

BLIGH TANNER

Flagstone Community Centre Civil Engineering Services Report and Site-based Stormwater Management Plan

Fulton Trotter Architects

Date: 27 June 2024

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2024/1523

Date: 25/09/2024



DOCUMENT	Flagstone Community Centre Civil Engineering Services Report and Site-based Stormwater Management Plan		
JOB NUMBER	2023.0165		
PROJECT ENGINEER	Jared Falkenhagen		
CLIENT	Fulton Trotter Architects		
CLIENT CONTACT	John Hay		
VERSION	AUTHOR	REVIEW	DATE
1	L Pally	Jared Falkenhagen	27/06/2024

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1. INTRODUCTION

1.1 Background

Flagstone is a rapidly growing master-planned suburb within Greater Flagstone district of the City of Logan. This area is declared a Priority Development Area by Economic Development Queensland (EDQ). Refer to *Greater Flagstone Urban Development Area Proposed Development Scheme* for further information on the overall Flagstone area Masterplan.

Logan City Council (LCC or Council) intend to develop a District Community Centre at Lot 30013 Parklands Drive, Flagstone. The area allocated for the District Community Centre was transferred to LCC as a trustee, who are responsible for the development of this site. This development will include a single-story building for flexible shared use and a 30 space carpark.

Preliminary works have already been complete for the District Community Centre & Entry Road. These works were to support the reconfiguration of lot of the site and provide access and service connections to the site.

Bligh Tanner has been engaged to provide civil engineering services to support a development application of these proposed works. This report will address the following:

- + Flooding
- + Lawful point of discharge (LPOD)
- + Stormwater Management Strategy
- + Erosion and Sediment Control
- + Earthworks
- + Services

Key Information used to inform this report includes:

- + Before You Dig Australia
- + Logan City Council City Plan Mapping
- + Nearmap Aerial Imagery

As this is a priority development area, the approvals are managed by EDQ and Logan Planning Scheme is superseded by the conditions of the Flagstone Town centre Masterplan.

Table 1 below shows the key development information.

Table 1 Key Development Information

Developer	Local Authority: EDQ
Address	Lot 30013 Parklands Drive, Flagstone
Real property Address	Lot 30013 SP332140
Total Property Area	3,000 m ²

1.2 Proposed development

The proposed development is the Flagstone District Community Centre to cater for the growing community of families and children. The centre will comprise single story slab on ground building with the following facilities:

- + Front entry reception area
- + Staff amenities
- + Different sized multipurpose community spaces
- + Meeting rooms
- + Community services spaces
- + Storage
- + 30 space carpark

Refer to Figure 1 and Appendix A2 for the Architectural concept plan.



Figure 1 Flagstone District Community Centre (Fulton Trotter)

2.SITE CONTEXT

2.1 Site Locality

The site is located in a developing area of the Greater Flagstone Area making up part of the Flagstone Town Centre Masterplan works. Sandy Creek is approximately 100m to the north of the site. Site access is via the recently constructed Parklands Drive that connects to Flagstonian Drive.

There is residential development to the east of Flagstonian Drive and on the northern side of Sandy Creek.



Figure 2 Site Locality

2.2 Existing land use

The site is zoned as Priority development area for the Greater Flagstone area. The proposed site is currently an undeveloped lot. Works have recently been completed to subdivide and formalise the lot. There is currently a trench on the western boundary of the site that appears to be capturing water from the upstream catchment.

2.3 Topography and Catchment

The site falls in a southeast direction with an approximate grade of 5%.

Prior to preliminary works completed in 2022, there was an overland flow path that catered to a minor upstream catchment running through the southern corner of the site.

Refer to Figure 3 for the existing flow paths, external catchment and site contours. There is a

Works have been completed to fill in the overland flow path and modifying the topography of the site. There is also a trench along the western boundary of the site that is capturing water. Refer to Figure 4. This upstream catchment will be diverted around the site by temporary swales and in the short term and then by the proposed road that will be complete in future.

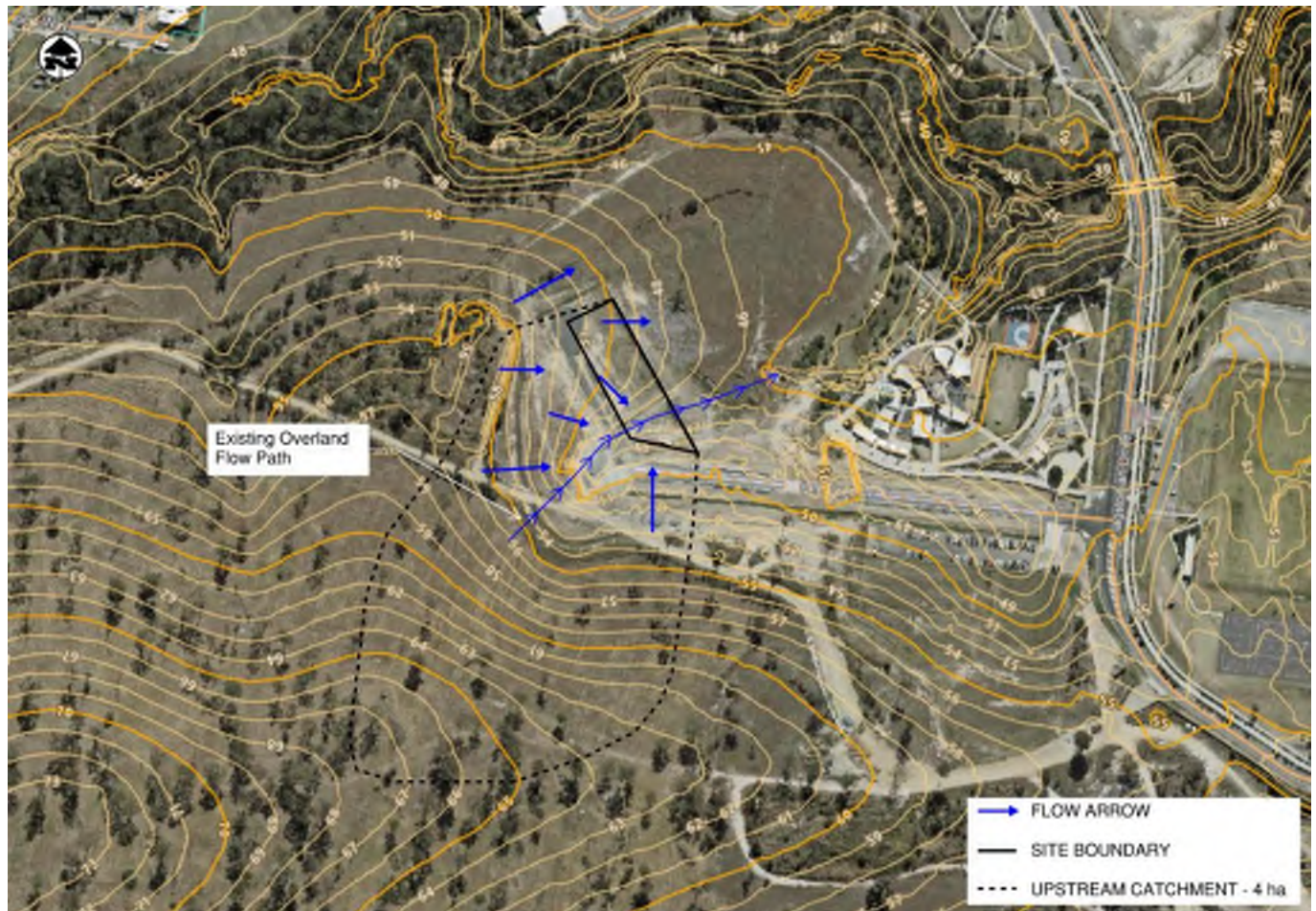


Figure 3 External catchment and site contours prior to 2022 (QLD Globe)

3.FLOODING

The site is not within the Logan City Council Flood Risk Area Mapping (Figure 5). However, part of the site is overlaid with investigation area as it is mapped as a waterway corridor. This area of the site has been filled as part of the site preparation works.

The site is encumbered by an overland flow path across the southern corner of the lot (Figure 6). As part of the reconfiguration of lot works the natural channel running through the site has been filled. The flows are being diverted around the site via bunds and swales, directing flows to the stormwater network and basin or into Sandy Creek via overland flow.

Refer to Figure 4 and Appendix A3 for the construction drawings of the diversion strategy for overland flow.



Figure 5 LCC Flood Risk Area Mapping



Figure 6 LCC Overland Flow Mapping

4. STORMWATER MANAGEMENT

Stormwater at Flagstone Town Centre will be managed holistically with sub-catchments feeding into end of line treatment and detention systems.

The approved plans for the development from DEV2021/1186 in 2021 provide a suitable drainage connection that outlets to the approved existing end of line treatment basin as part of the master planned drainage and WSUD strategy for the PDA. Refer to Appendix A4 for the approved trunk stormwater concept plan discharging to end of line treatment.

A field inlet was constructed as part of the preliminary works of the site, serving as lawful point of discharge. This stormwater network discharges via a headwall into an existing stormwater treatment/detention basin, ultimately flowing into Sandy Creek. Refer to Figure 7.

4.1 Stormwater Quantity

The proposed works will increase the impervious area of the site from 0% to approximately 75%. This will increase the sites peak flows leaving the site.

As the site is located at the bottom of the local catchment and discharges into Sandy Creek via a short network of stormwater pipes, it is unlikely to significantly impact any downstream properties, particularly as the drainage network was sized accordingly as part of the Masterplan. However, the cumulative impact of all the proposed development in the Flagstone Town Centre masterplan has the potential to cause worsening further downstream the Sandy Creek catchment. Therefore, the masterplan has been designed to manage stormwater quantity via multiple end of line detention basins. A technical memo by Peak Urban (2021) highlights the stormwater management strategy based on Engeny concept stormwater strategy catchments for the Flagstone Town Centre (Refer Appendix A5). These plans have been previously approved and it is assumed that the end of line treatment/detention basin is adequately sized to manage developed peak flows from the site. Refer Appendix A4.

Flows from the District Community Centre will be attenuated by discharging into the end of line treatment/detention basin (refer Figure 7).



Figure 7 Aerial Imagery of constructed stormwater treatment basin (Nearmap)

4.2 Stormwater Quality

The Flagstone Town Centre had been master planned to manage stormwater pollution with end of line stormwater treatment basins. The flow from the site will discharge into an existing treatment basin before discharging into Sandy Creek. These plans have been previously approved as it is assumed that the end of line treatment/detention basin is adequately sized to treat stormwater to State Planning Policy 2017 (SPP) requirements for total suspended solids, total nitrogen and total phosphorus.

The masterplan has been designed to manage stormwater quality via multiple end of line treatment basins. A technical memo by Peak Urban(21-0008.TM.DC)(2021) highlights the stormwater management strategy based on an Engeny concept stormwater strategy catchments for the Flagstone Town Centre (M45000_012(0). Refer Appendix A5. These plans have been previously approved, and it is assumed that the end of line treatment/detention basin is adequately sized to manage developed peak flows from the site. Refer Appendix A4.

In addition to the end of line treatment strategy, all field inlets/pits on site will require litter traps to meet SPP Appendix 2 gross pollutant requirements.

Refer to Appendix A1 for site concept stormwater plan.

5. EARTHWORKS

Site works were conducted on site as part of the lot reconfiguration works. The mapped waterway through the southern half of the site was filled and the site levelled. These works were completed with Level 1 geotechnical supervision. Refer to Appendix A6 for Geotechnical Report on Level 1 Earthworks Inspection and Testing.

A geotechnical investigation has been conducted by Soil Surveys in June 2023. Their findings have been summarised below. Refer to Soil Surveys Geotechnical Investigation - Flagstone Community Hub (PROJECT NO. 1-26299) for the full report.

5.1 Geotechnical Conditions

Four out of five of the boreholes drilled were fill until termination depth at weathered rock. Refer Figure 8.

Borehole No.	Fill (m)	Clayey Sand (m)	Weathered Rock (m)		Termination Depth (m)
			XW ⁴	DW	
BH01	0.00-1.70	1.70-1.90	1.90-2.70	2.70-TD	2.90 ³
BH02	0.00-1.80	NE	1.80-2.20	2.20-TD	2.40 ³
BH03	0.00-2.40	NE	NE	2.40-TD	2.50 ³
BH04	0.00-1.70	NE	NE	1.70-TD	1.80 ³
BH05	0.00-2.10	NE	NE	2.10-TD	2.30 ³
Notes:- 1. NE = Not Encountered; TD = Termination Depth. 2. All depths below existing ground level at date of drilling. 3. 'TC' bit refusal. 4. Note AS 1726-2017 'Geotechnical Site Investigations' requires that XW rock be described using soil terms.					

Figure 8 Summary of Subsurface Profile (Soil Surveys)

No groundwater was identified on site at the time of drilling.

5.1.1 Trafficability

Site soils will lose strength with repetitive vehicle loading and ponding on site. Drainage controls are essential to ensure that the site does not become un-trafficable. The upstream catchment will need to be diverted around the site during construction to ensure no ponding of water.

5.1.2 Site Classification

The majority of site consists of fill. In accordance with AS 2870 'Residential Slabs and Footings' based on the information attained the site is classified as Class P for building foundations. A stiffened raft foundation designed to suit Class M conditions is recommended to allow for potential differential settlement associated with the existing fill. Perimeter footings should be founded at a minimum depth of 500mm below the platform depth and at least 200mm into the controlled fill. Potential settlement should be allowed for in design.

Site is classified as Class S for slightly reactive soils, with characteristic surface movement of up to 20mm.

Best practice site management should be adhered to at all times during construction and the lifetime of the development.

5.1.3 Pavement design

A soaked CBR test was conducted with a sample from Borehole 1. The results produced a CBR Value of 19%. However, with the variation of fill across the site, a design subgrade CBR of 10% should be used.

All pavements should include perimeter drainage to mitigate the risk of deterioration under wet weather.

Pavement detail for carpark areas will be developed as the design progresses.

6. EROSION AND SEDIMENT CONTROL

The preparation of an erosion and sediment control plan is to be undertaken by a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC). This is to be submitted to Council as part of the Operational Works Package.

6.1 Design Guidance

It is assumed that erosion and sediment control will be designed by the Contractor (and certified by an RPEQ or CPESC) to suit their proposed construction methodology. The following is intended to clarify a minimum standard of practise for erosion and sediment control during the construction period.

The following references and guideline documents are relevant to the design of erosion and sediment control strategy for the proposed development:

- + Best Practice Erosion and Sediment Control (IECA, 2016)

6.2 General

All erosion and sediment control measures should be in accordance with the International Erosion Control Association (IECA) Best Management Practices (2016), the latest version of the IECA guidelines, Council requirements and the SPP.

All erosion and sediment control devices implemented onsite should represent current best management practices and all practical measures applicable to the site. This applies to all stages of the project including installation, operation and management of the control measures as well as maintenance and monitoring of devices.

6.3 Responsibility

The contractor is responsible for the establishment, management and maintenance of erosion and sediment control measures to ensure minimal environmental harm and compliance with State and Federal legislation.

6.4 Basic Concepts

- + Erosion control measures favoured over sediment control device, that is any exposed surfaces shall be stabilised as soon as practicable and sediment control devices used as a last defence;
- + Limit disturbance by only clearing and disturbing areas necessary for works. Disturbance should only extend 2 to 5 metres from necessary works areas;
- + Minimise the extent and duration of disturbance by staging the works.
- + Divert all clean upstream stormwater runoff around the site and disturbed areas. Collect all dirty runoff from work areas for treatment.

7.SERVICES

Service location is based on dial before you dig plans, LCC mapping and as constructed drawings of works complete to support the lot reconfiguration works.

7.1 Stormwater

A 900x900 field inlet and 375 dia. RCP pipe has been provided to the site to connect into as part of the completed entry road works. Refer to Figure 9.

Refer Section 3 for further information regarding stormwater management strategy.

