PARAMETER	TEST METHOD IN ACCORDANCE WITH	REQUIREMENT
SATURATED HYDRAULIC CONDUCTIVITY	ASTM f1815-11	50 - 500 mm/hr (200 PREFERRED)
pH	AS 4419	5.5 - 7.5
ELECTRICAL CONDUCTIVITY	AS 4419	<1.2 dS/m
NITROGEN CONTENT	AS 4419	<800 mg/kg
PHOSPHORUS CONTENT	AS 4419	<40 mg/kg
ORGANIC CONTENT	AS 4419	3% - 10%, WHERE ORGANIC CONTENT IS BELOW THIS THRESHOLD, THE FILTER MEDIA MAY BE AMELIORATED BY ADDING 50mm OF COMPOST AND TIINING IT INTO THE TOP 150mm OF FILTER MEDIA.
PARTICLE SIZE DISTRIBUTION	AS 1289.3.6.1 - 1995	CLAY & SILT 3 - 6% (<0.05mm) VERY FINE SAND 5 - 30% (0.05 - 0.15mm) FINE SAND 10 - 30% (0.15 - 0.25mm) MEDIUM TO COARSE SAND 40 - 60% (0.25 - 1.0mm) COARSE SAND 7 - 10% (1.0 - 2.0mm) FINE GRAVEL <3% (2.0 - 3.4mm)

BIO-FILTRATION NOTES

MINIMUM FILTER DEPTH IS TO BE 0.8m AND IS TO CONSIST OF THE FOLLOWING MEDIA:

1. 0.45m OF SANDY LOAM MATERIAL WITH A HYDRAULIC CONDUCTIVITY OF 50-500mm/h (200 PREFERRED).
2. TRANSITION LAYER - MINIMUM 100mm COARSE SAND TYPICALLY 1mm PARTICLE SIZE DIAMETER WITH <2% FINES.
3. DRAINAGE LAYER - FINE GRAVEL (NOMINAL 2-5mm) WITH <2% FINES.
4. ALL UNDERDRAINAGE PIPES TO BE COVERED BY A MINIMUM 50mm DRAINAGE LAYER MATERIAL.
5. CONTRACTOR TO ERECT SIGNAGE IDENTIFYING THE PURPOSE OF THE BIO-RETENTION BASIN AS PER COUNCIL REQUIREMENTS.
6. CONTRACTOR TO INSTALL GEOFABRIC, LAY TOPSOIL AND TURF AFTER BASIN INTERNAL DRAINAGE AND FILTER MEDIA IS INSTALLED TO PROTECT FILTER MEDIA. TURF AND GEOFABRIC TO BE REMOVED AFTER 80% OF BUILDINGS AND CONSTRUCTION IS COMPLETE.

Issue	Description	DR	CH	VE	Date
B	NOTE UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales: NOT TO SCALE

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 4

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0494

Issue: B

100mm on Original

Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0491-BioPodDetails.dwg

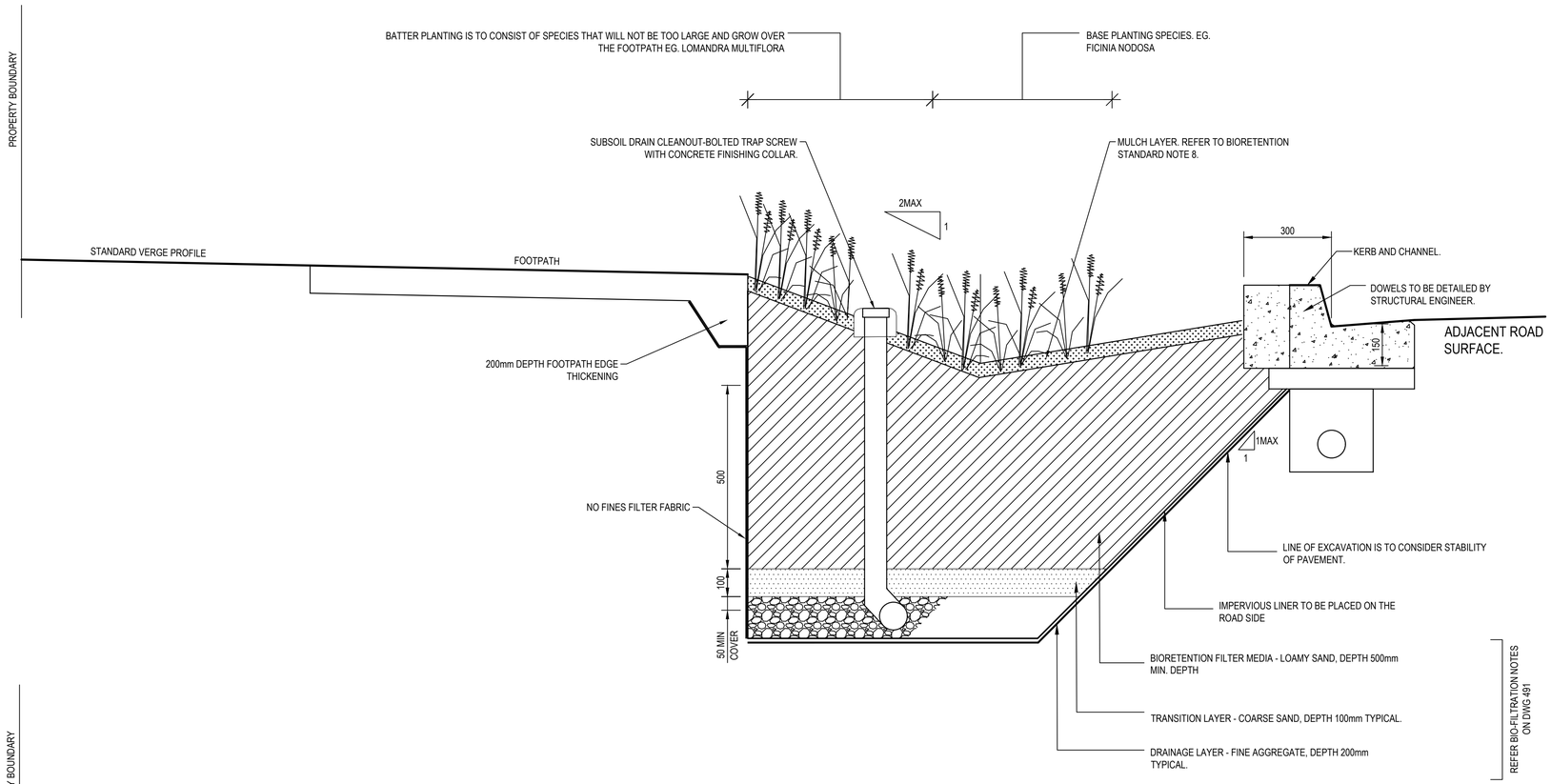
NOTES

BIORETENTION STANDARD NOTES:

1. GENERAL DESIGN: BIORETENTION SYSTEM TO BE DESIGNED IN ACCORDANCE WITH "BIORETENTION TECHNICAL DESIGN GUIDELINES" (WATER BY DESIGN).
2. SYSTEM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE WATER BY DESIGN 'CONSTRUCTION AND ESTABLISHMENT GUIDELINES.'
3. STORMWATER KERB OPENING IS TO BE TEMPORARILY BLOCKED DURING CONSTRUCTION.
4. BIORETENTION FILTER MEDIA, TRANSITION LAYER AND DRAINAGE LAYER IS TO BE IN ACCORDANCE WITH THE "GUIDELINES FOR SOIL MEDIA IN BIO-RETENTION SYSTEMS", FACILITY FOR ADVANCING WATER BIO-FILTRATION (FAWB).
5. UNDER-DRAIN, SLOTTED RIGID PIPE UPVC / HDPE OR SIMILAR TO AS 2439.1 OR APPROVED EQUIVALENT, 0.5% MINIMUM GRADE. DIAMETER TYPICALLY 100. PIPE JOINS SHALL BE GLUED WITH PLUMBING CEMENT. PIPE SHALL NOT BE INSTALLED WITH A FILTER SOCK SURROUNDING PIPE. UNDER-DRAINAGE PIPES SHALL BE SEALED INTO PITS USING GROUTS OR OTHER APPROVED WATERTIGHT SEAL. MINIMUM 50MM DRAINAGE LAYER OVER UNDERDRAINAGE PIPE.
6. FLITER CLOTH - NON-WOVEN GEOTEXTILE. FILTER CLOTH NOT TO BE PLACED BETWEEN ANY FILTER LAYERS. IMPERVIOUS LINER MAY BE REQUIRED ADJACENT TO ROADS AND MAY ALSO BE REQUIRED ELSEWHERE SUBJECT TO SOIL TESTING REQUIREMENTS IN ACCORDANCE WITH THE 'BIORETENTION TECHNICAL DESIGN GUIDELINES' (WATER BY DESIGN).
7. VEGETATION: PLANT SPECIES AND LAYOUT TO BE DETERMINED ON A PROJECT BY PROJECT BASIS. PLANT SPECIFICATION AND DENSITY SHALL BE IN ACCORDANCE WITH "BIORETENTION TECHNICAL DESIGN GUIDELINES" (WATER BY DESIGN) AND LOGAN CITY COUNCIL'S PLANNING SCHEME POLICY. TREE SPECIES TO BE SELECTED AS PER THE DESIGN MANUAL AND ALSO CONSIDERING THEIR SUITABILITY FOR WET AND DRY CONDITIONS.
8. MULCH: 75MM MULCH LAYER TO BE ORGANIC AND FRIABLE, SUCH AS SUGARCANE MULCH. MULCH TO BE SECURED WITH JUTE MESH TO MANUFACTURER'S SPECIFICATIONS.

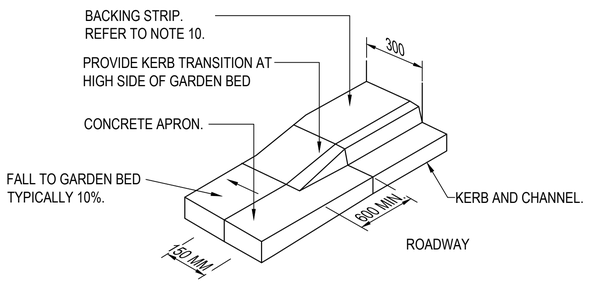
SECTION NOTES:

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH DRAWING 0491.
2. VERTICAL DROPS FROM THE TOP OF KERB TO FINISH LEVEL OF THE BIORETENTION GARDEN MUST NOT EXCEED 250MM AND THE MAXIMUM DEPTH OF THE GARDEN MUST NOT EXCEED 300MM.
3. DROP FROM KERB BACKING STRIP TO FILTER SURFACE NOT TO EXCEED 250MM.
4. KERB ADAPTORS ARE NOT TO BE DIRECTLY PLUMBED INTO SYSTEM.



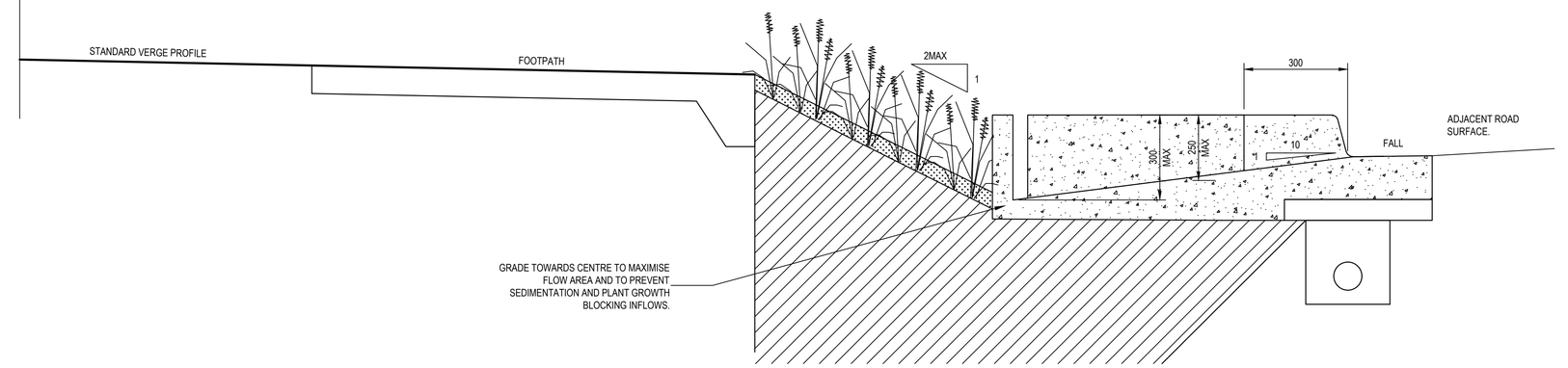
STREETSCAPE BIORETENTION (VERGE TYPE) - TYPICAL SECTION A 0494

NTS



KERB TRANSITION DETAIL

VERIFY LOCATION OF SERVICES PRIOR TO EXCAVATION.



STREETSCAPE BIORETENTION (VERGE TYPE) - KERB INLET DETAILS B 0494

NTS

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales: 0 100 200 400 600 800 1000mm — 1 : 10

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: COMBINED DETENTION BIO-RETENTION BASIN LAYOUT PLAN AND SECTION SHEET 5

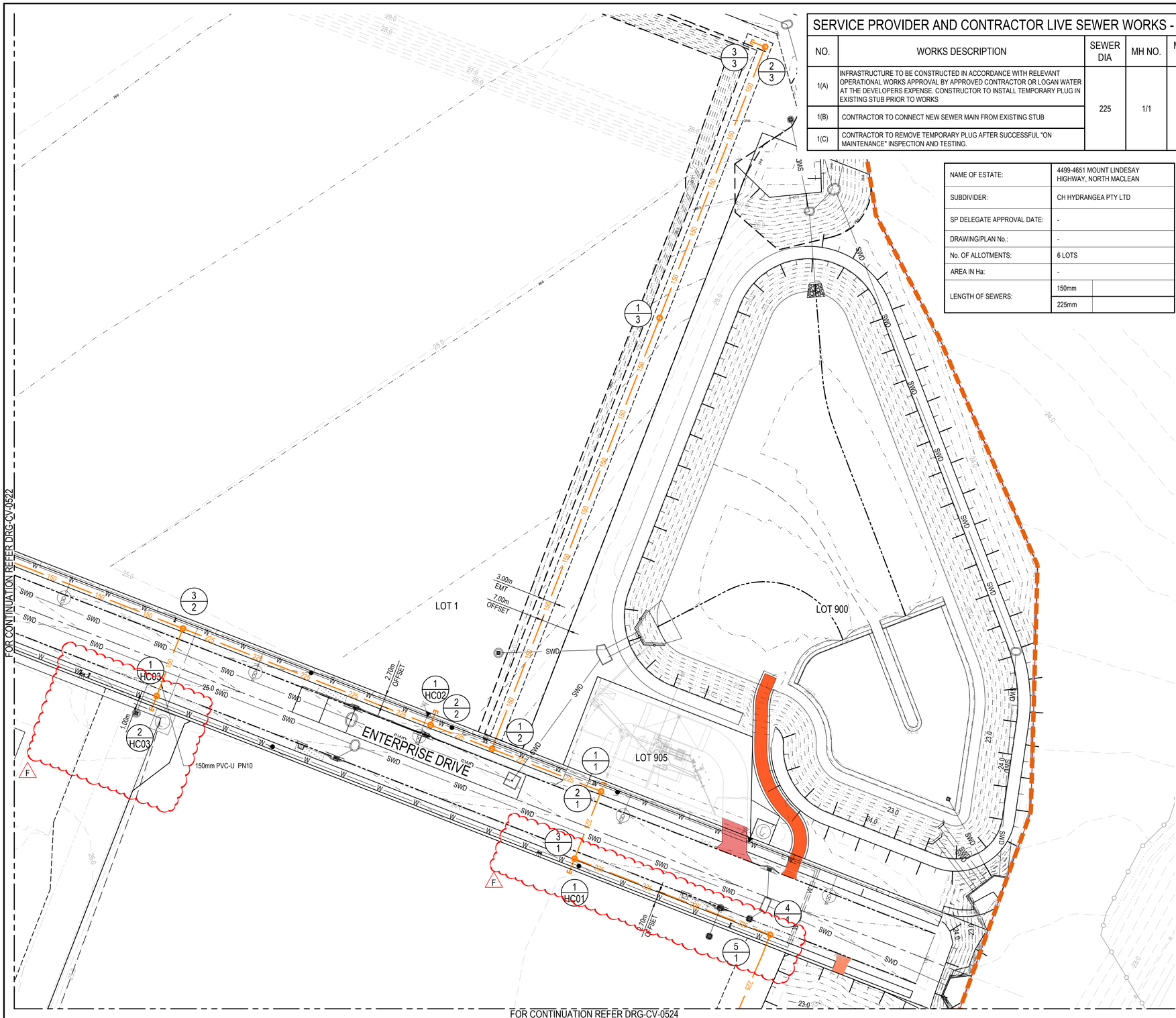
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Tel No: +61 7 3337 0000
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0495

Issue: A

Date Plotted: 13 Mar 2025 - 10:07AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0491-BioPodDetails.dwg



SERVICE PROVIDER AND CONTRACTOR LIVE SEWER WORKS - TYPICAL SCHEDULE

NO.	WORKS DESCRIPTION	SEWER DIA	MH NO.	MH/MS TYPE	COVER TYPE	LOT No.	F.S.L.	I.L.	DEPTH TO INVERT
1(A)	INFRASTRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH RELEVANT OPERATIONAL WORKS APPROVAL BY APPROVED CONTRACTOR OR LOGAN WATER AT THE DEVELOPERS EXPENSE. CONSTRUCTOR TO INSTALL TEMPORARY PLUG IN EXISTING STUB PRIOR TO WORKS	225	1/1	STUB	B	905	24.575	18.500	6.075
1(B)	CONTRACTOR TO CONNECT NEW SEWER MAIN FROM EXISTING STUB								
1(C)	CONTRACTOR TO REMOVE TEMPORARY PLUG AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION AND TESTING.								

NAME OF ESTATE:	4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN	
SUBDIVIDER:	CH HYDRANGEA PTY LTD	
SP DELEGATE APPROVAL DATE:	-	
DRAWING/PLAN No.:	-	
No. OF ALLOTMENTS:	6 LOTS	
AREA IN Ha:	-	
LENGTH OF SEWERS:	150mm	
	225mm	

SEWER NOTES

1. ALL WORK & MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST QUEENSLAND SEWERAGE CODE SPECIFICATIONS & STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS & WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE CONSTRUCTION OF THE SEWERAGE WORK SHOWN ON THIS DRAWING SHALL BE INSPECTED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. SEWERAGE WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT INTO THE SEQ SERVICE PROVIDER SEWERAGE SYSTEM.
4. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MAINTENANCE HOLES SHALL BE CARRIED OUT BY THE SEQ SERVICE PROVIDER AT THE DEVELOPER'S COST.
5. ALL PIPES & MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS & MATERIALS" LIST.
6. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE CARRIED OUT IN LAYERS NOT EXCEEDING 300mm (LOOSE) IN DEPTH & SHALL BE COMPACTED UNTIL THE COMPACTION IS NOT LESS THAN 95% OF THE MATERIALS MAXIMUM COMPACTION WHEN TESTED IN ACCORDANCE WITH A.S. 1289 (MODIFIED COMPACTION). TESTING SHALL BE CARRIED OUT AFTER EACH ALTERNATE LAYER. IN ALL SUCH CASES APPROVAL OF CONSTRUCTED SEWERS WILL NOT BE ISSUED BY THE SEQ SERVICE PROVIDER UNLESS CERTIFICATES ARE PRODUCED CERTIFYING THAT THE REQUIRED COMPACTION HAS BEEN ACHIEVED.
7. WHERE SEWERS HAVE A GRADE OF 1 IN 20 OR STEEPER,BULKHEADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SEQ SEWER CODE.
8. THE CONTRACTOR SHALL VERIFY THE LOCATION & DEPTH OF EXISTING SERVICES WITH RELEVANT AUTHORITIES BEFORE COMMENCING WORKS.
9. SEWERS SHALL BE DISUSED /ABANDONED IN ACCORDANCE WITH PROCEDURES SET OUT IN THE SEQ SEWER CODE.
10. BENCH MARK & LEVELS TO AHD.
11. EXISTING ALLOTMENTS REQUIRING A PROPERTY CONNECTION FROM EXISTING SEWERS SHALL BE PROVIDED BY THE SEQ SERVICE PROVIDER AT THE DEVELOPERS COST.
12. ALL MANHOLES 1500mm DIAMETER AND LARGER AND/ OR MANHOLES GREATER THAN 4.0m IN DEPTH TO BE LINED AS PER SOUTH EAST QUEENSLAND SEWERAGE CODE. REFER SEQ-SPS-1407 FOR DETAILS.
13. ALL MAINTENANCE HOLES ARE TO BE CONSTRUCTED USING CONCRETE CONTAINING CALCAREOUS AGGREGATE. IF CALCAREOUS AGGREGATE CONCRETE IS NOT AVAILABLE FOR MAINTENANCE HOLES POURED AFTER 1 AUGUST 2016, AN APPROVED INTERNAL PE LINER CAST IN PLACE IS TO BE CONSTRUCTED. MAINTENANCE HOLES POURED PRIOR TO THIS DATE WITHOUT USING CALCAREOUS AGGREGATE CONCRETE WILL ONLY BE ACCEPTED WITH SUFFICIENT (AS DETERMINED BY THE SUPERINTENDENT) PROOF THAT ALL REASONABLE EFFORTS WERE MADE TO SOURCE CALCAREOUS AGGREGATE CONCRETE.

VEGETATION PROTECTION

A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
B. WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8m BATTENS CLOSELY SPACED & ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION & REMAIN UNTIL COMPLETION.
C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL

A. TOPSOIL & SUBSOIL SHALL BE STOCKPILED SEPARATELY.
B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.

CREEK CROSSINGS

A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
C. NO SOIL SHALL BE STOCKPILED WITHIN 5m OF THE CREEK.

REHABILITATION

A. PREDISTURBANCE SOIL PROFILES & COMPACTION LEVELS SHALL BE REINSTATED.
B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

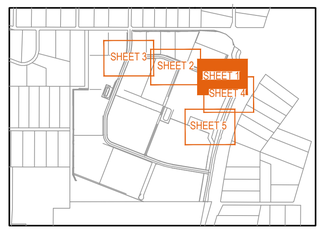
SAFETY

A. THE DESIGN & CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION.

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- SEWER EASEMENT LINE
- PROPOSED SEWER STRUCTURE NAME (1/1)
- PROPOSED DN150 SEWER RETICULATION AND MANHOLE STRUCTURE (150)
- PROPOSED DN225 SEWER RETICULATION AND MANHOLE STRUCTURE (225)
- PROPOSED STORMWATER DRAINAGE RETICULATION (SWD)
- PROPOSED WATER RETICULATION (W)
- EXISTING SEWER STRUCTURE NAME (1/1)
- EXISTING SEWER RETICULATION ($)
- EXISTING STORMWATER DRAINAGE RETICULATION (swd)
- EXISTING WATER RETICULATION (w)
- EXISTING UNDERGROUND ELECTRICAL RETICULATION (e)
- EXISTING OVERHEAD ELECTRICAL RETICULATION (oh)
- EXISTING EARTHWORKS INTERFACE (EXTERNAL WORKS)
- FUTURE SEWER RETICULATION (FUTS)
- FUTURE STORMWATER DRAINAGE RETICULATION (FUTSWD)
- FUTURE WATER RETICULATION (FUTW)

ALL ENVIRONMENT PROTECTION MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.



KEY PLAN

Issue	Description	DR	CH	VE	Date
F	UPDATED DRIVEWAYS, WATER CONNECTIONS	A.O.	S.S	B.K.	10.03.25
E	REMOVED NOTE	A.O.	S.S.	B.K.	05.09.24
D	SEWER LINE 3 UPDATED	A.O.	S.S.	B.K.	03.09.24
C	SEWER LINE 1/1 TO 3/2 UPDATED TO SIZE 225	A.O.	S.S.	B.K.	01.08.24
B	TEMPORARY ACCESS ROAD REMOVED	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER RETICULATION LAYOUT PLAN SHEET 1

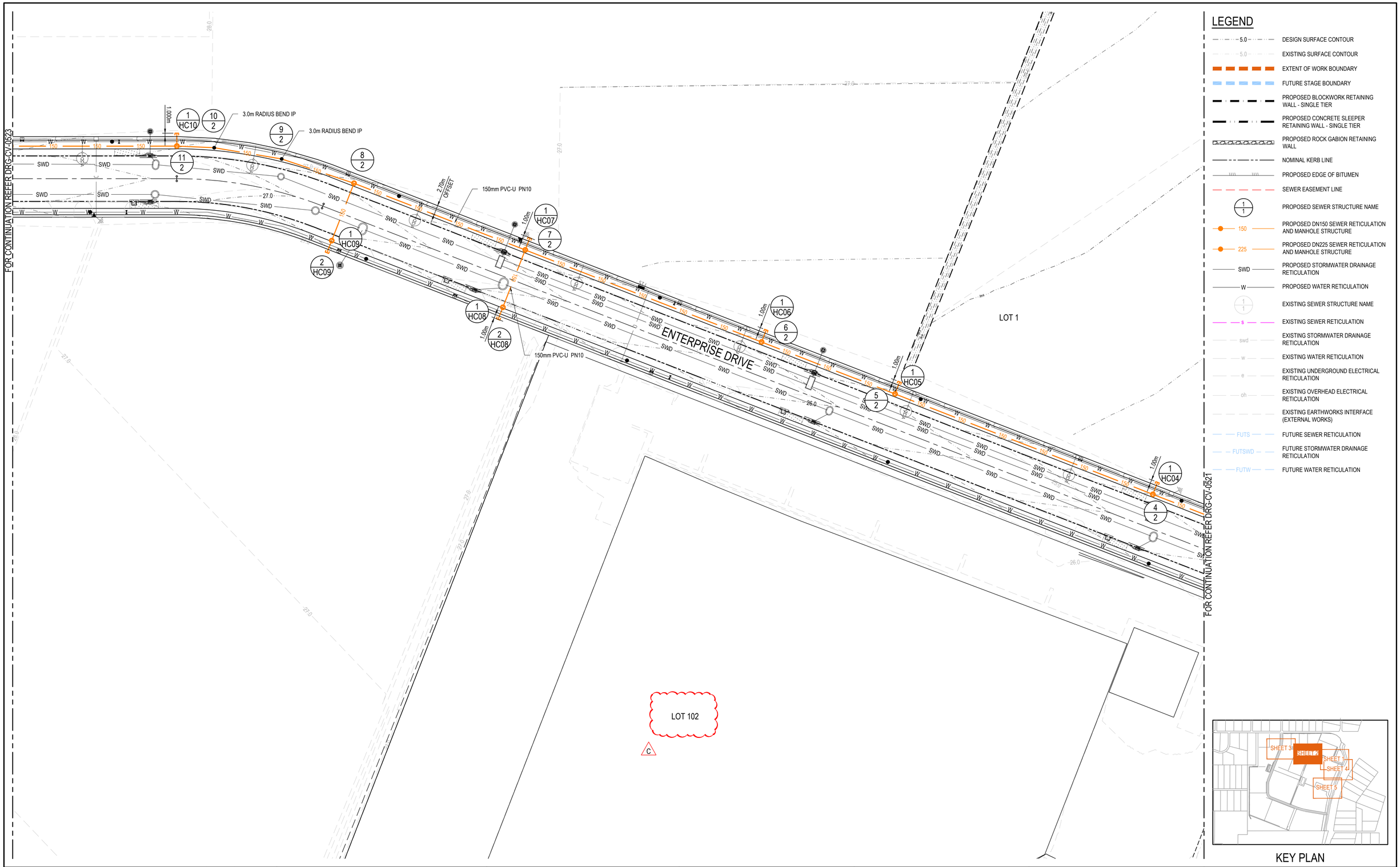
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0521 | Issue: F

100mm on Original

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LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- SEWER EASEMENT LINE
- PROPOSED SEWER STRUCTURE NAME
- PROPOSED DN150 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED DN225 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING SEWER STRUCTURE NAME
- EXISTING SEWER RETICULATION
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- EXISTING EARTHWORKS INTERFACE (EXTERNAL WORKS)
- FUTURE SEWER RETICULATION
- FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE WATER RETICULATION

KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
B	UPDATED ISSUE	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

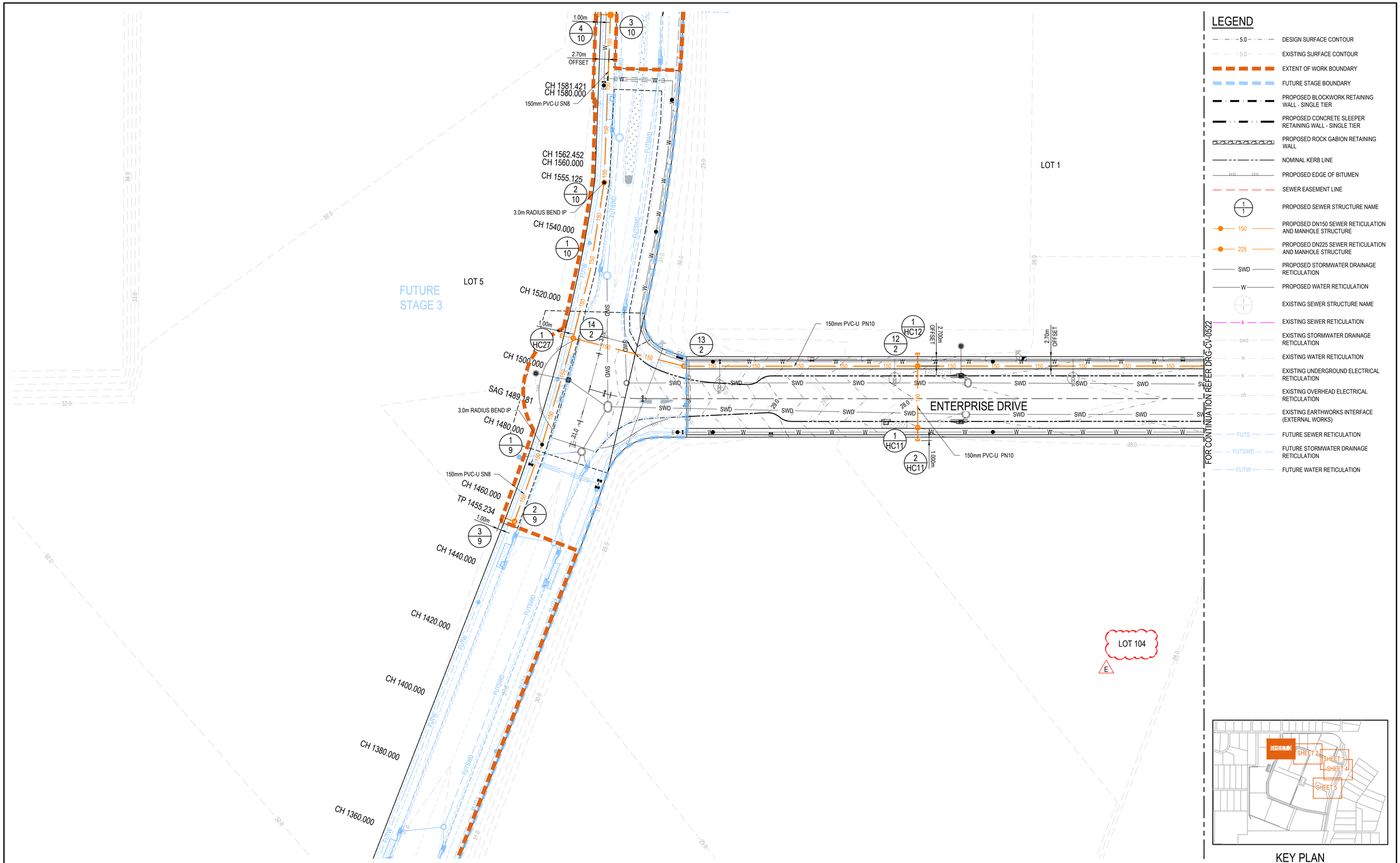
SEWER RETICULATION LAYOUT PLAN SHEET 2

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Project Number	30109334

Drawing No. 30109334-AAP-P301OP-CV-DRG-0522 | Issue C

Date Plotted: 13 Mar 2025 - 10:13AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0521-Sewer.dwg



Issue	Description	DR	CH	VE	Date
E	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
D	UPDATED LAYOUT	A.O.	S.S.	B.K.	18.10.24
C	SEWER MH ADDED	A.O.	S.S.	B.K.	03.09.24
B	SEWER LINE 9 AND 10 ADDED	A.O.	S.S.	B.K.	01.08.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project

FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title

SEWER RETICULATION LAYOUT PLAN SHEET 3

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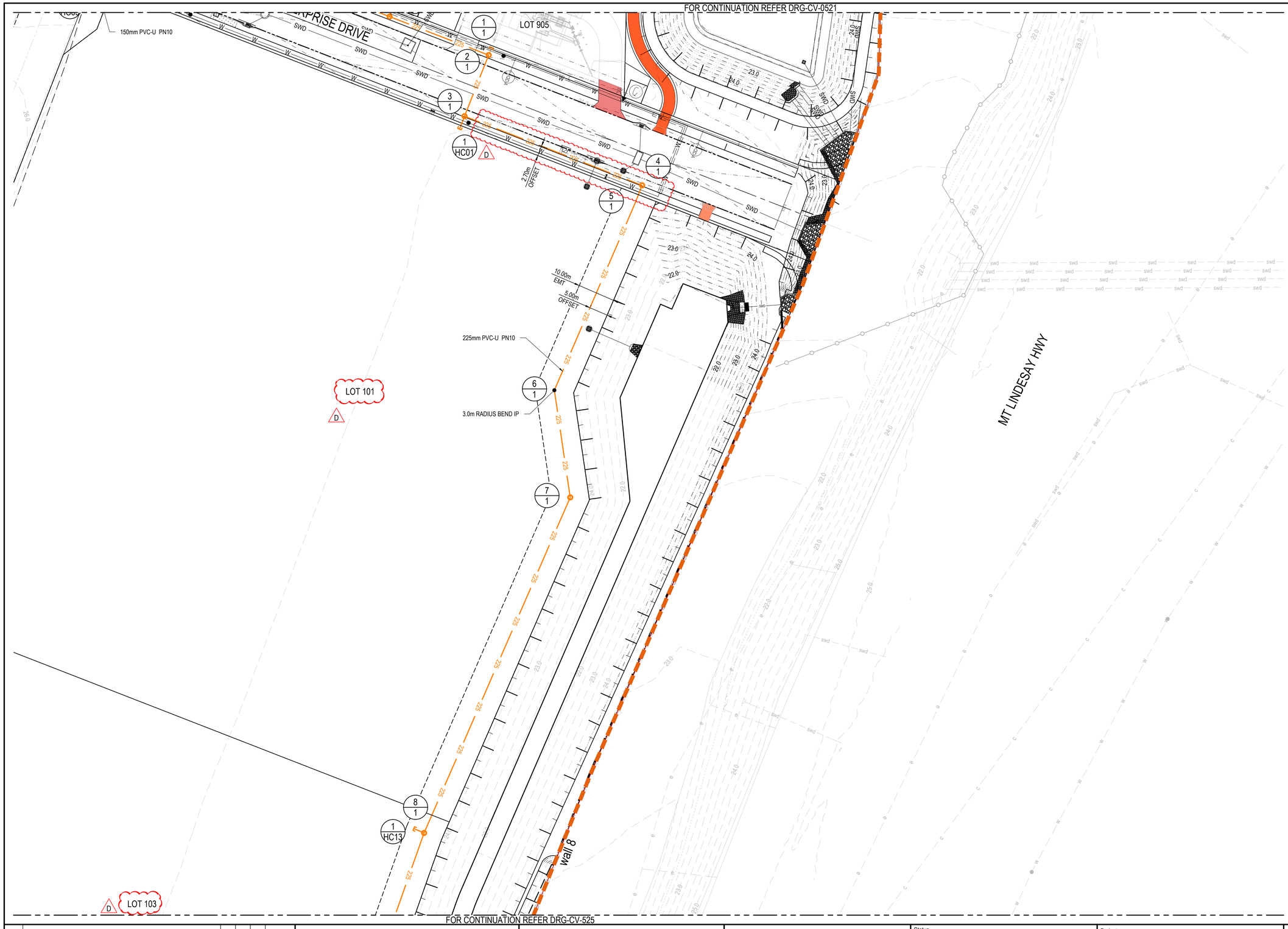
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Project Number	30109334

Drawing No.	Issue
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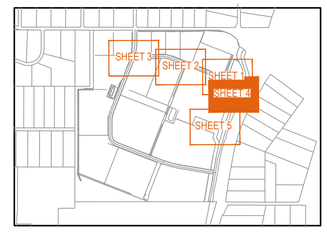
FOR CONTINUATION REFER DRG-CV-0521



FOR CONTINUATION REFER DRG-CV-525

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- SEWER EASEMENT LINE
- PROPOSED SEWER STRUCTURE NAME
- PROPOSED DN150 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED DN225 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING SEWER STRUCTURE NAME
- EXISTING SEWER RETICULATION
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- EXISTING EARTHWORKS INTERFACE (EXTERNAL WORKS)
- FUTURE SEWER RETICULATION
- FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE WATER RETICULATION



KEY PLAN

Issue	Description	DR	CH	VE	Date
D	UPDATED DRIVEWAYS, WATER CONNECTIONS AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
C	REMOVED NOTE	A.O.	S.S.	B.K.	05.09.24
B	UPDATED ISSUE	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

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Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER RETICULATION LAYOUT PLAN SHEET 4

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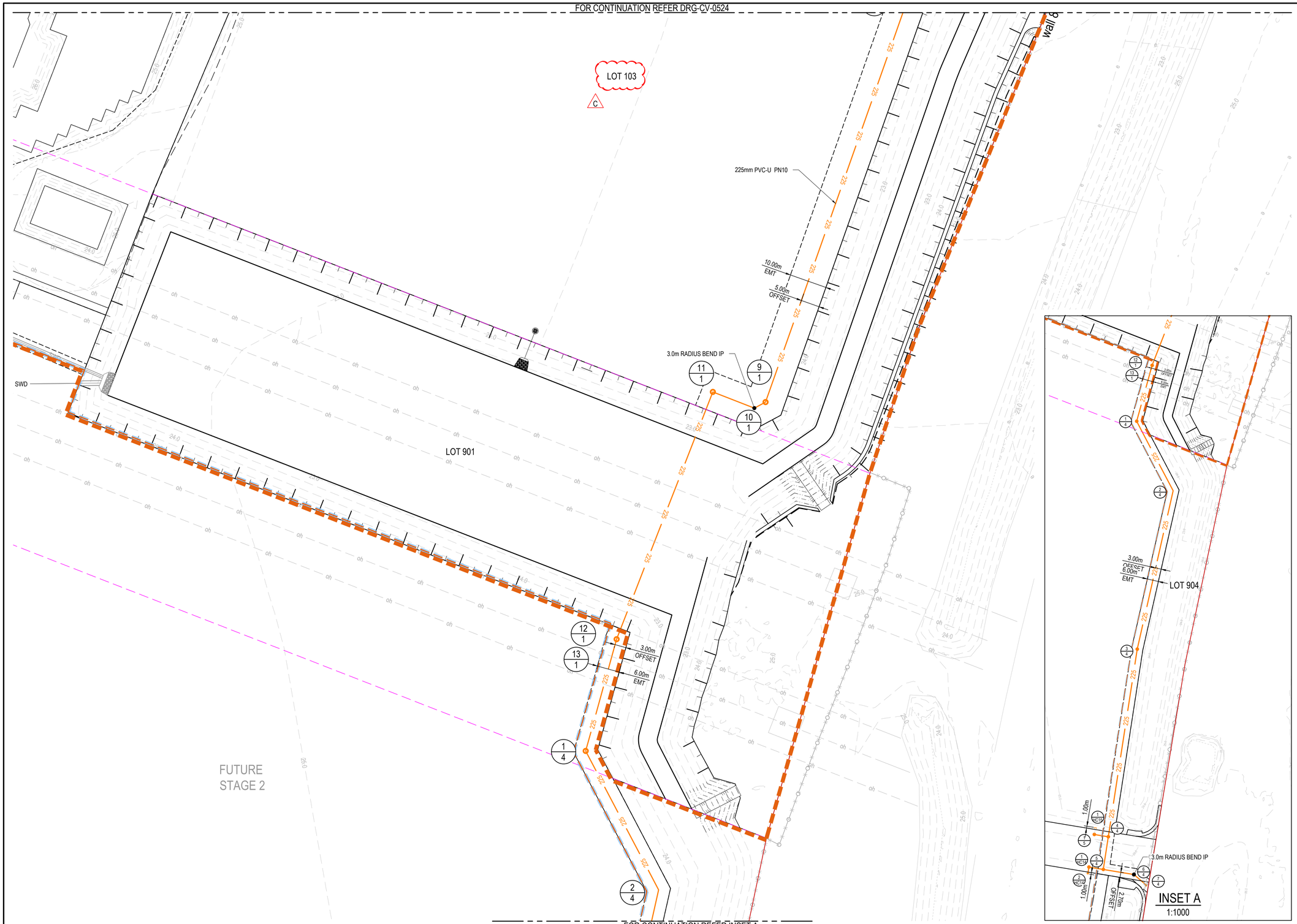
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0524

Issue: D

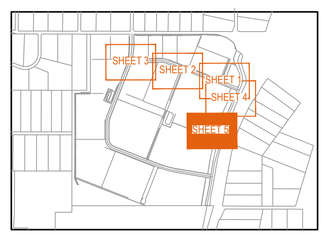
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FOR CONTINUATION REFER DRG-CV-0524



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- SEWER EASEMENT LINE
- PROPOSED SEWER STRUCTURE NAME
- PROPOSED DN150 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED DN225 SEWER RETICULATION AND MANHOLE STRUCTURE
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED WATER RETICULATION
- EXISTING SEWER STRUCTURE NAME
- EXISTING SEWER RETICULATION
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- EXISTING EARTHWORKS INTERFACE (EXTERNAL WORKS)
- FUTURE SEWER RETICULATION
- FUTURE STORMWATER DRAINAGE RETICULATION
- FUTURE WATER RETICULATION



KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED BOUNDARIES AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
B	SEWER LINE 4 AND 5 ADDED	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER RETICULATION LAYOUT PLAN SHEET 5

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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0525

Issue: C

Date Plotted: 13 Mar 2025 - 10:13AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0521-Sewer.dwg

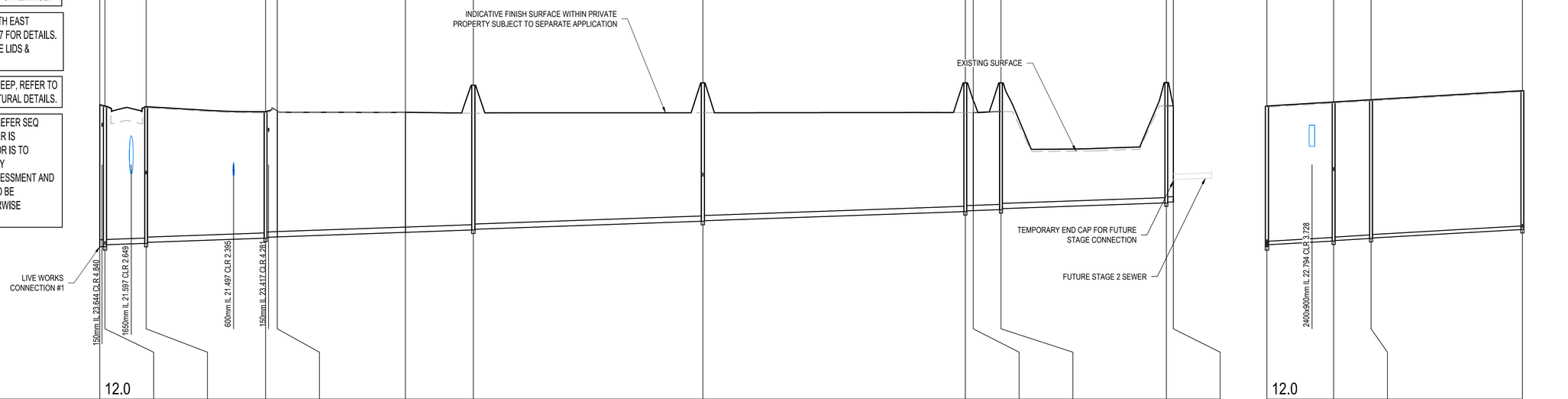
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STRUCTURE TYPE	REFER SPS DESIGN	X	PE LINED	P2	PE LINED	P2	PE LINED	IP	HTP 3.0m RADIUS	X	PE LINED	P2	PE LINED	HTP 3.0m RADIUS	P2	PE LINED	P2	PE LINED	END	X	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED
STRUCTURE LID TYPE		B		B		D		D		D		D		D		D		D		B		D		B		B	
STRUCTURE DROP TYPE			V		V		V			V		V		V		V		V	C	V		V		V		V	
JUNCTION LINE			LINE 2		LINE HC01					LINE HC13									LINE 4	LINE 2		LINE 3				LINE HC03	
DEPTH TO HC																											
HC INVERT LEVEL																											
HC TYPE																											
HC LOT No																											
CH. FROM D/S STRUC/ BEND																											

ALL PRECAST MANHOLES TO HAVE CONVERSION SLAB COVERINGS. REFER MANHOLE TYPE P2 SEQ-SEW-1300-1 FOR FURTHER DETAILS. ALL TYPE P2 MANHOLES TO BE 1050Ø, UNLESS NOTED OTHERWISE.

ALL PROPOSED MANHOLES TO BE LINED AS PER SOUTH EAST QUEENSLAND SEWERAGE CODE. REFER SEQ-SPS-1407 FOR DETAILS. MANHOLES ARE ALSO REQUIRED TO HAVE COMPOSITE LIDS & FRAMES.

FOR CUSTOM (X TYPE) MANHOLE STRUCTURE >6.0m DEEP, REFER TO DRG 0585-0586 FOR RPEQ CERTIFIED TYPICAL STRUCTURAL DETAILS.

FOR SEWER EMBEDMENT SUPPORT TYPE 3 DETAILS REFER SEQ WATER DWG SEQ-SEW-1201-1. WHERE GROUND WATER IS DISCOVERED DURING EXCAVATIONS THE CONTRACTOR IS TO IMMEDIATELY CEASE ASSOCIATED WORKS AND NOTIFY SUPERINTENDENT WHO IS TO PROVIDE FURTHER ASSESSMENT AND INSTRUCTION ON THE EMBEDMENT SUPPORT TYPE TO BE CONSTRUCTED WITHIN THESE AREAS. UNLESS OTHERWISE DIRECTED ON SITE.



LEGEND:

OP - OPEN SPACE
FP - FOOTPATH/VERGE
PP - PRIVATE PROPERTY
RD - ROAD

DATUM R.L.		12.0																			12.0							
LAND USE		RD			FP					PP												FP						
DIAMETER		300Ø PVC-U SN8								225Ø PVC-U SN8												225Ø PVC-U SN8						
GRADE		1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286							1 in 179	1 in 179	1 in 179				
EMBEDMENT TYPE										TYPE 3 *												TYPE 3 *						
DEPTH TO INVERT	6.075	6.075	6.005	5.925	5.836	5.796	5.403	5.363	5.368	5.368	5.128	5.128	6.181	6.151	5.908	5.888	5.495	5.465	4.184	4.184	5.412	5.372	5.124	5.094	4.107	6.005	5.925	5.936	5.916	5.923	5.903	5.929	
JUNCTION INVERT LEVEL				18.588		21.599										21.510									20.416		18.588		21.747				19.319
SEWER INVERT LEVEL	18.500	18.500	18.508	18.588	18.649	18.689	18.868	18.908	18.926	18.926	19.117	19.117	19.219	19.249	19.592	19.612	20.005	20.035	20.047	20.047	20.088	20.128	20.376	20.406	20.416	18.508	18.588	18.747	18.767	18.857	18.877	19.239	
DESIGN SURFACE LEVEL		24.575		24.513		24.485		24.271		24.294		24.245		25.400		25.500		25.500		24.230		25.500		25.500	24.524		24.513		24.684		24.780		25.168
SETOUT	E501869.082 N6929376.976		E501867.971 N6929374.077		E501859.085 N6929358.885		E501903.289 N6929333.305		E501900.786 N6929328.980		E501871.667 N6929282.606		E501871.468 N6929253.568		E501819.018 N6929170.640		E501765.972 N6929071.787		E501762.787 N6929070.663		E501752.516 N6929076.607		E501717.114 N6929015.433		E501715.883 N6929012.697		E501867.971 N6929374.077		E501843.299 N6929388.353		E501829.444 N6929396.370		E501773.461 N6929428.764
RUNNING CHAINAGE		0.000	2.200	2.200	17.600	19.800	51.071	70.871	4.997	75.868	54.758	130.626	29.039	159.665	98.123	257.787	112.186	369.974	3.377	373.351	11.867	385.218	70.680	455.897	3.000 458.898		0.000	28.505	28.505	16.007	44.512	64.680	109.191

1

2

Issue	Description	DR	CH	VE	Date
C	SEWER STRUCTURES REVISED	A.O.	S.S.	B.K.	05.09.24
B	SEWER LINE 1 REVISED	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
HORZ 0 10 20 40 60 80 100m 1:1000
VERT 0 1 2 4 6 8 10m 1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER LONGITUDINAL SECTION SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
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ABN 76 104 485 289
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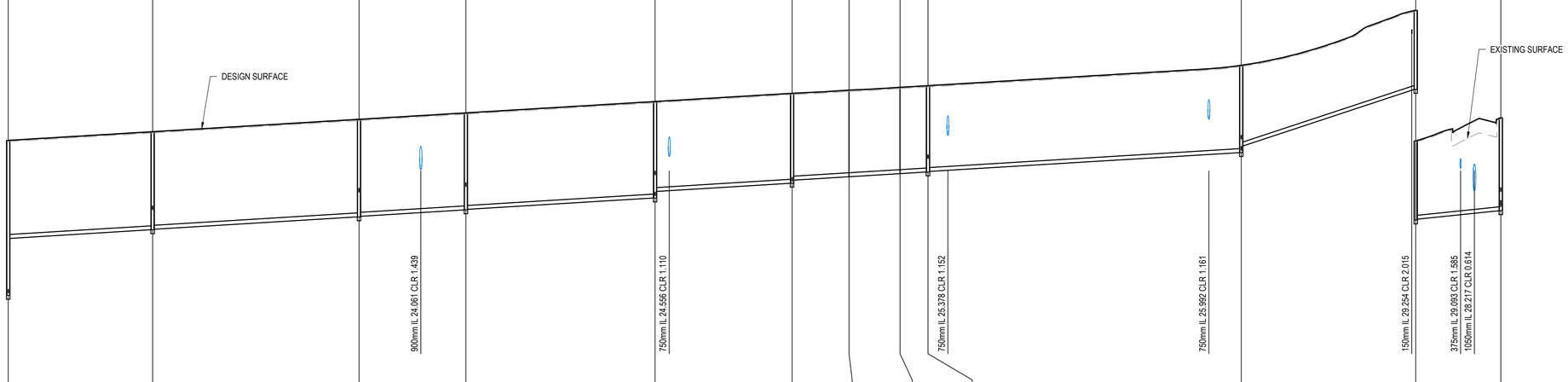
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0581

Issue: C

Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg

STRUC/ BEND/ END NAME		3/2		4/2		5/2		6/2		7/2		8/2	9/2	10/2	11/2	12/2		13/2	14/2	
STRUCTURE TYPE	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	HTP 3.0m RADIUS	HTP 3.0m RADIUS	P2	PE LINED	P2	PE LINED	P2	PE LINED
STRUCTURE LID TYPE	B		B		B		B		B		B				B		B		B	
STRUCTURE DROP TYPE		X		V		V		V		V		V				V		V		V
JUNCTION LINE		LINE HC03		LINE HC04		LINE HC05		LINE HC06		LINE HC07		LINE HC09				LINE HC10		LINE HC11		LINE 9
DEPTH TO HC																				
HC INVERT LEVEL																				
HC TYPE																				
HC LOT No																				
CH. FROM D/S STRUC/ BEND																				
DESIGN SURFACE LEVEL		25.168		25.500		25.974		26.220		26.655		26.970		27.094	27.202	27.262		28.041	30.146	31.034
SEWER INVERT LEVEL	19.239	21.417	21.749	21.769	22.243	22.263	22.509	22.529	22.964	23.214	23.529	23.649	23.779	23.779	23.897	23.897	23.961	23.981	24.701	24.951	27.121	27.151	27.477	
JUNCTION INVERT LEVEL		19.319		22.516		23.190		23.402		23.849		23.609				24.474		24.791		27.727
DEPTH TO INVERT	5.929	3.751	3.751	3.731	3.731	3.711	3.711	3.691	3.691	3.441	3.441	3.321	3.314	3.314	3.305	3.305	3.301	3.281	3.340	3.090	3.025	2.995	3.557	
LAND USE										FP										RD
DIAMETER										150Ø PVC-U SN8										
GRADE		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167	1 in 167	1 in 167		1 in 167		1 in 30.80		1 in 100.00
EMBEDMENT TYPE										TYPE 3 *										
SETOUT	E501773.461 N6929428.764		E501725.579 N6929456.470		E501657.135 N6929496.074		E501621.714 N6929516.570		E501558.963 N6929552.879		E501513.520 N6929579.173		E501494.161 N6929589.204	E501475.588 N6929595.320	E501465.089 N6929597.410		E501346.493 N6929615.716		E501280.440 N6929626.912	E501250.399 N6929638.648
RUNNING CHAINAGE	109.191	55.320	164.512	79.076	243.588	40.924	284.512	72.499	357.010	52.501	409.511	21.804	431.315	19.554	450.869	10.705	461.575	120.000	581.575	66.836	648.410	32.629	681.039	



ALL PRECAST MANHOLES TO HAVE CONVERSION SLAB COVERINGS. REFER MANHOLE TYPE P2 SEQ-SEW-1300-1 FOR FURTHER DETAILS. ALL TYPE P2 MANHOLES TO BE 1050Ø, UNLESS NOTED OTHERWISE.

ALL PROPOSED MANHOLES TO BE LINED AS PER SOUTH EAST QUEENSLAND SEWERAGE CODE. REFER SEQ-SPS-1407 FOR DETAILS. MANHOLES ARE ALSO REQUIRED TO HAVE COMPOSITE LIDS & FRAMES.

FOR CUSTOM (X TYPE) MANHOLE STRUCTURE >6.0m DEEP, REFER TO DRG 0585-0586 FOR RPEQ CERTIFIED TYPICAL STRUCTURAL DETAILS.

FOR SEWER EMBEDMENT SUPPORT TYPE 3 DETAILS REFER SEQ WATER DWG SEQ-SEW-1201-1. WHERE GROUND WATER IS DISCOVERED DURING EXCAVATIONS THE CONTRACTOR IS TO IMMEDIATELY CEASE ASSOCIATED WORKS AND NOTIFY SUPERINTENDENT WHO IS TO PROVIDE FURTHER ASSESSMENT AND INSTRUCTION ON THE EMBEDMENT SUPPORT TYPE TO BE CONSTRUCTED WITHIN THESE AREAS. UNLESS OTHERWISE DIRECTED ON SITE.

LEGEND:

OP - OPEN SPACE
FP - FOOTPATH/VERGE
PP - PRIVATE PROPERTY
RD - ROAD

2

C

Issue	Description	DR	CH	VE	Date
C	SEWER LINE 3 REVISED	A.O.	S.S.	B.K.	03.09.24
B	LINE 3 REVISED	A.O.	S.S.	B.K.	01.08.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
HORZ 0 10 20 40 60 80 100m
1:1000
VERT 0 1 2 4 6 8 10m
1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER LONGITUDINAL SECTION SHEET 2

ARCADIS
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BRISBANE QLD 4000
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Tel No: +61 7 3337 0000
www.arcadis.com/au

Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0582

Issue: C

Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg

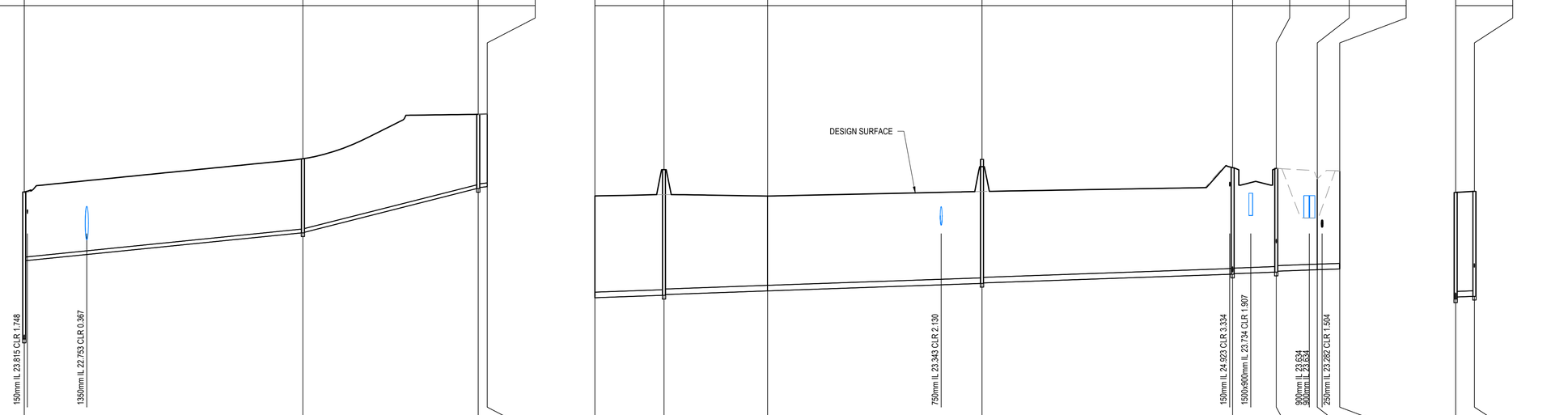
STRUC/ BEND/ END NAME	1/2			1/3			2/3	3/3	13/1	1/4	2/4	3/4	4/4	5/4	6/4	7/4	4/4	1/5
							-90°			-43°	-40°	-4°		-88°	-31°			
STRUCTURE TYPE	P2	PE LINED		P2	PE LINED		P2	PE LINED END	END	P2	PE LINED HTP	3.0m RADIUS P2	P2	PE LINED P2	PE LINED HTP	3.0m RADIUS HTP	P2	PE LINED P2	1200Ø PE LINED
STRUCTURE LID TYPE	D			D			D		D			D	D	D			D	D
STRUCTURE DROP TYPE		X			V			V		V		V		V	V			V	V
JUNCTION LINE		LINE 3							LINE 4				LINE 5	LINE HC14		LINE 100	LINE 5	LINE HC15
DEPTH TO HC																		
HC INVERT LEVEL																		
HC TYPE																		
HC LOT No																		
CH. FROM D/S STRUC/ BEND																		

ALL PRECAST MANHOLES TO HAVE CONVERSION SLAB COVERINGS. REFER MANHOLE TYPE P2 SEQ-SEW-1300-1 FOR FURTHER DETAILS. ALL TYPE P2 MANHOLES TO BE 1050Ø, UNLESS NOTED OTHERWISE.

