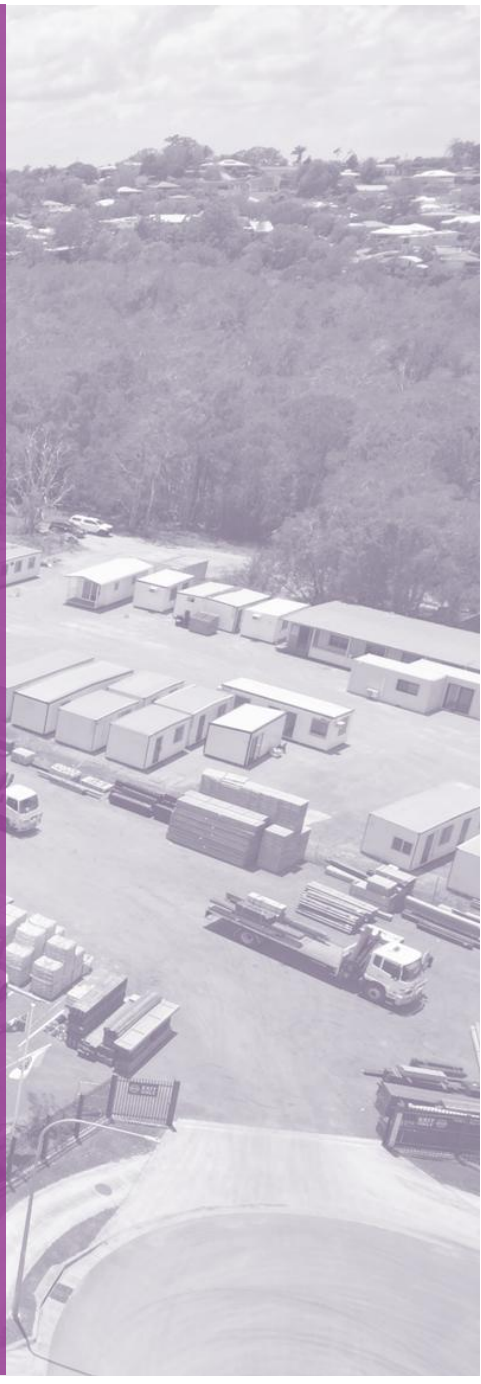
Context Engineering



Proposed Industrial Development
63 Cairns Street, Loganholme

Flood Assessment Report

Prepared For Howell Constructions

ABN 56 650 431 637

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This Document Has Been Approved by The Following Appropriately Qualified and Experienced Professional Civil Engineer:



Nicholas Rees
BEng (Hons), MIEAust, CPEng, NER, Registered Professional Engineer of Queensland (RPEQ) No. 18700

Report Number: C_25145 - R001

Issue	Date	Details	Author	Checked	Approved
1	19.12.25	Issue for Approval	DT	EG	NR
2	23.01.26	Issue for Approval (Updated Architectural Plans)	DT	EG	NR
3	20.03.26	Issue for Approval (Updated BEL & FSL)	DT	NR	NR

Contents

1. Introduction **4**

1.1 Associated Applications 5

1.2 Pre-Lodgement Meeting 6

1.3 Historical Flood Levels 6

2. Site Characteristics **7**

2.1 Site Location 7

2.2 Land Usage 8

2.3 Topography 8

3. Flood Assessment **9**

3.1 Sources of Flooding 9

3.1.1 Riverine Flooding 9

3.1.2 Overland Flow/Stormwater Flooding 9

3.2 Riverine Flooding 9

3.2.1 Designated Flood Level 9

3.2.2 Minimum and Design Floor Levels 10

3.3 Overland Flow Flooding 10

3.3.1 Flood Conveyance 11

3.4 Flood Plain Storage Balance 12

4. Flood Risk **14**

4.1 Flood Risk Mitigation Measures 14

4.1.1 Structural and Civil Design 14

4.1.2 Evacuation Procedure 14

5. Conclusion **16**

6. Disclaimer **16**

Tables and Figures

Figure 1-1 Proposed Development Layout (Source: ATP Design Studio) 4
Figure 1-2 Approved Earthworks Plans – Sheet 2 (Source: Wilkinson Shaw & Associates) 5
Figure 2-1 Site Locality Plan (Source: Nearmap 2025) 7
Figure 2-2 Subject Site Zoning (Source: LCC Planning Scheme 2015) 8
Table 3-1 Minimum Flood Planning Levels 10
Table 3-2 Minimum and Proposed Design Levels 10
Figure 4-1 Proposed Evacuation Route (Source: LCC Flood Portal) 15

Appendices

Appendix A Survey
Appendix B Architectural Drawings
Appendix C Civil Design Drawings
Appendix D LCC Flood Reports
Appendix E Flood Code Response

1. Introduction

This Flood Assessment Report has been commissioned by Howell Constructions and forms part of 'Minor Change' application to be lodged with Logan City Council over the following parcels of land:

Property Address:	**63 Cairns Street, Loganholme**
Property Description:	**Lot 130 on SP 320462**
Client:	**Howell Constructions**
Council:	**Logan City Council**
Site Area:	**18.55 ha**
Area of works:	**Approx. 3.06 ha**

The proposed development involves the creation of a new industrial facility comprising of 6 separate warehouse buildings over two lots defined as 'Lot A' (Lot 130 on SP320462) and 'Lot B' (Lot 120 on SP320462). The adjoining residential Lot 121 on SP320462 is to be amalgamated into Lot B, resulting in a newly configured boundary. These revised allotment boundaries are to be retained for the development. Figure 1-1 below details the extent of Lot A and B, with the area of works indicated in pink.



Figure 1-1 Proposed Development Layout (Source: ATP Design Studio)

The analysis in this report describes the key flood management requirements associated with the proposed development, with the objectives of investigations listed below:

- Demonstrate the extent of flooding impacts on the site;
- Provide suitable mitigation methods; and
- Confirm building design requirements in accordance with the LCC Flood Overlay Code.

Based on the outcomes of the above investigations, this report provides civil engineering recommendations to address compliance with Logan City Council requirements.

1.1 Associated Applications

Available documentation accessed from the LCC online portal indicates that a MCU application was previously lodged over the subject site on 16 December 2014 and approved on 22 February 2016 under the application number MCUI/20/2014/1. The application included the following civil serviceability documentation:

- Section 6 - Flood Plain Storage Management within *Stormwater Management Plan* by Wilkinson Shaw & Associates.

These reports were utilised to determine the existing and proposed constraints of the surrounding area.

An operational works application was previously lodged over the subject site on 09 November 2020 and approved on 16 November 2020 under the application number OW/176/2020. The application details operational works relating to the previously mentioned MCUI/20/2014/1, and includes the following civil engineering plans:

- *Earthworks Plan* by Wilkinson Shaw and Associates
- *Earthworks Cross Sections* by Wilkinson Shaw and Associates

An additional application was lodged on 04 March 2024 and approved on 02 April 2024 under the application number OW/176/2020/A, extending the currency period of the original Operational Works approval (OW/176/2020). The earthworks associated with this Operational Works approval have substantially commenced, and the approved earthworks plans shown below in Figure 1-2 therefore establish the effective existing ground levels for the site. These levels are adopted as the existing case for the development and will directly inform the flood assessment presented within this report. It is noted that at the time of approval of the OPW application, the applicable Designated Flood Level for the subject site was 6.12 m AHD.

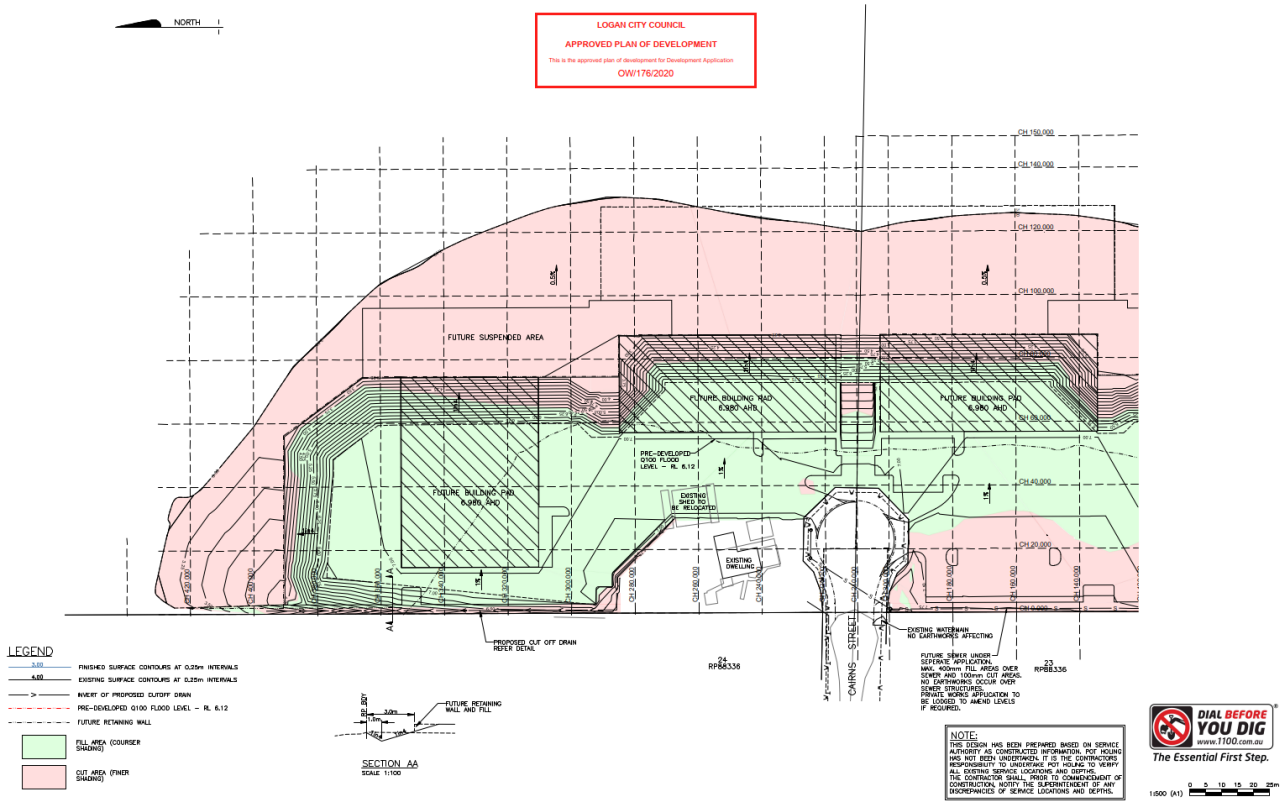

Figure 1-2 Approved Earthworks Plans – Sheet 2 (Source: Wilkinson Shaw & Associates)

1.2 Pre-Lodgement Meeting

A pre-lodgement meeting was held with Logan City Council on 07 June 2023 under PLM number PLM/151/2023 and included discussion on the necessary civil engineering requirements for the site. The meeting transcript details confirmation of the updated DFL for the development at 6.7m AHD. Where applicable, this preliminary advice from Logan City Council has been incorporated in the analysis and recommendations of this report.

1.3 Historical Flood Levels

Multiple flood studies have been undertaken for subject site, with corresponding historical 1% AEP (including equivalent event probability) flood levels and sources listed below:

- **RL 6.98m AHD** – *Stormwater & Flood Management Plan* dated 17 July 2007 by DEQ Saunders;
- **RL 6.12m AHD -** *Stormwater Management Plan* dated 22 October 2015 by Wilkins Shaw Associates; and
- **RL 6.7m AHD –** City of Logan Property Flood Report.

It is understood that RL 6.7m AHD is the most current flood height and therefore was adopted as the relevant DFL for the purposes for this report.

2. Site Characteristics

2.1 Site Location

The proposed development is situated on three existing allotments at 63 Cairns Street, Loganholme, described as Lot 130 on SP 320462, Lot 120 on SP 320462, and Lot 121 on SP 320462. These lots are located within the Logan City Council local government area and is zoned as 'Mixed Use' with a large portion of the site included in the 'Environmental Management and Conservation' zone under the Logan City Council Planning Scheme.

The subject site has an overall area of 18.55 ha and is bounded by Cairns Street to the west and environmental conservation area to the North, East and South.

A general locality plan is presented in Figure 2-1 below, with the subject site shown in purple and the area of works in pink.

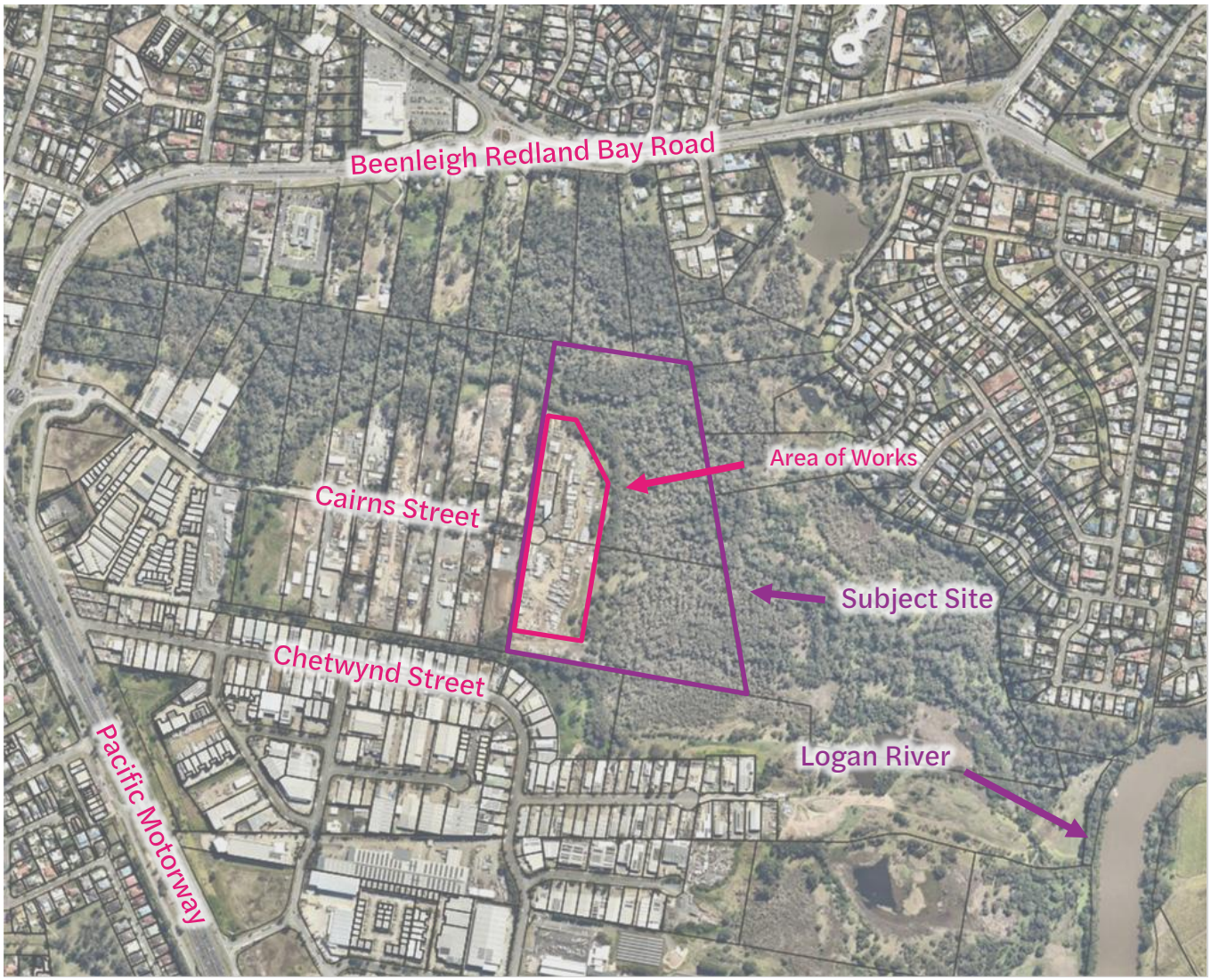

Figure 2-1 Site Locality Plan (Source: Nearmap 2025)

2.2 Land Usage

Aerial imagery indicates that the subject site is currently developed for mixed use, comprising of an industrial warehouse area across Lot 120 and 130 on SP320462, and a residential dwelling on Lot 121 on SP320462 (to be amalgamated with Lot 120 on SP320462 "Lot B"). A substantial portion of the site consists of vegetated bushland that accommodates an existing waterway forming part of the Logan River overflow system. The allotment is currently accessed via a crossover to Cairns Street.

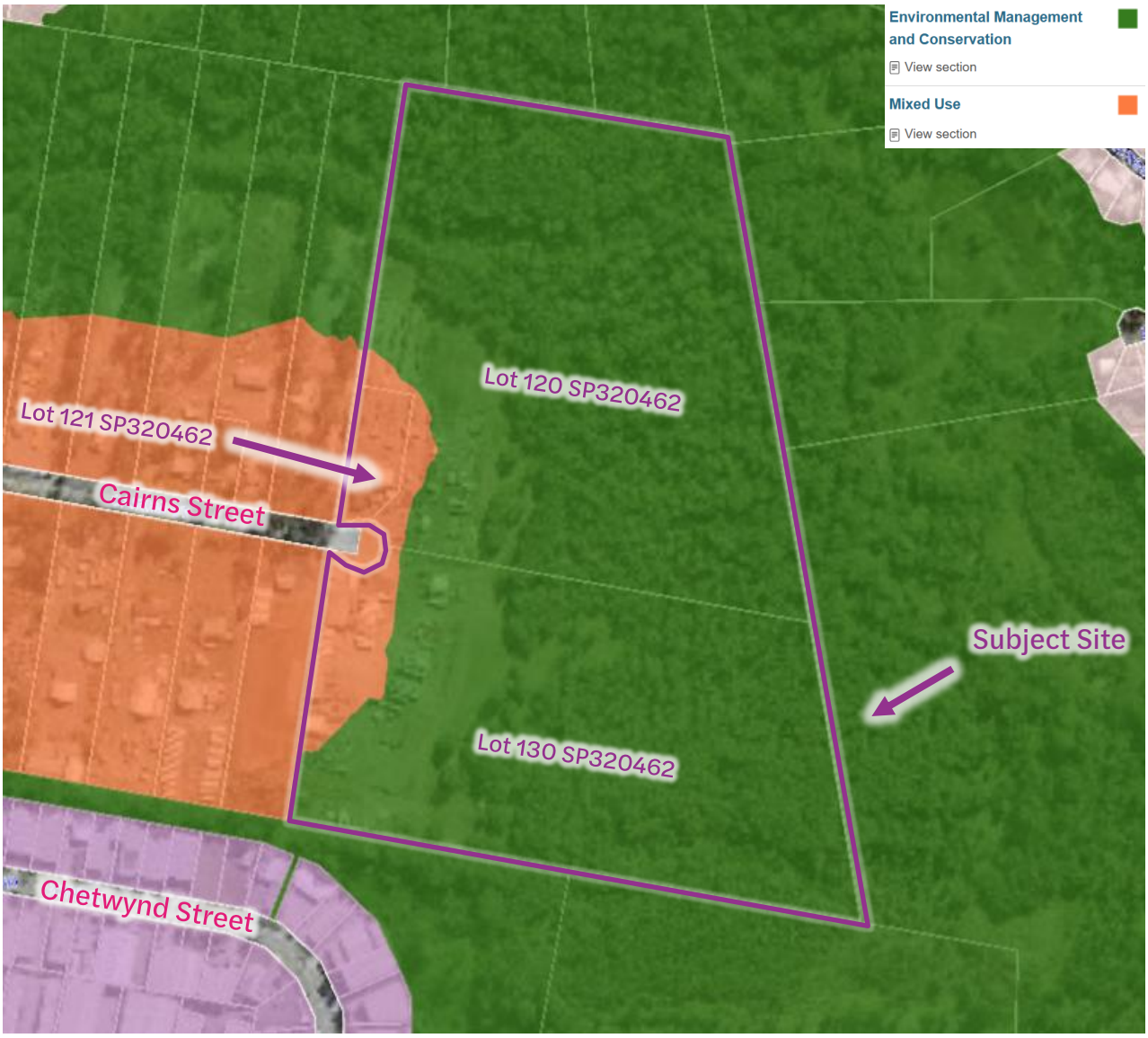

Figure 2-2 Subject Site Zoning (Source: LCC Planning Scheme 2015)

2.3 Topography

The approved earthworks plans by Wilkinson Shaw & Associates as part of the Operational Works application OW/176/2020 indicate that ground levels across the allotment are intended to range from approximately 8 m AHD at the western boundary to a low point of around 2 m AHD toward the east. The area of proposed works generally falls from west to east at an average grade of approximately 3%, while the remaining bushland portion of the site is characterised by relatively flat topography. As these earthworks are currently under construction, the existing surveyed levels were not considered within the stormwater or flood assessment.

3. Flood Assessment

3.1 Sources of Flooding

3.1.1 Riverine Flooding

The subject site is affected by riverine flooding from Logan River to the south-east. Riverine flooding refers to floodwaters resulting from rainfall in the catchment upstream of the subject site, and is dependent on several conditions, such as rainfall intensity and duration, time of concentration, floodplain hydraulics and catchment roughness. Riverine flooding in the Logan River catchment is typically the result of a prolonged rainfall system, or a series of rainfall events over subsequent days.

3.1.2 Overland Flow/Stormwater Flooding

The subject site is also affected by overland flow originating from various upstream locations. Overland flow refers to the concentration of rainfall as it is conveyed to waterways and may be naturally occurring or within urbanised drains, channels, reserves or roadways; in urban areas, overland flow may occur when the stormwater network capacity is exceeded or blocked.

3.2 Riverine Flooding

3.2.1 Designated Flood Level

An assessment of the on-site flood conditions has been undertaken utilising information provided within the Logan Flood Portal.

The majority of the subject site is shown to be affected by riverine flooding from the Logan River in the 1% AEP storm event. The ground level at the centre of the property is listed as RL 2.0m AHD and the Defined Flood Level (DFL) is listed as RL 6.7m AHD (according to property flood reports). The extent of flooding is demonstrated in Figure 3-1 below, with the subject site outlined in pink, and the area of works outlined in purple.

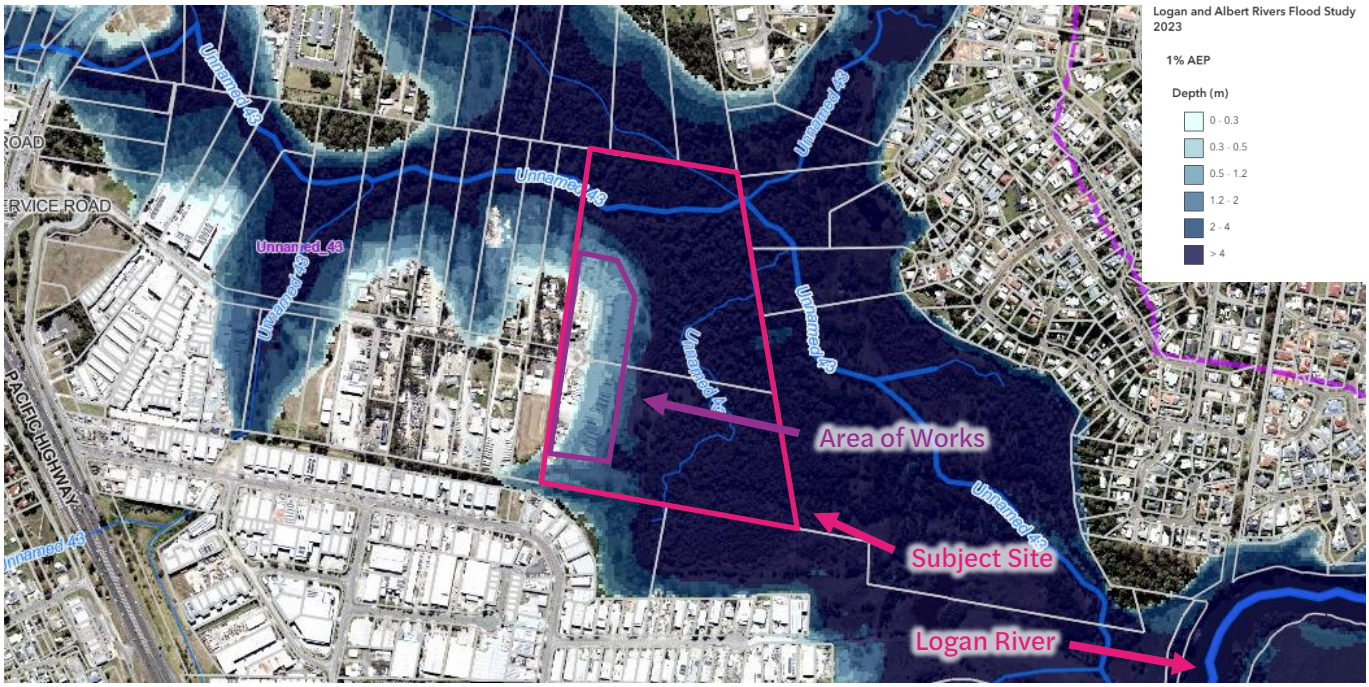

Figure 3-1 Logan River Flood Levels across the Subject Site (Source: Logan Flood Portal)

Figure 3-1 demonstrates that the waterway corridor traversing the subject site will experience flooding depths in excess of 4.0m during the DFL event.