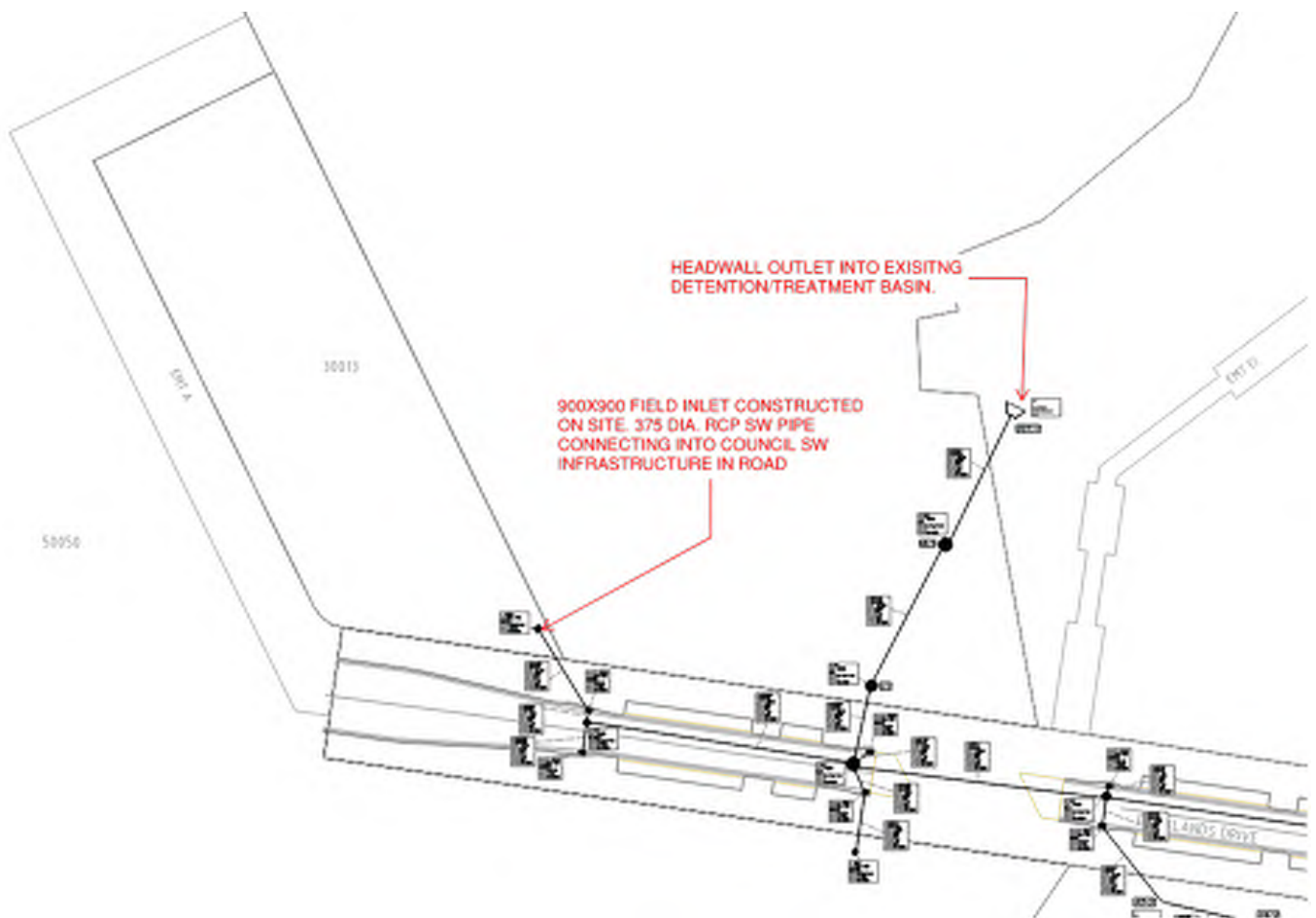


Figure 9 Existing Stormwater

7.2 Water and Sewer

As constructed plans were used to determine the location of the water and sewer connections.

A 150mm diameter sewer stub has been installed on at the southeast corner of the site. Design, approval and construction were completed for the proposed site and therefore it is assumed that no further approvals are required to connect into these Logan Water assets. Refer to Figure 10.

A 250mm diameter water main has been installed that runs along the southern property boundary with an end cap and valve. Refer to Figure 11. As there is no direct connection to the site, approvals may be required to construction a new connection.

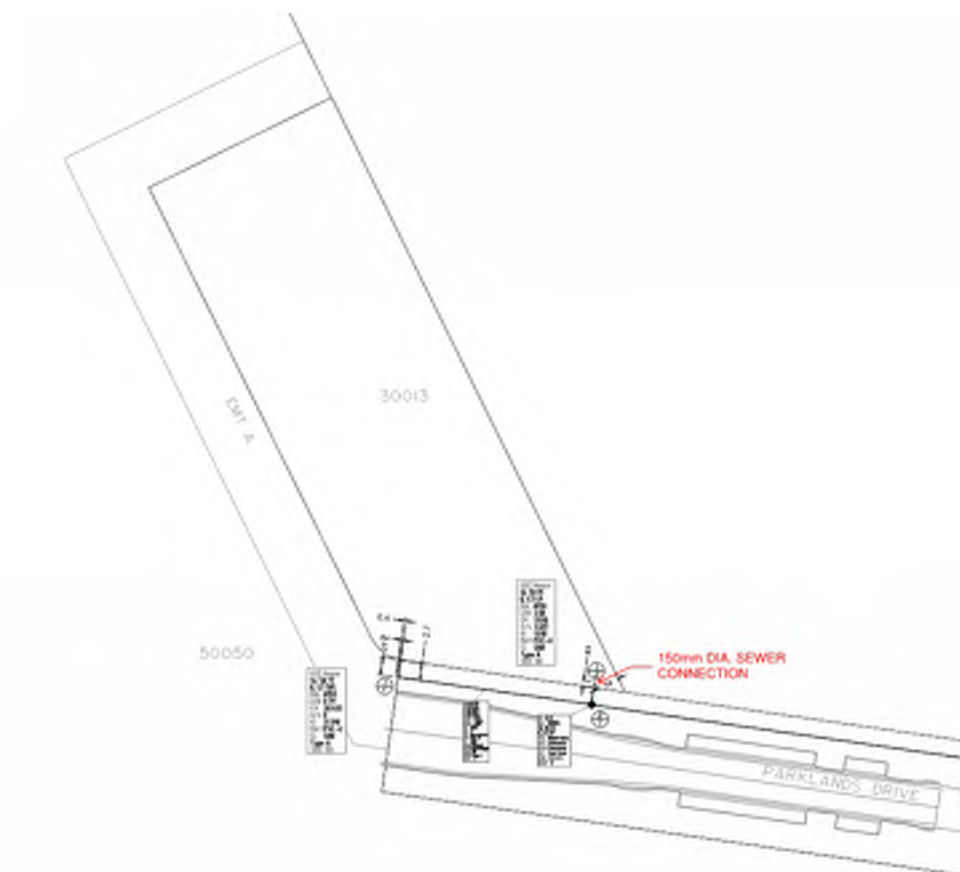


Figure 10 Sewer connection to site

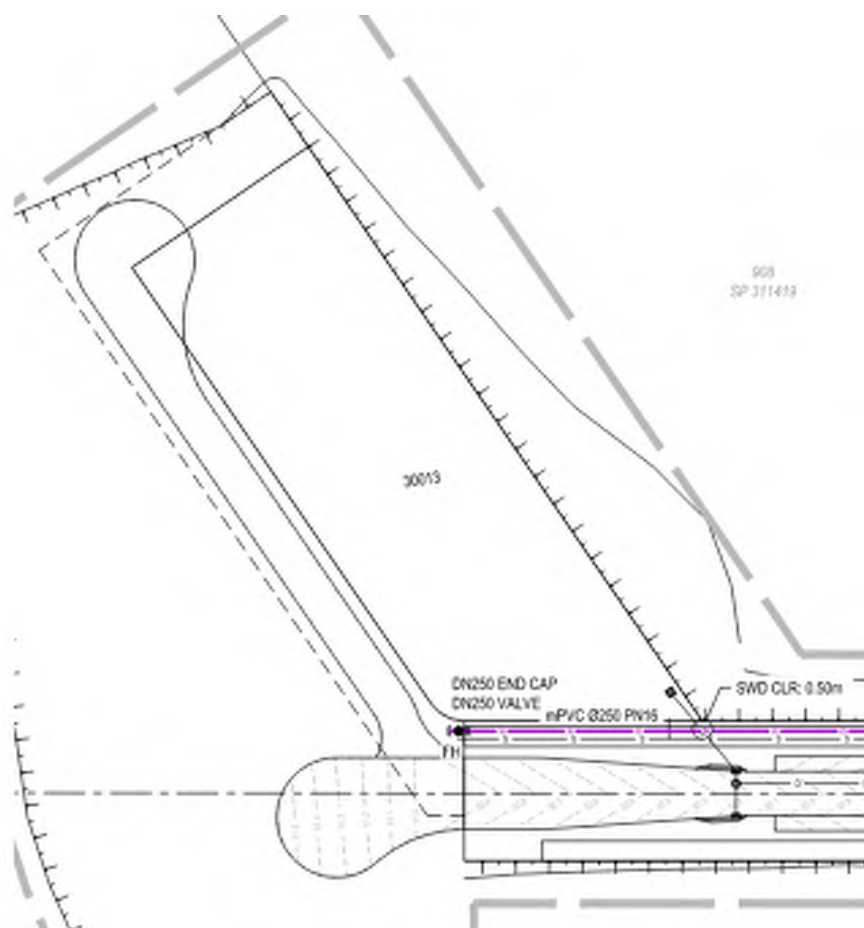


Figure 11 Water connection

7.3 Gas

There is no gas services within close proximity to the site.

7.4 Telecommunications

There are no telecommunication services within close proximity to the site. There are NBN services within Flagstonian Drive (Figure 12). Works may be necessary to ensure that site has access to communication services.



Figure 12 NBN Services within Flagstonian Drive (site not visible on figure)

7.5 Electrical

The site is well serviced by Energex. These works were completed as part of the District Community Centre & Entry Road Works. Refer to Figure 13.

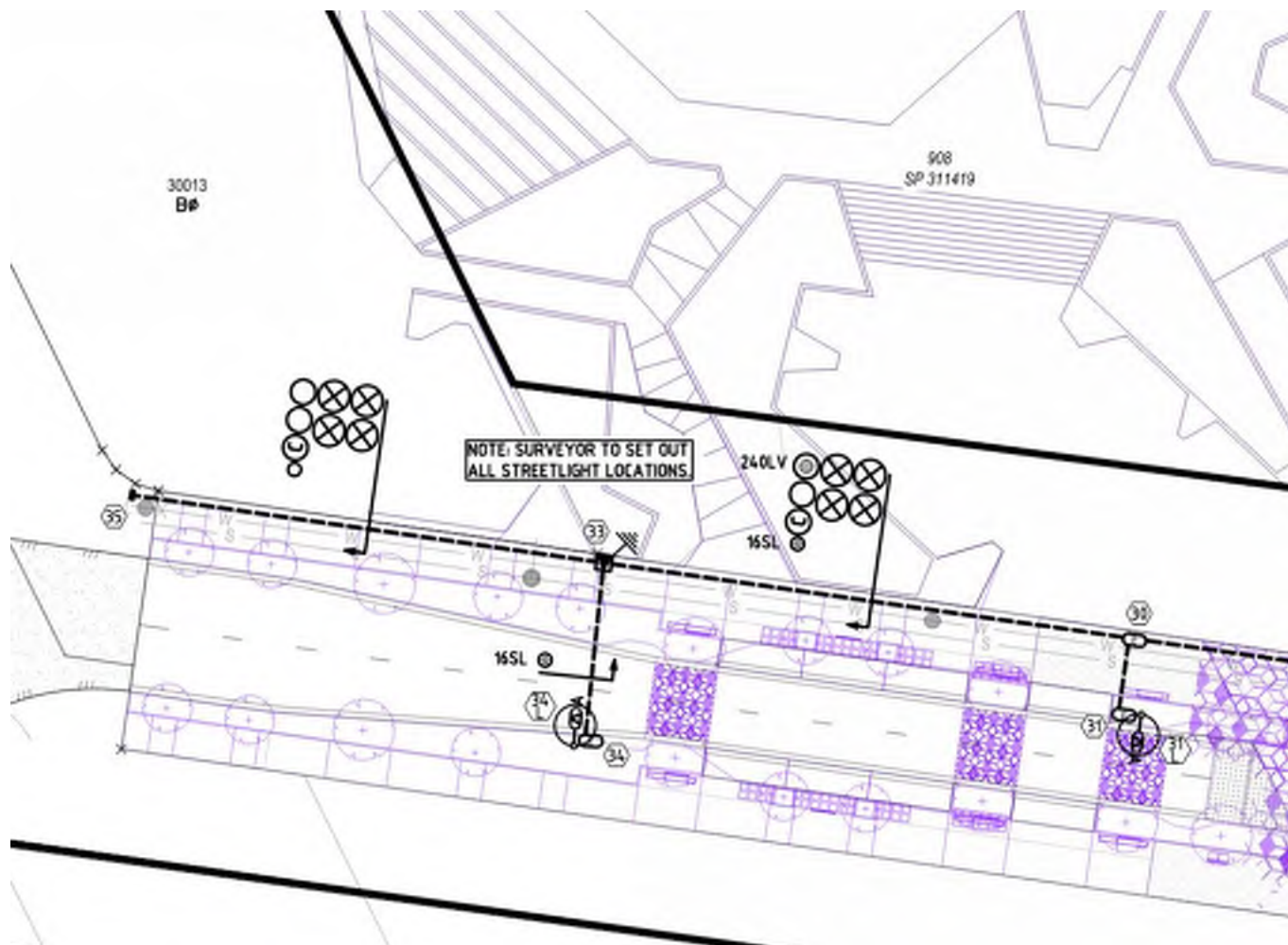
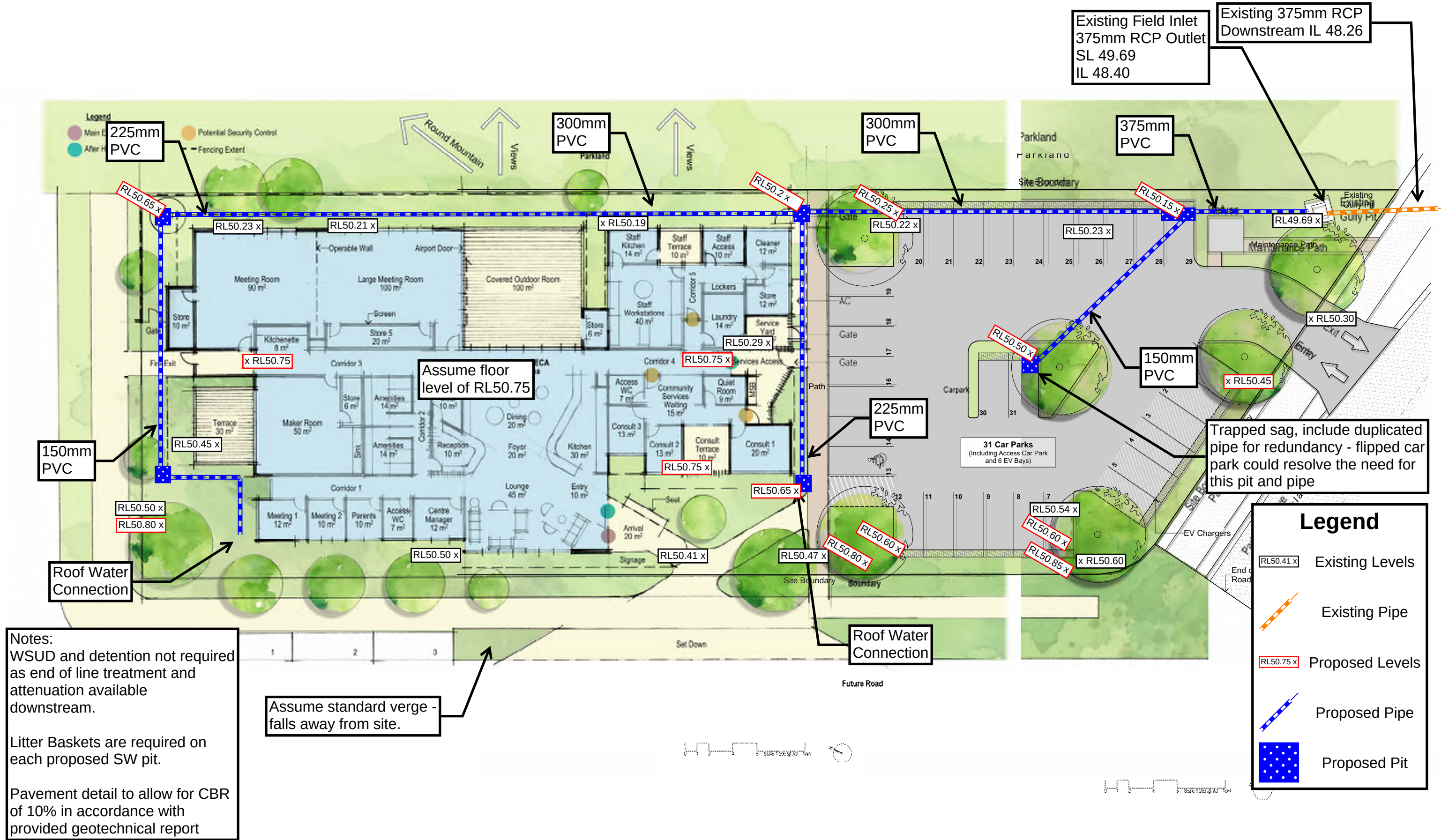


Figure 13 Electrical As Constructed Plan

8.CONCLUSION

- + Logan City Council is developing a Community District Centre as part of Flagstone Town Centre Masterplan. Proposed development includes a single storey community centre building and carpark.
- + Approval for these works are required from Economic Development Queensland.
- + The site is not subject to creek flooding. There is an existing overland flow path that runs through the southern half of the site. This has been diverted around the site via external swales upstream of the site.
- + The existing site is an undeveloped lot. Preliminary works have been completed to provide access to the site and install stormwater, water and sewer services.
- + The proposed works will increase the impervious area of the site from 0% to approximately 75%. An existing end of line treatment/detention basin has been constructed to attenuate these additional flows.
- + Stormwater quality will be managed by the existing end of line treatment/detention basin. In addition, litter baskets are to be installed in each field inlet/pit on site to capture litter and other gross pollutants.
- + Previous earthworks have been completed under Level 1 supervision and fill is considered controlled. Geotechnical investigation has been conducted on the site and Soil Surveys Geotechnical Report should be consulted during design.
- + Preliminary erosion and sediment control measures have been recommended for adoption into the Construction Management Plan prior to construction.
- + The site is well serviced by water, sewer, telecommunications and electrical.