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FOR SEWER EMBEDMENT SUPPORT TYPE 3 DETAILS REFER SEQ WATER DWG SEQ-SEW-1201-1. WHERE GROUND WATER IS DISCOVERED DURING EXCAVATIONS THE CONTRACTOR IS TO IMMEDIATELY CEASE ASSOCIATED WORKS AND NOTIFY SUPERINTENDENT WHO IS TO PROVIDE FURTHER ASSESSMENT AND INSTRUCTION ON THE EMBEDMENT SUPPORT TYPE TO BE CONSTRUCTED WITHIN THESE AREAS. UNLESS OTHERWISE DIRECTED ON SITE.



LEGEND:

OP - OPEN SPACE
FP - FOOTPATH/VERGE
PP - PRIVATE PROPERTY
RD - ROAD

DATUM R.L.	13.0								13.0								14.0	
LAND USE		FP								PP				FP			FP	
DIAMETER		150Ø PVC-U SN8								225Ø PVC-U SN8							225Ø PVC-U SN8	
GRADE		1 in 100			1 in 40.00			1 in 100.00	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286	1 in 286		1 in 286	
EMBEDMENT TYPE		TYPE 3 *										TYPE 3 *					TYPE 3 *	
DEPTH TO INVERT	5.936	2.774		2.989	2.969		2.993	2.953	2.935	4.107	4.107	5.086	5.056	3.828	3.828	5.007	4.987	4.299	4.279	4.188	4.148	3.668	3.668	3.953	4.299	4.219	4.238	4.163
JUNCTION INVERT LEVEL		21.910									20.416								21.447		22.628				21.578	21.447		22.644
SEWER INVERT LEVEL	18.747	21.910		23.034	23.054		24.823	24.863	24.899	20.416	20.416	20.514	20.544	20.690	20.690	20.993	21.013	21.367	21.387	21.448	21.488	21.546	21.546	21.578	21.367	21.447	21.473	21.548
DESIGN SURFACE LEVEL		24.684			26.024			27.816	27.834		24.524		25.600		24.518		26.000		25.666		25.637		25.215		25.531	25.666		25.711
SETOUT	E501843.299	N6929388.353		E501899.621	N6929485.694		E501935.072	N6929546.905	E501931.935 N6929548.720		E501715.883 N6929012.697		E501704.449 N6928987.276		E501718.001 N6928947.744		E501686.208 N6928867.253		E501655.708 N6928770.829		E501650.400 N6928754.047		E501666.140 N6928748.878		E501671.989 N6928742.009	E501655.708 N6928770.829		E501648.539 N6928773.183
RUNNING CHAINAGE		0.000	112.462		112.462	70.735		183.196	3.624 186.821		0.000	27.874	27.874	41.790	69.665	86.542	156.207	101.133	257.340	17.601	274.941	16.567	291.508	9.022	300.530	0.000	7.546	7.546
		3									4															5		

Issue	Description	DR	CH	VE	Date
E	SEWER STRUCTURES REVISED	A.O.	S.S.	B.K.	05.09.24
D	SEWER LINE 3, 4, 5 ADDED	A.O.	S.S.	B.K.	03.09.24
C	SEWER LINE 9 AND 10 ADDED	A.O.	S.S.	B.K.	01.08.24
B	SEWER LINE 3 REMOVED	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales
HORZ 0 10 20 40 60 80 100m
1:1000
VERT 0 1 2 4 6 8 10m
1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER LONGITUDINAL SECTION SHEET 3

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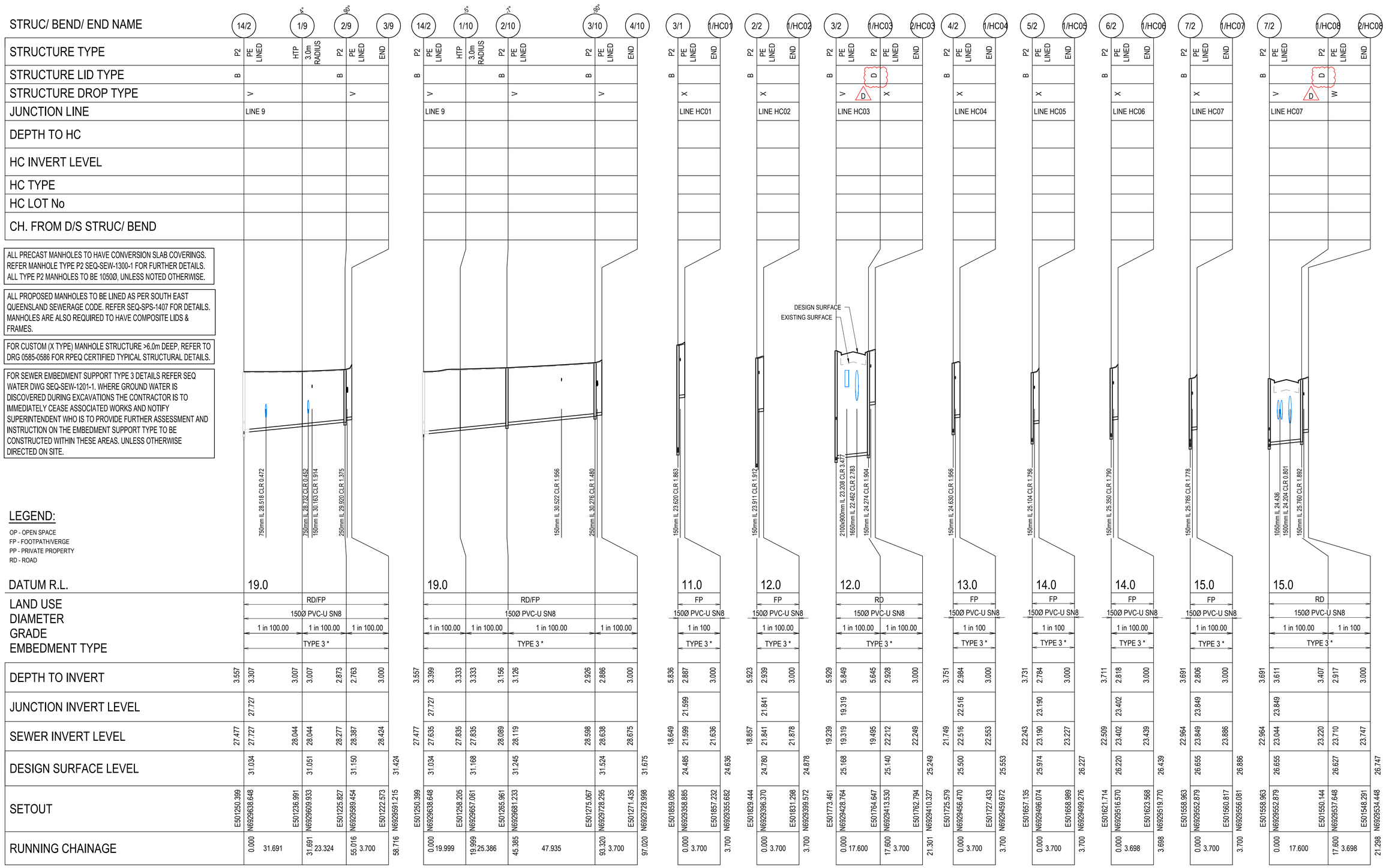
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0583

Issue: E

100mm on Original

Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg



Issue	Description	DR	CH	VE	Date
D	UPDATED SEWER LID TYPE	A.O.	S.S.	B.K.	18.10.24
C	SEWER STRUCTURES REVISED	A.O.	S.S.	B.K.	05.09.24
B	SEWER LINE 9 AND 10 REVISED	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

HORZ 0 10 20 40 60 80 100m — 1:1000

VERT 0 1 2 4 6 8 10m — 1:100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER LONGITUDINAL SECTION SHEET 4

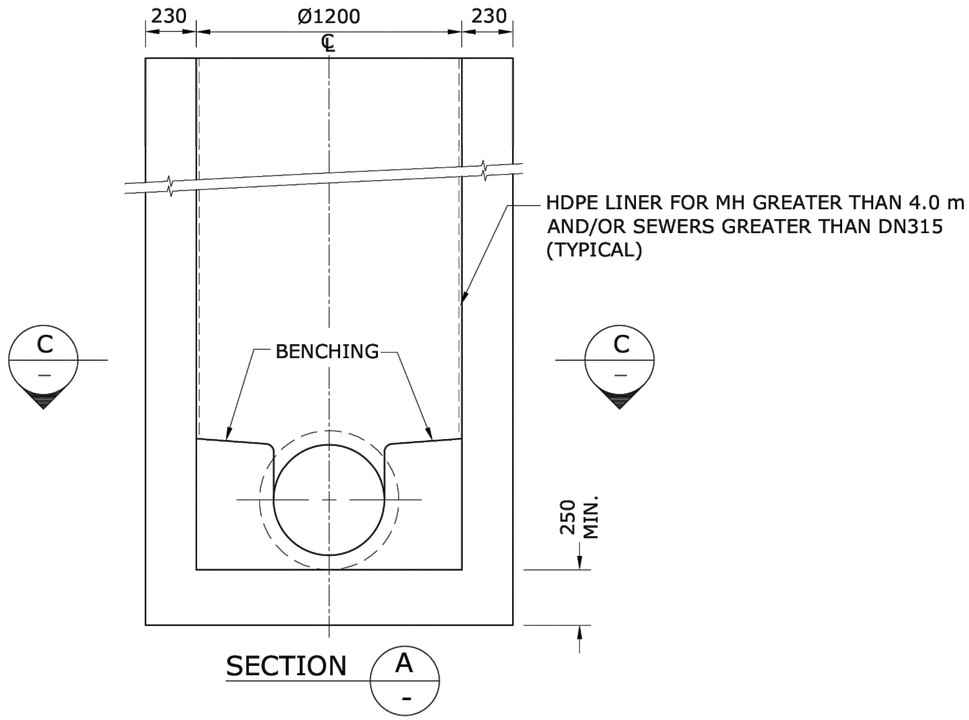
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Project Number: 30109334

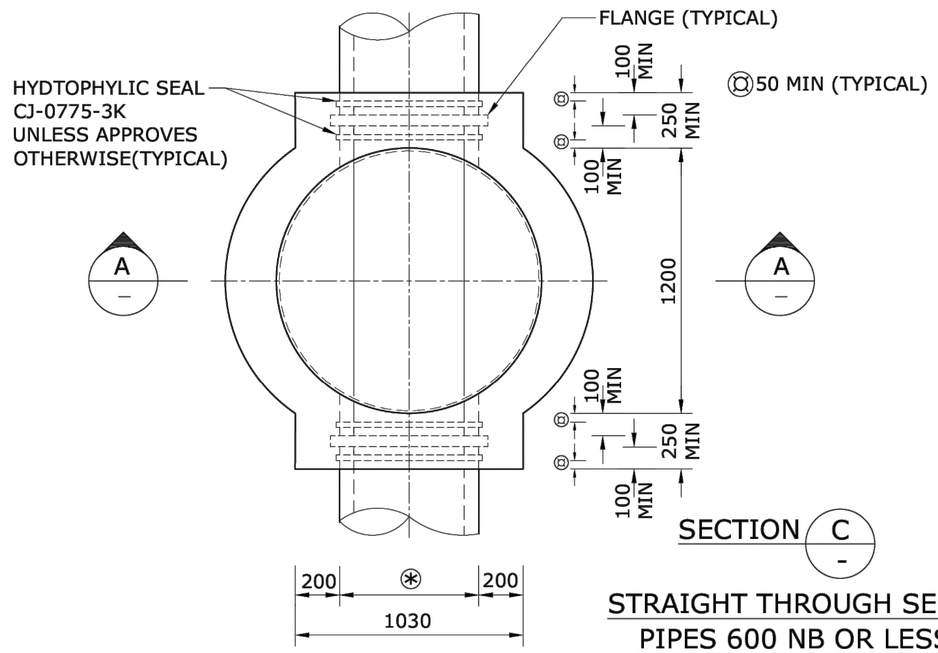
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Issue: D

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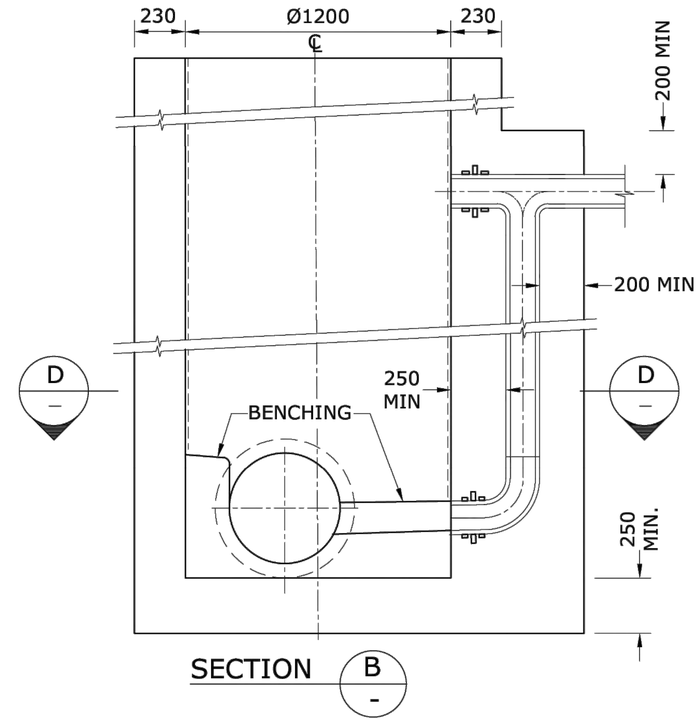


SECTION A -

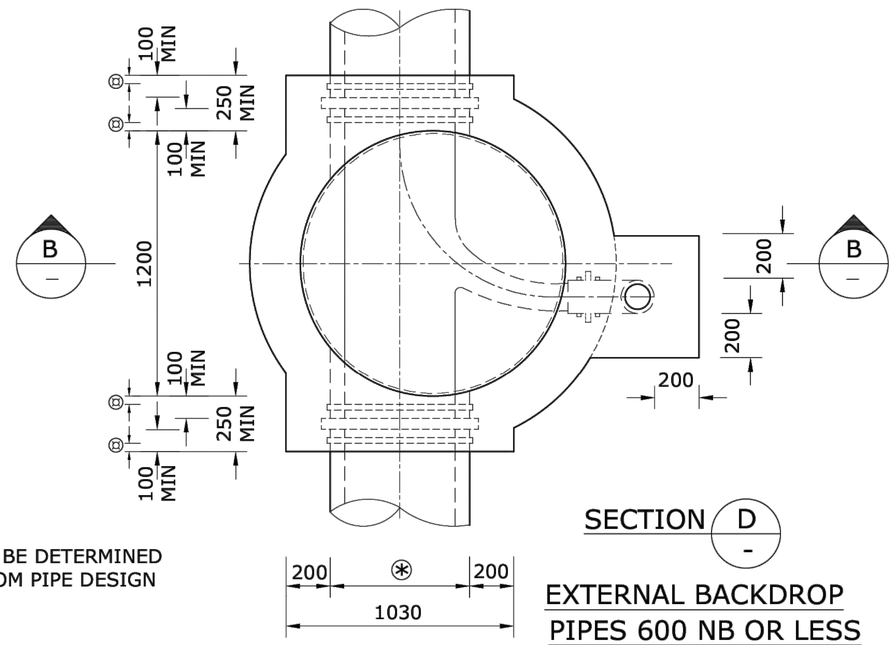


SECTION C -

STRAIGHT THROUGH SEWER PIPES 600 NB OR LESS



SECTION B -



⊛ TO BE DETERMINED FROM PIPE DESIGN

SECTION D -

EXTERNAL BACKDROP PIPES 600 NB OR LESS

Issue	Description	DR	CH	VE	Date
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales: NOT TO SCALE

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: CUSTOM X TYPE MANHOLE STRUCTURE DETAILS SHEET 1

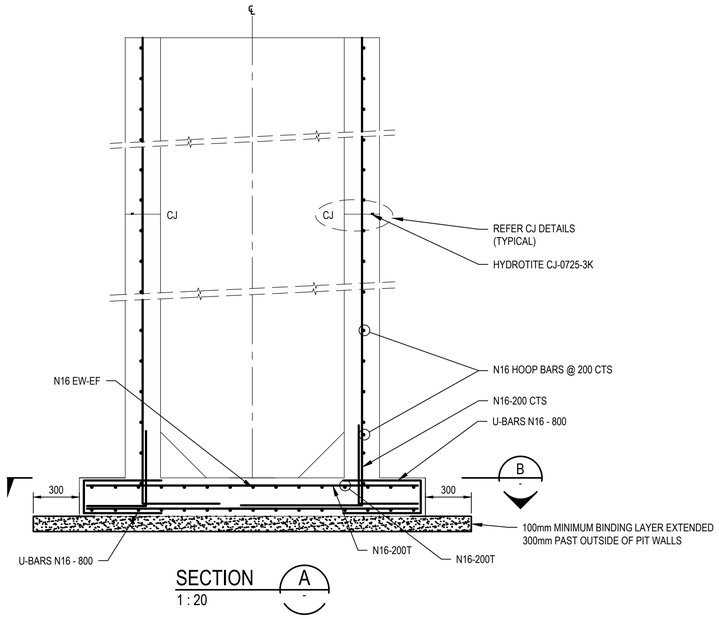
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BRISBANE QLD 4000
ABN 76 104 485 289
Tel No: +61 7 3337 0000
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Project Number: 30109334

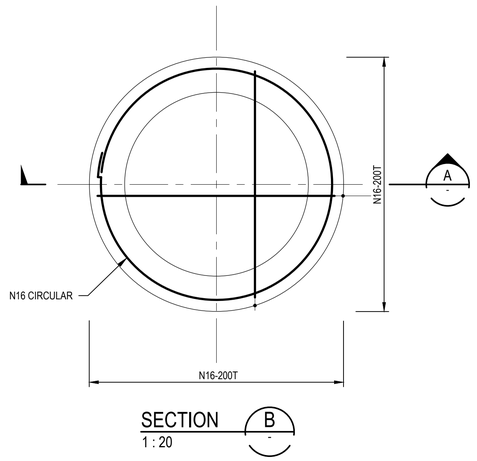
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0585

Issue: A

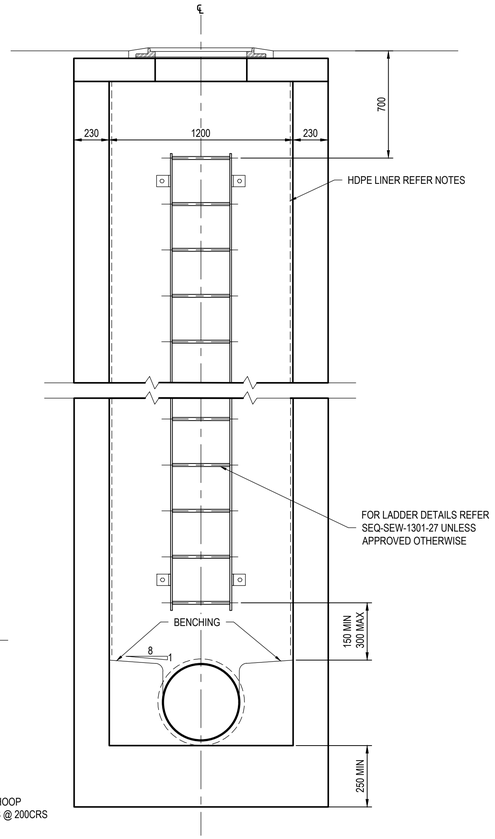
Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg



SECTION A
1 : 20

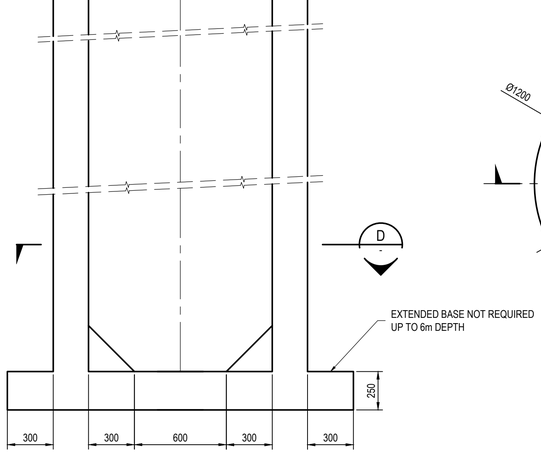


SECTION B
1 : 20

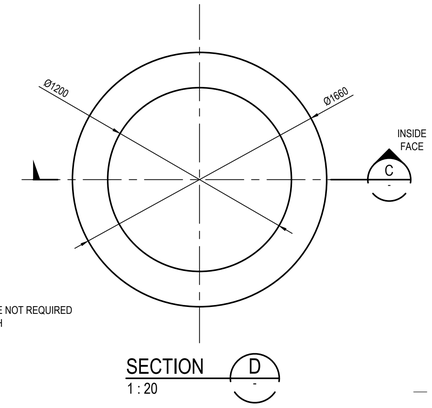


SECTIONAL ELEVATION
SEWERS 600NB OR LESS

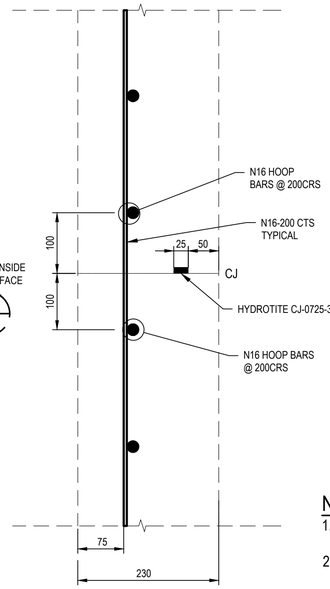
TYPICAL SECTION X-TYPE MAINTENANCE HOLE



SECTION C
1 : 20



SECTION D
1 : 20



TYPICAL CJ DETAIL
1 : 5

X-TYPE MAINTENANCE HOLE

NOTES:

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL LINER REQUIRED.
4. LADDERS TO STANDARD DRAWING SEQ-SEW-1301-27 SHALL BE PLACED OVER THE DOWNSTREAM OUTLET.

SEWER MAINTENANCE HOLE STRUCTURE AND REINFORCEMENT DETAIL FOR DN150, DN225 AND DN300 SEWER LINE

CONCRETE NOTES

1. ALL MATERIALS AND WORKMANSHIP MUST BE IN ACCORDANCE WITH AS 3600.
2. CONCRETE QUALITY:
   ADMIXTURES MUST NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE DESIGN ENGINEER.
   MAXIMUM SIZE OF COARSE AGGREGATE MUST BE 20 mm.

ELEMENT	CHARACTERISTIC CONCRETE STRENGTH (f'c)AT 28 DAYS	SPECIAL REQUIREMENTS
VARIOUS MH's	32	CALCAREOUS_AGGREGATE
BLINDING CONCRETE	N20	NIL

   ELEMENT CHARACTERISTIC CONCRETE STRENGTH (f'c) AT 28 DAYS MUST BE VERIFIED BY PROJECT ASSESSMENT TESTING, WITH SITE CURED SAMPLES TAKEN TO VERIFY STRENGTH AT EARLY LOADING IF REQUIRED PRIOR TO 28 DAYS.
3. COMPACTION OF CONCRETE MUST BE BY MEANS OF HIGH FREQUENCY VIBRATORS.
4. CONCRETE SIZES SHOWN ARE MINIMUM AND NO REDUCTIONS BY DUCTS, PIPES, ETC. MUST BE MADE WITHOUT THE APPROVAL OF THE DESIGN ENGINEER. SIZES DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
5. PIPES OR CONDUITS MUST NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE DESIGN ENGINEER.
6. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS MUST BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER.
7. CONSTRUCTION JOINTS, WHERE NOT SHOWN, MUST BE LOCATED TO THE APPROVAL OF THE DESIGN ENGINEER.
8 CURING OF ALL CONCRETE SURFACES MUST COMMENCE IMMEDIATELY AFTER SURFACES ARE FINISHED AS SPECIFIED AND MUST CONTINUE FOR A MINIMUM OF 7 DAYS. CLEAN FULLY WRAPPING ON PLASTIC SHEETING IS PREFERRED AND RECOMMENDED.

REINFORCEMENT NOTES

1. REINFORCEMENT SYMBOLS:
   "N" DENOTES GRADE 500N HOT ROLLED DEFORMED BAR T0 AS/NZS 4671.
   "RL" DENOTES GRADE 500L RECTANGULAR MESH T0 AS/NZS 4671.
   "SL" DENOTES GRADE 500L SQUARE MESH T0 AS/NZS 4671.
   BAR NOTATION
   THE NUMBER PRECEDING A BAR SYMBOL DENOTES THE NUMBER OF BARS IN THE GROUP AND THE NUMBER FOLLOWING THE BAR SYMBOL DENOTES THE BAR DIAMETER i.e. 4-N16. ALTERNATIVELY, THE NUMBER FOLLOWING THE BAR DIAMETER DENOTES THE MAXIMUM CENTRE TO CENTRE SPACING i.e. N16-200.
2. SPLICES IN REINFORCEMENT MUST BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE DESIGN ENGINEER MUST BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN, IT WILL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT TO AS3600 REQUIREMENTS OR IN ACCORDANCE WITH THE FOLLOWING LAP SCHEDULE :

BAR SIZE	LAP LENGTH
N16	800

3. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.
5. CLEAR CONCRETE COVER TO REINFORCEMENT INCLUDING TIES MUST BE TO AS 3600 REQUIREMENTS OR AS STATED BELOW OR OTHERWISE NOTED ON STRUCTURAL DRAWINGS. COVER TO REINFORCEMENT MUST BE OBTAINED BY THE USE OF APPROVED METAL, CONCRETE OR PLASTIC BAR CHAIRS FOR REINFORCEMENT. CHAIRS TO BE SPACED AT 1500 MAXIMUM CENTRES FOR BARS, 1000 MAXIMUM CENTRES FOR FABRIC.

ELEMENT	COVER TO REINFORCEMENT (mm)	
	INSIDE FACE	OUTSIDE FACE
INSITU BASE	70	75
INSITU WALLS	70	75

6. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
7. INSTALL CIRCULAR TRIMMER BAR AND HORIZONTAL AND VERTICAL MAKE-UP EQUIVALENT STEEL ALL PIPE PENETRATIONS AS PER TYPICAL PIPE PENETRATION TRIMMER BAR REINFORCEMENT DETAIL.
8. EXTRA DIAGONAL TRIMMER BARS TO BE INSTALLED TO EACH SIDE FACE OF PIPE OPENING. BAR EXTENSION TO BE MIN. 300 PAST PIPE IN EACH DIRECTION

GENERAL NOTES

1. APPLY HEAVY GREASE TO FRAME SEAT PRIOR TO INSTALLING COVER.
2. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
3. SEWER MANHOLE TO BE CAST IN-SITU
4. MANHOLE TO BE PE LINED WITH COMPOSITE LID AS PER SEQ CODE REQUIREMENTS.

STRUCTURAL DESIGN CERTIFICATE

WE HEREBY CERTIFY THAT ARCADIS PTY LTD IS RESPONSIBLE FOR THE STRUCTURAL DESIGN AND THAT THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH ALL RELEVANT PROVISIONS OF THE AUSTRALIAN STANDARDS. WHEN ERECTED IN ACCORDANCE WITH THIS DESIGN, THE STRUCTURE WILL BE ADEQUATE TO SUSTAIN THE WORST COMBINATION OF LOADS TO WHICH IT WILL BE SUBJECTED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS. THE BASIC DESIGN CODE USED IN THIS DESIGN WAS AS1170 FOR LOADS AND GENERALLY ACCEPTED ENGINEERING PRINCIPLES.

NAME: RICHARD MULLIGAN RPEQ: 7850

SIGNATURE:..... DATE: 16.07.24

Issue	Description	DR	CH	VE	Date
B	DETAILS UPDATED	A.O.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 50 100 200 300 400 500mm
1 : 5

0 0.5 1 1.5 2m
1 : 20

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: CUSTOM X TYPE MANHOLE STRUCTURE DETAILS SHEET 2

ARCADIS
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0586 Issue: B

Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg

STRUC/ BEND/ END NAME		8/2		1/HC09		2/HC09
STRUCTURE TYPE	P2	PE LINED	P2	PE LINED	END	
STRUCTURE LID TYPE	B		B			
STRUCTURE DROP TYPE		V		V		
JUNCTION LINE		LINE HC09				
DEPTH TO HC						
HC INVERT LEVEL						
HC TYPE						
HC LOT No						
CH. FROM D/S STRUC/ BEND						
DATUM R.L.		15.0				
LAND USE		RD				
DIAMETER		150Ø PVC-U SN8				
GRADE		1 in 100.00		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *				
DEPTH TO INVERT	3.441	3.361	3.157	2.983	3.000	
JUNCTION INVERT LEVEL		23.609				
SEWER INVERT LEVEL	23.529	23.609	23.785	23.959	23.996	
DESIGN SURFACE LEVEL		26.970		26.942		26.996
SETOUT	E501513.520	N6929579.173		E501504.706	N6929563.940	E501502.853 N6929560.737
RUNNING CHAINAGE		0.000	17.599	17.599	3.700	21.300

STRUC/ BEND/ END NAME		11/2		1/HC10
STRUCTURE TYPE	P2	PE LINED	END	
STRUCTURE LID TYPE	B			
STRUCTURE DROP TYPE		W		
JUNCTION LINE		LINE HC10		
DEPTH TO HC				
HC INVERT LEVEL				
HC TYPE				
HC LOT No				
CH. FROM D/S STRUC/ BEND				
DATUM R.L.		15.0		
LAND USE		FP		
DIAMETER		150Ø PVC-U SN8		
GRADE		1 in 100		
EMBEDMENT TYPE		TYPE 3 *		
DEPTH TO INVERT	3.301	2.788	3.000	
JUNCTION INVERT LEVEL		24.474		
SEWER INVERT LEVEL	23.961	24.474	24.511	
DESIGN SURFACE LEVEL		27.262		27.511
SETOUT	E501465.089	N6929597.410		E501465.654 N6929601.067
RUNNING CHAINAGE		0.000	3.700	3.700

STRUC/ BEND/ END NAME		12/2		1/HC11		2/HC11
STRUCTURE TYPE	P2	PE LINED	P2	PE LINED	END	
STRUCTURE LID TYPE	B		D			
STRUCTURE DROP TYPE		V C		V		
JUNCTION LINE		LINE HC11				
DEPTH TO HC						
HC INVERT LEVEL						
HC TYPE						
HC LOT No						
CH. FROM D/S STRUC/ BEND						
DATUM R.L.		16.0				
LAND USE		RD				
DIAMETER		150Ø PVC-U SN8				
GRADE		1 in 100.00		1 in 30.52		
EMBEDMENT TYPE		TYPE 3 *				
DEPTH TO INVERT	3.340	3.251	3.047	2.847	3.000	
JUNCTION INVERT LEVEL		24.791				
SEWER INVERT LEVEL	24.701	24.791	24.967	25.167	25.288	
DESIGN SURFACE LEVEL		28.041		28.013		28.288
SETOUT	E501346.493	N6929615.716		E501343.808	N6929598.322	E501343.244 N6929594.666
RUNNING CHAINAGE		0.000	17.600	17.600	3.699	21.299

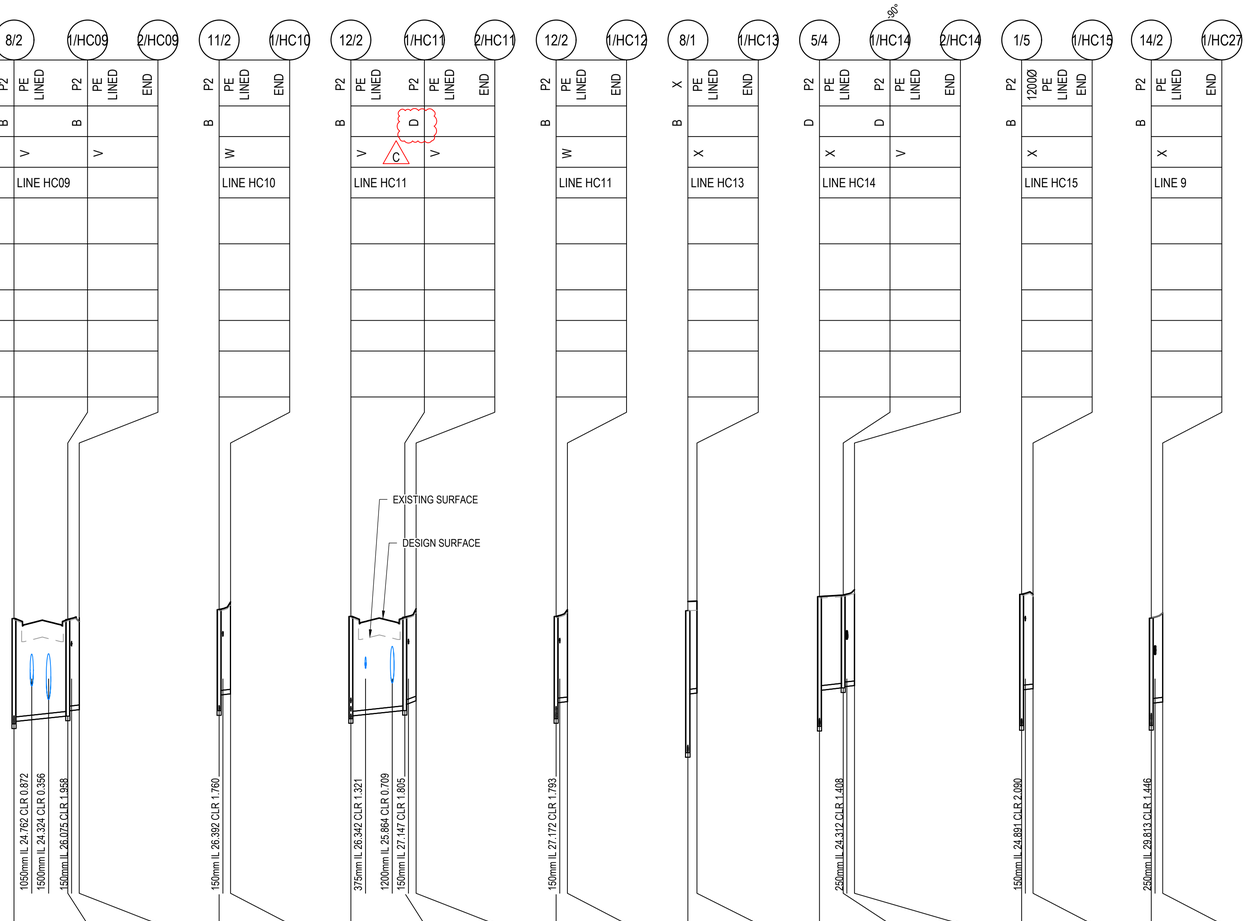
STRUC/ BEND/ END NAME		12/2		1/HC12
STRUCTURE TYPE	P2	PE LINED	END	
STRUCTURE LID TYPE	B			
STRUCTURE DROP TYPE		W		
JUNCTION LINE		LINE HC11		
DEPTH TO HC				
HC INVERT LEVEL				
HC TYPE				
HC LOT No				
CH. FROM D/S STRUC/ BEND				
DATUM R.L.		16.0		
LAND USE		FP		
DIAMETER		150Ø PVC-U SN8		
GRADE		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *		
DEPTH TO INVERT	3.340	2.820	3.000	
JUNCTION INVERT LEVEL		24.791		
SEWER INVERT LEVEL	24.701	25.221	25.258	
DESIGN SURFACE LEVEL		28.041		28.258
SETOUT	E501346.493	N6929615.716		E501347.059 N6929619.373
RUNNING CHAINAGE		0.000	3.700	3.700

STRUC/ BEND/ END NAME		8/1		1/HC13
STRUCTURE TYPE	X	PE LINED	END	
STRUCTURE LID TYPE	B			
STRUCTURE DROP TYPE		X		
JUNCTION LINE		LINE HC13		
DEPTH TO HC				
HC INVERT LEVEL				
HC TYPE				
HC LOT No				
CH. FROM D/S STRUC/ BEND				
DATUM R.L.		12.0		
LAND USE		FP		
DIAMETER		150Ø PVC-U SN8		
GRADE		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *		
DEPTH TO INVERT	4.632	2.715	3.000	
JUNCTION INVERT LEVEL		21.510		
SEWER INVERT LEVEL	19.592	21.510	21.540	
DESIGN SURFACE LEVEL		24.225		24.540
SETOUT	E501819.018	N6929170.640		E501816.483 N6929172.243
RUNNING CHAINAGE		0.000	3.000	3.000

STRUC/ BEND/ END NAME		5/4		1/HC14		2/HC14
STRUCTURE TYPE	P2	PE LINED	P2	PE LINED	END	
STRUCTURE LID TYPE	D		D			
STRUCTURE DROP TYPE		X		V		
JUNCTION LINE		LINE HC14				
DEPTH TO HC						
HC INVERT LEVEL						
HC TYPE						
HC LOT No						
CH. FROM D/S STRUC/ BEND						
DATUM R.L.		13.0				
LAND USE		FP		FP		
DIAMETER		150Ø PVC-U SN8		150Ø PVC-U SN8		
GRADE		1 in 100		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *		TYPE 3 *		
DEPTH TO INVERT	4.237	3.057	3.028	2.988	3.000	
JUNCTION INVERT LEVEL		22.628				
SEWER INVERT LEVEL	21.448	22.628	22.706	22.746	22.783	
DESIGN SURFACE LEVEL		25.686		25.733		25.783
SETOUT	E501650.400	N6928754.047		E501643.047	N6928756.462	E501641.893 N6928752.947
RUNNING CHAINAGE		0.000	-7.739	7.739	3.700	11.439

STRUC/ BEND/ END NAME		1/5		1/HC15
STRUCTURE TYPE	P2	1200Ø PE LINED	END	
STRUCTURE LID TYPE	B			
STRUCTURE DROP TYPE		X		
JUNCTION LINE		LINE HC15		
DEPTH TO HC				
HC INVERT LEVEL				
HC TYPE				
HC LOT No				
CH. FROM D/S STRUC/ BEND				
DATUM R.L.		13.0		
LAND USE		FP		
DIAMETER		150Ø PVC-U SN8		
GRADE		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *		
DEPTH TO INVERT	4.288	3.118	3.000	
JUNCTION INVERT LEVEL		22.644		
SEWER INVERT LEVEL	21.473	22.644	22.681	
DESIGN SURFACE LEVEL		25.761		25.681
SETOUT	E501648.539	N6928773.183		E501649.694 N6928776.698
RUNNING CHAINAGE		0.000	3.700	3.700

STRUC/ BEND/ END NAME		14/2		1/HC27
STRUCTURE TYPE	P2	PE LINED	END	
STRUCTURE LID TYPE	B			
STRUCTURE DROP TYPE		X		
JUNCTION LINE		LINE 9		
DEPTH TO HC				
HC INVERT LEVEL				
HC TYPE				
HC LOT No				
CH. FROM D/S STRUC/ BEND				
DATUM R.L.		19.0		
LAND USE		FP		
DIAMETER		150Ø PVC-U SN8		
GRADE		1 in 100.00		
EMBEDMENT TYPE		TYPE 3 *		
DEPTH TO INVERT	3.507	2.775	2.903	
JUNCTION INVERT LEVEL		27.727		
SEWER INVERT LEVEL	27.477	28.209	28.246	
DESIGN SURFACE LEVEL		30.984		31.149
SETOUT	E501250.399	N6929638.648		E501246.954 N6929639.997
RUNNING CHAINAGE		0.000	3.700	3.700



HC09 HC10 HC11 HC12 HC13 HC14 HC15 HC27

LEGEND:

OP - OPEN SPACE
FP - FOOTPATH/VERGE
PP - PRIVATE PROPERTY
RD - ROAD

ALL PRECAST MANHOLES TO HAVE CONVERSION SLAB COVERINGS. REFER MANHOLE TYPE P2 SEQ-SEW-1300-1 FOR FURTHER DETAILS. ALL TYPE P2 MANHOLES TO BE 1050Ø, UNLESS NOTED OTHERWISE.

ALL PROPOSED MANHOLES TO BE LINED AS PER SOUTH EAST QUEENSLAND SEWERAGE CODE. REFER SEQ-SPS-1407 FOR DETAILS. MANHOLES ARE ALSO REQUIRED TO HAVE COMPOSITE LIDS & FRAMES.

FOR CUSTOM (X TYPE) MANHOLE STRUCTURE >6.0m DEEP, REFER TO DRG 0585-0586 FOR RPEQ CERTIFIED TYPICAL STRUCTURAL DETAILS.

FOR SEWER EMBEDMENT SUPPORT TYPE 3 DETAILS REFER SEQ WATER DWG SEQ-SEW-1201-1. WHERE GROUND WATER IS DISCOVERED DURING EXCAVATIONS THE CONTRACTOR IS TO IMMEDIATELY CEASE ASSOCIATED WORKS AND NOTIFY SUPERINTENDENT WHO IS TO PROVIDE FURTHER ASSESSMENT AND INSTRUCTION ON THE EMBEDMENT SUPPORT TYPE TO BE CONSTRUCTED WITHIN THESE AREAS. UNLESS OTHERWISE DIRECTED ON SITE.

Issue	Description	DR	CH	VE	Date
C	UPDATED SEWER LID TYPE	A.O.	S.S.	B.K.	18.10.24
B	SEWER STRUCTURES REVISED	A.O.	S.S.	B.K.	05.09.24
A	ISSUED FOR CONSTRUCTION - SEWER HC 14 AND 15 ADDED	A.O.	S.S	B.K	03.09.24

100mm on Original

Scales
HORZ 0 10 20 40 60 80 100m
1:1000
VERT 0 1 2 4 6 8 10m
1:100

Surveyor: WOLTER consulting group — Planning Urban Design Landscape Environment Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: SEWER LONGITUDINAL SECTION SHEET 5

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Drawing No.: 30109334-AAP-P301OP-CV-DRG-0587 Issue: C

Date Plotted: 13 Mar 2025 - 10:14AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0581-SewerLX.dwg

SEQ CODE WATER NOTES

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST QUEENSLAND WATER SUPPLY CODE SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. ADOPT LIP OF KERB OR SHOULDER OF ROAD AS PERMANENT LEVEL.
4. COVER ON MAINS FROM PERMANENT LEVEL TO BE AS SHOWN IN SEQ-WAT-1200-2.
5. CONDUITS TO BE INSTALLED IN ACCORDANCE WITH THE STANDARD DRAWINGS.
6. ALL MATERIALS USED IN THE WORKS SHALL COMPLY WITH THE QUU's ACCEPTED PRODUCTS AND MATERIALS LIST OR BE APPROPRIATELY SHOWN, LISTED AND DEFINED IN THE ENGINEERING SUBMISSION SO THAT THE ALTERNATIVE PRODUCT OR MATERIAL CAN BE ASSESSED AND IF APPROPRIATE, APPROVED BY QUU.
7. TEST/CHLORINATION POINTS TO BE INSTALLED IN ACCORDANCE WITH STANDARD DRAWING NO.SEQ-WAT-1410-1.
8. THE CONSTRUCTION OF THE WATER RETICULATION WORK SHOWN ON THIS DRAWING MUST BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT TO THE RETICULATION SYSTEM.

ALL ENVIRONMENT PROTECTION MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.

VEGETATION PROTECTION

A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
B. WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL

A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.
C. ACID SULPHATE SOILS EXIST IN THE WORKS AREA. THE OUTPUTS FROM THE RISK ASSESSMENT BASED ON THE QUEENSLAND ACID SULPHATE SOIL TECHNICAL MANUAL REQUIRES THAT ACID SULPHATE SOILS BE MANAGED AS FOLLOWS: (DELETE IF NO ACID SULPHATE SOILS)

REHABILITATION

A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

SAFETY

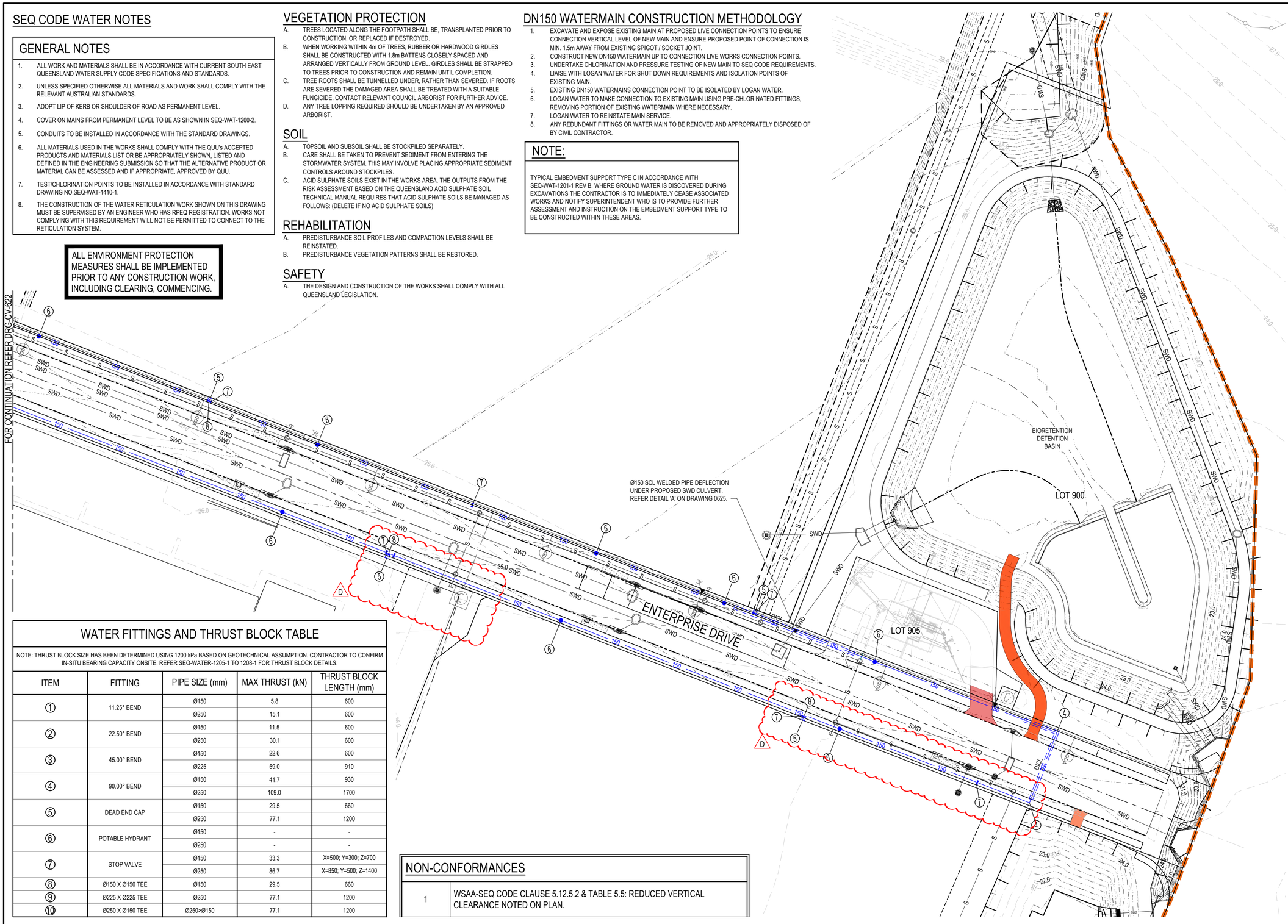
A. THE DESIGN AND CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION.

DN150 WATERMAIN CONSTRUCTION METHODOLOGY

1. EXCAVATE AND EXPOSE EXISTING MAIN AT PROPOSED LIVE CONNECTION POINTS TO ENSURE CONNECTION VERTICAL LEVEL OF NEW MAIN AND ENSURE PROPOSED POINT OF CONNECTION IS MIN. 1.5m AWAY FROM EXISTING SPIGOT / SOCKET JOINT.
2. CONSTRUCT NEW DN150 WATERMAIN UP TO CONNECTION LIVE WORKS CONNECTION POINTS.
3. UNDERTAKE CHLORINATION AND PRESSURE TESTING OF NEW MAIN TO SEQ CODE REQUIREMENTS.
4. LIAISE WITH LOGAN WATER FOR SHUT DOWN REQUIREMENTS AND ISOLATION POINTS OF EXISTING MAIN.
5. EXISTING DN150 WATERMAINS CONNECTION POINT TO BE ISOLATED BY LOGAN WATER.
6. LOGAN WATER TO MAKE CONNECTION TO EXISTING MAIN USING PRE-CHLORINATED FITTINGS, REMOVING PORTION OF EXISTING WATERMAIN WHERE NECESSARY.
7. LOGAN WATER TO REINSTATE MAIN SERVICE.
8. ANY REDUNDANT FITTINGS OR WATER MAIN TO BE REMOVED AND APPROPRIATELY DISPOSED OF BY CIVIL CONTRACTOR.

NOTE:

TYPICAL EMBEDMENT SUPPORT TYPE C IN ACCORDANCE WITH SEQ-WAT-1201-1 REV B. WHERE GROUND WATER IS DISCOVERED DURING EXCAVATIONS THE CONTRACTOR IS TO IMMEDIATELY CEASE ASSOCIATED WORKS AND NOTIFY SUPERINTENDENT WHO IS TO PROVIDE FURTHER ASSESSMENT AND INSTRUCTION ON THE EMBEDMENT SUPPORT TYPE TO BE CONSTRUCTED WITHIN THESE AREAS.



WATER FITTINGS AND THRUST BLOCK TABLE

NOTE: THRUST BLOCK SIZE HAS BEEN DETERMINED USING 1200 kPa BASED ON GEOTECHNICAL ASSUMPTION. CONTRACTOR TO CONFIRM IN-SITU BEARING CAPACITY ONSITE. REFER SEQ-WATER-1205-1 TO 1208-1 FOR THRUST BLOCK DETAILS.

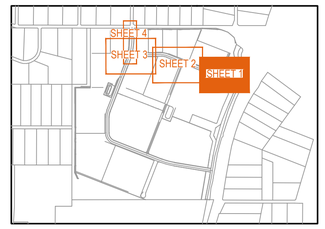
ITEM	FITTING	PIPE SIZE (mm)	MAX THRUST (kN)	THRUST BLOCK LENGTH (mm)
①	11.25° BEND	Ø150	5.8	600
		Ø250	15.1	600
②	22.50° BEND	Ø150	11.5	600
		Ø250	30.1	600
③	45.00° BEND	Ø150	22.6	600
		Ø225	59.0	910
④	90.00° BEND	Ø150	41.7	930
		Ø250	109.0	1700
⑤	DEAD END CAP	Ø150	29.5	660
		Ø250	77.1	1200
⑥	POTABLE HYDRANT	Ø150	-	-
		Ø250	-	-
⑦	STOP VALVE	Ø150	33.3	X=500; Y=300; Z=700
		Ø250	86.7	X=850; Y=500; Z=1400
⑧	Ø150 X Ø150 TEE	Ø150	29.5	660
⑨	Ø225 X Ø225 TEE	Ø250	77.1	1200
⑩	Ø250 X Ø150 TEE	Ø250>Ø150	77.1	1200

NON-CONFORMANCES

1	WSAA-SEQ CODE CLAUSE 5.12.5.2 & TABLE 5.5: REDUCED VERTICAL CLEARANCE NOTED ON PLAN.

LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- DICL 150 — PROPSOED Ø150 DICL PN35 ROAD CROSSING WATER RETICULATION
- 150 — PROPOSED Ø150 PVC-M PN20 SERIES 2 WATER RETICULATION
- 250 — PROPOSED Ø250 PVC-M PN20 SERIES 2 TRUNK WATER MAIN
- DICL 250 — PROPOSED Ø250 DICL PN35 TRUNK WATER MAIN
- SWD — PROPOSED STORMWATER DRAINAGE RETICULATION
- S — PROPOSED SEWER RETICULATION
- s — EXISTING SEWER RETICULATION
- swd — EXISTING STORMWATER DRAINAGE RETICULATION
- w — EXISTING WATER RETICULATION
- e — EXISTING UNDERGROUND ELECTRICAL RETICULATION
- oh — EXISTING OVERHEAD ELECTRICAL RETICULATION
- FUTS — FUTURE SEWER RETICULATION
- FUTURE STORMWATER DRAINAGE



KEY PLAN

Issue	Description	DR	CH	VE	Date
E	UPDATED WATER CONNECTIONS, DRIVEWAYS	A.O.	S.S.	B.K.	10.03.25
D	UPDATED ISSUE	A.O.	S.S.	B.K.	18.10.24
C	UPDATED NOTE	A.O.	S.S.	B.K.	03.09.24
B	TEMPORARY ACCESS ROAD REMOVED	J.B.	S.S.	B.K.	15.07.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: WATER RETICULATION LAYOUT PLAN SHEET 1

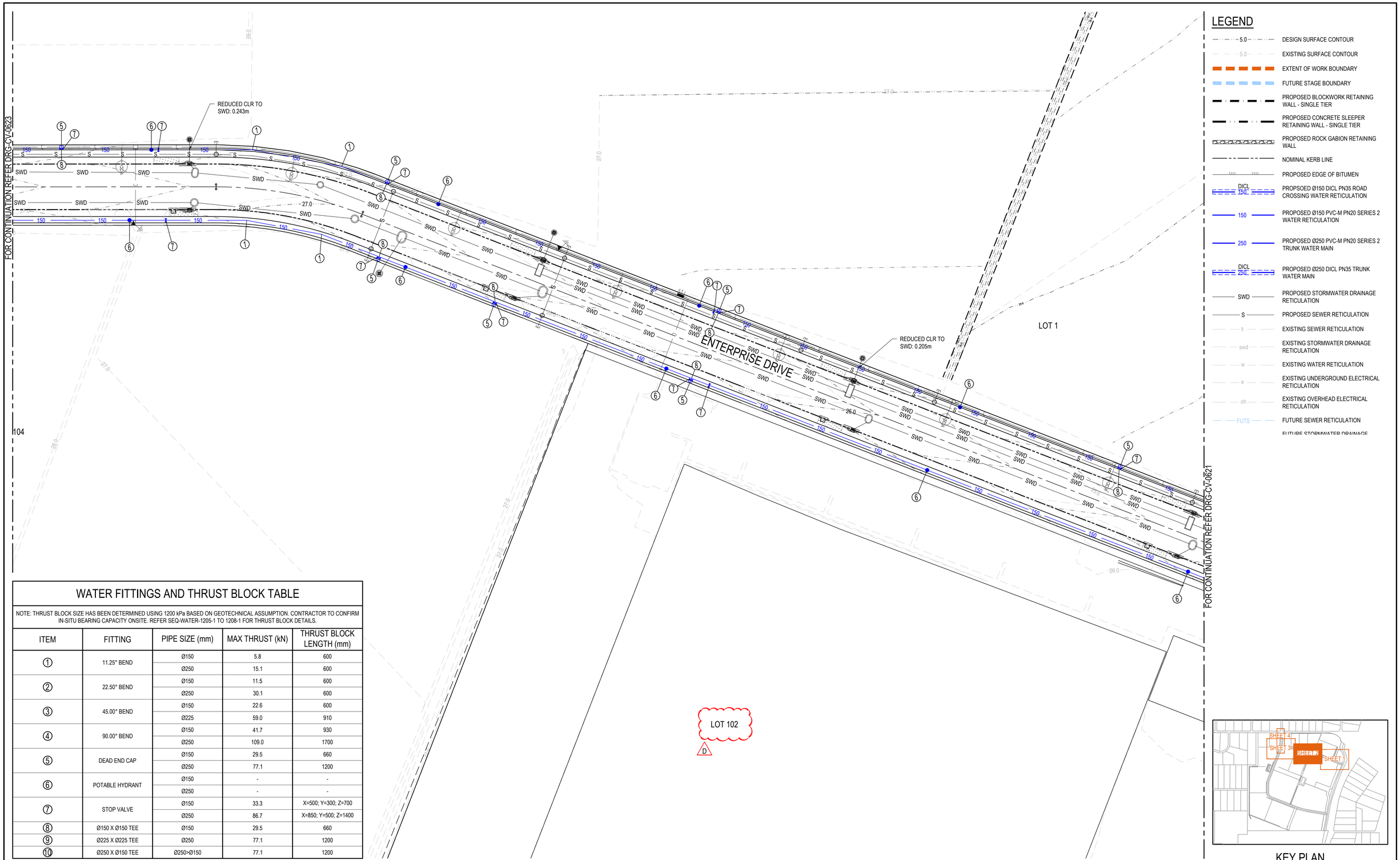
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Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0621

Issue: E

Date Plotted: 13 Mar 2025 - 10:18AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0621-Water.dwg



LEGEND

- DESIGN SURFACE CONTOUR
- EXISTING SURFACE CONTOUR
- EXTENT OF WORK BOUNDARY
- FUTURE STAGE BOUNDARY
- PROPOSED BLOCKWORK RETAINING WALL - SINGLE TIER
- PROPOSED CONCRETE SLEEPER RETAINING WALL - SINGLE TIER
- PROPOSED ROCK GABION RETAINING WALL
- NOMINAL KERB LINE
- PROPOSED EDGE OF BITUMEN
- PROPSOED Ø150 DICL PN35 ROAD CROSSING WATER RETICULATION
- PROPOSED Ø150 PVC-M PN20 SERIES 2 WATER RETICULATION
- PROPOSED Ø250 PVC-M PN20 SERIES 2 TRUNK WATER MAIN
- PROPOSED Ø250 DICL PN35 TRUNK WATER MAIN
- PROPOSED STORMWATER DRAINAGE RETICULATION
- PROPOSED SEWER RETICULATION
- EXISTING SEWER RETICULATION
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING WATER RETICULATION
- EXISTING UNDERGROUND ELECTRICAL RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- FUTURE SEWER RETICULATION
- FUTURE STORMWATER DRAINAGE

WATER FITTINGS AND THRUST BLOCK TABLE

NOTE: THRUST BLOCK SIZE HAS BEEN DETERMINED USING 1200 kPa BASED ON GEOTECHNICAL ASSUMPTION. CONTRACTOR TO CONFIRM IN-SITU BEARING CAPACITY ONSITE. REFER SEQ-WATER-1205-1 TO 1208-1 FOR THRUST BLOCK DETAILS.