3.2.2 Minimum and Design Floor Levels

The minimum flood planning levels for the allotment were identified in accordance with Table 8.2.5.3.3 of the Logan City Council Planning Scheme – *Section 8.2.5 Flood Hazard Overlay Code* and is summarised in Table 3-1 below.

Table 3-1 Minimum Flood Planning Levels

Land Use	Minimum Flood Planning Level
Development involving the use of Class 7(b) or 8 building other than specified above	Building floor level → DFL Essential building services → DFL + 500mm freeboard

Note - Essential building services and infrastructure may include air conditioning ducts, communication equipment, charging units, pumps, motors, sensitive electrical equipment such as transformers, low voltage switch gear, high voltage switch gear, battery charges, and communal assets and materials (such as waste bins or chemicals).

The minimum design levels for each portion of the proposed buildings were calculated using the below values listed in the LCC Flood Report for each lot within the subject site, shown below:

- **1% AEP** – DFL – RL 6.7m AHD

A comparison of the minimum and lowest proposed design levels for the development is presented in Table 3-2 below.

Table 3-2 Minimum and Proposed Design Levels

Proposed Development	Minimum Design Level	Proposed Design Level (Lot A)	Proposed Design Level (Lot B)
Building floor level	RL 6.7m AHD	7.2m AHD	RL 7.36m AHD
Essential building services	RL 7.2m AHD	7.2m AHD	7.36m AHD

Each of these proposed levels are shown indicatively in the Civil Design Drawings in Appendix C.

3.3 Overland Flow Flooding

Overland flow flooding affects the waterway corridor portion of the site along the eastern boundary. This path is localised entirely within the mapped waterway corridor and bypasses the area of works and is denoted as 'OF1' in Figure 3-2 below. Since the waterway corridor is identified as an established watercourse with assumed high importance in natural drainage for the mapped "Unnamed 43" catchment that defines the local area, it is deemed that no mitigation is required for this flow path.

An overland flow path is shown to exist in the south-western corner of the subject site originating upstream at the rear of neighbouring properties in Cairns Street. A portion of this path traverses the area of works of the development and is denoted as 'OF2' in Figure 3-2 below. The proposed development is offset from the southern boundary to maintain an unobstructed overland flow corridor through this portion of the site. This setback allows overland flows to be conveyed around the development footprint and discharged to the downstream waterway corridor at the rear of the site, maintaining the existing flow path and therefore no further mitigation is required.

An overland flow path is shown to exist centrally to the area of works just east of the frontage to Cairns Street and adjacent to the existing stormwater easement, denoted as 'OF3' in Figure 3-2 below. This path originates from the subject site and enters the adjacent waterway corridor path and is therefore deemed to not require mitigation.

An overland flow path is shown to exist just south of OF3 within the stormwater easement and is denoted as 'OF4' in Figure 3-2 below. This path represents the flows from the upstream catchment of the Cairns Street cul-de-sac conveyed via the culvert pipe system that discharge from a headwall located centrally within the area of works. The proposed development intends to extend the culvert pipe and easement further east into the waterway corridor to ensure that discharged flows bypass the area of works. Additionally, a kerb and channel will be implemented along the easement to ensure that major flows will continue to discharge to the waterway corridor as intended. These measures are deemed to be appropriate solutions for the mitigation of the overland path traversing the area of works. Refer *C_25145 DA_40 Stormwater Drainage Layout Plan* and Section 4.4 of *C_25145 R001_Stormwater Management Plan* for further details

LCC Overland flow mapping is detailed in Figure 3-2 below, with overland flow paths relevant to the site outlined in blue, and the subject site outlined in pink.

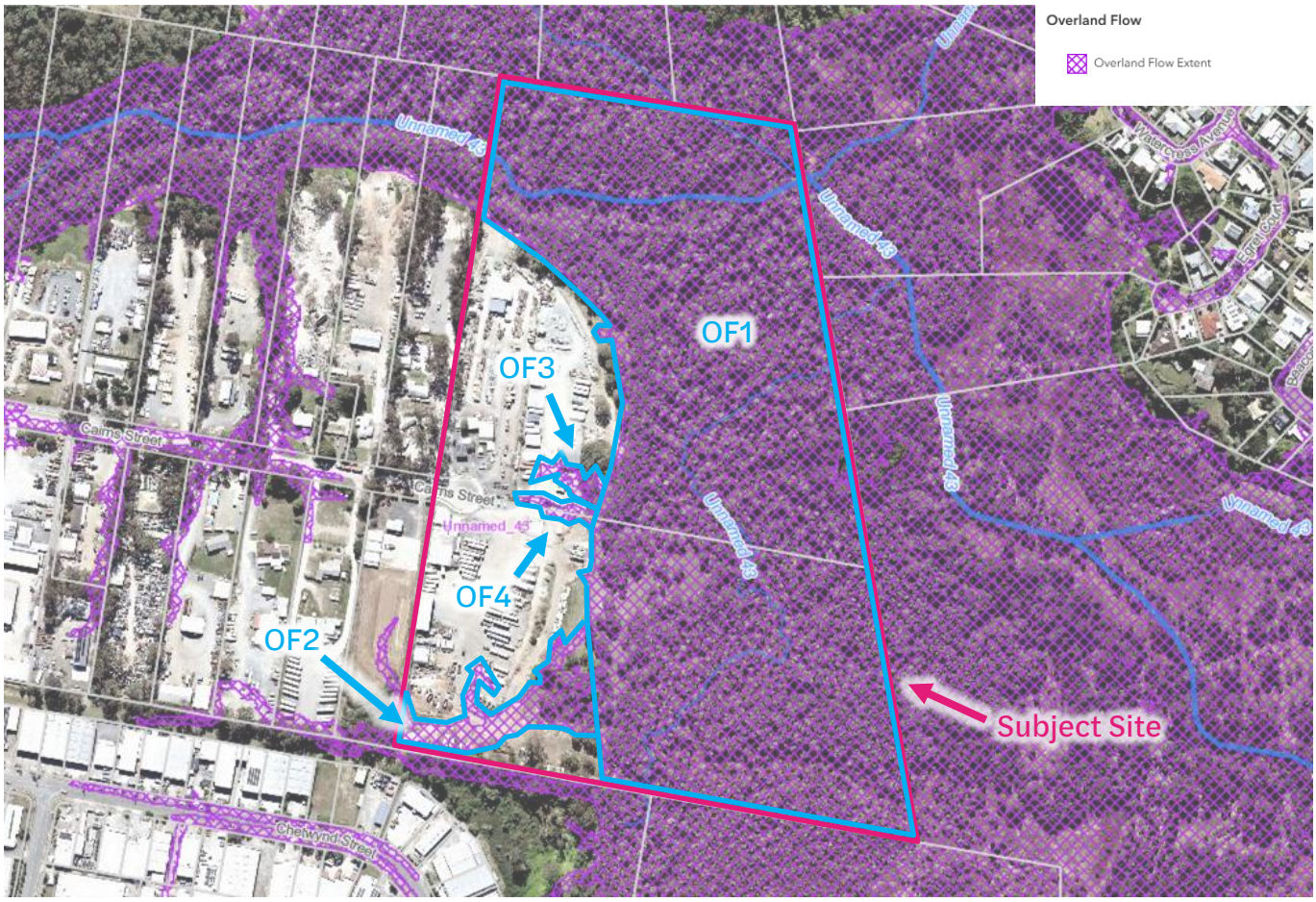

Figure 3-2 Overland Flow Flood Levels across the Subject Site (Source: Logan Flood Portal)

3.3.1 Flood Conveyance

The development proposes to include a design level of 7.2m AHD, which is 0.5m above the DFL. This allows for free flow of flood water around the area of works in the overland flow path 'OF1' detailed in Section 3.2 of this report whilst ensuring that the finished level of the development is above the 1% AEP DFL of 6.7m AHD for riverine flooding.

3.4 Flood Plain Storage Balance

Flood storage within the subject site has been assessed with reference to the *Earthworks Plan* and *Earthworks Cross Sections* prepared by Wilkinson Shaw & Associates and approved under the previous Operational Works application (OW/176/2020). These approved earthworks incorporate designated compensatory cut areas to offset fill and maintain floodplain storage capacity. For the purposes of this flood assessment, the approved earthworks levels are adopted as the existing condition and are represented in Figure 3-3 below

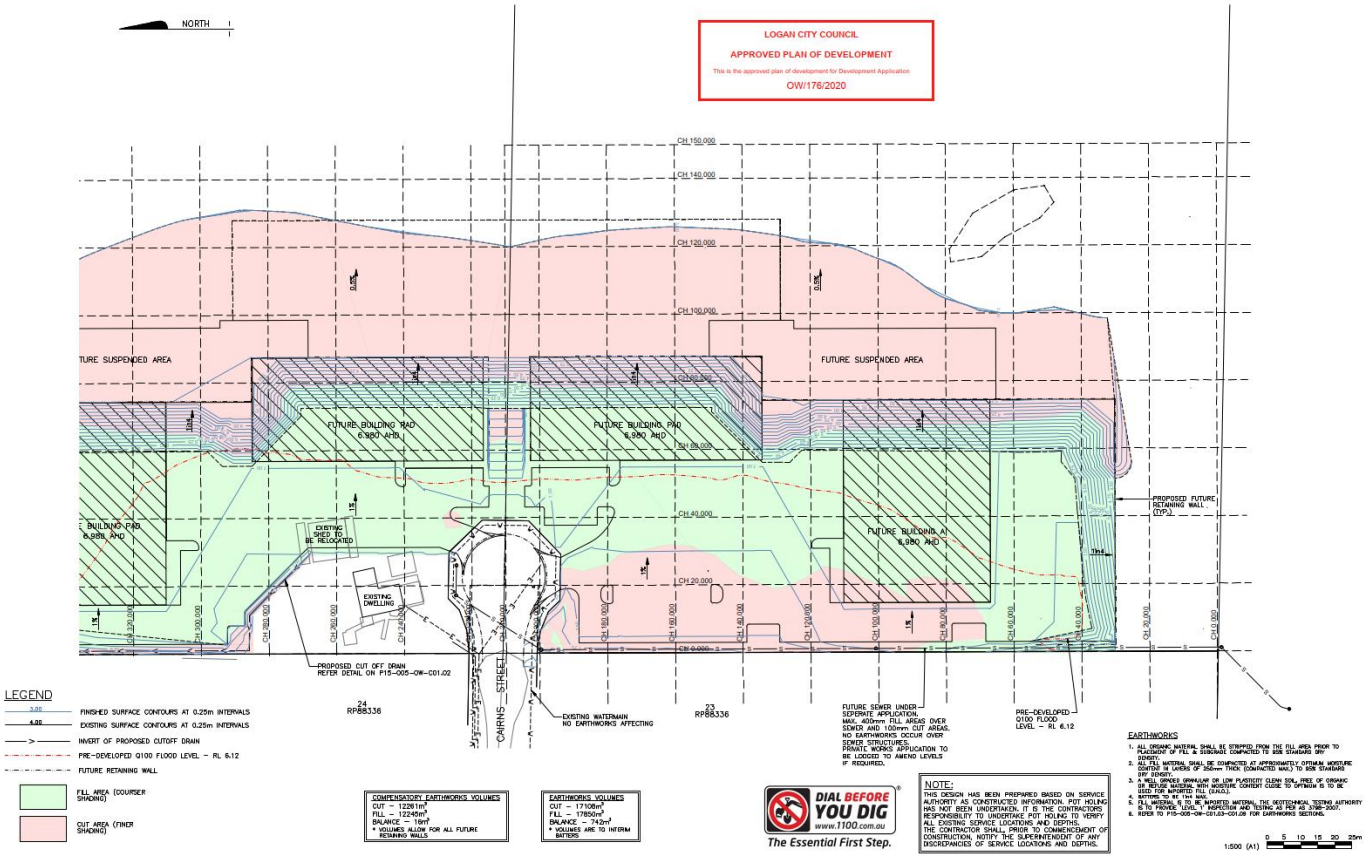

Figure 3-3 Approved Earthworks Plans – Sheet 1 (Source: Wilkinson Shaw & Associates)

The proposed development includes additional fill associated with building platforms and site grading; however, this fill is not located within the compensatory cut areas identified and approved under the earlier Operational Works application. The approved compensatory cut areas therefore remain unaffected and continue to provide the flood storage necessary to maintain floodplain function.

The pre-developed, OW/176/2020 approved, and proposed design levels are presented in Figure 3-4. Buildings, driveways, and car parking areas that encroach within the footprint of the approved compensatory cut areas are shown to be suspended, ensuring that the approved cut extents remain available during major flood events.

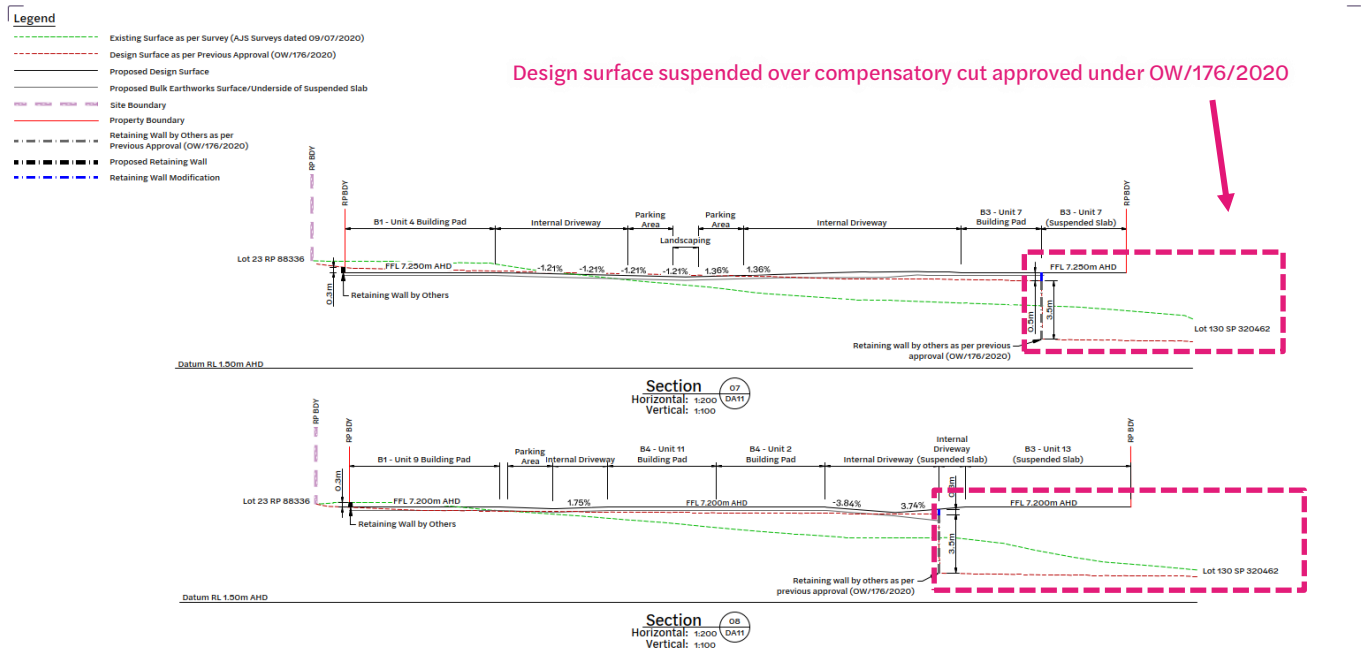

Figure 3-4 Earthworks Cross Sections (Source: Context Engineering)

As illustrated in Figure 3-4, the compensatory cut levels approved under OW/176/2020 are retained across the site and are not impacted by the proposed development. All proposed finished surface and design floor levels have been assessed relative to this approved baseline. While differences between the approved earthworks surface and the proposed design levels are reported as cut or fill relative to the approved baseline, it is acknowledged that some areas identified as cut may involve fill when compared to the site's current physical ground condition. This assessment convention does not alter the flood storage outcome, as the approved compensatory cut areas are preserved. On this basis, the development does not result in a net loss of floodplain storage and achieves a non-worsening outcome.

4. Flood Risk

Given the characteristics of the subject site, appropriate flood hazard management is required to ensure the proposed development is not subject to undue flood risk.

4.1 Flood Risk Mitigation Measures

4.1.1 Structural and Civil Design

The proposed development intends to create a new industrial facility comprising of 5 separate warehouse buildings. This requires the incorporation of structural flood mitigation measures as part of the redevelopment.

All operable rooms have been designed at or above the minimum planning level, with the lowest building pad within the development set to align with the DFL of 6.7m AHD.

Consideration of the flood planning levels shall be incorporated into the proposed fit out, with specific consideration given to essential building services such as sensitive electrical equipment, communication equipment etc. by implementing a 500mm freeboard in addition to the DFL.

Structural and interior design should consider the hydrostatic and buoyant forces from inundating water levels in flood events and be appropriately waterproofed to resist damage from floodwater inundation.

4.1.2 Evacuation Procedure

River flooding in the Logan River catchment is primarily driven by prolonged or intense rainfall occurring across the upstream catchment, resulting in elevated flows and overtopping of the adjoining waterway corridor. Given the size of the contributing catchment and the time required for runoff to concentrate and travel downstream, riverine flood events of a magnitude capable of affecting property access or safety are typically preceded by extended periods of rainfall and progressively rising water levels. Accordingly, it is anticipated that any significant river flooding event would provide several hours to days of adequate warning prior to conditions necessitating evacuation or emergency response.

If the Bureau of Meteorology issues a flood warning for the area, residents of the development should evacuate to a flood immune area (shortest route shown in Figure 4-1) or return home and be prepared to shelter in place. As soon as flood water starts to build in the street frontage vehicle movements should halt and residents should be prepared to shelter until the flood levels regress.

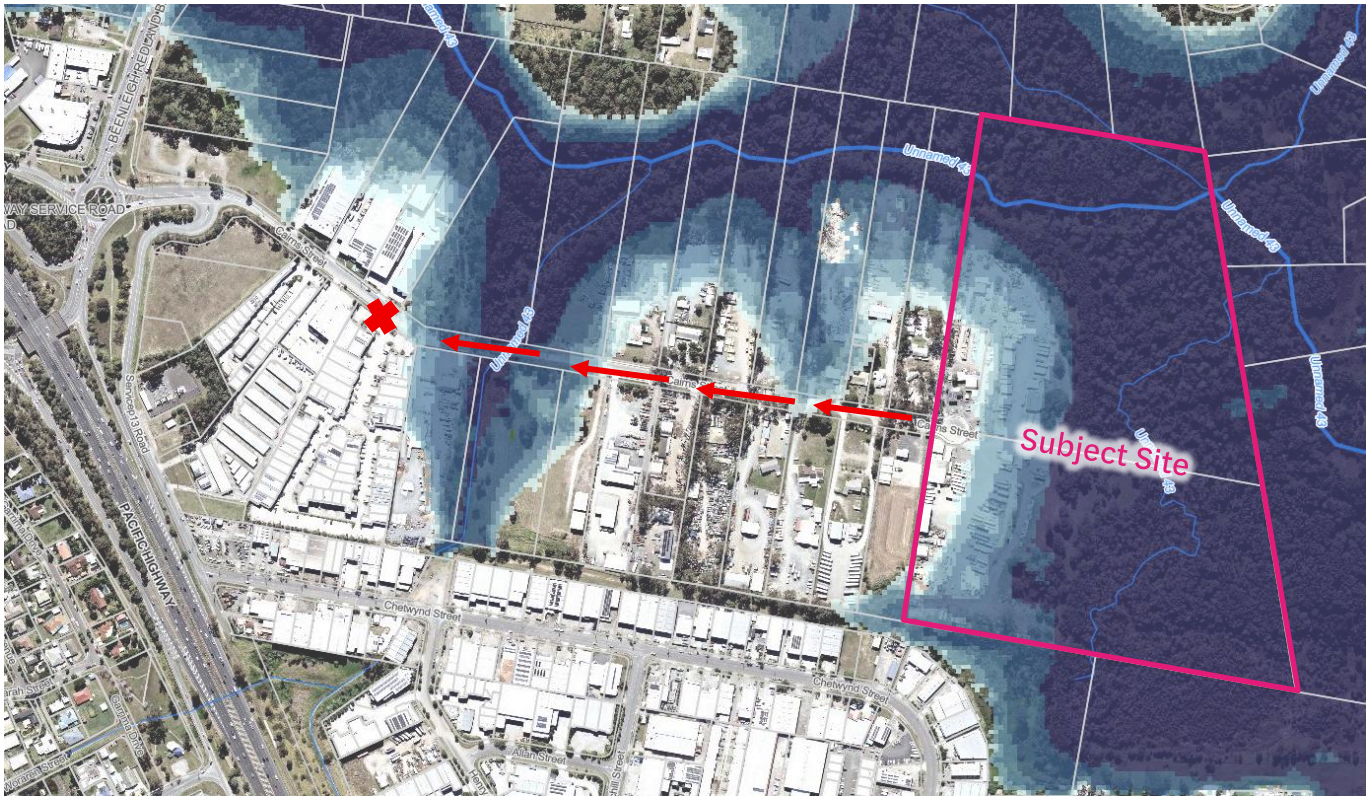

Figure 4-1 Proposed Evacuation Route (Source: LCC Flood Portal)

The evacuation route above is approximately 596m and provides connectivity to the greater road network.

5. Conclusion

This Flood Assessment Report has been commissioned by Howell Constructions for a Minor Change application at 63 Cairns Street, Loganholme. The proposed development involves the creation of a new industrial facility comprising of 5 separate warehouse buildings.

A summary of the investigation and outcomes presented in this report are as follows:

- **Flooding Assessment (Section 3):** Allotment impacted by riverine and overland flow flooding. Proposed design levels for areas of use meet or exceed minimum flood planning levels.
- **Flood Risk (Section 4):** Vehicle and pedestrian evacuation to the western portion of Cairns Street.

6. Disclaimer

This report has been prepared on behalf of and for the exclusive use of Howell Constructions and is subject to and issued in accordance with the agreement between Context Engineering.

Our investigation and analysis has been specifically catered for the particular requirements of Howell Constructions and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Context Engineering.

Context Engineering accepts no liability or responsibility whatsoever for the report in respect of any use of or reliance upon this report by any third party.

The investigation and analysis have relied on information provided by others. We accept no responsibility for the accuracy of material supplied by others. The accuracy of the investigation, analysis and report are dependent upon the accuracy of this information.

63 Cairns Street, Loganholme

Flood Assessment Report

Appendix A **Survey**

CONTOUR & DETAIL SURVEY

AJS SURVEYS
SURVEYING • PLANNING • DEVELOPMENT
incorporating LJ Hewitt & Co
P: 07 3823 2144 E: mail@ajs.net.au
W:www.ajssurveys.com.au

N

23
RP 88336

SHED
(concrete)

Gutter Level 13.72
Roof Level 15.59
Gutter Level 13.71
Roof Level 15.56

7.50
7.50
8°47'55"
20.218

Dirt
Concrete
Dirt
Concrete
Dirt
Dirt
Dirt
Dirt
Dirt
Grass
Thick Vegetation

6.00
6.12
6.50
5.50
5.00
4.50
3.50
4.00

Top of Bank
Bottom of Bank
Wire Mesh Fence
Mesh Fence

T*S4/400
T*S4/260
T*S3/200
T*S4/400
T*S4/300

Sewer Manhole SL 7.29 IL 3.37
Stormwater Manhole SL 7.30 (unable to locate IL due to debris)
Sewer Manhole SL 7.44 IL 3.59

58
RP 136121
59
RP 136121
60
RP 136121

LEGEND

- LIGHT POLE
- OP ORIGINAL PEG
- POWER POLE
- FIRE HYDRANT
- VALVE
- SEWER MANHOLE
- ROOFWATER PIT
- POWER BOX
- TELSTRA PIT
- RETAINING WALL
- STORMWATER MANHOLE
- GAS SUPPLY/GAS CYLINDER
- TEMPORARY BENCH MARK (TBM)
- PERMANENT SURVEY MARK
- GULLY GRATE
- WATER METER
- SIGN
- HEADWALL/CROSSOVER
- ROCK WALL
- PALM
- TREE

Horizontal Datum

GDA - Geodetic Datum Australia

Scale 1:150 – Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22

Contours shown on this plan denote existing ground level at time of survey and are not be used to determine maximum building heights.

No survey marks were located at time of survey.
It is recommended that an Identification Survey be carried out prior to any construction.
All boundary positions are approximate only.

Levels shown on this plan are correct in relation to the benchmarks placed on this plan.
AJS Surveys accepts no responsibility for any subsequent plans or works that do not use the same level datum as shown on this plan.

Subject title has not been obtained, therefore AJS Surveys can not certify that no easements affect this lot. A full title search should be carried out prior to any construction.