A1. BLIGH TANNER SITE CONCEPT STORMWATER PLAN



BLIGH TANNER BRISBANE SYDNEY blightanner@blightanner.com.au blightanner.com.au	REV	DATE	DESCRIPTION	DESIGN	DRAWN	APPROVED	CLIENT	ARCHITECT	Fulton Trotter Architects	SCALES	NTS	DRAWN BY JF	PROJECT Flagstone Community Centre						
												DRAWING TITLE							
												Preliminary Concept Site Plans							
												PRINTING REQUIREMENTS		PROJECT NUMBER		DRAWING NUMBER		REVISION	
												PRINT THIS DRAWING IN							

A2. ARCHITECTURE

SITE CONCEPT

PLAN



PROPOSED SITE PLAN

SD203 Date: 17/05/2024

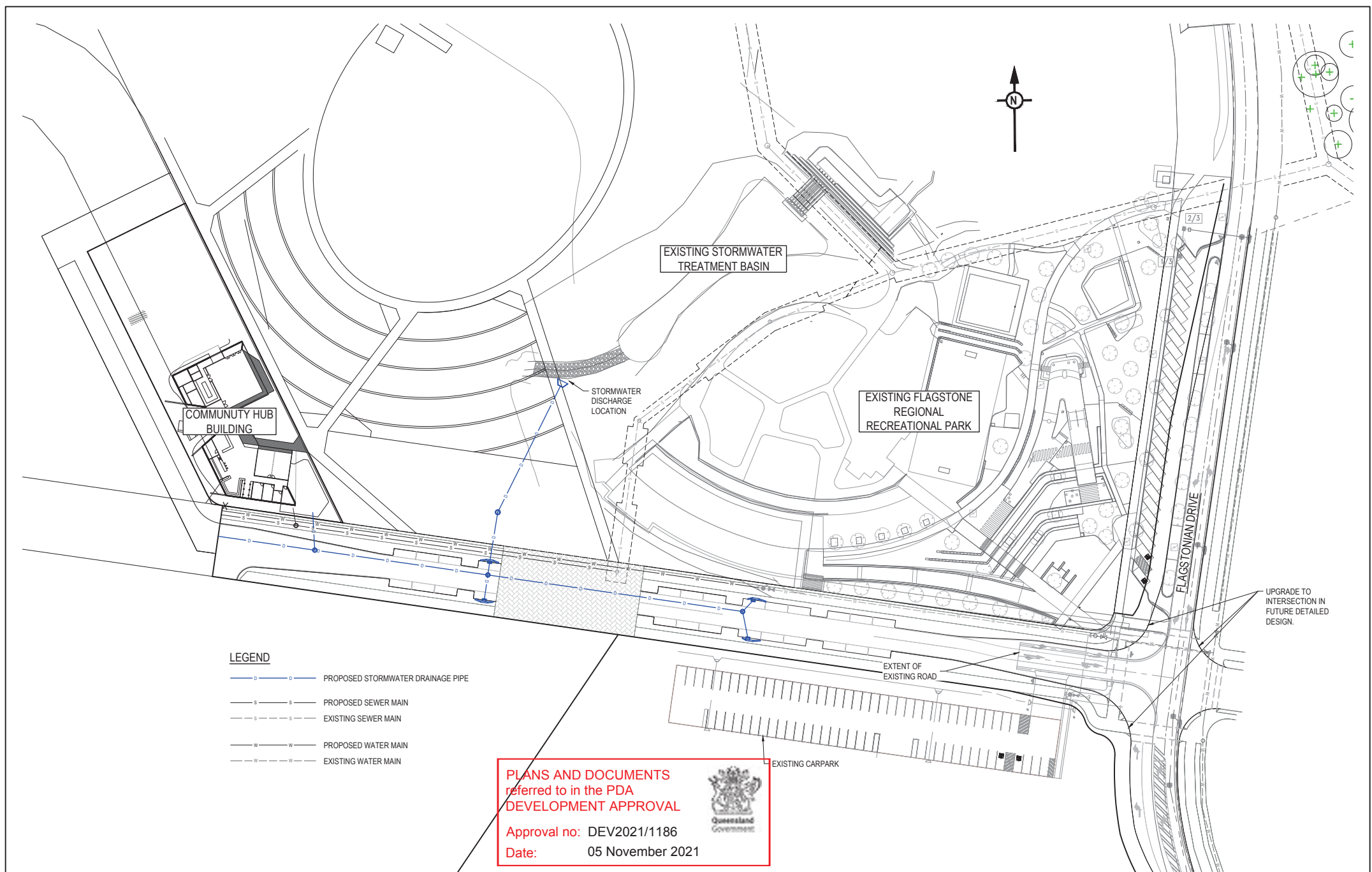
Not to Scale



fulton trotter
ARCHITECTS

A3. TRUNK ROADWORKS AND DRAINAGE LAYOUT CONSTRUCTION PLAN

A4. TRUNK STORMWATER CONCEPT APPROVED PLANS



REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE
1	25.06.21	TR	TR				1:500	PEET FLAGSTONE CITY PTY LTD	FLAGSTONE COMMUNITY HUB	ROADWORKS AND DRAINAGE CONCEPT LAYOUT
2							1:1000			
3										
4										
5										
6										
7										
8										
9										
10										

CONCEPT NOT FOR CONSTRUCTION	PEAKURBAN Achieve more.	1:500 1:1000	PEET FLAGSTONE CITY PTY LTD	FLAGSTONE COMMUNITY HUB	ROADWORKS AND DRAINAGE CONCEPT LAYOUT
FOR AND ON BEHALF OF PEAKURBAN PTY LTD	ENQUIRES@PEAKURBAN.COM.AU		ASSOCIATED CONSULTANT		

PROJECT No.	DRAWING No.	REVISION
21-0008	P101	1

A5. PEAK URBAN TECHNICAL MEMO (2021)

TECHNICAL MEMO

TO: Louisa Sloan (RPS)

FROM: Dan Collins (PEAKURBAN)

SUBJECT: Flagstone City District Community Centre – Engineering Services

DATE: 14 APRIL 2021

OUR REFERENCE: 21-0008.TM.DC.DOCX

1 INTRODUCTION

PEAKURBAN have been appointed by PEET Flagstone City Pty Ltd to prepare a technical memo in support of the development application submission for the Flagstone City District Community Centre.

We refer to Proposed Subdivision Plan 110056-509A prepared by RPS dated 24 March 2021 enclosed within **Attachment A**.

This technical memo documents the engineering servicing strategies associated with the proposed development application.

2 SERVICING STRATEGY

The development of the site will involve internal subdivision works connecting to existing nearby infrastructure. The below image highlights the downstream connection points for the relevant civil services proposed for the Community Centre development:





- ▶ **Water Main Connection** – There is an existing 250mm watermain directly south of the existing Recreational Park, please refer to **Attachment B** for design plan 15-889-C1-TC-500 Revision A prepared by Meinhardt Urban Pty Ltd for details.

It is proposed that the 250mm water main will be extended through the HATUA Entry Road Reserve to service the Community Centre and the greater Town Centre precinct.

- ▶ **Sewer Main Connection** – There is an existing 150mm sewer manhole located within the Southern boundary of the Recreational Park which outlets to the larger trunk main adjacent the sports fields on the opposite side of Flagstonian Drive as nominated in the image provided.

It is proposed the Community Centre can be serviced by connecting into this existing manhole.

There is a larger trunk sewer main further north fronting the waterway corridor that will ultimately service the greater Town Centre precinct.

Stormwater Connection – As a part of the Recreational Park construction and stormwater basin was constructed north of the adventure park which contains an inlet drain and culvert outlet with spillway configuration and rock gabions and rock protection at the outlet to the waterway corridor. Please refer to **Attachment B** for the design plans 15-889-C1-SIAB-CIL-3110(C), 3111(C), 3200(C), 3205(D) & 3206(D) prepared by Meinhardt Urban Pty Ltd for details.

It is proposed that the Community Centre development be serviced via stormwater discharge through this existing basin.

3 ROAD NETWORKS AND LOT ACCESS

It is proposed that access to the Community Centre is provided via a HATUA Entry Road gaining access off the existing intersection at Flagstonian Drive. Modifications will be required to the existing intersection and Flagstonian Drive to enable the intersection to operate in both interim and ultimate scenarios for Flagstonian Drive.

Please refer to the Traffic and Transport Technical Memorandum prepared by Bitzios for more detailed analysis of the road network requirements.

4 STORMWATER MANAGEMENT

Previously stormwater concepts have been prepared by Engeny for stormwater management strategy catchments to the overall Town Centre. Please refer to **Attachment C** for Preliminary Stormwater Mitigation Measures plan M45000_012 Revision 0 prepared by Engeny for details.

It is noted in the Engeny concepts that a water quality basin will be required for this catchment noted at the location of the current Community Centre (Noted as WQB_003). It is expected that this water quality basin can be shifted to align with the existing stormwater basin constructed north of the adventure park for water quality treatment.

PEAKURBAN are currently preparing a Concept Stormwater Management Plan for the overall Town Centre precinct which will be provided in due course. Please note that following preliminary site grading strategies prepared for the overall Town Centre that the catchments and road grading is generally consistent with the concepts provided by Engeny.

As an interim measure it is proposed that the development works for the HATUA Entry Road and Community Centre be serviced for stormwater quality and quantity via the existing basin north of the adventure park. This is proposed to be implemented until such time that the overall Town Centre precinct Stormwater Management Plan is completed and endorsed.



5 BULK EARTHWORKS

Preliminary road grading has been completed for the current proposed overall Town Centre precinct framework to help inform stormwater catchments for the Community Centre. Please refer to **Attachment D** for the Town Centre Precinct Framework Plan prepared by Cox.

It is expected that the earthworks pads can be delivered to interface to existing levels at the park area without the requirement for retaining walls. Detailed earthworks will be provided with detailed design to align with the proposed Community Centre built form proposed to ensure tie into the existing infrastructure and proposed larger Town Centre precinct and Sports Fields.

Concept levels for the Community Centre and future sports field precinct have been provided in **Attachment E**.

6 SUMMARY

This technical memorandum provides high level details for the proposed servicing strategy related to the development application for the proposed Flagstone Community Centre. It is therefore requested the application be approved subject to reasonable and relevant conditions.

ATTACHMENTS:

Attachment A	Proposed Subdivision Plan (110056-509A prepared by RPS)
Attachment B	Meinhardt Urban Plans (15-889-C1-TC-500(A) & 15-889-C1-SIAB-CIL-3110(C), 3111(C), 3200(C), 3205(D) & 3206(D))
Attachment C	Engeny Preliminary Stormwater Mitigation Measures Plan (M45000_012(0))
Attachment D	Town Centre Precinct Framework Plan
Attachment E	Community Centre Concept Grading Strategy



Attachment A Proposed Subdivision Plan
(110056-509A prepared by
RPS)



Legend

- Site Boundary
- Proposed Access Easement (10m Wide)

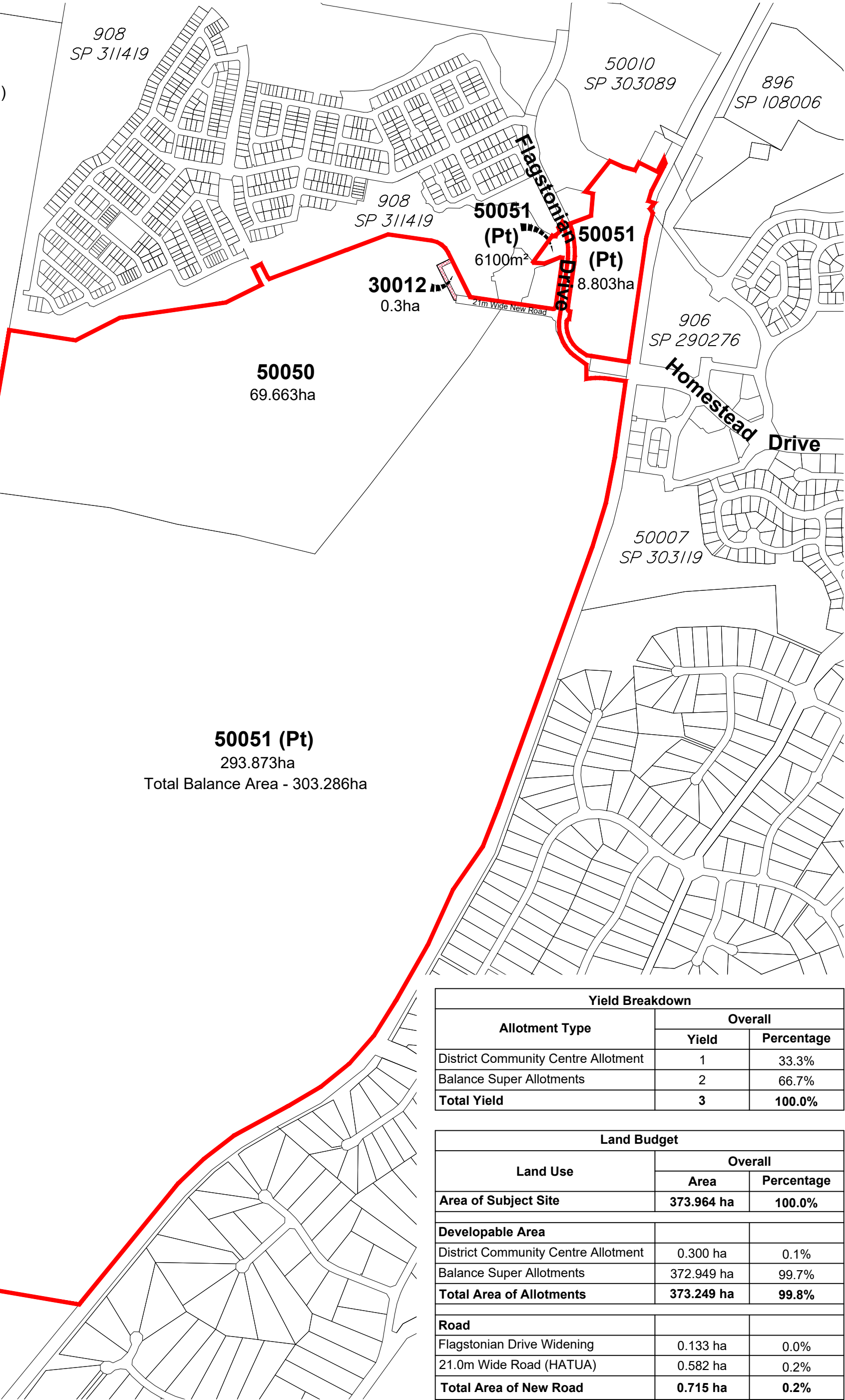
Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Road pavement detail is indicative and conceptual only - subject to further detailed design.