ITEM	FITTING	PIPE SIZE (mm)	MAX THRUST (kN)	THRUST BLOCK LENGTH (mm)
①	11.25° BEND	Ø150	5.8	600
		Ø250	15.1	600
②	22.50° BEND	Ø150	11.5	600
		Ø250	30.1	600
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⑤	DEAD END CAP	Ø150	29.5	660
		Ø250	77.1	1200
⑥	POTABLE HYDRANT	Ø150	-	-
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		Ø250	86.7	X=850; Y=500; Z=1400
⑧	Ø150 X Ø150 TEE	Ø150	29.5	660
⑨	Ø225 X Ø225 TEE	Ø250	77.1	1200
⑩	Ø250 X Ø150 TEE	Ø250>Ø150	77.1	1200

KEY PLAN

Issue	Description	DR	CH	VE	Date
D	UPDATED WATER CONNECTIONS AND LOT NUMBERS	A.O.	S.S.	B.K.	10.03.25
C	UPDATED ISSUE	A.O.	S.S.	B.K.	18.10.24
B	UPDATED ISSUE	A.O.	S.S.	B.K.	03.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: WATER RETICULATION LAYOUT PLAN SHEET 2

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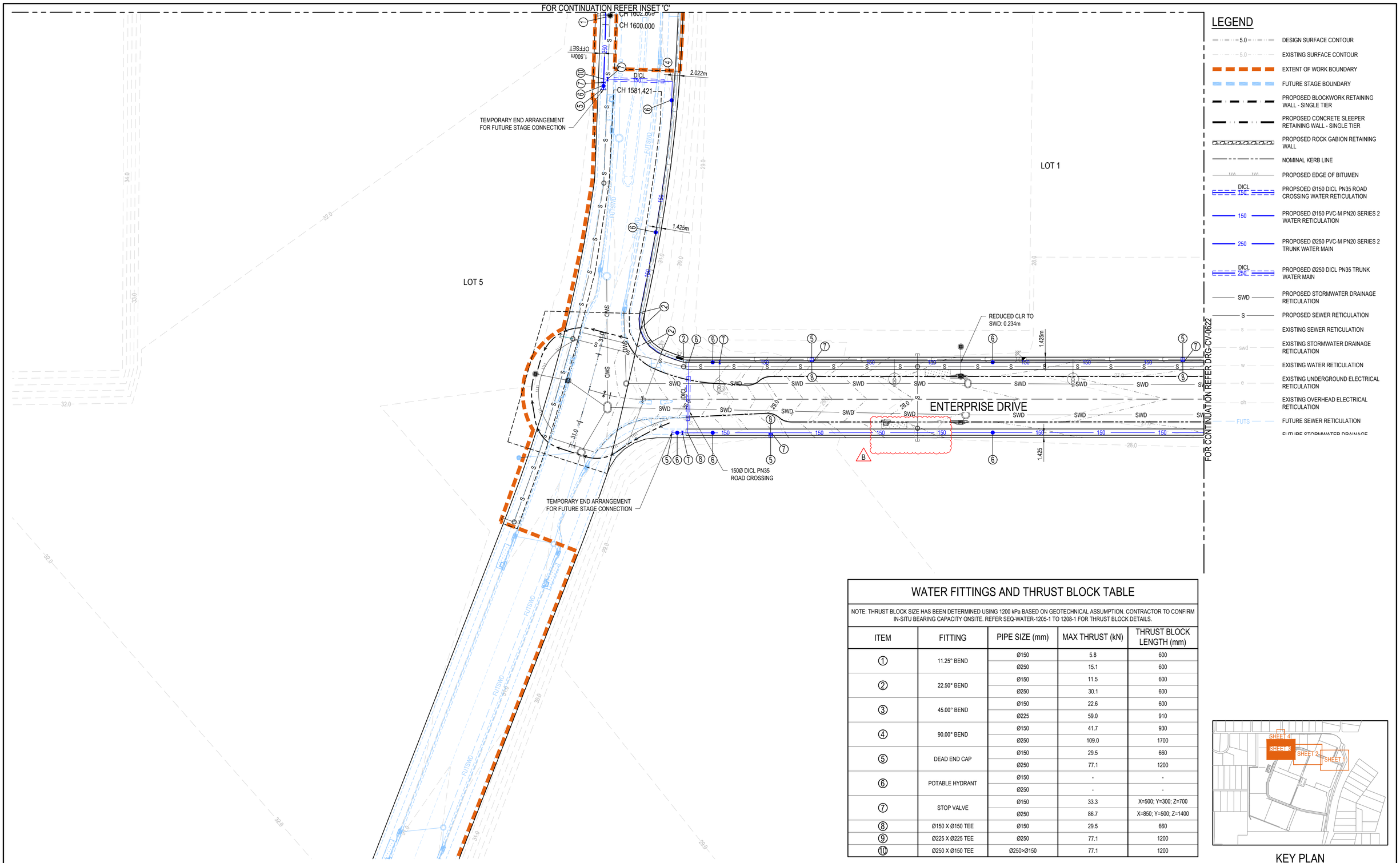
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0622

Issue: D

100mm on Original

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WATER FITTINGS AND THRUST BLOCK TABLE

NOTE: THRUST BLOCK SIZE HAS BEEN DETERMINED USING 1200 kPa BASED ON GEOTECHNICAL ASSUMPTION. CONTRACTOR TO CONFIRM IN-SITU BEARING CAPACITY ONSITE. REFER SEQ-WATER-1205-1 TO 1208-1 FOR THRUST BLOCK DETAILS.

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		Ø250	-	-
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		Ø250	86.7	X=850; Y=500; Z=1400
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⑩	Ø250 X Ø150 TEE	Ø250>Ø150	77.1	1200

KEY PLAN

Issue	Description	DR	CH	VE	Date
B	UPDATED ISSUE	A.O.	S.S.	B.K.	18.10.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Client

Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: WATER RETICULATION LAYOUT PLAN SHEET 3

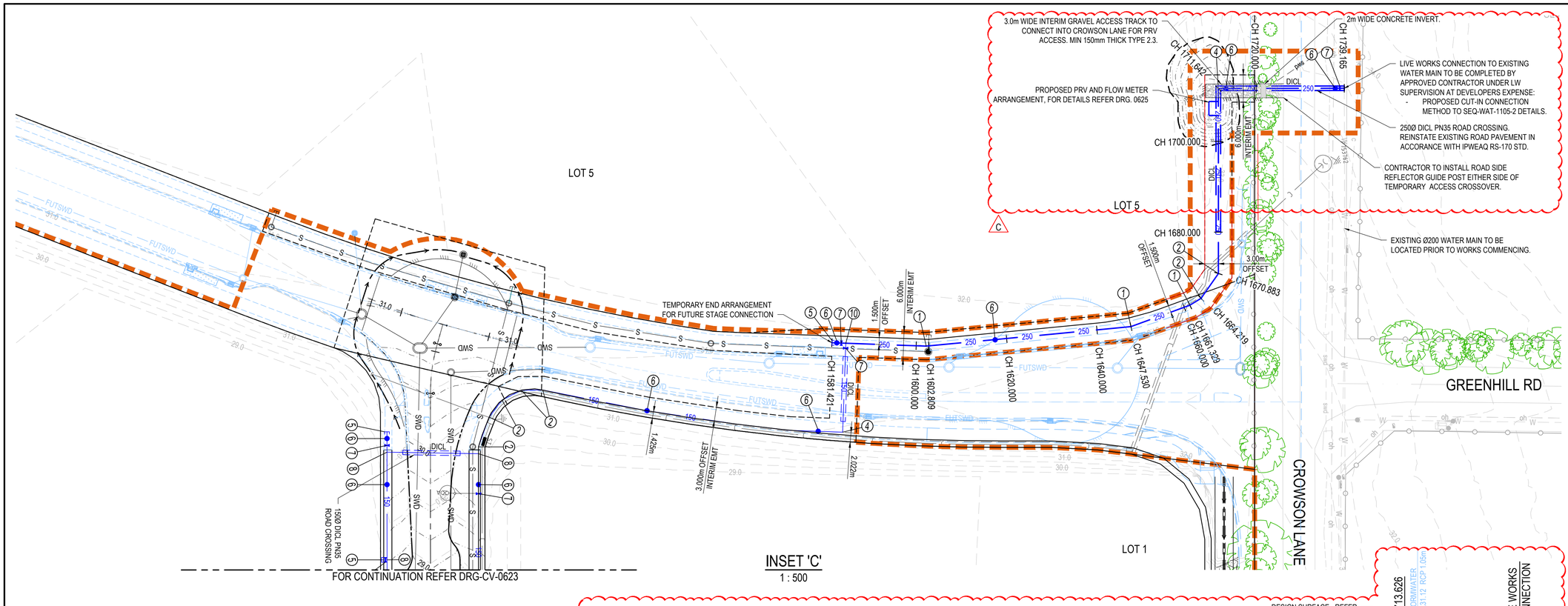
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ABN 76 104 485 289
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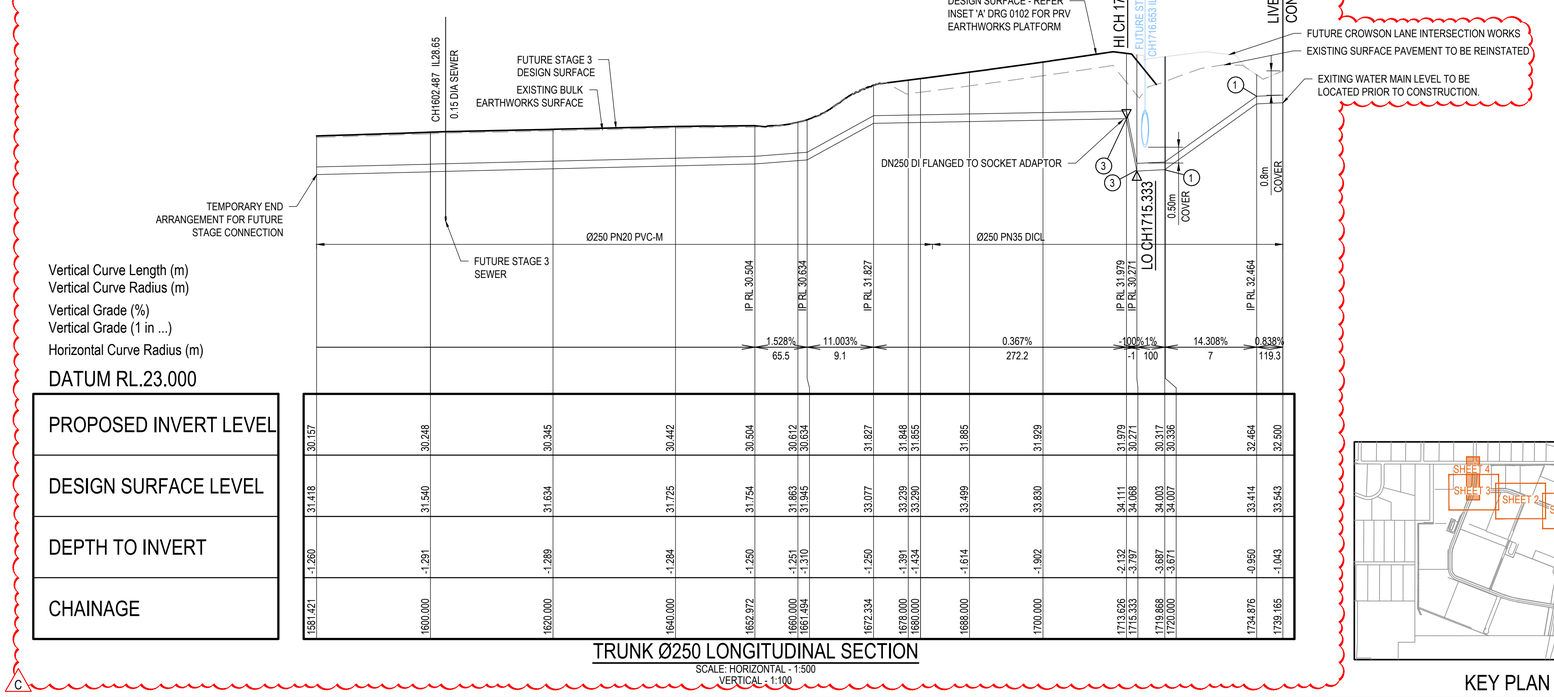
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0623

Issue: B

Date Plotted: 13 Mar 2025 - 10:18AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0621-Water.dwg

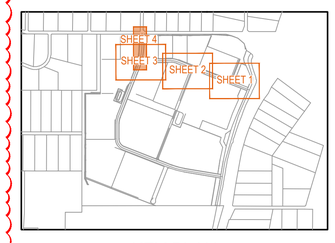




WATER FITTINGS AND THRUST BLOCK TABLE

NOTE: THRUST BLOCK SIZE HAS BEEN DETERMINED USING 1200 kPa BASED ON GEOTECHNICAL ASSUMPTION. CONTRACTOR TO CONFIRM IN-SITU BEARING CAPACITY ONSITE. REFER SEQ-WATER-1205-1 TO 1208-1 FOR THRUST BLOCK DETAILS.

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⑩	Ø250 X Ø150 TEE	Ø250>Ø150	77.1	1200



KEY PLAN

Issue	Description	DR	CH	VE	Date
C	UPDATED WATER CONNECTION	A.O.	S.S.	B.K.	10.03.25
B	DICL MAIN EXTENTS AMENDED	L.S.	L.S.	B.K.	11.09.24
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
0 5 10 20 30 40 50m
1 : 500
0 1 2 4 6 8 10m
1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures

Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 12.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: WATER RETICULATION LAYOUT PLAN SHEET 4

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Project Number: 30109334

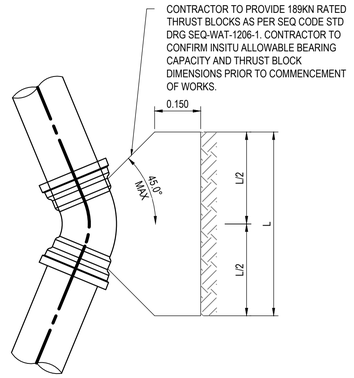
Drawing No.: 30109334-AAP-P301OP-CV-DRG-0624

Issue: C

Date Plotted: 13 Mar 2025 - 10:18AM File Name: C:\Users\ao67297\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0621-Water.dwg

THRUST BLOCK DIMENSION - 1200kPa

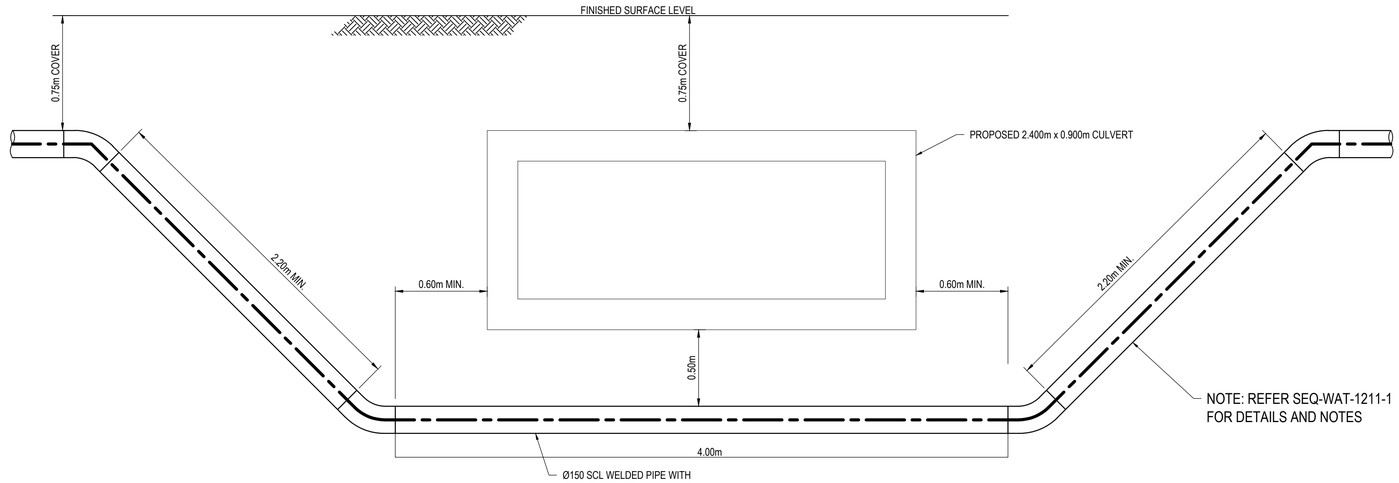
*INDICATES BLOCK LENGTH OF 600
*SPECIAL DESIGN



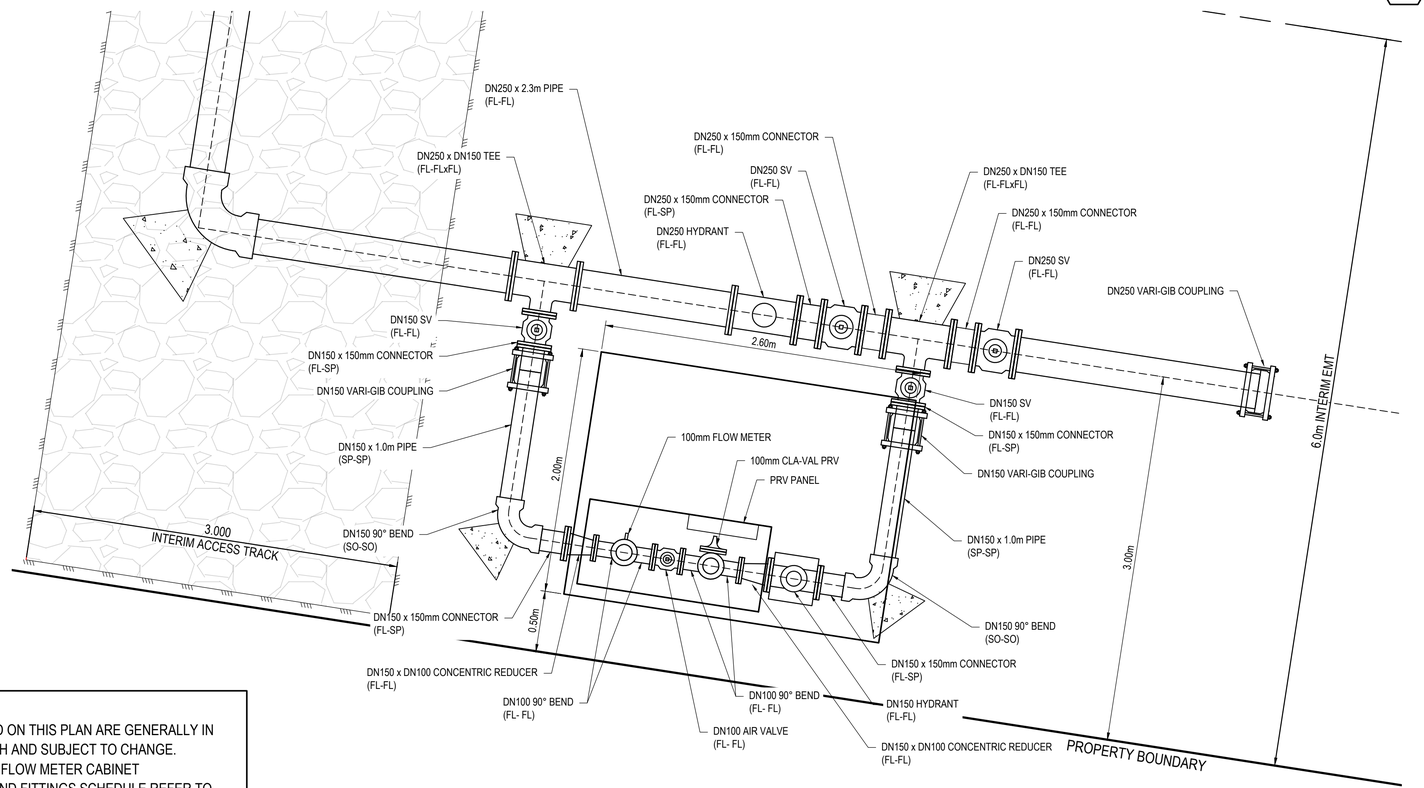
TYPICAL THRUST BLOCK DETAIL FOR NON-RESTRAINED PIPEWORK

11.25°, 22.5°, 45° AND 90° BEND

NTS

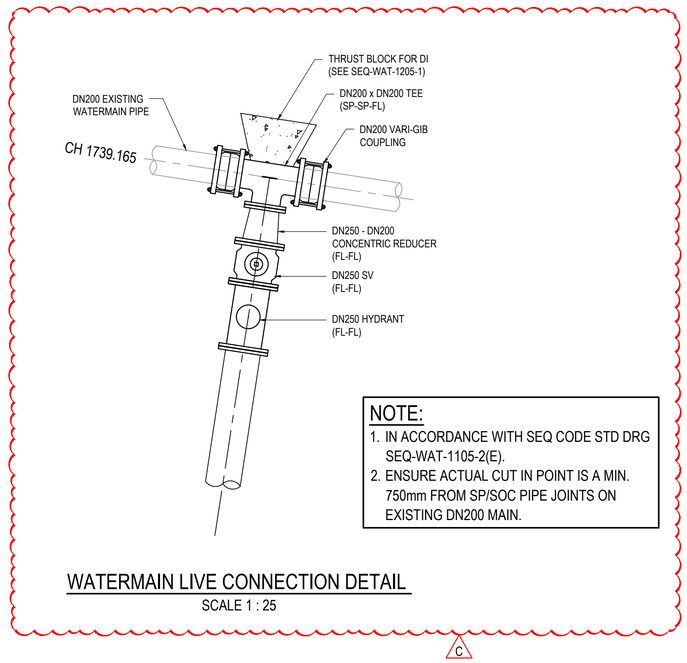


DETAIL A
1 : 20
0621



CROWSON LANE PRV DETAIL

SCALE 1 : 25



NOTE:
1. IN ACCORDANCE WITH SEQ CODE STD DRG SEQ-WAT-1105-2(E).
2. ENSURE ACTUAL CUT IN POINT IS A MIN. 750mm FROM SP/SOC PIPE JOINTS ON EXISTING DN200 MAIN.

WATERMAIN LIVE CONNECTION DETAIL

SCALE 1 : 25

C

NOTES:
1. DETAILS PROVIDED ON THIS PLAN ARE GENERALLY IN ACCORDANCE WITH AND SUBJECT TO CHANGE.
2. FOR PRV DETAILS, FLOW METER CABINET SPECIFICATIONS AND FITTINGS SCHEDULE REFER TO SEQ-WAT-1310-5, 1310-6, 1310-7, 1310-8, 1310-9, 1310-10.
3. ALL SPECIFICATIONS AND STANDARD DRAWINGS TO BE APPROVED BY EDQ AND LW PRIOR TO INSTALLATION.

Issue	Description	DR	CH	VE	Date
C	WATERMAIN LIVE CONNECTION DETAIL ADDED	J.U.	S.S.	B.K.	27.03.25
B	UPDATED WATER CONNECTION	A.O.	S.S.	B.K.	10.03.25
A	ISSUED FOR CONSTRUCTION	J.B.	T.F.	G.E.	16.02.24

100mm on Original

Scales
0 0.5 1 1.5 2m
1 : 20
0 0.5 1 1.5 2 2.5m
1 : 25

Surveyor: WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Client: Charter Hall

Status: FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	P.LAGANAO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	LOCAL
Verified	B.KITSON	R.P.E.Q. No: 07884 Date 24.03.25	

Project: FLAGSTONE LOGISTICS ESTATE - STAGE 1

Title: WATER RETICULATION DETAILS

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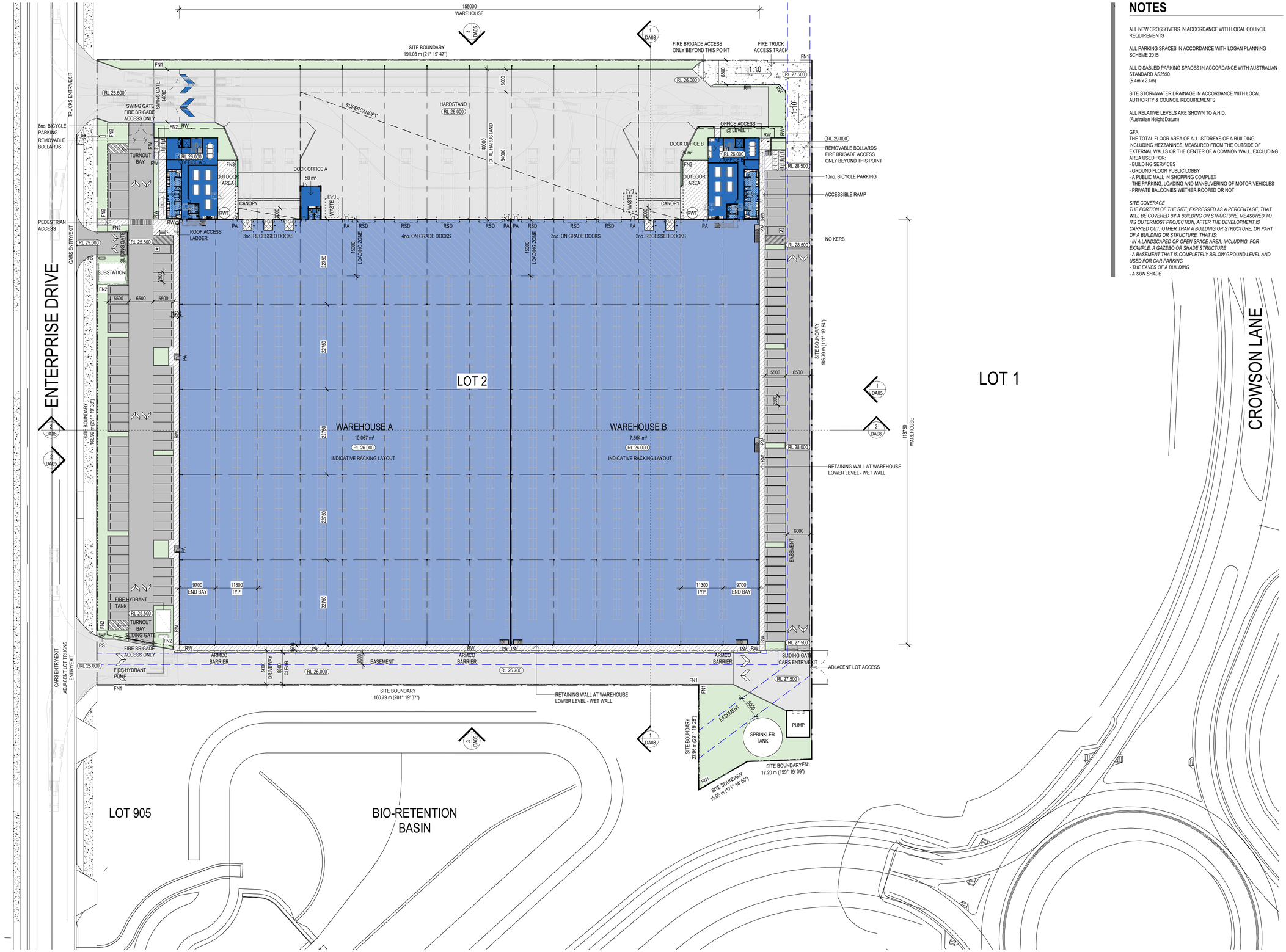
Project Number: 30109334

Drawing No.: 30109334-AAP-P301OP-CV-DRG-0625

Issue: C

Date Plotted: 27 Mar 2025 - 03:04pm File Name: C:\Users\umipigj3186\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Stage-01_Internal Works\DRG\30109334-AAP-P301OP-CV-DRG-0621-Water.dwg

Appendix C – Architectural Drawings



NOTES

ALL NEW CROSSOVERS IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS

ALL PARKING SPACES IN ACCORDANCE WITH LOGAN PLANNING SCHEME 2015

ALL DISABLED PARKING SPACES IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890
(5.4m x 2.4m)

SITE STORMWATER DRAINAGE IN ACCORDANCE WITH LOCAL AUTHORITY & COUNCIL REQUIREMENTS

ALL RELATIVE LEVELS ARE SHOWN TO A.H.D.
(Australian Height Datum)

GFA
THE TOTAL FLOOR AREA OF ALL STOREYS OF A BUILDING, INCLUDING MEZZANINES, MEASURED FROM THE OUTSIDE OF EXTERNAL WALLS OR THE CENTER OF A COMMON WALL, EXCLUDING AREA USED FOR:
- BUILDING SERVICES
- GROUND FLOOR PUBLIC LOBBY
- A PUBLIC MALL IN SHOPPING COMPLEX
- THE PARKING, LOADING AND MANEUVERING OF MOTOR VEHICLES
- PRIVATE BALCONIES WETHER ROOFED OR NOT

SITE COVERAGE
THE PORTION OF THE SITE, EXPRESSED AS A PERCENTAGE, THAT WILL BE COVERED BY A BUILDING OR STRUCTURE, MEASURED TO ITS OUTERMOST PROJECTION. AFTER THE DEVELOPMENT IS CARRIED OUT, OTHER THAN A BUILDING OR STRUCTURE, OR PART OF A BUILDING OR STRUCTURE, THAT IS:
- IN A LANDSCAPED OR OPEN SPACE AREA, INCLUDING, FOR EXAMPLE, A GAZEBO OR SHADE STRUCTURE
- A BASEMENT THAT IS COMPLETELY BELOW GROUND LEVEL AND USED FOR CAR PARKING
- THE EAVES OF A BUILDING
- A SUN SHADE

DEVELOPMENT ANALYSIS

BUILDING	GFA (EXCL. LOADING ZONE)
TENANCY A	
WAREHOUSE A	8,964 m²
OFFICE A	579 m²
DOCK OFFICE A	50 m²
	9,593 m²
TENANCY B	
WAREHOUSE B	6,875 m²
OFFICE B	551 m²
DOCK OFFICE B	28 m²
	7,454 m²
TOTAL AREA	17,047 m²

EXTERNAL AREAS (APPROX)	
CRUSHED ROCK	344 m²
HARDSTAND	7,570 m²
LANDSCAPING	1,657 m²
LIGHT DUTY	3,570 m²
PAVING	946 m²

PARKING	
TENANCY A	75
TENANCY B	47
TOTAL BAYS PROVIDED	122

SITE COVERAGE	
TOTAL SITE AREA	32,559 m²
BUILDING FOOTPRINT (INCL. PUMP HOUSE)	18,345 m²
SITE COVERAGE	56.34%
LANDSCAPE COVERAGE	5.09%

LEGEND

- INDICATES EXTENT OF HEAVY DUTY HARDSTAND TO CIVIL ENGINEERS DETAILS
- INDICATES EXTENT OF LIGHT DUTY PAVEMENT TO CIVIL ENGINEERS DETAILS
- CONCRETE PAVING WITH EXPOSED AGGREGATE FINISH OR SIMILAR
- SEALED FIRE TRUCK ACCESS TRACK TO BRIGADE APPROVAL
- AREA OF GRASS / LANDSCAPING. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPE LAYOUT AND DETAILS
- SITE BOUNDARY
- EASEMENT
- **FN1** 2100mm HIGH BLACK VINYL COATED CYCLONE WIRE FENCE, 3 BARB WIRES TO 2400mm HIGH
- **FN2** 2400mm HIGH BLACK PAINTED METAL PICKET (DIPLOMAT / PALISADE STYLE) FENCING
- **FN3** 2100mm HIGH OUTDOOR AREA FEATURE SCREEN
- **RWT** 10,000L CAPACITY RAINWATER TANK NOTE: TANKS WILL BE USED FOR TOILETS, LANDSCAPE IRRIGATION AND WASH DOWN WHERE SUITABLE. REFER TO SUSTAINABLE MANAGEMENT PLAN (SMP) FOR FURTHER INFORMATION
- **RW** RETAINING WALL - DESIGN AND LOCATION TO BE CONFIRMED BY CIVIL ENG.
- **PA** PERSONNEL ACCESS DOOR
- **RSD** ROLLER SHUTTER DOOR
- **PS** PYLON SIGN

PRELIMINARY
NOT FOR CONSTRUCTION

No.	DATE:	REVISION:	BY:	CHK:
P1	27.03.2026	PRELIMINARY ISSUE	JGM	KA
P2	31.03.2026	PRELIMINARY ISSUE	JGM	KA
P3	14.04.2026	PRELIMINARY ISSUE	JGM	KA
A	16.04.2026	FOR DA LODGEMENT	JGM	KA

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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PROJECT:
FLAGSTONE LOGISTICS PROPOSED LOT 105
ENTERPRISE DRIVE, NORTH MACLEAN, QLD 4280

TITLE:
SITE & GROUND FLOOR PLAN

NORTH

CLIENT:
Charter Hall

DATE: FEBRUARY, 2025
DRAWN BY: JGM
SCALE: 1 : 500 @ A1
SCALE: 1 : 1000 @ A3

JOB NO: 26036
DRAWING NO: DA02
REVISION: A

watson young

Appendix D – Arcadis Water Network Analysis

WATER NETWORK ASSESSMENT

4499 – 4651 MOUNT LINDESAY HIGHWAY NORTH MACLEAN

CHARTER HALL PRIME INDUSTRIAL FUND

COMPLIANCE ENDORSEMENT
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2018/961/9

Date: 22-Feb-24

Queensland Government

4499 – 4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

WATER NETWORK ASSESSMENT

Author	Mike Cazeres	
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Report No	EAG005–30109334-AAR-WNA
Date	15/02/2024
Revision Text	03

This report has been prepared for Charter Hall Prime Industrial Fund in accordance with the terms and conditions of appointment for 4499-4651 Mount Lindesay Highway, North MacLean QLD 4280. Arcadis Australia Pacific Pty Limited (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

Revision	Date	Description	Prepared by	Approved by
01	28/08/2023	Issued for Compliance Assessment	MC	RM
02	25/01/2024	Amended Connection Strategy	MC	RM
03	15/02/2024	Response to RFI	HQ	RM

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1 INTRODUCTION

Arcadis has been engaged by Charter Hall Prime Industrial Fund to prepare a Water Network Assessment (WNA) for a proposed development located in North Maclean, QLD over the following allotments:

- Lot 39 on SP258739 (4499-4651 Mount Lindesay Highway, North Maclean)

With the use of the Greater Flagstone PDA Infrastructure Planning and Background Report (IPBR), Logan City Council Desired Standards of Service (2019) and Logan Water Draft Technical Memorandum (DD8001 North Maclean), a hydraulic assessment of the proposed development's internal potable water network has been undertaken.

The existing potable water supply network adjacent to the site is comprised of the following:

- 200mm DIA watermain along the eastern verge of the Mount Lindesay Highway; and
- 200mm DIA PN16 mPVC main located along the northern verge of Crowson Lane.

Revision 01 of the WNA previously specified and assessed the proposed internal water network under connections to both the existing networks within Crowson Lane (made in Stage 1) and Mt Lindesay Highway (made in Stage 2), including a proposed water main along the eastern service road connecting the internal water networks within the northern and southern internal roads as per the endorsed EDQ sewer and water context plan for the site.

1.1 Revision 02

Revision 02 has been undertaken to demonstrate internal water network DSS compliance via connection to Crowson Lane only, and reduction of the proposed water main alignment within the eastern service road with a water main extended from the southern internal road only to the future connection point to the existing Mount Lindesay Highway network prior to the Mount Lindesay Highway road crossing.

The proposed connection point to service the development is the existing DN200 main in the northern verge of Crowson Lane, constructed as part of Stage 1 works.

The proposed development will consist of 3 stages, and it is assumed that the internal water supply network within Stage 3 will be constructed in conjunction with Stage 2 works prior to the operation of Stage 2. This provides the full looped supply arrangement through Stage 3 to allow for the internal network to meet the required DSS across all stages of the development via a single connection to the existing network within Crowson Lane.

A second connection is to be made to the existing DN200 water main within the eastern verge of the Mt Lindesay Hwy during Stage 2 or Stage 3 works in accordance with the approved EDQ DCOP and provides redundancy of supply to the supply area. It is noted that this connection is not required to allow the proposed development to meet the required performance DSS and is to be isolated under normal operating conditions.

An alternative supply arrangement is further investigated in this report which explores the impacts to the internal network DSS in the unlikely event that the internal water network within Stage 3 is not constructed prior to Stage 2 operation. This alternative supply arrangement requires an additional connection to be made to the existing DN200 water network within Mt Lindesay Hwy.

The following WNA compares the existing allowances made within the Logan City Council Draft Technical Memorandum to the current development layout completed by Watson Young (MP01 P10, March 2023). The purpose of this assessment is to demonstrate internal water network compliance with the relevant Desired Standards of Service (DSS) for the proposed development across all proposed staging scenarios in accordance with the Logan City Council Desired Standards of Service 2019 documentation in accordance with the Greater Flagstone PDA Infrastructure Planning and Background Report, and the Logan Water Draft Technical Memorandum. The report also confirms that future satisfactory water servicing provision is available for the external Lot to the south.

1.2 Revision 03

Revision 03 has been created in response to the information request received from Marco Bonato of EDQ on 02/02/2024, requesting the following information:

1. *Please provide detailed blown-up layout of the DMA feed in the Overall Water Main Sketch Plan to address interaction with the other infrastructure within the verge and land requirement.*
   Refer to updated drawing 30109334-AAP-WS00OP-CV-SKT-031-03 in appendix B for detailed blown-up layout of the DMA.
2. *Please include in the report a strategy to address potential high-pressure issues during the interim supply of Stage 2 through to the Mt Lindesay Hwy water network.*
   Private pressure relief valves will be installed at the lot property connections to address potential high-pressure issue should Stage 2 be constructed independent of Stage 3 (refer to section 11.1).

2 SITE CHARACTERISTICS

2.1 LOCATION DETAILS

The subject site is located within North Maclean, South-East Queensland, Australia over the following allotments:

- Lot 39 on SP258739 (4499-4651 Mount Lindesay Highway, North Maclean)

The site is bordered by Crowson Lane to the north, Mount Lindesay Hwy to the east, a vacant lot to the south and residential lots to the west.

The total area of the site is approximately 1,177,359m² or 117.7359 ha.

Logan City Council is the local government authority.

2.2 LAND USAGE

In its current state, the project site has undergone recent vegetation clearing works and contains a high voltage electrical easement. Figure 2-1 below provides a current locality plan of the site.



Figure 2-1 Site Locality Plan (Aerial Imagery Courtesy of Nearmap)

2.3 TOPOGRAPHY AND FEATURES

The site topography consists of hills and valleys with gradual to steep grades. The site contains an overland flow path that discharges flows via a natural channel to an existing headwall that crosses Mount Lindesay Hwy. The site has a high point of approximately RL 43m AHD and a low point of RL 21m AHD.

3 PROPOSED DEVELOPMENT

The proposed development consists of five super lots and six auxiliary lots, comprising drainage, open space and a sewer pumpstation. A plan extract of the proposed development has been provided in Figure 3-1.

This plan is also provided within Appendix A and should be referred to for further clarity.

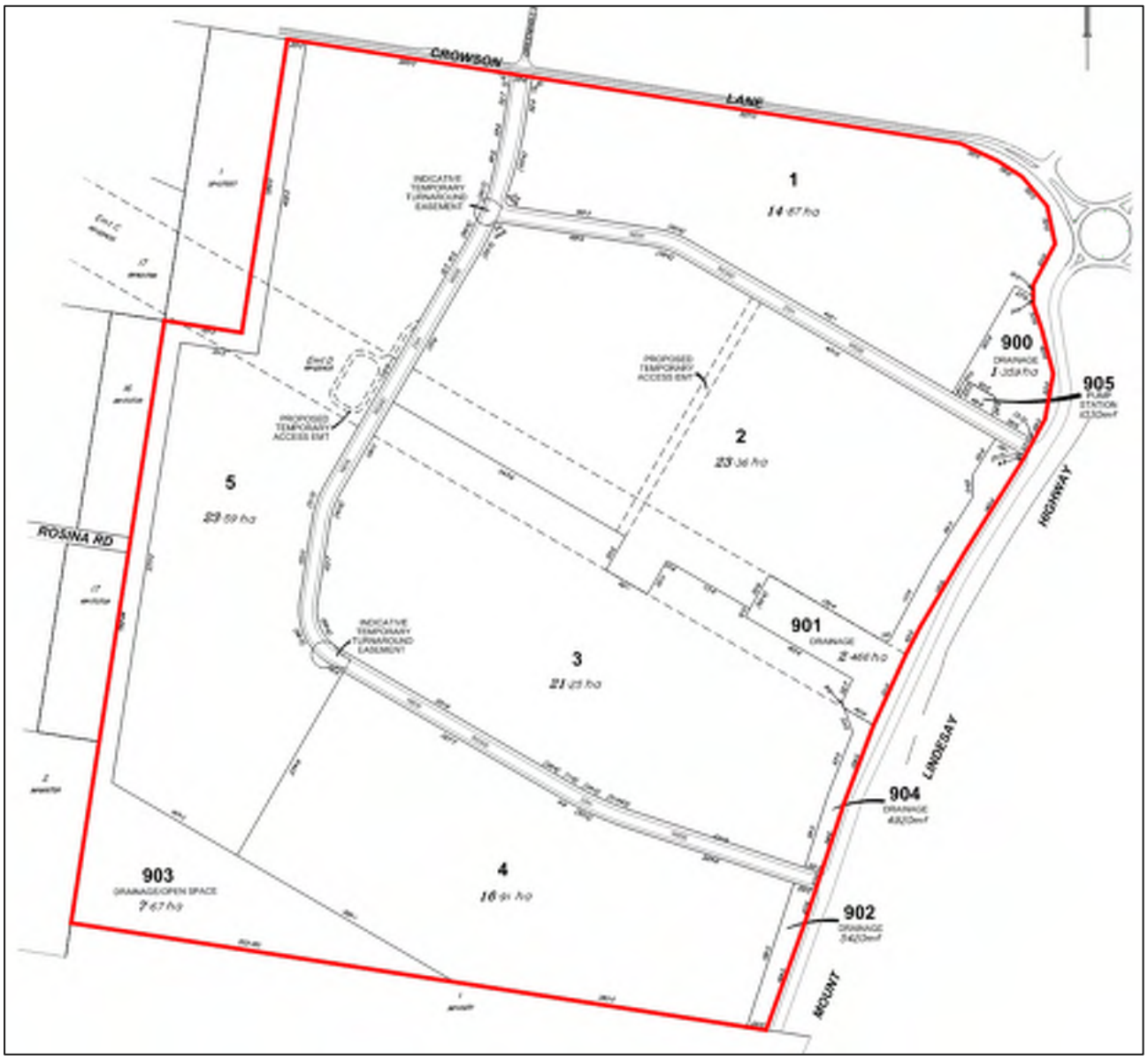


Figure 3-1 Proposed Amended ROL Layout (Source: Wolters, August 2023)

3.1 DEVELOPMENT STAGING

The proposed staging of the development site is summarised below and illustrated in Figure 3-2.

- Stage 1 – Includes Superlots 1 to 2
- Stage 2 – Includes Superlots 3 to 4
- Stage 3 – Includes Superlot 5

It is assumed that the proposed internal water network within Stage 3 of the development will be constructed during Stage 2 works.



Figure 3-2 Proposed Development Staging Plan

3.2 DEVELOPMENT LOADING

For the purposes of this report, the development has been assessed under two demand cases to better determine the anticipated impact to be had on the surrounding network. These cases are as follows:

- **Logan Water Projected Case –** Results as per the assessment completed by Logan Water within the Draft Technical Memorandum DD8001. Logan water generated EPs in accordance with Infrastructure Demand Model 2020 (IP0017) to allow for optioneering. The EPs have been assigned to 70% of the developable area as an "allowable GFA" and excludes roads, open spaces, carparks etc.
- **Arcadis Calculated Developed Case –** The calculated demand for the development based on the EP's outlined by Logan Water for Industry Medium and Commercial. GFAs are based on development layout plans and exclude roads, open spaces, carparks etc. A 10% contingency has been applied to the demand calculated via this concept development layout for future design flexibility.

These values are compared to ensure that NM1 can suitably cater for the development as per its current designed state (Watson Young MP01 P10, March 2023). For this comparison the Projected Case will consider Industry Medium and Commercial only as per the current intention for the development.

Figure 3-3 shows the non-residential conversion rates (Equivalent Persons (EP)) for the proposed development as per Logan Water's Draft Technical Memorandum DD8001 North Maclean included within Appendix D. Refer to Appendix C for the developed case development EP and demand summary.

IDM Development Type	Average Water Consumption Method Adopted	Conversion Rates - Water		Return to Sewer (%)	Conversion Rates - Sewage	
		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)
Commercial	GFA, 5th-95th %ile	-	55.90	0.90	-	50.31
Office	As per Commercial		55.90	0.90		50.31
Warehouse Distribution	As per Commercial		55.90	0.90		50.31
Education	GFA, 5th-95th %ile	-	105.30	0.80	-	84.24
Health	GFA, 5th-95th %ile	-	226.50	0.90	-	203.85
Industry Heavy	50% above Light Industrial	-	56.60	0.80	-	45.28
Industry Medium	25% above Light Industrial	-	47.25	0.80	-	37.80
Industry Light	GFA, 5th-95th %ile	-	37.80	0.80	-	30.24
Sport Recreation	Gross, 10th-90th %ile	1.05	-	0.90	0.945	-
Rural	Based on Water Meter Consumption	-	-	-	-	-
Retail Services	GFA, 5th-95th %ile	-	97.60	0.90	-	87.84
Showroom Bulk Goods	GFA, 5th-95th %ile	-	110.80	0.90	-	99.72
Accommodation	GFA, 5th-95th %ile	-	233.90	0.90	-	210.51

Reference: Table 7.2 Development of Infrastructure Demand Model, LWIA 2018 (PI-181).

Figure 3-3 Non-residential conversion rates (Table 7.2 Development of Infrastructure Demand Model)



Figure 3-4 Concept Masterplan (Watson Young MP01 P10, March 2023)

3.3 PROJECTED CASE

The proposed development and an additional upstream allotment were accounted for as part of the assessed NM1 study catchment aligning with the Logan Water study and associated draft technical memorandum DD8001, with the assumption GFA = 70% of developable area totalling a GFA of 74 ha.

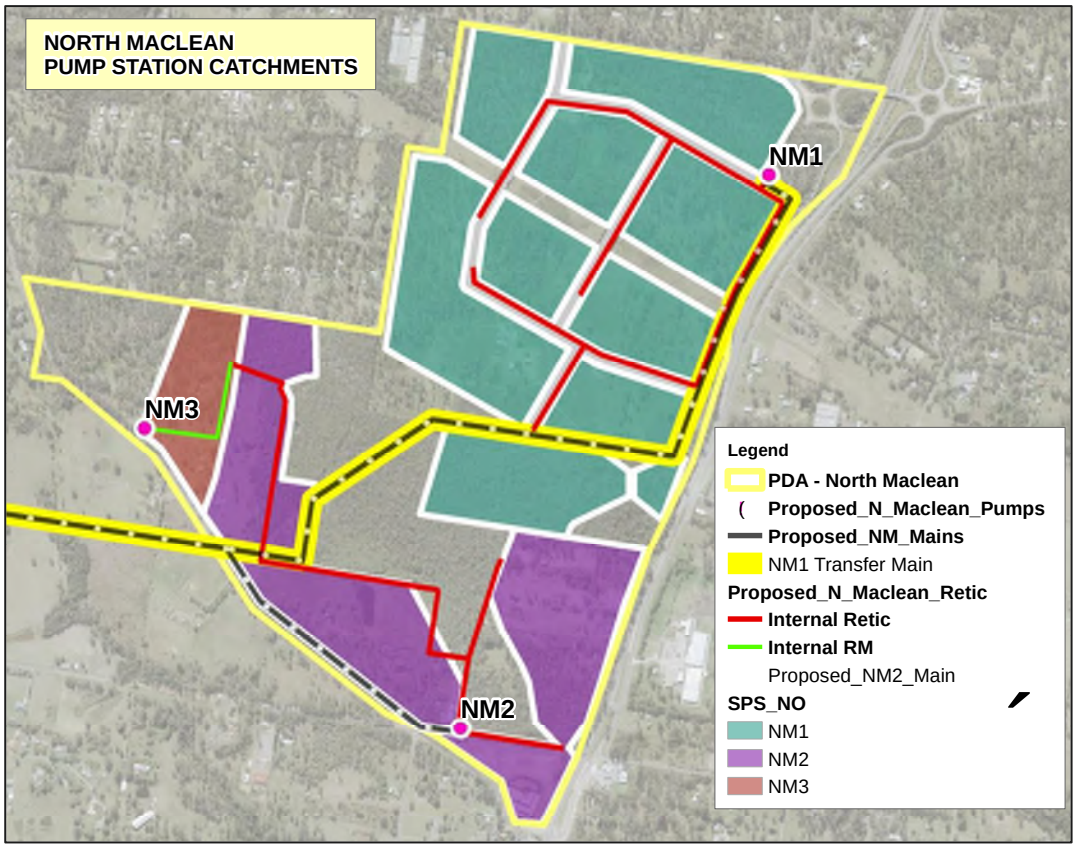


Figure 3-5 Logan Water NM1 Catchment

3.4 ARCADIS CALCULATED DEVELOPMENT LOADING

The demand for the development based on the EP's outlined by Logan Water for Industry Medium and Commercial was applied to the concept development layout completed by Watson Young (MP01 P10, March 2023) to generate a comparison of ultimate demand on the potable water. A 10% contingency has been applied to the demand calculated via this concept development layout for future design flexibility.

Lot 1RP113251 is located immediately south of the site area illustrated in Figure 2-1 and also forms a part of the overall NM1 catchment illustrated in Figure 3-5. This area has also been included in this assessment, with assumed demand for this lot specified below in line with Logan Water demand estimation methodology:

- Lot 1RP113251 Area = 16.0435ha
- Assume 70% GFA = 11.23045Ha GFA
- Corresponding Lot 1 RP113251 EP demand = 425 EPs +10% Contingency = 530.7 EPs

The results of this were then compared against the projected loads completed by Logan Water, included in Table 3-1 below. Refer to Appendix C for further details on EP calculations.

Table 3-1 North Maclean PDA – Proposed vs Projected Loads (Medium Industry)

	Study Catchment No	Ultimate Water EPs
Logan Water Projected Loading	NM1	3482
Arcadis Calculated Proposed Loading	NM1	3448
Difference (%)		-1%

As seen above, the proposed development demand based on the concept lot layout MP01 P10 and the assumed development demand of the southern Lot 1 RP 113251 also forming a part of the NM1 study catchment remains generally in accordance with Logan Water's projected demand.

4 ASSESSMENT SCENARIOS

Four assessment scenarios have been adopted for the purposes of this report.

- Stage 1 – This scenario consists of Stage 1 of the proposed development only.
- Stage 1+2 – This scenario consists of Stage 1 and Stage 2 of the proposed development.
- Ultimate – This scenario consists of the ultimate development internal to the site area (Stages 1+2+3).
- Ultimate + External Lot – This scenario consists of the ultimate development internal to the site area plus the external lot immediately south of the development site corresponding to the full area of the NM1 catchment assessed in the Logan Water draft technical memorandum DD8001. A GFA of 11.23 ha has been assumed for this external lot.



Figure 4-1 Water Network Assessment Scenario Areas

5 WATER SUPPLY INFRASTRUCTURE

5.1 EXISTING NETWORK

The North Maclean proposed industrial development is located within the urban catchment and around associated existing water infrastructure operated by Logan Water in the region. Based on the Logan Water Asset Location Data - GIS mapping, below shows the location of the site relative to the existing potable water reticulation network. The following relevant water infrastructure was identified in proximity:

- 200mm DIA watermain along the eastern verge of the Mount Lindesay Highway; and
- 200mm DIA PN16 mPVC main located along the northern verge of Crowson Lane.



Figure 5-1 – Existing Potable Water Infrastructure (Logan Water, June 2022)

5.2 EDQ DCOP, ENDORSED NORTH MACLEAN CONTEXT PLAN & CONNECTIONS

As part of the planning for the Greater Flagstone PDA, EDQ have developed a Development Charges and Offset Plan (DCOP). This document sets out the required charges levied to Developers to contribute towards funding the delivery of required trunk infrastructure for the area. An extract from the DCOP is shown in Figure 5-2 below.

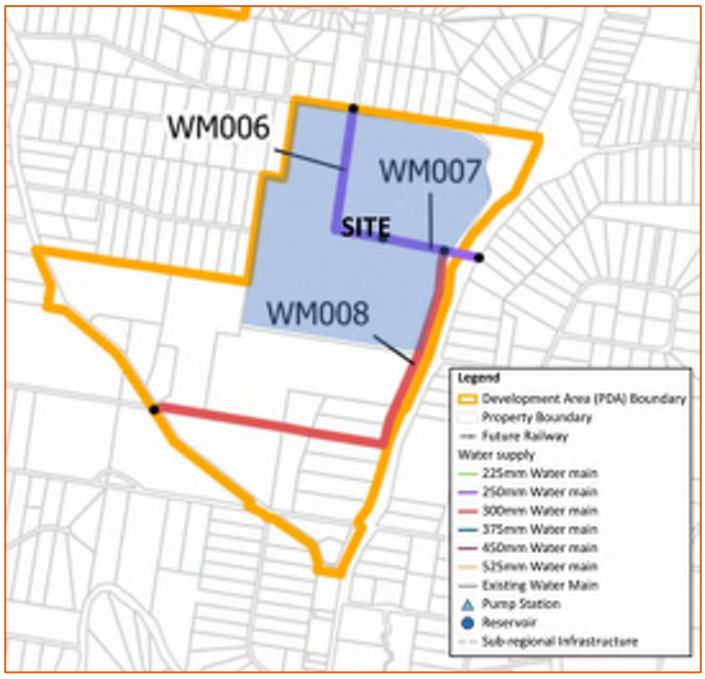


Figure 5-2 – Water Supply Trunk Infrastructure in DCOP

Figure 5-3 shows the endorsed EDQ Sewer and Water plan for the site. As shown in the plan, the development has been approved for connection to the trunk watermains located along Crowson Lane and the Mount Lindesay Highway.

The existing DN200 water main within the northern side of Crowson Lane will be adopted as the connection point for the site.

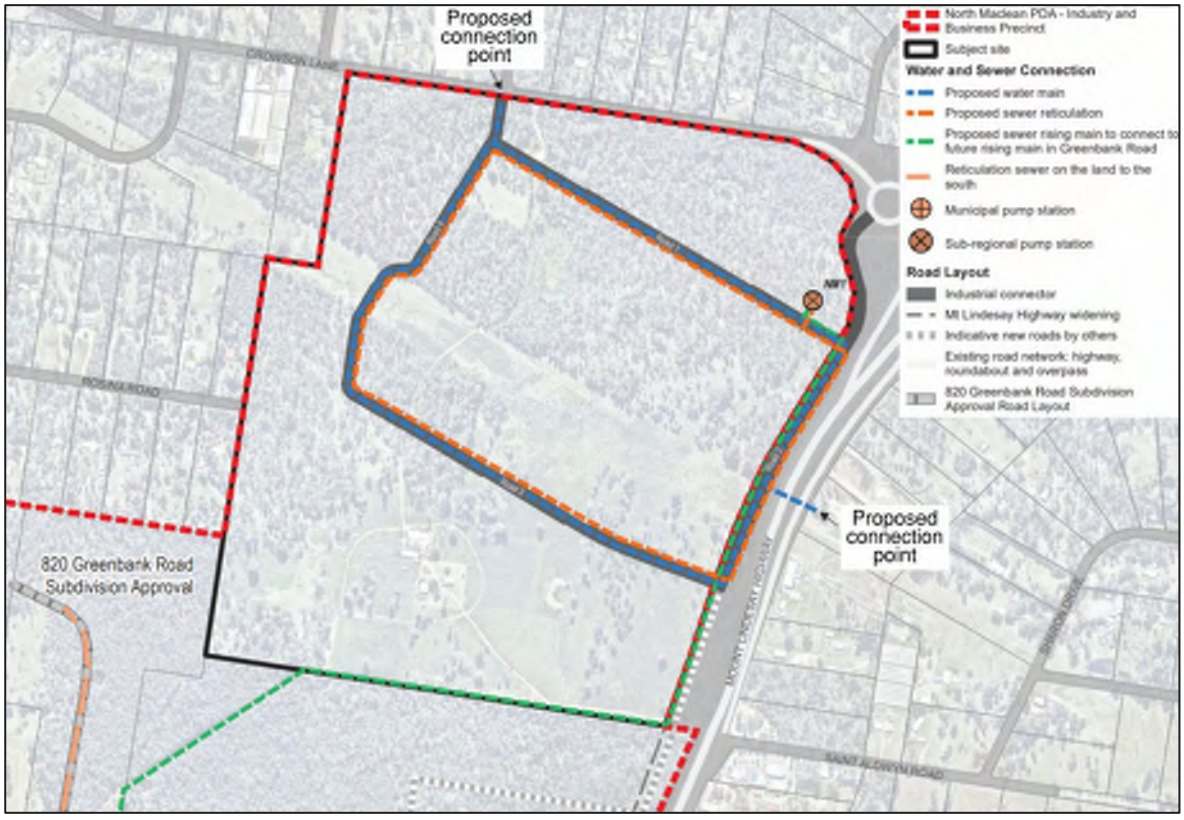


Figure 5-3 – Endorsed EDQ Water & Sewer Context Plan

6 MODELLING ASSUMPTIONS & DSS

The water network modelling was undertaken using Bentley modelling software WaterCAD Connect Edition network and designed using the current Logan City Council Desired Standards of Service 2019 documentation as referenced in the Greater Flagstone PDA IPBR.