This plan has been prepared for the purpose of designing new constructions and should not be used for any other purpose. Title boundaries were not marked at time of survey and have been determined by plan dimensions and not by field measurement.

Unless noted otherwise only visible services have been located.

Prior to any demolition, excavation or construction on the site, the relevant authorities should be contacted for accurate location of all services.

REVISIONS			
			C
			B
09/07/2020	Add extra detail and add boundaries from field survey.	PDR	A

ASSOCIATED CONSULTANTS:
WILLATON GROUP

SURVEYOR HRN
DRAWN MJE
DATE 8-8-19
CHECKED HRN

LEVEL DATUM:
AHD
DERIVED FROM PSM #138088 (RL 13.742m)

CLIENT:
Mr Shane Murrihy

SITE:
60 Cairns Street, Loganholme
Lot 12 on RP 100717

SCALE 1:150 (A0)
PLAN REF: S0003-D2A-1

Contours shown on this plan denote existing ground level at time of survey and are not be used to determine maximum building heights.

Subject lot boundary dimensions and area are derived from field survey.

Levels shown on this plan are correct in relation to the benchmarks placed on this plan.
AJS Surveys accepts no responsibility for any subsequent plans or works that do not use the same level datum as shown on this plan.

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LEGEND

- LIGHT POLE
- ORIGINAL PEG
- POWER POLE
- FIRE HYDRANT
- VALVE
- SEWER MANHOLE
- ROOFWATER PIT
- POWER BOX
- TELSTRA PIT
- RETAINING WALL
- STORMWATER MANHOLE
- GAS SUPPLY/GAS CYLINDER
- TEMPORARY BENCH MARK (TBM)
- PERMANENT SURVEY MARK
- GULLY GRATE
- WATER METER
- SIGN
- HEADWALL/CROSSOVER
- ROCK WALL
- PALM
- TREE

24
RP 88336

121
SP 320462
4000m²

120
SP 320462
9·783ha

12
RP 100717
10·219 ha

130
SP 320462
8·256ha

CAIRNS STREET

TWO STOREY BRICK/TIMBER DWELLING
Floor Level 9.86
Floor Level 7.32
DECK
Stairs
Outline of lower level
Concrete
Grass
Gravel
Bitumen
Dirt
VKHG
Concrete
Toilets
SHIPPING CONTAINER
SHIPPING CONTAINER
DEMOUNTABLE BUILDING
DEMOUNTABLE BUILDING
DEMOUNTABLE BUILDING
CONTAINER
SHED (concrete)
Concrete
Gravel
Grass
Dirt

Wire Mesh Fence
Timber Fence
Edge of Bitumen
Water Line Approximate Only Plotted from Council Records
Power Pole #57854
Power Pole
Septic Tank SL 7.43
Septic Tank SL 8.00
Bottom of Bank
Top of Bank

TBM
GI Nail in Bitumen
RL 7.85
See datum note

TBM
Dumpy Peg
RL 7.53
See datum note

T*S1/250
T*S5/400
T*S3/250
T*S3/150
T*S3/150
T*S3/300
T*S6/300
T*S6/300
T*S3/200
T*S4/250
T*S4/250
T*S6/350
T*S6/350
T*S3/300
T*S3/300
T*S4/350
T*S9/850
T*S7/700
T*S7/600
T*S4/250
T*S4/350
T*S5/500
T*S3/250
T*S5/700

103°05'9
71.58
188°48'55"
6.00
6.12
7.00
6.50
5.00
4.00
8.00
7.50
6.12
6.00
7.00
6.50
5.00
4.00
6.84
6.408
273°26'40"
4.715
235°04'25"
8.565
280°04'25"
5.104
13.669
325°04'25"
6.835
109°04'25"
6.835
109°04'25"
6.402
107°09'15"
6.408
121°18'25"
4.715
145°04'25"
13.669
100°04'25"
13.668
55°04'25"
30.627
225°14'40"

Roof Level 11.48
Roof Level 13.73
Roof Level 10.76
Roof Level 11.06
Roof Level 13.73
Roof Level 10.78
Gutter Level 13.72
Roof Level 15.59

Horizontal Datum

GDA - Geodetic Datum Australia

Scale 1:150 – Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22

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W:www.ajssurveys.com.au

CONTOUR & DETAIL SURVEY

REVISIONS			
			C
			B
09/07/2020	Add extra detail and add boundaries from field survey.	PDR	A

ASSOCIATED CONSULTANTS:
WILLATON GROUP

SURVEYOR HRN
DRAWN MJE
DATE 8-8-19
CHECKED HRN

LEVEL DATUM: AHD
DERIVED FROM PSM #138088 (RL 13.742m)

CLIENT: Mr Shane Murrihy

SITE: 60 Cairns Street, Loganholme
Lot 12 on RP 100717

SCALE 1:150 (A0)
PLAN REF: S0003-D2A-2

No survey marks were located at time of survey.
It is recommended that an Identification Survey be carried out prior to any construction.
All boundary positions are approximate only.

Levels shown on this plan are correct in relation to the benchmarks placed on this plan.
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Contours shown on this plan denote existing ground level at time of survey and are not be used to determine maximum building heights.

LEGEND

- LIGHT POLE
- OP ORIGINAL PEG
- POWER POLE
- FIRE HYDRANT
- V VALVE
- SEWER MANHOLE
- R ROOFWATER PIT
- POWER BOX
- TELSTRA PIT
- RETAINING WALL
- S STORMWATER MANHOLE
- G GAS SUPPLY/GAS CYLINDER
- TEMPORARY BENCH MARK (TBM)
- PERMANENT SURVEY MARK
- GULLY GRATE
- W WATER METER
- SIGN
- HEADWALL/CROSSOVER
- ROCK WALL
- PALM
- TREE

N

225·365

8°48'55"

100°04'25"
43·001

7·58
188°48'55"

Dirt
Grass
Gravel
VKHG
Wire Mesh Fence
Timber Fence
Top of Bank
Bottom of Bank
T*S6/400
T*S5/250
T*S6/300
T*S7/250
T*S5/400
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
24
RP 88336
120
SP 320462
9·783ha

Horizontal Datum

GDA - Geodetic Datum Australia

Scale 1:150 – Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22

CONTOUR & DETAIL SURVEY

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REVISIONS			
			C
			B
09/07/2020	Add extra detail and add boundaries from field survey.	PDR	A

ASSOCIATED CONSULTANTS: **WILLATON GROUP**

SURVEYOR HRN
DRAWN MJE
DATE 8-8-19
CHECKED HRN

LEVEL DATUM: **AHD**
DERIVED FROM PSM #138088 (RL 13.742m)

CLIENT: **Mr Shane Murrihy**

SITE: **60 Cairns Street, Loganholme**
Lot 12 on RP 100717

SCALE 1:150 (A0)
PLAN REF: S0003-D2A-3

CONTOUR & DETAIL SURVEY

! No survey marks were located at time of survey.
It is recommended that an Identification Survey be carried out prior to any construction.
All boundary positions are approximate only.

! Levels shown on this plan are correct in relation to the benchmarks placed on this plan.
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! Contours shown on this plan denote existing ground level at time of survey and are not be used to determine maximum building heights.

LEGEND

- LIGHT POLE
- ORIGINAL PEG
- POWER POLE
- FIRE HYDRANT
- VALVE
- SEWER MANHOLE
- ROOFWATER PIT
- POWER BOX
- TELSTRA PIT
- RETAINING WALL
- STORMWATER MANHOLE
- GAS SUPPLY/GAS CYLINDER
- TEMPORARY BENCH MARK (TBM)
- PERMANENT SURVEY MARK
- GULLY GRATE
- WATER METER
- SIGN
- HEADWALL/CROSSOVER
- ROCK WALL
- PALM
- TREE

N

120
SP 320462
9·783 ha

12
RP 100717
10·219 ha

Gravel, Dirt, Grass, Wire Mesh Fence, Top of Bank, Bottom of Bank, T*S4/250, T*S4/300, T*S0/500, T*S3/250, T*S5/700, ONTAINER, Stairs, 71.58, 188°48'55", 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00, 6.12, 6.50

Horizontal Datum

GDA - Geodetic Datum Australia

Scale 1:150 – Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22

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W:www.ajssurveys.com.au

REVISIONS			
			C
			B
09/07/2020	Add extra detail and add boundaries from field survey.	PDR	A

ASSOCIATED CONSULTANTS: WILLATON GROUP

SURVEYOR HRN | DRAWN MJE | DATE 8-8-19 | CHECKED HRN

LEVEL DATUM: AHD
DERIVED FROM PSM #138088 (RL 13.742m)

CLIENT: Mr Shane Murrihy

SITE: 60 Cairns Street, Loganholme
Lot 12 on RP 100717

SCALE 1:150 (A0)
PLAN REF: S0003-D2A-4

CONTOUR & DETAIL SURVEY

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W:www.ajssurveys.com.au

130
SP 320462
8·256 ha

Septic Tank SL 7.43

Wire Mesh Fence

Dirt
Grass
Top of Bank
Bottom of Bank

Horizontal Datum

GDA - Geodetic Datum Australia

Scale 1:150 – Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22

LEGEND

- LIGHT POLE
- ORIGINAL PEG
- POWER POLE
- FIRE HYDRANT
- VALVE
- SEWER MANHOLE
- ROOFWATER PIT
- POWER BOX
- TELSTRA PIT
- RETAINING WALL
- STORMWATER MANHOLE
- GAS SUPPLY/GAS CYLINDER
- TEMPORARY BENCH MARK (TBM)
- PERMANENT SURVEY MARK
- GULLY GRATE
- WATER METER
- SIGN
- HEADWALL/CROSSOVER
- ROCK WALL
- PALM
- TREE

No survey marks were located at time of survey.
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All boundary positions are approximate only.

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REVISIONS			
			C
			B
09/07/2020	Add extra detail and add boundaries from field survey.	PDR	A

ASSOCIATED CONSULTANTS: WILLATON GROUP

SURVEYOR HRN
DRAWN MJE
DATE 8-8-19
CHECKED HRN

LEVEL DATUM: AHD
DERIVED FROM PSM #138088 (RL 13.742m)

CLIENT: Mr Shane Murrihy

SITE: 60 Cairns Street, Loganholme
Lot 12 on RP 100717

SCALE 1:150 (A0)
PLAN REF: S0003-D2A-5

CAIRNS ST

121

120

130

7.50 7.00 6.50 6.00 5.50

AS CONSTRUCTED LEVELS

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REVISIONS	ASSOCIATED CONSULTANTS:	SURVEYOR BRC	DATE 03/03/2023	LEVEL DATUM:	CLIENT:	SITE:	SCALE 1:425
		DRAWN BRC	CHECKED	AHD PSM 138088 RL:13.742m	WILKINSON SHAW	Cairns St, LOGANHOLME	PLAN REF: S0003- Levels

63 Cairns Street, Loganholme

Flood Assessment Report

Appendix B **Architectural Drawings**

DEVELOPMENT SUMMARY

60-63 CAIRNS STREET, LOGANHOLME

SITE AREA: X m²

TOTAL BUILDING AREA

LOT A:
TOTAL BUILDING = 9,833.9 m²
UNITS = 51

PARKING RATES

1/100 SQM = 98.33 (99)

PROVIDED: 122

REFER AREA CALCULATION TABLE BELOW

TOTAL BUILDING AREA

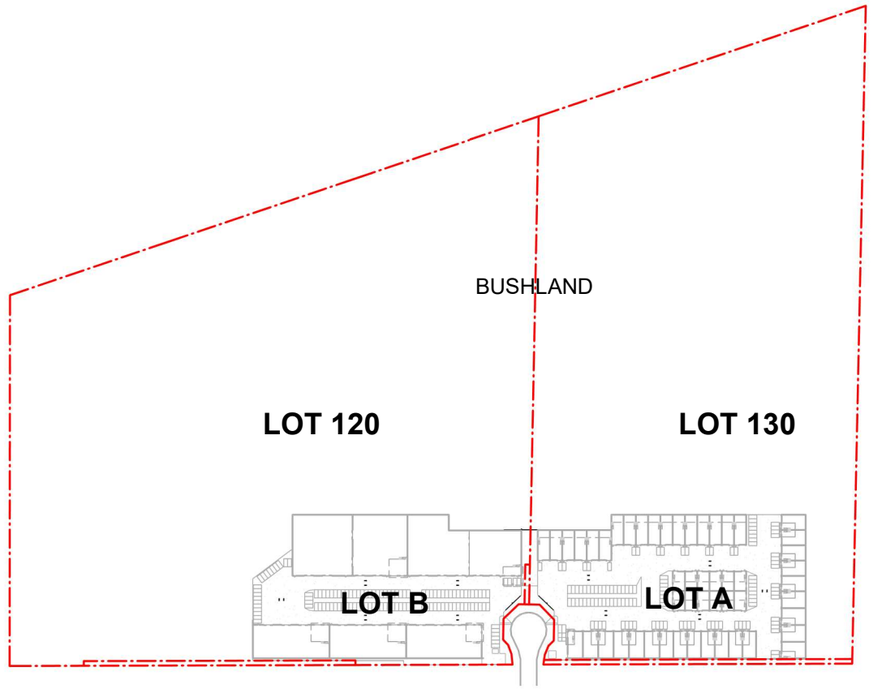
LOT B:
TOTAL BUILDING = 9547.7 m²
UNITS = 5

PARKING RATES

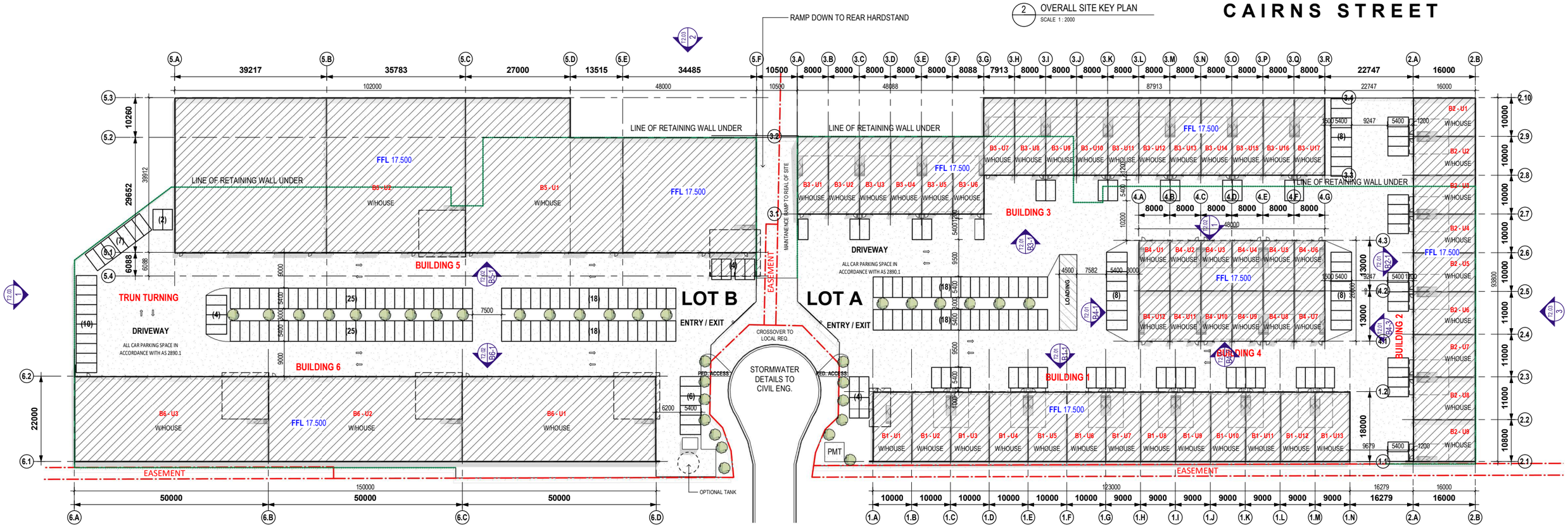
1/100 SQM = 95.48 (96)

PROVIDED: 119

REFER AREA CALCULATION TABLE BELOW



2 OVERALL SITE KEY PLAN
SCALE 1 : 2000



1 OVERALL SITE PLAN
SCALE 1 : 500

PROPOSED INDUSTRIAL/ COMMERCIAL DEVELOPMENT

TP ISSUE

T0.03

60-63 CAIRNS STREET, LOGANHOLME

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0 1 2 5 10 SCALE As indicated

SCALE: 200 @ A3 (SCALE:100 @ A1)

DRAWING NAME
OVERALL SITE PLAN

ADDRESS
60-63 CAIRNS STREET, LOGANHOLME

PROJECT No.	SHEET NUMBER	REV.	DATE
25-074	T0.03	ISSUE 1	23.01.26

A: 6/3990 Pacific Highway Loganholme QLD 4129
E. www.ATPdesignstudio.com
P. 04 23 535 120
E. andrew@ATPdesignstudio.com

QBCC : 15183066
ABN : 74 739 848 180

ATP DESIGN STUDIO
BUILDING & INTERIOR DESIGN STUDIO

63 Cairns Street, Loganholme

Flood Assessment Report

Appendix C **Civil Design Drawings**

Existing Legend

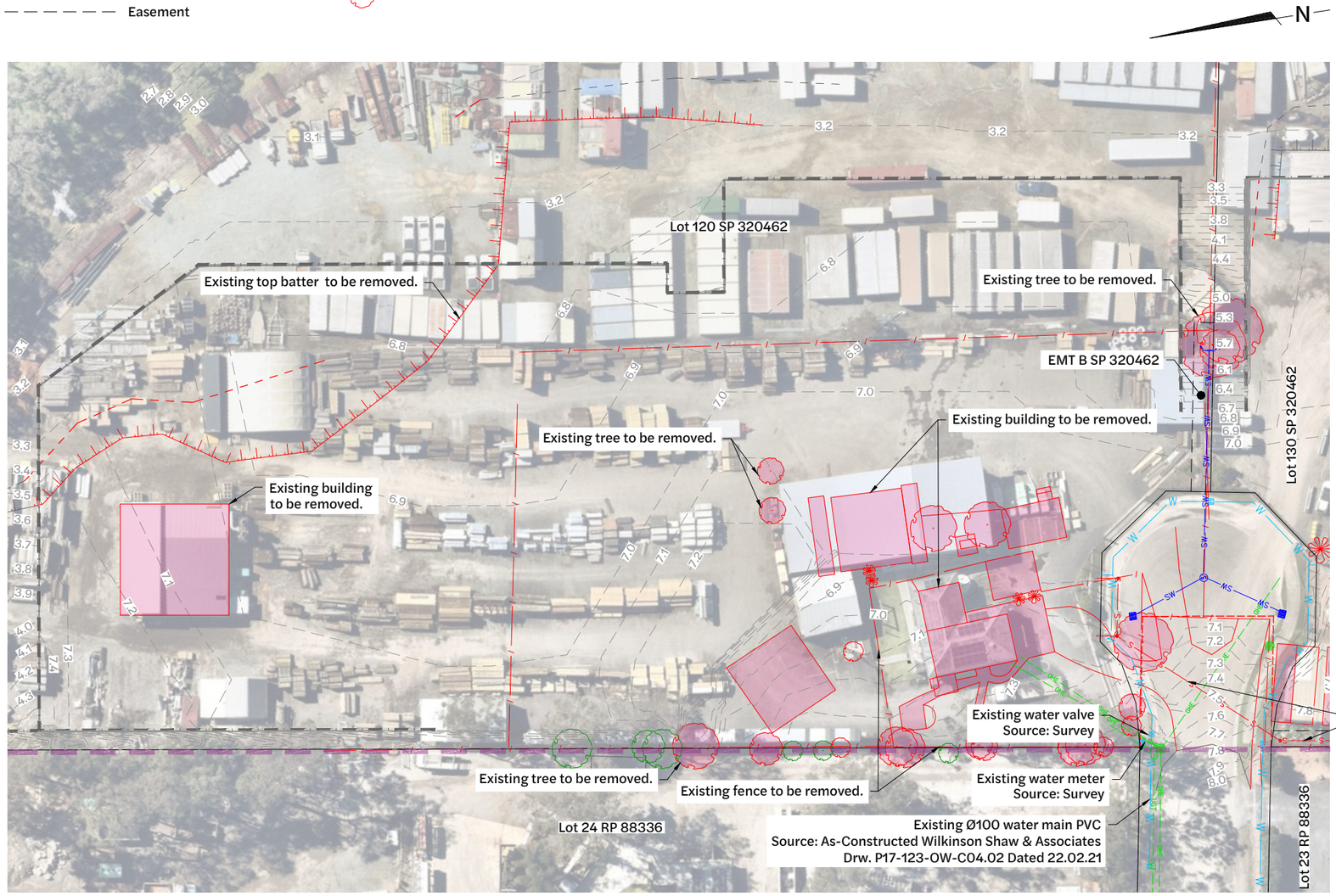
- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

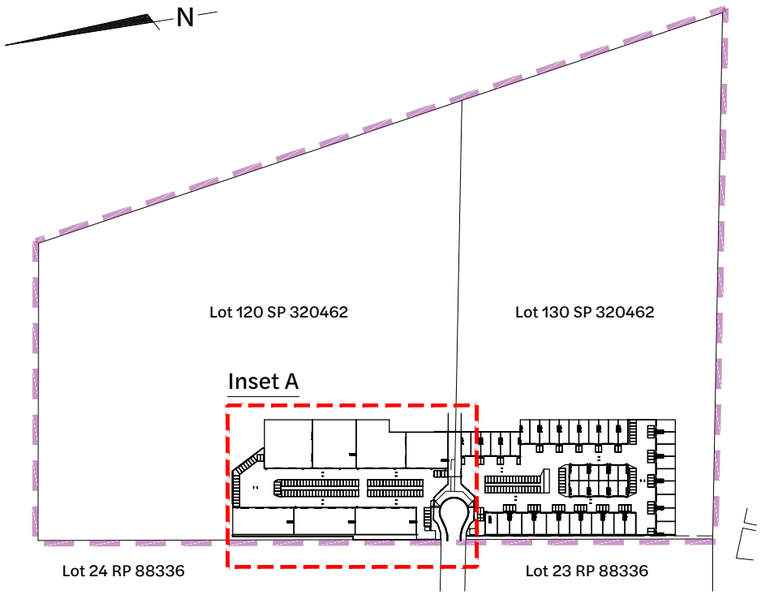
- Site Boundary
- Demolition Area
- Existing Feature to be Removed
- Tree to be Demolished



Inset A - Existing Features and Demolition Layout Plan
1:400 Scale

Matchline for Continuation
Refer to Dwg No. C_25145 DA02

Existing Ø150 PVC sewer main.
Source: As-Constructed Wilkinson Shaw & Associates
Drw. P17-123-OW-C05.03 Dated 22.02.21



Locality Plan
1:2500 Scale

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:400 4 0 4 8 12 16 20m A1
1:800 A3
1:2500 50 0 50 100m A1
1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Existing Features and Demolition Layout Plan (Sheet 1 of 2)

Project No.	Drawing No.	Revision
C_25145	DA01	3

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\6_MODEL\AUTOCAD\C_25145 DA01_EXISTING FEATURES AND DEMOLITION LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

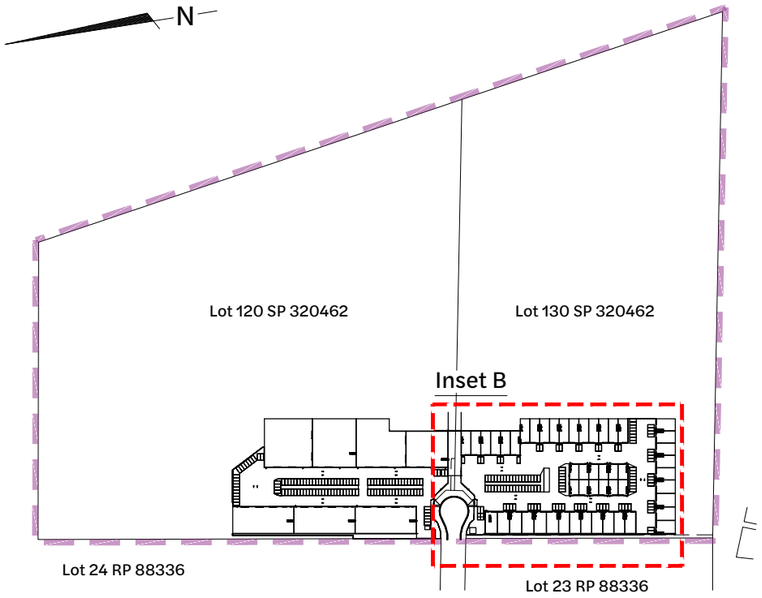
- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