Yield Breakdown		
Allotment Type	Overall	
	Yield	Percentage
District Community Centre Allotment	1	33.3%
Balance Super Allotments	2	66.7%
Total Yield	3	100.0%

Land Budget		
Land Use	Overall	
	Area	Percentage
Area of Subject Site	373.964 ha	100.0%
Developable Area		
District Community Centre Allotment	0.300 ha	0.1%
Balance Super Allotments	372.949 ha	99.7%
Total Area of Allotments	373.249 ha	99.8%
Road		
Flagstonian Drive Widening	0.133 ha	0.0%
21.0m Wide Road (HATUA)	0.582 ha	0.2%
Total Area of New Road	0.715 ha	0.2%

PLAN REF: 110056 - 509A

DATE: 24 MARCH 2021
CLIENT: PEET
DRAWN BY: MD
CHECKED BY: MD/DG
SHEET: 1 of 2

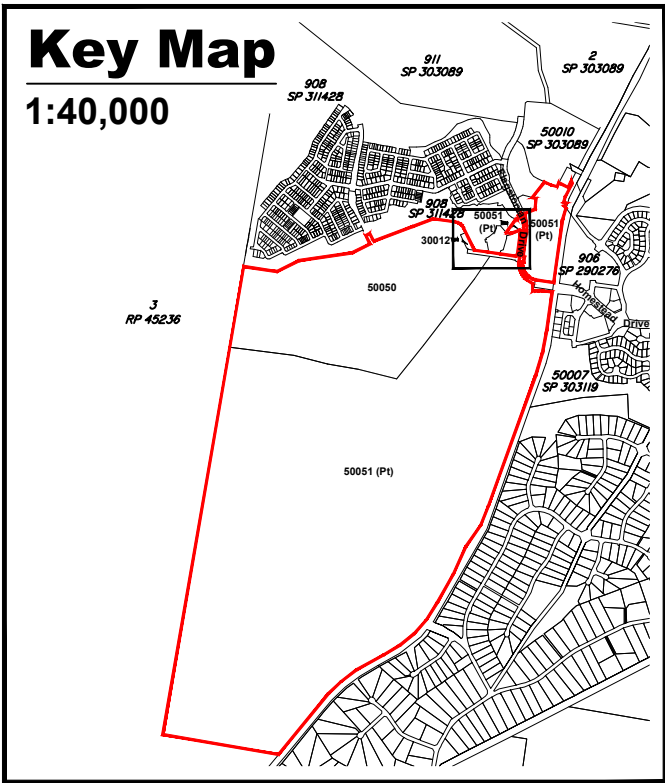
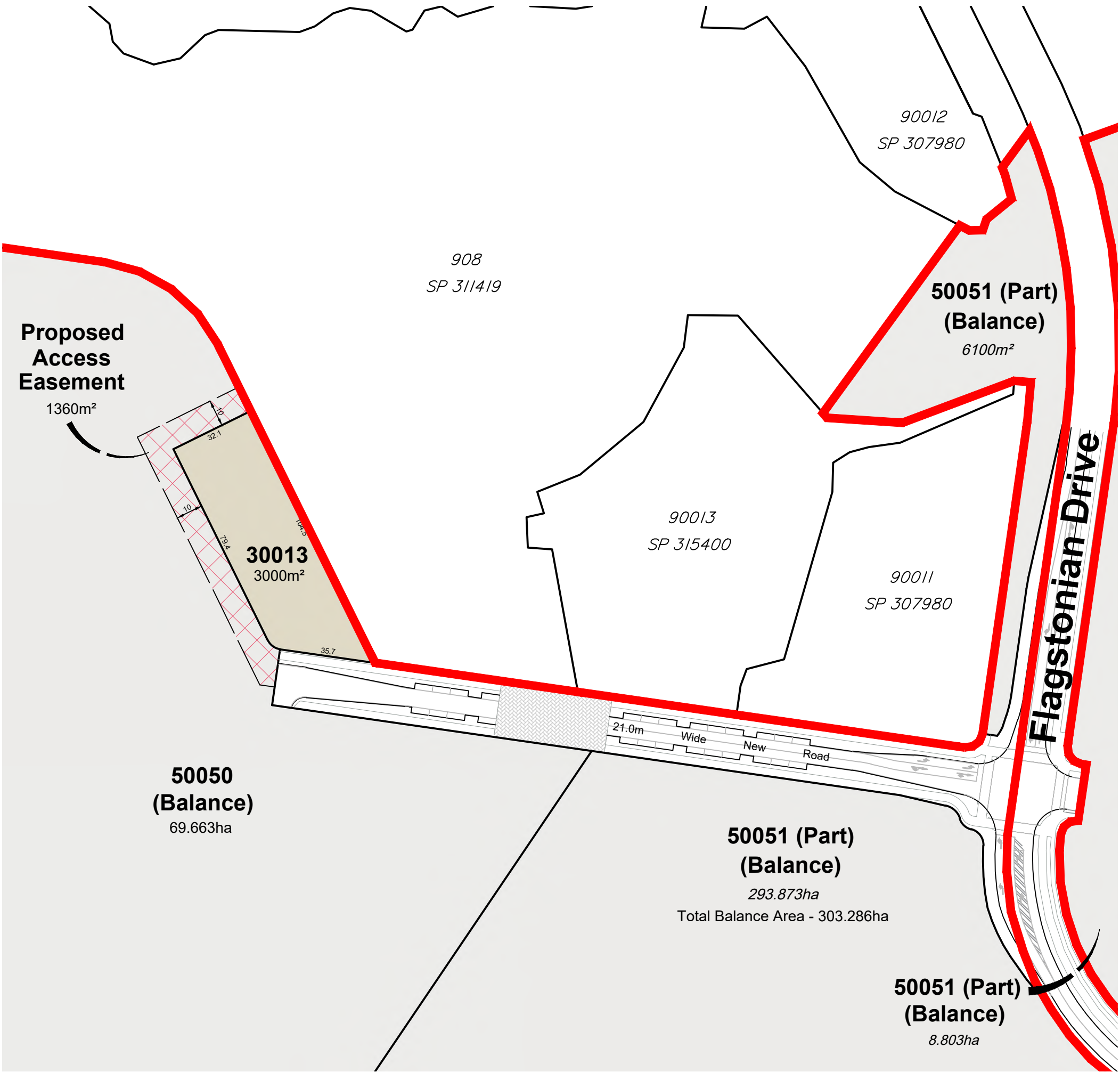


FLAGSTONE TOWN CENTRE
PROPOSED SUBDIVISION - 2 INTO 3 ALLOTMENTS
CANCELLING LOT 30008 ON SP315462 & LOT 907 ON SP315400

URBAN DESIGN
Level 4 HQ South
520 Wickham Street
PO Box 1559
Fortitude Valley QLD 4006
T +61 7 3539 9500
W rpsgroup.com



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Total Area of New Road	0.715 ha	0.2%

Legend

- Site Boundary
- Proposed Access Easement (10m Wide)
- Indicative Shared Zone

Note:
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Dimensions have been rounded to the nearest 0.1 metres.
Areas have been rounded down to the nearest 5m².
The boundaries shown on this plan should not be used for final detailed engineers design.
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PLAN REF: 110056 - 509A

DATE: 24 MARCH 2021
CLIENT: PEET
DRAWN BY: MD
CHECKED BY: MD/DG



FLAGSTONE TOWN CENTRE PROPOSED SUBDIVISION - 2 INTO 3 ALLOTMENTS CANCELLING LOT 30008 ON SP315462 & LOT 907 ON SP315400

URBAN DESIGN
Level 4 HQ South
520 Wickham Street
PO Box 1559
Fortitude Valley QLD 4006
T +61 7 3539 9500
W rpsgroup.com

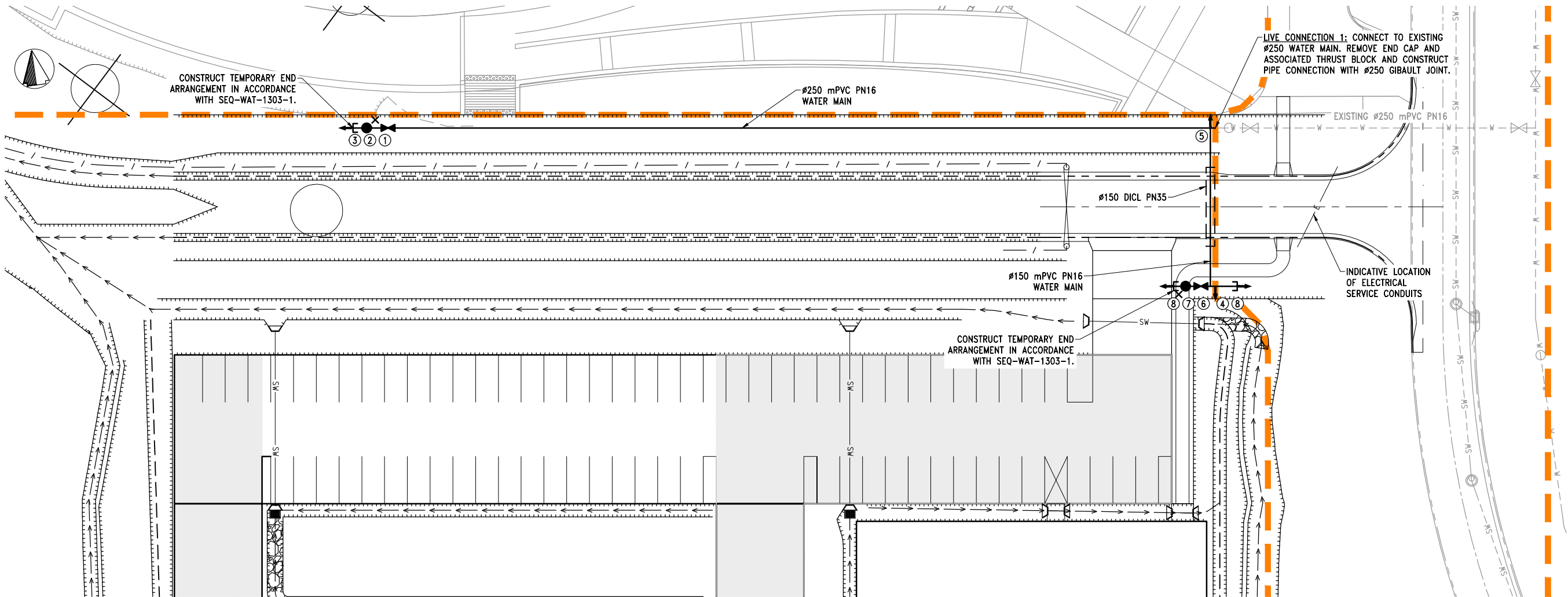


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Attachment B

Meinhardt Urban Plans (15-889-C1-TC-500(A) & 15-889-C1-SIAB-CIL-3110(C), 3111(C), 3200(C), 3205(D) & 3206(D))



WATER NOTES:

1. THE GENERAL ALIGNMENT OF WATER MAINS SHALL BE 1.425m OUTSIDE THE PROPERTY BOUNDARY UNLESS SHOWN OTHERWISE.
2. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST QUEENSLAND (SEQ) WATER SUPPLY CODE SPECIFICATIONS AND STANDARDS.
3. WATER RETICULATION MAINS SHALL BE CONSTRUCTED WITH mPVC-O PN16 PIPE, UNLESS NOTED OTHERWISE. WATER ROAD CROSSINGS ARE TO BE DICL PN35.
4. DEAD ENDS OF WATER MAINS TO BE CONSTRUCTED IN ACCORDANCE WITH SEQ CODE REQUIREMENTS.
5. REFER TO SEQ CODE STANDARD DRAWINGS SEQ-WAT-1301-1 & SEQ-WAT-1302-1 FOR VALVE AND HYDRANT INSTALLATION DETAILS.
6. MARKERS ARE REQUIRED FOR ALL HYDRANTS AND VALVES IN ACCORDANCE WITH SEQ CODE STANDARD DRAWINGS SEQ-WAT-1300-1 & SEQ-WAT-1300-2.
7. WHERE THERE IS A DIRECT LINE CLASH BETWEEN THE POWER SUPPLY PILLAR/STREET LIGHT AND FIRE HYDRANT THE FIRE HYDRANT IS TO BE LOCATED 1000mm OFF THE PROLONGATION OF ANY COMMON BOUNDARY, i.e. 1000mm AWAY FROM THE POWER SUPPLY PILLAR/STREET LIGHT.
8. THE CONTRACTOR SHALL DETERMINE ALLOWABLE BEARING CAPACITIES OF THE UNDISTURBED SIDE OF THE TRENCH. DIMENSIONS OF THE THRUST BLOCK ARE TO BE IN ACCORDANCE WITH SEQ CODE STANDARD DRAWING SEQ-WAT-1205-1.
9. WATER MAINS SHALL BE TESTED UNDER HYDRAULIC PRESSURE TO A PRESSURE TEST OF 1.2MPa. REFER TO SEQ CODE AND WSA 03 2011 V3.1 CLAUSE 19.4 FOR DETAILS.
10. LIVE CONNECTIONS TO BE COMPLETED BY CONTRACTOR UNDER LCC SUPERVISION UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
11. WATER SERVICE CONDUITS TO BE 150mm DIA uPVC PN9 SERIES WITH SOLVENT WELD JOINTS IN ACCORDANCE WITH SEQ CODE STANDARD DRAWING SEQ-WAT-1110-1.
12. ALL WATER CONDUITS TO EXTEND 300mm BEYOND CONCRETE FOOTPATH IN ACCORDANCE WITH SEQ CODE STANDARD DRAWING SEQ-WAT-1110-1. WHERE NO FOOTPATHS ARE PRESENT, WATER SERVICE CONDUITS ARE TO EXTEND 300mm MINIMUM BEHIND BACK OF KERB.
13. NEW WATER MAIN IN THE VICINITY OF THE LIVE CONNECTION IS TO BE LAID AT A LEVEL THAT SUITS THE EXISTING WATER MAIN.
14. ANY WORKS CONSTRUCTED OUT OF SPECIFIED TOLERANCE SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE (IF ORDERED).
15. WATER MAINS ARE NOT PERMITTED TO BE CONSTRUCTED WITHIN THE ROAD BOX. ROAD CROSSING DESIGN IS TO ACCOUNT FOR THE CONSTRUCTION PHASE OF THE DEVELOPMENT TO PROVIDE THE REQUIRED COVER.
16. MINIMUM CLEARANCE BETWEEN WATER AND OTHER SERVICES TO COMPLY WITH SEQ CODE REQUIREMENTS.
17. ADJACENT SOCKETED FITTINGS SHALL BE SEPARATED BY A MINIMUM STRAIGHT LENGTH OF 600mm.

LEGEND

- NOMINAL KERB LINE
- TOP OF BATTER
- TOE OF BATTER
- PROPOSED WATER MAIN
- FIRE HYDRANT, STOP VALVE, REDUCER & DEAD END CAP
- Ø40mm WATER SERVICE AS PER SEQ-WAT-1110-2 WITH FITTINGS UPSIZED TO SUIT UNLESS NOTED OTHERWISE
- WATER CONDUITS
- FITTINGS NUMBER
- WATER ROAD CROSSING DICL PN35
- THRUST/ANCHOR BLOCK
- ELECTRICAL
- STORMWATER
- 100mm GRAVEL PAVEMENT WITH SINGLE COAT 10mm PRIMER SEAL
- ROCK LINED BATTER CHUTE (TYPE 2)
- SWALE
- 1.8m FENCE WITH DEVELOPER SCREEN
- STAGE BOUNDARY

MINIMUM COVER TO WATER MAINS

LOCATION	≤Ø150mm NB	≥Ø200mm NB
NON-ROADWAYS	600mm	1000mm
SEALED ROADS	600mm	1000mm
MAJOR ROADS/EMBANKMENT	750mm	1000mm
FREEWAYS	1200mm	1200mm

SCHEDULE OF FITTINGS

No.	Description
①	Ø250 Stop Valve
②	Ø250 Fire Hydrant
③	Ø250 Dead End Cap
④	Ø150 x Ø150 Tee
⑤	Ø250 x Ø150 Tee
⑥	Ø150 Stop Valve
⑦	Ø150 Fire Hydrant
⑧	Ø150 Dead End Cap

LIVE WATER MAIN WORKS

No.	DESCRIPTION	WATER DIA./MAT.	ADJACENT LOT NO.	COVER/DEPTH
1.	CONTRACTOR TO CONSTRUCT WATER MAIN INCLUDING ALL FITTINGS STOPPING 5.0m SHORT OF LIVE CONNECTIONS TO EXISTING WATER MAINS.			
2.	LIVE CONNECTION 1: AFTER ACCEPTANCE OF CONSTRUCTED WATER WORKS "ON MAINTENANCE", EXISTING END CAP AND ASSOCIATED THRUST BLOCK TO BE REMOVED FROM END OF LINE ARRANGEMENT AND CONNECTION COMPLETED WITH Ø250 GIBALT JOINT.	Ø250 mPVC PN16	RRP 3	1000mm COVER

ALL LIVE WORKS TO BE COORDINATED WITH LCC AND TO BE COMPLETED UNDER LCC SUPERVISION.

FIRE ANT NOTE:

UNDER QUEENSLAND LEGISLATION, FIRE ANTS ARE A NOTIFIABLE PEST AND SUSPECTED SIGHTING MUST BE REPORTED TO BIOSECURITY QUEENSLAND. MOVEMENT OF FIRE ANTS IS PROHIBITED UNLESS APPROVED OTHERWISE BY THE DEPARTMENT OF PRIMARY INDUSTRIES. THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS TO COMPLETE THE WORKS.