- The extent of the network studied is the Logan Water NM1 Catchment Area.
- Colebrook-White equation is used for hydraulic calculations.
- 0.3mm Colebrook-White k value adopted.
- DICL & M-PVC PN20 assumed, as such most conservative IDs of M-PVC mains adopted. DN300 PN20 PVC-M main ID ≈ 306mm, DN250 PN20 M-PVC main ID ≈ 253mm, DN150 PN20 M-PVC main ID ≈ 157mm
- External southern catchment area adopted as 11.23ha GFA
- Allowable head loss design criteria applicable under Peak Hour demand scenario only

Table 6-1 LCC Desired Standard of Service for Water Supply 2019

Service Pressure	
Minimum Operating Pressure @MH	Min. 22 m at the property boundary
Maximum Operating Pressure	Max. 80m at the property boundary on the reservoir
Target Pressure	55m at the property boundary
Fire Fighting	
Commercial / Industrial Fire Flow Demand	30L/s for 4 hours
Rural Commercial/Industrial	15L/s for 2 hours
Background Demand Commercial/ Industrial	2/3 PH demand (single fire event only)
Pipeline Design	
Pipeline Capacity Requirements	Trunk system: MDMM for gravity supply MDMM over 20hrs for pumped supply
	Reticulation Mains: MH + fire flow
Maximum Velocity	2.5m/s
Item	**Value**
Average Day Demand (AD)	190 L/EP/day
Industry Mean Day Max Month (MDMM)	AD x 1.2
Industry Max Day (MD)	AD x 1.3
Industry Max Hour (MH)	AD x 1.7
Commercial Mean Day Maximum Month (MDMM)	AD x 1.2
Commercial Max Day (MD)	AD x 1.3
Commercial Max Hour (MH)	AD x 2.0
Pipe Friction Loss	

<table>
<tr><td>Colebrook White k values (mm)</td><td>
<table>
<tr><th rowspan="2">Pipe Material</th><th colspan="3">Pipeline Age (years)</th></tr>
<tr><th>< 10</th><th>10 to 25</th><th>> 25</th></tr>
<tr><td>Asbestos Cement</td><td>0.15</td><td>0.3</td><td>0.3</td></tr>
<tr><td>Plastic (UPVC, MDPE, Hobas, etc)</td><td>0.06</td><td>0.06</td><td>0.15</td></tr>
<tr><td>MSCL/DICL</td><td>0.3</td><td>0.3</td><td>0.6</td></tr>
<tr><td>CICL</td><td>0.3</td><td>0.3</td><td>0.6</td></tr>
</table>
</td></tr>
<tr><th colspan="2">Allowable Head Loss</th></tr>
<tr><td>Design of future infrastructure to be conducted to achieve less than the head losses as indicated</td><td>(a) 5 m head/km for ≤DN 150 (CIOD) or ≤DN 180 (ISO).
(b) 3 m head/km for ≥DN 200 (CIOD) or ≥DN 250 (ISO).
Head loss shall be calculated using computer models or hydraulic formulas</td></tr>
</table>

6.1 PIPE MATERIAL

In accordance with the SEQ IPAM list and confirmed by EDQ, M-PVC and DICL water mains are suitable for use in LCC and the proposed development site.

- Pipes in the road shall be DICL
- Pipe sections under road crossings and industrial/commercial driveways shall be DICL PN35
- Pipes in verges shall be M-PVC pipes minimum PN20

7 POTABLE WATER DEMAND

Table 7-1 below lists the estimated water supply demand generated by the proposed development. This has been calculated in accordance with the LCC Desired Standards of Service 2019 documentation.

Table 7-1 Potable Water Demand Estimate

Scenario	Total EP	AD+NRW (L/s)	MDMM+NRW(L/s)	MD+NRW (L/s)	MH+NRW (L/s)	2/3MH + FF (L/s)
Stage 1	1057	2.32	2.73	2.93	3.74	32.49
Stage 1+2	2178	4.79	5.62	6.04	7.70	35.13
Ultimate	2864	6.30	7.39	7.94	10.13	36.75
Ultimate + Southern External Lot	3448	7.58	8.90	9.56	12.19	38.13

8 BOUNDARY CONDITION

8.1 HYDRANT PRESSURE AND FLOW MODELLING REPORT – 2021

Flow and pressure modelling was undertaken near the two proposed connection points in the eastern verge of Mt Lindesay Highway and in the northern verge of Crowson Lane (101-109 Crowson Lane) on Test Hydrant WFH019651and Test Hydrant WFH019651 respectively. Figure 8-1 below provides the hydrant locations.

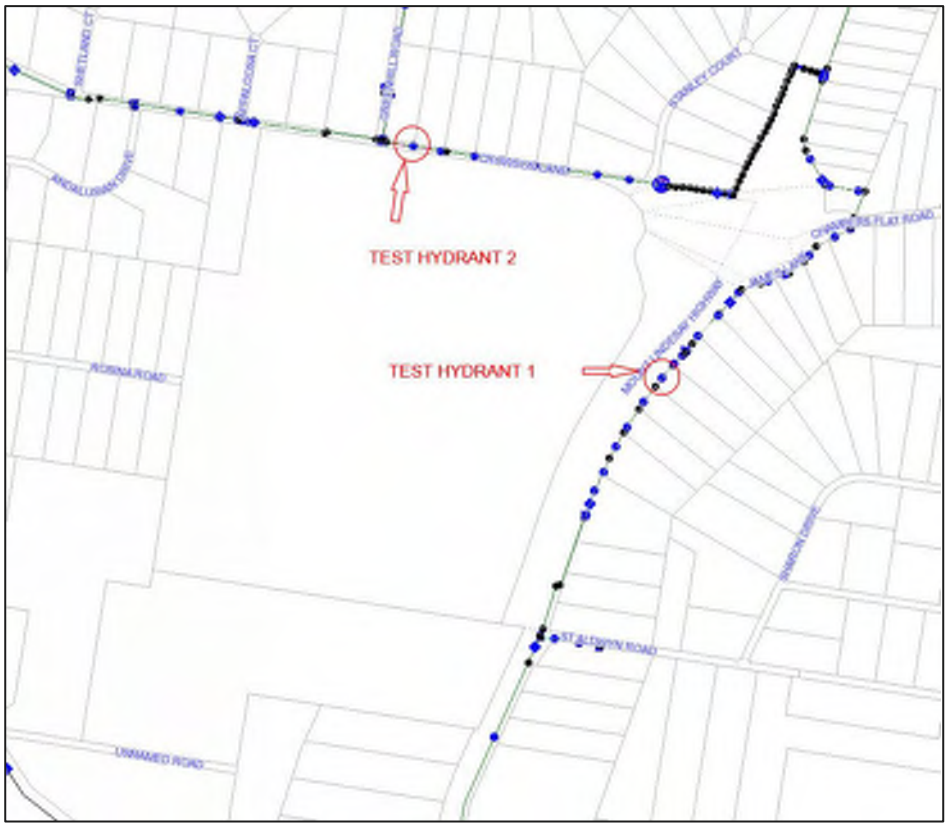


Figure 8-1 Flow Test Hydrant Locations

The Hydrant Curve function is used in the H2OMap network modelling software to simulate an increasing demand scenario in the water supply network with peak hour background demand to assess and evaluate peak hour flow. The residual pressure in the water supply network at the hydrant is calculated by the model for each increase in flow. The report notes it is strongly suggested that field tests are conducted to verify the theoretical results which has been undertaken and further discussed in Section 8.2 below.

The hydraulic modelling results are presented in Table 8-1 below.

Table 8-1 Hydrant Test Results – 2021 Modelling

Normal Supply Conditions / (Peak Day Analysis)		
Available Flow (L/s)	**Test Hydrant 1 – Residual Pressure (m)**	**Test Hydrant 2 – Residual Pressure (m)**
0.00	54.14	42.31
5.00	49.66	40.56
10.00	48.19	39.00
15.00	46.33	37.40
20.00	44.08	35.40
25.00	41.51	33.13
30.00	38.64	30.34
35.00	35.47	27.94
40.00	32.03	25.05
45.00	28.34	22.00
50.00	24.34	18.76

8.2 FLOW & PRESSURE TESTING RESULTS – 2022

Flow and pressure field testing was undertaken in October 2022 at multiple test hydrant location points around Crowson Lane and Mt Lindesay Highway North and South of the site. The field tests are undertaken to cross check, evaluate and verify theoretical outcomes. Figure 8-2 and Figure 8-3 below illustrates the hydrant testing locations.

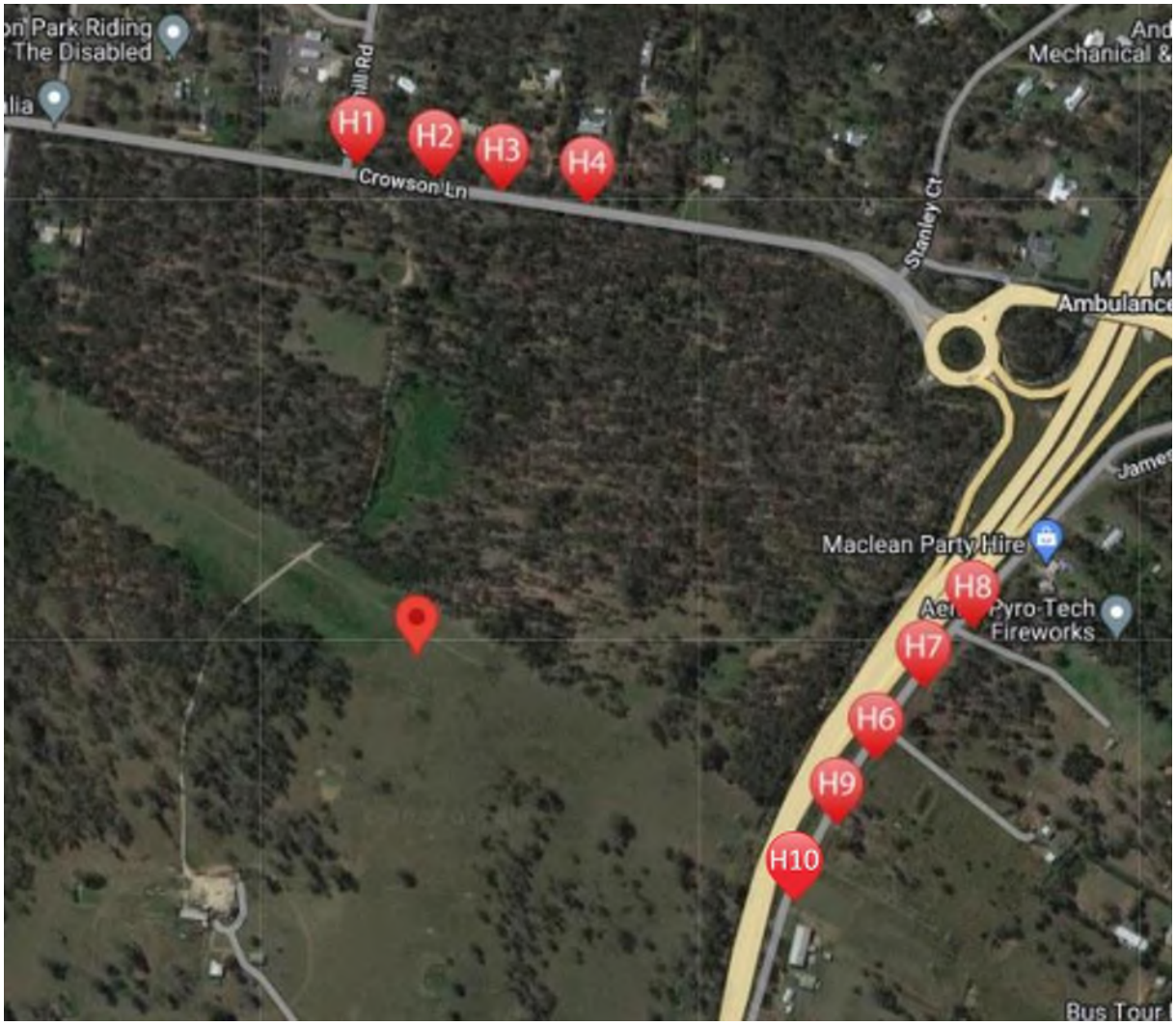


Figure 8-2 Flow Test Hydrant Locations – Crowson Lane (H1-4) & Mt Lindesay Hwy North (H6-10)

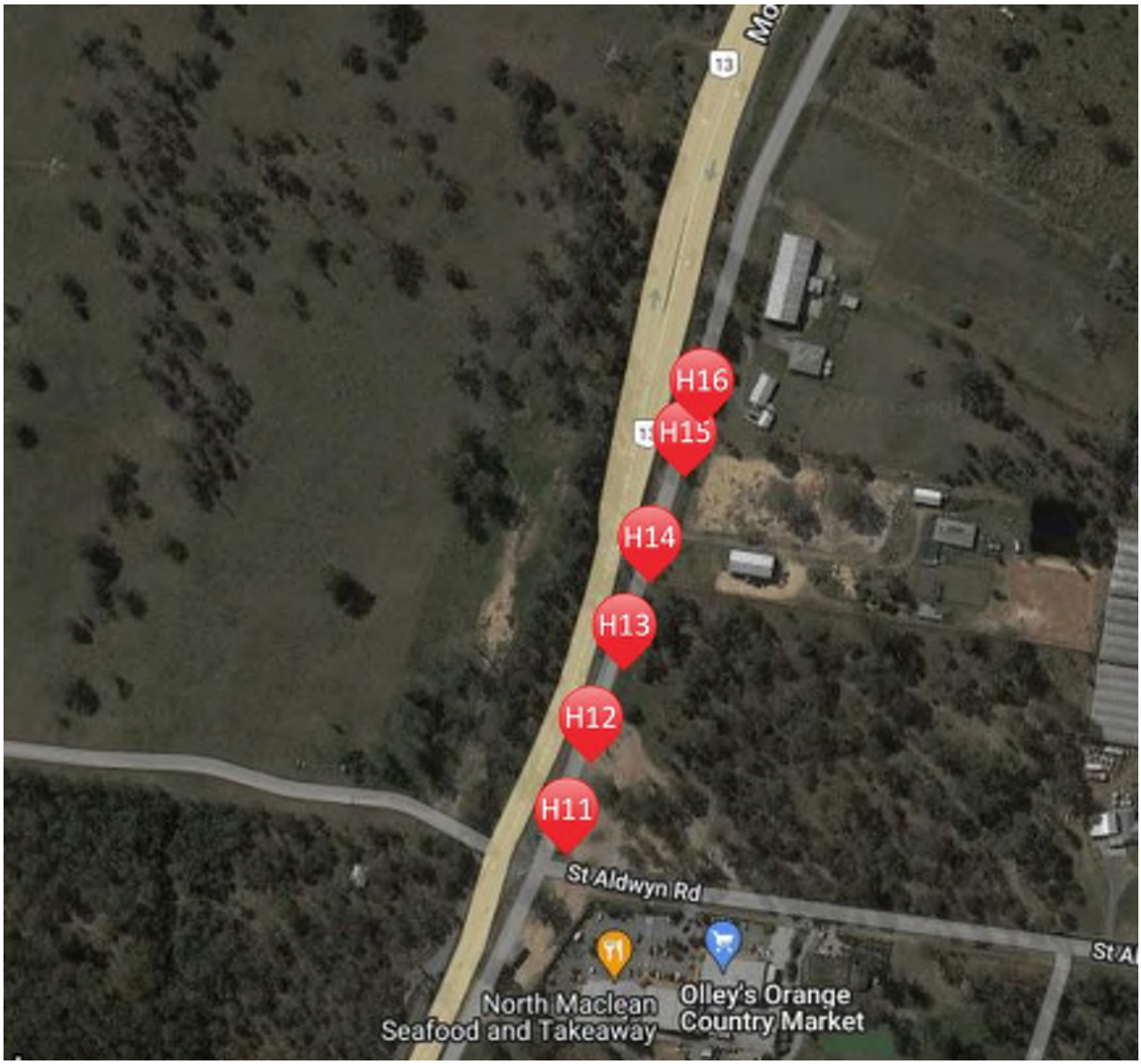


Figure 8-3 Flow Test Hydrant Locations – Mt Lindesay Highway South (H11-16)

The flow and pressure results for each of the number of tests performed at various test hydrant locations is summarised in Table 8-2 below.

Table 8-2 Hydrant Test Results Summary – 2022 Testing

Test Hydrants H1-4 Crowson Lane – Residual Pressure (m)		Test Hydrants H6-10 Mt Lindesay Highway North – Residual Pressure (m)		Test Hydrants H11-16 Mt Lindesay Highway South – Residual Pressure (m)	
Flow (L/s)	Hydrant Residual Pressure (m)	Flow (L/s)	Hydrant Residual Pressure (m)	Flow (L/s)	Hydrant Residual Pressure (m)
0	66.4	0	74.3	0	71.4
15	64.2	15	70.3	15	63.3
30	58.8	30	61.2	30	54.8
45	52.8	45	49.0	45	38.0
60	46.9	56.9	32.5	52.2	26.8
65	45.8				
75	40.1				
77.6	38.5				

8.3 FLOW AND PRESSURE RESULTS BOUNDARY HGL COMPARISON

A comparison of the calculated boundary HGLs based on the two available 2021 and 2022 flow and pressure results and the development demands is provided in Table 8-3 below. These results show that the 2022 hydrant field testing yields significantly higher boundary HGLs than the 2021 flow and pressure modelling report by LCC. As such, 2021 boundary HGLs have been adopted for the purposes of this assessment, remaining conservative and aligning with LCC modelling for the area.

Table 8-3 Boundary HGL Comparison

Scenario	Location 1 – Crowson Lane		Location 2 – Mt Lindesay Highway North		Location 3 – Mt Lindesay Highway South	
	2021 Modelling Report HGL (m)	2022 Hydrant Testing HGL (m)	2021 Modelling Report HGL (m)	2022 Hydrant Testing HGL (m)	2021 Modelling Report HGL (m)	2022 Hydrant Testing HGL (m)
MH Stage 1	71.68	96.60	72.39	94.67	-	89.21
FF Stage 1	58.89	88.71	57.77	80.79	-	72.37
MH Stage 1+2	70.47	95.77	70.77	93.89	-	87.15
FF Ultimate	58.45	87.77	56.09	78.56	-	69.98
MH Ultimate	69.99	95.21	69.71	93.23	-	85.94
FF Ultimate	57.55	87.18	55.04	77.11	-	68.38
MH ULTIMATE + EXT	68.94	94.72	68.78	92.57	-	84.93
FF ULTIMATE + EXT	56.76	86.66	54.13	75.84	-	66.94

Note – the above table includes HGL – whereas Table 8-2 specifies pressure head.

9 CONCEPT ULTIMATE INTERNAL WATER NETWORK LAYOUT & CONNECTIONS

The concept ultimate internal water network layout and sizing adopted for this assessment in illustrated in Figure 9-1 below.

This involves connection to the existing DN200 water main within the northern verge of Crowson Lane as per the endorsed EDQ water & sewer context plan, with a DN250 water main extended across Crowson Lane to the site in accordance with EDQ DCOP mapping.

The existing DN200 water main within the northern side of Crowson Lane will be adopted as the connection point for the site to be made as part of Stage 1 works.

Parallel DN150 water mains have been modelled for the internal reticulation to the proposed development site, with a separate main modelled in each verge. A DN250 trunk water main has been modelled along the southern internal road alignment to adhere with DCOP planning, with lot connections to be made directly to this DN250 main for adjacent lots and confirmed by EDQ. A DN300 water main has been modelled continuing south from the DN250 at the intersection of the Mt Lindesay Highway and the southern site entrance to cater for future southern external areas in accordance with EDQ DCOP mapping. The external demand of the southern Lot 1RP113251 has been applied at the end of this modelled DN300 main, however it is noted that this DN300 extension will not be constructed by Charter Hall as part of the current proposed development works.

A second connection is to be made to the existing DN200 water main within the eastern verge of the Mt Lindesay Hwy in accordance with the approved EDQ DCOP and provides redundancy of supply to the supply area. It is noted however that this connection is not required to allow the proposed development to meet the required performance DSS and is to be isolated under normal operating conditions.

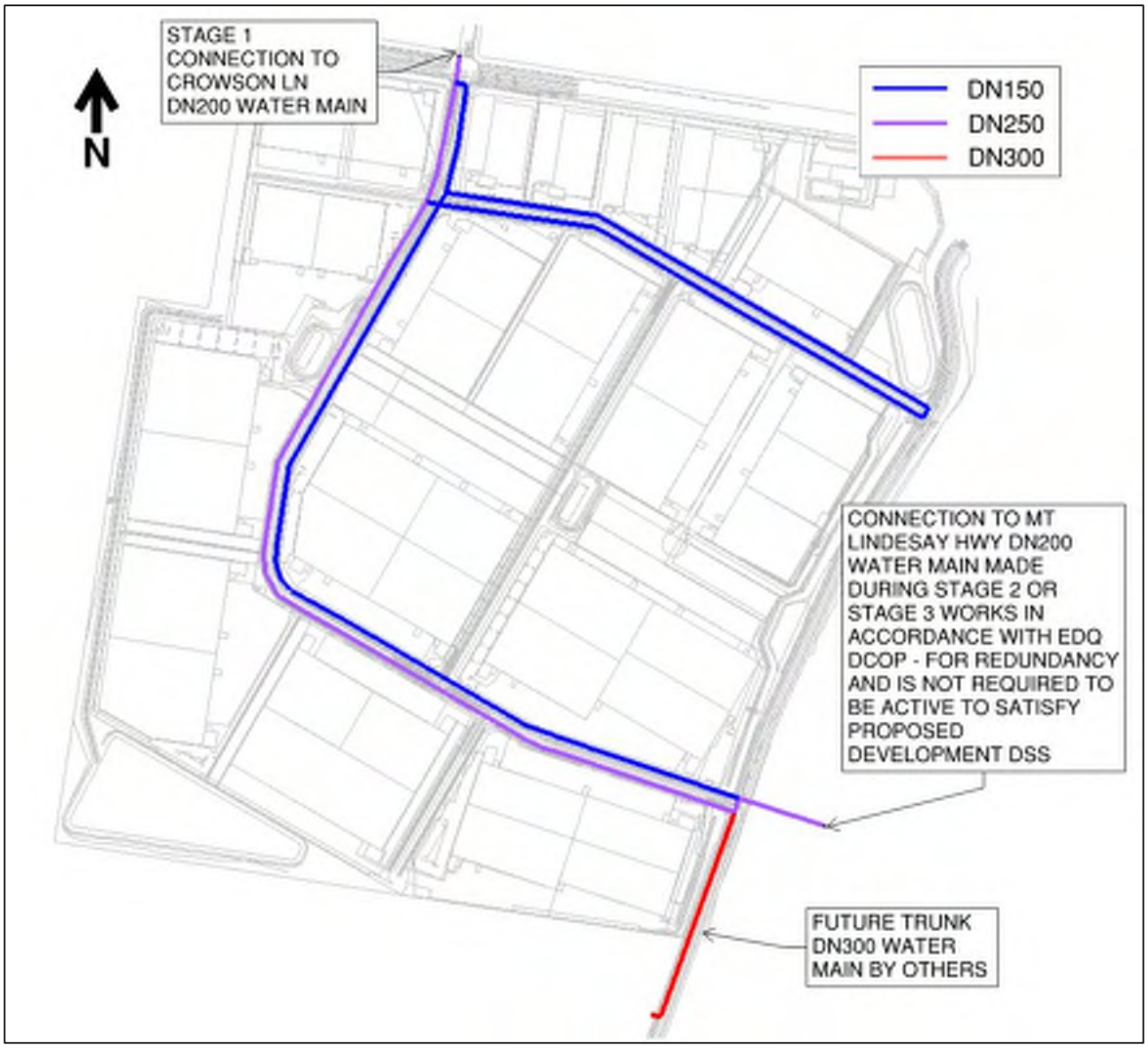


Figure 9-1 Concept Ultimate Internal Water Network Layout

9.1 STAGE 1 INTERNAL WATER NETWORK LAYOUT

As part of Stage 1 works, a new DN250 water main connection will be undertaken to the existing DN200 main within the northern verge of Crowson Ln adjacent to the future northern internal road connection. This DN250 connection will extend south across Crowson Ln to the northern site boundary and forms the initial section of the DCOP planning DN250 trunk water main alignment.

A DN150 reticulation water main has been modelled from this future DN250 site connection extending south to the northern internal road alignment, to supply parallel DN150 mains within the northern and southern verges of the northern internal road. A DN150 cross-connection has been included at the end of the parallel DN150 mains to mitigate dead ends. The concept Stage 1 internal water network layout is illustrated in Figure 9-2 below.

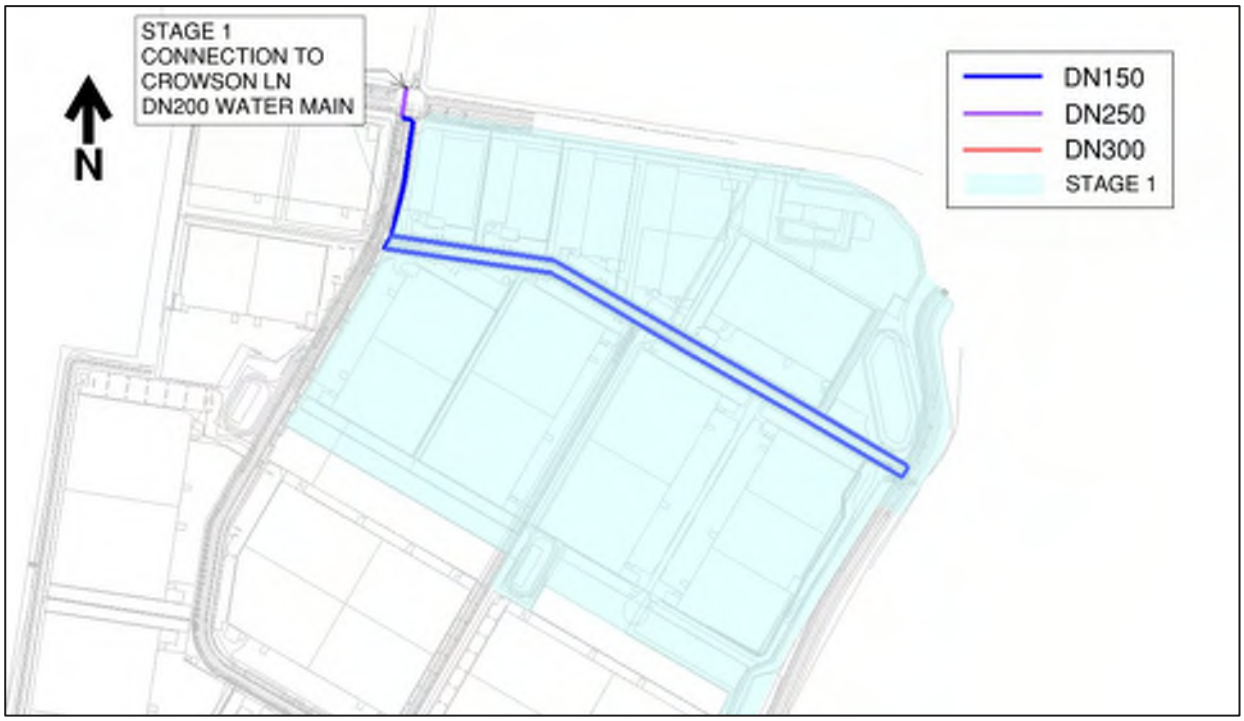


Figure 9-2 Concept Stage 1 Internal Water Network Layout

9.2 STAGE 2 INTERNAL WATER NETWORK LAYOUT

As part of Stage 2 works, a second DN250 connection will be undertaken to the existing DN200 water main within the eastern verge of the Mt Lindesay Hwy. A new trunk DN250 water main will be constructed to the eastern service road and continue south along the southern internal road servicing the Stage 2 area. A DN150 reticulation main will be constructed within the northern verge of the southern internal road. The proposed water network within Stage 3 will be constructed during Stage 2 works to provide the full looped connection through Stage 3 to allow the development to meet the hydraulic performance DSS. This also provides the complete trunk DN250 water main alignment in accordance with EDQ DCOP planning.

A DN150 main will also be constructed north along the eastern service road to connect to the DN150 water network within Stage 1 through Stage 3. The concept Stage 1-2 internal water network layout is illustrated in Figure 9-3 below.

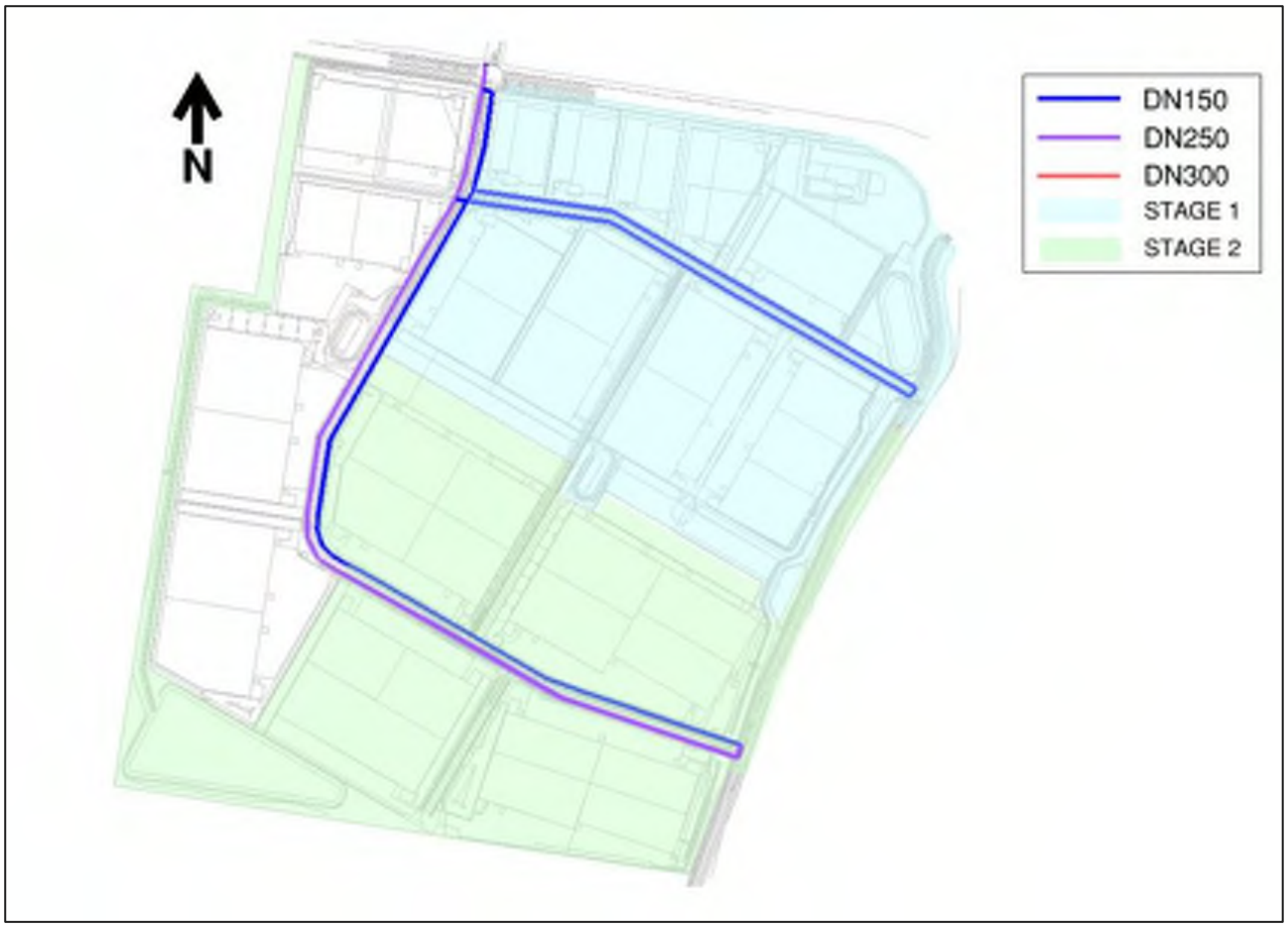


Figure 9-3 Concept Stage 1-2 Internal Water Network Layout

9.3 STAGE 3 INTERNAL WATER NETWORK LAYOUT

With the Stage 3 internal water network proposed for construction during Stage 2, no additional elements will be required to the internal water network as part of Stage 3 works. The concept Stage 1-3 internal water network layout is illustrated in Figure 9-4 below.



Figure 9-4 Concept Stage 1-3 Internal Water Network Layout

9.4 DMA BOUNDARY VALVE

Logan City Council has advised that the intent for this site is to form part of a single future District Metered Area (DMA). To this end, a boundary valve assembly is to be implemented at the proposed connection to the existing network within Crowson Lane, to be designed and constructed in accordance with SEQ drinking water supply drawings SEQ-WAT-1310-5 to SEQ-WAT-1310-10. Refer to the water layout plan included in Appendix B for concept locations of the boundary valves.

10 RESULTS AND DISCUSSION

The assessment modelling results across the four assessment scenarios are summarised in Table 10-1 below. Refer to Appendix C for modelling results across both assessment scenarios and model junctions.

Table 10-1 Water Network Modelling Results Summary

Scenario	Standard Flow Simulation		Fire Flow Simulation	
	Min Pressure (m)	Max Pressure (m)	Min Residual Pressure (m)	Maximum Velocity (m/s)
Stage 1	39.6	47.4	25.0	1.71
Stage 1+2	38.4	46.8	24.6	1.57
Ultimate	37.6	46.3	23.7	1.57
Ultimate + External	36.8	45.9	21.8	1.71

As observed in the above summary, network hydraulic performance meets the specified DSS across all assessed staging scenarios.

11 ALTERNATIVE SUPPLY ARRANGEMENT – STAGE 2 SERVICE PRIOR TO STAGE 3 NETWORK

An alternative supply arrangement is explored below to demonstrate the performance of the internal water network in the unlikely event that Stage 2 is constructed and serviced prior to the construction of the water network within Stage 3, illustrated in Figure 11-1 below.

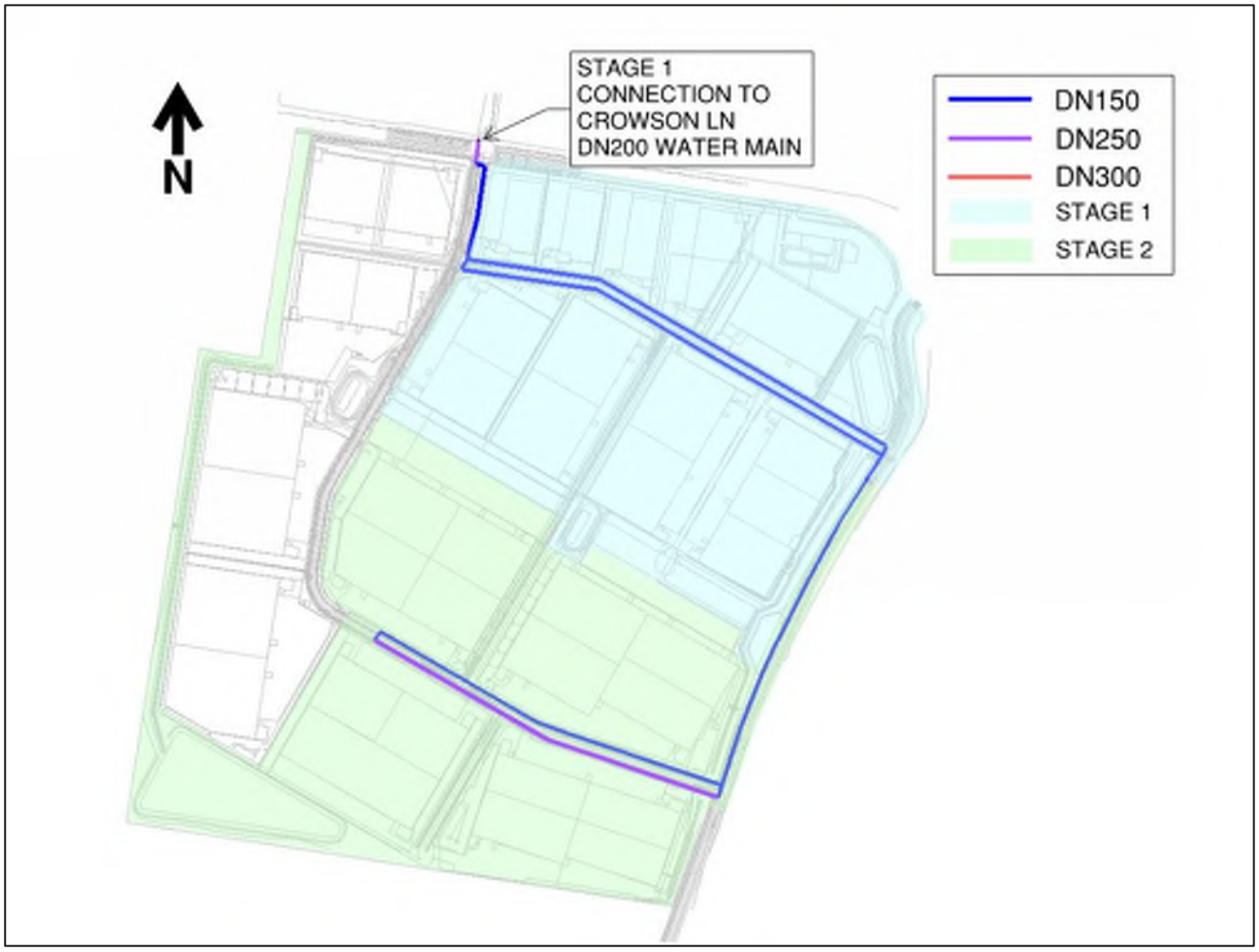


Figure 11-1 Alternative Supply Arrangement – Crowson Lane Only Internal Water Network Layout

As per Table 11-1 below, this scenario results in a minimum residual pressure DSS non-compliance under fire flow simulation of 4.3m (7.7m below DSS).

Table 11-1 Alternate Supply Arrangement Water Network Modelling Results Summary – Crowson Ln Connection Only

Scenario	Standard Flow Simulation		Fire Flow Simulation	
	Min Pressure (m)	Max Pressure (m)	Min Residual Pressure (m)	Maximum Velocity (m/s)
Stage 1+2 – Crowson Ln Connection Only	38.4	46.6	4.3	1.84

11.1 CROWSON LANE + MT LINDESAY HIGHWAY CONNECTIONS

To allow for adequate service to Stage 2 of the development prior to the construction of the water network within Stage 3, a second connection to the existing water network within Mt Lindesay Hwy is required (illustrated in Figure 11-2 below).

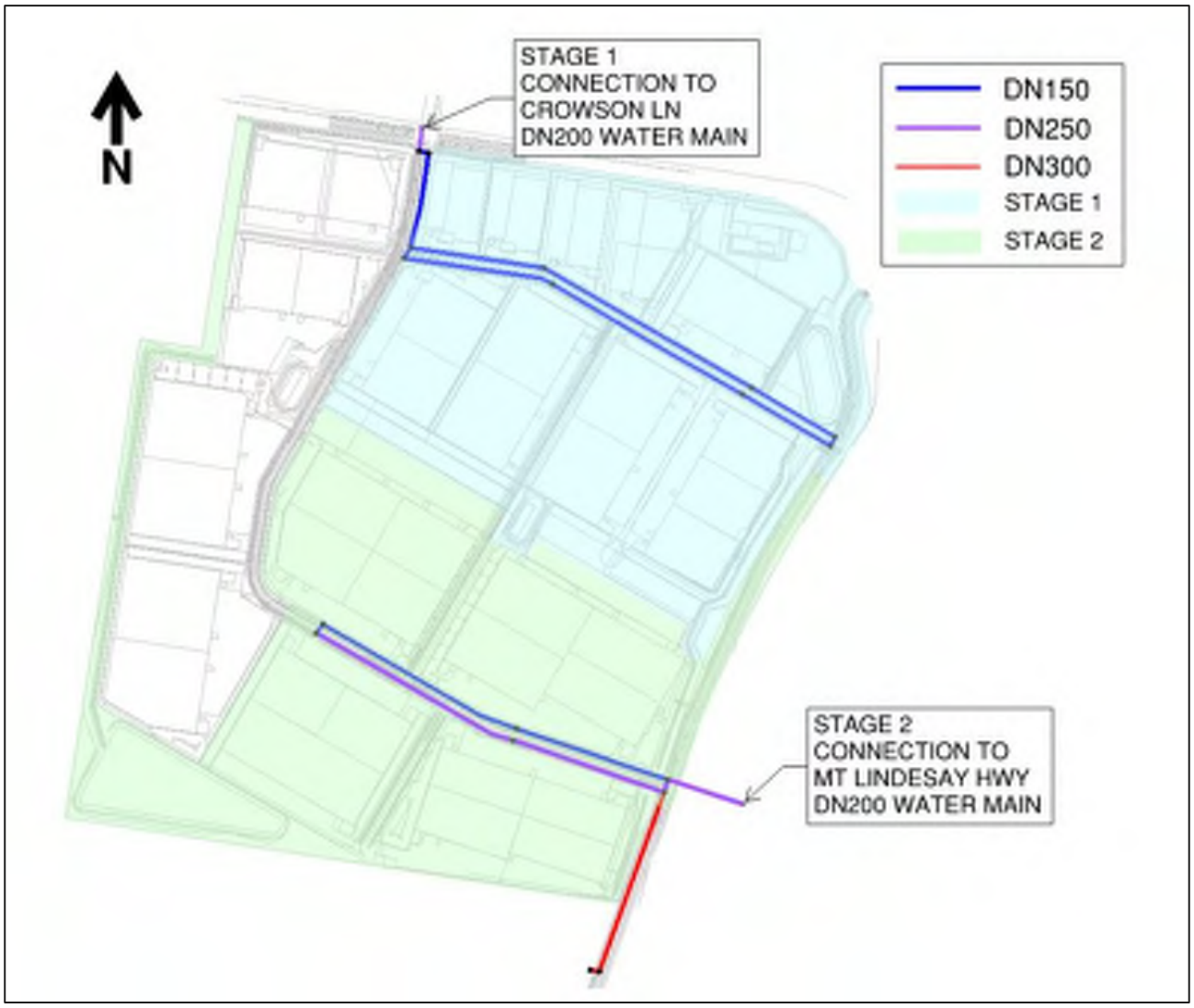


Figure 11-2 Alternative Supply Arrangement – Crowson Lane + Mt Lindesay Hwy Internal Water Network Layout

As per Table 11-2 below, this scenario provides adequate network performance meeting the specified DSS. Private pressure relief valves are proposed at the lot property connections in lieu of an additional DMA boundary valve assembly.

Table 11-2 Alternate Supply Arrangement Water Network Modelling Results Summary – Crowson Ln + Mt Lindesay Hwy Connections

Scenario	Standard Flow Simulation		Fire Flow Simulation	
	Min Pressure (m)	Max Pressure (m)	Min Residual Pressure (m)	Maximum Velocity (m/s)
Stage 1+2 – Crowson Ln + Mt Lindesay Hwy Connections	38.4	46.9	17.3	1.71

12 CONCLUSION

This Water Network Capacity Assessment shows that the proposed development can be adequately serviced via connection to the existing network within Crowson Lane. Furthermore, adequate provision has been made for the external Lot to the south. A second connection is to be made to the existing DN200 water main within the eastern verge of the Mt Lindesay Hwy during Stage 2 or Stage 3 works in accordance with the approved EDQ DCOP and provides redundancy of supply to the supply area. It is noted that this connection is not required to allow the proposed development to meet the required performance DSS and is to be isolated under normal operating conditions.

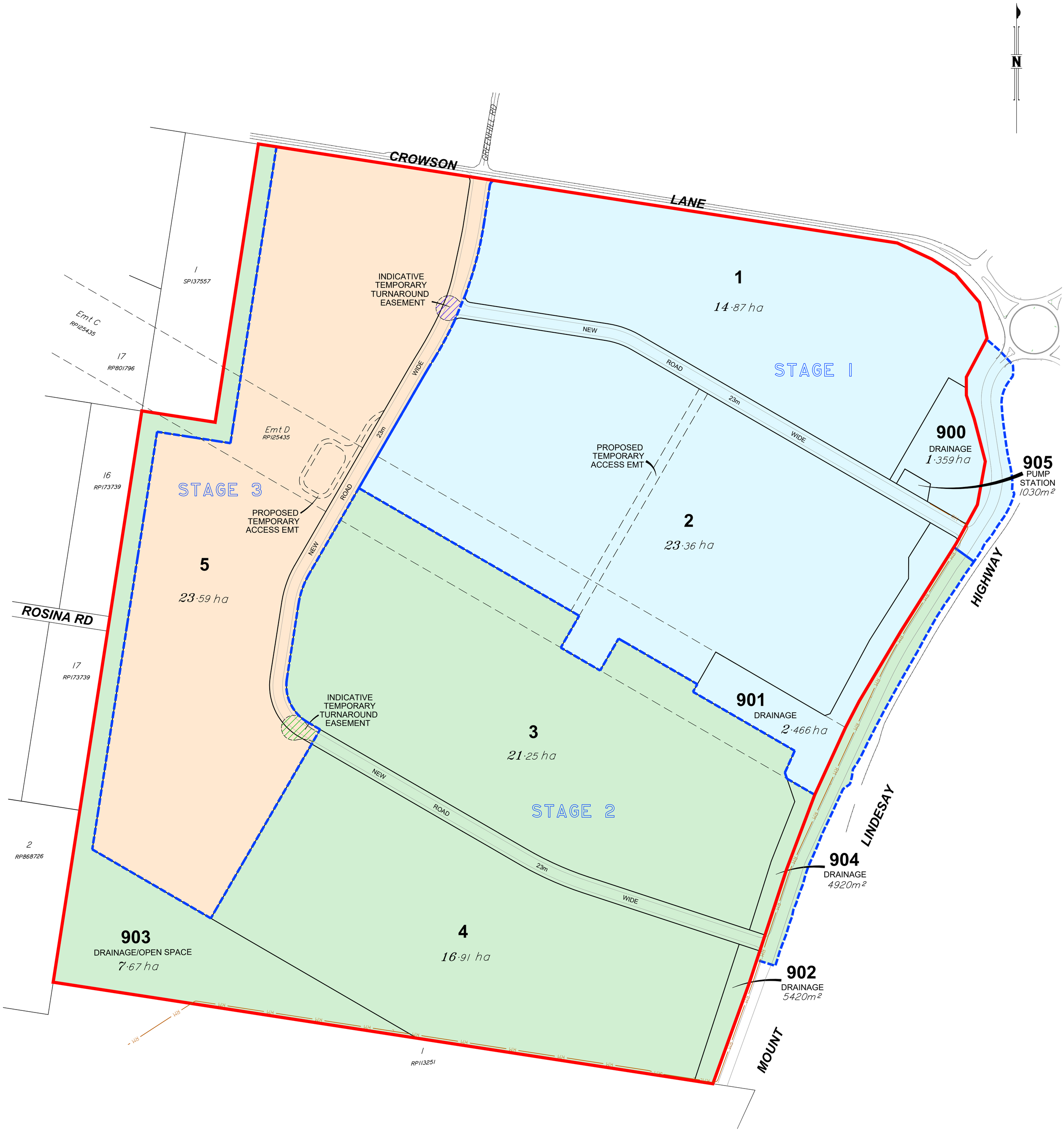
An alternative supply arrangement is further investigated in this report which explores the impacts to the internal network DSS in the unlikely event that the internal water network within Stage 3 is not constructed prior to Stage 2 operation. This alternative supply arrangement requires an additional active connection to be made to the existing DN200 water network within Mt Lindesay Hwy and corresponding boundary valve assembly.

The water network has been designed in accordance with LCC Desired Standards of Service 2019 in accordance with the Greater Flagstone PDA Infrastructure Planning and Background Report.

Further changes and requirements are subject to detailed design not covered as a part of the present report. A detailed assessment of the performance and design requirements of this proposed potable water network will be required as design progresses to ensure compliance with all relevant criteria.

APPENDIX A

Development Layout Plans



Notes

1. Any licence, express or implied, to use this document for any purpose whatsoever is restricted to the terms of the agreement or implied agreement between Wolter Consulting Group and the instructing party.

2. Design subject to local authority approval & detailed engineering requirements , areas and dimensions are approximate only and are subject to survey. Therefore this drawing is not to be used for engineering design.

3. Cadastral data supplied by others and is approximate only.

4. Earthworks for Sewer Rising Main and full service road will be completed with Stage 1.

5. Indicative road horizontal design, subject to biopods and engineering review.

6. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

Legend

- Site Boundary
- Stage Boundary
- Stage 1
- Indicative Temporary Turnaround - Stage 1
- Stage 2
- Indicative Temporary Turnaround - Stage 2
- Stage 3
- RM — Sewer Rising Main

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2500 @ A1 - Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

Staging Sketch Plan

4499-4651 Mount Lindesay Highway

Description
Local Authority

Lot 39 on SP258739
Logan City

CLIENT
Charter Hall Group

DRAWING NO. 22-0007P/01-03

VERSION E

DATE DRAWN 14-08-2023

SHEET NO. 1 of 1

KB



1 MASTERPLAN
SCALE: 1 : 2500

LEGEND

- HARDSTAND
- CAR PARK
- COLLECTOR ROAD
- CRUSHED ROCK TO FIRE ACCESS TRACK
- AREA OF GRASS / LANDSCAPING
- BIO DETENTION, GREEN CORRIDOR, STORMWATER EASEMENT
- WAREHOUSE
- OFFICE
- STAFF OUTDOOR
- AWNING
- ESTATE ROAD CONNECTION TO EXTERNAL ROAD NETWORK
- TRUCK ENTRY/EXIT
- POWER EASEMENT MAINTENANCE ACCESS POINT
- ESTATE BOUNDARY LINE
- LOT BOUNDARY LINE
- BUILDING SETBACK LINE
- LANDSCAPE SETBACK LINE
- FENCE LINE
- RETAINING WALL

PARKING PROVISION

SITE	PARKING RATIO
WAREHOUSES	0.66 (approximately 1/150m²)

PARKING	REQUIRED	PROVIDED
TOTAL	3570	3915
activity/amenities	TBC	

NOTE : Ratio applied to calculate required car parking for combined facility area including warehouse & associated offices

DEVELOPMENT ANALYSIS

LOT 1	**30,990m²**
LOT 2	**31,274m²**
WAREHOUSE 1	20,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1,100m²
LOT 3	**24,981m²**
WAREHOUSE 1	6,600m²
OFFICE	300m²
WAREHOUSE 2	5,850m²
OFFICE	300m²
LOT 4	**17,479m²**
WAREHOUSE 1	7,950m²
OFFICE	400m²
LOT 5	**15,005m²**
WAREHOUSE 1	6,850m²
OFFICE	350m²
LOT 6	**15,503m²**
WAREHOUSE 1	6,550m²
OFFICE	300m²
LOT 7	**49,645m²**
WAREHOUSE 1A	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 2A	7,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	400m²
WAREHOUSE 2B	5,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	400m²
LOT 8	**39,921m²**
WAREHOUSE 1A	9,750m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 1B	9,250m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
LOT 9	**108,081m²**
WAREHOUSE 1A	14,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1B	14,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 2A	15,900m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 2B	15,900m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
LOT 10	**120,643m²**
WAREHOUSE 1A	19,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1000m²
WAREHOUSE 1B	19,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1000m²
WAREHOUSE 2A	10,700m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 2B	10,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 2C	9,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
LOT 11	**109,982m²**
WAREHOUSE 1A	17,650m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 1B	17,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 1C	13,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1D	13,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
LOT 12	**98,224m²**
WAREHOUSE 1A	15,700m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1B	14,350m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1C	12,400m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1D	12,400m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
LOT 13	**142,280m²**
WAREHOUSE 1A	20,550m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 1B	19,850m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 2A	20,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 2B	20,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
LOT 14	**80,077m²**
WAREHOUSE 1A	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 1B	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 1C	24,050m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1300m²
LOT 15	**82,432m²**
WAREHOUSE 1A	10,350m²
OFFICE	500m²
WAREHOUSE 1B	9,050m²
OFFICE	500m²
WAREHOUSE 1C	12,250m²
OFFICE	600m²
WAREHOUSE 1D	7,850m²
OFFICE	400m²
TOTAL BLDG AREA (LOT 1 Amenities not included)	**540,800m²**

SITE COVERAGE

TOTAL SITE AREA	1,177,359m²
INTERNAL ROADS	71,013m²
BIO-DETENTION BASIN	14,302m²
BIO-DIVERSITY+25m BUFFER	76,670m²
STORMWATER EASEMENT 1	5,790m²
STORMWATER EASEMENTS (2)	26,074m²
ROAD WIDENING	16,992m²
TOTAL DEVELOPABLE AREA	**966,518m²**
SITE COVERAGE	55.95%

No.	DATE:	REVISION:	BY:	CHK:
P7	26.06.2022	PRELIMINARY ISSUE	JWK	GP
P8	01.08.2022	CIVIL & LOT ALIGNMENT ISSUE	JWK	GP
P9	02.09.2022	CIVIL UPDATES	JWK	GP
P10	26.09.2022	TRUCK MOVEMENT UPDATES	JWK	GP

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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PROJECT:
North Maclean
Crowson Ln, North Maclean, Logan, QLD

TITLE:
MASTERPLAN

CLIENT:
Charter Hall

NOTE :
HARDSTAND LEVELS BASED ON 6.0m EXCLUSION ZONE BELOW LOWEST SAG POINT OF EXISTING POWERLINES INCLUDING 5.0m OPERATIONAL ZONE CLEAR BELOW.
ACCESS TO ELECTRICAL TOWERS FROM COLLECTOR AND PRIVATE ROADS TO CIVIL ENG'S DESIGN
PROVIDE PROTECTION TO TOWERS LOCATED 5m MINIMUM FROM EACH LEG

DATE: MARCH, 2022
DRAWN BY: MB/JWK
SCALE: 1:2500 @ A1
SCALE: 1:5000 @ A3

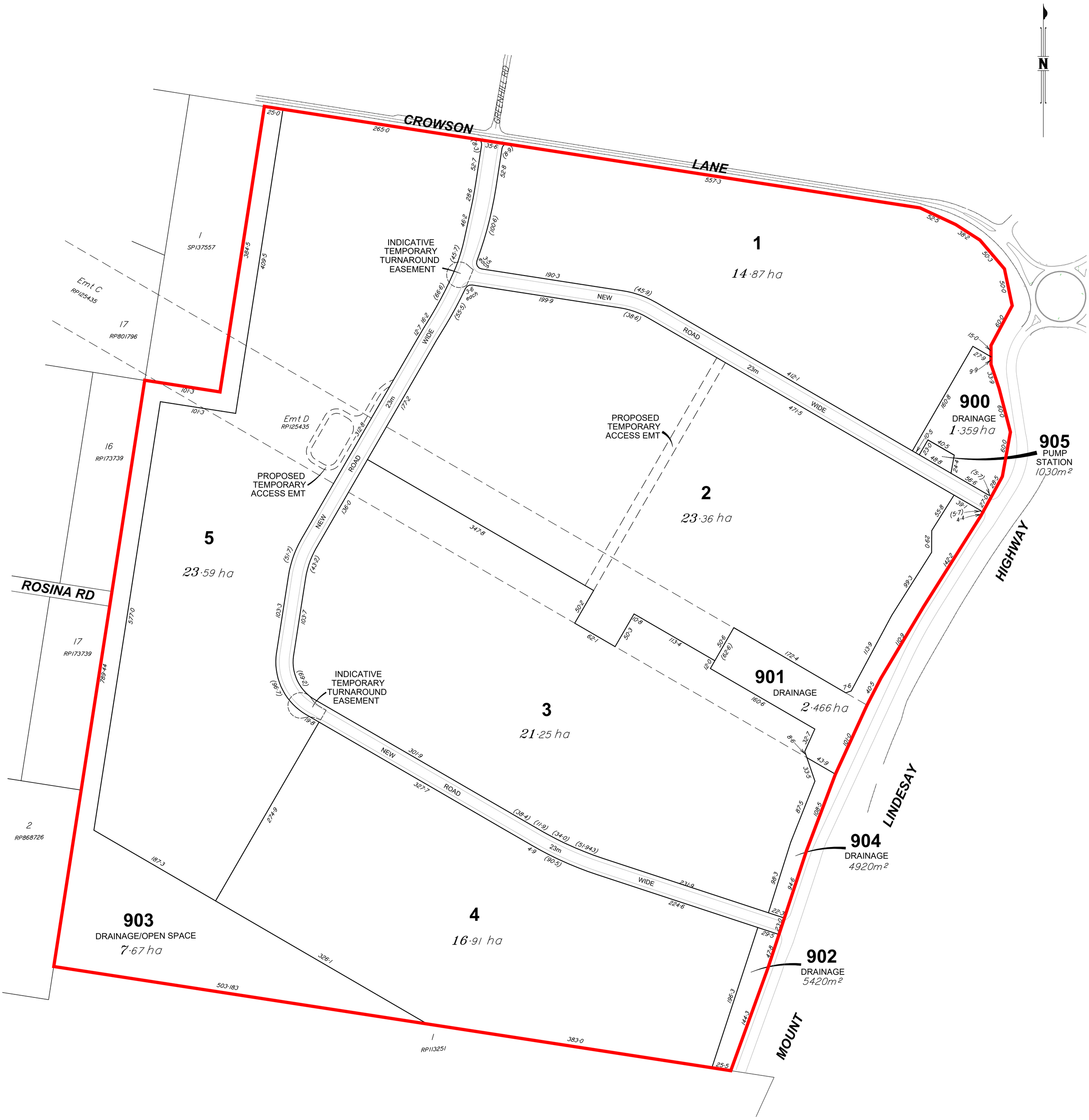
JOB NO: 22055
DRAWING NO: MP01
REVISION: P10

watson young



Appendix B

Plan of Reconfiguration



Notes

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3. Cadastral data supplied by others and is approximate only.