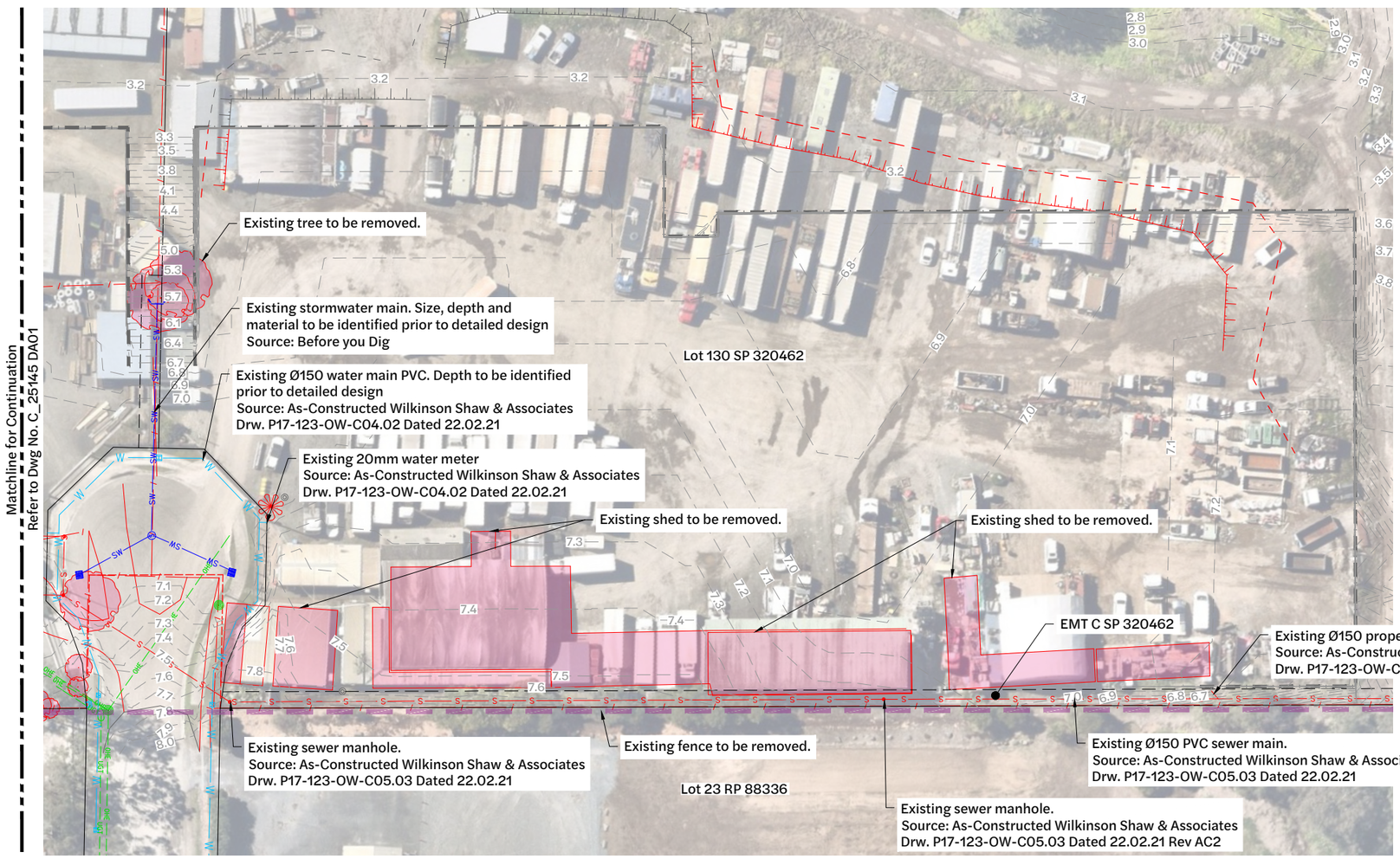
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

- Site Boundary
- Demolition Area
- Existing Feature to be Removed
- Tree to be Demolished



Locality Plan
1:2500 Scale



Inset B - Existing Features and Demolition Layout Plan
1:400 Scale

BEFORE YOU DIG www.byda.com.au

Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:400 / 1:800 / 1:2500 / 1:5000 — 4 0 4 8 12 16 20m A1 A3 — 50 0 50 100m A1 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
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Context Engineering

Drawing Title: Existing Features and Demolition Layout Plan (Sheet 2 of 2)

Project No.	Drawing No.	Revision
C_25145	DA02	3

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\6_MODEL\AUTOCAD\C_25145 DA01_EXISTING FEATURES AND DEMOLITION LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

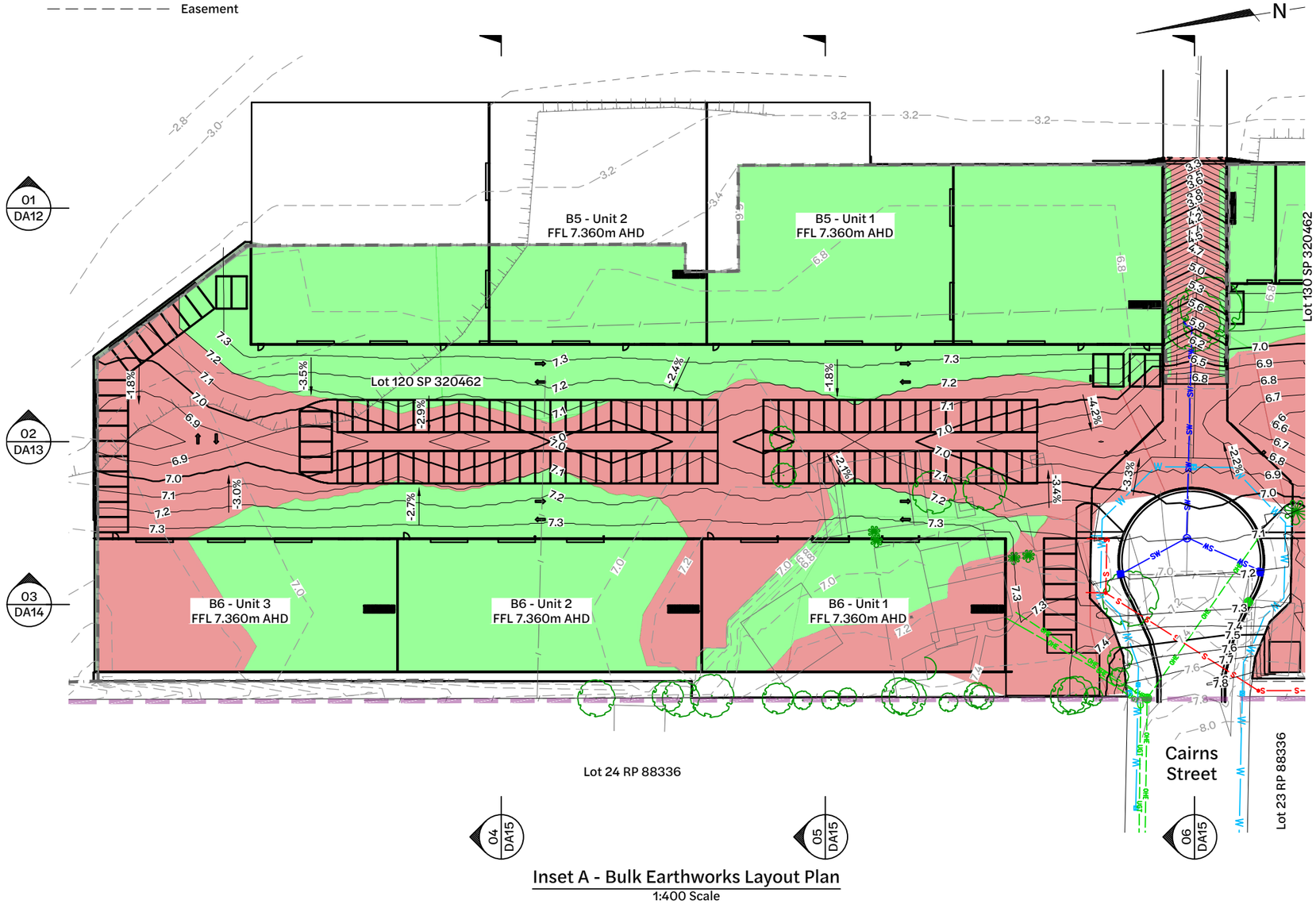
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor

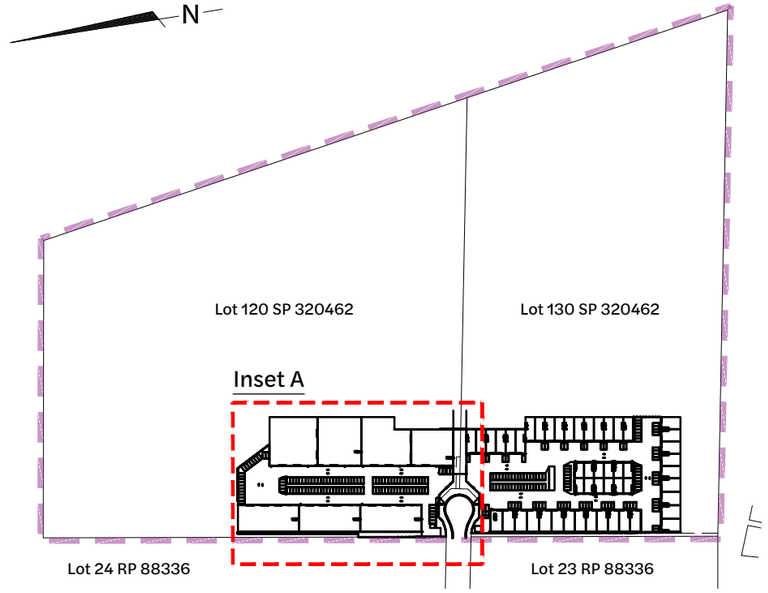
Note:
Existing contours shown incorporates both surveyed existing surface (AJS Surveys dated 09/07/2020) and design surface as per previous approval (OW/176/2020)

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.



Matchline for Continuation
Refer to Dwg No. C_25145 DA11

Inset A - Bulk Earthworks Layout Plan
1:400 Scale



Locality Plan
1:2500 Scale

Bulk Earthworks Legend
Hatching from Design surface as per previous approval (OW/176/2020) to Bulk Earthworks surface

Cut		Fill	
> 5.0m		> 5.0m	
2.0 to 5.0m		2.0 to 5.0m	
1.0 to 2.0m		1.0 to 2.0m	
0.0 to 1.0m		0.0 to 1.0m	

Earthworks Schedule
Hatching from Design surface as per previous approval (OW/176/2020) to Bulk Earthworks surface

Type	Volume (m^3)
Cut	-3,124*
Fill	2,832*
Total Balance	-292*

*Assume no strip and 200mm slab and pavement depth.

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:400, 1:800, 1:2500, 1:5000 — 4 0 4 8 12 16 20m A1 A3; 50 0 50 100m A1 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Bulk Earthworks Layout Plan (Sheet 1 of 2)

Project No.: C_25145
Drawing No.: DA10
Revision: 4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\6_MODEL\AUTOCAD\C_25145 DA10_BULK EARTHWORKS LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

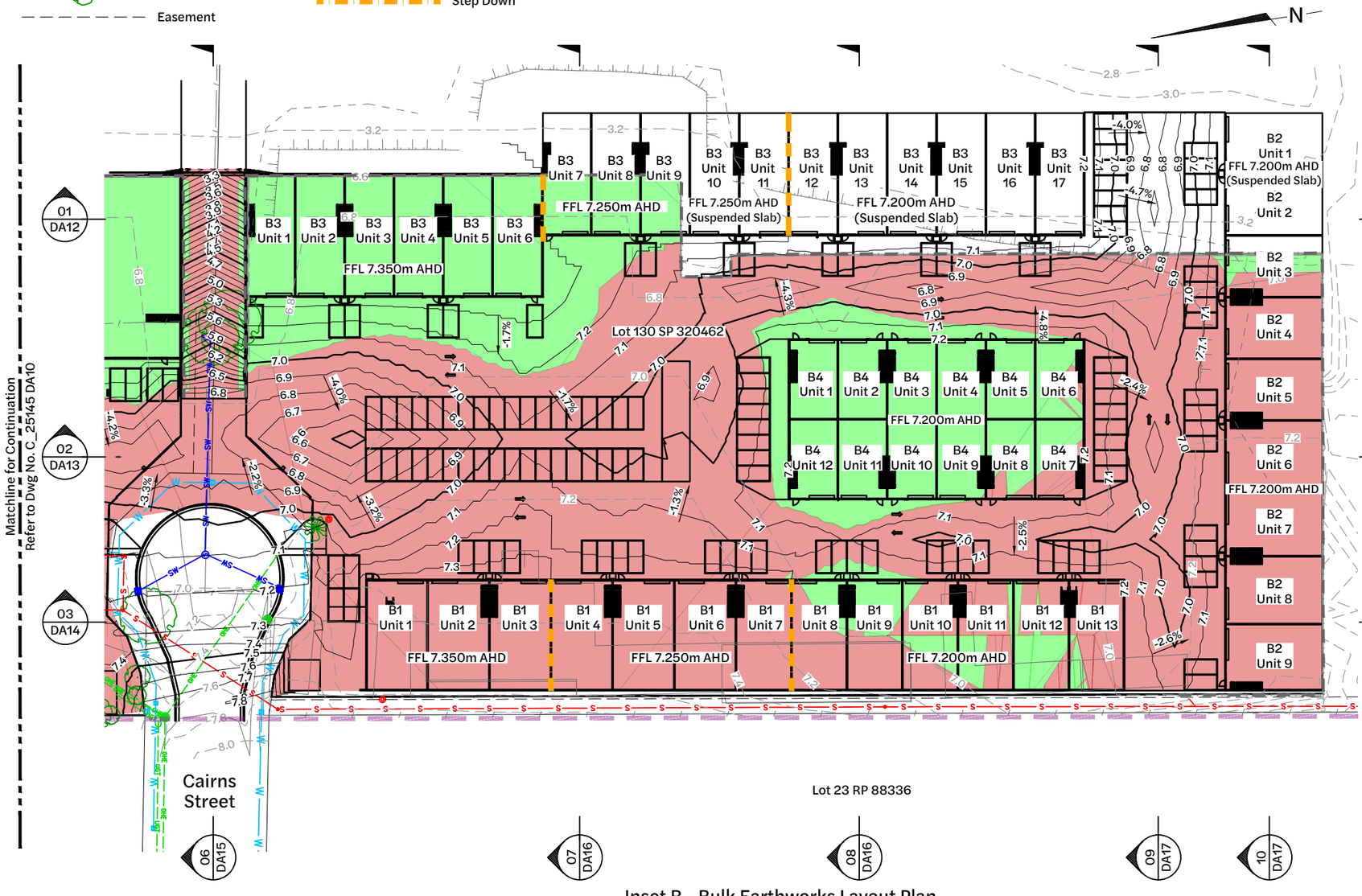
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

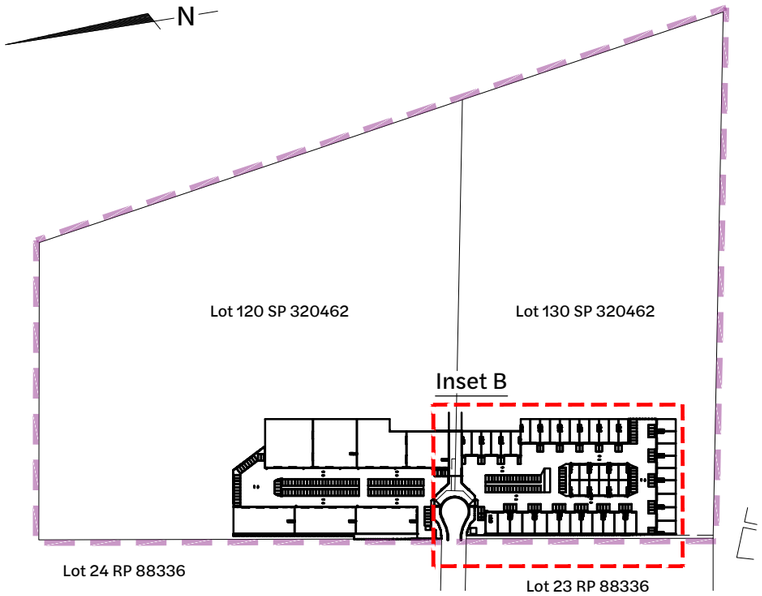
- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor
- Step Down

Note:
Existing contours shown incorporates both surveyed existing surface (AJS Surveys dated 09/07/2020) and design surface as per previous approval (OW/176/2020)

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.



Inset B - Bulk Earthworks Layout Plan
1:400 Scale



Locality Plan
1:2500 Scale

FFL 6.860m AHD

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval** Not for Construction

Scale: 1:400 / 1:800 — 4 0 4 8 12 16 20m A1 / A3; 1:2500 / 1:5000 — 50 0 50 100m A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer: All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

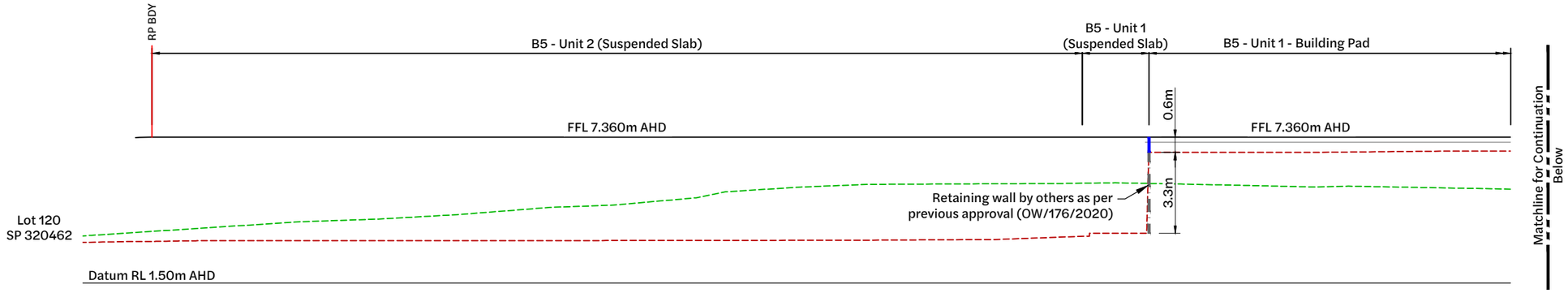
Drawing Title: Bulk Earthworks Layout Plan (Sheet 2 of 2)

Project No.: C_25145 | Drawing No.: DA11 | Revision: 4

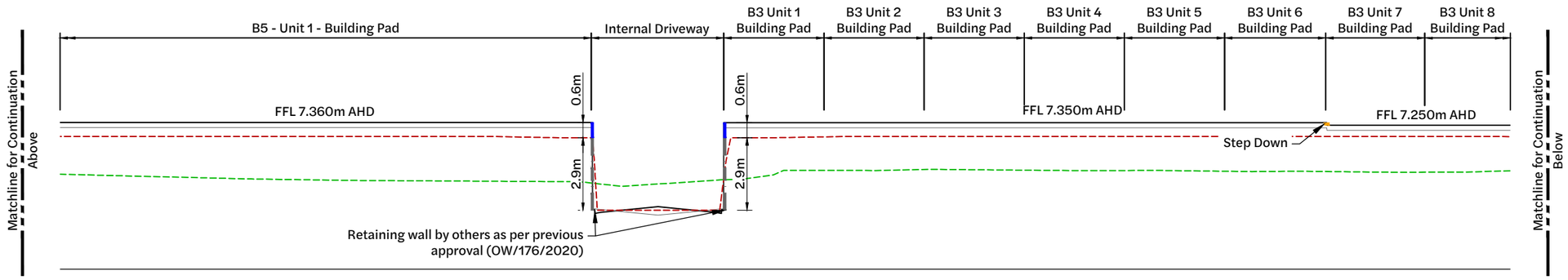
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\6_MODEL\AUTOCAD\C_25145-DA10_BULK EARTHWORKS LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Legend

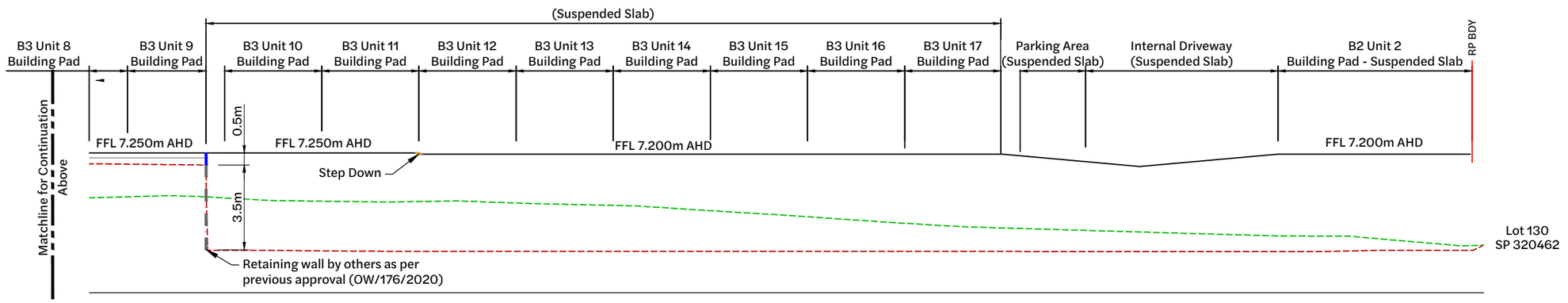
- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining wall by Others as per Previous Approval (OW/176/2020)
- Retaining Wall Modification
- Step Down



Section 01 / DA10
Horizontal: 1:200
Vertical: 1:100



Section 01 / DA10
Horizontal: 1:200
Vertical: 1:100



Section 01 / DA10
Horizontal: 1:200
Vertical: 1:100

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R002_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval** — Not for Construction

Scale: 1:200 2 0 2 4 6 8 10m A1 / 1:400 A3 (HORIZONTAL); 1:100 1 0 1 2 3 4 5m A1 / 1:200 A3 (VERTICAL)

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer: All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Bulk Earthworks Sections (Sheet 1 of 6)

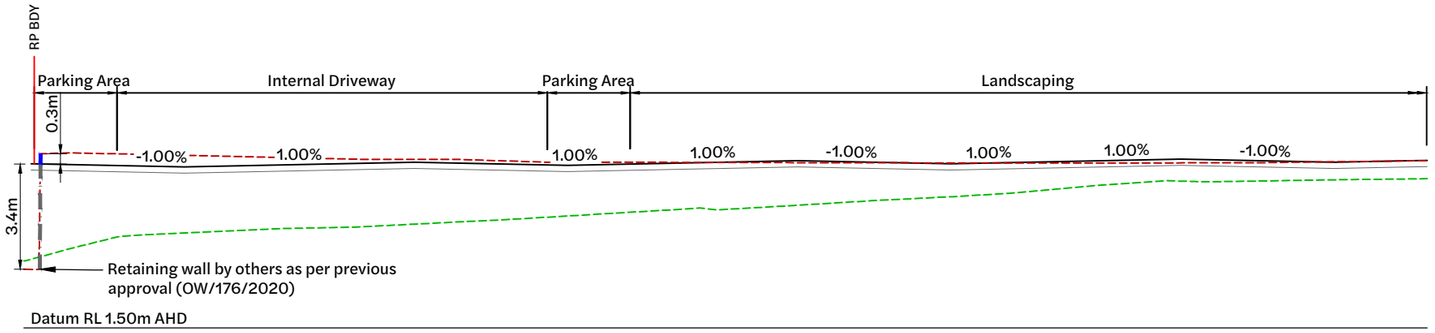
Project No. C_25145 | Drawing No. DA12 | Revision 4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\IE_MODEL\AUTOCAD\C_25145 DA12_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

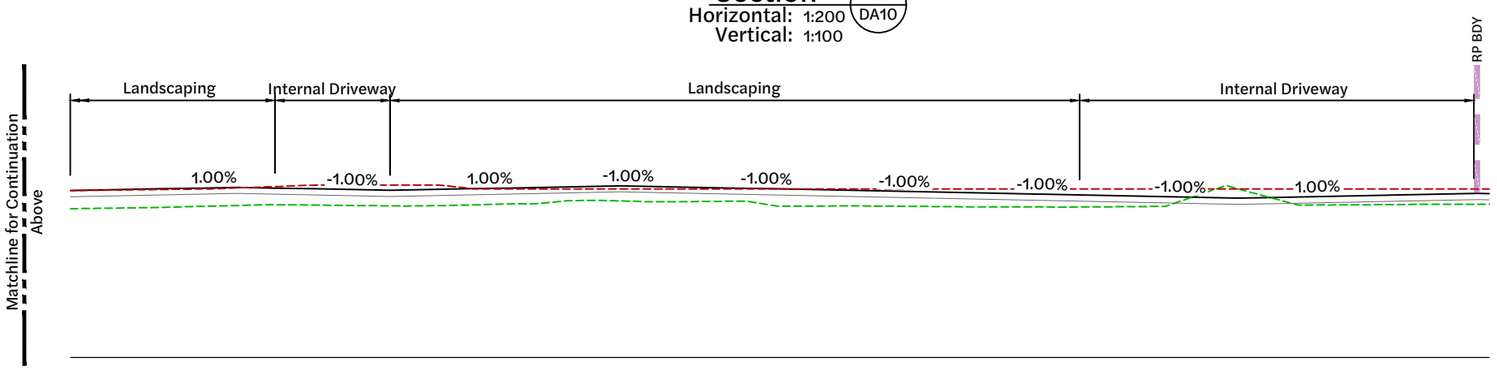
Legend

- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining Wall by Others as per Previous Approval (OW/176/2020)
- Retaining Wall Modification