LOCAL AUTHORITY: ECONOMIC DEVELOPMENT QUEENSLAND
EDQ FILE REF NO: DEV2012/402
RP DESCRIPTION: LOT 908 RP819216
PARISH/COUNTY: MACLEAN/UNDULLAH
ORIGIN: PM107142 (RL39.078)
HORIZONTAL DATUM: MGA

REV	DESCRIPTION	BY	SDR	DATE
A	ORIGINAL ISSUE	LH	JuH	12.07.18

5 0 5 10m
1 : 250 (FULL SIZE A1)

NAME Jason Harley
RPEQ 5665
Jason Harley
Approved by, for and on behalf of Meinhardt
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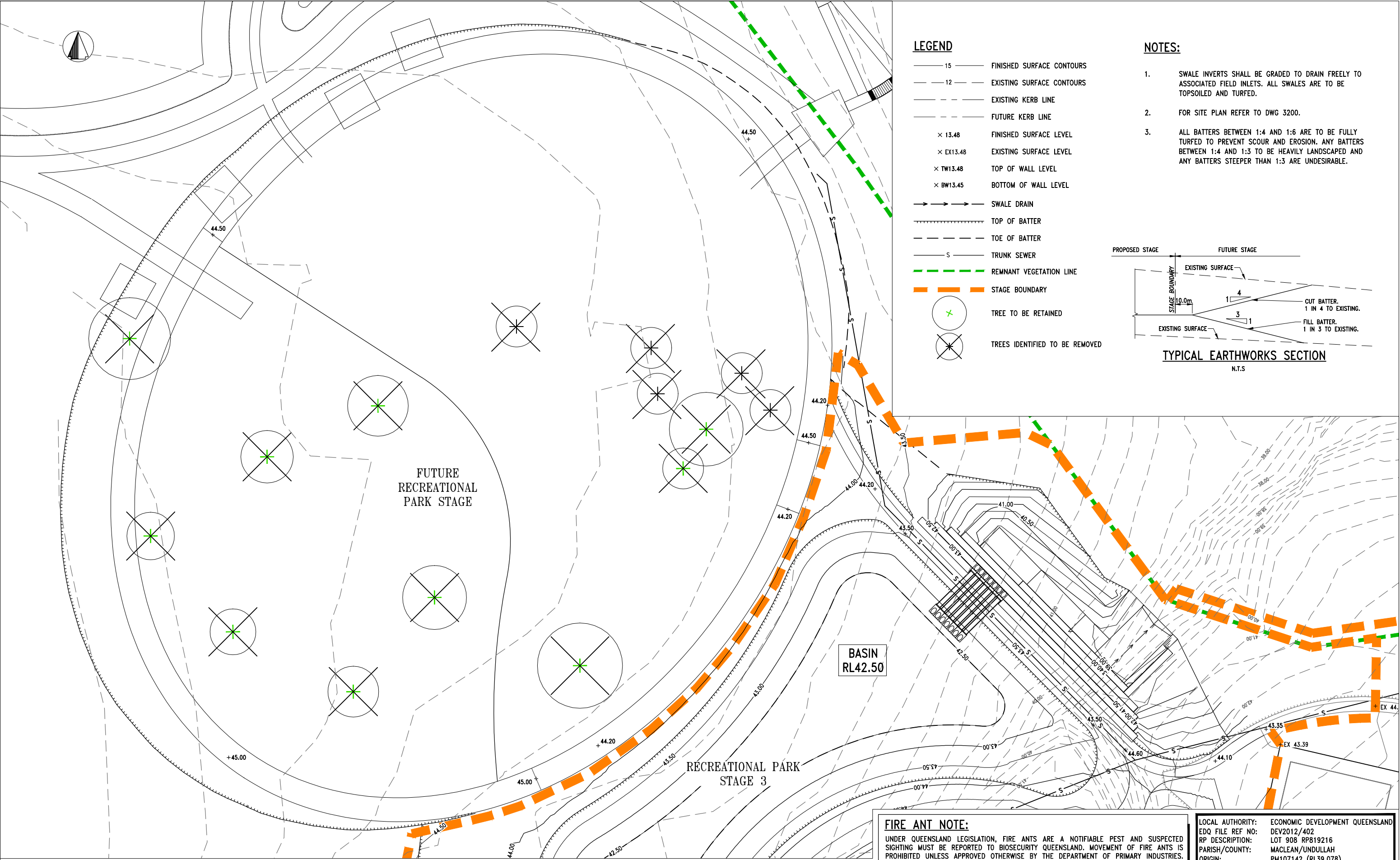


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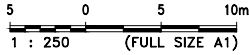


CLIENT
PEET FLAGSTONE CITY PTY. LTD.
TITLE
WATER RETICULATION
NOTES AND DETAILS

PROJECT
FLAGSTONE CITY - TEMPORARY CARPARK
FLAGSTONE CITY - TEMPORARY CARPARK
STATUS
CONSTRUCTION
FOR CONSTRUCTION
DESIGNED NM
DRAWN LH
APPROVED JuH
DATE 12.07.18
SCALE @ A1 1:250
SHEET 1 OF 1
PROJECT No 15-889
DRAWING No C1-TC-500
REV A



REV	DESCRIPTION	BY	APP	DATE
A	ORIGINAL ISSUE	SW	JH	05.12.17
B	UPDATED DESIGN	SW	JH	22.01.18
C	FOR CONSTRUCTION	SW	JH	07.02.18



SURVEYOR
THG
Brisbane 075 4066 4700
Mackay 075 4061 2016
Proserpine 075 4061 1722
Bowen 075 4786 1000
Cairns 075 4061 6722
Email: mail@thg.com.au
Web: www.thg.com.au
ABN: 15 153 531 9022

RPEQ 5023 Jason Harley
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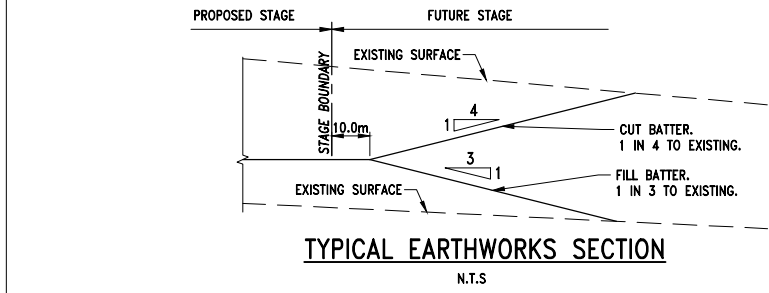
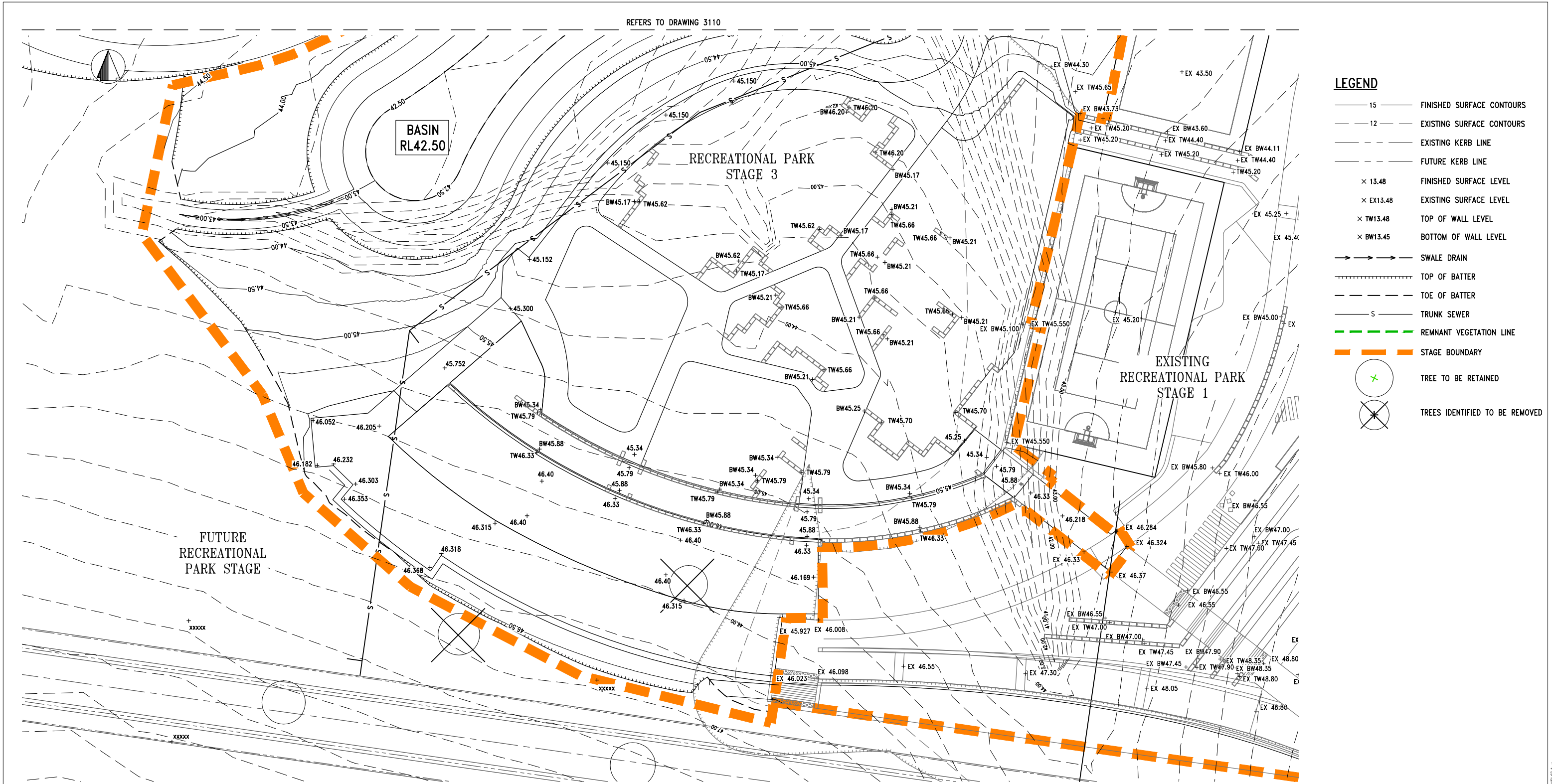
Bradlees
Part of the Meinhardt Group

CLIENT
PEET FLAGSTONE CITY PTY. LTD.
TITLE
**EARTHWORKS LEVELS PLAN
SHEET 1 OF 2**

PROJECT
FLAGSTONE CITY - REGIONAL RECREATION PARK
ECONOMIC DEVELOPMENT QUEENSLAND
STATUS
FOR CONSTRUCTION
DESIGNED SW
DRAWN SW
APPROVED JH
DATE 05.12.17
SCALE @ A1 1:500
SHEET 1 OF 1
PROJECT No 15-889
DRAWING No C1-S1AB-CIL-3110
REV C

LOCAL AUTHORITY: ECONOMIC DEVELOPMENT QUEENSLAND
EDO FILE REF NO: DEV2012/402
RP DESCRIPTION: LOT 908 RP819216
PARISH/COUNTY: MACLEAN/UNDULLAH
ORIGIN: PM107142 (RL39.078)
HORIZONTAL DATUM: MGA

FIRE ANT NOTE:
UNDER QUEENSLAND LEGISLATION, FIRE ANTS ARE A NOTIFIABLE PEST AND SUSPECTED SIGHTING MUST BE REPORTED TO BIOSECURITY QUEENSLAND. MOVEMENT OF FIRE ANTS IS PROHIBITED UNLESS APPROVED OTHERWISE BY THE DEPARTMENT OF PRIMARY INDUSTRIES. THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS TO COMPLETE THE WORKS.



REV	DESCRIPTION	BY	APP	DATE
A	ORIGINAL ISSUE	SW	JH	05.12.17
B	UPDATED DESIGN	SW	JH	22.01.18
C	FOR CONSTRUCTION	SW	JH	07.02.18



SURVEYOR

THG

BRISSBANE 075 4000 4700
MACQUARY 075 4001 2011
PESKIDERRINE 075 4001 1722

BOWEN 075 4700 1000
CAIRNS 075 4001 4722

Email: mail@thg.com.au
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ABN: 15 153 531 902

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CLIENT

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TITLE

EARTHWORKS LEVELS PLAN
SHEET 2 OF 2

PROJECT

FLAGSTONE CITY - REGIONAL RECREATION PARK

ECONOMIC DEVELOPMENT QUEENSLAND

STATUS

FOR CONSTRUCTION

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET
SW	SW	JH	05.12.17	1:500	1 OF 1

PROJECT No

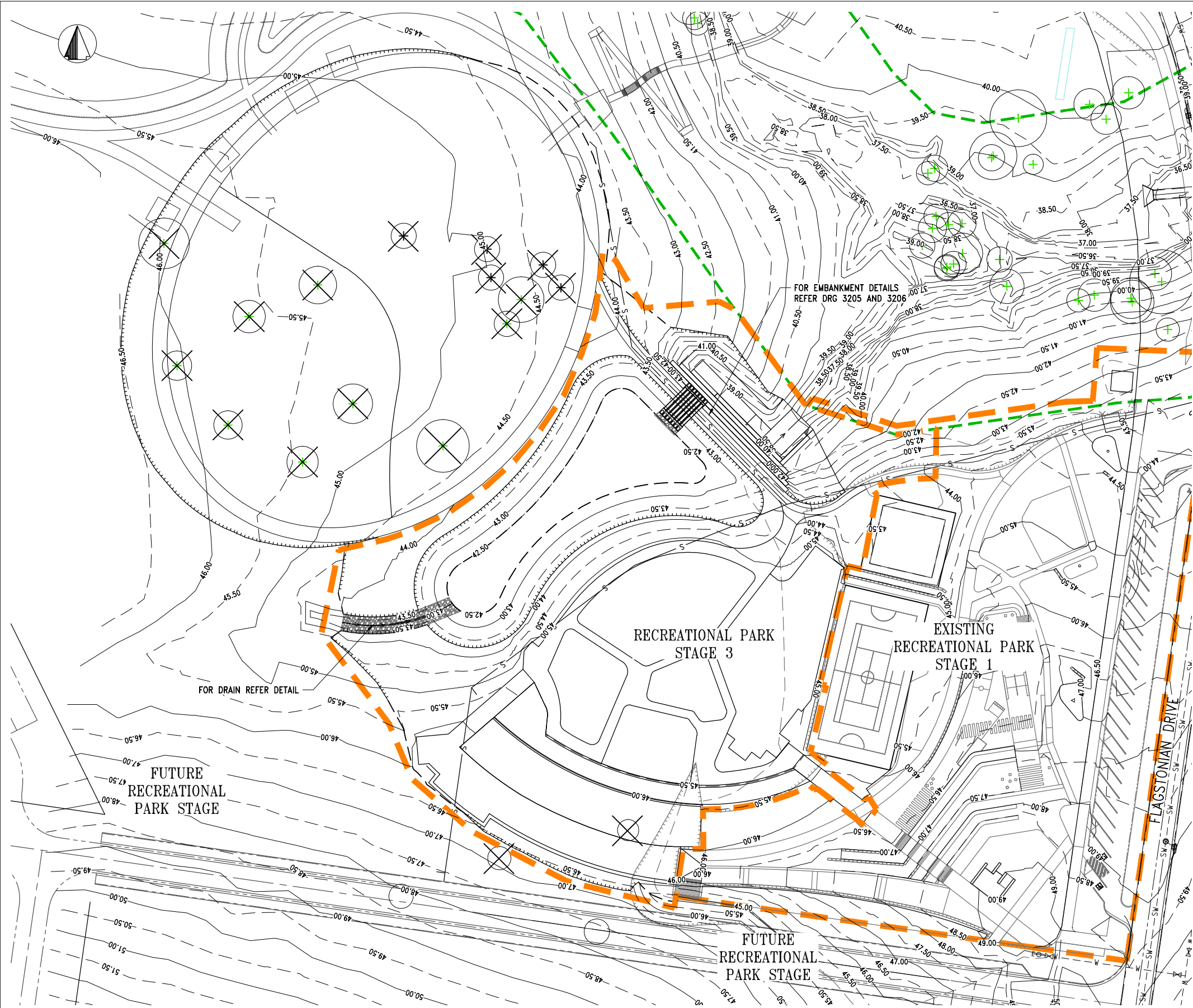
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DRAWING No

C1-S1AB-CIL-3111

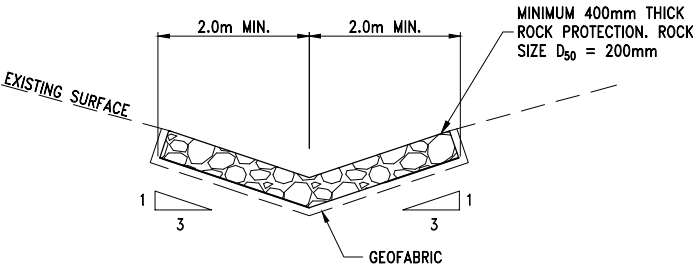
REV

C



LEGEND

- 12 FINISHED SURFACE CONTOURS
- FUTURE KERB LINE
- EXISTING KERB LINE
- S PROPOSED TRUNK SEWER (BY OTHERS)
- SWALE DRAIN
- STAGE BDY
- REMNANT VEGETATION LINE



TYPICAL DRAIN DETAIL
N.T.S.

SITE NOTES

- REFER DRAWING 3001 FOR GENERAL NOTES.
- SIDE DRAINS ARE TO BE CONSTRUCTED UNDER ALL KERB UNLESS NOTED OTHERWISE.
- PROVIDE ROCK AND DRAINS/SWALES PROTECTION TO ALL OUTLETS. ALL ROCK TO BE UNIFORMLY GRADED.
- LOCATION OF ALL STORMWATER OUTLETS ARE INDICATIVE ONLY AND MUST BE VERIFIED IN THE FIELD AND CONFIRMED BY THE SUPERINTENDENT PRIOR TO CONSTRUCTION OF DISCHARGE LINE AND OUTLET.
- ANY WORKS CONSTRUCTED OUTSIDE OF SPECIFIED TOLERANCES ARE TO BE RECTIFIED AT THE CONTRACTORS EXPENSE (IF ORDERED).