4. Indicative road horizontal design, subject to biopods and engineering review.

5. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

PLANS AND DOCUMENTS
referred to in the
PDA DEVELOPMENT APPROVAL
Approval no.: **DEV2018/961/8**
Date: **27/09/2023**

Queensland Government

Legend

Site Boundary

Stage Boundary

Table of Development

Gross area of subject land	117.9 ha
Area of proposed park, drainage and open space (Including pump station)	12.6 ha
Area of new road	5.32 ha
Length of new road	2299m
Net area of subject land (Excluding park & open space)	99.98 ha
Number of proposed lots	11
Number of existing lots	1

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2500 @ A1 – Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

Plan of Reconfiguration

4499-4651 Mount Lindesay Highway

Description: Lot 39 on SP258739
Local Authority: Logan City

CLIENT
Charter Hall Group

DRAWING NO. 22-0007P/01-02
VERSION E
DATE DRAWN 14-08-2023
SHEET NO. 1 of 1
KB



Appendix C

Staging Plan

N

CROWSON LANE

GREENHILL RD

1
SP137557

Emt C
RP125435

17
RP801796

16
RP173739

17
RP173739

2
RP868726

ROSINA RD

Emt D
RP125435

STAGE 3

5
23·59 ha

PROPOSED TEMPORARY ACCESS EMT

INDICATIVE TEMPORARY TURNAROUND EASEMENT

NEW ROAD 23m WIDE

INDICATIVE TEMPORARY TURNAROUND EASEMENT

1
14·87 ha

STAGE 1

NEW ROAD 23m WIDE

PROPOSED TEMPORARY ACCESS EMT

2
23·36 ha

900
DRAINAGE
1·359 ha

905
PUMP STATION
1030m²

HIGHWAY

3
21·25 ha

STAGE 2

NEW ROAD 23m WIDE

901
DRAINAGE
2·466 ha

LINDESAY

904
DRAINAGE
4920m²

4
16·91 ha

903
DRAINAGE/OPEN SPACE
7·67 ha

902
DRAINAGE
5420m²

MOUNT

1
RP113251

RM

Notes

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5. Indicative road horizontal design, subject to biopods and engineering review.

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PLANS AND DOCUMENTS
referred to in the
PDA DEVELOPMENT APPROVAL
Approval no.: **DEV2018/961/8**
Date: **27/09/2023**

Queensland Government

Legend

- Site Boundary
- Stage Boundary
- Stage 1
- Indicative Temporary Turnaround - Stage 1
- Stage 2
- Indicative Temporary Turnaround - Stage 2
- Stage 3
- RM — Sewer Rising Main

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2500 @ A1 – Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

Staging Sketch Plan

4499-4651 Mount Lindesay Highway

Description
Local Authority

Lot 39 on SP258739
Logan City

CLIENT
Charter Hall Group

DRAWING NO. 22-0007P/01-03

VERSION E

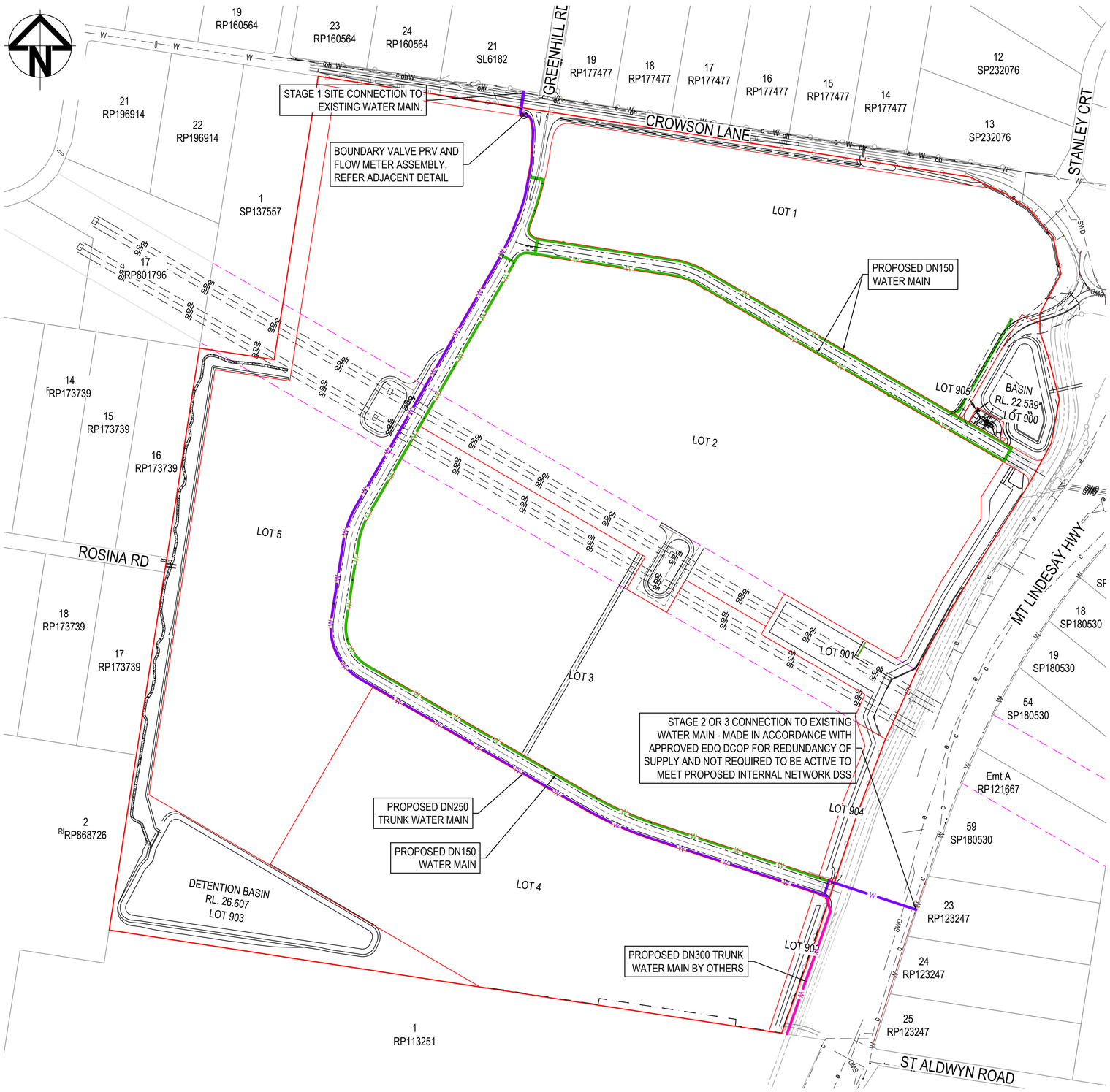
DATE DRAWN 14-08-2023

SHEET NO. 1 of 1

KB

APPENDIX B

Concept Water Network Sizing and Layout Plan

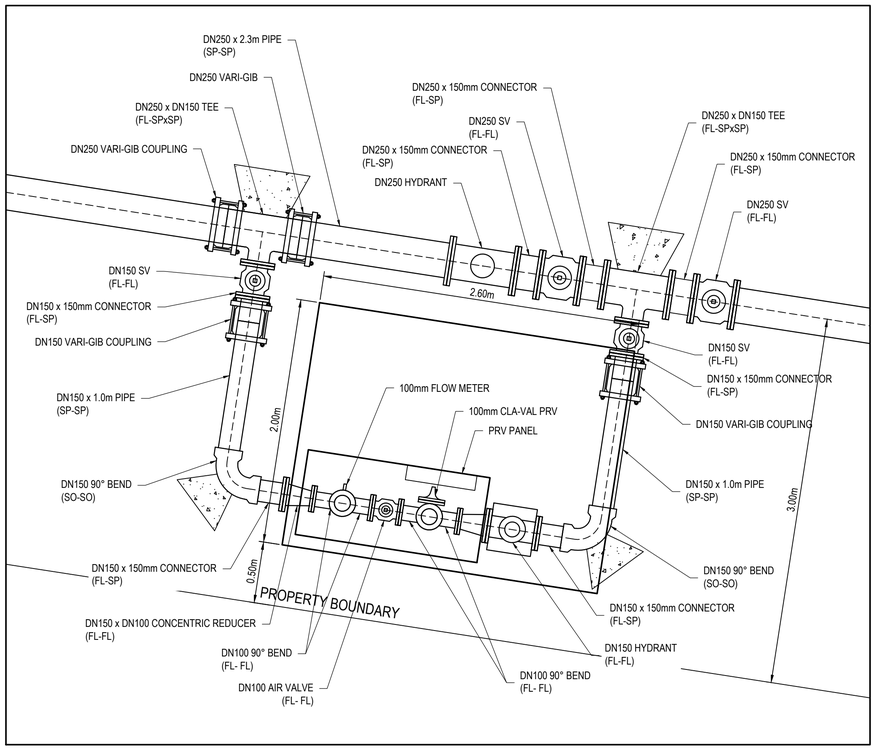


LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING WATER RETICULATION
- EXISTING COMMUNICATIONS
- EXISTING OVERHEAD ELECTRICAL
- POWERLINK EASEMENT
- EXISTING FENCE
- PROPOSED WATER MAIN DN150
- PROPOSED TRUNK WATER MAIN DN250
- PROPOSED TRUNK WATER MAIN DN300
- PROPOSED BOUNDARY PRV AND FLOW METER ASSEMBLY
- PROPOSED ISOLATION VALVE
- PROPOSED STAGE BOUNDARY

NOTE:

1. ISOLATION VALVES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SEQ DRINKING WATER SUPPLY DRAWINGS SEQ-WAT-1102-1, 1103-1 AND 1206-1.
2. BOUNDARY PRV AND FLOW METER ASSEMBLY TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SEQ WATER SUPPLY DRAWINGS SEQ-WAT-1310-5 TO SEQ-WAT-1310-10



CROWSON LANE PRV DETAIL

SCALE 1 : 25

Issue	Description	DR	CH	VE	Date
03	PRV DETAIL ADDED				09.02.24
02	AMENDED WATER NETWORK LAYOUT				23.01.23
01	ORIGINAL ISSUE	GP	GP	BK	8.08.23

Scales: 0 30 60 120 180 240 300m — 1 : 3000

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY — NOT TO BE USED FOR CONSTRUCTION

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Original Issue Signatures

Drawn	G.PUMNUT	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	T.FANNING	Grid	
Verified	B.KITSON	R.P.E.Q. No: 7884 Date 21/12/2023	

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title: OVERALL WATER MAIN SKETCH LAYOUT PLAN

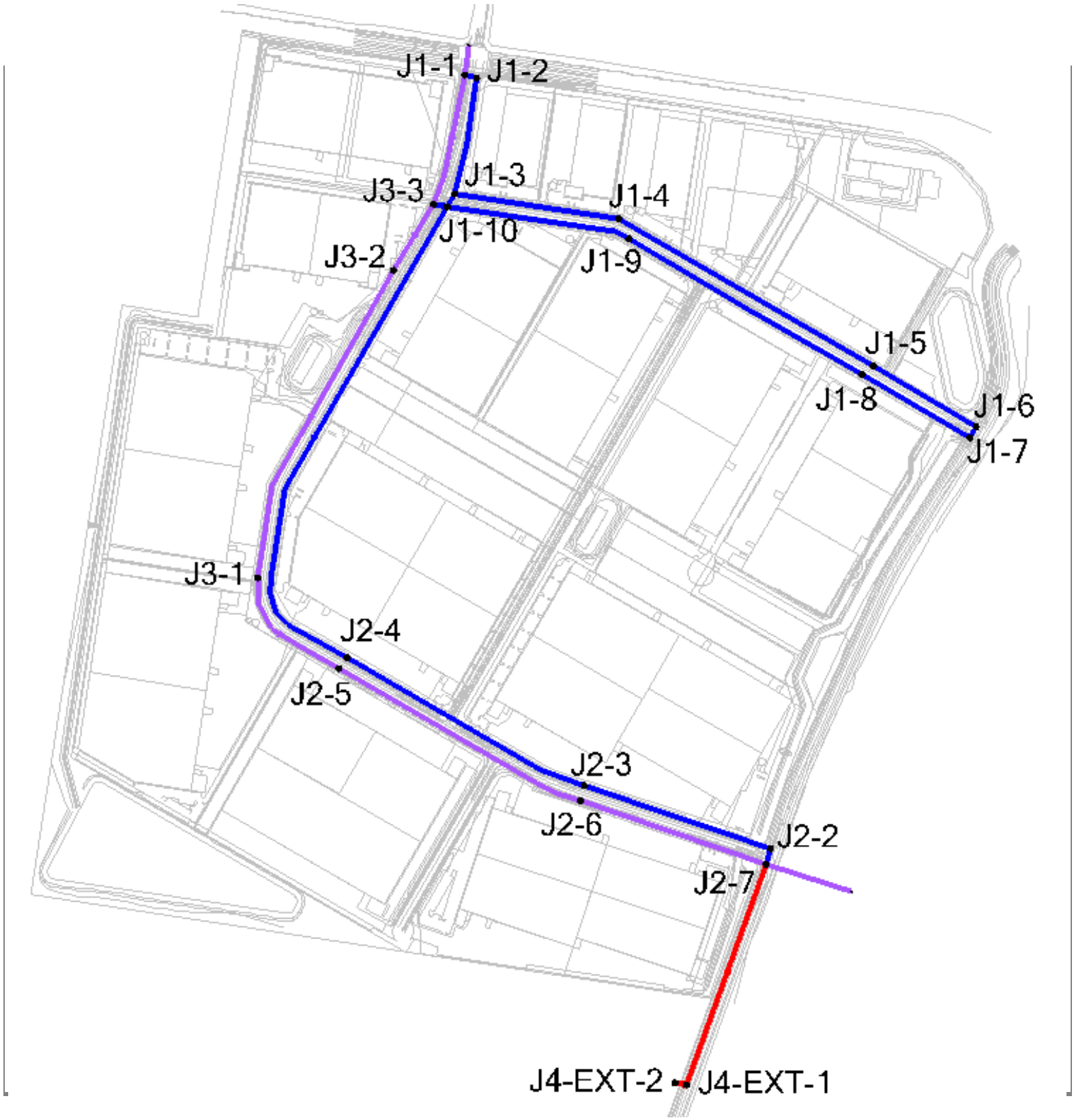
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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334 -	AAP -	WS00OP -	CV -	SKT -	031 -	03

APPENDIX C

EP Water Demand Calculations & WaterCAD Modelling Results

WATER NETWORK MODEL JUNCTION LABELLING PLAN



PROJECT:	North Maclean	**Author:**	**MC**
PROJECT NUMBER:	30109334	**Software:**	**WaterCad**
DATE:	23/08/2023		

WaterCAD Connect Edition 10.01.01.04

ARCADIS Design & Consultancy for natural and built assets

STAGE	Lot Number	Lot Area (Ha)	Lot Number	Med Industrial Site (GFA)	Service Station (ha)	EP	10% Contingency	Total Eps	AD (L/s)	NRW (L/s)	MDMM (L/s)	PD (L/s)	PH (L/s)	PH+NRW Design Flow (L/s)
1	Lot 1	3.099	Lot 1		0.5	49	5	54	0.10	0.02	0.12	0.13	0.17	0.19
1	Lot 2	3.1274	Lot 2	2.11		100	10	110	0.21	0.03	0.25	0.27	0.36	0.39
1	Lot 3	2.4981	Lot 3	1.305		62	6	68	0.13	0.02	0.16	0.17	0.22	0.24
1	Lot 4	1.7479	Lot 4	0.835		39	4	43	0.08	0.01	0.10	0.11	0.14	0.15
1	Lot 5	1.5005	Lot 5	0.72		34	3	37	0.07	0.01	0.09	0.09	0.12	0.13
1	Lot 6	1.5503	Lot 6	0.685		32	3	36	0.07	0.01	0.08	0.09	0.12	0.13
1	Lot 9	10.8081	Lot 9	6.36		301	30	331	0.63	0.10	0.76	0.82	1.07	1.17
1	Lot 10	12.0643	Lot 10	7.28		344	34	378	0.72	0.11	0.87	0.94	1.23	1.34
2	Lot 11	10.9982	Lot 11	6.525		308	31	339	0.65	0.10	0.78	0.84	1.10	1.20
2	Lot 12	9.8224	Lot 12	5.805		274	27	302	0.58	0.09	0.69	0.75	0.98	1.07
2	Lot 14	8.0077	Lot 14	5.095		241	24	265	0.51	0.08	0.61	0.66	0.86	0.94
2	Lot 15	8.2432	Lot 15	4.15		196	20	216	0.41	0.06	0.49	0.54	0.70	0.76
3	Lot 7	4.9645	Lot 7	2.63		124	12	137	0.26	0.04	0.31	0.34	0.44	0.48
3	Lot 8	3.9921	Lot 8	2.02		95	10	105	0.20	0.03	0.24	0.26	0.34	0.37
3	Lot 13	14.228	Lot 13	8.56		404	40	445	0.85	0.13	1.02	1.10	1.44	1.57
4	External Lot	16.0435	External Lot	11.23045		531	53	584	1.11	0.17	1.34	1.45	1.90	2.06
Total				65.31045		3135	313	3448	6.59	1.00	7.90	8.56	11.19	12.19

Author: Mike Cazeres

PROJECT: 30109334 **Software:** WaterCAD Connect Edition

DATE: 21/01/2024

ULTIMATE + EXTERNAL SCENARIO MODELLING RESULTS

ARCADIS Design & Consultancy for natural and built assets

		STANDARD FLOW		FIRE FLOW			
ELEVATION (m)	JUNCTION LABEL NUMBER	MIN. PRESSURE (PH) (m)	MAX. PRESSURE (AD) (m)	FLOW NEEDED (L/s)	SATISFIES FF	MIN. RESIDUAL PRESSURE (m)	MAX. VELOCITY (m/s)
32.0	J1-1	36.85	38.43	30.00	TRUE	24.40	1.36
30.5	J1-10	38.32	39.91	30.00	TRUE	24.91	1.36
32.0	J1-2	36.85	38.43	30.00	TRUE	24.04	1.71
30.5	J1-3	38.32	39.91	30.00	TRUE	24.87	1.36
27.5	J1-4	41.29	42.9	30.00	TRUE	25.52	1.36
25.0	J1-5	43.77	45.39	30.00	TRUE	26.35	1.36
24.5	J1-6	44.27	45.88	30.00	TRUE	26.70	1.36
25.0	J1-7	43.77	45.38	30.00	TRUE	26.19	1.36
25.5	J1-8	43.27	44.89	30.00	TRUE	25.81	1.36
27.5	J1-9	41.28	42.89	30.00	TRUE	25.27	1.36
25.5	J2-2	43.25	44.87	30.00	TRUE	27.81	1.36
27.0	J2-3	41.75	43.38	30.00	TRUE	24.80	1.36
29.5	J2-4	39.26	40.88	30.00	TRUE	21.81	1.36
29.5	J2-5	39.27	40.89	30.00	TRUE	24.57	1.36
27.0	J2-6	41.75	43.38	30.00	TRUE	26.71	1.36
25.5	J2-7	43.25	44.87	30.00	TRUE	27.99	1.36
30.5	J3-1	38.28	39.89	30.00	TRUE	23.77	1.36
32.0	J3-2	36.81	38.41	30.00	TRUE	22.88	1.36
31.0	J3-3	37.82	39.41	30.00	TRUE	24.52	1.36
31.0	J4-EXT-1	37.76	39.38	30.00	TRUE	22.30	1.36
31.0	J4-EXT-2	37.76	39.38	30.00	TRUE	22.28	1.36

Author: Mike Cazeres

PROJECT: 30109334 **Software:** WaterCAD Connect Edition

DATE: 21/01/2024

ULTIMATE SCENARIO MODELLING RESULTS

ARCADIS Design & Consultancy for natural and built assets

		STANDARD FLOW		FIRE FLOW			
ELEVATION (m)	JUNCTION LABEL NUMBER	MIN. PRESSURE (PH) (m)	MAX. PRESSURE (AD) (m)	FLOW NEEDED (L/s)	SATISFIES FF	MIN. RESIDUAL PRESSURE (m)	MAX. VELOCITY (m/s)
32.0	J1-1	37.58	38.83	30.00	TRUE	25.41	0.73
30.5	J1-10	39.05	40.31	30.00	TRUE	26.49	1.12
32.0	J1-2	37.57	38.83	30.00	TRUE	25.20	1.29
30.5	J1-3	39.05	40.31	30.00	TRUE	26.40	1.05
27.5	J1-4	42.02	43.3	30.00	TRUE	27.07	1.17
25.0	J1-5	44.5	45.79	30.00	TRUE	27.92	1.10
24.5	J1-6	45	46.29	30.00	TRUE	28.26	1.10
25.0	J1-7	44.5	45.79	30.00	TRUE	27.76	1.10
25.5	J1-8	44	45.29	30.00	TRUE	27.38	1.10
27.5	J1-9	42.01	43.3	30.00	TRUE	26.85	1.17
25.5	J2-2	44.01	45.29	30.00	TRUE	29.88	1.23
27.0	J2-3	42.5	43.79	30.00	TRUE	26.75	1.02
29.5	J2-4	40.01	41.3	30.00	TRUE	23.66	0.83
29.5	J2-5	40.02	41.3	30.00	TRUE	26.65	0.73
27.0	J2-6	42.51	43.8	30.00	TRUE	28.80	0.73
25.5	J2-7	44.01	45.29	30.00	TRUE	30.08	0.73
30.5	J3-1	39.03	40.31	30.00	TRUE	25.85	0.73
32.0	J3-2	37.55	38.82	30.00	TRUE	24.97	0.73
31.0	J3-3	38.55	39.82	30.00	TRUE	26.14	0.73
31.0	J4-EXT-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
31.0	J4-EXT-2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

Author: Mike Cazeres

PROJECT: 30109334 **Software:** WaterCAD Connect Edition

DATE: 21/01/2024

STAGE 1 + 2 SCENARIO MODELLING RESULTS

ARCADIS Design & Consultancy for natural and built assets

		STANDARD FLOW		FIRE FLOW			
ELEVATION (m)	JUNCTION LABEL NUMBER	MIN. PRESSURE (PH) (m)	MAX. PRESSURE (AD) (m)	FLOW NEEDED (L/s)	SATISFIES FF	MIN. RESIDUAL PRESSURE (m)	MAX. VELOCITY (m/s)
32.0	J1-1	38.39	39.29	30.00	TRUE	26.32	0.70
30.5	J1-10	39.87	40.78	30.00	TRUE	27.42	1.13
32.0	J1-2	38.39	39.29	30.00	TRUE	26.11	1.28
30.5	J1-3	39.87	40.78	30.00	TRUE	27.32	1.05
27.5	J1-4	42.84	43.76	30.00	TRUE	27.99	1.17
25.0	J1-5	45.32	46.25	30.00	TRUE	28.84	1.10
24.5	J1-6	45.82	46.75	30.00	TRUE	29.19	1.11
25.0	J1-7	45.32	46.25	30.00	TRUE	28.69	1.11
25.5	J1-8	44.82	45.75	30.00	TRUE	28.30	1.11
27.5	J1-9	42.83	43.76	30.00	TRUE	27.77	1.17
25.5	J2-2	44.84	45.76	30.00	TRUE	30.86	1.24
27.0	J2-3	43.33	44.26	30.00	TRUE	27.71	1.02
29.5	J2-4	40.84	41.77	30.00	TRUE	24.61	0.83
29.5	J2-5	40.86	41.77	30.00	TRUE	27.63	0.70
27.0	J2-6	43.35	44.27	30.00	TRUE	29.78	0.70
25.5	J2-7	44.84	45.76	30.00	TRUE	31.06	0.70
30.5	J3-1	39.86	40.78	30.00	TRUE	26.83	0.70
32.0	J3-2	38.37	39.28	30.00	TRUE	25.91	0.70
31.0	J3-3	39.37	40.28	30.00	TRUE	27.07	0.70
31.0	J4-EXT-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
31.0	J4-EXT-2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

Author: Mike Cazeres

PROJECT: 30109334 **Software:** WaterCAD Connect Edition

DATE: 21/01/2024

STAGE 1 SCENARIO MODELLING RESULTS

ARCADIS Design & Consultancy for natural and built assets

		STANDARD FLOW		FIRE FLOW			
ELEVATION (m)	JUNCTION LABEL NUMBER	MIN. PRESSURE (PH) (m)	MAX. PRESSURE (AD) (m)	FLOW NEEDED (L/s)	SATISFIES FF	MIN. RESIDUAL PRESSURE (m)	MAX. VELOCITY (m/s)
32.0	J1-1	39.6	40	30.00	TRUE	27.76	0.65
30.5	J1-10	41.03	41.47	30.00	TRUE	25.01	1.71
32.0	J1-2	39.59	40	30.00	TRUE	27.41	1.71
30.5	J1-3	41.04	41.47	30.00	TRUE	25.36	1.71
27.5	J1-4	44.01	44.46	30.00	TRUE	25.94	1.71
25.0	J1-5	46.49	46.94	30.00	TRUE	26.74	1.71
24.5	J1-6	46.99	47.44	30.00	TRUE	27.06	1.71
25.0	J1-7	46.49	46.94	30.00	TRUE	26.56	1.71
25.5	J1-8	45.99	46.44	30.00	TRUE	26.16	1.71
27.5	J1-9	44	44.45	30.00	TRUE	25.55	1.71
25.5	J2-2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
27.0	J2-3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
29.5	J2-4	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
29.5	J2-5	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
27.0	J2-6	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
25.5	J2-7	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
30.5	J3-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
32.0	J3-2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
31.0	J3-3	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
31.0	J4-EXT-1	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
31.0	J4-EXT-2	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

APPENDIX D

Logan Water Draft Technical Memorandum DD8001 North Maclean

Technical Memorandum

To: Water Infrastructure Project Development Program Leader

From: **M Seymour (Planning Engineer)**

Actioned by: Click or tap here to enter text.

Date: 21 July 2022

Reference: DD8001 North Maclean

Subject: **Load Projections for North Maclean PDA**

1. Overview

The purpose of this memo is to confirm the estimated loads associated with the North Maclean PDA based on the best available current information as provided by developers.

1.1 Developer Information

The developer of "Charter Hall – Industrial Subdivision", 4499-4651 Mount Lindesay Highway, North Maclean is represented by Arcadis who have provided several plans showing the extent of the development that they are proposing. These are included in Attachment A. The development areas within the North Maclean PDA are shown in Figure 1.

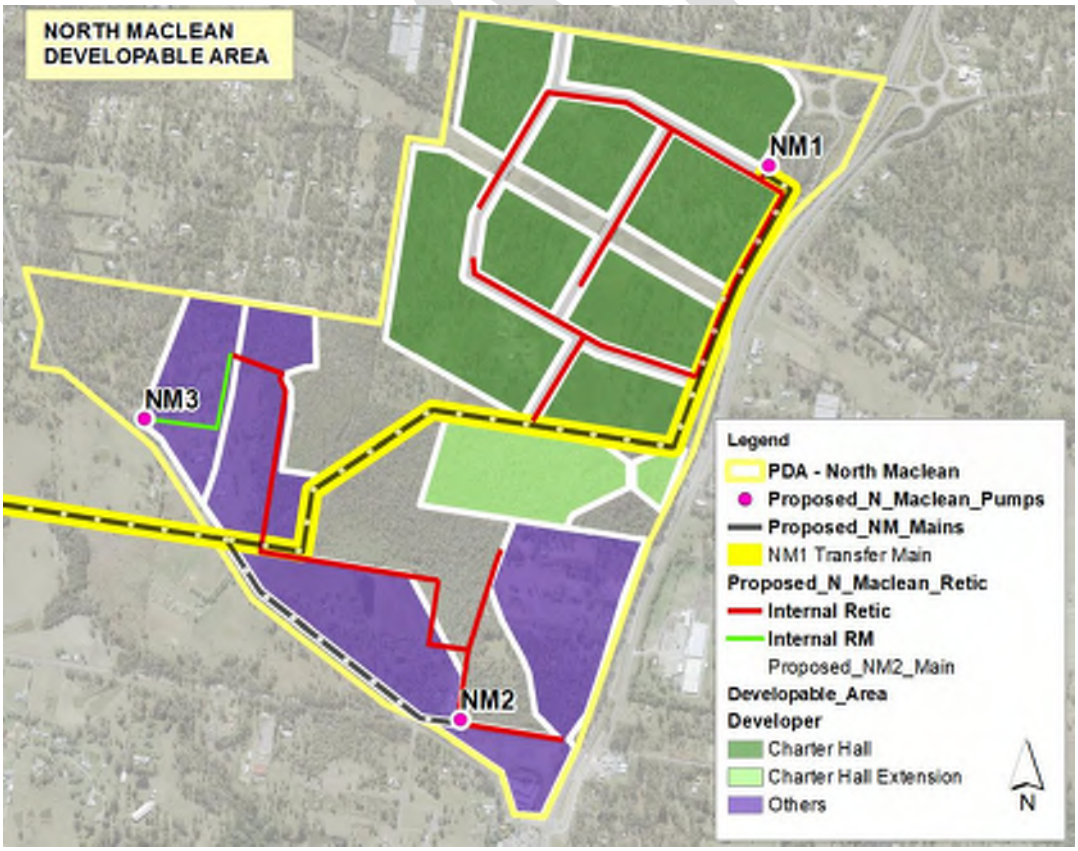


Figure 1: Development areas

The development areas include:

- Charter Hall subdivision which is the main focus for development (represented by Arcadis)

- Charter Hall extension immediately south of the main focus of development (also represented by Arcadis
- Development areas draining to NM2 and NM3 (number of individual property owners)

Preliminary development plans have been submitted by Arcadis (developer's representative) for areas draining to NM1 transfer pump station.

The North Maclean PDA has been designated as an industrial precinct. The Charter Hall sub-division has not indicated the type of development (i.e. light, medium or heavy industry) and this will depend on the individual lot sales.

1.1.1 Development Constraints

The main constraint within the North Maclean PDA is flooding and Arcadis is proposing significant earthworks to raise the area above the Q100 flood level shown in Figure 2. They will also be installing stormwater basins and drainage channels.

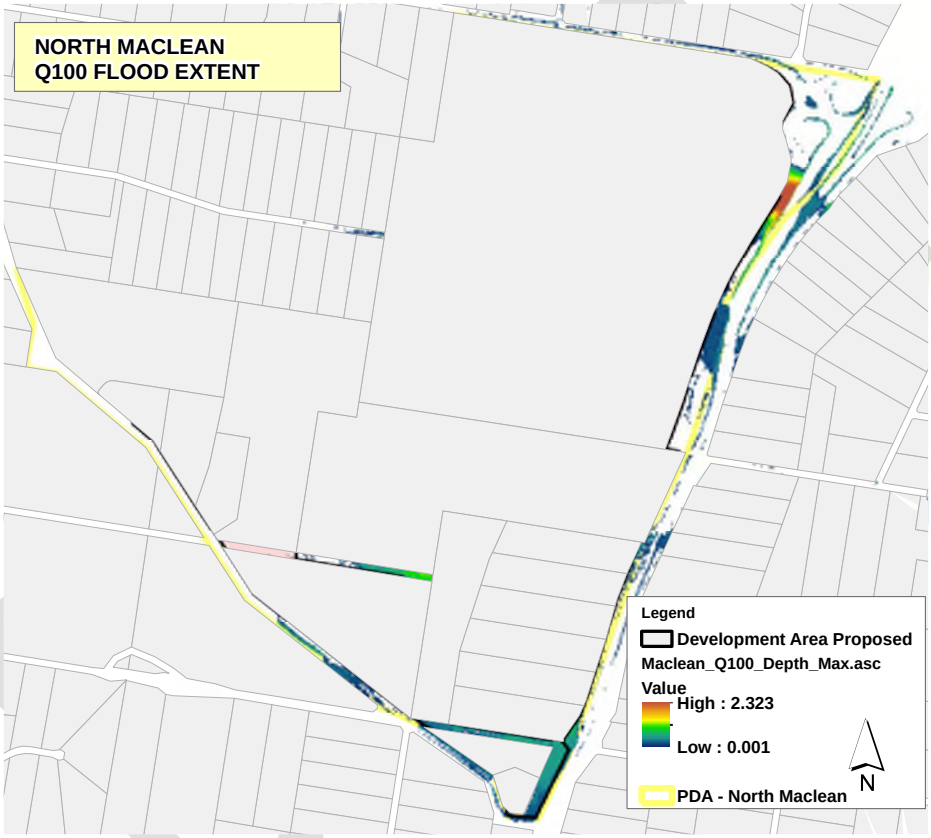


Figure 2: Q100 Flood Constraints

Arcadis have submitted bulk earthworks plans for the areas proposed for development. These are shown in Figure 3 and Figure 4.



Figure 3: Bulk Earthworks in Charter Hall Subdivision

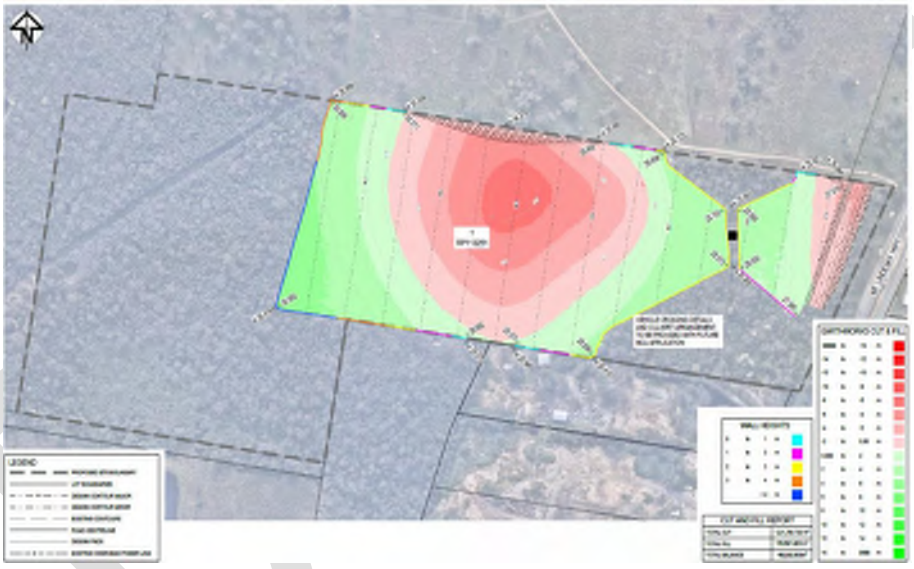


Figure 4: Bulk Earthworks in Charter Hall extension area.

2. Load assumptions

The North Maclean PDA is a designated industrial use precinct. The load estimates have been based on the following table extract from the task report “Infrastructure Demand Model 2020 (IP0017), September 2021. The industrial conversion rates were based on typical water consumption rates associated with several non-residential uses along with a return to sewer factor.

Table 4-2: Non-residential conversion rates – Base Year and/or growth years*

IDM Development Type	Average Water Consumption Method Adopted	Conversion Rates - Water		Return to Sewer (%)	Conversion Rates - Sewage	
		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)
Commercial	GFA, 5th-95th %ile	-	55.90	0.90	-	50.31
Office	As per Commercial		55.90	0.90		50.31
Warehouse Distribution	As per Commercial		55.90	0.90		50.31
Education	GFA, 5th-95th %ile	-	105.30	0.80	-	84.24
Health	GFA, 5th-95th %ile	-	226.50	0.90	-	203.85
Industry Heavy	50% above Light Industrial	-	56.60	0.80	-	45.28
Industry Medium	25% above Light Industrial	-	47.25	0.80	-	37.80
Industry Light	GFA, 5th-95th %ile	-	37.80	0.80	-	30.24
Sport Recreation	Gross, 10th-90th %ile	1.05	-	0.90	0.945	-
Rural	Based on Water Meter Consumption	-	-	-	-	-
Retail Services	GFA, 5th-95th %ile	-	97.60	0.90	-	87.84
Showroom Bulk Goods	GFA, 5th-95th %ile	-	110.80	0.90	-	99.72
Accommodation	GFA, 5th-95th %ile	-	233.90	0.90	-	210.51

Reference: Table 7.2 Development of Infrastructure Demand Model, LWIA 2018 (PI-181).

Table 1: Non-residential conversion rates

Industrial use was subdivided into consumption rates for light, medium and heavy industry. It should be noted that these are averages and in the case of very high users such as bottling plants, abattoirs, concrete manufacturers, etc individual assessments of load will be necessary.

The consumption rates have been based on GFA and it has been assumed that this is equal to 70% of the developable area that excludes roads, public open space and stormwater lagoons and drainage channels, etc.

The ultimate loads were determined for the developable areas assuming light, medium and heavy industrial uses.

In the absence of any growth rate assumptions from the developer it has been assumed that.

- North Maclean 1 Pump Station catchment
    - 10% of the ultimate load in 2023
    - 90% of ultimate load in 2051
- North Maclean 2 and 3 pump station catchments
    - 10 % of the ultimate load in 2026
    - 90% of the ultimate load in 2051

Ultimate development is assumed in 2081 and linear growth has been assumed between 2023 / 2026 and 2051.

I should be noted that the growth rates are unlikely to have any impact on the transfer infrastructure which has been sized on ultimate loads.

3. Load Estimates and Projection

Figure 5 includes the pump stations servicing the North Maclean PDA.

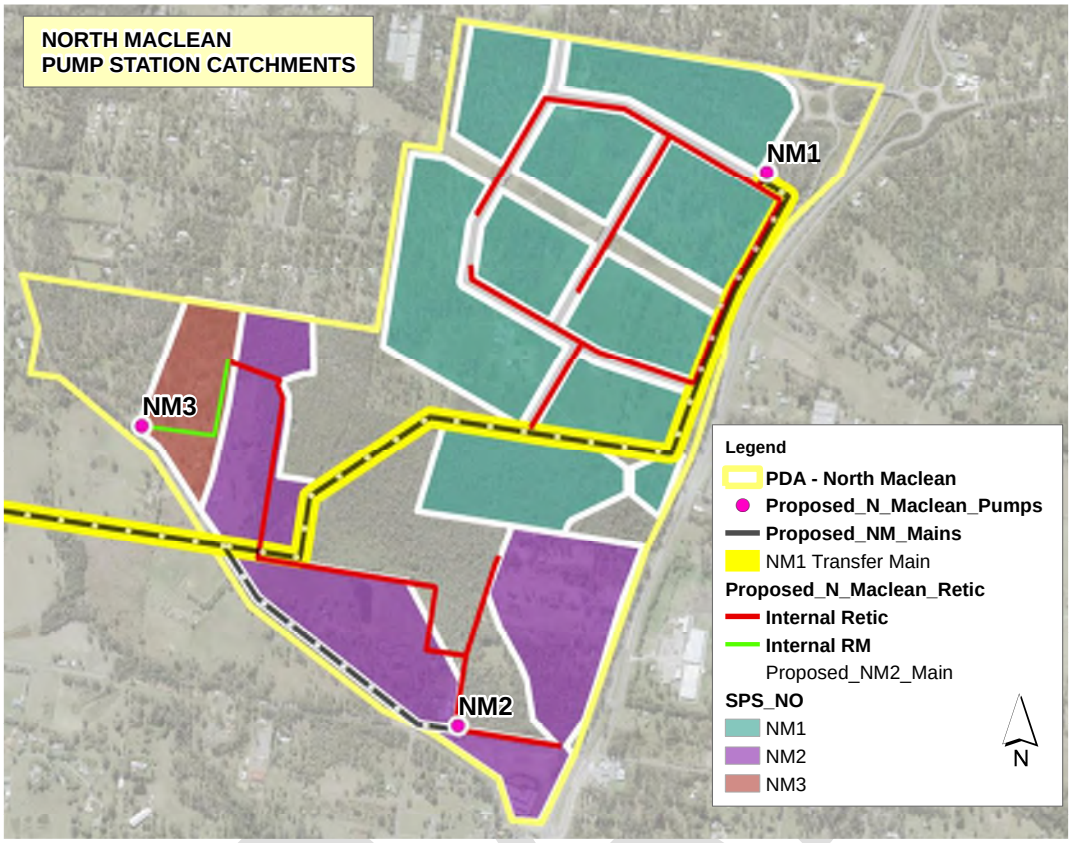


Figure 5: North Maclean pump station catchments

There are three pump stations, NM1 and NM2 are transfer pump stations and inject into a common rising main. NM3 is an internal pump station, and it transfers load to NM2 pump station via internal reticulation.

The ultimate loads have been estimated for the three pump stations and these are included in Table 2.

Table 2: Ultimate Loads

SPS NO	Developable Lot Area Ha	GFA Ha (1)	Light Ind EP (2)	Med Ind EP (3)	Heavy Ind EP (4)	IDM EP ULT
NM1	105	74	2,228	2,785	3,336	3,460
NM2	55	38	1,164	1,455	1,743	1,880
NM3	11	8	230	288	345	255
NM2 Total	66	46	1,394	1,743	2,088	2,135
Totals:	**171**	**120**	**3,623**	**4,528**	**5,424**	**5,595**

Note:
1. GFA assumed 70% of Developable Area
2. Light Industry: 30.24 EP / HA (based on GFA)
3. Medium Industry: 37.80 EP / HA (based on GFA)
4. Heavy Industry: 45.28 EP / HA (based on GFA)

Table 2 also includes ultimate loads for light, medium and heavy industry along with IDM2020 assumptions. The IDM_2020 load assumed in earlier studies was 5,595 EP.

The loads based on industrial use along with projections are included in Table 3.

Table 3: North Maclean PDA – Projected Loads

Medium Industry (3)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	279	517	915	1,313	1,711	2,507	2,785	105	74
NM2		*146*	*349*	*553*	*757*	*1,164*	*1,455*	*55*	*38*
NM3		*29*	*69*	*109*	*150*	*230*	*288*	*11*	*8*
NM2 Total		174	418	662	906	1,394	1,743	66	46
Totals:	**279**	**692**	**1,333**	**1,975**	**2,617**	**3,901**	**4,528**	**171**	**120**

Light Industry (2)

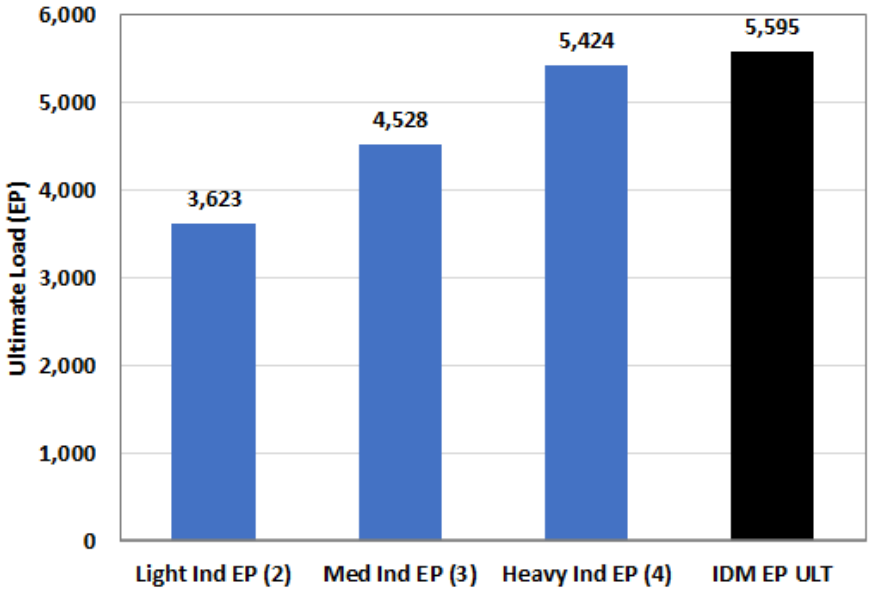
SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	223	414	732	1,050	1,369	2,005	2,228	105	74
NM2		*116*	*279*	*442*	*605*	*931*	*1,164*	*55*	*38*
NM3		*23*	*55*	*87*	*120*	*184*	*230*	*11*	*8*
NM2 Total		139	335	530	725	1,115	1,394	66	46
Totals:	**223**	**553**	**1,067**	**1,580**	**2,094**	**3,121**	**3,623**	**171**	**120**

Heavy Industry (4)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	334	620	1,096	1,573	2,050	3,003	3,336	105	74
NM2		*174*	*418*	*662*	*906*	*1,395*	*1,743*	*55*	*38*
NM3		*34*	*83*	*131*	*179*	*276*	*345*	*11*	*8*
NM2 Total		209	501	793	1,086	1,670	2,088	66	46
Totals:	**334**	**828**	**1,597**	**2,366**	**3,135**	**4,673**	**5,424**	**171**	**120**

Note:
1. GFA assumed 70% of Developable Area
2. Light Industry: 30.24 EP / HA (based on GFA)
3. Medium Industry: 37.80 EP / HA (based on GFA)
4. Heavy Industry: 45.28 EP / HA (based on GFA)

The following Figure 6 compares the ultimate loads based on the industrial use and the IDM_2020 assumption.



Note:

1 *GFA assumed 70% of Developable Area*
2 *Light Industry* 30.24 EP / HA (based on GFA)
3 *Medium Industry* 37.80 EP / HA (based on GFA)
4 *Heavy Industry* 45.28 EP / HA (based on GFA)

Figure 6: Ultimate Loads based on Industrial Use

The growth rates included in Table 3 are shown in the following Figure 7, Figure 8 and Figure 9 for the NM1 and NM2 transfer pump stations and the total North Maclean PDA load.

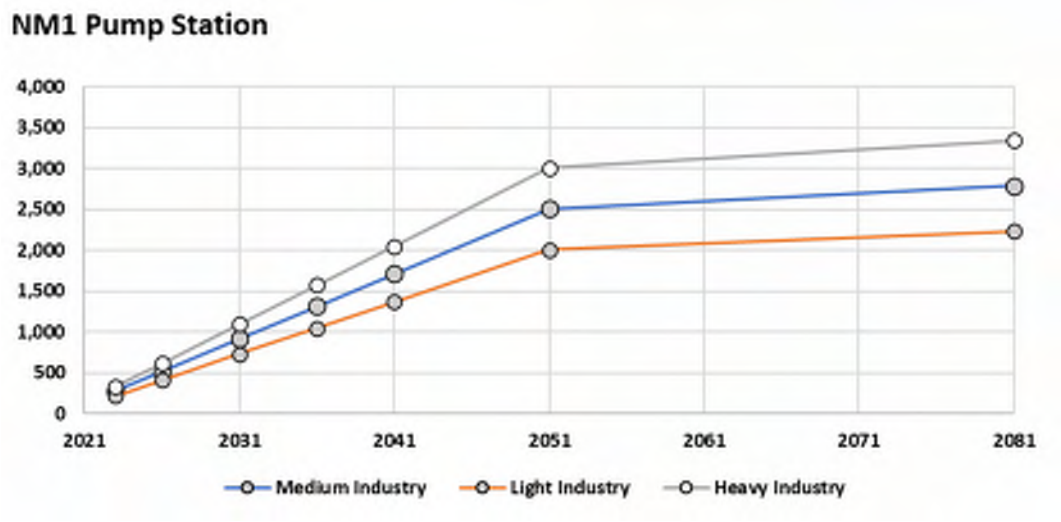


Figure 7: North Maclean 1 Pump Station – Growth Projections

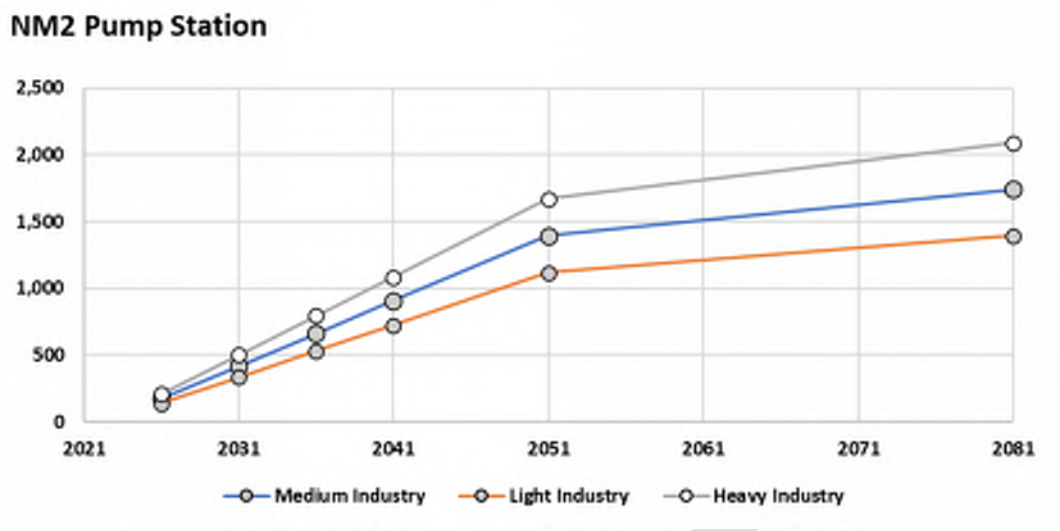


Figure 8: North Maclean 2 Pump Station – Growth Projections

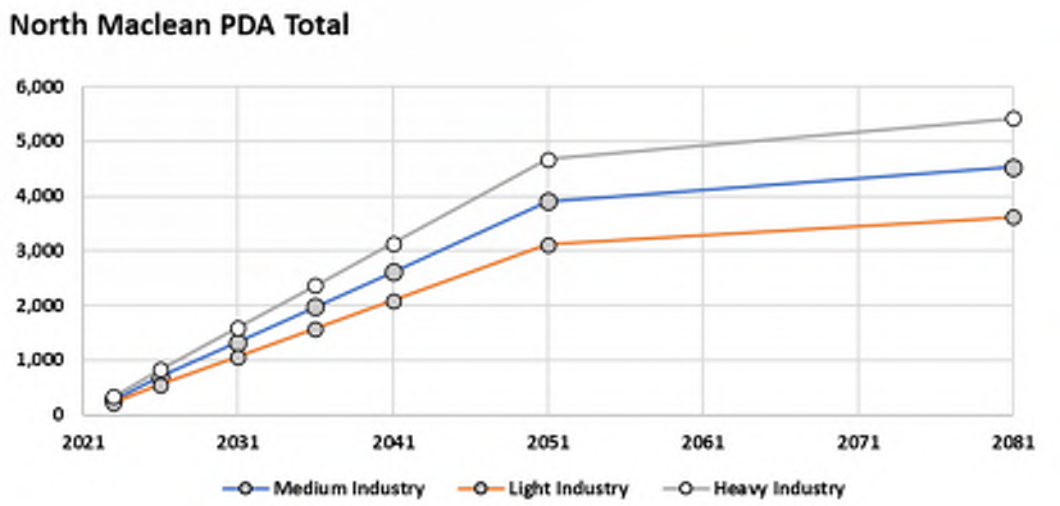


Figure 9: North Maclean PDA – Growth Projections

The type of industry will impact on the loads

- Light Industry 3,623 EP or 65% of IDM 2020 load (5,595 EP)
- Medium Industry 4,528 EP or 81% of IDM 2020 load (5,595 EP)
- Heavy industry 5,424 EP or 97% of IDM 2020 load (5,595 EP)

Indications are that the industrial development is unlikely to be heavy industrial use and will be a mix of light and medium industry.

4. Conclusions

In the absence of more accurate indication of uses it is proposed to adopt the loads based on medium industrial loads. It is unlikely to result in any significant reduction in infrastructure sizing and will allow for some flexibility if there is a need to service any industry with high sewage loads.

5. Recommendations

It is recommended that Logan Water adopt the loads included in Table 4 for development within the North Maclean PDA:

Table 4: Recommended Loads for North Maclean PDA (based on Medium Industrial use)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT
NM1	279	517	915	1,313	1,711	2,507	2,785
NM2		*146*	*349*	*553*	*757*	*1,164*	*1,455*
NM3		*29*	*69*	*109*	*150*	*230*	*288*
NM2 Total		174	418	662	906	1,394	1,743
Totals:	**279**	**692**	**1,333**	**1,975**	**2,617**	**3,901**	**4,528**

Signed by

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DRAFT

Attachment 1: Developer Drawings

DRAFT

APPENDIX E

Logan Flow and Pressure Modelling Report - 2021

Hydrant Pressure and Flow Modelling Report

Preamble

This Hydrant Pressure and Flow Modelling Report presents a theoretical estimate of the residual pressure in the water main at the nominated location when water is taken from the system at the indicated flow rate. The information has not been verified by field tests and is presented for information purposes only. Please refer to the limitations described at the end of the report.

It is strongly suggested that field tests are conducted to verify the theoretical results. Note that pressure management has been implemented and it may take up to 60 seconds for the control valve in the water supply network to respond to increases in fire flow demand.

Method

The Hydrant Curve function is used in the H2OMap network modelling software to simulate an increasing demand at a nominated hydrant in the water supply network with peak hour background demand. The residual pressure in the water supply network at the hydrant is calculated by the model for each increase in flow.

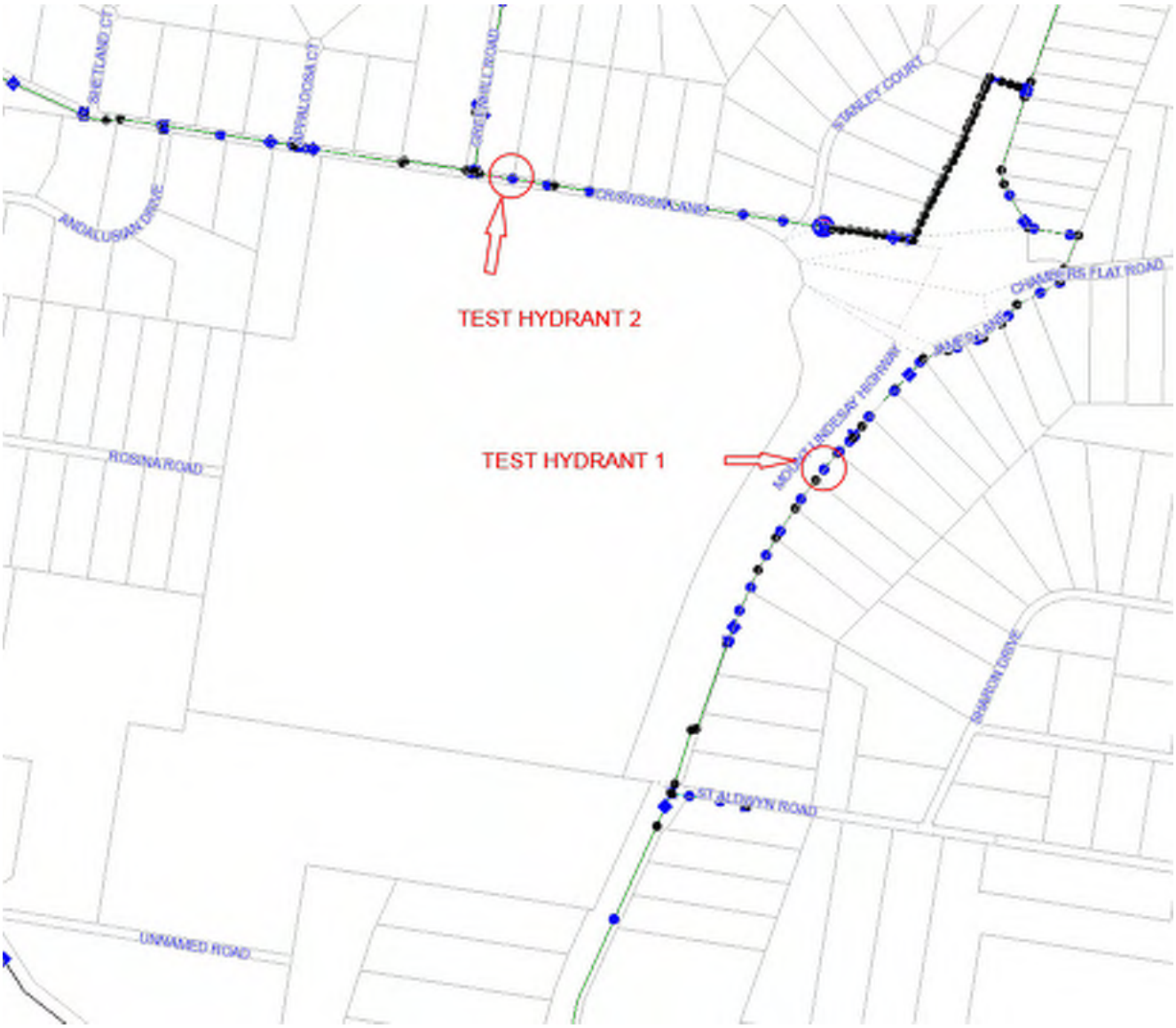
Location

The subject property details and test hydrant locations are provided in Table 1 and the locations of test hydrants are shown in Figure 1.