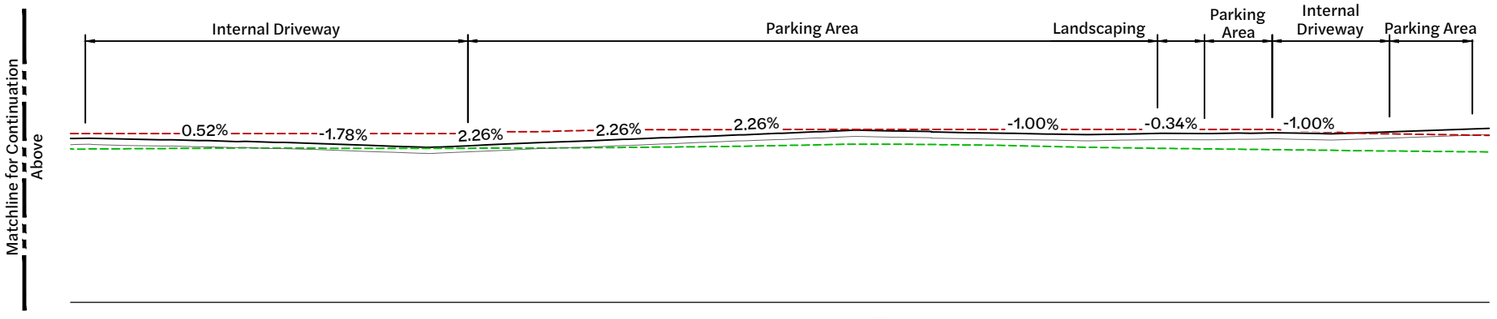
Lot 120
SP 320462



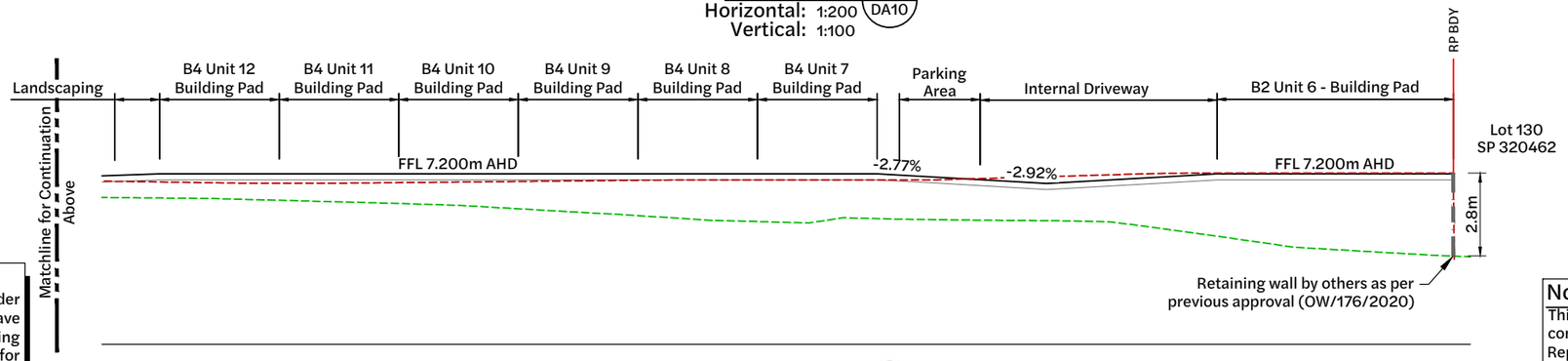
Section 02 DA10
Horizontal: 1:200
Vertical: 1:100



Section 02 DA10
Horizontal: 1:200
Vertical: 1:100



Section 02 DA10
Horizontal: 1:200
Vertical: 1:100



Section 02 DA10
Horizontal: 1:200
Vertical: 1:100

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R002_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:200 2 0 2 4 6 8 10m A1
1:400 A3
HORIZONTAL
1:100 1 0 1 2 3 4 5m A1
1:200 A3
VERTICAL

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

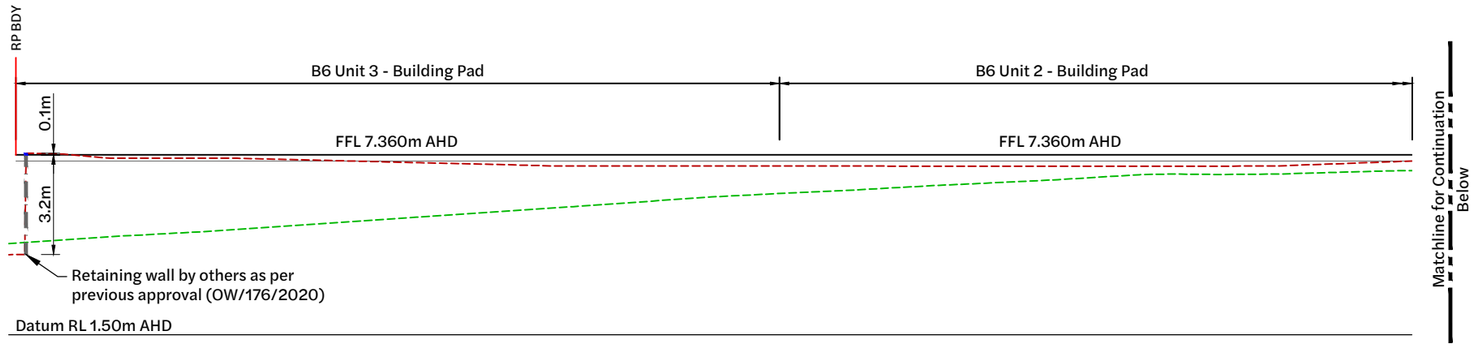
Drawing Title: Bulk Earthworks Sections (Sheet 2 of 6)

Project No.	Drawing No.	Revision
C_25145	DA13	4

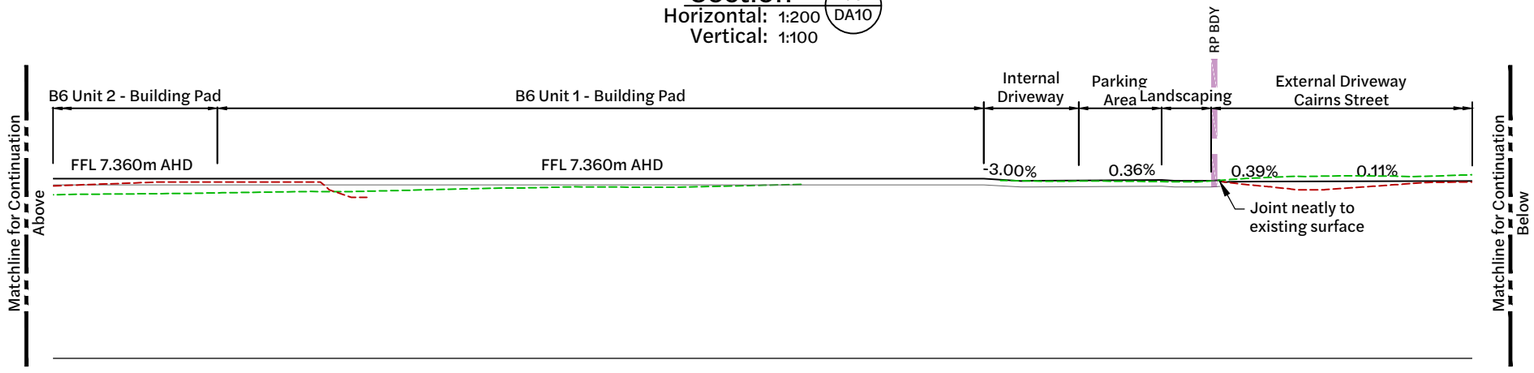
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA02_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

Legend

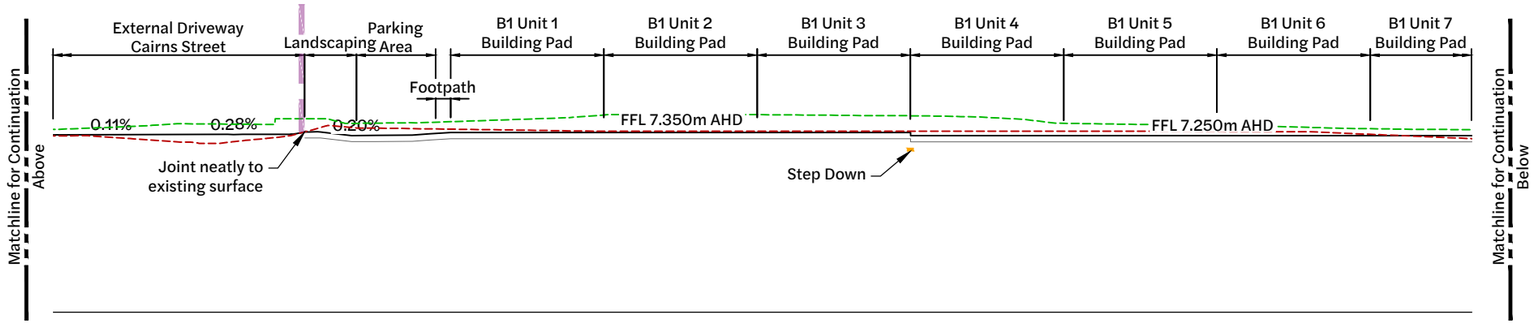
- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining Wall by Others as per Previous Approval (OW/176/2020)
- Retaining Wall Modification
- Step Down



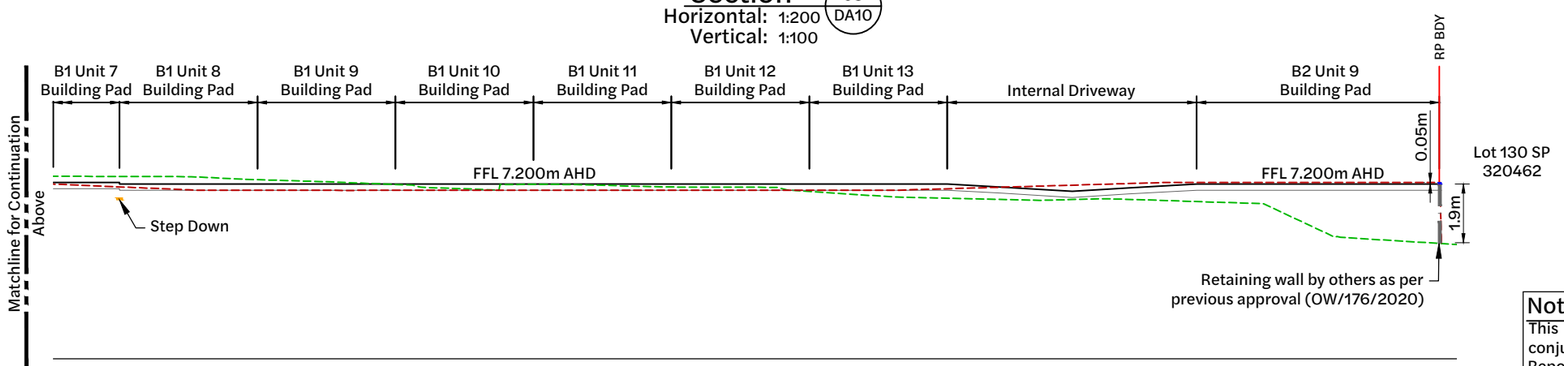
Section 03 DA10
Horizontal: 1:200
Vertical: 1:100



Section 03 DA10
Horizontal: 1:200
Vertical: 1:100



Section 03 DA10
Horizontal: 1:200
Vertical: 1:100



Section 03 DA10
Horizontal: 1:200
Vertical: 1:100

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:200 2 0 2 4 6 8 10m A1
1:400 HORIZONTAL A3
1:100 1 0 1 2 3 4 5m A1
1:200 VERTICAL A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

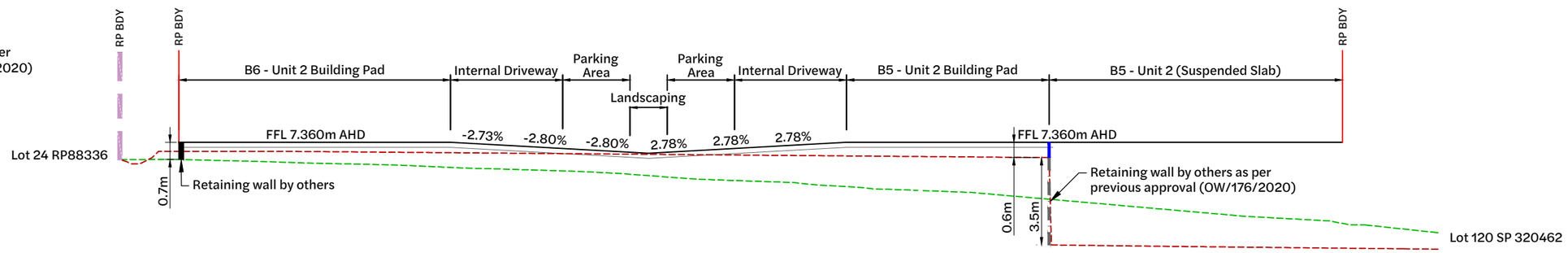
Drawing Title: Bulk Earthworks Sections (Sheet 3 of 6)

Project No. C_25145
Drawing No. DA14
Revision 4

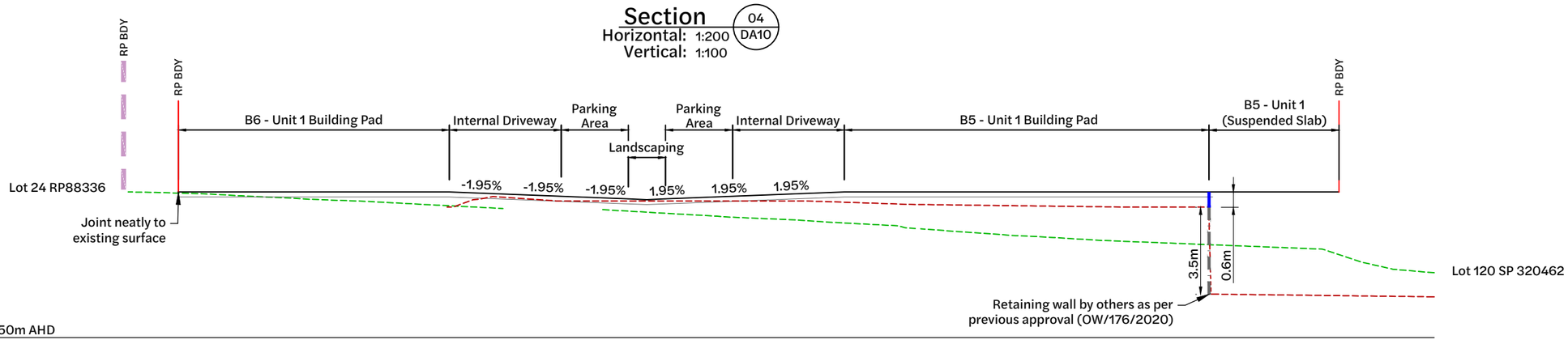
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA02_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

Legend

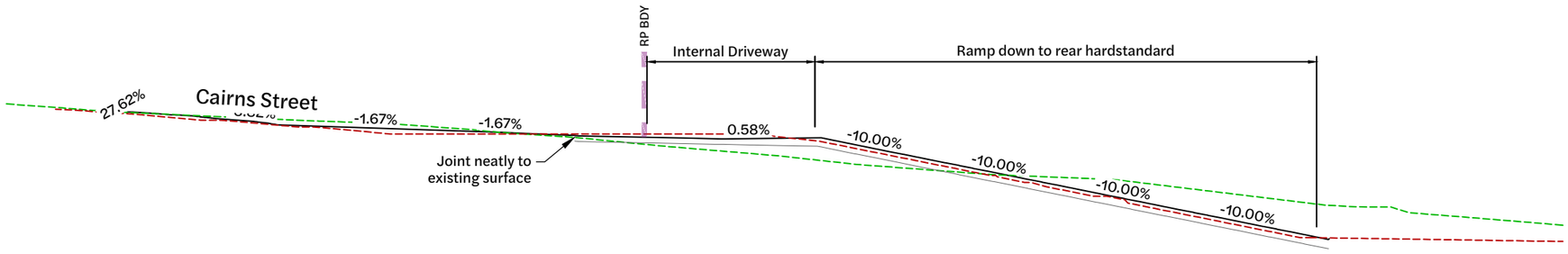
- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining Wall by Others as per Previous Approval (OW/176/2020)
- Proposed Retaining Wall
- Retaining Wall Modification



Section 04 DA10
Horizontal: 1:200
Vertical: 1:100



Section 05 DA10
Horizontal: 1:200
Vertical: 1:100



Section 06 DA10
Horizontal: 1:200
Vertical: 1:100

Note:
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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:200 2 0 2 4 6 8 10m A1
1:400 A3
HORIZONTAL
1:100 1 0 1 2 3 4 5m A1
1:200 A3
VERTICAL

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

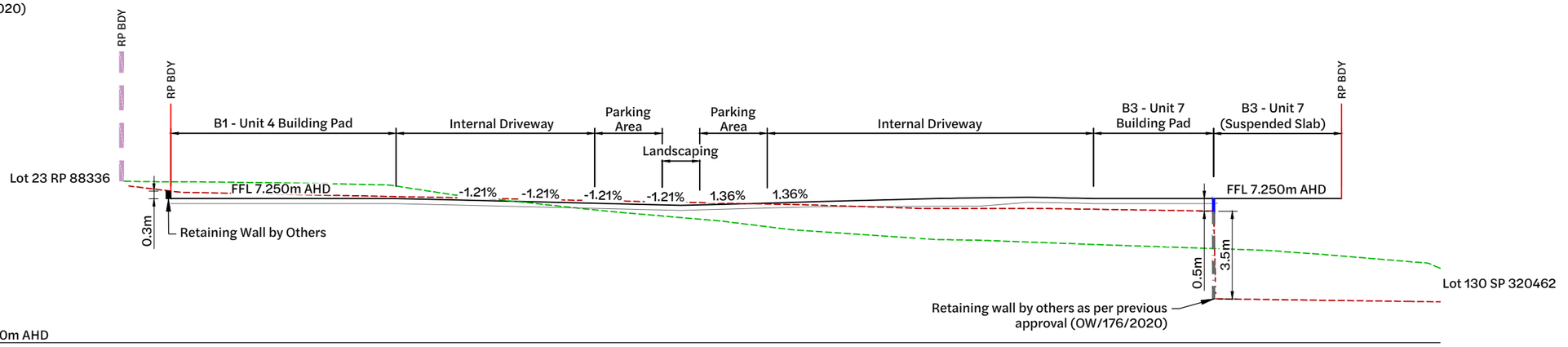
Drawing Title: Bulk Earthworks Sections (Sheet 4 of 6)

Project No. C_25145 | Drawing No. DA15 | Revision 4

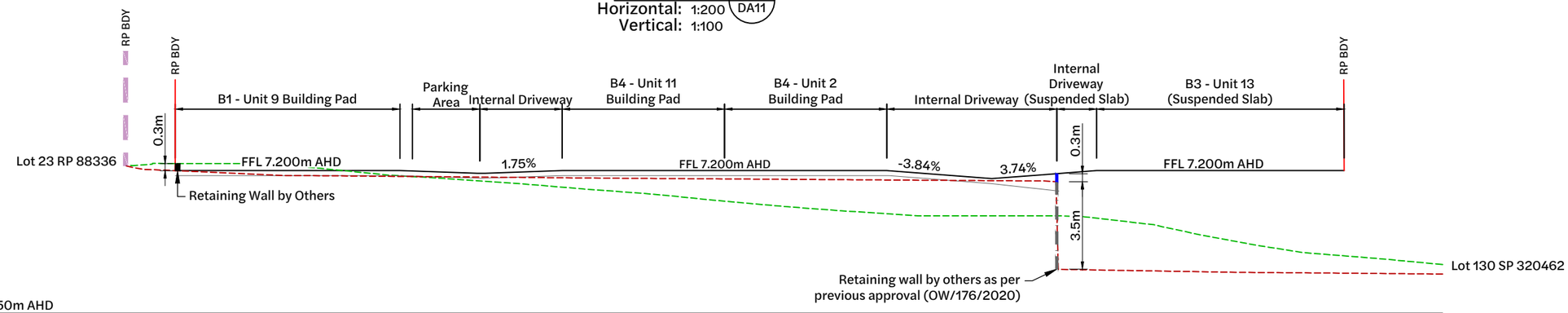
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA02_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

Legend

- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining Wall by Others as per Previous Approval (OW/176/2020)
- Proposed Retaining Wall
- Retaining Wall Modification



Section 07
Horizontal: 1:200
Vertical: 1:100 (DA11)



Section 08
Horizontal: 1:200
Vertical: 1:100 (DA11)

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:200 2 0 2 4 6 8 10m A1
1:400 A3
HORIZONTAL
1:100 1 0 1 2 3 4 5m A1
1:200 A3
VERTICAL

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

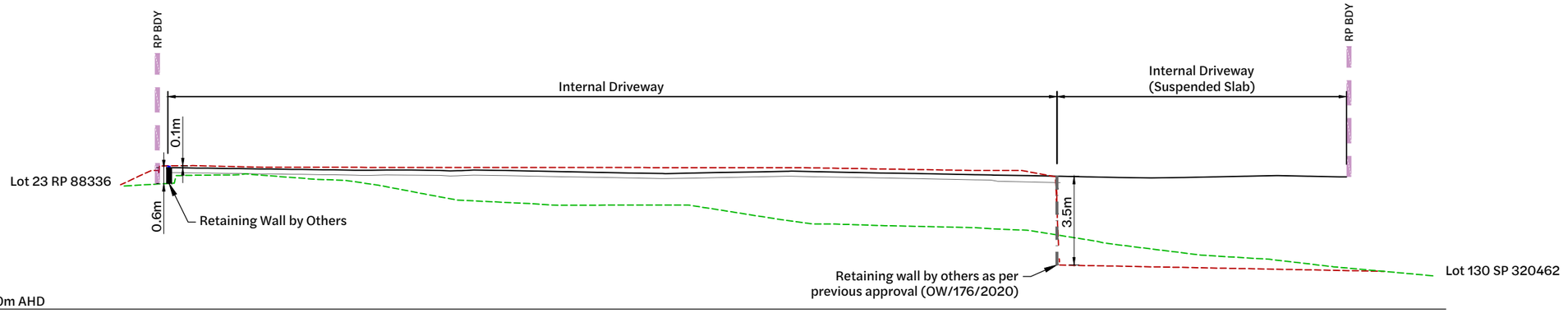
Drawing Title: Bulk Earthworks Sections (Sheet 5 of 6)

Project No.	Drawing No.	Revision
C_25145	DA16	4

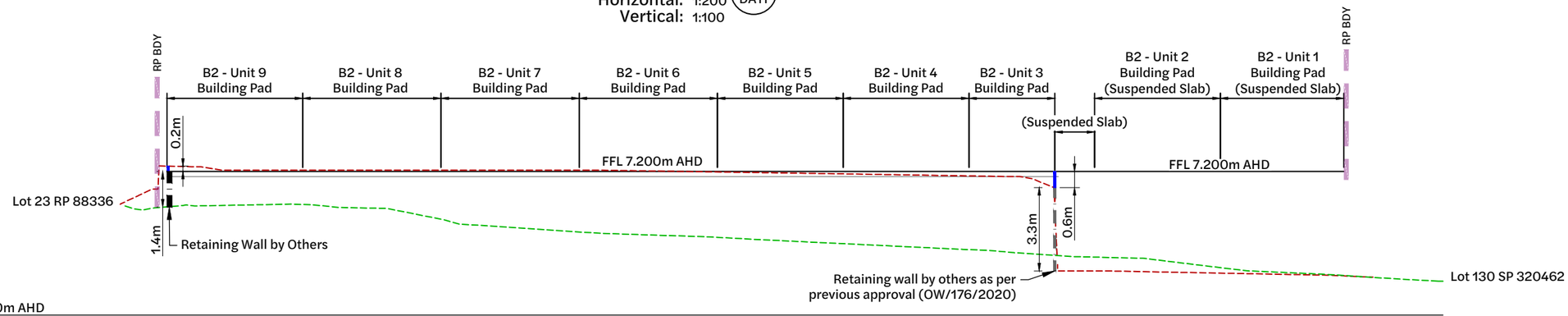
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA02_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

Legend

- Existing Surface as per Survey (AJS Surveys dated 09/07/2020)
- Design Surface as per Previous Approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/Underside of Suspended Slab
- Site Boundary
- Property Boundary
- Retaining Wall by Others as per Previous Approval (OW/176/2020)
- Proposed Retaining Wall
- Retaining Wall Modification



Section 09 DA11
Horizontal: 1:200
Vertical: 1:100



Section 10 DA11
Horizontal: 1:200
Vertical: 1:100

Note:
It is understood that the works approved under OW/176/2020 (including compensatory earthworks) have substantially commenced. Therefore, the corresponding surface has been adopted as the comparison scenario for bulk earthworks and flood storage calculations. For completeness, the surveyed surface is also shown on the sections.