FIRE ANT NOTE:

UNDER QUEENSLAND LEGISLATION, FIRE ANTS ARE A NOTIFIABLE PEST AND SUSPECTED SIGHTING MUST BE REPORTED TO BIOSECURITY QUEENSLAND. MOVEMENT OF FIRE ANTS IS PROHIBITED UNLESS APPROVED OTHERWISE BY THE DEPARTMENT OF PRIMARY INDUSTRIES. THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS TO COMPLETE THE WORKS.

LOCAL AUTHORITY: ECONOMIC DEVELOPMENT QUEENSLAND
EDQ FILE REF NO: DEV2012/402
RP DESCRIPTION: LOT 908 RP819216
PARISH/COUNTY: MACLEAN/UNDULLAH
ORIGIN: PM107142 (RL39.078)
HORIZONTAL DATUM: MGA

REV	DESCRIPTION	BY	APP	DATE
A	ORIGINAL ISSUE	SW	JH	05.12.17
B	UPDATED DESIGN	SW	JH	22.01.18
C	FOR CONSTRUCTION	SW	JH	07.02.18

5 0 5 10 15 20 25m
1 : 500 (FULL SIZE A1)



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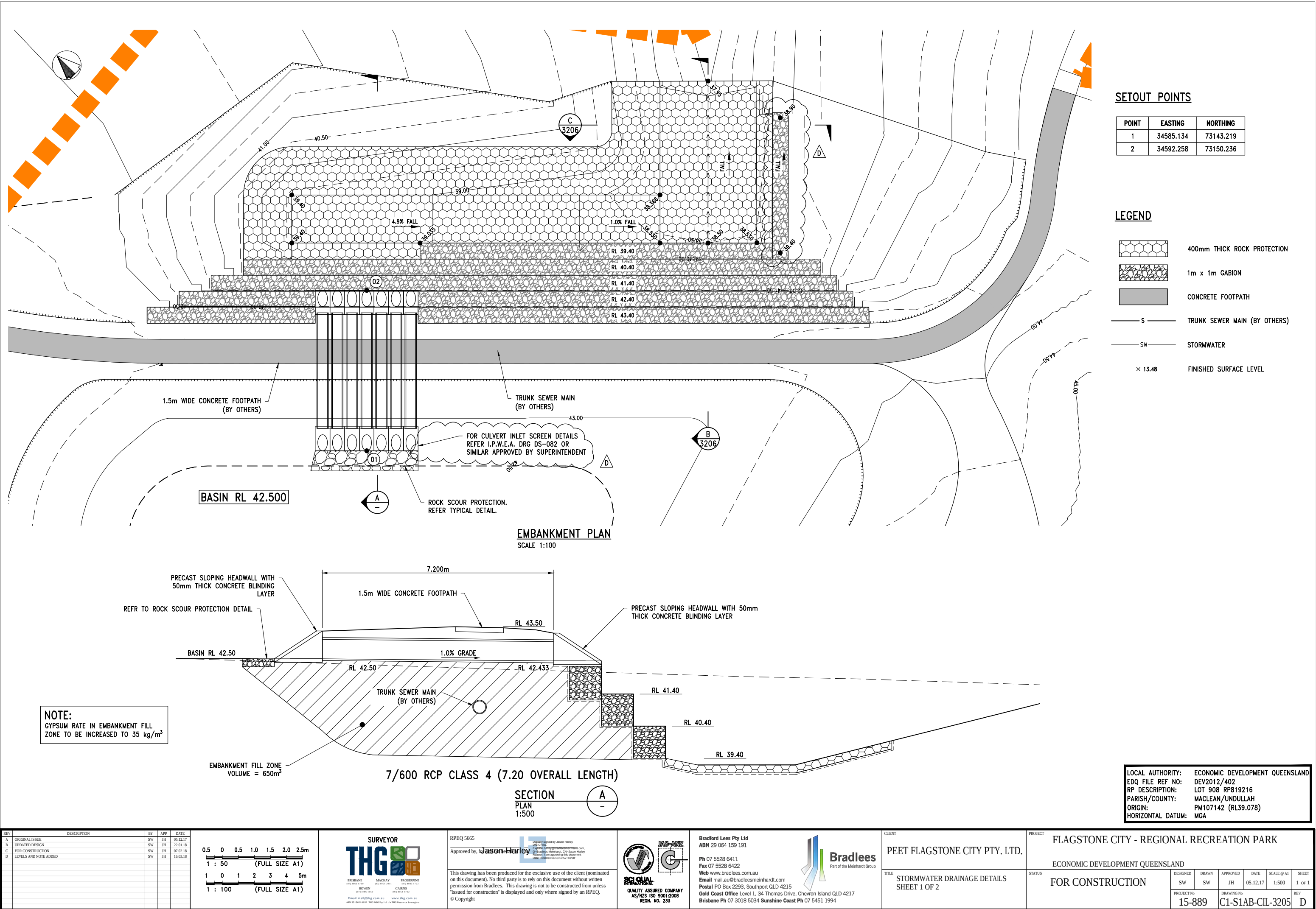


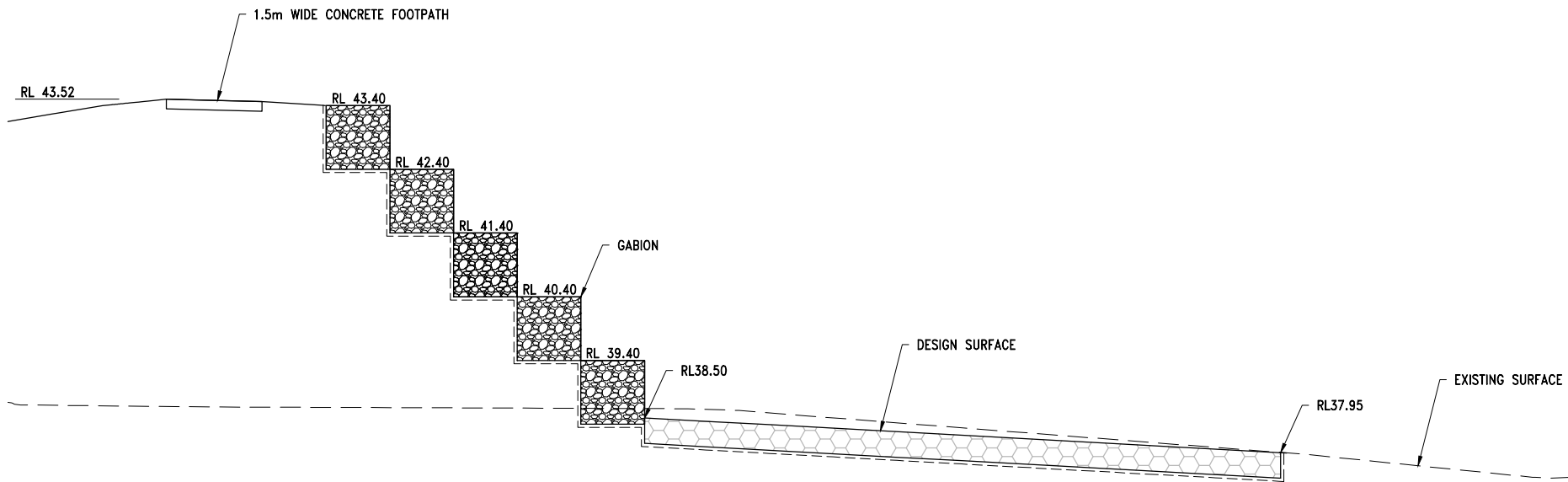
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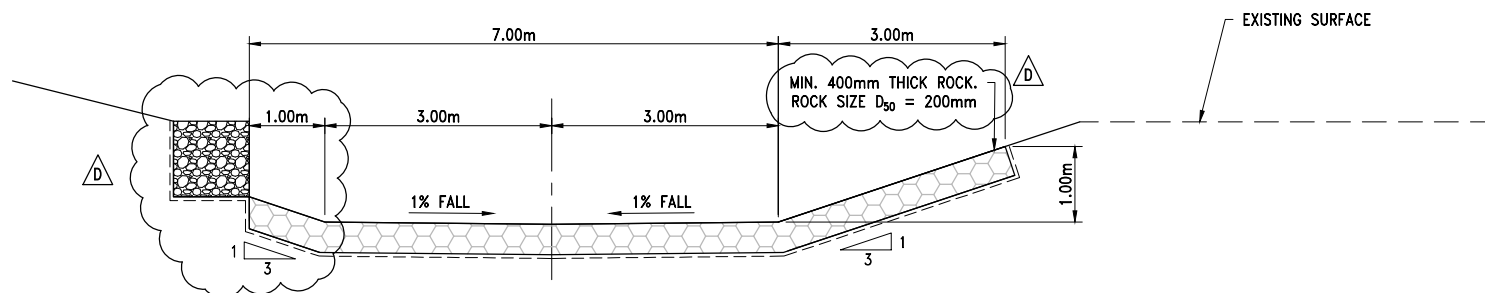
CLIENT
PEET FLAGSTONE CITY PTY. LTD.
TITLE
SITE PLAN
LAYOUT PLAN

PROJECT									
FLAGSTONE CITY - REGIONAL RECREATION PARK									
ECONOMIC DEVELOPMENT QUEENSLAND									
STATUS FOR CONSTRUCTION									
DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET				
SW	SW	JH	05.12.17	1:500	1 of 1				
PROJECT No		DRAWING No		REV					
15-889		C1-S1AB-CIL-3200		C					

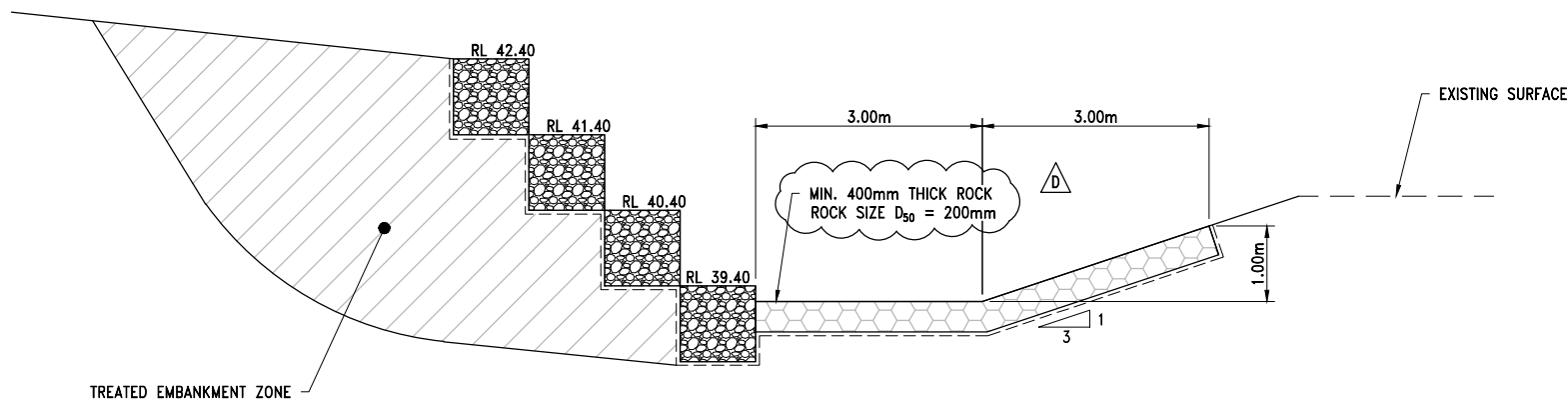




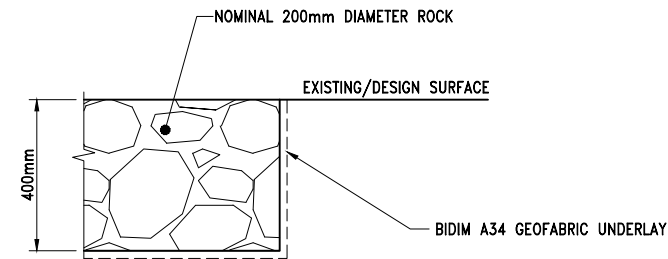
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PLAN SCALE 1:50



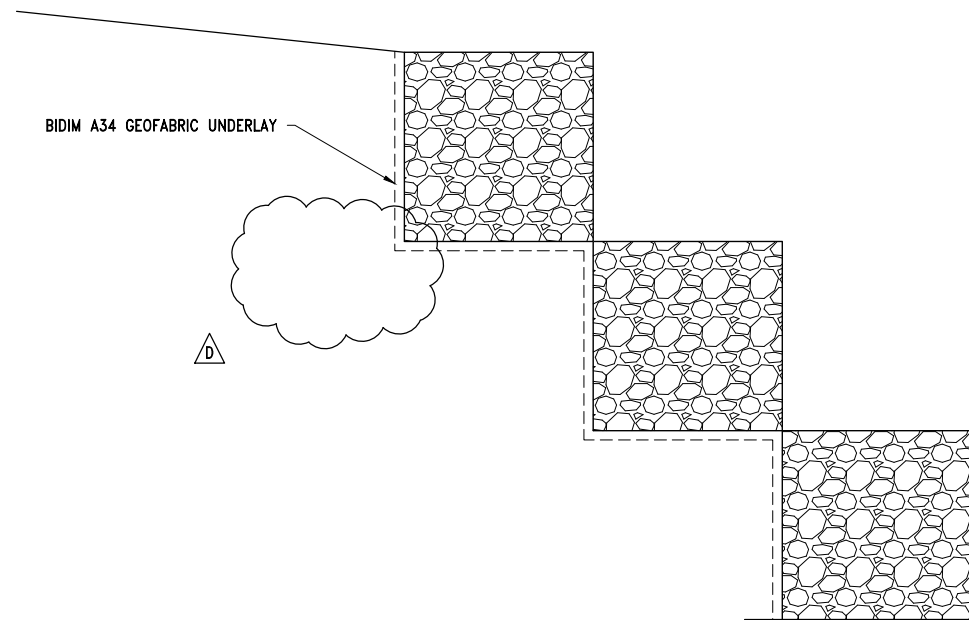
SECTION C
PLAN SCALE 1:50



TYPICAL ROCK CHANNEL SECTION
SCALE 1:50



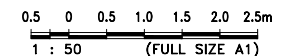
ROCK PROTECTION DETAIL
N.T.S.



GABION WALL DETAIL
N.T.S.

LOCAL AUTHORITY:	ECONOMIC DEVELOPMENT QUEENSLAND
EDQ FILE REF NO:	DEV2012/402
RP DESCRIPTION:	LOT 908 RP819216
PARISH/COUNTY:	MACLEAN/UNDULLAH
ORIGIN:	PM107142 (RL39.078)
HORIZONTAL DATUM:	MGA

REV	DESCRIPTION	BY	APP	DATE
A	ORIGINAL ISSUE	SW	JH	05.12.17
B	UPDATED DESIGN	SW	JH	22.01.18
C	FOR CONSTRUCTION	SW	JH	07.02.18
D	NOTES AMENDED	SW	JH	16.03.18



SURVEYOR
THG
Brisbane 4700 4700 4700
Mackay 4700 4700 4700
Proserpine 4700 4700 4700
Brisbane 4700 4700 4700
Mackay 4700 4700 4700
Proserpine 4700 4700 4700

RPEQ 5665
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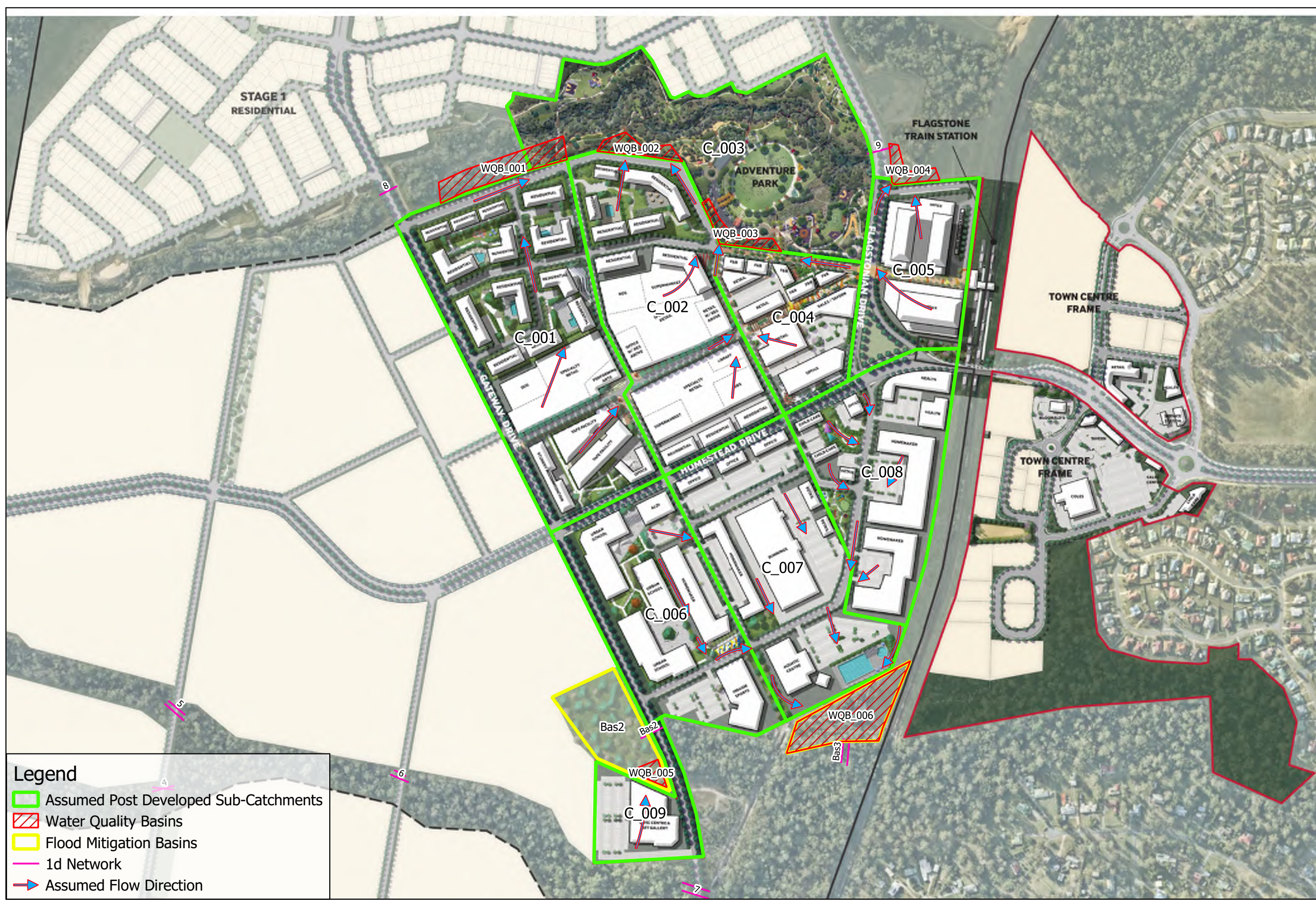
Bradlees
Part of the Meinhardt Group
CLIENT
PEET FLAGSTONE CITY PTY. LTD.
TITLE
STORMWATER DRAINAGE DETAILS
SHEET 2 OF 2