Table 1 Hydrant Location and Network Parameters

Subject Property Details	
Property Address	4499-4651 Mount Lindesay Highway
Hydrant and Network Parameters – Test Hydrant –connection point 1	
Test Hydrant Asset ID	WFH019651
Hydrant Location	Eastern Verge of Mount Lindesay Highway (at 4556-4564 Mount Lindesay Highway)
Node Elevation (m)	20.97 m AHD
Hydrant and Network Parameters – Test Hydrant –connection point 2	
Test Hydrant Asset ID	WFH019651
Hydrant Location	Northern Verge of Crowson Lane (at 101-109 Crowson Lane)
Node Elevation (m)	30.56 m AHD

Figure 1 Hydrant Test Locations



Results

The results of the hydraulic modelling are presented in Table 2. A graphical representation of the hydrant curve results are shown in Figure 2 and Figure 3.

Table 2 Hydrant Test Results

Normal Supply Conditions /(Peak Day Analysis)		
Hydrant		
Available Flow (L/s)	**Test Hydrant 1- Residual Pressure (m)**	**Test Hydrant 2- Residual Pressure (m)**
0.00	54.14	42.31
5.00	49.66	40.56
10.00	48.19	39.00
15.00	46.33	37.40
20.00	44.08	35.40
25.00	41.51	33.13
30.00	38.64	30.64
35.00	35.47	27.94
40.00	32.03	25.05
45.00	28.34	22.00
50.00	24.34	18.76

Figure 2 Hydrant Curve for test hydrant 1

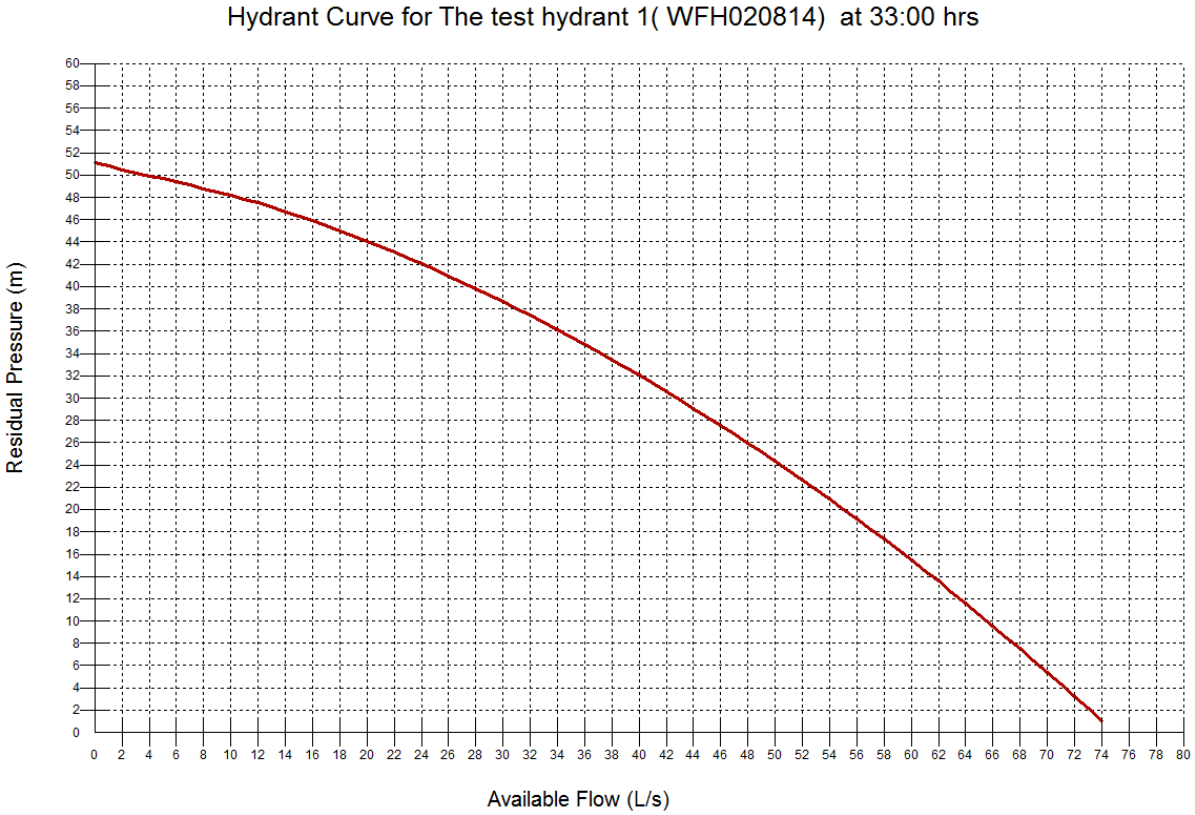
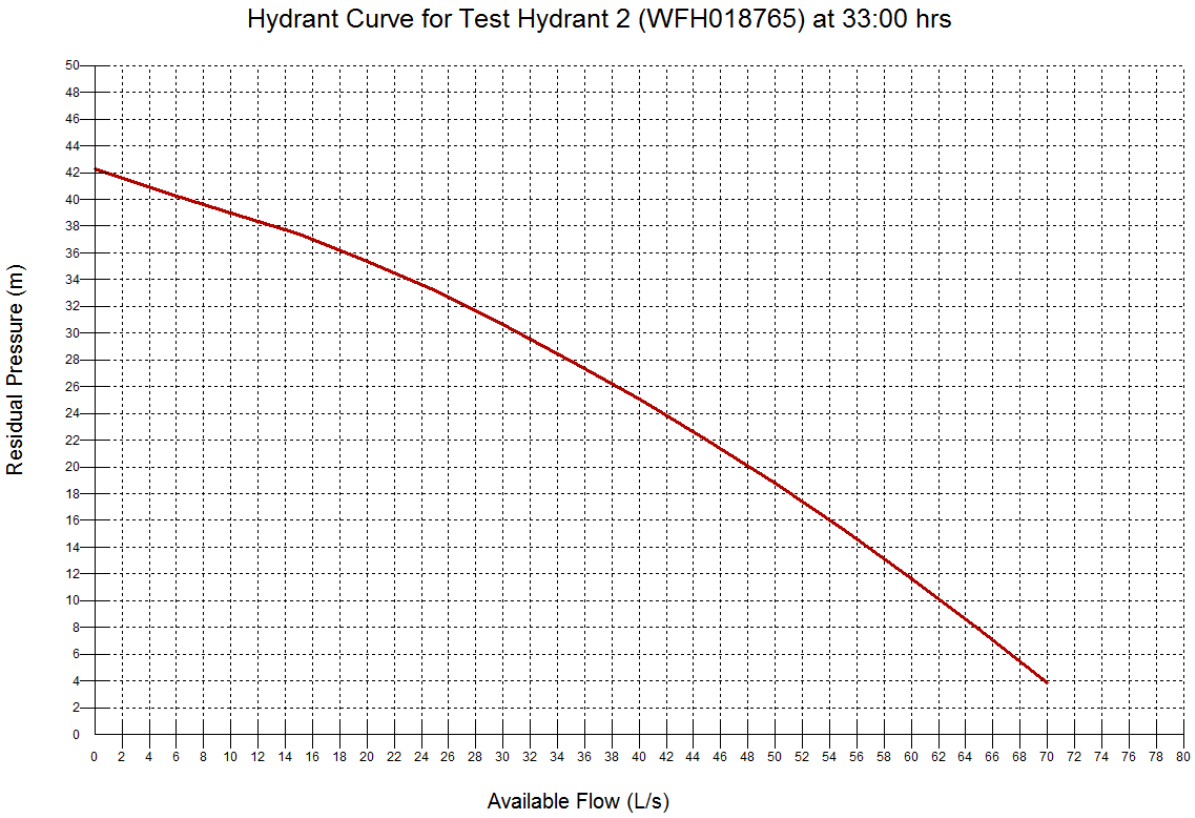


Figure 3 Hydrant Curve for test hydrant 2



Disclaimer

Information requested from Logan Water Infrastructure Development Services relating to hydraulic pressure and flow information is undertaken with the knowledge that such information is based on the most representative hydraulic modelling information available at the time (Hydraulic Modelling Information).

Information provided by Logan Water Infrastructure Development Services is based on hydraulic modelling of an area under the Pressure and Leakage Management Program undertaken by Logan City Council pursuant to government Regulation.

Model results are for the anticipated performance of a commissioned District Metered Area (DMA). Flow rates and system pressures may change after a DMA is commissioned.

The results of the hydraulic assessment may vary from practice due to changes in water supply operational philosophies, water supply policy decisions, maintenance activities on the water supply network and changes in customer demands.

The Hydraulic Modelling Information has not been verified by field measurements and may be inaccurate due to field conditions. Users relying on Hydraulic Modelling Information do so at their

own risk and should make their own independent investigations to verify model outputs after the DMA is commissioned.

Logan Water Infrastructure Development Services do not guarantee and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of the Hydraulic Modelling Information. The Hydraulic Modelling Information is made available to users only upon the terms of this disclaimer and no conditions imposed by users apply.

APPENDIX F

HTC Group Flow and Pressure Testing Report - 2022

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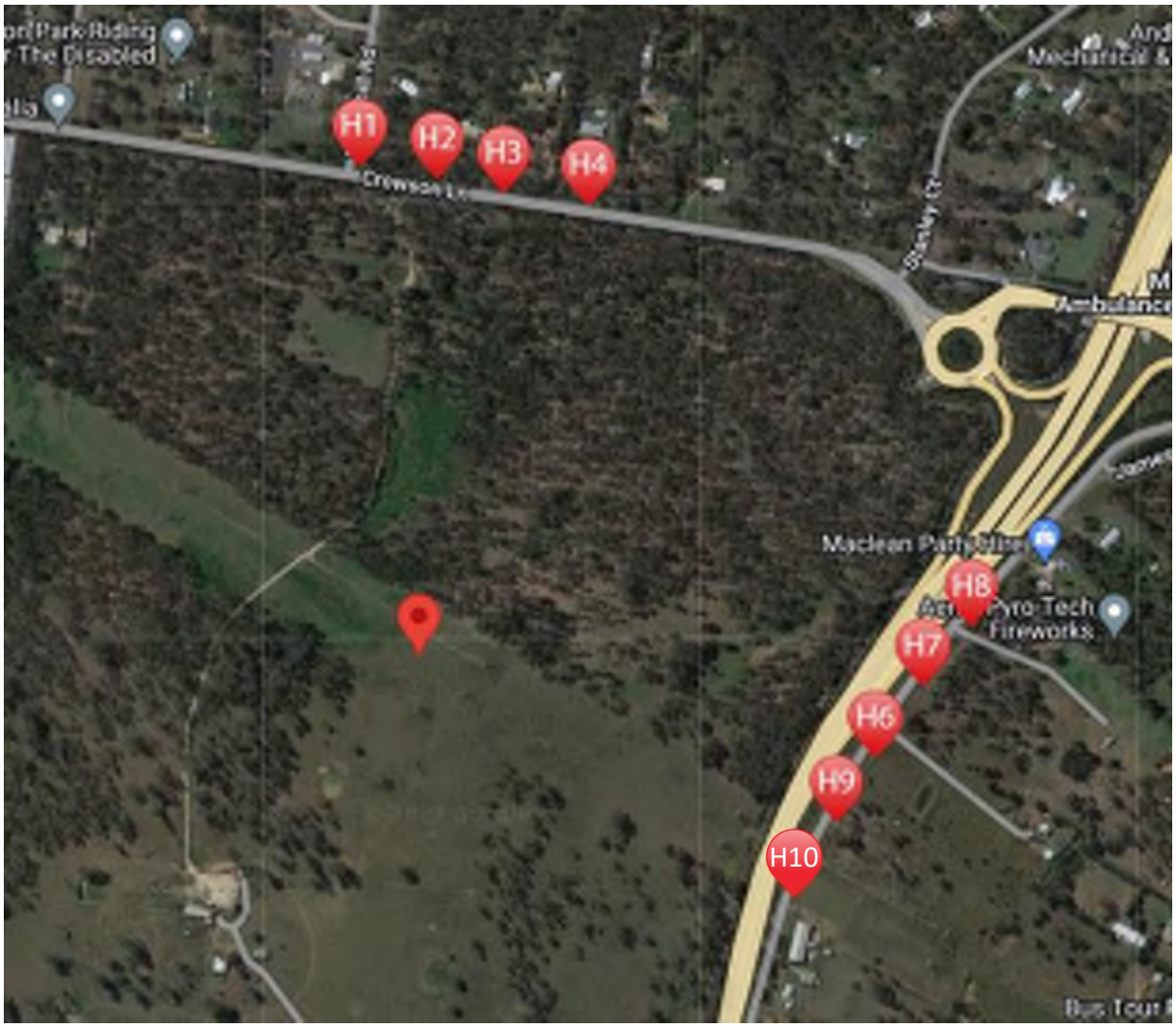
HTC Reference: Q6237
Date: 12th of October, 2022

SEQ WS&S D&C Code Test Report for 4499-4651 Mount Lindesay Highway, North MacLean



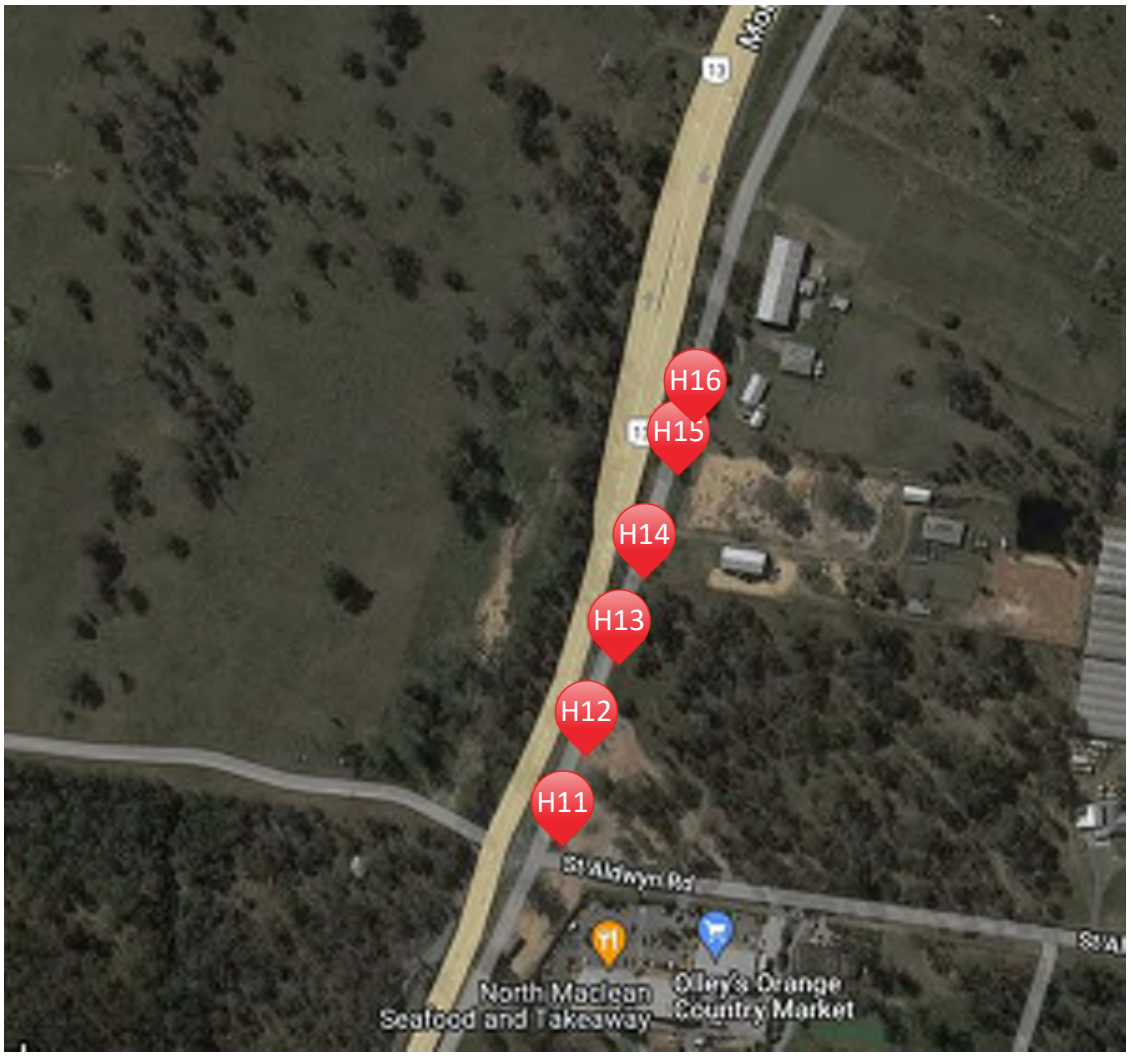
Map 1: Test location overview

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Map 2: Hydrant locations for Crowson Lane (Test 1) and Mount Lindsay Highway North Tests 2 and 3.

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Map 3: Hydrant locations for the Mount Lindsay Highway South Tests 4, 5 and 6.

Test Summary

1. The Crowson Lane main (Test 1) was the strongest supply with 3 hydrants flowing simultaneously providing 60L/s at a residual pressure of greater than 120kPa.
2. Mount Lindsay Highway North (Tests 2 and 3) required 4 hydrants to flow simultaneously to provide 60L/s at a residual pressure of greater than 120kPa.
3. Mount Lindsay Highway South (Tests 4, 6 and 6) required 5 hydrants to flow simultaneously to provide 60L/s at a residual pressure of greater than 120kPa.

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Test 1: SEQ WS&S D&C Code Crowson Lane Test

Water was simultaneously drawn, at the flow rates below, from a single outlet of street spring hydrants H1, H2 and H3. The pressure was recorded at the outlet of H1, H2 and H3 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H4.

H1 Flow (L/s)	**H1 Hydrant Pressure** (kPa)	**H2 Flow** (L/s)	**H2 Hydrant Pressure** (kPa)	**H3 Flow** (L/s)	**H3 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**H4 Water Main Residual Pressure** (kPa)
0	649	0	645	0	646	0	651
5	600	5	598	5	591	15	630
10	520	10	537	10	538	30	577
15	440	15	434	15	430	45	518
20	**320**	**20**	**318**	**20**	**315**	**60**	**460**
25	266	20	309	20	306	65	449
25	180	25	155	25	152	75	393
26.2	120	25.8	120	25.6	120	77.6	378

Test 1 Comments: No onsite tap was available for any test due to being a locked gate rural area.

Test 2: SEQ WS&S D&C Code Mount Lindesay Highway North Supply Test 1

Water was simultaneously drawn, at the flow rates below, from a single outlet of street spring hydrants H8, H7 and H6. The pressure was recorded at the outlet of H8, H7 and H6 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H9.

H8 Flow (L/s)	**H8 Hydrant Pressure** (kPa)	**H7 Flow** (L/s)	**H7 Hydrant Pressure** (kPa)	**H6 Flow** (L/s)	**H6 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**H9 Water Main Residual Pressure** (kPa)
0	682	0	695	0	740	0	729
5	628	5	683	5	685	15	689
10	504	10	525	10	566	30	600
15	321	15	343	15	393	45	481
17.9	128	17.8	134	20	179	55.7	337
17.6	120	17.5	120	21.8	120	56.9	319

Test 2 Comments: The flow test was unable to achieve 65L/s @ 120kpa so Test 3 was performed.

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Test 3: SEQ WS&S D&C Code Mount Lindesay Highway North Supply Test 2

Water was simultaneously drawn, at the flow rates below, from H6, H7, H8 and H9. The type of equipment and the number of flowing outlets are shown in the table below. The pressure was recorded at the outlet of H6, H7, H8 and H9 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H10.

H6 Flow (L/s)	**H6 Hydrant Pressure** (kPa)	**H7 Flow** (L/s)	**H7 Hydrant Pressure** (kPa)	**H8 Flow** (L/s)	**H8 Hydrant Pressure** (kPa)	**H9 Flow** (L/s)	**H9 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**Water Main Residual Pressure – H10** (kPa)
0	682	0	695	0	734	0	726	0	706
16.3	**120**	**16.6**	**120**	**20**	**122**	**10**	**182**	**62.9**	**292**
15.3	120	15.8	120	17.6	120	18	120	66.7	232

Test 4: SEQ WS&S D&C Code Mount Lindesay Highway South Supply Test 1

Water was simultaneously drawn, at the flow rates below, from a single outlet of street spring hydrants H11, H12 and H13. The pressure was recorded at the outlet of H11, H12 and H13 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H14.

H11 Flow (L/s)	**H11 Hydrant Pressure** (kPa)	**H12 Flow** (L/s)	**H12 Hydrant Pressure** (kPa)	**H13 Flow** (L/s)	**H13 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**H14 Water Main Residual Pressure** (kPa)
0	690	0	692	0	700	0	700
5	610	5	605	5	595	15	621
10	490	10	462	10	490	30	537
15	265	15	267	15	287	45	373
17.5	120	17.4	120	17.3	120	52.2	263

Test 4 Comments: The flow test was unable to achieve 65 L/S @ 120kpa. A further flow test was therefore performed

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Test 5: SEQ WS&S D&C Code Mount Lindesay Highway South Supply Test 2

Water was simultaneously drawn, at the flow rates below, from H11, H12, H13 and H14. The type of equipment and the number of flowing outlets are shown in the table below. The pressure was recorded at the outlet of H11, H12, H13 and H14 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H15.

H11 Flow (L/s)	**H11 Hydrant Pressure** (kPa)	**H12 Flow** (L/s)	**H12 Hydrant Pressure** (kPa)	**H13 Flow** (L/s)	**H13 Hydrant Pressure** (kPa)	**H14 Flow** (L/s)	**H14 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**H15 Water Main Residual Pressure** (kPa)
0	685	0	692	0	701	0	697	0	705
13.9	120	13.8	120	14	120	13.7	120	55.4	211

Test 5 Comments: The flow test was unable to achieve 65 L/s at 120kpa. A further flow test was therefore performed

Test 6: SEQ WS&S D&C Code Mount Lindesay Highway South Supply Test 3

Water was simultaneously drawn, at the flow rates below, from H11, H12, H13, H14 and H16. The type of equipment and the number of flowing outlets are shown in the table below. The pressure was recorded at the outlet of H11, H12, H13, H14 and H16 to determine the hydrant performance. These pressures are used to determine if the main meets the requirements of the SEQ WS&S D&C Code. The residual pressure was recorded from the outlet of street spring hydrant H15.

H11 Flow (L/s)	**H11 Hydrant Pressure** (kPa)	**H12 Flow** (L/s)	**H12 Hydrant Pressure** (kPa)	**H13 Flow** (L/s)	**H13 Hydrant Pressure** (kPa)	**H14 Flow** (L/s)	**H14 Hydrant Pressure** (kPa)	**H16 Flow** (L/s)	**H16 Hydrant Pressure** (kPa)	**Total Flow** (L/s)	**H15 Water Main Residual Pressure** (kPa)
0	685	0	692	0	685	0	675	0	694	0	679
13.2	**120**	**13.3**	**120**	**13.1**	**120**	**12.9**	**120**	**12.8**	**120**	**65.3**	**175**

Hydrant Condition: All the hydrants (H1 to H16) were in good condition with a powder coat exterior.

General Notes:

- The test results are correct at the time of the tests
- Flow meters and pressure gauges are calibrated annually
- It is the responsibility of the recipient to determine the effect of changes in domestic/industrial usage, modifications to the main, differences in RL and extra hydraulic losses between the hydrant and tie in locations
- Flows are accurate to ±0.2L/s. Pressures are accurate to ±10kPa

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Approvals:

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Test Leading Hand

Michael Gough
10:02hrs, 11th of October, 2022



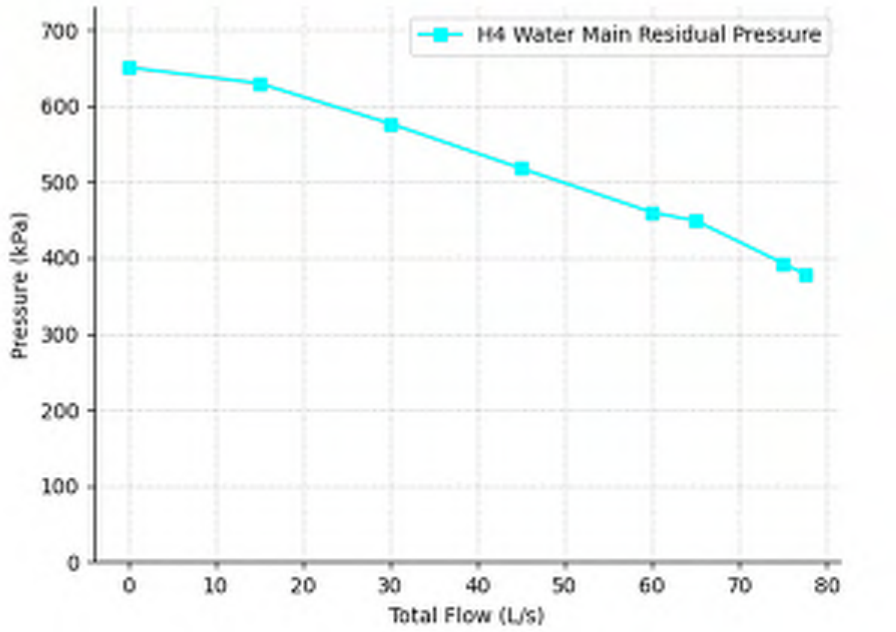
Report Approval

Daniel Barwick
13th of October, 2022

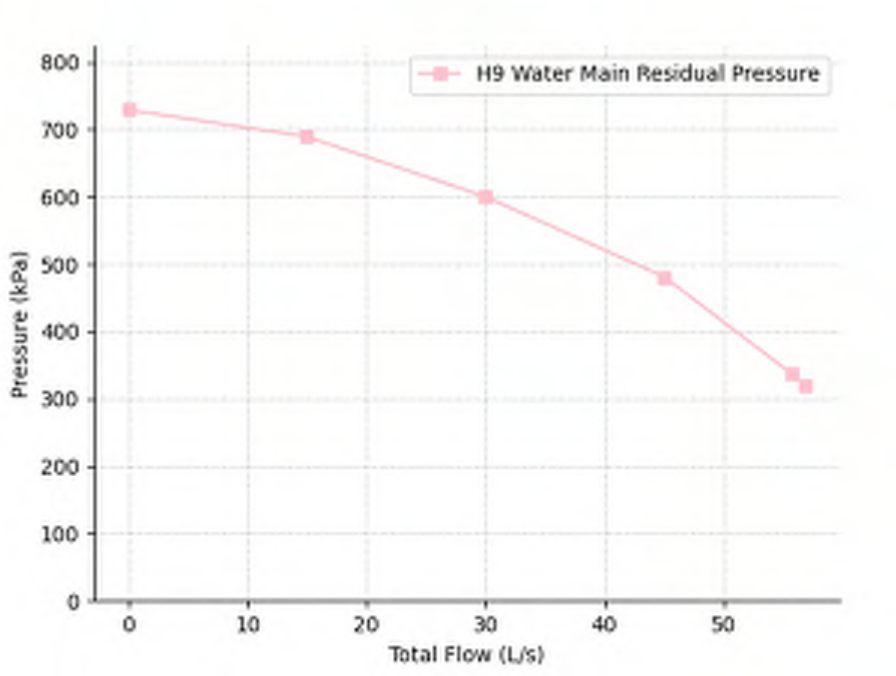


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Appendix 1: Test Result Graphs

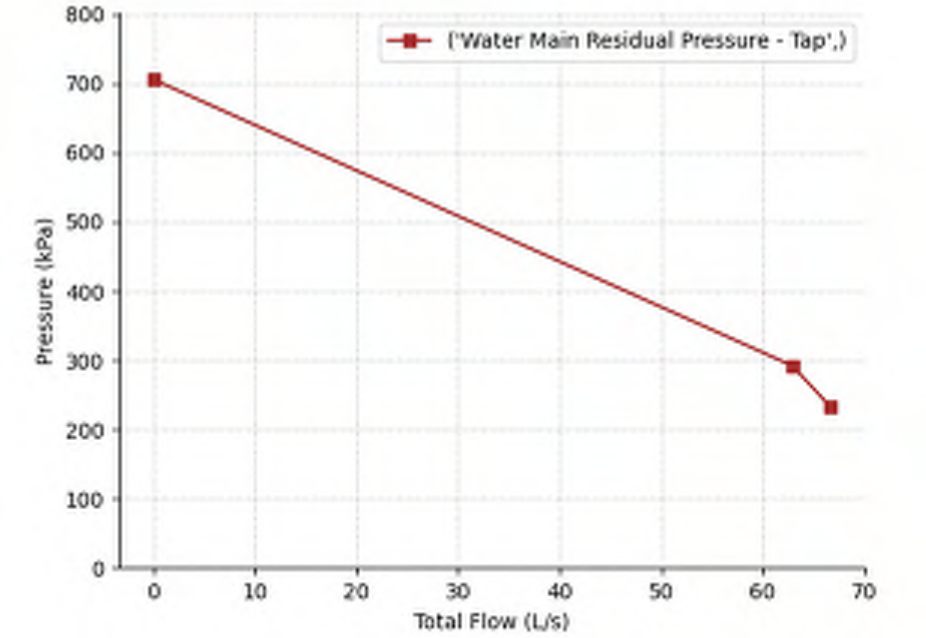


Test 1: H1, H2 and H3 Combined Performance and Street Supply Test

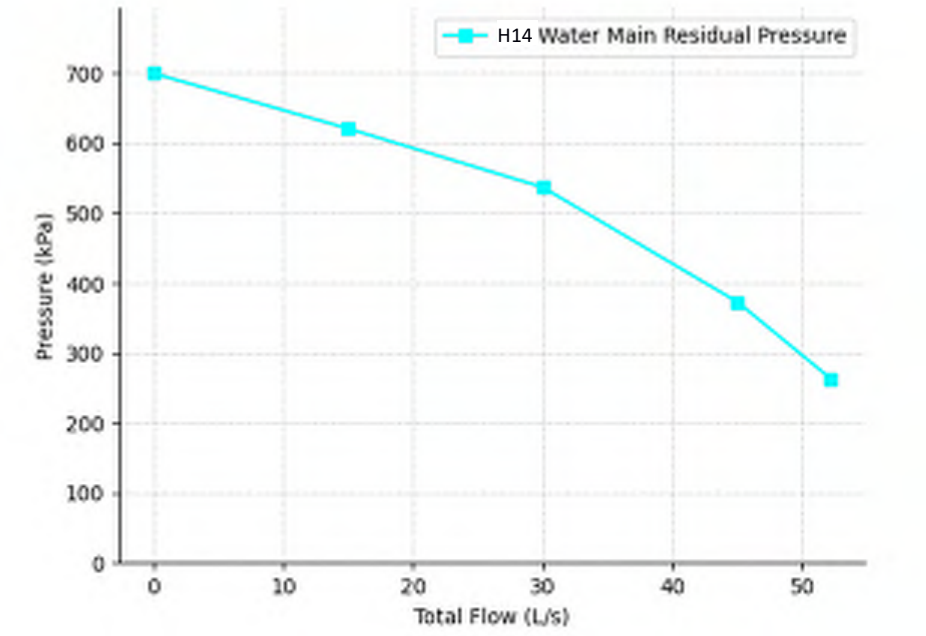


Test 2: H8, H7 and H6 Combined Performance and Street Supply Test

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Test 3: H6, H7, H8 and H9 Combined Performance and Street Supply Test



Test 4: H11, H12 and H13 Combined Performance and Street Supply Test

Appendix E – Arcadis Sewer Network Analysis

SEWER NETWORK ASSESSMENT

4499 – 4651 MOUNT LINDESAY HIGHWAY NORTH MACLEAN

CHARTER HALL PRIME INDUSTRIAL FUND

COMPLIANCE ENDORSEMENT
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2018/961/5

Date: 22-Feb-24

Queensland Government

4499 – 4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

SEWER NETWORK ASSESSMENT

Author Mike Cazeres

Checker Richard Mulligan

Approver Richard Mulligan
RPEQ 7850

Report No EAG006–30109334-AAR-SNA

Date 15/02/2024

Revision Text 04

This report has been prepared for Charter Hall Prime Industrial Fund in accordance with the terms and conditions of appointment for 4499-4651 Mount Lindesay Highway, North MacLean QLD 4280. Arcadis Australia Pacific Pty Limited (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

Revision	Date	Description	Prepared by	Approved by
01	1/11/2022	Issued For Information	ADA	RM
02	3/07/2023	Issued For Compliance Assessment	MC	RM
03	14/09/2023	Response to Information Request	MC	RM
04	15/02/2024	Updated Development Plan	HQ	RM

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1 EXECUTIVE SUMMARY

Arcadis has been engaged by Charter Hall Prime Industrial Fund to prepare a Sewer Network Assessment (SNA) for a proposed development located in North Maclean, QLD over the following allotments:

- Lot 39 on SP258739 (4499-4651 Mount Lindesay Highway, North Maclean)

With the use of the SEQ Design Criteria, Logan City Council Planning Scheme and Logan City Council Technical Memorandum (DD8001 North Maclean), a hydraulic assessment of the proposed development's impact on the surrounding wastewater network and proposed internal network has been undertaken. The proposed connection point is the NM1 Pump Station.

The following SNA compares the existing allowances made within the Logan City Council Technical Memorandum to the current development layout completed by Watson Young (MP01 P10 March 2023). The purpose of this assessment is to determine whether the proposed development has been adequately accounted for within the greater sewer network and to size the sewer pipes within the local network in accordance with the Greater Flagstone PDA Infrastructure Planning and Background Report (IPBR), SEQ Design Criteria, Logan City Council Planning Scheme, and the Logan City Council Technical Memorandum DD8001. The assessment also confirms that satisfactory sewer capacity is available to convey external flows from the south to the NM1 SPS.

REVISION 02

An updated revision 02 of the Sewer Network Assessment has been undertaken to reflect the latest proposed development layout and staging. This revision demonstrates that the updated development has been adequately accounted for within the design of NM1 and that sewer gravity mains ranging from DN150 to DN225 are adequate to cater for the subject site in accordance with the Greater Flagstone PDA IPBR, SEQ Design Criteria, Logan City Council Planning Scheme, and the Logan City Council Technical Memorandum.

REVISION 03

Revision 03 of this report was prepared in response to an email received from Marco Bonotto of EDQ on 9 August 2023, requesting a response to the following items raised by Logan Water:

1. *Provide a plan to demonstrate how proposed connection for each lot (including the southern external lot) can control the whole body of the lot. Internal plumbing should be able to maintain minimum of 1:60 gradient.*

   The Preliminary Sewer Sketch Plan Sheets 1 and 2 (30109334-AAP-WS00OP-CV-SKT-009 – 009G), enclosed with in Appendix B, provides the approximate extent of the lot serviceability catchment. The serviceability is based on ~3m deep property connections with 1:100 grade and achieves significant coverage across the development. There are localised areas within allotments which are not included in the lot serviceability catchment. Several approaches can be taken for these areas at the detailed/building design phases, including:

   - Adjusting the architectural design to ensure areas requiring plumbing are situated within the lot serviceability catchment;
   - Installation of a private pump station;
   - Potential further extension of the sewer network following further subdivision of the super lots.

   Please note that the SEQ Code allows 1:100 gradient for DN150 property connection branches and has been adopted accordingly (refer to SEQ-SEW-1104-1-D Note 1 and SEQ-SEW-1104-3-A, Note 2).

2. *Deep sewer is not supported by Council. Demonstrate why deep sewer is required to service the development.*

   The proposed property connections have been raised to ~3m depth, thus avoiding deep property connections. The preliminary sewer grading provided in Appendix B includes sewer depths >5m to allow for the drainage of the large allotments over the 1.512km distance. As portions of super lot 4 grade away from the Sewer Line 3, the connection from Sewer Line 5 into Sewer Line 3 is a controlling factor forcing the sewer deeper.

Figure 6-1 has been updated to reflect additional branch lines included in the design to service the lots that grade away from the main gravity sewer lines.

3. *Provide design calculations to demonstrate proposed gravity mains can achieve cleansing velocity (minimum velocity should be checked for PDWF not for PWWF as per the SEQ Code).*

   The pipe sizing has been amended such that the DN225 pipe commences further downstream at Structure 2/3 where the flow is greater. The design now meets the minimum grade for the corresponding pipe sizes. The sewer sizing calculations included in Appendix C have been updated accordingly.

REVISION 04

An updated revision 04 of the Sewer Network Assessment has been undertaken to reflect the latest proposed development layout and staging. Catchment boundaries have been updated to optimise the sewer network. Sewer gravity main has been relocated outside of the stormwater easement 2. The updated sewer network design demonstrates that the development has been adequately accounted for within the design of NM1 and that sewer gravity mains ranging from DN150 to DN225 are adequate to cater for the subject site in accordance with the Greater Flagstone PDA IPBR, SEQ Design Criteria, Logan City Council Planning Scheme, and the Logan City Council Technical Memorandum.

2 SITE CHARACTERISTICS

2.1 LOCATION DETAILS

The subject site is located within North Maclean, South-East Queensland, Australia over the following allotments:

- Lot 39 on SP258739 (4499-4651 Mount Lindesay Highway, North Maclean)

The site is bordered by Crowson Lane to the north, Mount Lindesay Hwy to the east, a vacant lot to the south and residential lots to the west.

The total area of the site is approximately 1,177,359m² or 117.7359 ha.

Logan City Council is the local government authority.

2.2 LAND USAGE

In its current state, the project site has undergone recent vegetation clearing works and contains a high voltage electrical easement. Figure 2-1 below provides a current locality plan of the site.



Figure 2-1 Site Locality Plan (Aerial Imagery Courtesy of Nearmap)

2.3 TOPOGRAPHY AND FEATURES

The site topography consists of hills and valleys with gradual to steep grades. The site contains an overland flow path that discharges flows via a natural channel to an existing headwall that crosses Mount Lindesay Hwy. The site has a high point of approximately RL 43m AHD and a low point of RL 21m AHD.

3 PROPOSED DEVELOPMENT

The proposed development involves the delivery of 5 superlots and 4 drainage/open space lots. A plan extract of the proposed development has been provided in Figure 3-1.

This plan is also provided within Appendix A and should be referred to for further clarity.

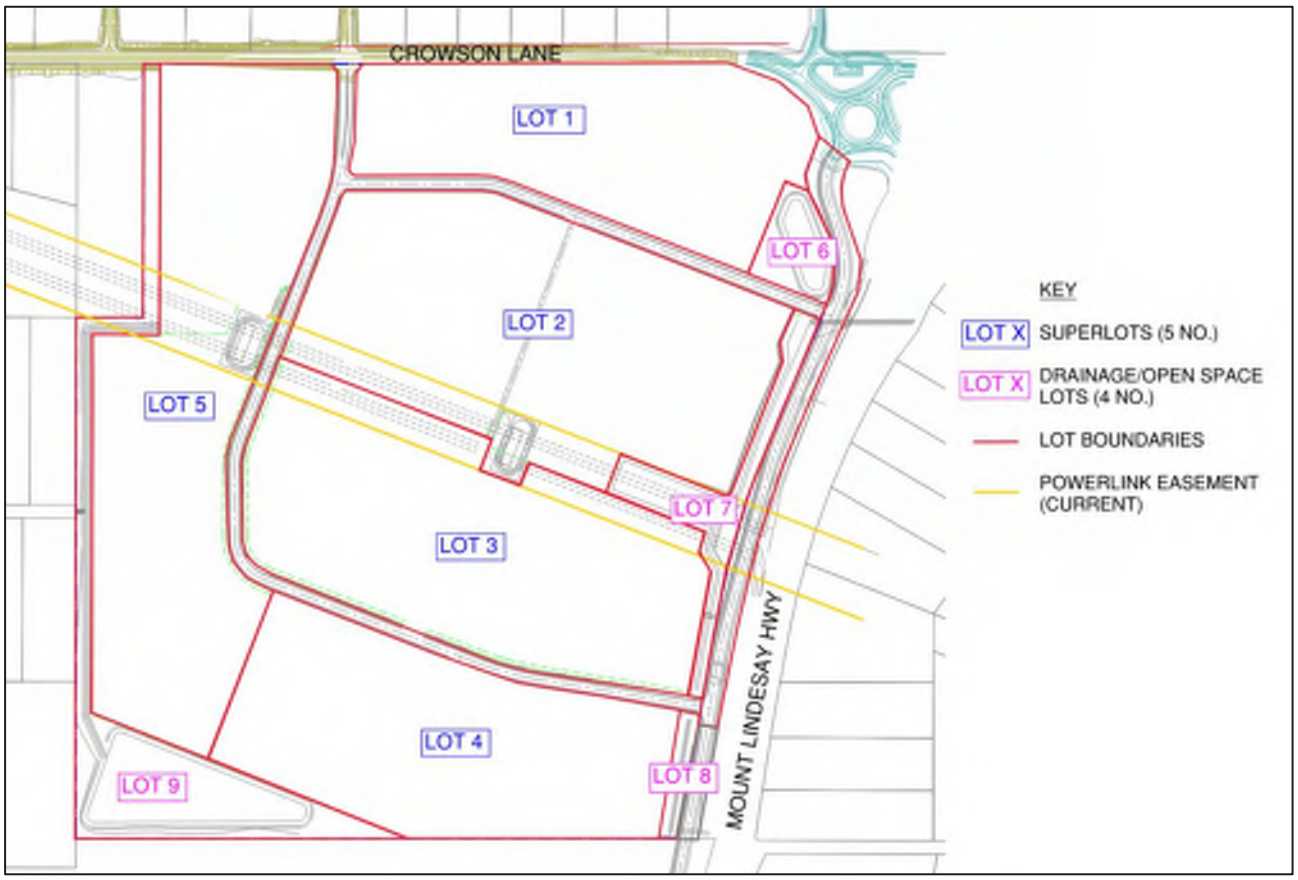


Figure 3-1 Proposed Development Superlot Plan (Watson Young MP01 P10, March 2022)

3.1 DEVELOPMENT STAGING

The proposed staging of the development site is summarised below and illustrated in Figure 3-2.

- Stage 1 – Includes Superlots 1 to 2
- Stage 2 – Includes Superlots 3 to 4
- Stage 3 – Includes Superlot 5

An additional development demand reflecting the ultimate sewer servicing scenario for the NM1 SPS catchment was also included as summarised below and further discussed in Section 3.3.

- Ultimate – Includes External Lot 1RP113251 which also forms a part of the NM1 SPS catchment

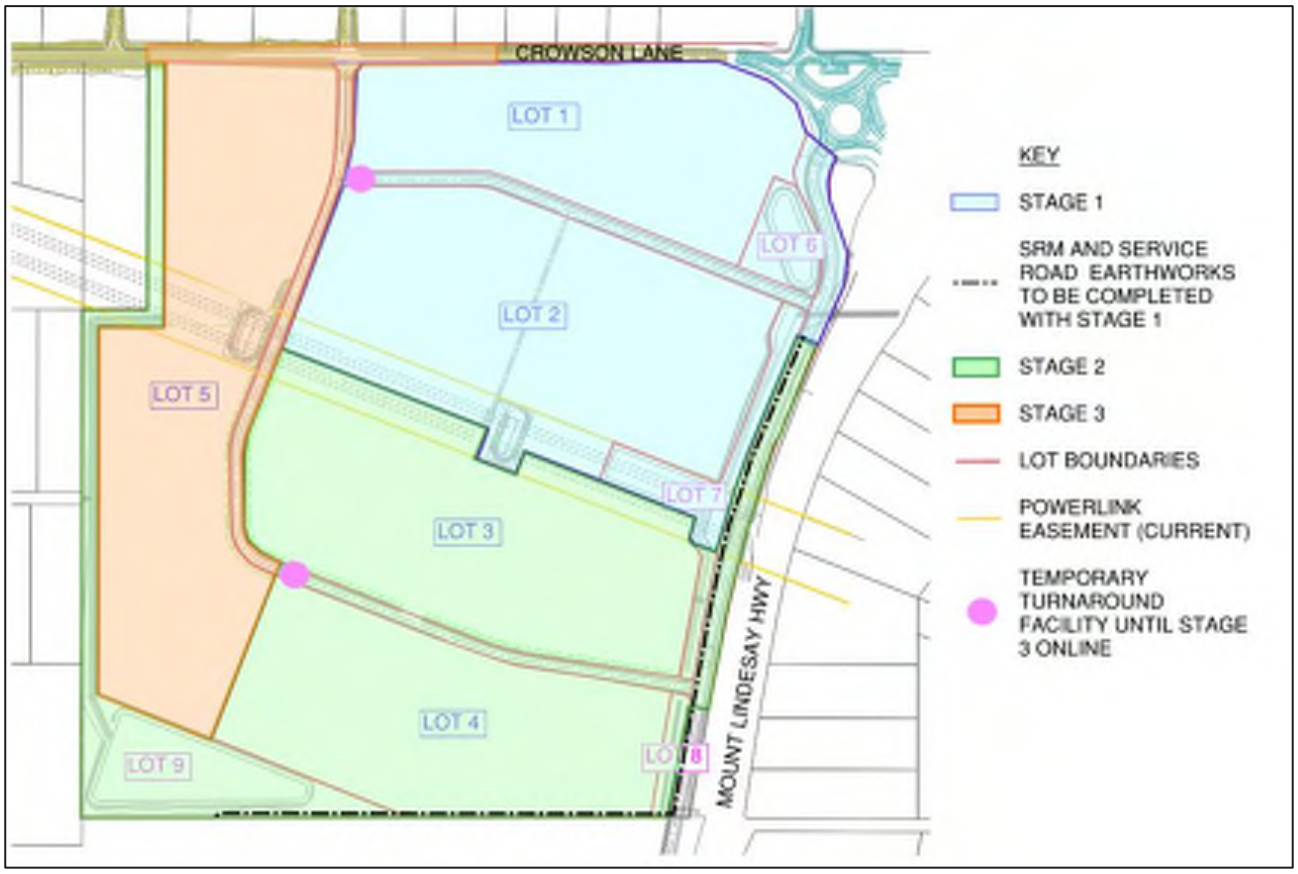


Figure 3-2 Proposed Development Staging Plan

3.2 DEVELOPMENT LOADING

For the purposes of this report, the development loading has been assessed under two loading cases to better determine the anticipated impact to be had on the surrounding network. These cases are as follows:

- **Logan Water Projected Case –** In accordance with the assessment completed by Logan Water within Technical Memorandum DD8001. Logan water generated Eps in accordance with Infrastructure Demand Model 2020 (IP0017) to allow for optioneering. The EPs have been assigned to 70% of the developable area as an “allowable GFA” and excludes roads, open spaces, carparks etc.

  Figure 3-3 shows the non-residential conversion rates (Equivalent Persons (EP)) for the proposed development as per Logan Water’s Technical Memorandum DD8001 North Maclean included within Appendix D.

- **Arcadis Calculated Developed Case –** The calculated demand for the development based on the EP’s outlined by Logan Water for Industry Medium and Retail (service station conservative assumption). GFAs are based on a concept development layout plan (Watson Young MP01 P10, March 2023) excluding roads, open spaces, carparks etc. A 10% contingency has been applied to the demand calculated via this concept development layout for future design flexibility.

  An extract of the masterplan used for this scenario is included in Figure 3-4 below and provided in Appendix A.

These values are compared to ensure that NM1 can suitably cater for the development in its current designed state (Watson Young MP01 P10, March 2023). For this comparison the Projected Case will consider Industry Medium and Commercial only as per the current intention for the development.

IDM Development Type	Average Water Consumption Method Adopted	Conversion Rates - Water		Return to Sewer (%)	Conversion Rates - Sewage	
		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)
Commercial	GFA, 5th-95th %ile	-	55.90	0.90	-	50.31
Office	As per Commercial		55.90	0.90		50.31
Warehouse Distribution	As per Commercial		55.90	0.90		50.31
Education	GFA, 5th-95th %ile	-	105.30	0.80	-	84.24
Health	GFA, 5th-95th %ile	-	226.50	0.90	-	203.85
Industry Heavy	50% above Light Industrial	-	56.60	0.80	-	45.28
Industry Medium	25% above Light Industrial	-	47.25	0.80	-	37.80
Industry Light	GFA, 5th-95th %ile	-	37.80	0.80	-	30.24
Sport Recreation	Gross, 10th-90th %ile	1.05	-	0.90	0.945	-
Rural	Based on Water Meter Consumption	-	-	-	-	-
Retail Services	GFA, 5th-95th %ile	-	97.60	0.90	-	87.84
Showroom Bulk Goods	GFA, 5th-95th %ile	-	110.80	0.90	-	99.72
Accommodation	GFA, 5th-95th %ile	-	233.90	0.90	-	210.51

Reference: Table 7.2 Development of Infrastructure Demand Model, LWIA 2018 (PI-181).

Figure 3-3 Non-residential conversion rates (Table 7.2 Development of Infrastructure Demand Model)

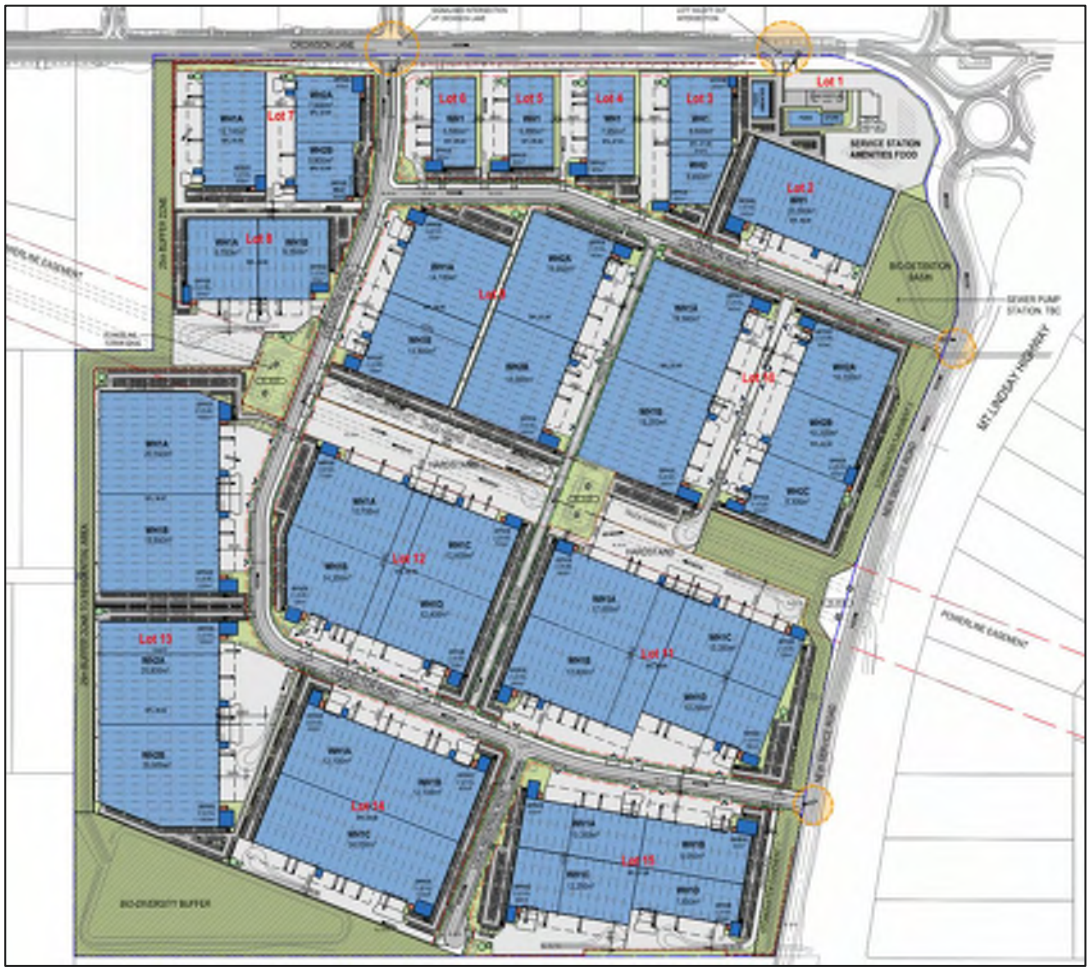


Figure 3-4 Concept Masterplan (Watson Young MP01 P10, March 2023)

3.3 LOGAN WATER PROJECTED DEVELOPMENT LOADING

The proposed development and an additional upstream catchment will be serviced by pump station NM1 and inject into a common rising main. The catchment plan used by Logan Water in their regional servicing strategy documentation is included in Figure 3-5.

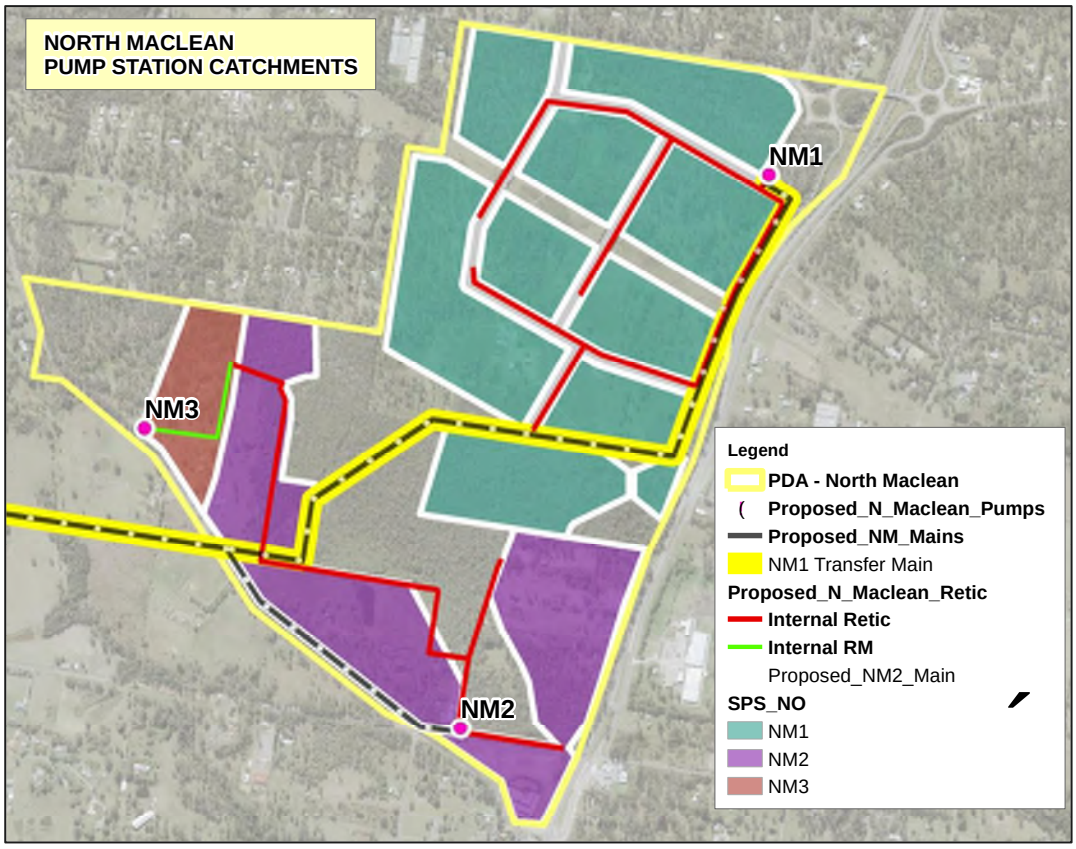


Figure 3-5 Sewer Pump Station Catchments

Based on this Logan Water has estimated loads for NM1 with the assumption GFA = 70% of developable area. The results of Logan Water's Technical Memorandum DD8001 can be seen highlighted in Table 3-1 below.

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	279	517	915	1,313	1,711	2,507	2,785	105	74
NM2		*146*	*349*	*553*	*757*	*1,164*	*1,455*	*55*	*38*
NM3		*29*	*69*	*109*	*150*	*230*	*288*	*11*	*8*
NM2 Total		174	418	662	906	1,394	1,743	66	46
Totals:	**279**	**692**	**1,333**	**1,975**	**2,617**	**3,901**	**4,528**	**171**	**120**

Table 3-1 North Maclean PDA – Projected Loads

3.4 ARCADIS CALCULATED DEVELOPMENT LOADING

The demand for the development based on the EP's outlined by Logan Water for Industry Medium and Commercial was applied to the concept development layout completed by Watson Young (MP01 P10, March 2023) to generate a comparison of ultimate demand on the sewer network. A 10% contingency has been applied to the demand calculated via this concept development layout for future design flexibility.

Lot 1RP113251 is located immediately south of the site area illustrated in Figure 2-1 and also forms a part of the overall NM1 catchment illustrated in Figure 3-5. This area has also been included in this assessment, with assumed demand for this lot specified below in line with Logan Water demand estimation methodology:

- Lot 1RP113251 Area = 16.0435Ha
- Assume 70% GFA = 11.23045Ha GFA
- Corresponding Lot 1 RP113251 EP demand = 425 EPs +10% Contingency = 467 EPs

The results of this were then compared against the projected loads completed by Logan Water, included in Table 3-2 below. Refer to Appendix C for further details on EP calculations. The calculation summary in Appendix C also specifies the assumed contributing lots to each manhole structure, and it is noted that large variances to these contributing lot assumptions will impact the conclusions of this sewer network assessment accordingly.