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
2	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:200 2 0 2 4 6 8 10m A1
1:400 A3
HORIZONTAL
1:100 1 0 1 2 3 4 5m A1
1:200 A3
VERTICAL

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Bulk Earthworks Sections (Sheet 6 of 6)

Project No.	Drawing No.	Revision
C_25145	DA17	2

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA52_BULK EARTHWORKS SECTIONS.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

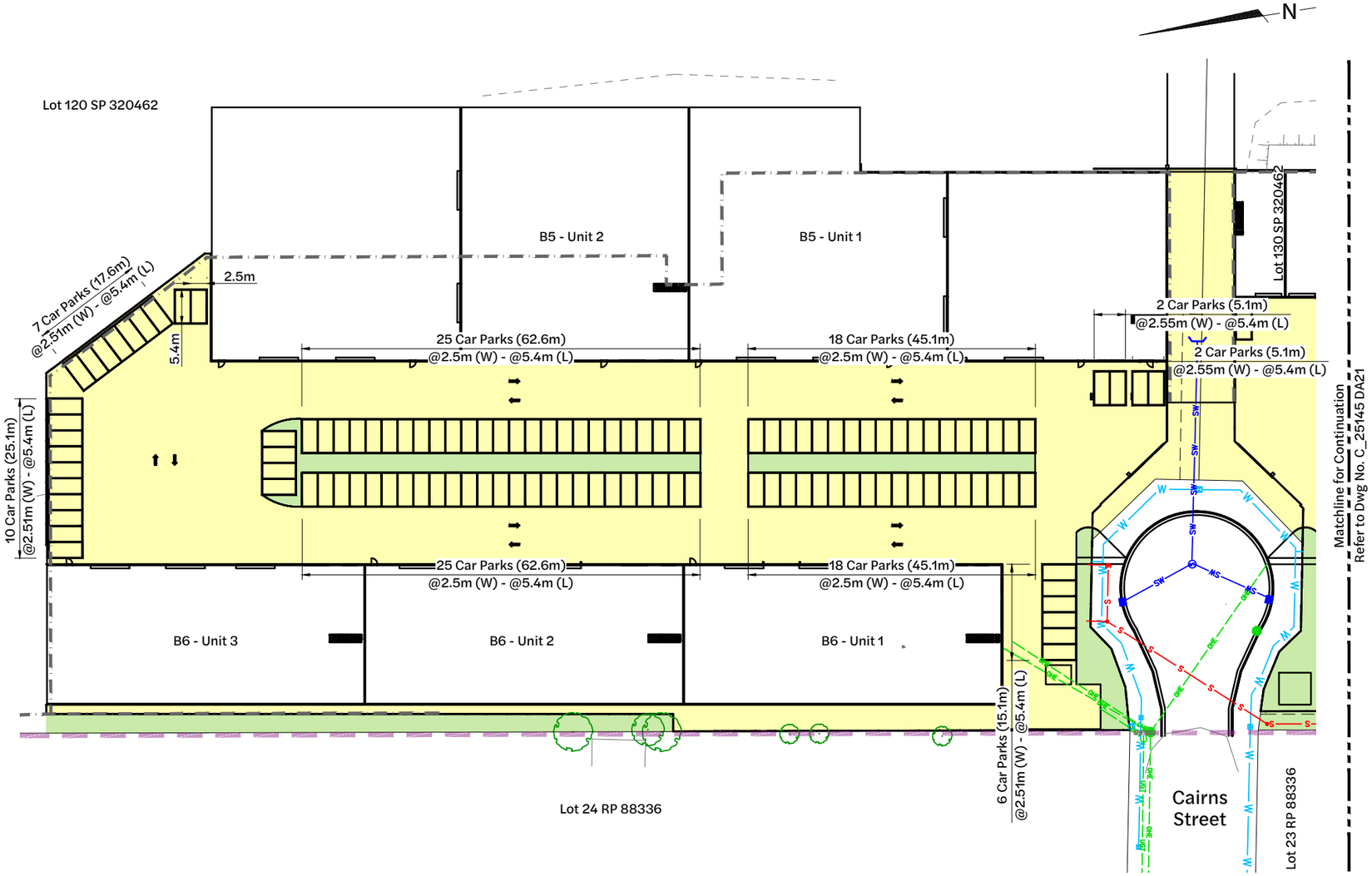
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

- Site Boundary
- Concrete Pavement
- Grassed

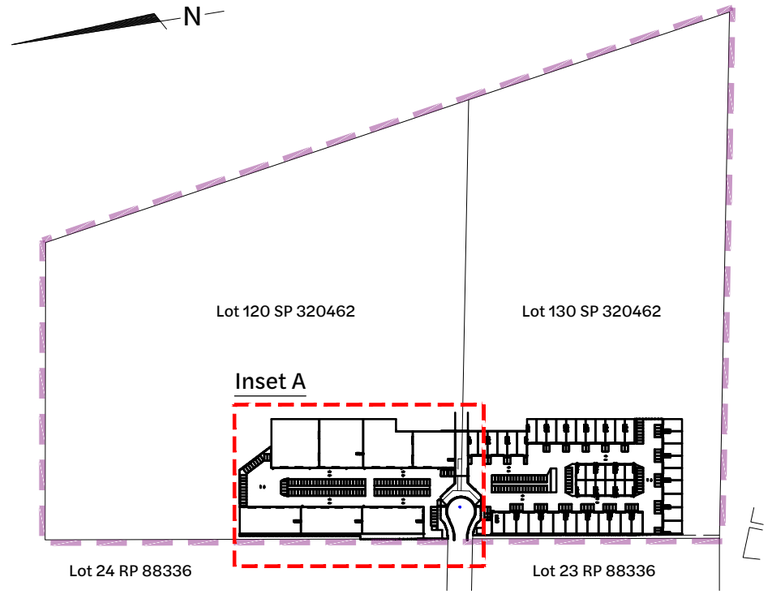
Pavement Marking Legend

Pavement Markings	Length(m)	Gap(m)	Width(mm)
Park Line	-	-	100



Inset A - Internal Roadworks Layout Plan

1:400 Scale



Locality Plan

1:2500 Scale

BEFORE YOU DIG www.byda.com.au

Note:

This drawing is conceptual only and must be viewed in conjunction with C_25145 R002_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:400 4 0 4 8 12 16 20m A1
1:800 A3
1:2500 50 0 50 100m A1
1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Internal Roadworks Layout Plan (Sheet 1 of 2)

Project No.	Drawing No.	Revision
C_25145	DA20	4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA20_INTERNAL ROADWORKS LAYOUT PLAN.DWG LAST SAVED BY: CONTE

Existing Legend

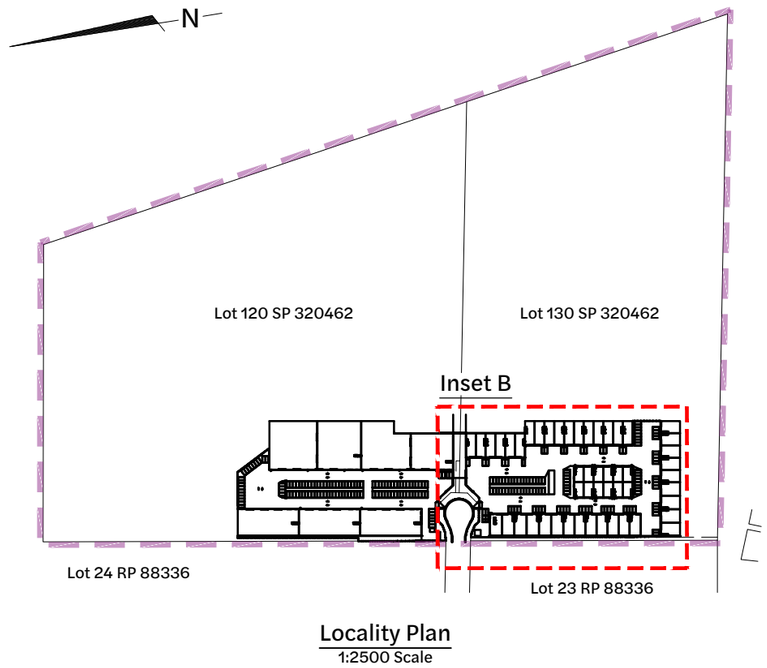
- Property Boundary
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

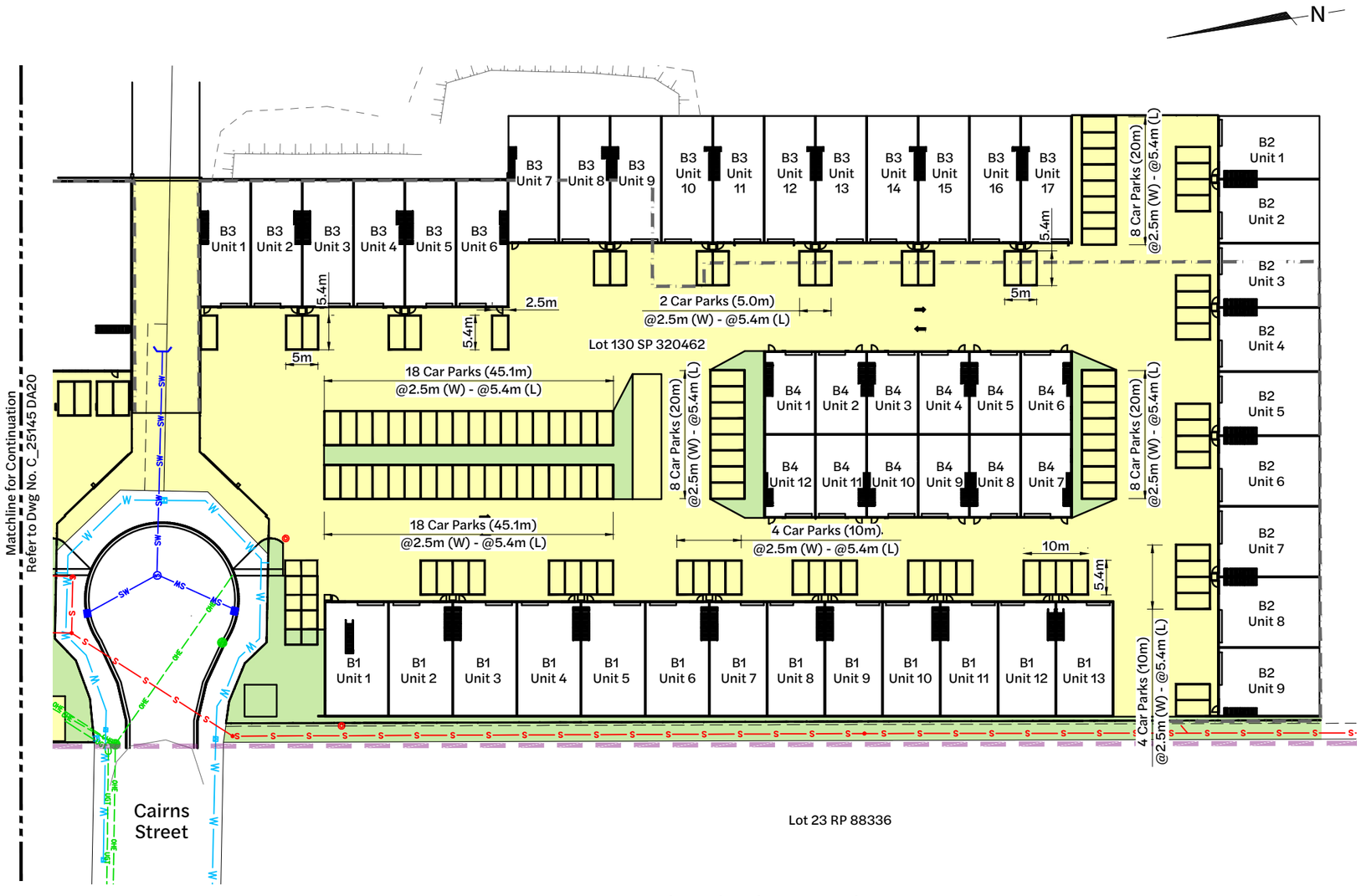
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

- Site Boundary
- Concrete Pavement
- Grassed



Locality Plan
1:2500 Scale



Inset B - Internal Roadworks Layout Plan
1:400 Scale

BEFORE YOU DIG www.byda.com.au

Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R002_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval** Not for Construction

Scale: 1:400, 1:800, 1:2500, 1:5000 (4 0 4 8 12 16 20m A1; A3; 50 0 50 100m A1; A3)

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer: All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Internal Roadworks Layout Plan (Sheet 2 of 2)

Project No.: C_25145 | Drawing No.: DA21 | Revision: 4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\3D_MODEL\AUTOCAD\C_25145 DA20_INTERNAL ROADWORKS LAYOUT PLAN.DWG LAST SAVED BY: CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

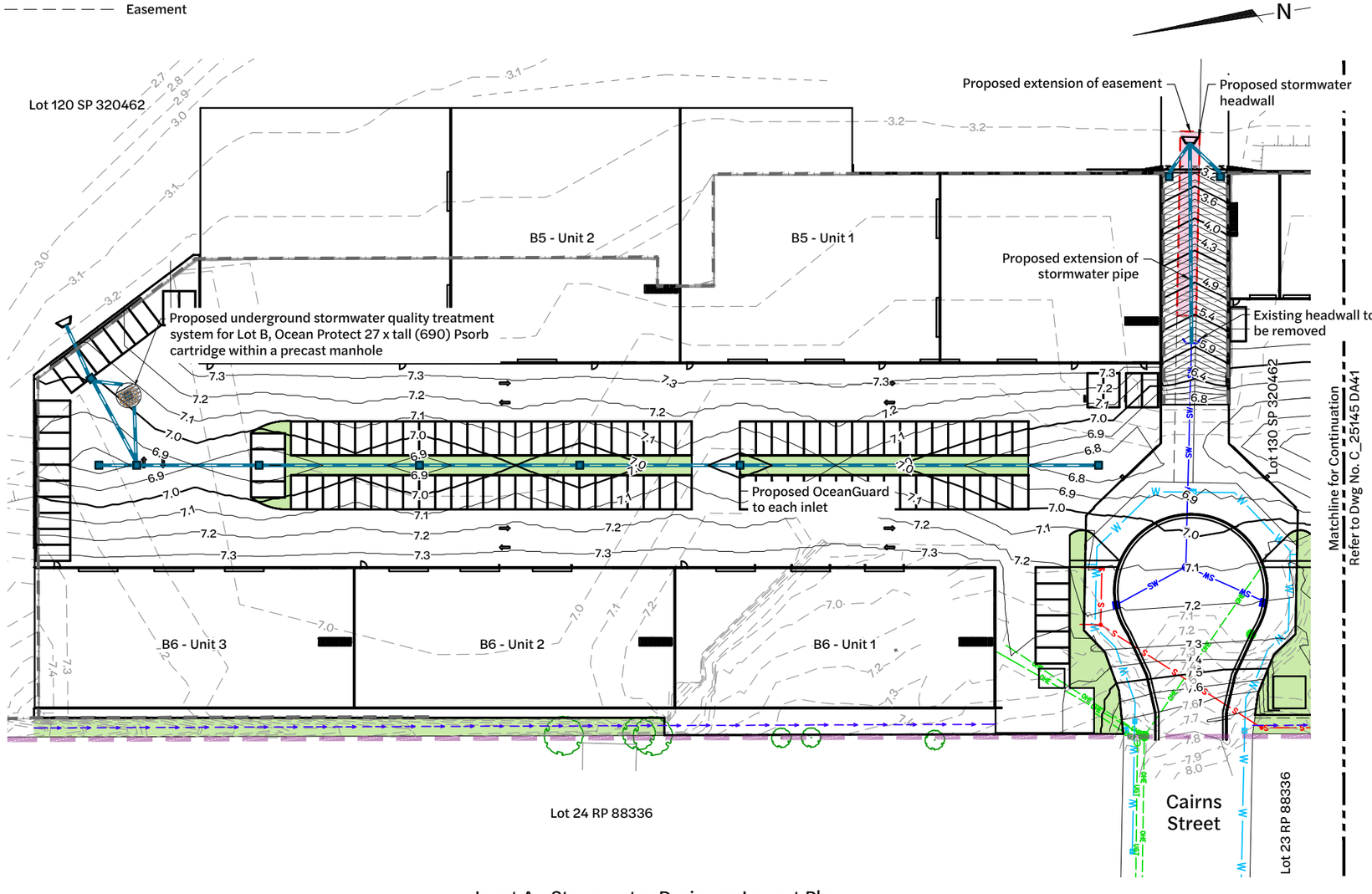
- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

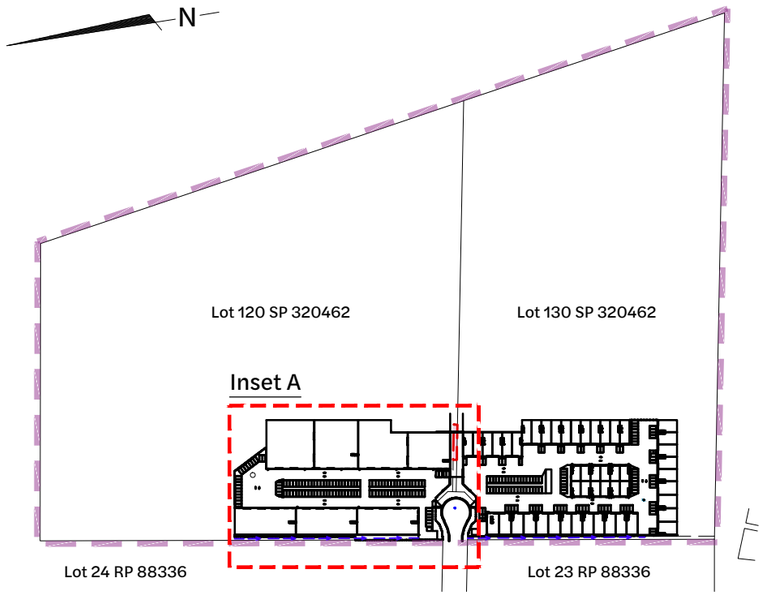
- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor
- Swale Invert

Proposed Legend

- Gully Pit
- Stormwater Drainage
- Stormwater Headwall
- Grassed
- Easement



Inset A - Stormwater Drainage Layout Plan
1:400 Scale



Locality Plan
1:2500 Scale

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Stormwater Management Plan by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG
5	04.03.26	Issued for Approval	DT	DT

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:400 4 0 4 8 12 16 20m A1
1:800 A3
1:2500 50 0 50 100m A1
1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Stormwater Drainage Layout Plan (Sheet 1 of 2)

Project No. C_25145 | Drawing No. DA40 | Revision 4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA40_STORMWATER DRAINAGE LAYOUT PLAN.DWG LAST SAVED BY:KARUN

Existing Legend

- Property Boundary
- Surface Contour (0.1)
- Water Reticulation (W)
- Water Meter
- Water Valve
- Overhead Electrical (OHE)
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

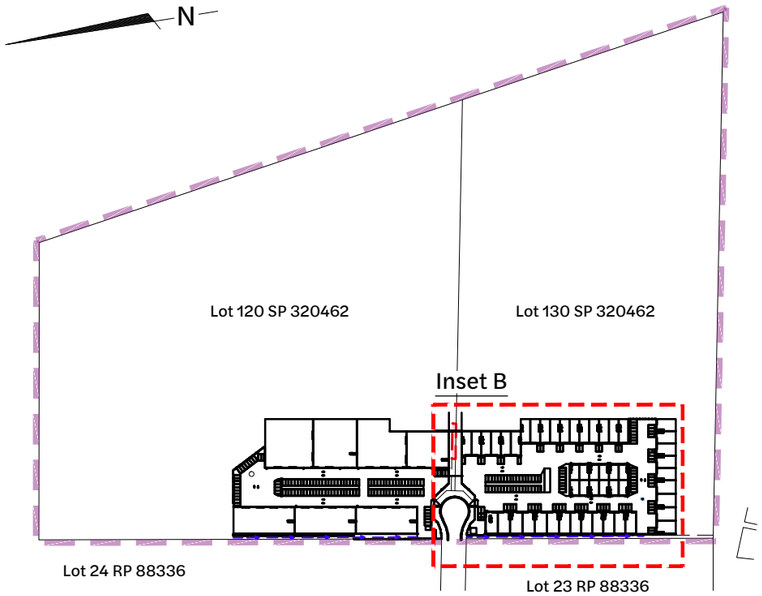
- Water Hydrant
- Sewer Reticulation (S)
- Sewer Manhole
- Stormwater Reticulation (SW)
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

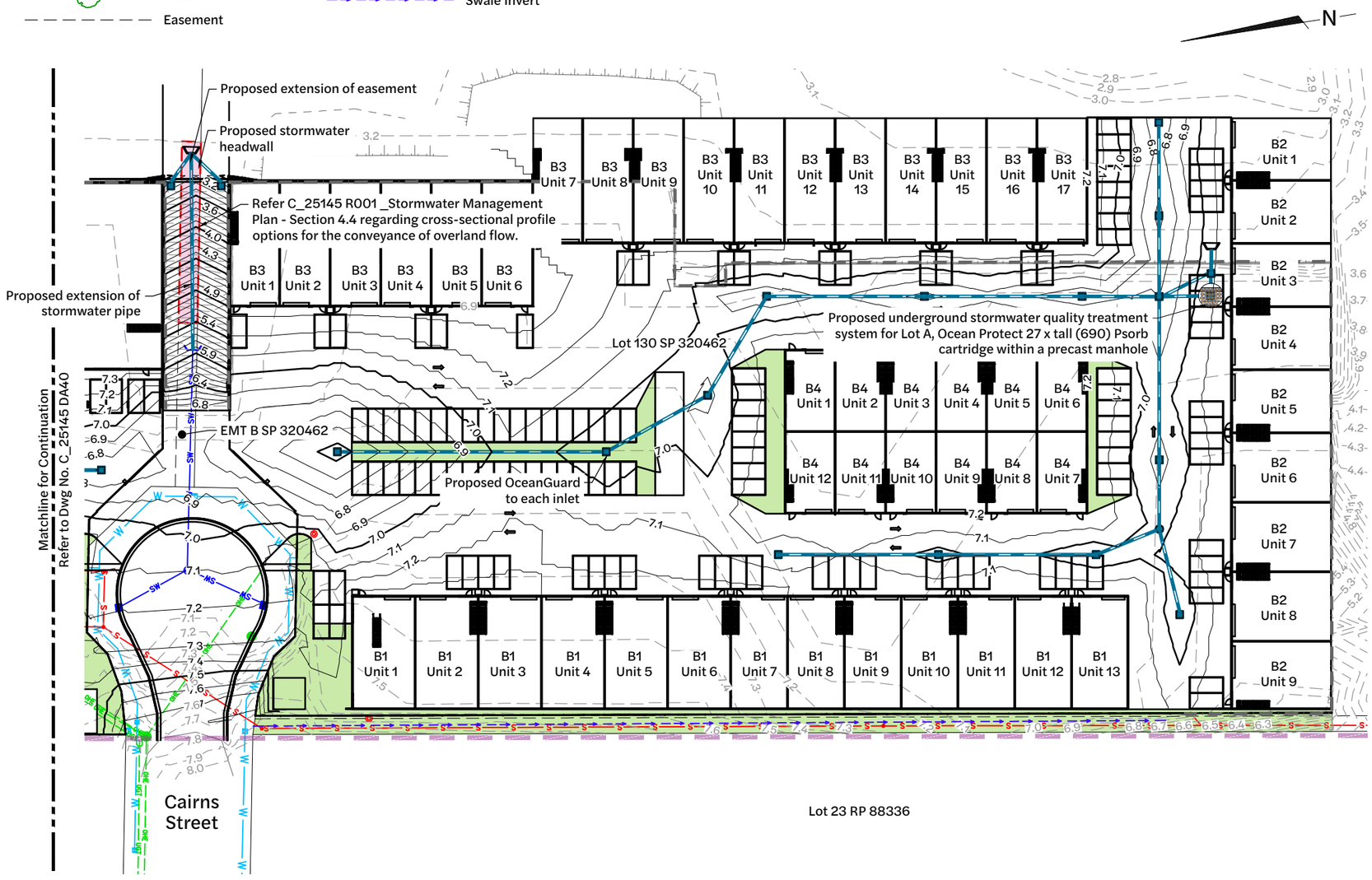
- Site Boundary
- Design Surface Contour Major (0.5)
- Design Surface Contour Minor (0.1)
- Swale Invert