PROJECT
FLAGSTONE CITY - REGIONAL RECREATION PARK
ECONOMIC DEVELOPMENT QUEENSLAND
STATUS
FOR CONSTRUCTION
DESIGNED
SW
DRAWN
SW
APPROVED
JH
DATE
05.12.17
SCALE @ A1
1:500
SHEET
1 OF 1
PROJECT No
15-889
DRAWING No
C1-S1AB-CIL-3206
REV
D



Attachment C

Engeny Preliminary Stormwater
Mitigation Measures Plan
(M45000_012(0))



Level 7, 500 Queen St Brisbane QLD 4000
PO Box 10183 Brisbane QLD 4000
www.engeny.com.au
P: 03 3221 7174
F: 03 3236 2399



0 150 300 m

Scale in metres (1:6000 @ A3)
Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: Map Grid of Australia, Zone 56

Flagstone Town Center

Preliminary Stormwater Mitigation Measures

Job Number:
M45000_012
Revision: 0
Drawn: SW
Date: 19 /2 /2020



Attachment D

Town Centre Precinct Framework Plan



Precinct Framework

Undulating topography is a distinguishing feature of the area, offering opportunity for a Hilltop Park at its highest point, with views across the Retail Precinct and Town Centre.

A Ring Park skirts the hilltop, connecting the Town Centre with East & West Village via an at-grade adventure park connection.

Homestead and Flagstonian Drives are significant road corridors impacting access and amenity to adjacent land parcels. A mixed use buffer between the Homestead Drive corridor and northern residential parcels is proposed.





Attachment E

Community Centre Concept Grading Strategy





A6. GEOTECHNICAL REPORT ON LEVEL 1 EARTHWORKS INSPECTION AND TESTING

4th July 2023

Ref No: 1279_SEE Civil_Level 1_Flagstone City DCC

REPORT ON LEVEL 1

EARTHWORKS INSPECTION AND TESTING



PROJECT: **FLAGSTONE CITY DISTRICT COMMUNITY CENTRE**
& ENTRY ROAD

CONTRACTOR: **SEE CIVIL PTY LTD**





TABLE OF CONTENTS

1 INTRODUCTION

1.0 General

1.1 Site Description

2 WORKS AND SPECIFICATIONS

3 PREVIOUS EARTHWORKS

4 FILL FOUNDATION

5 COMPLIANCE TESTING

6 CONCLUSION

7 LIMITATIONS

Appendix A – Earthworks drawing

Appendix B – Test Reports

Appendix C – Individual Lot Certificates

1 INTRODUCTION

1.0 GENERAL

Australian Soil and Concrete Testing was commissioned by SEE Civil Pty Ltd to provide earthworks inspection and testing services on a 'Level 1' basis in accordance with Clause 8.2 of AS 3798-2007 *'Guidelines on Earthworks for Commercial and Residential Developments'*.

The fill placed on the development between 26/07/2022 and 11/10/2022 as detailed in this report is considered to be controlled Fill as defined in AS2870 – 2011 *'Residential Slabs & Footings'*.

1.1 SITE DESCRIPTION

The site is located at the Flagstone City Residential Estate off Flagstonian Drive in Queensland.



Drawing showing the Site Location.

2 WORKS AND SPECIFICATIONS

The earthworks generally comprised of Level 1 filling placed across the site. Filling was conducted by using site won materials. The fill materials were placed in layers not exceeding 200mm and moisture conditioned as required. Pad foot rollers were then utilized to compact the fill until the required density specifications were achieved.

Filling was carried out in accordance with AS3798-2007 '*Guidelines on Earthworks for Commercial and Residential Developments*' and with the project specification prepared for the project.

The specification requirements were that all fill was to be placed and compacted in layers to a density ratio of not less than 98% of the maximum dry density as determined by AS1289.5.4.1 (Standard Compaction).

3 PREVIOUS EARTHWORKS

No Earthworks have previously been carried out at the site.

4 FILL FOUNDATION

The stripped surfaces of proposed fill areas were inspected and proof rolled prior to placement of fill. In general, the proof rolling was carried out with the equipment used to compact the fill and water truck. Compliance of the fill foundation and approval to commence filling was on the basis of:

- adequate removal of topsoil and organics
- adequate removal of soft compressible soils
- soundness (minimum deflection) under proof rolling
- Adequate benching into existing slopes/batters

5 COMPLIANCE TESTING

Test locations were randomly selected by the Geotechnical Testing Authority (GTA) Australian Soil and Concrete Testing. Compaction control tests were carried out at regular intervals throughout the placement of fill in accordance with the minimum test frequency recommendations included in the specifications. The table below summarises the test results. The test locations were not professionally surveyed and should be considered approximate.

All field density tests carried out on the structural fill meet the minimum specification requirements of 95% Standard Compaction (AS 1289 5.8.1, 5.1.1, 5.7.1 & 2.1.1).

SUMMARY OF FIELD DENSITY TEST RESULTS

Test No	Test Date	Test Location			Test Level	Density Ratio %
68589	3/08/2022	Level 1 Fill	E: 34424.024	N: 73035.519	RL: 50.357	99.0
68590	3/08/2022	Level 1 Fill	E: 34412.181	N: 73029.655	RL: 50.996	98.0
68591	3/08/2022	Level 1 Fill	E: 34443.620	N: 73036.357	RL: 49.965	101.5

68592	3/08/2022	Level 1 Fill	E: 34434.179	N: 73035.867	RL: 50.175	100.5
68626	4/08/2022	Level 1 Fill	E: 34425.38	N: 73078.367	RL: 47.639	98.0
68627	4/08/2022	Level 1 Fill	E: 34440.047	N: 73082.903	RL: 47.119	100.5
68628	4/08/2022	Level 1 Fill	E: 34443.199	N: 73073.098	RL: 47.431	99.0
68629	4/08/2022	Level 1 Fill	E: 34425.322	N: 73049.956	RL: 49.307	98.0
68717	5/08/2022	Level 1 Fill	E: 34511.929	N: 73034.47	RL: 47.681	99.0
68718	5/08/2022	Level 1 Fill	E: 34446.366	N: 73064.777	RL: 48.191	101.0
68719	5/08/2022	Level 1 Fill	E: 34479.599	N: 73038.532	RL: 48.135	98.0
68720	5/08/2022	Level 1 Fill	E: 34442.165	N: 73074.602	RL: 47.825	98.0
69019	9/08/2022	Level 1 Fill	E: 34443.929	N: 73060.489	RL: 48.770	101.0
69020	9/08/2022	Level 1 Fill	E: 34429.220	N: 73058.552	RL: 49.227	98.5
69021	9/08/2022	Level 1 Fill	E: 34401.025	N: 73044.128	RL: 50.067	98.0
69022	9/08/2022	Level 1 Fill	E: 34408.678	N: 73053.205	RL: 49.617	99.0
69233	16/08/2022	Level 1 Fill	E: 34486.342	N: 73032.382	RL: 48.871	101.5
69234	16/08/2022	Level 1 Fill	E: 34470.658	N: 73034.945	RL: 49.005	102.0
69235	16/08/2022	Level 1 Fill	E: 34485.216	N: 73046.766	RL: 48.224	102.5
69236	16/08/2022	Level 1 Fill	E: 34503.996	N: 73030.373	RL: 48.53	98.5
70802	8/09/2022	Level 1 Fill	E: 34503.816	N: 73037.614	RL: 49.021	98.5
70803	8/09/2022	Level 1 Fill	E: 34471.612	N: 73034.614	RL: 49.264	98.5
70804	8/09/2022	Level 1 Fill	E: 34472.613	N: 73048.189	RL: 49.316	99.0
70805	8/09/2022	Level 1 Fill	E: 34489.612	N: 73026.184	RL: 49.424	99.0
72379	7/10/2022	Level 1 Fill	E: 34548.63	N: 73032.16	RL: 49.23	99.0
72380	7/10/2022	Level 1 Fill	E: 34486.32	N: 73028.41	RL: 49.41	100.0
72381	7/10/2022	Level 1 Fill	E: 34486.43	N: 73042.16	RL: 49.41	99.0
72382	7/10/2022	Level 1 Fill	E: 34489.46	N: 73021.41	RL: 49.56	99.5
72383	7/10/2022	Level 1 Fill	E: 34462.14	N: 73021.49	RL: 49.39	99.0
72600	11/10/2022	Level 1 Fill	E: 34457.161	N: 73051.418	RL: 48.261	99.0
72601	11/10/2022	Level 1 Fill	E: 34431.149	N: 73062.186	RL: 48.341	100.0
72602	11/10/2022	Level 1 Fill	E: 34401.412	N: 73036.023	RL: 48.614	99.0
72603	11/10/2022	Level 1 Fill	E: 34481.211	N: 73022.111	RL: 48.960	99.5
72604	11/10/2022	Level 1 Fill	E: 34476.181	N: 73041.906	RL: 49.049	99.0

No. of Tests: 34

Mean: 99.4 %

6 CONCLUSION

Based on the observations made by Australian Soil and Concrete Testing and the test results obtained during construction, as far as we have been able to determine, the structural fill placed between the 26/07/2022 and 11/10/2022 is considered to have been carried out in general accordance with AS 3798-2007 '*Guidelines on Earthworks for Commercial and Residential Developments*'.



7 LIMITATIONS

Unless otherwise stated in this report, this report does not include: Backfill behind retaining structures, Backfill to service trenches, Road Pavements, Any Topsoil placed on the site, Slope Stability or Site Drainage.

Please do not hesitate to contact me if you have any queries.

Yours faithfully

A handwritten signature in blue ink, appearing to read 'Jason Mckenna', is written over a light blue rectangular background.

Jason Mckenna
Laboratory Manager
ASCT Brisbane South



Appendix A

Earthworks Drawing



Appendix B

Test Reports



ASCT Brisbane South
 Postal: PO Box 1232 Park Ridge QLD 4125
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 Mobile: 0437 776 582
 A.B.N. 28 608 830 306

Compaction Control Test Report (Nuclear Gauge & Hilf) Page: 1 of 1

Client:	See Civil Pty Ltd	Report No:	4
Client Address:	108 Siganto Drive, Helensvale QLD 4210	Report Date:	18/08/2022
Project:	Flagstone City - District Community Centre	Project No:	1279
Component:	General fill - import	Test Request:	
Lot Number:		ITP/PCP:	

Sample Information & Location

Sample Number:	68589	68590	68591	68592	-
Field Test Number:	1	2	3	4	-
Date - Field Tested:	3/08/2022	3/08/2022	3/08/2022	3/08/2022	-
Time - Field Tested:	1030	1040	1050	1100	-
Material Source / Type:	Import - General Fill				
Remarks / Notes:					
Control Line:	-	-	-	-	
Location/Chainage/Easting:	(m) E: 34424.024	E: 34412.181	E: 34443.620	E: 34434.179	-
Position/Offset/Northing:	(m) N: 73035.519	N: 73029.655	N: 73036.357	N: 73035.867	-
Level/Layer/R.L.	50.357	50.996	49.965	50.175	-
Layer Depth:	(mm) -	-	-	-	-
Depth Tested:	(mm) 150	150	150	150	-

Field & Laboratory Results

Field Wet Density:	(t/m ³) 2.20	2.10	2.29	2.21	-
Field Dry Density:	(t/m ³) 2.03	1.92	2.12	2.04	-
Retained Oversize (Wet basis):	(%) 16% on 19.0mm	14% on 19.0mm	16% on 19.0mm	9% on 19.0mm	-
Material Description:	-	-	-	-	-
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-
Field Moisture Content:	(%) 8.5	9.0	8.0	8.0	-
Adjusted Lab OMC:	(%) 7.9	8.2	7.7	8.7	-
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-
Lab Max Converted Wet Density:	(t/m ³) 2.18	2.10	2.24	2.18	-
Adjusted Lab Max CWD:	(t/m ³) 2.21	2.14	2.26	2.20	-
Compactive Effort:	Standard	Standard	Standard	Standard	-

Relative Compaction & Moisture

Moisture Variation	(%) 0.5% Wetter than OMC	1.0% Wetter than OMC	At OMC	0.5% Dryer than OMC	-
Moisture Ratio	(%) 105.5	110.5	103.0	94.0	-
Density Ratio	(%) 99.0	98.0	101.5	100.5	-

Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	98	98.8	4	99.70	1.48	0.640
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-

Test Methods Used.

AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)

Remarks Regarding the Lot.

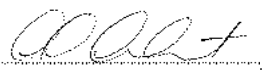
Laboratory testing 17/08/2022

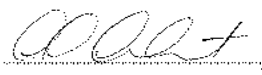


Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested.

Accreditation number: 19902

Approved By: A.Lenkeit
 Approved Signatory

		ASCT Brisbane South Postal: PO Box 1232 Park Ridge QLD 4125 Laboratory: 4/31 Tradelink Road Hillcrest Q 4118 Telephone: 0437 776 582 E-Mail: brisbane.south@asct.com.au Mobile: 0437 776 582 A.B.N. 28 608 830 306				
Compaction Control Test Report (Nuclear Gauge & Hilf)						Page: 1 of 1
Client: See Civil Pty Ltd		Report No: 1				
Client Address: 108 Siganto Drive, Helensvale QLD 4210		Report Date: 18/08/2022				
Project: Flagstone City - District Community Centre		Project No: 1279				
Component: Import - general fill		Test Request:				
Lot Number:		ITP/PCP:				
Sample Information & Location						
Sample Number:	68626	68627	68628	68629	-	
Field Test Number:	1	2	3	4	-	
Date - Field Tested:	4/08/2022	4/08/2022	4/08/2022	4/08/2022	-	
Time - Field Tested:	1010	1020	1030	1040	-	
Material Source / Type:	import - general fill					
Remarks / Notes:						
Control Line:	-	-	-	-	-	
Location/Chainage/Easting: (m)	E: 34425.38	E: 34440.047	E: 34443.199	E: 34425.322	-	
Position/Offset/Northing: (m)	N: 73078.367	N: 73082.903	N: 73073.098	N: 73049.956	-	
Level/Layer/R.L.	47.639	47.119	47.431	49.307	-	
Layer Depth: (mm)	-	-	-	-	-	
Depth Tested: (mm)	150	150	150	150	-	
Field & Laboratory Results						
Field Wet Density: (t/m ³)	2.10	2.15	2.06	2.03	-	
Field Dry Density: (t/m ³)	1.90	1.97	1.88	1.85	-	
Retained Oversize (Wet basis): (%)	3% on 19.0mm	1% on 19.0mm	1% on 19.0mm	3% on 19.0mm	-	
Material Description:	-	-	-	-	-	
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-	
Field Moisture Content: (%)	10.5	9.0	9.5	10.0	-	
Adjusted Lab OMC: (%)	11.5	11.1	11.8	12.2	-	
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-	
Lab Max Converted Wet Density: (t/m ³)	2.13	2.14	2.08	2.06	-	
Adjusted Lab Max CWD: (t/m ³)	2.13	2.14	2.08	2.07	-	
Compactive Effort:	Standard	Standard	Standard	Standard	-	
Relative Compaction & Moisture						
Moisture Variation (%)	1.0% Drier than OMC	2.0% Drier than OMC	2.0% Drier than OMC	2.0% Drier than OMC	-	
Moisture Ratio (%)	92.5	81.5	82.5	83.0	-	
Density Ratio (%)	98.0	100.5	99.0	98.0	-	
Test Methods Used.						
Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	98	98.2	4	98.88	1.06	0.640
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-
Remarks Regarding the Lot.						
Laboratory testing 17/08/2022						
		Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested. Accreditation number: 19902				
		Approved By:  A. Lenkeit Approved Signatory				
WB101 - Rev 10, 27/01/2022						