Table 3-2 North Maclean PDA – Proposed vs Projected Loads (Medium Industry)

	SPS Catchment No	Ultimate Sewer EPs
Logan Water Projected Loading	NM1	2785
Arcadis Calculated Proposed Loading	NM1	2764
Difference (%)		-1%

As seen above, the proposed development loading based on the concept lot layout MP01 P10 and the assumed development loading of the southern Lot 1 RP 113251 also forming a part of the NM1 sewer pump station catchment remains generally in accordance with Logan Water's projected loading.

It is recommended to maintain infrastructure sizing based on the Logan Water projected loadings as it will allow for some flexibility in the network if there is future need to service development with higher sewage loads. The sewer calculations undertaken in this assessment have therefore factored the proposed contributing EPs to each sewer structure up to meet Logan Water's total projected loading of 2785 EPs to remain conservative and ensure alignment with the previous studies undertaken for the NM1 SPS.

4 DESIGN ASSUMPTIONS

The sewer network surrounding the proposed development site was designed using the SEQ WS&SDC, Logan City Council Planning Scheme Policy and Logan Water's Technical Memorandum DD8001 North Maclean. The demand due to the proposed development has been applied to the Colebrook-White equation and minimum pipe sizes and grades were generated.

- The extent of the network studied is to the downstream manhole prior to the NM1 SPS (gravity line from collection manhole to SPS and SPS excluded).
- Industry Medium Average Dry Weather Flow (ADWF) = 165 L/EP/d.
- Peak Dry Weather Flow (PDWF) = d x 165 L/EP/d.
- Peak Wet Weather Flow – Industry Medium (PWWF) = 840 L/EP/d
- Gravity Main Maximum Velocity = 3m/s at PWWF.
- Colebrook-White equation is used to calculate flows.
- Roughness coefficient is taken as k = 1.5mm.

- Depth of flow @ PWWF – Proposed new sewers = Max flow depth shall not exceed 75% of full pipe depth.

5 MODELLING METHODOLOGY

The PWWF of the internal gravity sewer network was calculated and compared against the theoretical performance of the network determined via the Colebrook-White equation to confirm the adequacy of the proposed sewer network under the proposed development loading. Refer to Appendix C for EP & Sewer Sizing Calculation results.

For the purposes of this assessment, the ultimate development scenario has been assessed. Interim staging scenarios for the sewer network result in lower peak flows through the system and therefore less conservative scenarios. The proposed gravity sewer network is to meet or exceed minimum grades to ensure self-cleansing throughout the interim staging scenarios and the ultimate assessment aims to confirm adequacy under the most conservative peak flow network state.

5.1 DEPTH OF FLOW

The depth of flow was assessed for all new pipes to be installed to service the developed scenario. In accordance with the Logan City Council Planning Scheme requirements and as listed in the Design Assumptions above. Depth of flow compliance under PWWF (75% max depth for new pipes) was assessed in accordance with the sewer network design criteria as specified in the Greater Flagstone PDA IPBR Table 4.2.1.

6 RESULTS AND DISCUSSION

6.1 GRAVITY LINE ASSESSMENT

For the developed scenario, the pipe reaches assessed are shown below in Figure 6-1.



Figure 6-1 Assessed Gravity Line

Loads have been assigned to each structure as per the proposed loads of the development. Based on this loading and in accordance with the Greater Flagstone PDA IPBR, SEQ WS&SDC and Logan City Council Planning Scheme Policy the following reticulation main sizes are required:

- DN150 PVC to DN225 PVC

The tabulated results are attached in Appendix C that show the detailed outputs of each structure assessed. Longitudinal sections and a Sewer Sketch Plan showing the depth of flow have also been included in Appendix B. We note the lot numbering in the Sewer Sketch Plan has been superseded by the lot numbering illustrated in the masterplan layout as per Figure 3-4 and included in Appendix A.

7 CONCLUSION

This assessment has concluded that the proposed development has been adequately accounted for within the design of NM1 and that sewer gravity mains ranging from DN150 PVC to DN225 PVC are adequate to cater for the subject site. The assessment also confirms that satisfactory sewer capacity is available to convey external flows from the southern Lot 1 RP113251 also included in the NM1 SPS catchment to the NM1 SPS.

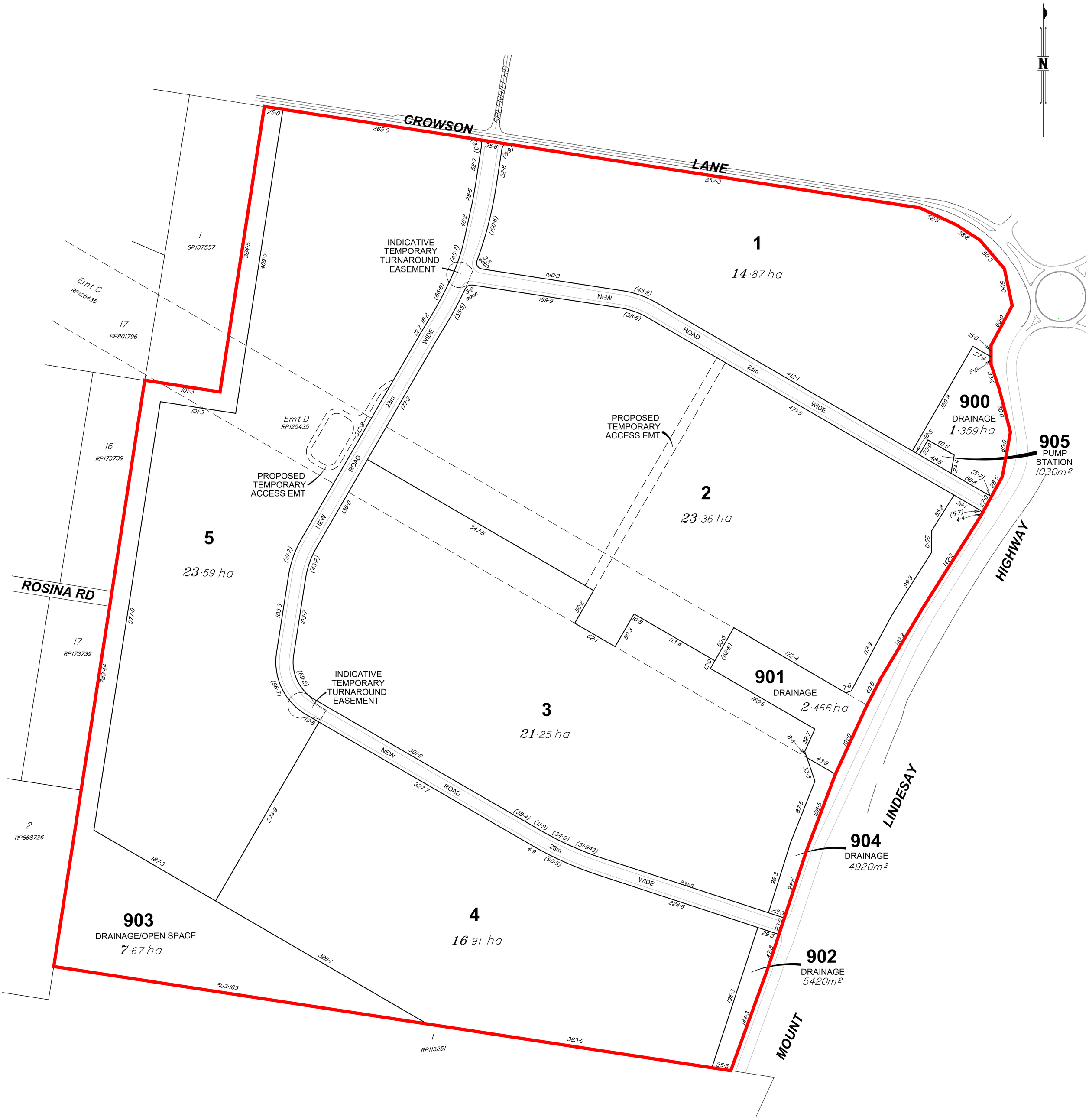
APPENDIX A

Development Layout Plans



Appendix B

Plan of Reconfiguration



Notes

1. Any licence, express or implied, to use this document for any purpose whatsoever is restricted to the terms of the agreement or implied agreement between Wolter Consulting Group and the instructing party.

2. Design subject to local authority approval & detailed engineering requirements , areas and dimensions are approximate only and are subject to survey. Therefore this drawing is not to be used for engineering design.

3. Cadastral data supplied by others and is approximate only.

4. Indicative road horizontal design, subject to biopods and engineering review.

5. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

PLANS AND DOCUMENTS
referred to in the
PDA DEVELOPMENT APPROVAL
Approval no.: **DEV2018/961/8**
Date: **27/09/2023**

Queensland Government

Legend

Site Boundary

Stage Boundary

Table of Development

Gross area of subject land	117.9 ha
Area of proposed park, drainage and open space (Including pump station)	12.6 ha
Area of new road	5.32 ha
Length of new road	2299m
Net area of subject land (Excluding park & open space)	99.98 ha
Number of proposed lots	11
Number of existing lots	1

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2500 @ A1 – Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

Plan of Reconfiguration

4499-4651 Mount Lindesay Highway

Description: Lot 39 on SP258739
Local Authority: Logan City

CLIENT
Charter Hall Group

DRAWING NO. 22-0007P/01-02
VERSION E
DATE DRAWN 14-08-2023
SHEET NO. 1 of 1
KB



Appendix C

Staging Plan

N

CROWSON LANE

GREENHILL RD

1
SP137557

Emt C
RP125435

17
RP801796

16
RP173739

17
RP173739

2
RP868726

ROSINA RD

Emt D
RP125435

STAGE 3

5
23·59 ha

PROPOSED TEMPORARY ACCESS EMT

INDICATIVE TEMPORARY TURNAROUND EASEMENT

NEW ROAD 23m WIDE

INDICATIVE TEMPORARY TURNAROUND EASEMENT

1
14·87 ha

STAGE 1

NEW ROAD 23m WIDE

PROPOSED TEMPORARY ACCESS EMT

2
23·36 ha

900
DRAINAGE
1·359 ha

905
PUMP STATION
1030m²

HIGHWAY

3
21·25 ha

STAGE 2

NEW ROAD 23m WIDE

901
DRAINAGE
2·466 ha

LINDESAY

904
DRAINAGE
4920m²

4
16·91 ha

903
DRAINAGE/OPEN SPACE
7·67 ha

902
DRAINAGE
5420m²

MOUNT

1
RP113251

RM

Notes

1. Any licence, express or implied, to use this document for any purpose whatsoever is restricted to the terms of the agreement or implied agreement between Wolter Consulting Group and the instructing party.

2. Design subject to local authority approval & detailed engineering requirements , areas and dimensions are approximate only and are subject to survey. Therefore this drawing is not to be used for engineering design.

3. Cadastral data supplied by others and is approximate only.

4. Earthworks for Sewer Rising Main and full service road will be completed with Stage 1.

5. Indicative road horizontal design, subject to biopods and engineering review.

6. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

PLANS AND DOCUMENTS
referred to in the
PDA DEVELOPMENT APPROVAL
Approval no.: **DEV2018/961/8**
Date: **27/09/2023**

Queensland Government

Legend

- Site Boundary
- Stage Boundary
- Stage 1
- Indicative Temporary Turnaround - Stage 1
- Stage 2
- Indicative Temporary Turnaround - Stage 2
- Stage 3
- RM — Sewer Rising Main

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2500 @ A1 – Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

Staging Sketch Plan

4499-4651 Mount Lindesay Highway

Description
Local Authority

Lot 39 on SP258739
Logan City

CLIENT
Charter Hall Group

DRAWING NO. 22-0007P/01-03

VERSION E

DATE DRAWN 14-08-2023

SHEET NO. 1 of 1

KB



1 MASTERPLAN
SCALE: 1 : 2500

LEGEND

- HARDSTAND
- CAR PARK
- COLLECTOR ROAD
- CRUSHED ROCK TO FIRE ACCESS TRACK
- AREA OF GRASS / LANDSCAPING
- BIO DETENTION, GREEN CORRIDOR, STORMWATER EASEMENT
- WAREHOUSE
- OFFICE
- STAFF OUTDOOR
- AWNING
- ESTATE ROAD CONNECTION TO EXTERNAL ROAD NETWORK
- TRUCK ENTRY/EXIT
- POWER EASEMENT MAINTENANCE ACCESS POINT
- ESTATE BOUNDARY LINE
- LOT BOUNDARY LINE
- BUILDING SETBACK LINE
- LANDSCAPE SETBACK LINE
- FENCE LINE
- RETAINING WALL

PARKING PROVISION

SITE	PARKING RATIO
WAREHOUSES	0.66 (approximately 1/150m²)

PARKING	REQUIRED	PROVIDED
TOTAL	3570	3915
activity/amenities	TBC	

NOTE : Ratio applied to calculate required car parking for combined facility area including warehouse & associated offices

DEVELOPMENT ANALYSIS

LOT 1	**30,990m²**
LOT 2	**31,274m²**
WAREHOUSE 1	20,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1,100m²
LOT 3	**24,981m²**
WAREHOUSE 1	6,600m²
OFFICE	300m²
WAREHOUSE 2	5,850m²
OFFICE	300m²
LOT 4	**17,479m²**
WAREHOUSE 1	7,950m²
OFFICE	400m²
LOT 5	**15,005m²**
WAREHOUSE 1	6,850m²
OFFICE	350m²
LOT 6	**15,503m²**
WAREHOUSE 1	6,550m²
OFFICE	300m²
LOT 7	**49,645m²**
WAREHOUSE 1A	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 2A	7,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	400m²
WAREHOUSE 2B	5,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	400m²
LOT 8	**39,921m²**
WAREHOUSE 1A	9,750m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 1B	9,250m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
LOT 9	**108,081m²**
WAREHOUSE 1A	14,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1B	14,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 2A	15,900m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 2B	15,900m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
LOT 10	**120,643m²**
WAREHOUSE 1A	19,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1000m²
WAREHOUSE 1B	19,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1000m²
WAREHOUSE 2A	10,700m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 2B	10,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	600m²
WAREHOUSE 2C	9,300m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
LOT 11	**109,982m²**
WAREHOUSE 1A	17,650m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 1B	17,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	900m²
WAREHOUSE 1C	13,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1D	13,200m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
LOT 12	**98,224m²**
WAREHOUSE 1A	15,700m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1B	14,350m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1C	12,400m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
WAREHOUSE 1D	12,400m²
OFFICE (INCLD. 100m² DOCK OFFICE)	800m²
LOT 13	**142,280m²**
WAREHOUSE 1A	20,550m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 1B	19,850m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 2A	20,800m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
WAREHOUSE 2B	20,000m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1100m²
LOT 14	**80,077m²**
WAREHOUSE 1A	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 1B	12,100m²
OFFICE (INCLD. 100m² DOCK OFFICE)	700m²
WAREHOUSE 1C	24,050m²
OFFICE (INCLD. 100m² DOCK OFFICE)	1300m²
LOT 15	**82,432m²**
WAREHOUSE 1A	10,350m²
OFFICE	500m²
WAREHOUSE 1B	9,050m²
OFFICE	500m²
WAREHOUSE 1C	12,250m²
OFFICE	600m²
WAREHOUSE 1D	7,850m²
OFFICE	400m²
TOTAL BLDG AREA (LOT 1 Amenities not included)	**540,800m²**

SITE COVERAGE

TOTAL SITE AREA	1,177,359m²
INTERNAL ROADS	71,013m²
BIO-DETENTION BASIN	14,302m²
BIO-DIVERSITY+25m BUFFER	76,670m²
STORMWATER EASEMENT 1	5,790m²
STORMWATER EASEMENTS (2)	26,074m²
ROAD WIDENING	16,992m²
TOTAL DEVELOPABLE AREA	**966,518m²**
SITE COVERAGE	55.95%

No.	DATE:	REVISION:	BY:	CHK:
P7	26.06.2022	PRELIMINARY ISSUE	JWK	GP
P8	01.08.2022	CIVIL & LOT ALIGNMENT ISSUE	JWK	GP
P9	02.09.2022	CIVIL UPDATES	JWK	GP
P10	26.09.2022	TRUCK MOVEMENT UPDATES	JWK	GP

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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PROJECT:
North Maclean
Crowson Ln, North Maclean, Logan, QLD

TITLE:
MASTERPLAN

CLIENT:
Charter Hall

NOTE :
HARDSTAND LEVELS BASED ON 6.0m EXCLUSION ZONE BELOW LOWEST SAG POINT OF EXISTING POWERLINES INCLUDING 5.0m OPERATIONAL ZONE CLEAR BELOW.
ACCESS TO ELECTRICAL TOWERS FROM COLLECTOR AND PRIVATE ROADS TO CIVIL ENG'S DESIGN
PROVIDE PROTECTION TO TOWERS LOCATED 5m MINIMUM FROM EACH LEG

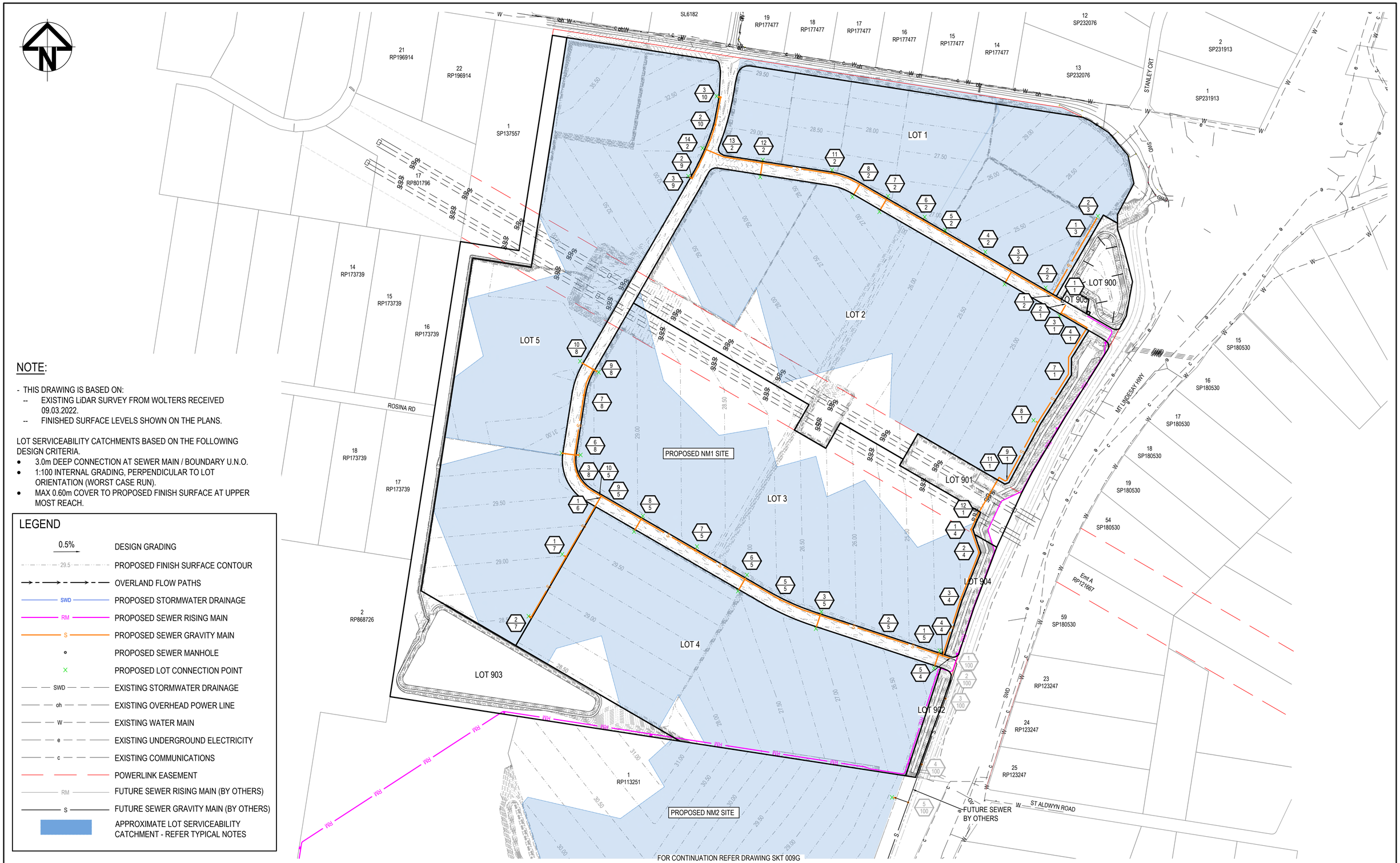
DATE: MARCH, 2022
DRAWN BY: MB/JWK
SCALE: 1:2500 @ A1
SCALE: 1:5000 @ A3

JOB NO: 22055
DRAWING NO: MP01
REVISION: P10

watson young

APPENDIX B

Preliminary Sewer Plans



NOTE:

- THIS DRAWING IS BASED ON:
  - -- EXISTING LiDAR SURVEY FROM WOLTERS RECEIVED 09.03.2022.
  - -- FINISHED SURFACE LEVELS SHOWN ON THE PLANS.

LOT SERVICEABILITY CATCHMENTS BASED ON THE FOLLOWING DESIGN CRITERIA.

- 3.0m DEEP CONNECTION AT SEWER MAIN / BOUNDARY U.N.O.
- 1:100 INTERNAL GRADING, PERPENDICULAR TO LOT ORIENTATION (WORST CASE RUN).
- MAX 0.60m COVER TO PROPOSED FINISH SURFACE AT UPPER MOST REACH.

LEGEND

0.5%	DESIGN GRADING
29.5	PROPOSED FINISH SURFACE CONTOUR
	OVERLAND FLOW PATHS
SWD	PROPOSED STORMWATER DRAINAGE
RM	PROPOSED SEWER RISING MAIN
S	PROPOSED SEWER GRAVITY MAIN
	PROPOSED SEWER MANHOLE
	PROPOSED LOT CONNECTION POINT
SWD	EXISTING STORMWATER DRAINAGE
oh	EXISTING OVERHEAD POWER LINE
W	EXISTING WATER MAIN
e	EXISTING UNDERGROUND ELECTRICITY
c	EXISTING COMMUNICATIONS
	POWERLINK EASEMENT
RM	FUTURE SEWER RISING MAIN (BY OTHERS)
S	FUTURE SEWER GRAVITY MAIN (BY OTHERS)
	APPROXIMATE LOT SERVICEABILITY CATCHMENT - REFER TYPICAL NOTES

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
03	LINE 04 ADDED	JG	EP	GE	24.10.22
02	LINES 2 AND 3 ADDED	JG	EP	GE	26.08.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

Scales

0 30 60 120 180 240 300m

1 : 3000

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures

Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

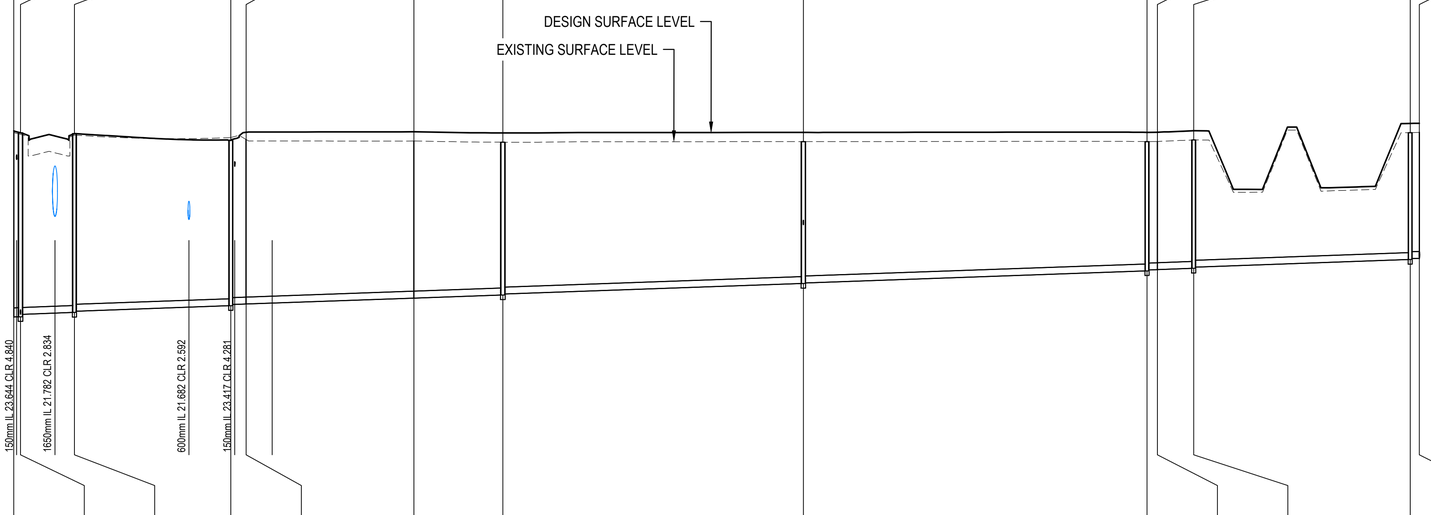
Title: PRELIMINARY SEWER SKETCH PLAN

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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	009	06

Date Plotted: 16 Feb 2024 - 05:48PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1	12/1	13/1
STRUCTURE TYPE	END	X	PE LINED	P2	PE LINED	P2	PE LINED	HTP 3.0m RADIUS	HTP 3.0m RADIUS	X	PE LINED	P2	PE LINED	HTP 3.0m RADIUS	P2	PE LINED	P2	PE LINED	END
STRUCTURE LID TYPE		B		B		B				B		B			B		B		
STRUCTURE DROP TYPE																			
JUNCTION LINE			LINE 2							LINE HC13									LINE 4
DEPTH TO HC																			
HC INVERT LEVEL																			
HC TYPE																			
HC LOT No																			
CH. FROM D/S STRUC/ BEND																			



DATUM R.L.		11.0			
LAND USE					
DIAMETER		225Ø uPVC			
GRADE		1 in 286			
EMBEDMENT TYPE					
DEPTH TO INVERT	6.075	6.075	6.005	5.925	5.836
JUNCTION INVERT LEVEL				18.588	
SEWER INVERT LEVEL	18.500	18.500	18.508	18.588	18.649
DESIGN SURFACE LEVEL		24.575		24.513	
SETOUT	E501869.082	N6929375.976	E501867.971	N6929374.077	E501859.085
RUNNING CHAINAGE		0.000	2.200	2.200	17.600

DATUM R.L.					
LAND USE					
DIAMETER					
GRADE		1 in 286			
EMBEDMENT TYPE					
DEPTH TO INVERT	5.796	5.398	5.358	5.368	5.368
JUNCTION INVERT LEVEL					
SEWER INVERT LEVEL	18.689	18.868	18.908	18.926	18.926
DESIGN SURFACE LEVEL	24.485		24.266		24.294
SETOUT	N6929358.885	E501903.289	N6929333.305	E501900.786	N6929328.980
RUNNING CHAINAGE	19.800	51.071	70.871	4.997	75.868

DATUM R.L.					
LAND USE					
DIAMETER					
GRADE		1 in 286			
EMBEDMENT TYPE					
DEPTH TO INVERT	5.128	5.128	4.987	4.957	4.632
JUNCTION INVERT LEVEL					
SEWER INVERT LEVEL	19.117	19.117	19.219	19.249	19.592
DESIGN SURFACE LEVEL		24.245		24.206	
SETOUT	E501871.667	N6929282.606	E501871.468	N6929253.568	E501819.018
RUNNING CHAINAGE	54.758	130.626	29.039	159.665	98.123

DATUM R.L.					
LAND USE					
DIAMETER					
GRADE		1 in 286			
EMBEDMENT TYPE					
DEPTH TO INVERT	4.612	4.222	4.192	4.184	4.184
JUNCTION INVERT LEVEL	21.510				
SEWER INVERT LEVEL	19.612	20.005	20.035	20.047	20.047
DESIGN SURFACE LEVEL	24.225		24.227		24.230
SETOUT	N6929170.640	E501765.972	N6929071.787	E501762.787	N6929070.663
RUNNING CHAINAGE	257.787	112.186	369.974	3.377	373.351

DATUM R.L.					
LAND USE					
DIAMETER					
GRADE		1 in 286			
EMBEDMENT TYPE					
DEPTH TO INVERT	4.192	4.152	4.143	4.113	4.107
JUNCTION INVERT LEVEL					20.416
SEWER INVERT LEVEL	20.088	20.128	20.376	20.406	20.416
DESIGN SURFACE LEVEL		24.280		24.518	24.524
SETOUT	E501752.516	N6929076.607	E501717.114	E501715.883	N6929012.697
RUNNING CHAINAGE	11.867	385.218	70.680	455.897	3.000 458.898

1

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
03	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	24.10.22
02	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	11.10.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

Scales

HORZ 0 10 20 40 60 80 100m — 1 : 1000

VERT 0 1 2 4 6 8 10m — 1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

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Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title: PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 1 OF 8

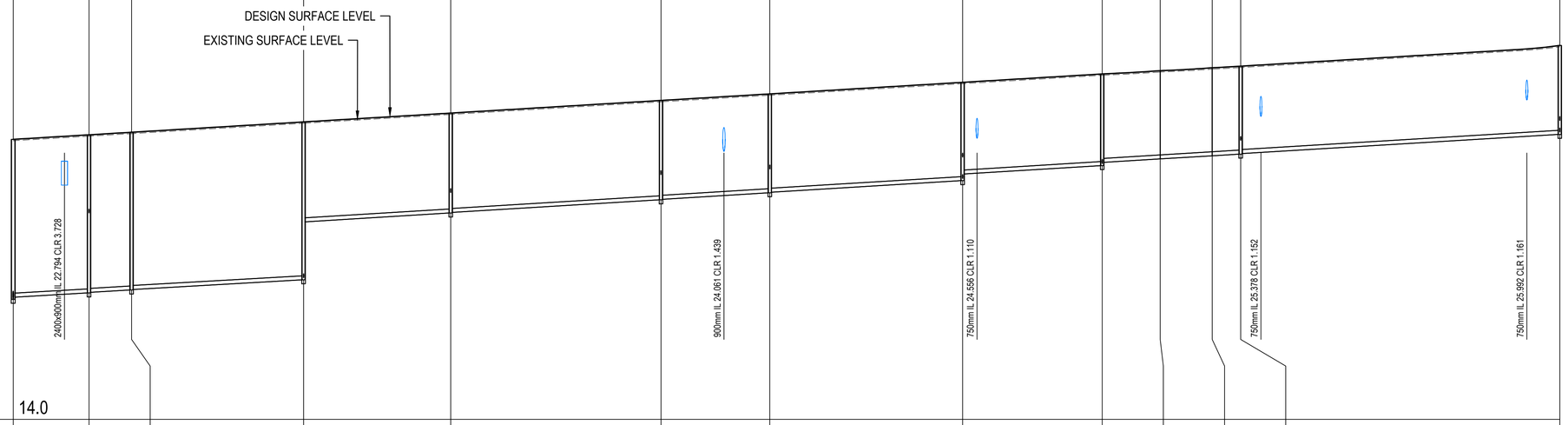
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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	- AAP	- WS00OP	- CV	- SKT	- 009A	- 06

100mm on Original

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STRUC/ BEND/ END NAME		2/1		1/2		2/2		3/2		4/2		5/2		6/2		7/2		8/2		9/2		10/2		11/2		12/2	
STRUCTURE TYPE	X	PE LINED		P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	P2	PE LINED	HTP	3.0m RADIUS	HTP	3.0m RADIUS	P2	PE LINED	P2	PE LINED
STRUCTURE LID TYPE	B			D		B		B		B		B		B		B		B						B		B	
STRUCTURE DROP TYPE																											
JUNCTION LINE		LINE 2		LINE 3				LINE HC03		LINE HC04		LINE HC05		LINE HC06		LINE HC07		LINE HC09						LINE HC10		LINE HC11	
DEPTH TO HC																											
HC INVERT LEVEL																											
HC TYPE																											
HC LOT No																											
CH. FROM D/S STRUC/ BEND																											



DATUM R.L.		14.0																									
LAND USE																											
DIAMETER														150Ø uPVC													
GRADE		1 in 179		1 in 179		1 in 179		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167		1 in 167			
EMBEDMENT TYPE																											
DEPTH TO INVERT	6.005	5.925	5.936	5.916	5.923	5.903	5.929	3.751	3.751	3.731	3.731	3.711	3.711	3.691	3.691	3.441	3.441	3.321	3.314	3.314	3.305	3.305	3.301	3.281	3.340		
JUNCTION INVERT LEVEL		18.588		21.747				19.319		22.516		23.190		23.402		23.849		23.609						24.474		24.791	
SEWER INVERT LEVEL	18.508	18.588	18.747	18.767	18.857	18.877	19.239	21.417	21.749	21.769	22.243	22.263	22.509	22.529	22.964	23.214	23.529	23.649	23.779	23.779	23.897	23.897	23.961	23.981	24.701		
DESIGN SURFACE LEVEL		24.513		24.684		24.780		25.168		25.500		25.974		26.220		26.655		26.970		27.094		27.202		27.262		28.041	
SETOUT	E501867.971	N6929374.077	E501843.299	N6929388.353	E501829.444	N6929396.370	E501773.461	N6929428.764	E501725.579	N6929456.470	E501657.135	N6929496.074	E501621.714	N6929516.570	E501558.963	N6929552.879	E501513.520	N6929579.173	E501494.161	N6929589.204	E501475.588	N6929595.320	E501465.089	N6929597.410	E501346.493	N6929615.716		
RUNNING CHAINAGE	0.000	28.505		28.505	16.007	44.512	64.680	109.191	55.320	164.512	79.076	243.588	40.924	284.512	72.499	357.010	52.501	409.511	21.804	431.315	19.554	450.869	10.705	461.575	120.000	581.575	

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
03	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	24.10.22
02	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	11.10.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

100mm on Original

Scales

HORZ 0 10 20 40 60 80 100m

1 : 1000

VERT 0 1 2 4 6 8 10m

1 : 100

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Architect

-

Client

Charter Hall

Status

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Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project

4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title

PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 2 OF 8

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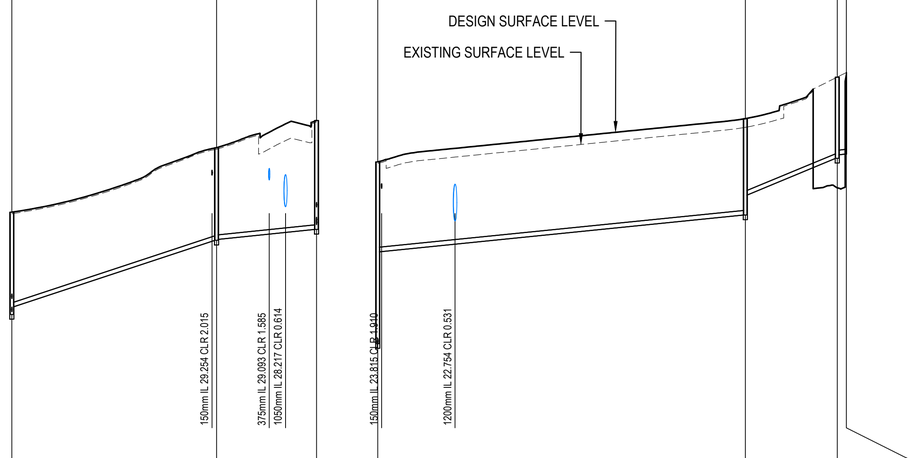
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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	009B	06

Date Plotted: 16 Feb 2024 - 05:48PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME	12/2			13/2 (14°)		14/2	1/2			1/3		2/3	3/3	13/1	1/4 (45°)		2/4 (90°)		3/4 (1°)		4/4 (135°)		5/4
STRUCTURE TYPE	P2	PE LINED		P2	PE LINED	P2	P2	PE LINED		P2	PE LINED	P2	PE LINED	END	END	P2	PE LINED	HTP 3.0m RADIUS	P2		P2	PE LINED	END
STRUCTURE LID TYPE	B			B		B	D			D		D				B			B		B		
STRUCTURE DROP TYPE		V																					
JUNCTION LINE		LINE HC11				LINE 9		LINE 3							LINE 4							LINE 5	LINE 100
DEPTH TO HC																							
HC INVERT LEVEL																							
HC TYPE																							
HC LOT No																							
CH. FROM D/S STRUC/ BEND																							
DATUM R.L.	18.0						13.0								13.0								
LAND USE																							
DIAMETER		150Ø uPVC																225Ø uPVC					
GRADE		1 in 30.80			1 in 100.00			1 in 100.00			1 in 25.00		1 in 100.00			1 in 286		1 in 286		1 in 286		1 in 286	
EMBEDMENT TYPE																							
DEPTH TO INVERT	3.340	3.090		3.025	2.995	3.557	5.936	2.936		3.147	2.497	2.652	2.537	2.662	4.107	4.107	4.064	4.034	3.828	3.828	3.711	3.691	4.349	4.309	4.279	
JUNCTION INVERT LEVEL		24.791				27.727		21.747								20.416								21.447		21.465
SEWER INVERT LEVEL	24.701	24.951		27.121	27.151	27.477	18.747	21.747		22.947	23.597	24.797	24.913	24.943	20.416	20.416	20.514	20.544	20.690	20.690	20.993	21.013	21.367	21.407	21.465	
DESIGN SURFACE LEVEL		28.041			30.146	31.034		24.684			26.095		27.450	27.605		24.524		24.578		24.518		24.704		25.716		25.744
SETOUT	E501346.493	N6929615.716		E501280.440	N6928625.912	E501250.399	E501843.299	N6929388.353		E501903.397	N6929492.220	E501918.422	N6929518.186	E501919.924	E501715.883	N6929012.697	E501704.449	N6928987.276	E501718.001	N6928947.744	E501686.208	N6928867.253	E501655.708	N6928770.829	E501671.423	N6928765.668
RUNNING CHAINAGE		581.575	66.836		648.410	32.629 681.039		0.000	120.001		120.001	30.000	150.000	3.000 153.001		0.000	27.874	27.874	41.790	69.665	86.542	156.207	101.133	257.340	16.541	273.880



2 3 4

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
03	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	24.10.22
02	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	11.10.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

Scales

HORZ 0 10 20 40 60 80 100m

1 : 1000

VERT 0 1 2 4 6 8 10m

1 : 100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

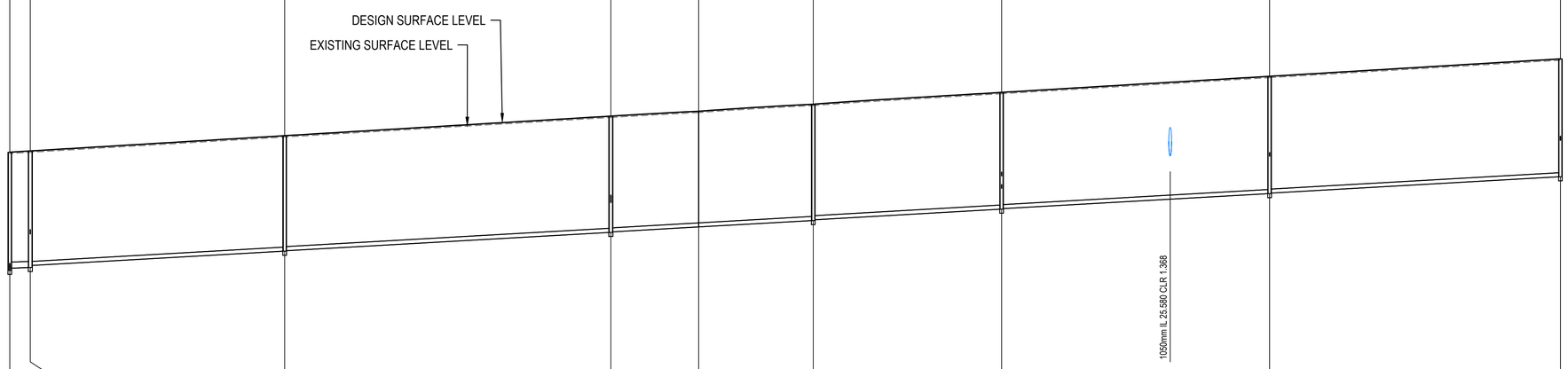
Title: PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 3 OF 8

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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334 -	AAP -	WS00OP -	CV -	SKT -	009C -	06

Date Plotted: 16 Feb 2024 - 05:48PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME	4/4	1/5	2/5	3/5	4/5	5/5	6/5	7/5	8/5
STRUCTURE TYPE	P2 PE LINED	B P2-1200mm PE LINED	P2 PE LINED	B P2-1200mm PE LINED	HTP 3.0m RADIUS	P2 PE LINED	P2 PE LINED	P2 PE LINED	P2 PE LINED
STRUCTURE LID TYPE	B	B	B	B		B	B	B	B
STRUCTURE DROP TYPE									
JUNCTION LINE	LINE 5	LINE HC14		LINE HC16			LINE HC18	LINE HC20	LINE HC21
DEPTH TO HC									
HC INVERT LEVEL									
HC TYPE									
HC LOT No									
CH. FROM D/S STRUC/ BEND									



DATUM R.L.	15.0				
LAND USE DIAMETER GRADE EMBEDMENT TYPE	225Ø uPVC 1 in 286	1 in 179	1 in 179	1 in 179	1500Ø uPVC 1 in 179	1 in 179	1 in 179	1 in 179	
DEPTH TO INVERT	4.349 / 4.269 / 4.288	4.213 / 4.250	4.230 / 4.278	4.258 / 4.257	4.257 / 4.280	4.250 / 4.297	4.277 / 4.316	4.296 / 4.339	
JUNCTION INVERT LEVEL	21.447	22.700		23.856			24.381	25.562	26.145
SEWER INVERT LEVEL	21.367 / 21.447 / 21.473	21.548 / 22.072	22.092 / 22.764	22.784 / 22.965	22.965 / 23.201	23.231 / 23.619	23.639 / 24.191	24.211 / 24.811	
DESIGN SURFACE LEVEL	25.716	25.761	26.323	27.043	27.223	27.481	27.916	28.508	29.150
SETOUT	E501655.708 N6928770.829 E501648.539	N6928773.183 E501559.616	N6928802.388 E501445.607	N6928839.831 E501414.917	N6928849.911 E501376.437	N6928867.150 E501316.462	N6928901.812 E501231.120	N6928951.194 E501138.507	N6929004.783
RUNNING CHAINAGE	0.000	7.546 / 93.596	101.142 / 120.000	221.142	32.303 / 253.445	42.165 / 295.610	69.271 / 364.881	98.599 / 463.480	107.000 / 570.480

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
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02	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	11.10.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

100mm on Original

Scales

HORZ 0 10 20 40 60 80 100m

1 : 1000

VERT 0 1 2 4 6 8 10m

1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

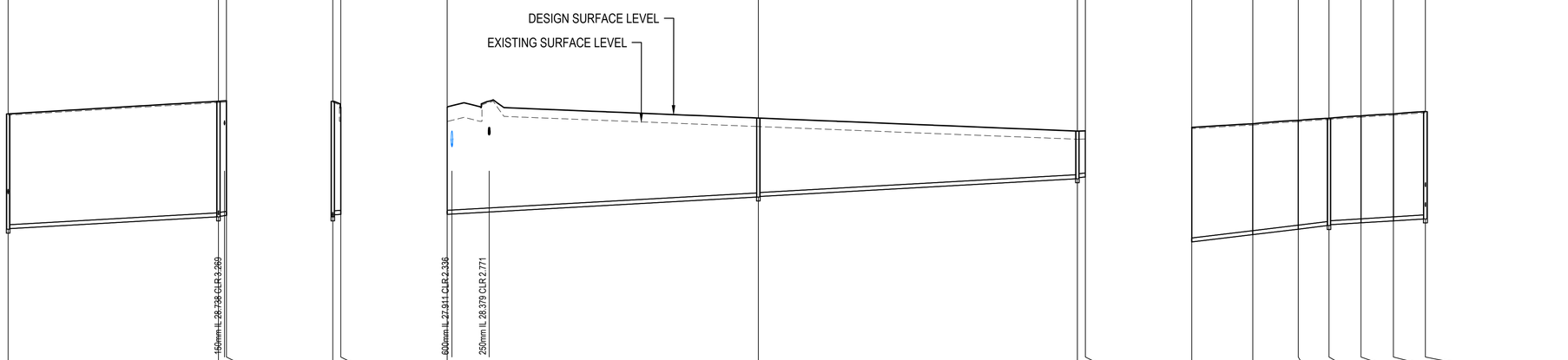
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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	009D	06

Date Plotted: 16 Feb 2024 - 05:48PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME		8/5			9/5		10/5	9/5		1/6	1/6		1/7		2/7	3/7	10/5	1/8	2/8	3/8	4/8	5/8	6/8	
STRUCTURE TYPE		P2	PE LINED		P2	PE LINED	END	P2	PE LINED	END	END		P2	PE LINED	P2	PE LINED END	END	HTP	3.0m RADIUS	HTP	3.0m RADIUS	P2	PE LINED	HTP	3.0m RADIUS	HTP	3.0m RADIUS	B	P2-1200mm PE LINED	
STRUCTURE LID TYPE		B			B			B					B		B							B							
STRUCTURE DROP TYPE																														
JUNCTION LINE			LINE HC21			LINE 6	LINE 8		LINE 6	LINE 7	LINE 7							LINE 8												LINE HC24
DEPTH TO HC																														
HC INVERT LEVEL																														
HC TYPE																														
HC LOT No																														
CH. FROM D/S STRUC/ BEND																														
DATUM R.L.			17.0						17.0			17.0							18.0											
LAND USE																														
DIAMETER			150Ø uPVC						150Ø uPVC				150Ø uPVC																	
GRADE			1 in 179			1 in 83.33			1 in 180				1 in 180			1 in 100.00			1 in 83.33		1 in 83.33		1 in 167		1 in 167		1 in 167			
EMBEDMENT TYPE																														
DEPTH TO INVERT	4.339	4.319		4.351	4.331	4.313		4.351	4.271	4.027	4.027		2.972	2.952	1.794	1.754	1.732	4.313	4.313	4.170	4.170	4.093	4.093	4.036	4.006	4.022	4.022	4.021	4.021	4.040	
JUNCTION INVERT LEVEL	26.145			25.354			25.330		25.354		25.370							25.330												26.662	
SEWER INVERT LEVEL	24.811	24.831		25.274	25.294	25.330		25.274	25.354	25.370	25.370		26.021	26.041	26.707	26.747	26.777	25.330	25.330	25.605	25.605	25.810	25.810	25.949	25.979	26.051	26.051	26.124	26.124	26.196	
DESIGN SURFACE LEVEL	29.150			29.624			29.642		29.624	29.397	29.397			28.993		28.501	28.510	29.642		29.775		29.904		29.985		30.073		30.146		30.236	
SETOUT	E501138.507	N6929004.783		E501070.046	N6929044.396	E501067.449 N6929045.899		E501070.046	N6929044.396	E501068.544 N6929041.800	E501068.544	N6929041.800		E501009.946	N6928940.531	E500949.846	N6928836.665 E500947.250 N6928838.168	E501067.449	N6929045.899	E501047.606	N6929057.381	E501035.859	N6929069.851	E501029.921	N6929079.745	E501026.986	N6929091.112	E501023.682	N6929103.103	E501024.566	N6929115.082	
RUNNING CHAINAGE	570.480	79.095		649.575	3.000		652.576	0.000	2.999		2.999	0.000	117.000		117.000	120.001	237.001 3.000	240.001	0.000	0.22.926	22.926	17.131	40.058	11.539	51.597	12.029	63.626	12.210	75.836	12.012	87.847	



5 6 7 8

Issue	Description	DR	CH	VE	Date
06	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
05	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
04	SEWER LONGITUDINAL SECTION UPDATED	AO	SS	GE	03.07.23
03	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	24.10.22
02	SEWER LONGITUDINAL SECTION UPDATED	JG	EP	GE	11.10.22
01	ORIGINAL ISSUE	JG	EP	GE	19.07.22

Scales

HORZ 0 10 20 40 60 80 100m — 1 : 1000

VERT 0 1 2 4 6 8 10m — 1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures

Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title: PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 5 OF 8

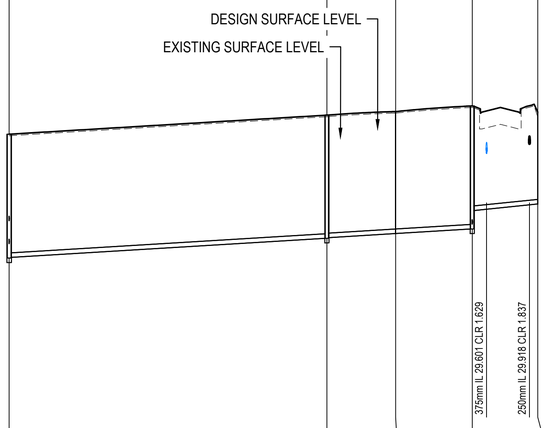
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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	009E	06

100mm on Original

Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME		6/8					7/8		8/8		9/8		10/8	14/2		1/9		2/9		3/9	14/2		1/10		2/10		3/10		4/10
		-5°					-3°		-16°		-97°					-4°		-90°					-5°		-7°		-90°		
STRUCTURE TYPE		P2-1200mm	PE LINED				P2	PE LINED	HTP	3.0m RADIUS	P2	PE LINED	END	P2	PE LINED	HTP	3.0m RADIUS	P2	PE LINED	END	P2	PE LINED	HTP	3.0m RADIUS	P2	PE LINED	P2	PE LINED	END
STRUCTURE LID TYPE		B					B				B			B				B			B				B		B		
STRUCTURE DROP TYPE																													
JUNCTION LINE			LINE HC24									LINE HC26			LINE 9							LINE 9						
DEPTH TO HC																													
HC INVERT LEVEL																													
HC TYPE																													
HC LOT No																													
CH. FROM D/S STRUC/ BEND																													
DATUM R.L.			18.0												19.0							19.0							
LAND USE																													
DIAMETER					150Ø uPVC											150Ø uPVC									150Ø uPVC				
GRADE					1 in 167			1 in 167		1 in 167		1 in 100.00			1 in 100.00		1 in 100.00		1 in 100.00			1 in 100.00		1 in 100.00			1 in 100.00		
EMBEDMENT TYPE																													
DEPTH TO INVERT	4.040	4.020				4.020	4.000	3.980	3.980	4.017	3.415	3.000		3.557	3.307		3.007	3.007	2.873	2.763	3.000		3.557	3.399	3.333	3.333	3.156	3.126		2.926	2.886	3.000	
JUNCTION INVERT LEVEL		26.662									27.299				27.727									27.727								
SEWER INVERT LEVEL	26.196	26.216				26.839	26.859	26.993	26.993	27.143	27.745	27.959		27.477	27.727		28.044	28.044	28.277	28.387	28.424		27.477	27.635	27.835	27.835	28.089	28.119		28.598	28.638	28.675	
DESIGN SURFACE LEVEL		30.236					30.859		30.973		31.160		30.959		31.034			31.051		31.150	31.424			31.034		31.168		31.245			31.524		31.675
SETOUT	E501024.566	N6929115.082				E501040.464	N6929217.585	E501044.930	N6929239.596	E501056.435	N6929261.791	E501037.927	N6929272.500	E501250.399	N6929638.648		E501236.991	N6929609.933	E501225.827	N6929589.454	E501222.573	N6929591.215	E501250.399	N6929638.648	E501258.205	N6929657.061	E501265.961	N6929681.233		E501275.067	N6929728.295	E501271.435	N6929728.998
RUNNING CHAINAGE		87.847	103.729				191.576	22.460	214.035	25.000	239.035	21.382	260.418	0.000	31.691		31.691	23.324	55.016	3.700	58.716		0.000	19.999	19.999	25.386	45.385	47.935			93.320	3.700	97.020
		8													9									10								



Issue	Description	DR	CH	VE	Date
02	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
01	ORIGINAL ISSUE	GP	TF	GE	25.08.23

Scales

HORZ 0 10 20 40 60 80 100m

1 : 1000

VERT 0 1 2 4 6 8 10m

1 : 100

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

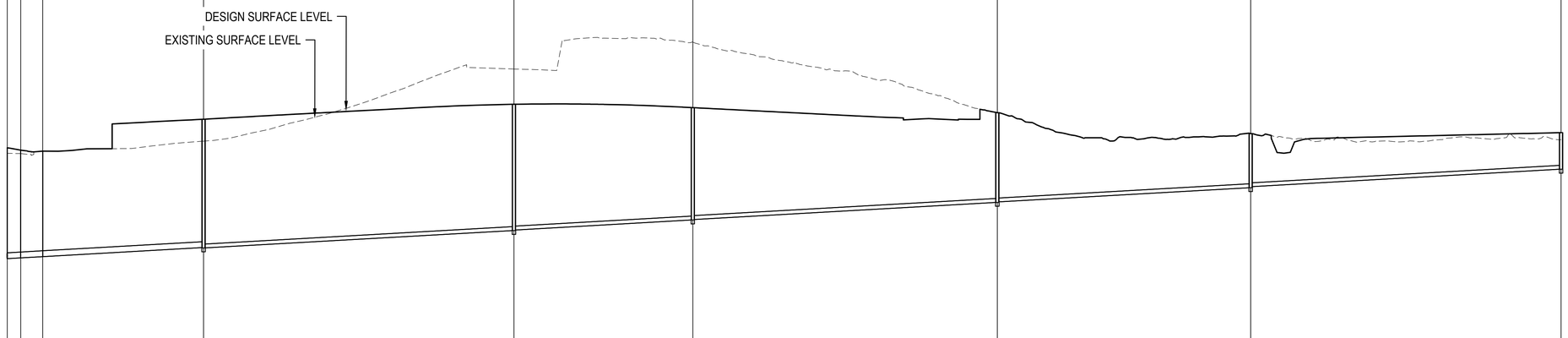
Title: PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 6 OF 8

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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	09H - 02	

Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME	5/4	1/100	2/100	3/100	4/100	5/100	6/100	7/100	8/100
		45°	45°	7°				7°	
STRUCTURE TYPE	END	HTP	HTP	P2	P2	P2	P2	P2	P2
STRUCTURE LID TYPE				B	B	B	B	B	B
STRUCTURE DROP TYPE									
JUNCTION LINE	LINE 100								
DEPTH TO HC									
HC INVERT LEVEL									
HC TYPE									
HC LOT No									
CH. FROM D/S STRUC/ BEND									



DATUM R.L.	15.0									
LAND USE										
DIAMETER		225Ø uPVC					150Ø uPVC			
GRADE		1 in 179	1 in 179	1 in 179	1 in 179	1 in 179	1 in 179	1 in 179	1 in 179	
EMBEDMENT TYPE										
DEPTH TO INVERT	4.279	4.279	4.160	4.160	4.074	4.074	4.958	4.971	4.877	4.857	4.340	4.320	3.465	3.445	2.090	2.050	1.413	
JUNCTION INVERT LEVEL		21.465																
SEWER INVERT LEVEL	21.465	21.465	21.494	21.494	21.542	21.542	21.890	21.877	22.549	22.569	22.957	22.977	23.636	23.656	24.205	24.245	24.917	
DESIGN SURFACE LEVEL		25.744		25.654		25.615		26.848		27.426		27.296		27.101		26.295		26.330
SETOUT	E501671.423	N6928765.668	E501676.400	N6928764.033	E501680.217	N6928756.465	E501660.663	N6928697.412	E501619.950	N6928584.530	E501596.540	N6928519.445	E501556.740	N6928408.630	E501523.628	N6928316.437	E501404.563	N6928331.390
RUNNING CHAINAGE	0.000	5.239	5.239	8.476	13.715	62.206	75.922	119.999	195.921	69.167	265.088	117.746	382.834	97.959	480.792	120.000	600.792	

100

Issue	Description	DR	CH	VE	Date
01	ORIGINAL ISSUE	GP	TF	GE	31.01.24

100mm on Original

Scales

HORZ 0 10 20 40 60 80 100m — 1 : 1000

VERT 0 1 2 4 6 8 10m — 1 : 100

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

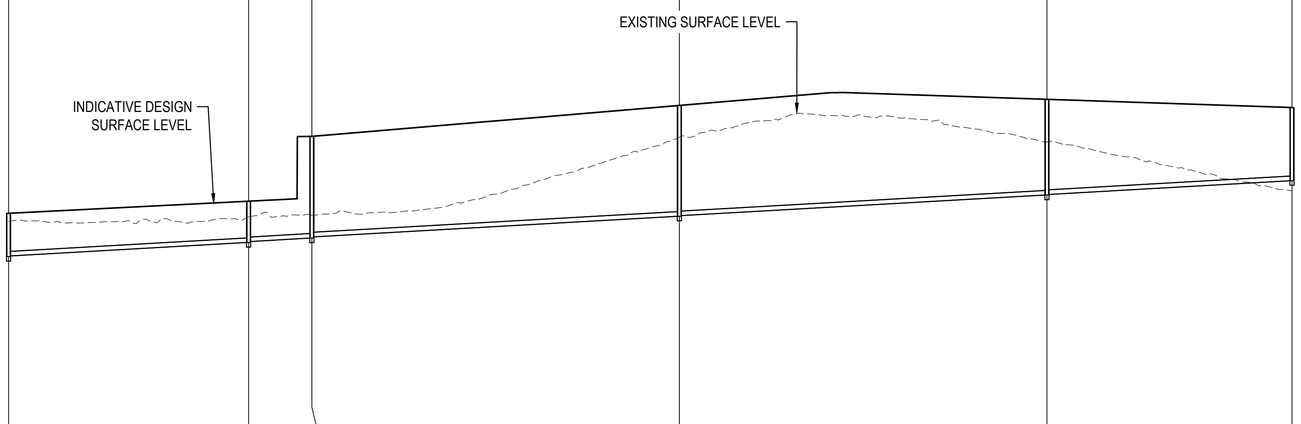
Title: PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 7 OF 8

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Project No.	Folder Prefix	Zone	Stage	Phase	Discipline	Type	Drawing No.	Issue
30109334	- AAP	- WS00	OP	- CV	- SKT	- 09J	- 01	

Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

STRUC/ BEND/ END NAME		8/100		9/100	10/100		11/100		12/100		13/100	
			45°			47°						
STRUCTURE TYPE	P2		P2		P2		P2		P2		P2	
STRUCTURE LID TYPE	B		B		B		B		B		B	
STRUCTURE DROP TYPE												
JUNCTION LINE												
DEPTH TO HC												
HC INVERT LEVEL												
HC TYPE												
HC LOT No												
CH. FROM D/S STRUC/ BEND												



DATUM R.L.		17.0										
LAND USE DIAMETER GRADE EMBEDMENT TYPE			1 in 179		1 in 179		150Ø uPVC 1 in 179		1 in 179		1 in 179	
DEPTH TO INVERT	1.413	1.393		1.350	1.320	3.319	3.279	3.616	3.596	3.124	3.104	2.388
JUNCTION INVERT LEVEL												
SEWER INVERT LEVEL	24.917	24.937		25.376	25.406	25.521	25.561	26.233	26.253	26.925	26.945	27.393
DESIGN SURFACE LEVEL		26.330			26.725		26.840		29.849		30.049	29.781
SETOUT	E501404.563 N6928331.390			E501326.785 N6928341.158		E501310.603 N6928328.364		E501192.090 N6928347.199		E501073.577 N6928366.034		E500994.569 N6928378.591
RUNNING CHAINAGE		600.792	78.390		679.182	20.629	699.811	120.000	819.811	120.000	939.811	80.000	1019.811

100

Issue	Description	DR	CH	VE	Date
01	ORIGINAL ISSUE	GP	TF	GE	31.01.24

Scales

HORZ 0 10 20 40 60 80 100m

1 : 1000

VERT 0 1 2 4 6 8 10m

1 : 100

100mm on Original

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Architect

-

Client

Charter Hall

Status

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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project

4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title

PRELIMINARY SEWER LONGITUDINAL SECTION SHEET 8 OF 8

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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	09K	01

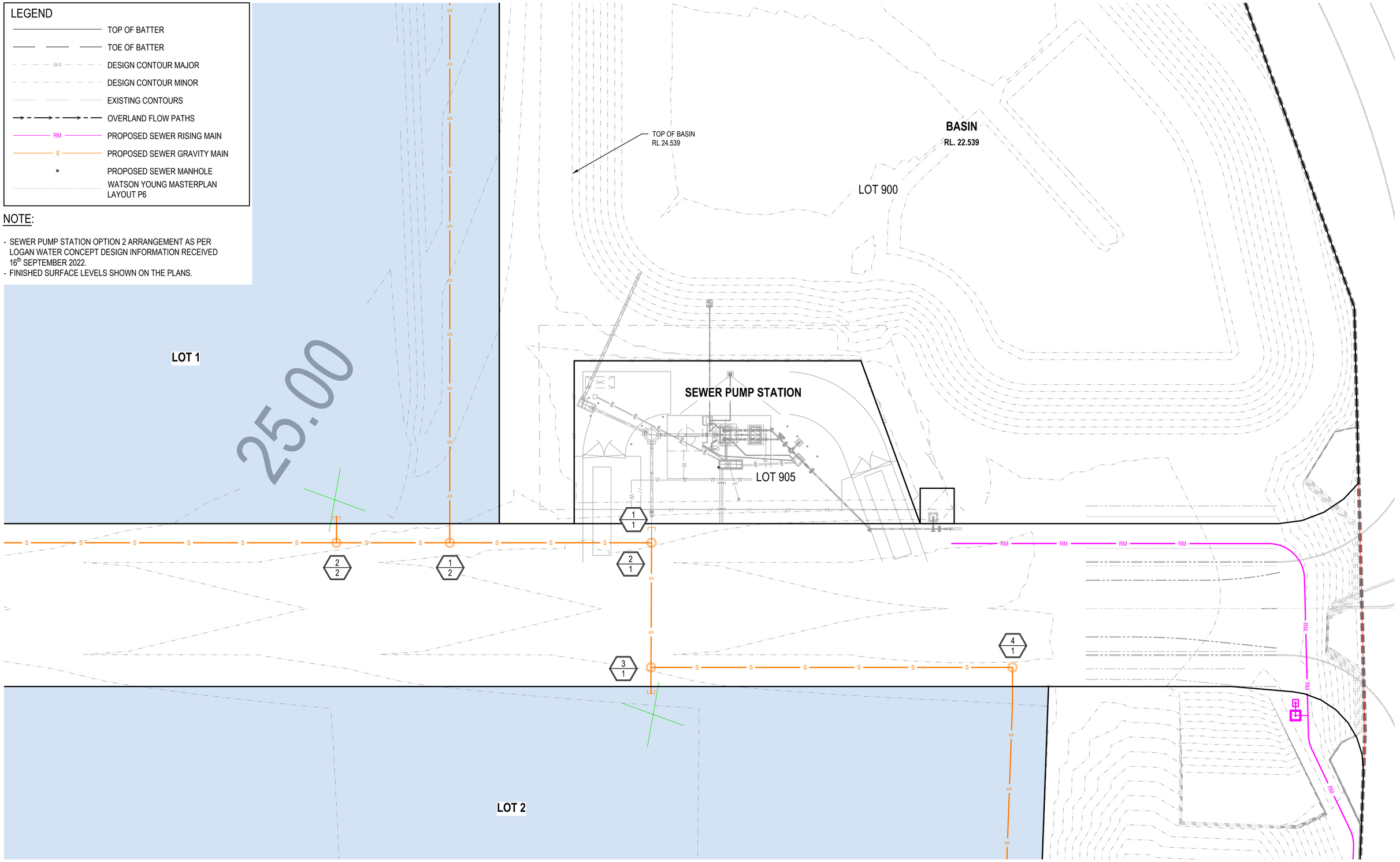
Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

LEGEND

- TOP OF BATTER
- TOE OF BATTER
- 34.0 DESIGN CONTOUR MAJOR
- DESIGN CONTOUR MINOR
- EXISTING CONTOURS
- OVERLAND FLOW PATHS
- RM PROPOSED SEWER RISING MAIN
- S PROPOSED SEWER GRAVITY MAIN
- PROPOSED SEWER MANHOLE
- WATSON YOUNG MASTERPLAN LAYOUT P6

NOTE:

- SEWER PUMP STATION OPTION 2 ARRANGEMENT AS PER LOGAN WATER CONCEPT DESIGN INFORMATION RECEIVED 16th SEPTEMBER 2022.
- FINISHED SURFACE LEVELS SHOWN ON THE PLANS.