Proposed Legend

- Gully Pit
- Stormwater Drainage
- Stormwater Headwall
- Stormwater Manhole
- Grassed
- Easement



Locality Plan
1:2500 Scale



Inset B - Stormwater Drainage Layout Plan
1:400 Scale

BEFORE YOU DIG www.byda.com.au

Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Stormwater Management Plan by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval** — Not for Construction

Scale
1:400 4 0 4 8 12 16 20m A1
1:800 A3
1:2500 50 0 50 100m A1
1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Stormwater Drainage Layout Plan (Sheet 2 of 2)

Project No. C_25145 | Drawing No. DA41 | Revision 4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\6_MODEL\AUTOCAD\C_25145 DA40_STORMWATER DRAINAGE LAYOUT PLAN.DWG LAST SAVED BY:VARUN

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)
- Catchment Boundary
- Drainage Flow Arrow
- Catchment Label

Proposed Legend

- Site Boundary

Existing Catchment		
Catchment	E1	E2
Area	15,679m²	15,538m²
Imperviousness	98%	96%
Time of Concentration	11 minutes	11 minutes

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Note:
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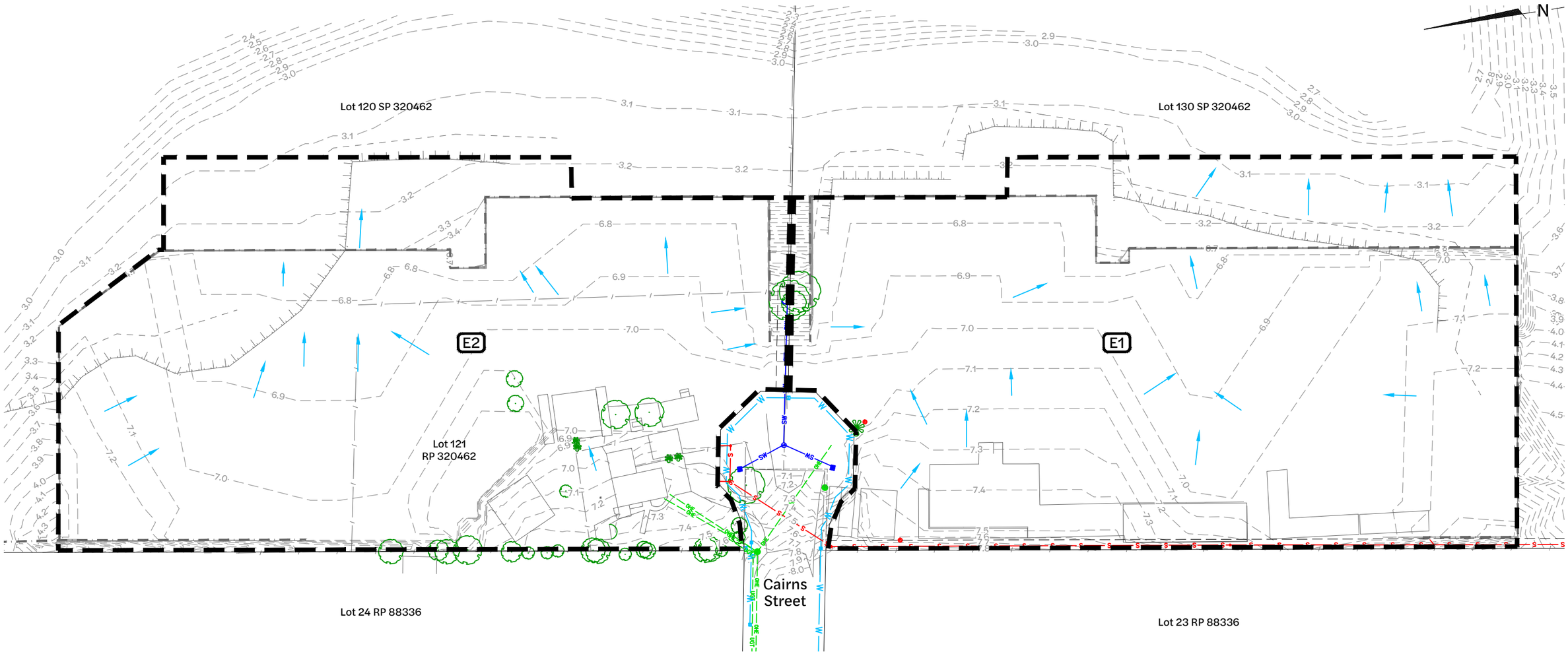

Existing Catchment Plan
1:500 Scale

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:500 / 1:1000 — 10 5 0 10 20m — A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Existing Catchment Plan

Project No.	Drawing No.	Revision
C_25145	DA42	3

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA42_EXISTING CATCHMENT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Water Hydrant
- Sewer Reticulation
- Easement

Existing Legend

- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole
- Retaining wall by others as per previous approval (OW/176/2020)

Proposed Legend

- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor
- Catchment Boundary
- Drainage Flow Arrow
- Catchment Label

Developed Catchment		
Catchment	D1	D2
Area	15,679m²	15,538m²
Imperviousness	99%	99%
Time of Concentration	7 minutes	7 minutes

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Note:
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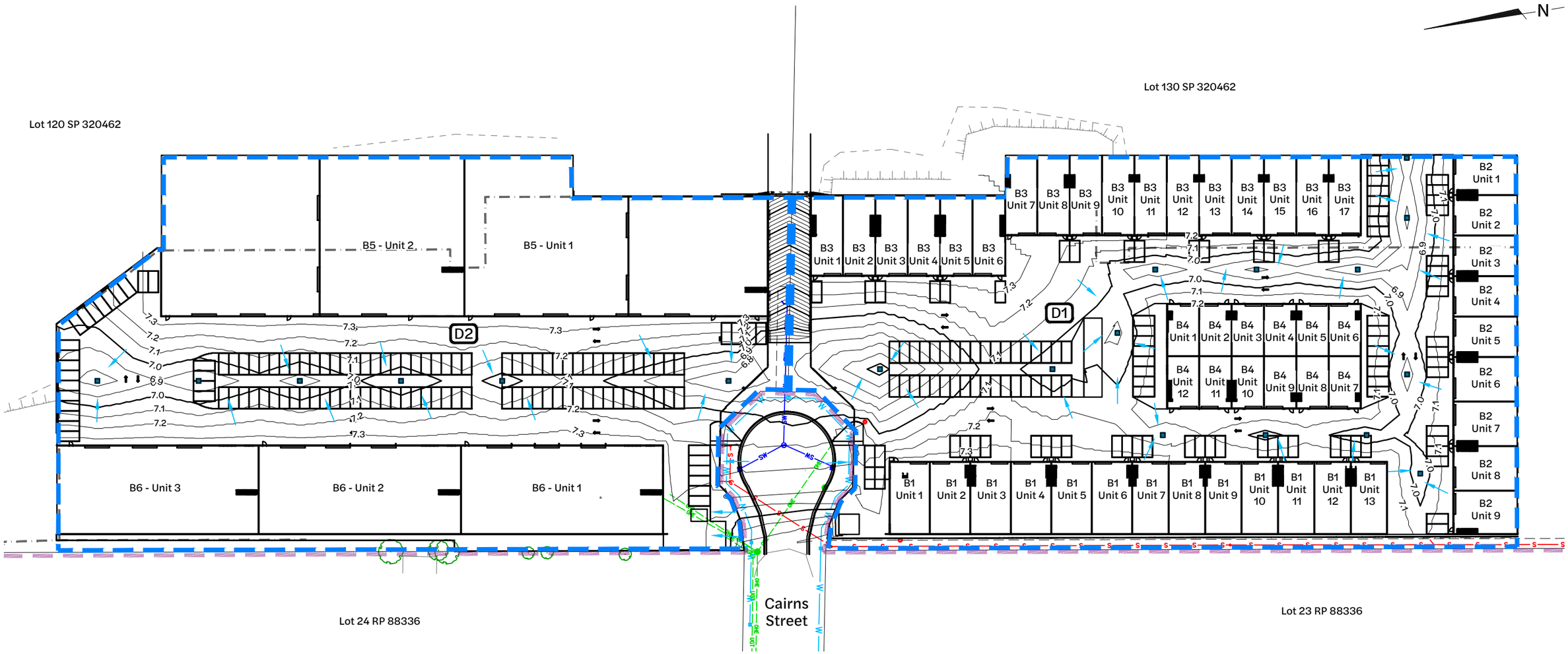

Developed Catchment Plan
1:500 Scale

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:500 / 1:1000 — 10 5 0 10 20m — A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
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Context Engineering

Drawing Title: Developed Catchment Plan

Project No.	Drawing No.	Revision
C_25145	DA43	5

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\IE_MODEL\AUTOCAD\C_25145 DA43_DEVELOPED CATCHMENT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole

Proposed Legend

- Site Boundary
- Catchment Boundary

Quality Catchment Area

Legend	Description	Lot A Area (ha)	Lot B Area (ha)
	Roof	0.874	0.986
	Driveway	0.664	0.522
	Pervious	0.107	0.075
	Bypass (Pervious)	0.008	0.000

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Note:
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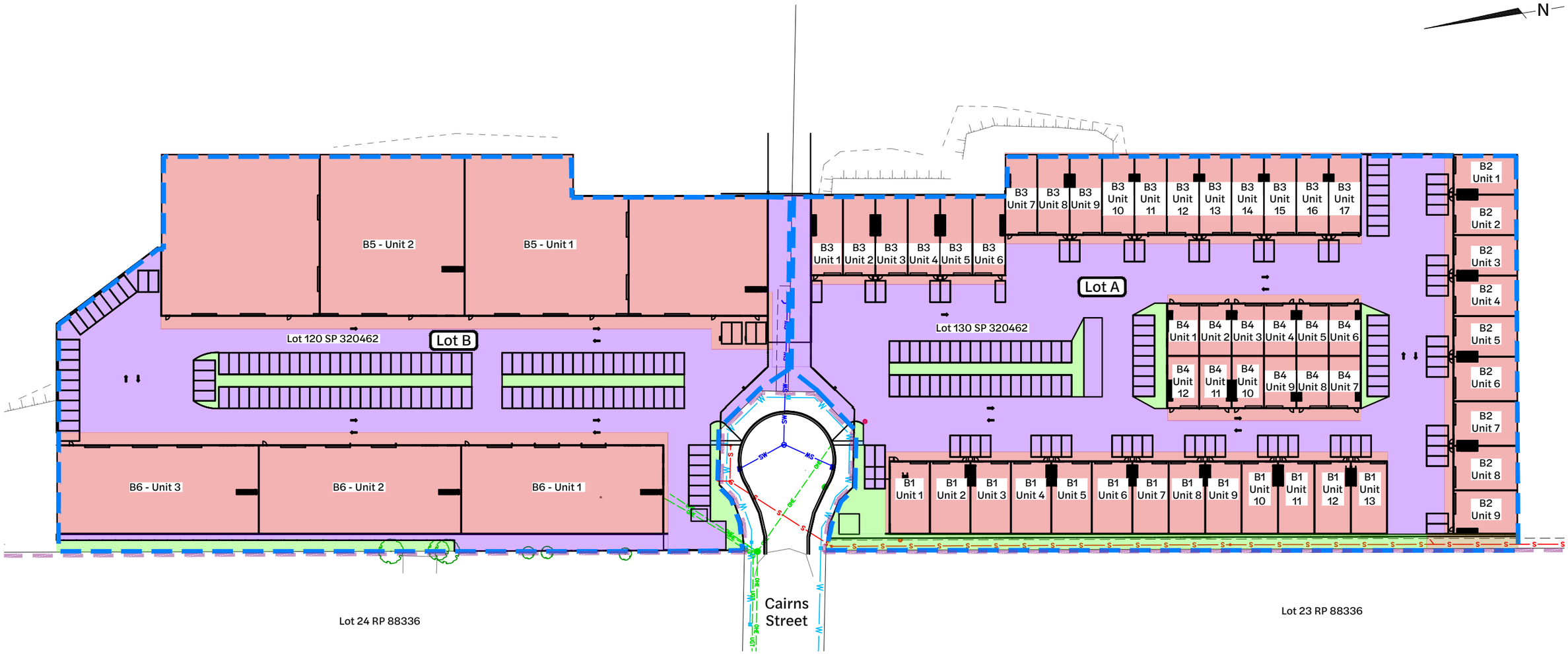

Quality Catchment Plan
1:500 Scale

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	14.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	DT
4	18.02.26	Issued for Approval	CG	CG
5	04.03.26	Issued for Approval	DT	DT

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:500 / 1:1000 — 10 5 0 10 20m — A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
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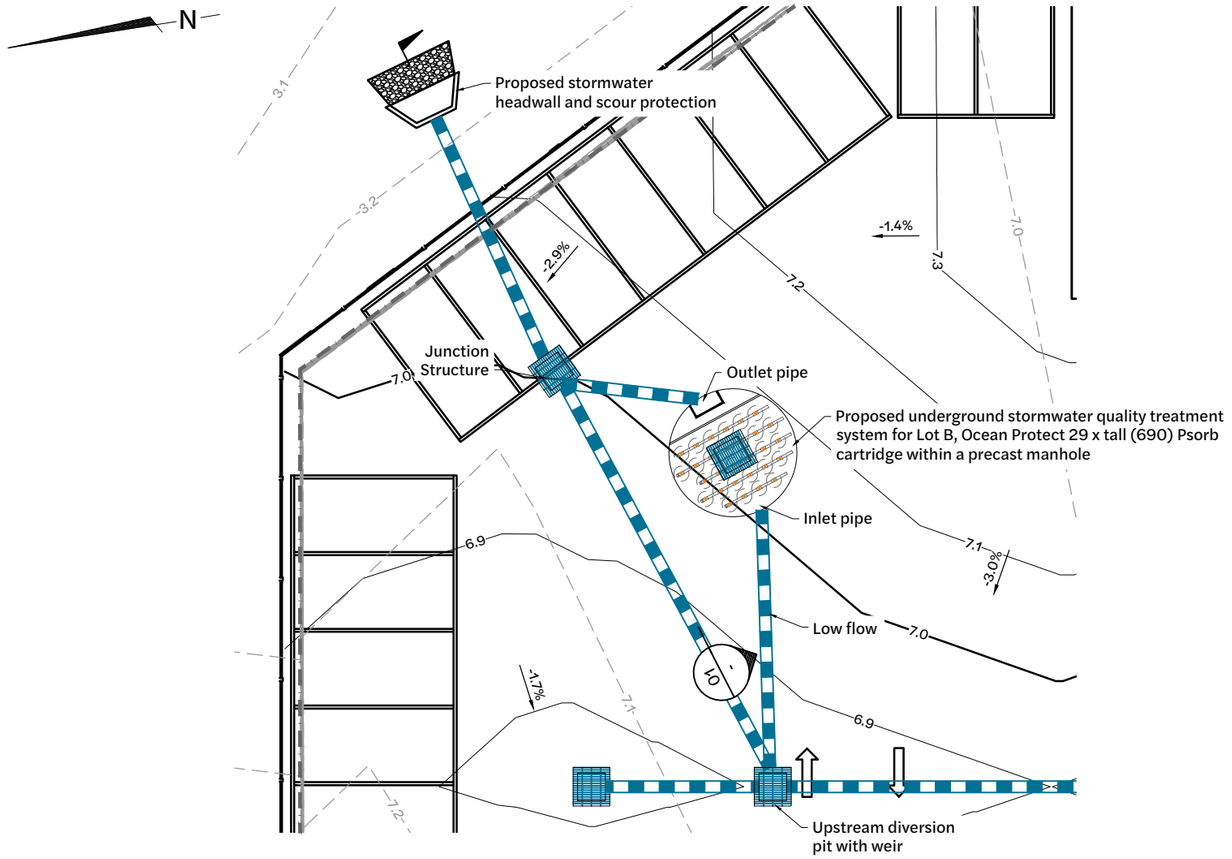
Context Engineering

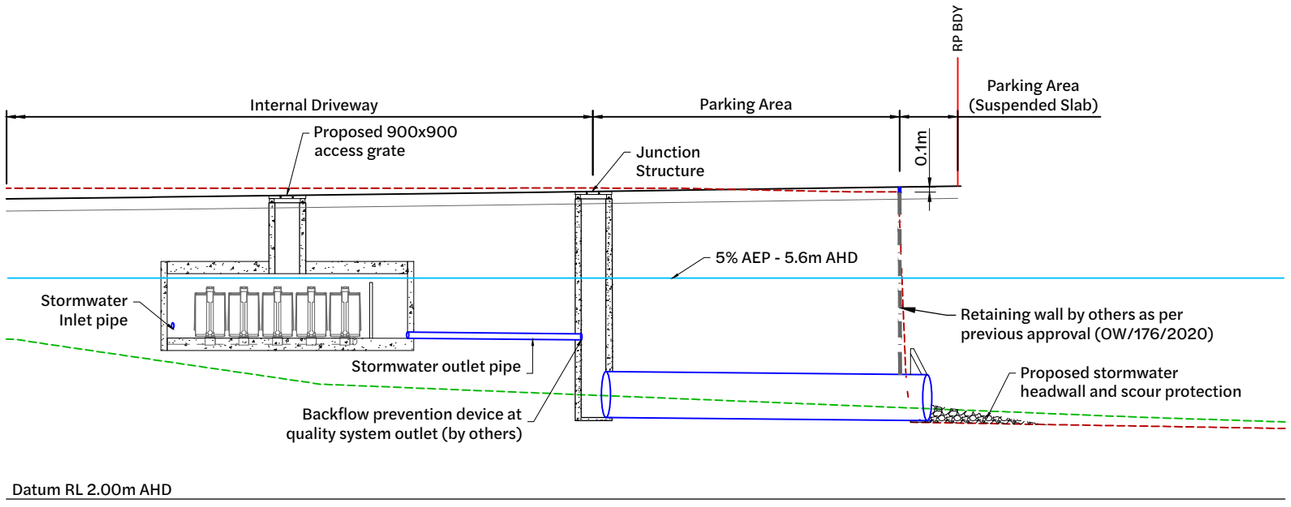
Drawing Title: Quality Catchment Plan

Project No. C_25145 | Drawing No. DA44 | Revision 3

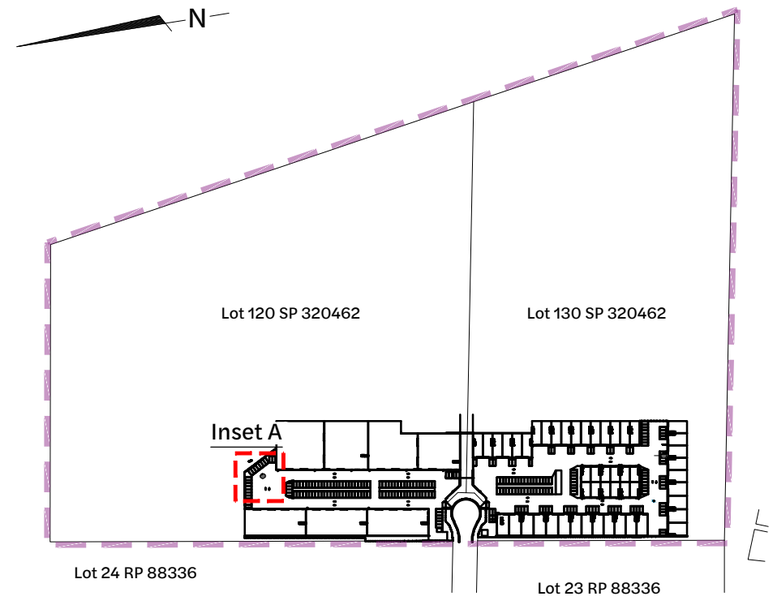
FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA44_QUALITY CATCHMENT PLAN.DWG LAST SAVED BY:VARUN



Inset A - Stormwater Quality Treatment Detail Plan View
1:100 Scale



Section 01 - Stormwater Quality Treatment Section Plan View
1:50 Scale



Locality Plan
1:2500 Scale

Existing Legend
- Property Boundary
- Surface Contour (0.1)
- Retaining wall by others as per previous approval (OW/176/2020)
- Retaining wall extension

Proposed Legend
- Site Boundary
- Design Surface Contour Major (0.5)
- Design Surface Contour Minor (0.1)
- Gully Pit
- Stormwater Drainage
- Proposed Stormwter Headwall

Section Legend
- Existing Surface as per survey (AJS Surveys dated 09/07/2020)
- Design surface as per previous approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/underside of suspended slab
- Property Boundary

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG
5	04.03.26	Issued for Approval	DT	DT

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:50 1 0.5 0 1 2m A1
1:100 A3
1:100 1 0 1 2 3 4 5m A1
1:200 A3
1:2500 50 0 50 100m A1
1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

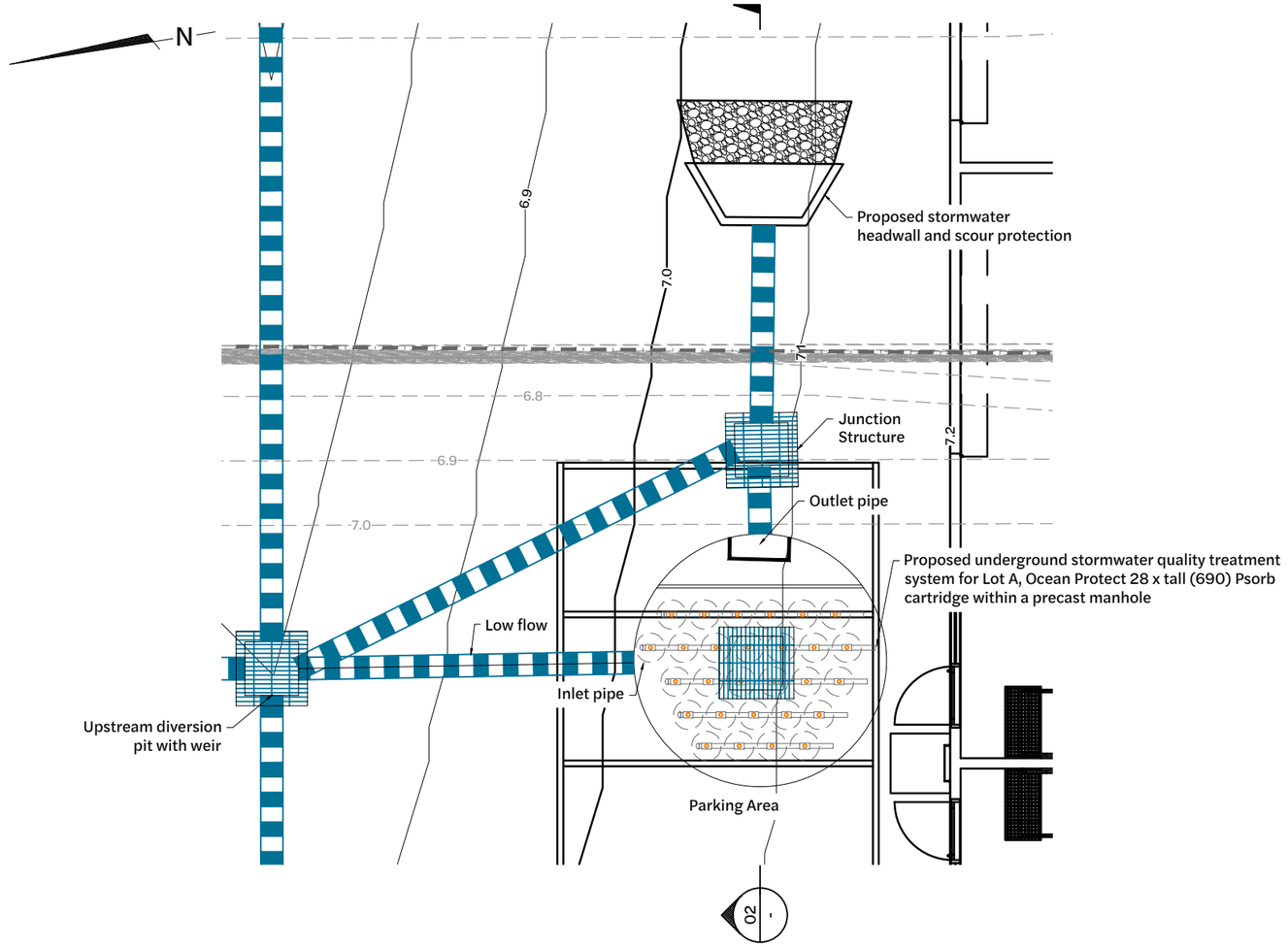
Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Stormwater Structure Details (Sheet 1 of 2)