		ASCT Brisbane South Postal: PO Box 1232 Park Ridge QLD 4125 Laboratory: 4/31 Tradelink Road Hillcrest Q 4118 Telephone: 0437 776 582 E-Mail: brisbane.south@asct.com.au Mobile: 0437 776 582 A.B.N. 28 608 830 306				
Compaction Control Test Report (Nuclear Gauge & Hilf)						Page: 1 of 1
Client: See Civil Pty Ltd		Report No: 5				
Client Address: 108 Siganto Drive, Helensvale QLD 4210		Report Date: 19/08/2022				
Project: Flagstone City - District Community Centre		Project No: 1279				
Component: Import - general fill		Test Request:				
Lot Number:		ITP/PCP:				
Sample Information & Location						
Sample Number:	68717	68718	68719	68720	-	
Field Test Number:	1	2	3	4	-	
Date - Field Tested:	5/08/2022	5/08/2022	5/08/2022	5/08/2022	-	
Time - Field Tested:	1030	1040	1050	1100	-	
Material Source / Type:	Import - General Fill					
Remarks / Notes:						
Control Line:	-	-	-	-	-	
Location/Chainage/Easting: (m)	34511.9	34446.4	34479.6	34442.2	-	
Position/Offset/Northing: (m)	73034.5	73064.8	73038.5	73074.6	-	
Level/Layer/R.L.	47.681	48.191	48.135	47.825	-	
Layer Depth: (mm)	-	-	-	-	-	
Depth Tested: (mm)	150	150	150	150	-	
Field & Laboratory Results						
Field Wet Density: (t/m ³)	2.13	2.19	2.12	2.09	-	
Field Dry Density: (t/m ³)	1.89	1.96	1.93	1.91	-	
Retained Oversize (Wet basis): (%)	9% on 19.0mm	6% on 19.0mm	10% on 19.0mm	4% on 19.0mm	-	
Material Description:	-	-	-	-	-	
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-	
Field Moisture Content: (%)	13.0	12.0	9.5	9.5	-	
Adjusted Lab OMC: (%)	12.6	12.3	11.9	11.8	-	
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-	
Lab Max Converted Wet Density: (t/m ³)	2.13	2.17	2.14	2.13	-	
Adjusted Lab Max CWD: (t/m ³)	2.16	2.18	2.16	2.14	-	
Compactive Effort:	Standard	Standard	Standard	Standard	-	
Relative Compaction & Moisture						
Moisture Variation (%)	0.5% Wetter than OMC	0.5% Drier than OMC	2.0% Drier than OMC	2.0% Drier than OMC	-	
Moisture Ratio (%)	103.5	96.5	81.5	81.5	-	
Density Ratio (%)	99.0	101.0	98.0	98.0	-	
Test Methods Used.						
AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)						
Remarks Regarding the Lot.						
Laboratory testing 16/08/2022						
		Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested. Accreditation number: 19902				
		Approved By:  A. Lenkeit Approved Signatory				
WB101 - Rev 10, 27/01/2022						



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Compaction Control Test Report (Nuclear Gauge & Hilf)			Page:	1 of 1
Client:	See Civil Pty Ltd	Report No:	6	
Client Address:	108 Siganto Drive, Helensvale QLD 4210	Report Date:	12/08/2022	
Project:	Flagstone City - District Community Centre	Project No:	1279	
Component:	Level 1 Fill	Test Request:		
Lot Number:		ITP/PCP:		

Sample Information & Location					
Sample Number:	69019	69020	69021	69022	-
Field Test Number:	1	2	3	4	-
Date - Field Tested:	9/08/2022	9/08/2022	9/08/2022	9/08/2022	-
Time - Field Tested:	1400	1410	1420	1430	-
Material Source / Type:	On Site - General Fill				
Remarks / Notes:					
Control Line:	-	-	-	-	
Location/Chainage/Easting:	(m) E: 34443.929	E: 34429.220	E: 34401.025	E: 34408.678	-
Position/Offset/Northing:	(m) N: 73060.489	N: 73058.552	N: 73044.128	N: 73053.205	-
Level/Layer/R.L.	RL: 48.770	RL: 49.227	RL: 50.067	RL: 49.617	-
Layer Depth:	(mm) -	-	-	-	-
Depth Tested:	(mm) 150	150	150	150	-

Field & Laboratory Results					
Field Wet Density:	(t/m ³) 2.22	2.15	2.12	2.11	-
Field Dry Density:	(t/m ³) 1.99	1.97	1.95	1.90	-
Retained Oversize (Wet basis):	(%) 1% on 19.0mm	2% on 19.0mm	2% on 19.0mm	1% on 19.0mm	-
Material Description:	-	-	-	-	-
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-
Field Moisture Content:	(%) 11.5	9.0	8.5	10.5	-
Adjusted Lab OMC:	(%) 10.9	11.1	10.4	12.2	-
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-
Lab Max Converted Wet Density:	(t/m ³) 2.20	2.18	2.15	2.13	-
Adjusted Lab Max CWD:	(t/m ³) 2.20	2.18	2.16	2.13	-
Compactive Effort:	Standard	Standard	Standard	Standard	-

Relative Compaction & Moisture					
Moisture Variation	(%) 0.5% Wetter than OMC	2.0% Drier than OMC	2.0% Drier than OMC	1.5% Drier than OMC	-
Moisture Ratio	(%) 104.0	83.0	80.0	87.5	-
Density Ratio	(%) 101.0	98.5	98.0	99.0	-

Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	98	98.4	4	99.18	1.27	0.640
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-

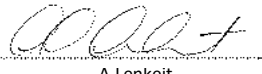
Test Methods Used.
 AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)

Remarks Regarding the Lot.
 Laboratory testing 12/08/2022



Accreditation number: 19902

Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested.

Approved By: 
 A. Lenkeit
 Approved Signatory

WB101 - Rev 10, 27/01/2022



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Compaction Control Test Report (Nuclear Gauge & Hilf) Page: 1 of 1

Client:	See Civil Pty Ltd	Report No:	7
Client Address:	108 Siganto Drive, Helensvale QLD 4210	Report Date:	26/08/2022
Project:	Flagstone City - District Community Centre	Project No:	1279
Component:	Import - general fill	Test Request:	
Lot Number:		ITP/PCP:	

Sample Information & Location

Sample Number:	69233	69234	69235	69236	-
Field Test Number:	1	2	3	4	-
Date - Field Tested:	16/08/2022	16/08/2022	16/08/2022	16/08/2022	-
Time - Field Tested:	1040	1050	1100	1110	-
Material Source / Type:	Import - General fill				
Remarks / Notes:					
Control Line:	-	-	-	-	-
Location/Chainage/Easting:	(m) 34486.3	34470.7	34485.2	34504.0	-
Position/Offset/Northing:	(m) 73032.4	73034.9	73046.8	73030.4	-
Level/Layer/R.L.	48.871	49.005	48.224	48.53	-
Layer Depth:	(mm) -	-	-	-	-
Depth Tested:	(mm) 150	150	150	150	-

Field & Laboratory Results

Field Wet Density:	(t/m ³) 2.13	2.12	2.19	1.97	-
Field Dry Density:	(t/m ³) 1.98	1.94	2.02	1.81	-
Retained Oversize (Wet basis):	(%) 1% on 19.0mm	3% on 19.0mm	4% on 19.0mm	1% on 19.0mm	-
Material Description:	-	-	-	-	-
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-
Field Moisture Content:	(%) 8.0	9.0	8.5	9.0	-
Adjusted Lab OMC:	(%) 9.0	11.2	10.2	11.1	-
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-
Lab Max Converted Wet Density:	(t/m ³) 2.10	2.07	2.14	2.00	-
Adjusted Lab Max CWD:	(t/m ³) 2.10	2.08	2.14	2.01	-
Compactive Effort:	Standard	Standard	Standard	Standard	-

Relative Compaction & Moisture

Moisture Variation	(%) 1.0% Drier than OMC	2.0% Drier than OMC	1.5% Drier than OMC	2.0% Drier than OMC	-
Moisture Ratio	(%) 88.0	82.5	83.0	81.5	-
Density Ratio	(%) 101.5	102.0	102.5	98.5	-

Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	98	99.9	4	101.10	1.83	0.640
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-

Test Methods Used.

AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)

Remarks Regarding the Lot.

Laboratory testing 23/08/2022



Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested.

Accreditation number: 19902

Approved By:

A. Lenkeit
 Approved Signatory



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Compaction Control Test Report (Nuclear Gauge & Hilf) Page: 1 of 1

Client:	See Civil Pty Ltd	Report No:	10
Client Address:	108 Siganto Drive, Helensvale QLD 4210	Report Date:	20/09/2022
Project:	Flagstone City - District Community Centre	Project No:	1279
Component:	Level 1 Fill	Test Request:	
Lot Number:		ITP/PCP:	

Sample Information & Location

Sample Number:	70802	70803	70804	70805	-
Field Test Number:	1	2	3	4	-
Date - Field Tested:	8/09/2022	8/09/2022	8/09/2022	8/09/2022	-
Time - Field Tested:	1000	1010	1020	1030	-
Material Source / Type:	Import - General Fill				
Remarks / Notes:					
Control Line:	-	-	-	-	-
Location/Chainage/Easting:	(m) E: 34503.816	E: 34471.612	E: 34472.613	E: 34489.612	-
Position/Offset/Northing:	(m) N: 73037.614	N: 73034.614	N: 73048.189	N: 73026.184	-
Level/Layer/R.L.	RL: 49.021	RL: 49.264	RL: 49.316	RL: 49.424	-
Layer Depth:	(mm) -	-	-	-	-
Depth Tested:	(mm) 150	150	150	150	-

Field & Laboratory Results

Field Wet Density:	(t/m ³)	2.13	2.15	2.13	2.17	-
Field Dry Density:	(t/m ³)	1.92	1.94	1.94	1.96	-
Retained Oversize (Wet basis):	(%)	2% on 19.0mm	2% on 19.0mm	2% on 19.0mm	2% on 19.0mm	-
Material Description:		-	-	-	-	-
Moisture Content Method:		AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	-
Field Moisture Content:	(%)	10.5	11.0	10.0	10.5	-
Adjusted Lab OMC:	(%)	12.3	12.4	11.6	11.8	-
Fraction Tested:		Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	-
Lab Max Converted Wet Density:	(t/m ³)	2.16	2.18	2.15	2.19	-
Adjusted Lab Max CWD:	(t/m ³)	2.16	2.18	2.16	2.19	-
Compactive Effort:		Standard	Standard	Standard	Standard	-

Relative Compaction & Moisture

Moisture Variation	(%)	1.5% Drier than OMC	1.5% Drier than OMC	1.5% Drier than OMC	1.5% Drier than OMC	-
Moisture Ratio	(%)	86.5	88.5	87.5	88.0	-
Density Ratio	(%)	98.5	98.5	99.0	99.0	-

Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	95	98.5	4	98.73	0.28	0.640
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-

Test Methods Used.

AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)

Remarks Regarding the Lot.

Laboratory testing 14/09/2022



Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested.

Accreditation number: 19902

Approved By:

A. Lenkeit
 Approved Signatory

**ASCT Brisbane South**

Postal: PO Box 1232 Park Ridge QLD 4125

Laboratory: 4/31 Tradelink Road Hillcrest Q 4118

Telephone: 0437 776 582

E-Mail: brisbane.south@asct.com.au

Mobile: 0437 776 582

A.B.N. 28 608 830 306

Compaction Control Test Report (Nuclear Gauge & Hilf)

Page: 1 of 1

Client: See Civil Pty Ltd
 Client Address: 108 Siganto Drive, Helensvale QLD 4210
 Project: Flagstone City - District Community Centre
 Component: Level 1 Fill
 Lot Number:

Report No: 15
 Report Date: 20/10/2022
 Project No: 1279
 Test Request:
 ITP/PCP:

Sample Information & Location

Sample Number:	72379	72380	72381	72382	72383
Field Test Number:	1	2	3	4	5
Date - Field Tested:	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022
Time - Field Tested:	1200	1210	1220	1230	1240
Material Source / Type:	Import - General Fill				
Remarks / Notes:					
Control Line:	-	-	-	-	-
Location/Chainage/Easting: (m)	E: 34548.63	E: 34486.32	E: 34486.43	E: 34489.46	E: 34462.14
Position/Offset/Northing: (m)	N: 73032.16	N: 73028.41	N: 73042.16	N: 73021.41	N: 73021.49
Level/Layer/R.L.	RL: 49.23	RL: 49.41	RL: 49.41	RL: 49.56	RL: 49.39
Layer Depth: (mm)	-	-	-	-	-
Depth Tested: (mm)	150	150	150	150	150

Field & Laboratory Results

Field Wet Density: (t/m ³)	2.16	2.19	2.18	2.17	2.18
Field Dry Density: (t/m ³)	1.97	1.99	1.99	1.99	1.99
Retained Oversize (Wet basis): (%)	2% on 19.0mm	2% on 19.0mm	2% on 19.0mm	2% on 19.0mm	1% on 19.0mm
Material Description:	-	-	-	-	-
Moisture Content Method:	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven	AS1289.2.1.1 - Oven
Field Moisture Content: (%)	10.0	10.5	10.0	9.5	9.5
Adjusted Lab OMC: (%)	11.6	11.7	11.4	11.4	11.0
Fraction Tested:	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm	Passing 19.0mm
Lab Max Converted Wet Density: (t/m ³)	2.18	2.20	2.21	2.18	2.20
Adjusted Lab Max CWD: (t/m ³)	2.18	2.20	2.21	2.18	2.20
Compactive Effort:	Standard	Standard	Standard	Standard	Standard

Relative Compaction & Moisture

Moisture Variation (%)	2.0% Drier than OMC	1.5% Drier than OMC	1.5% Drier than OMC	2.0% Drier than OMC	1.5% Drier than OMC
Moisture Ratio (%)	85.0	88.0	87.5	81.5	87.0
Density Ratio (%)	99.0	100.0	99.0	99.5	99.0

Specified Density Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)	98	99.0	5	99.26	0.42	0.572
Maximum (%)		-	-	-	-	-
Specified Moisture Ratio		Characteristic Value	Number of Tests	Mean	Standard Deviation	Constant k
Minimum (%)		-	-	-	-	-
Maximum (%)		-	-	-	-	-

Test Methods Used.

AS1289.1.1 (Prep), AS1289.5.4.1 - (Dry Density Ratio, Moisture Variation & Ratio), AS1289.5.7.1 - (Hilf Density/Moisture Ratio (Rapid Method)), AS1289.5.8.1 (Nuclear Gauge, Direct Transmission), AS 1289.1.2.1, CI 6.4(b) (Sampling), CV calculations derived from Austroads NTR-09 publication (Not Included in NATA endorsement)

Remarks Regarding the Lot.

Laboratory testing 12/10/2022 to 13/10/2022



Accredited for compliance with ISO/IEC 17025 - Testing. The results relate only to the items sampled/tested.

Accreditation number: 19902

Approved By:

A. Lenkeit
 Approved Signatory

WB101 - Rev 11, 06/10/2022



Appendix C

Individual Lot Reports



ASCT Brisbane South

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ACN: 608 830 306
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Email: brisbane.south@asct.com.au
Web: www.asct.com.au

4th July 2023

Ref No: 1279_SEE Civil_Level 1_Flagstone City DCC_Lot 30013

SEE Civil Pty Ltd
108 Siganto Drive
Helensvale QLD 4210

CERTIFICATE OF CONTROLLED LEVEL 1 FILLING

LOT 30013 – FLAGSTONE CITY DISTRICT COMMUNITY CENTRE & ACCESS ROAD

Australian Soil and Concrete Testing was commissioned by SEE Civil Pty Ltd to provide earthworks inspection and testing services on a 'Level 1' basis in accordance with the requirements of AS 3798-2007 *'Guidelines on earthworks for commercial and residential developments'*.

Fill was placed on the development between 26/07/2022 and 11/10/2022.

Based on the observations made by Australian Soil and Concrete Testing and the test results obtained during construction the structural fill placed on allotment **30013** is considered to have been carried out in general accordance with AS3798-2007 and is considered to be Controlled Fill as defined in AS2870 – 2011 *'Residential Slabs & Footings'*.

Full details of the inspection and testing conducted is included in our report Ref No: **1279_SEE Civil_Level 1_Flagstone City DCC**.

Please do not hesitate to contact me if you have any queries.

Yours faithfully

A handwritten signature in blue ink, appearing to read 'Jason Mckenna', with a stylized flourish extending to the right.

Jason Mckenna
Laboratory Manager

ASCT Brisbane South
jason.mckenna@asct.com.au

Bligh Tanner Pty Ltd

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