Issue	Description	DR	CH	VE	Date
04	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	25.08.23
03	UDPATED SEWER PUMP STATION LAYOUT	AO	SS	GE	03.07.23
02	UDPATED SEWER PUMP STATION LAYOUT	JG	EP	GE	24.10.22
01	ORIGINAL ISSUE	JG	EP	GE	23.08.22

Scales

0 5 10 15 20 25m

1 : 250

100mm on Original

Surveyor: WOLTER consulting group — Planning, Urban Design, Landscape, Environment, Surveying

Architect: -

Client: Charter Hall

Status: CONCEPT DESIGN ONLY
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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project: 4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

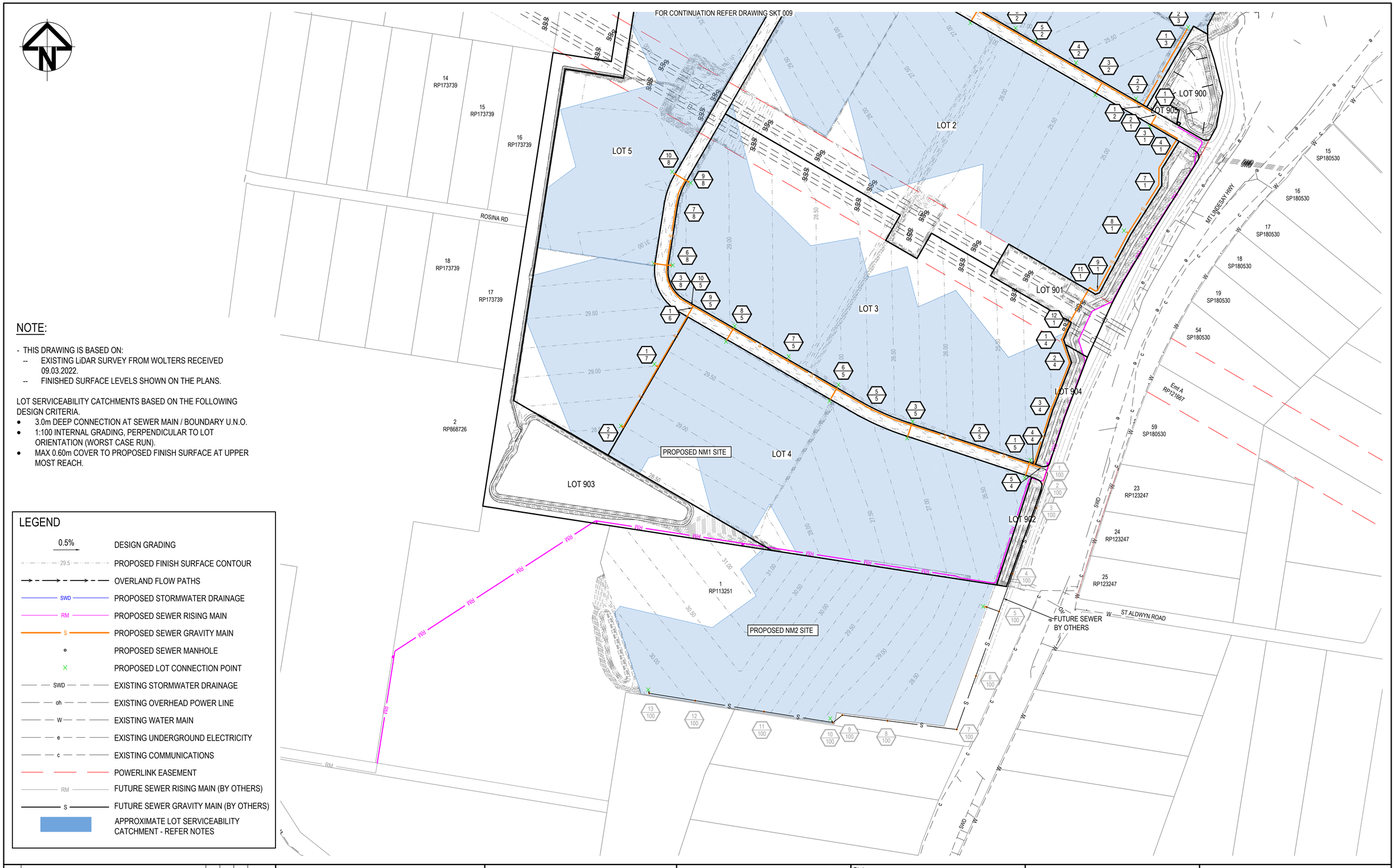
Title: SEWER PUMP STATION SKETCH PLAN

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Project No.	Folder Prefix	Zone	Stage	Phase	Discipline	Type	Drawing No.	Issue
30109334	- AAP	- WS00OP	- CV	- SKT	- 009F	- 04		

Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1



NOTE:

- THIS DRAWING IS BASED ON:
  - -- EXISTING LiDAR SURVEY FROM WOLTERS RECEIVED 09.03.2022.
  - -- FINISHED SURFACE LEVELS SHOWN ON THE PLANS.

LOT SERVICEABILITY CATCHMENTS BASED ON THE FOLLOWING DESIGN CRITERIA.

- 3.0m DEEP CONNECTION AT SEWER MAIN / BOUNDARY U.N.O.
- 1:100 INTERNAL GRADING, PERPENDICULAR TO LOT ORIENTATION (WORST CASE RUN).
- MAX 0.60m COVER TO PROPOSED FINISH SURFACE AT UPPER MOST REACH.

LEGEND

- 0.5% — DESIGN GRADING
- 29.5 — PROPOSED FINISH SURFACE CONTOUR
- OVERLAND FLOW PATHS
- SWD — PROPOSED STORMWATER DRAINAGE
- RM — PROPOSED SEWER RISING MAIN
- S — PROPOSED SEWER GRAVITY MAIN
- PROPOSED SEWER MANHOLE
- PROPOSED LOT CONNECTION POINT
- SWD — EXISTING STORMWATER DRAINAGE
- oh — EXISTING OVERHEAD POWER LINE
- W — EXISTING WATER MAIN
- e — EXISTING UNDERGROUND ELECTRICITY
- c — EXISTING COMMUNICATIONS
- POWERLINK EASEMENT
- RM — FUTURE SEWER RISING MAIN (BY OTHERS)
- S — FUTURE SEWER GRAVITY MAIN (BY OTHERS)
- APPROXIMATE LOT SERVICEABILITY CATCHMENT - REFER NOTES

Issue	Description	DR	CH	VE	Date
02	SEWER LAYOUT AND LONGITUDINAL SECTION UPDATED	GP	TF	GE	31.01.24
01	ORIGINAL ISSUE	GP	TF	GE	25.08.23

100mm on Original

Scales

0 30 60 120 180 240 300m

1 : 3000

Surveyor

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Architect

-

Client

Charter Hall

Status

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Original Issue Signatures			
Drawn	A.OSORIO	Original Size	A1
Designed	G.PUMNUT	Height Datum	AHD
Project Manager	B.KITSON	Grid	
Verified	G.ELLIS		

Project

4499-4651 MOUNT LINDESAY HIGHWAY, NORTH MACLEAN

Title

PRELIMINARY SEWER SKETCH PLAN SHEET 2

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Project No.	Folder Prefix	Zone | Stage | Phase	Discipline	Type	Drawing No.	Issue
30109334	AAP	WS00OP	CV	SKT	009G	02

Date Plotted: 16 Feb 2024 - 05:49PM File Name: C:\Users\gp117798\DC\ACCDocs\Arcadis\AAU-30109334-4499-4651 Mount Lindesay Highway\Project Files\01_WIP\01_Package-00_Civil_CV\Drawings\30109334-AAP-WS00OP-CV-SKT-009-SewerSketchPlan.dwg V1

APPENDIX C

EP & Sewer Sizing Calculations

Author: Hannah Qiao

PROJECT NUMBER: 10037557
DATE: 6/02/2024
Software:

Sewer Sizing Calculations

Updated ID, same catchment | Structure Removed | Updated ID and Catchment | New Structure

ARCADIS Design & Consultancy for natural and built assets

0.915 flow factor to 75% depth AS2200
1.15 velocity factor to 75% depth AS2200

Structure #	Contributing Lots	EPs	Factored EPs matching Logan Water Ultimate Loading	ADWF	d	PDWF	PWWF (L/s)	Downstream Pipe DN	Pipe Grade min.	100% Pipe Capacity Qo (L/s)	100% Velocity Vo (m/s)	Capacity at 75% depth (L/s)	Velocity at 75% depth (m/s)	75% Pipe Depth Flow Exceeds PWWF?	75% Depth Velocity within 3m/s?
4/100	NM2-EXT	467	471	0.90	2.37	2.13	4.57	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
17/1	NM2-EXT	467	471	0.90	2.37	2.13	4.57	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
2-3/100	Lot 13, Lot 12, Lot 14, 75% of Lot 11, Lot 15, EXT-NM2	1652	1665	3.18	2.37	7.53	16.18	DN225	0.56%	33.0	0.85	30.20	0.98	YES	YES
3/4	Lot 13, Lot 12, Lot 14, 75% of Lot 11, Lot 15, EXT-NM2	1652	1665	3.18	2.37	7.53	16.18	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
2/4	Lot 13, Lot 12, Lot 14, Lot 11, Lot 15, EXT-NM2	1720	1733	3.31	2.37	7.84	16.85	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
1/4	Lot 13, Lot 12, Lot 14, Lot 11, Lot 15, EXT-NM2	1720	1733	3.31	2.37	7.84	16.85	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
12/1	Lot 13, Lot 12, Lot 14, Lot 11, Lot 15, EXT-NM2	1720	1733	3.31	2.37	7.84	16.85	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
11/1	Lot 13, Lot 12, Lot 14, Lot 11, Lot 15, EXT-NM2	1720	1733	3.31	2.37	7.84	16.85	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
8/1	Lot 13, Lot 12, Lot 14, Lot 11,30% of Lot 10, Lot 15, EXT-NM2	1860	1874	3.58	2.37	8.48	18.22	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
7/1	Lot 13, Lot 12, Lot 14, Lot 11,30% of Lot 10, Lot 15, EXT-NM2	1860	1874	3.58	2.37	8.48	18.22	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
4/1	Lot 13, Lot 12, Lot 14, Lot 11,30% of Lot 10, Lot 15, EXT-NM2	1860	1874	3.58	2.37	8.48	18.22	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
3/1	Lot 13, Lot 12, Lot 14, Lot 11, Lot 15, EXT-NM2, 50% of Lot 10	1871	1886	3.60	2.37	8.53	18.33	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
1/1	All	2764	2785	5.32	2.37	12.60	27.08	-	-	-	-	-	-	-	-
3/10	50% of Lot 8	42	42	0.08	2.37	0.19	0.41	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
2/10	50% of Lot 8	42	42	0.08	2.37	0.19	0.41	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
3/9	50% of Lot 8	42	42	0.08	2.37	0.19	0.41	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
1/9	Lot 8, Lot 7	193	195	0.37	2.37	0.88	1.89	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
13/2	Lot 8, Lot 7	193	195	0.37	2.37	0.88	1.89	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
12/2	Lot 8, Lot 7, Lot 6, 30% of Lot 9	301	303	0.58	2.37	1.37	2.95	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
11/2	Lot 8, Lot 7, Lot 6, 30% of Lot 9, Lot 5	331	334	0.64	2.37	1.51	3.24	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
12/2	Lot 8, Lot 7, Lot 6, 50% of Lot 9, Lot 5	384	387	0.74	2.37	1.75	3.76	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
8/2	Lot 8, Lot 7, Lot 6, 60% of Lot 9, Lot 5	410	414	0.79	2.37	1.87	4.02	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
7/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4	551	555	1.06	2.37	2.51	5.40	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
6/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, 50% of Lot 3	578	582	1.11	2.37	2.63	5.66	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES

Structure #	Contributing Lots	EPs	Factored EPs matching Logan Water Ultimate Loading	ADWF	d	PDWF	PWWF (L/s)	Downstream Pipe DN	Pipe Grade min.	100% Pipe Capacity Qo (L/s)	100% Velocity Vo (m/s)	Capacity at 75% depth (L/s)	Velocity at 75% depth (m/s)	75% Pipe Depth Flow Exceeds PWWF?	75% Depth Velocity within 3m/s?
5/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, Lot 3	605	610	1.16	2.37	2.76	5.93	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
4/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, Lot 3, 33% of Lot 2	634	639	1.22	2.37	2.89	6.21	DN150	0.60%	11.0	0.67	10.07	0.77	YES	YES
3/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, Lot 3, 33% of Lot 2, 50% of Lot 10	786	791	1.51	2.37	3.58	7.69	DN150	4.50%	22.5	1.7	20.59	1.96	YES	YES
2/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, Lot 3, Lot 2, 50% of Lot 10	844	851	1.62	2.37	3.85	8.27	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
1/2	Lot 8, Lot 7, Lot 6, Lot 9, Lot 5, Lot 4, Lot 3, Lot 2, 50% of Lot 10, Lot 1	893	899	1.72	2.37	4.07	8.74	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
2/3	Lot 1	48	49	0.09	2.37	0.22	0.47	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
1/3	Lot 1	48	49	0.09	2.37	0.22	0.47	DN150	4.00%	21.0	1.6	19.22	1.84	YES	YES
1/1	All	2764	2785	5.32	2.37	12.60	27.08	-	-	-	-	-	-	-	-

Structure #	Contributing Lots	EPs	Factored EPs matching Logan Water Ultimate Loading	ADWF	d	PDWF	PWWF (L/s)	Downstream Pipe DN	Pipe Grade min.	100% Pipe Capacity Qo (L/s)	100% Velocity Vo (m/s)	Capacity at 75% depth (L/s)	Velocity at 75% depth (m/s)	75% Pipe Depth Flow Exceeds PWWF?	75% Depth Velocity within 3m/s?
10/8	20% of Lot 13	71	72	0.14	2.37	0.32	0.70	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
9/8	15% of Lot 12	36	36	0.07	2.37	0.17	0.35	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES
7/8	20% of Lot 13, 15% of Lot 12	107	108	0.21	2.37	0.49	1.05	DN150	0.59%	14.0	0.86	12.81	0.99	YES	YES
6/8	50% of Lot 13, 25% of Lot 12	238	240	0.46	2.37	1.09	2.33	DN150	0.59%	11.0	0.67	10.07	0.77	YES	YES
3/8	50% of Lot 13, 25% of Lot 12	238	240	0.46	2.37	1.09	2.33	DN150	0.59%	11.0	0.67	10.07	0.77	YES	YES
9/5	Lot 13, 25% of Lot 12	416	419	0.80	2.37	1.90	4.08	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
8/5	Lot 13, 33% of Lot 12, 25% of Lot 14	489	492	0.94	2.37	2.23	4.79	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
7/5	Lot 13, Lot 12, 25% of Lot 14	650	655	1.25	2.37	2.96	6.37	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
6/5	Lot 13, Lot 12, Lot 14, 10% of Lot 11	836	843	1.61	2.37	3.81	8.19	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
5/5	Lot 13, Lot 12, Lot 14, 10% of Lot 11	836	843	1.61	2.37	3.81	8.19	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
3/5	Lot 13, Lot 12, Lot 14, 33% of Lot 11, 33% of Lot 15	956	963	1.84	2.37	4.36	9.36	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
2/5	Lot 13, Lot 12, Lot 14, 33% of Lot 11, 33% of Lot 15	956	963	1.84	2.37	4.36	9.36	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
1/5	Lot 13, Lot 12, Lot 14, 75% of Lot 11, Lot 15	1185	1194	2.28	2.37	5.40	11.61	DN225	0.35%	26.0	0.67	23.79	0.77	YES	YES
14/100	10% of NM2-EXT	47	47	0.09	2.37	0.21	0.46	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
13/100	10% of NM2-EXT	47	47	0.09	2.37	0.21	0.46	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
12/100	10% of NM2-EXT	47	47	0.09	2.37	0.21	0.46	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
11/100	40% of NM2-EXT	187	188	0.36	2.37	0.85	1.83	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
10/100	40% of NM2-EXT	187	188	0.36	2.37	0.85	1.83	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
9/100	40% of NM2-EXT	187	188	0.36	2.37	0.85	1.83	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
8/100	40% of NM2-EXT	187	188	0.36	2.37	0.85	1.83	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES

Structure #	Contributing Lots	EPs	Factored EPs matching Logan Water Ultimate Loading	ADWF	d	PDWF	PWWF (L/s)	Downstream Pipe DN	Pipe Grade min.	100% Pipe Capacity Qo (L/s)	100% Velocity Vo (m/s)	Capacity at 75% depth (L/s)	Velocity at 75% depth (m/s)	75% Pipe Depth Flow Exceeds PWWF?	75% Depth Velocity within 3m/s?
7/100	40% of NM2-EXT	187	188	0.36	2.37	0.85	1.83	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
6/100	NM2-EXT	467	471	0.90	2.37	2.13	4.57	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
5/100	NM2-EXT	467	471	0.90	2.37	2.13	4.57	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
2/4	NM2-EXT	467	471	0.90	2.37	2.13	4.57	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
2/7	40% of Lot 13	142	143	0.27	2.37	0.65	1.39	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
1/7	50% of Lot 13	178	179	0.34	2.37	0.81	1.74	DN150	0.56%	10.5	0.64	9.61	0.74	YES	YES
1/7	60% of NM2-EXT	280	282	0.54	2.37	1.28	2.74	DN150	1.00%	14.0	0.86	12.81	0.99	YES	YES

APPENDIX D

Logan Water Technical Memorandum DD8001 North Maclean

Technical Memorandum

To: Water Infrastructure Project Development Program Leader

From: **M Seymour (Planning Engineer)**

Actioned by: Click or tap here to enter text.

Date: 21 July 2022

Reference: DD8001 North Maclean

Subject: **Load Projections for North Maclean PDA**

1. Overview

The purpose of this memo is to confirm the estimated loads associated with the North Maclean PDA based on the best available current information as provided by developers.

1.1 Developer Information

The developer of "Charter Hall – Industrial Subdivision", 4499-4651 Mount Lindesay Highway, North Maclean is represented by Arcadis who have provided several plans showing the extent of the development that they are proposing. These are included in Attachment A. The development areas within the North Maclean PDA are shown in Figure 1.

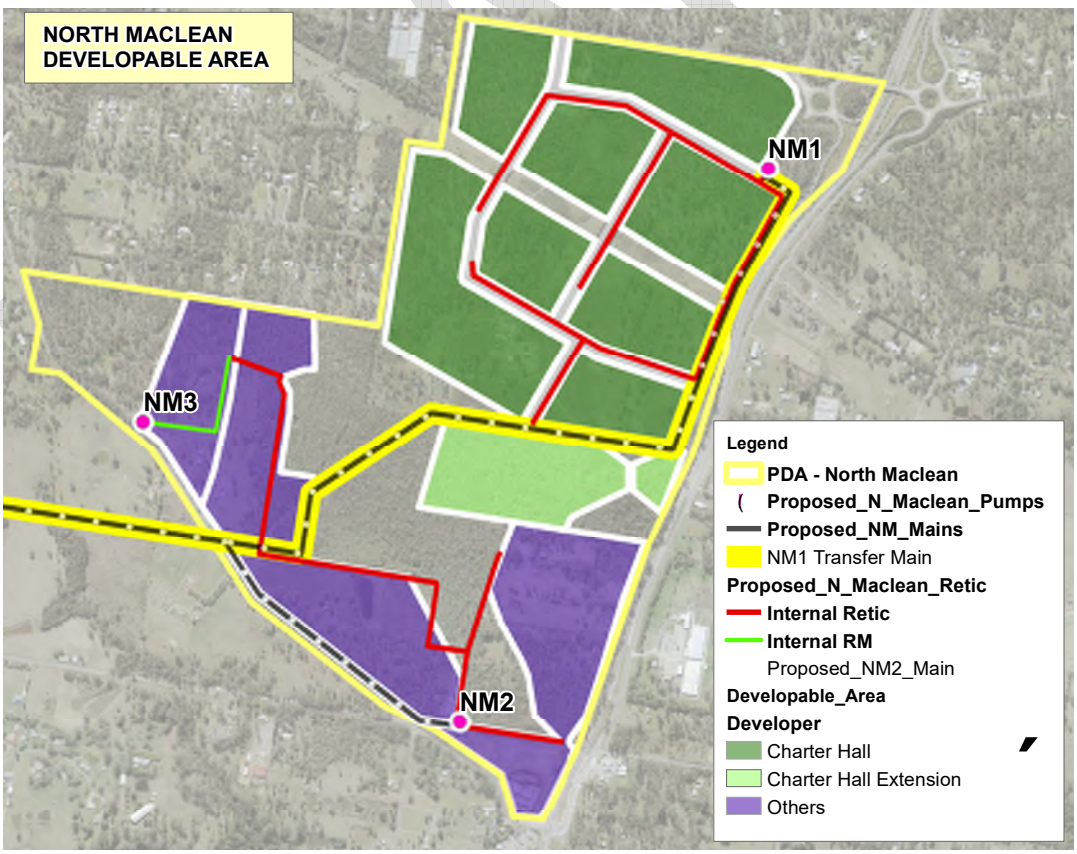


Figure 1: Development areas

The development areas include:

- Charter Hall subdivision which is the main focus for development (represented by Arcadis)

- Charter Hall extension immediately south of the main focus of development (also represented by Arcadis
- Development areas draining to NM2 and NM3 (number of individual property owners)

Preliminary development plans have been submitted by Arcadis (developer's representative) for areas draining to NM1 transfer pump station.

The North Maclean PDA has been designated as an industrial precinct. The Charter Hall sub-division has not indicated the type of development (i.e. light, medium or heavy industry) and this will depend on the individual lot sales.

1.1.1 Development Constraints

The main constraint within the North Maclean PDA is flooding and Arcadis is proposing significant earthworks to raise the area above the Q100 flood level shown in Figure 2. They will also be installing stormwater basins and drainage channels.

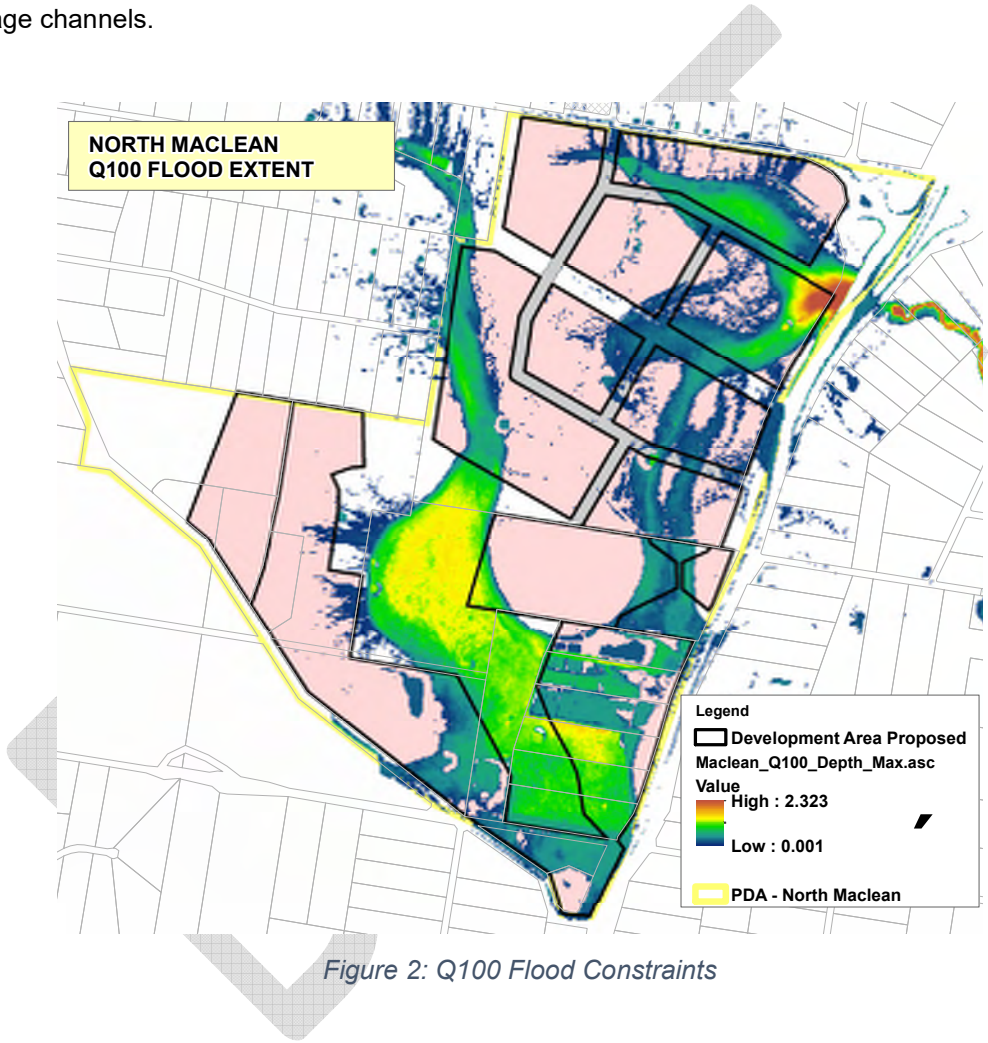


Figure 2: Q100 Flood Constraints

Arcadis have submitted bulk earthworks plans for the areas proposed for development. These are shown in Figure 3 and Figure 4.



Figure 3: Bulk Earthworks in Charter Hall Subdivision

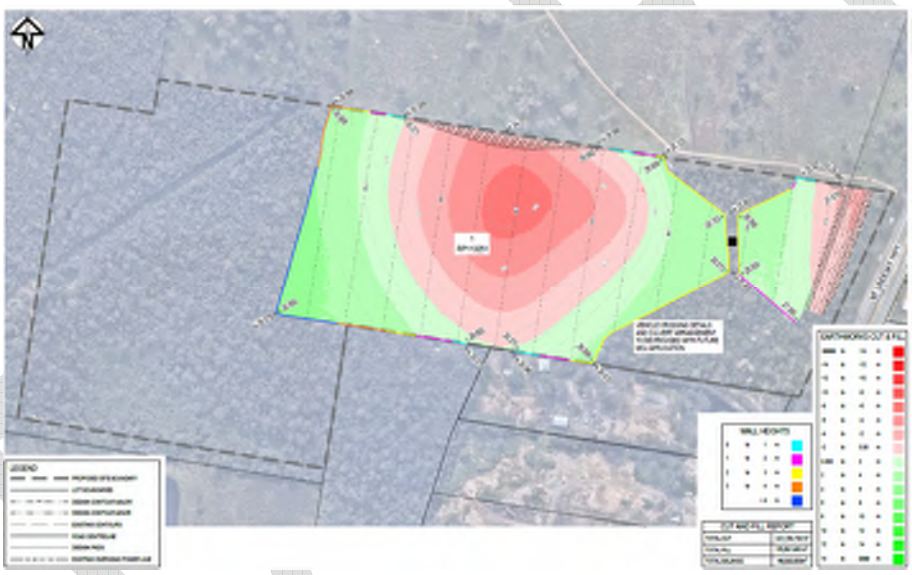


Figure 4: Bulk Earthworks in Charter Hall extension area.

2. Load assumptions

The North Maclean PDA is a designated industrial use precinct. The load estimates have been based on the following table extract from the task report “Infrastructure Demand Model 2020 (IP0017), September 2021. The industrial conversion rates were based on typical water consumption rates associated with several non-residential uses along with a return to sewer factor.

Table 4-2: Non-residential conversion rates – Base Year and/or growth years*

IDM Development Type	Average Water Consumption Method Adopted	Conversion Rates - Water		Return to Sewer (%)	Conversion Rates - Sewage	
		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)		Gross Site Area Water EP/HA (Density Gross)	Gross Floor Area Water EP/HA (Density GFA)
Commercial	GFA, 5th-95th %ile	-	55.90	0.90	-	50.31
Office	As per Commercial		55.90	0.90		50.31
Warehouse Distribution	As per Commercial		55.90	0.90		50.31
Education	GFA, 5th-95th %ile	-	105.30	0.80	-	84.24
Health	GFA, 5th-95th %ile	-	226.50	0.90	-	203.85
Industry Heavy	50% above Light Industrial	-	56.60	0.80	-	45.28
Industry Medium	25% above Light Industrial	-	47.25	0.80	-	37.80
Industry Light	GFA, 5th-95th %ile	-	37.80	0.80	-	30.24
Sport Recreation	Gross, 10th-90th %ile	1.05	-	0.90	0.945	-
Rural	Based on Water Meter Consumption	-	-	-	-	-
Retail Services	GFA, 5th-95th %ile	-	97.60	0.90	-	87.84
Showroom Bulk Goods	GFA, 5th-95th %ile	-	110.80	0.90	-	99.72
Accommodation	GFA, 5th-95th %ile	-	233.90	0.90	-	210.51

Reference: Table 7.2 Development of Infrastructure Demand Model, LWIA 2018 (PI-181).

Table 1: Non-residential conversion rates

Industrial use was subdivided into consumption rates for light, medium and heavy industry. It should be noted that these are averages and in the case of very high users such as bottling plants, abattoirs, concrete manufacturers, etc individual assessments of load will be necessary.

The consumption rates have been based on GFA and it has been assumed that this is equal to 70% of the developable area that excludes roads, public open space and stormwater lagoons and drainage channels, etc.

The ultimate loads were determined for the developable areas assuming light, medium and heavy industrial uses.

In the absence of any growth rate assumptions from the developer it has been assumed that.

- North Maclean 1 Pump Station catchment
  - 10% of the ultimate load in 2023
  - 90% of ultimate load in 2051
- North Maclean 2 and 3 pump station catchments
  - 10 % of the ultimate load in 2026
  - 90% of the ultimate load in 2051

Ultimate development is assumed in 2081 and linear growth has been assumed between 2023 / 2026 and 2051.

I should be noted that the growth rates are unlikely to have any impact on the transfer infrastructure which has been sized on ultimate loads.

3. Load Estimates and Projection

Figure 5 includes the pump stations servicing the North Maclean PDA.

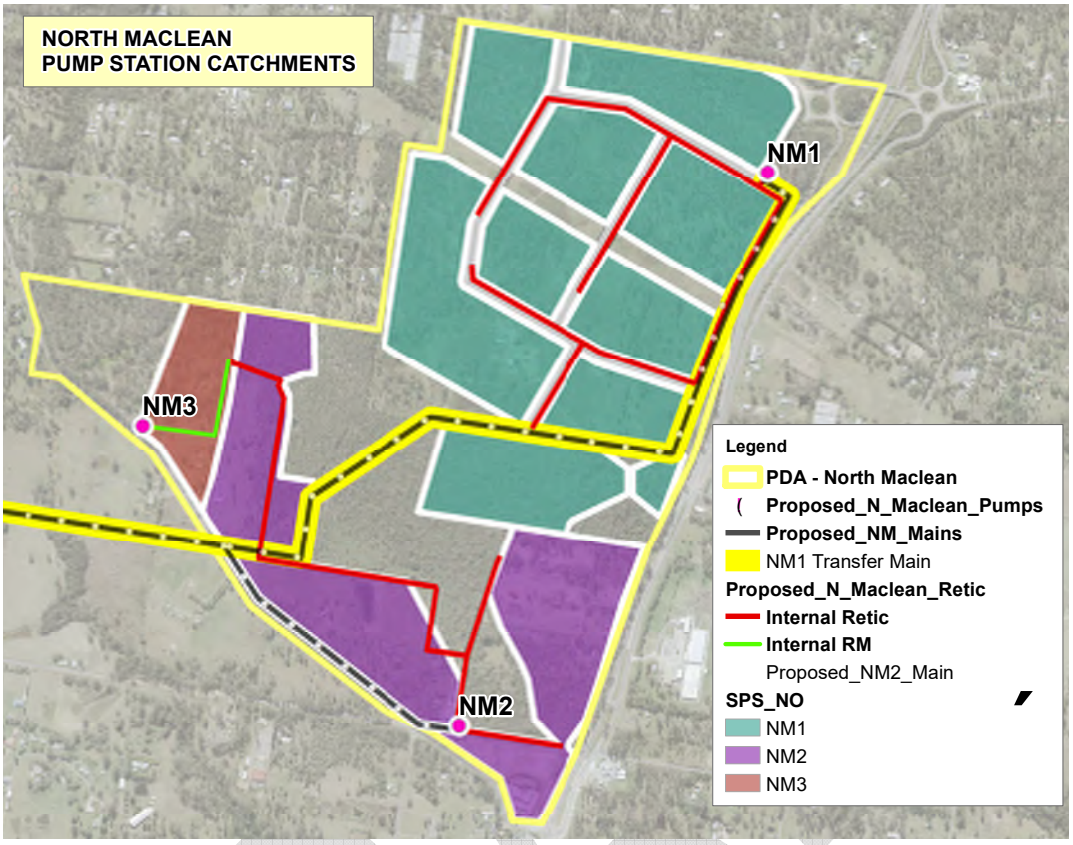


Figure 5: North Maclean pump station catchments

There are three pump stations, NM1 and NM2 are transfer pump stations and inject into a common rising main. NM3 is an internal pump station, and it transfers load to NM2 pump station via internal reticulation.

The ultimate loads have been estimated for the three pump stations and these are included in Table 2.

Table 2: Ultimate Loads

SPS NO	Developable Lot Area Ha	GFA Ha (1)	Light Ind EP (2)	Med Ind EP (3)	Heavy Ind EP (4)	IDM EP ULT
NM1	105	74	2,228	2,785	3,336	3,460
NM2	55	38	1,164	1,455	1,743	1,880
NM3	11	8	230	288	345	255
NM2 Total	66	46	1,394	1,743	2,088	2,135
Totals:	**171**	**120**	**3,623**	**4,528**	**5,424**	**5,595**

Note:
1. GFA assumed 70% of Developable Area
2. Light Industry: 30.24 EP / HA (based on GFA)
3. Medium Industry: 37.80 EP / HA (based on GFA)
4. Heavy Industry: 45.28 EP / HA (based on GFA)

Table 2 also includes ultimate loads for light, medium and heavy industry along with IDM2020 assumptions. The IDM_2020 load assumed in earlier studies was 5,595 EP.

The loads based on industrial use along with projections are included in Table 3.

Table 3: North Maclean PDA – Projected Loads

Medium Industry (3)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	279	517	915	1,313	1,711	2,507	2,785	105	74
NM2		*146*	*349*	*553*	*757*	*1,164*	*1,455*	*55*	*38*
NM3		*29*	*69*	*109*	*150*	*230*	*288*	*11*	*8*
NM2 Total		174	418	662	906	1,394	1,743	66	46
Totals:	**279**	**692**	**1,333**	**1,975**	**2,617**	**3,901**	**4,528**	**171**	**120**

Light Industry (2)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	223	414	732	1,050	1,369	2,005	2,228	105	74
NM2		*116*	*279*	*442*	*605*	*931*	*1,164*	*55*	*38*
NM3		*23*	*55*	*87*	*120*	*184*	*230*	*11*	*8*
NM2 Total		139	335	530	725	1,115	1,394	66	46
Totals:	**223**	**553**	**1,067**	**1,580**	**2,094**	**3,121**	**3,623**	**171**	**120**

Heavy Industry (4)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT	Developable Lot Area Ha	GFA Ha (1)
NM1	334	620	1,096	1,573	2,050	3,003	3,336	105	74
NM2		*174*	*418*	*662*	*906*	*1,395*	*1,743*	*55*	*38*
NM3		*34*	*83*	*131*	*179*	*276*	*345*	*11*	*8*
NM2 Total		209	501	793	1,086	1,670	2,088	66	46
Totals:	**334**	**828**	**1,597**	**2,366**	**3,135**	**4,673**	**5,424**	**171**	**120**

Note:
1. GFA assumed 70% of Developable Area
2. Light Industry: 30.24 EP / HA (based on GFA)
3. Medium Industry: 37.80 EP / HA (based on GFA)
4. Heavy Industry: 45.28 EP / HA (based on GFA)

The following Figure 6 compares the ultimate loads based on the industrial use and the IDM_2020 assumption.

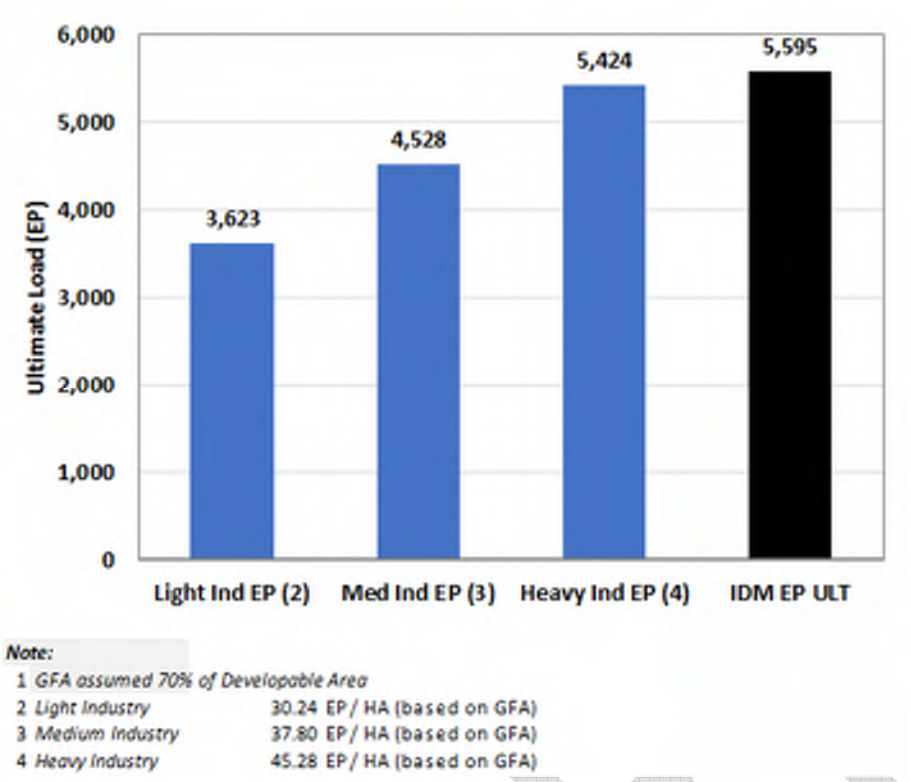


Figure 6: Ultimate Loads based on Industrial Use

The growth rates included in Table 3 are shown in the following Figure 7, Figure 8 and Figure 9 for the NM1 and NM2 transfer pump stations and the total North Maclean PDA load.

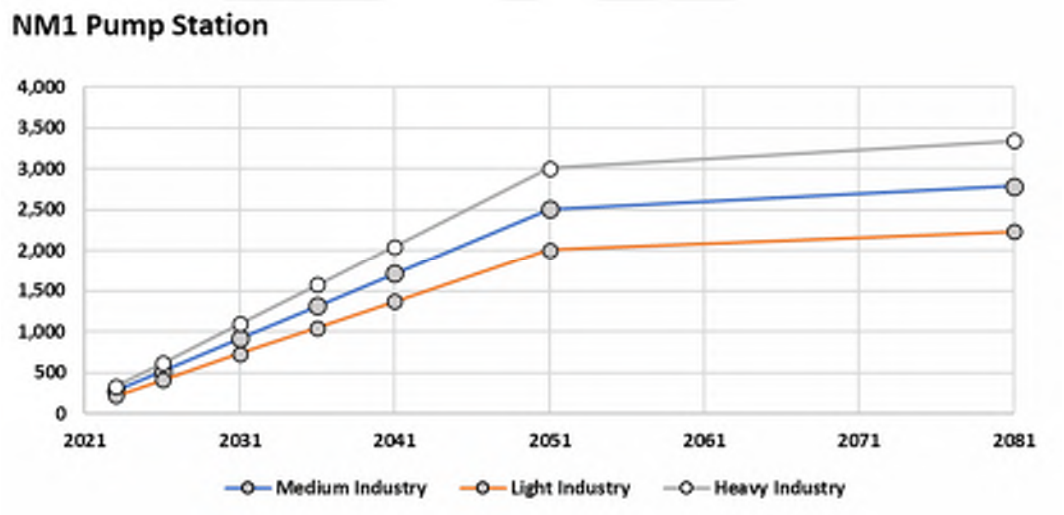


Figure 7: North Maclean 1 Pump Station – Growth Projections

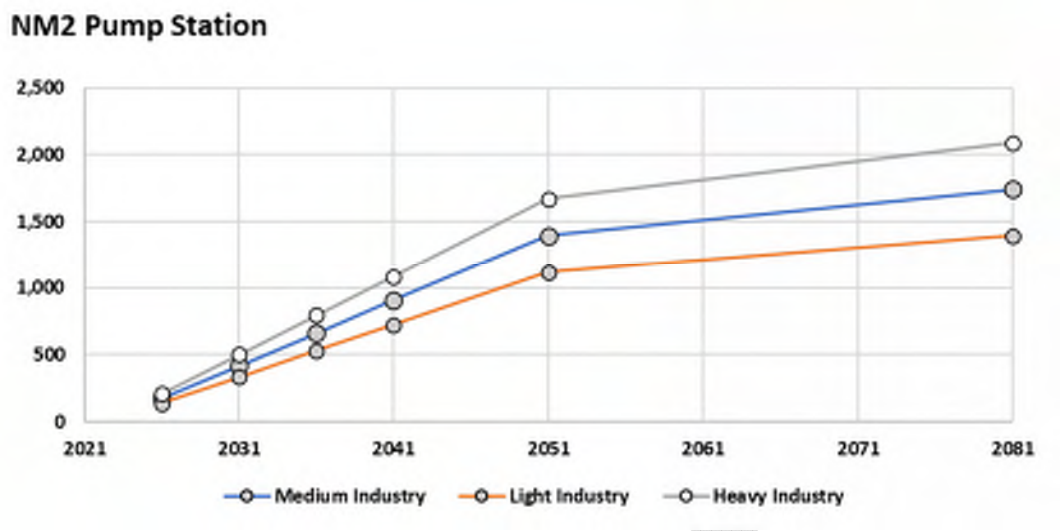


Figure 8: North Maclean 2 Pump Station – Growth Projections

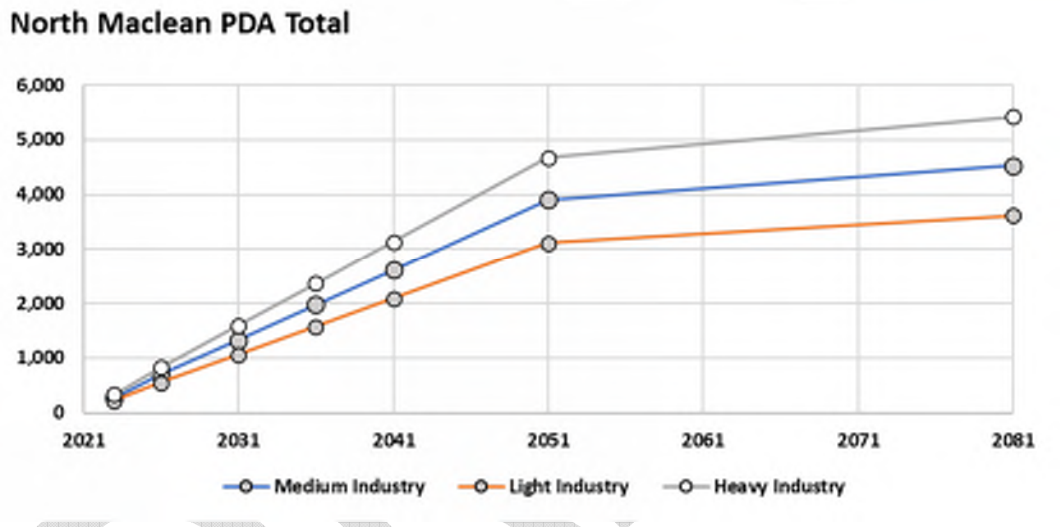


Figure 9: North Maclean PDA – Growth Projections

The type of industry will impact on the loads

- Light Industry 3,623 EP or 65% of IDM 2020 load (5,595 EP)
- Medium Industry 4,528 EP or 81% of IDM 2020 load (5,595 EP)
- Heavy industry 5,424 EP or 97% of IDM 2020 load (5,595 EP)

Indications are that the industrial development is unlikely to be heavy industrial use and will be a mix of light and medium industry.

4. Conclusions

In the absence of more accurate indication of uses it is proposed to adopt the loads based on medium industrial loads. It is unlikely to result in any significant reduction in infrastructure sizing and will allow for some flexibility if there is a need to service any industry with high sewage loads.

5. Recommendations

It is recommended that Logan Water adopt the loads included in Table 4 for development within the North Maclean PDA:

Table 4: Recommended Loads for North Maclean PDA (based on Medium Industrial use)

SPS NO	Sum of Sewer EP 2023	Sum of Sewer EP 2026	Sum of Sewer EP 2031	Sum of Sewer EP 2036	Sum of Sewer EP 2041	Sum of Sewer EP 2051	Sum of Sewer EP ULT
NM1	279	517	915	1,313	1,711	2,507	2,785
NM2		*146*	*349*	*553*	*757*	*1,164*	*1,455*
NM3		*29*	*69*	*109*	*150*	*230*	*288*
NM2 Total		174	418	662	906	1,394	1,743
Totals:	**279**	**692**	**1,333**	**1,975**	**2,617**	**3,901**	**4,528**

Signed by

_____ Date: _____

Choose an item.

Choose an item. Choose an item.

Supported by

_____ Date: _____

Choose an item.

Choose an item. Choose an item.

DRAFT

Attachment 1: Developer Drawings

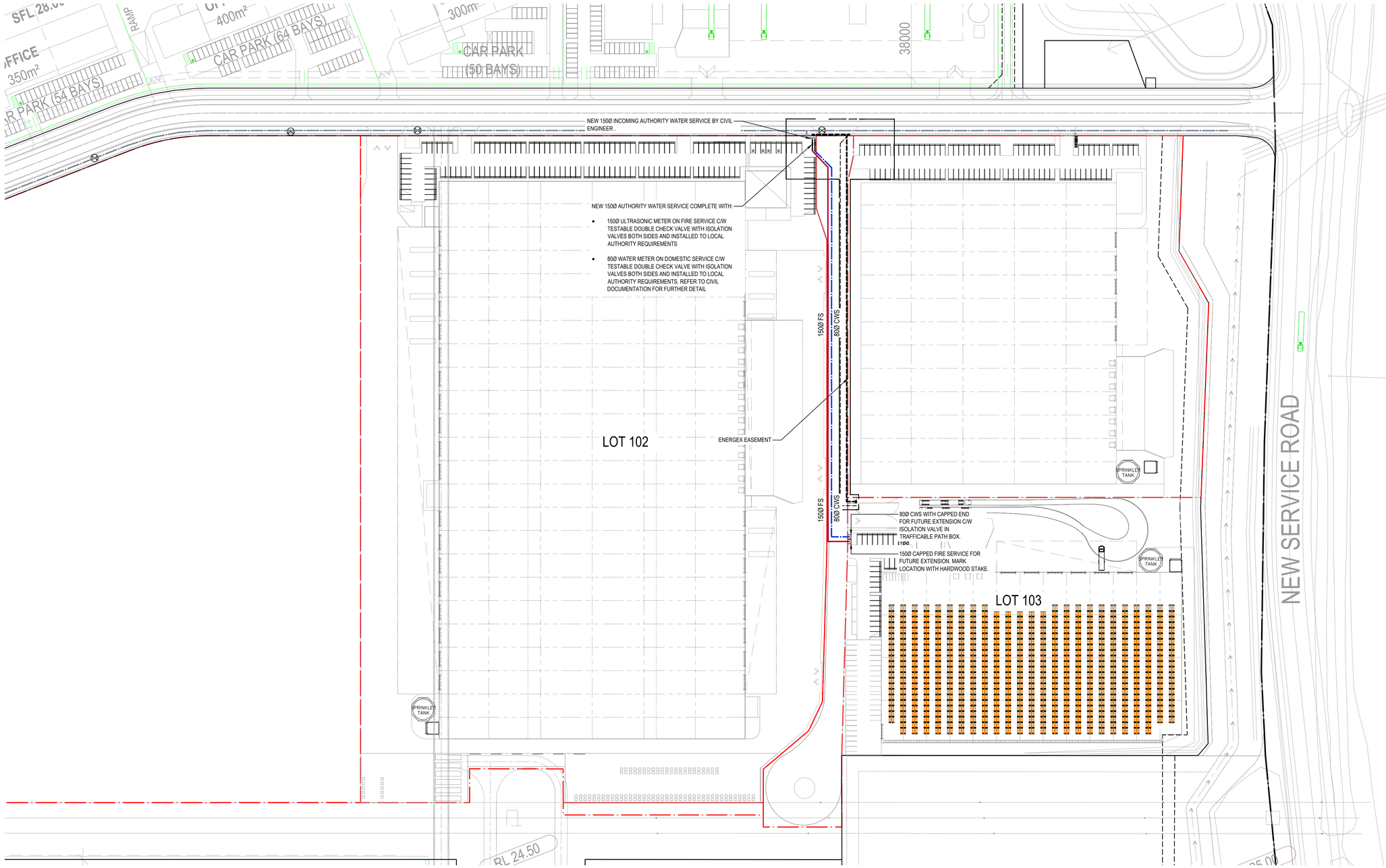
DRAFT

Appendix F – ACOR Consultants Lot 103 Hydraulics Concept

BARCODE

NOTES

1. THE WHOLE OF THE PLUMBING AND DRAINAGE WORK SHALL BE INSTALLED IN ACCORDANCE WITH QLD PLUMBING AND DRAINAGE ACT 2018, QLD PLUMBING AND DRAINAGE REGULATION 2019, AS/NZS:3500, THE LOCAL AUTHORITY APPROVED DRAWINGS, REQUIREMENTS & COMPLIANCE PERMIT CONDITIONS.
2. ALL WORK TO BE CO-ORDINATED ON SITE WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLING.
3. FINAL LOCATION OF ALL FITTINGS AND FIXTURES TO BE CO-ORDINATED ON SITE WITH ALL SERVICES.



0 20 40 60 m

SCALE 1:2000 @ A3 / SCALE 1:1000 @ A1

EXISTING SERVICES

SERVICES SHOWN AS EXISTING HAVE BEEN INTERPOLATED FROM RECORD DRAWINGS. CONTRACTOR TO VERIFY LOCATIONS AND LEVELS PRIOR TO COMMENCEMENT OF WORK.

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DRAWINGS INDEXING SYSTEM
FOR PROJECT SERVICES, PLANS AND RECORDS USE ONLY

- ☐ DRAINAGE PLANS
- ☐ FIRE SERVICES
- ☐ GASES / MEDICAL
- ☐ OTHER
- ☐ PLUMBING PLAN
- ☐ SEWERAGE
- ☐ SITE PLAN
- ☐ STANDARDS
- ☐ WATER RETICULATION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
SK	01.11.24	SKETCH	AA
SK	07.11.24	SKETCH	AA

DRAWN DATE

DISCIPLINE TEAM LEADER DATE

AUTHORISED FOR ISSUE DATE

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CHARTER HALL LOT 103, MOUNT LINDSAY HIGHWAY, NORTH MCLEAN QLD 4280

HYDRAULIC SERVICES
SITE DEMO PLAN PART B- DRAINAGE LAYOUT

SCALE	AT
1:1000	A1 SIZE
MASTER SITE NUMBER	DISIPLINE PROJECT NUMBER: NA240765
DRAWING NUMBER: SK01	ISSUE	SHEET NO: SK