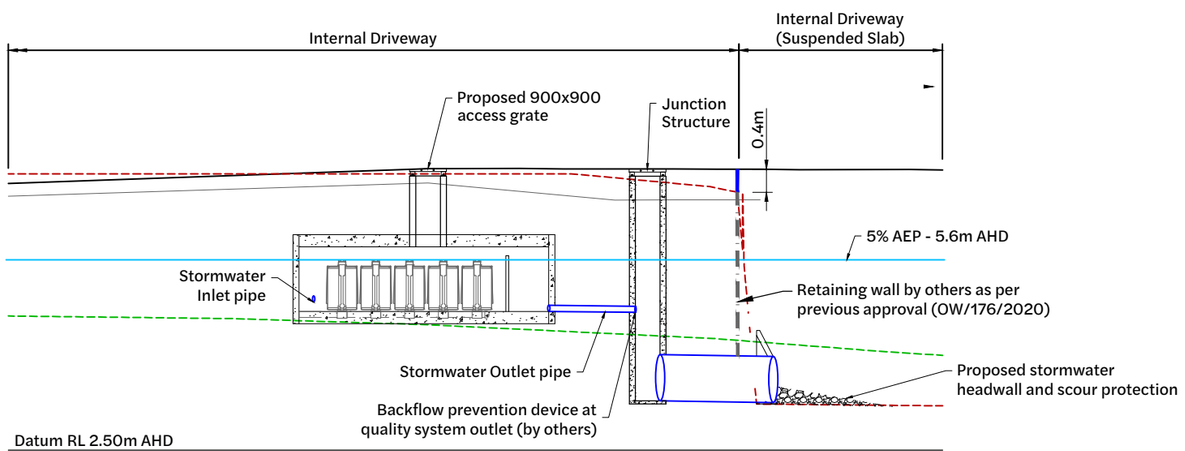
Project No. C_25145 | Drawing No. DA45 | Revision 3

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA45_STORMWATER STRUCTURE DETAILS.DWG LAST SAVED BY:CONTE



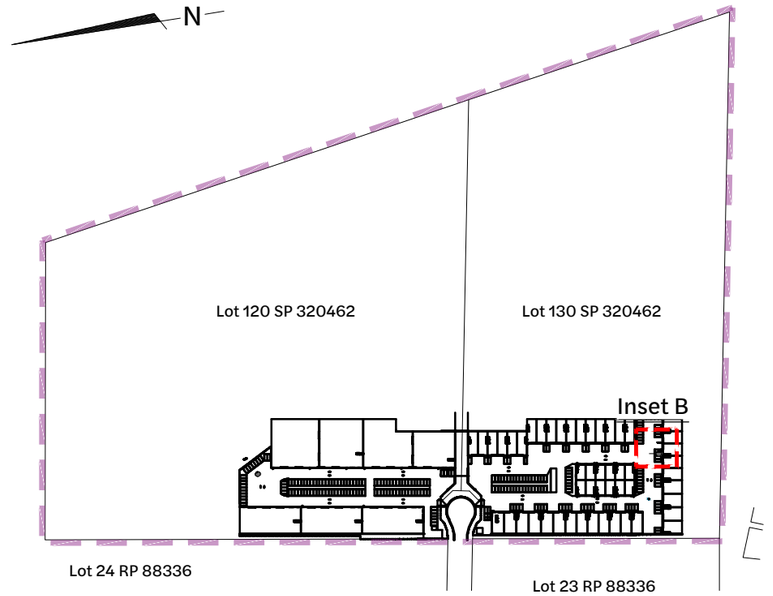
Inset B - Stormwater Quality Treatment Detail Plan View

1:50 Scale



Section 02 - Stormwater Quality Treatment Section Plan View

1:50 Scale



Locality Plan

1:2500 Scale

Existing Legend

- Property Boundary
- 0.1 Surface Contour
- Retaining wall by others as per previous approval (OW/176/2020)
- Retaining wall extension

Proposed Legend

- Site Boundary
- 0.5 Design Surface Contour Major
- 0.1 Design Surface Contour Minor
- Gully Pit
- Stormwater Drainage
- Proposed Stormwter Headwall

Section Legend

- Existing Surface as per survey (AJS Surveys dated 09/07/2020)
- Design surface as per previous approval (OW/176/2020)
- Proposed Design Surface
- Proposed Bulk Earthworks Surface/underside of suspended slab
- Property Boundary

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval** Not for Construction

Scale: 1:50, 1:100, 1:2500, 1:5000 — A1, A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer: All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Stormwater Structure Details (Sheet 2 of 2)

Project No.	Drawing No.	Revision
C_25145	DA46	5

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\16_MODEL\AUTOCAD\C_25145 DA45_STORMWATER STRUCTURE DETAILS.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

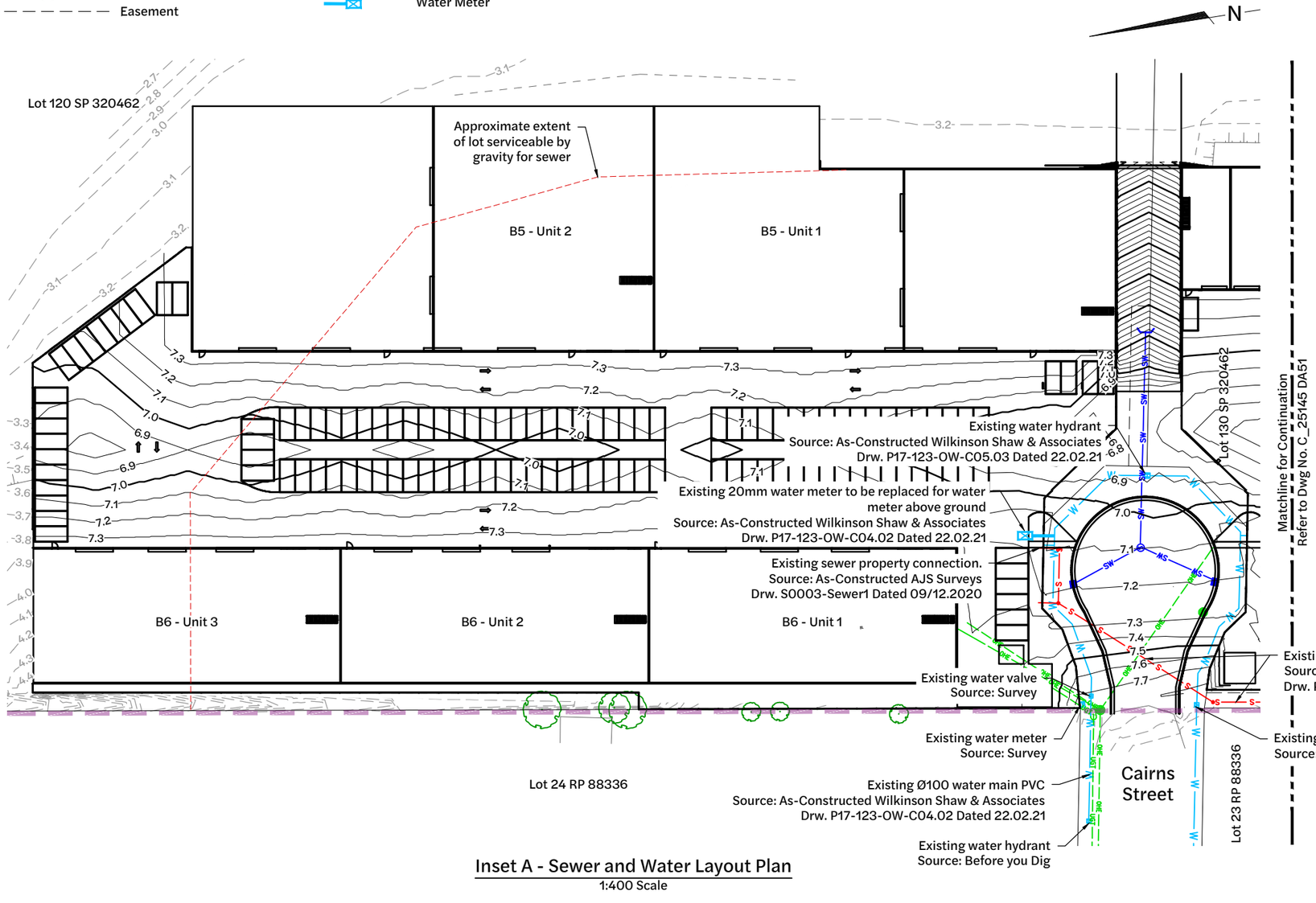
Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole

Proposed Legend

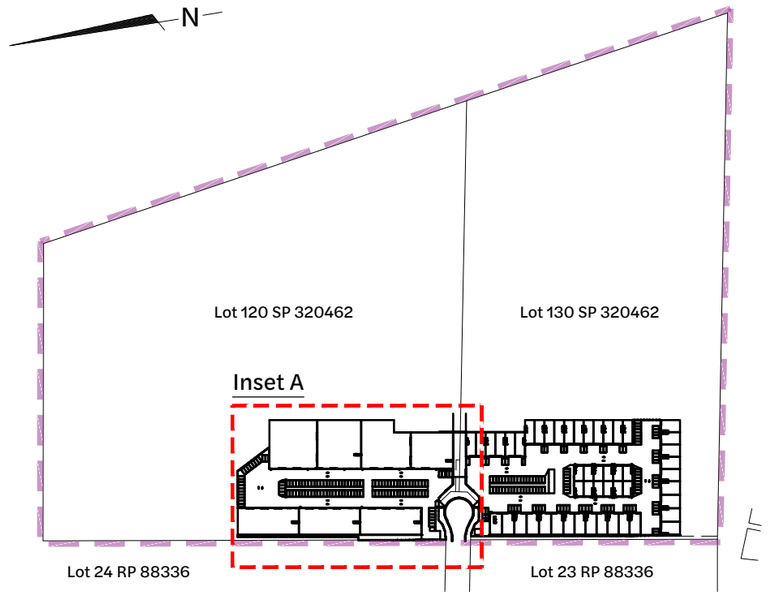
- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor
- Extent of Gravity Serviceability
- Water Meter

Note:
Extent of serviceability based on 450mm cover and 1 in 100 grade



Inset A - Sewer and Water Layout Plan

1:400 Scale



Locality Plan

1:2500 Scale

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Note:
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Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE
4	18.02.26	Issued for Approval	CG	CG

QR Code

Status: **Issued for Approval**
Not for Construction

Scale
1:400 / 1:800 — 4 0 4 8 12 16 20m — A1 / A3
1:2500 / 1:5000 — 50 0 50 100m — A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
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Context Engineering

Drawing Title: Water & Sewer Layout Plan (Sheet 1 of 2)

Project No.	Drawing No.	Revision
C_25145	DA50	5

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\IE_MODEL\AUTOCAD\C_25145 DA50_WATER & SEWER LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree
- Easement

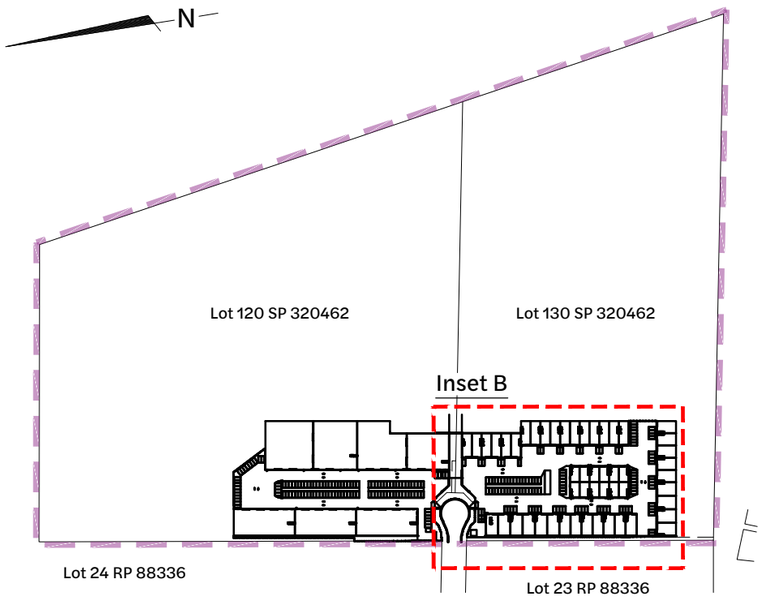
Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole

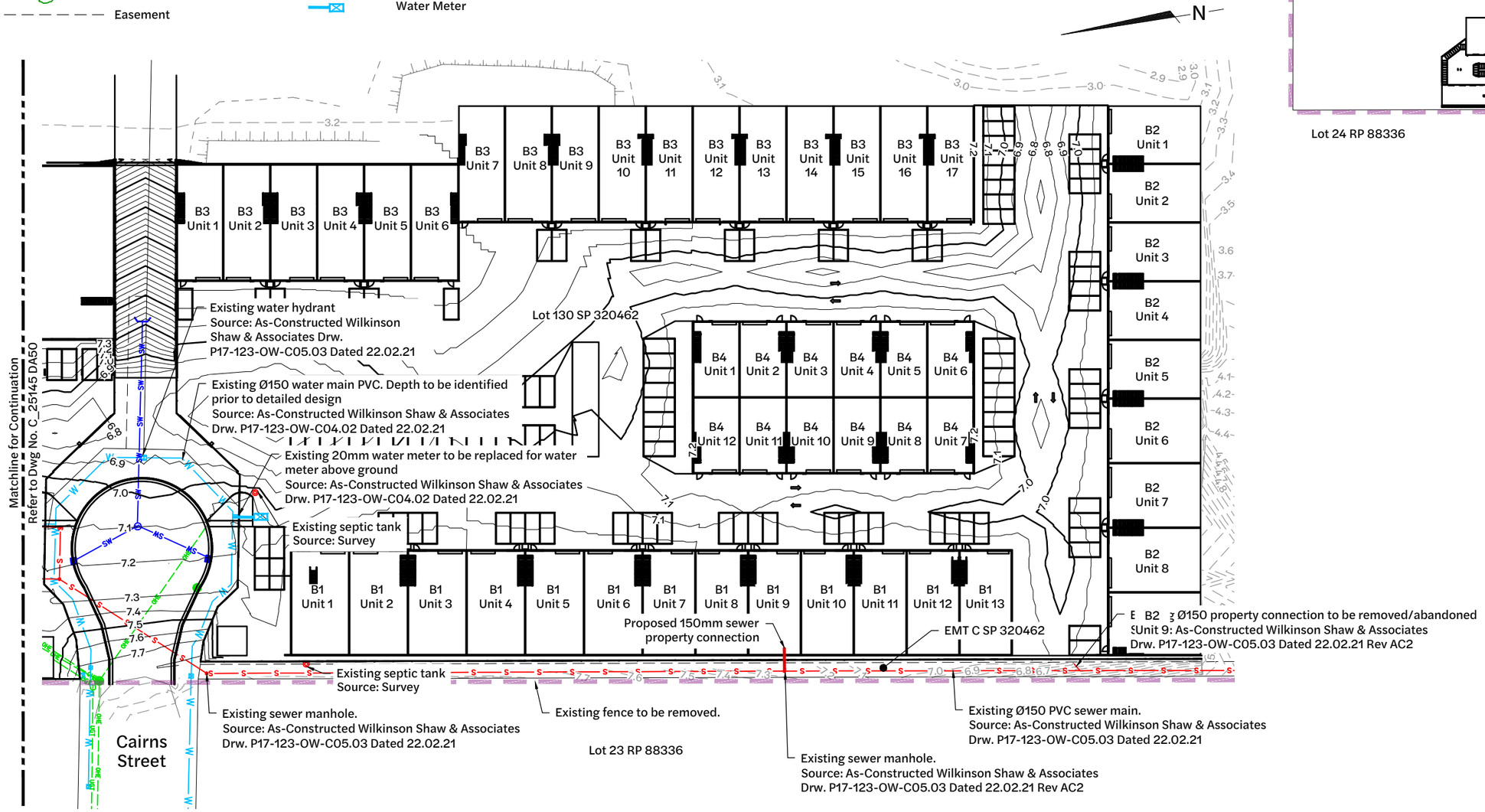
Proposed Legend

- Site Boundary
- Design Surface Contour Major
- Design Surface Contour Minor
- Sewer Reticulation
- Water Meter

Note:
Extent of serviceability based on 450mm cover and 1 in 100 grade



Locality Plan
1:2500 Scale



Inset B - Sewer and Water Layout Plan
1:400 Scale

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Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R001_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval**
Not for Construction

Scale: 1:400 4 0 4 8 12 16 20m A1; 1:800 A3; 1:2500 50 0 50 100m A1; 1:5000 A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer
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Context Engineering

Drawing Title: Water & Sewer Layout Plan (Sheet 2 of 2)

Project No.: C_25145
Drawing No.: DA51
Revision: 5

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA50_WATER & SEWER LAYOUT PLAN.DWG LAST SAVED BY:CONTE

Existing Legend

- Property Boundary
- Surface Contour
- Water Reticulation
- Water Meter
- Water Valve
- Overhead Electrical
- Telstra Pit
- Power Pole
- Fence
- Bottom of Bank
- Top of Bank
- Concrete
- Tree

Existing Legend

- Water Hydrant
- Sewer Reticulation
- Sewer Manhole
- Stormwater Reticulation
- Stormwater Inlet Pit
- Stormwater Headwall
- Stormwater Manhole

Proposed Legend

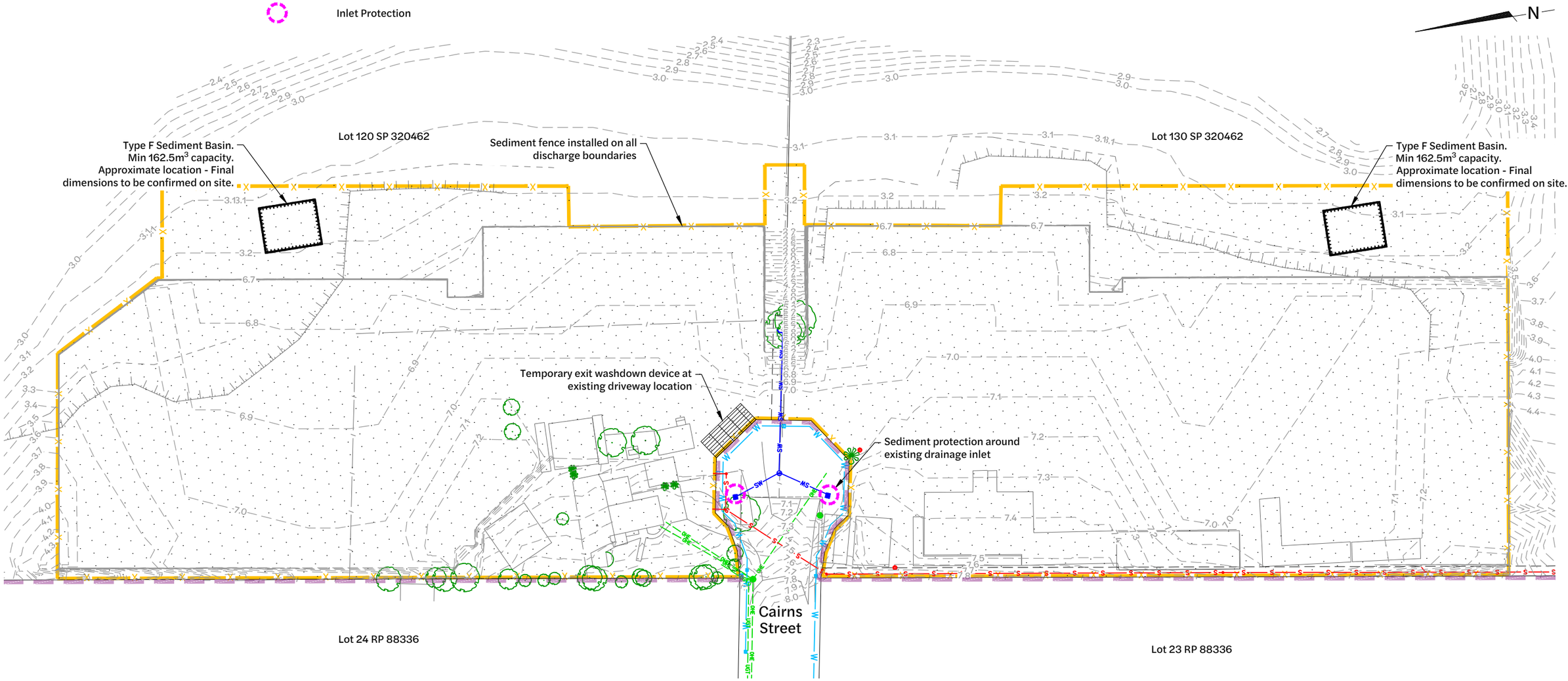
- Site Boundary
- Proposed Sediment Fence (or as directed by Site Superintendent)
- Temporary Exit Washdown Grate
- Proposed Area of Disturbance
- Inlet Protection

Sediment Basin Calculations

1.	Sediment Basin		= "Type F"
2.	Settling Volume		= 400 * Cv * 3.249 (Ha) = 649.8m³
	Where:	Cv Area	= 0.5 (Open Soil) = 0.610ha
3.	Sediment Storage Volume		= 50% * Settling Volume = 325m³

BEFORE YOU DIG www.byda.com.au

Note:
This drawing is conceptual only and must be viewed in conjunction with C_25145 R002_Engineering Services Report by Context Engineering. The proposed design is preliminary, based on available information at the time of issue and is subject to change as part of refinements undertaken within the detailed design phase.



Erosion and Sediment control Layout Plan

1:500 Scale

Revision	Date	Issue Details	Drawn	Designed
1	19.12.25	Issued for Approval	PD	JE
2	23.01.26	Issued for Approval (Update Architectural plans)	PD	JE
3	29.01.26	Issued for Approval (Update Architectural plans)	PD	JE

QR Code

Status: **Issued for Approval** — Not for Construction

Scale: 1:500 / 1:1000 — 10 5 0 10 20m — A1 / A3

Client: Howell constructions

Project: **60-63 Cairns Street, Loganholme**

Disclaimer: All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context Engineering

Drawing Title: Erosion & Sediment Control Layout Plan

Project No.	Drawing No.	Revision
C_25145	DA80	4

FILE: Z:\PROJECTS\C_25145 - 63 CAIRNS STREET LOGANHOLME\E_MODEL\AUTOCAD\C_25145 DA80_EROSION & SEDIMENT CONTROL LAYOUT PLAN.DWG LAST SAVED BY:CONTE

63 Cairns Street, Loganholme

Flood Assessment Report

Appendix D **LCC Flood Reports**

CITY OF LOGAN

PROPERTY FLOOD REPORT

Property Details

Address: 63-65 Cairns Street LOGANHOLME QLD 4129

Lot/Plan: Lot 130 SP 320462

Size/Area: 82,608 m^2

Property Key: 392318

Catchment(s): Logan River, Unnamed_43

View Logan's catchments and waterways map (PDF)

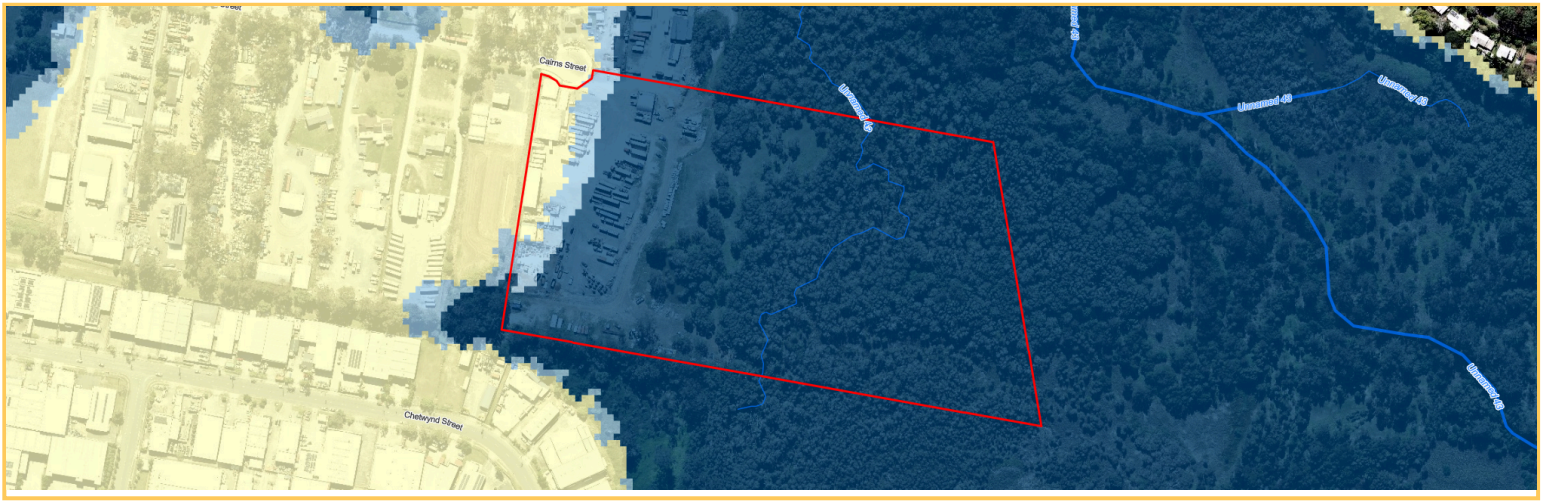
Summary Flood Assessment

The table below presents the flood risks applicable to the selected property. There may be multiple studies and flood scenarios affecting the property, particularly for larger sites.

Assessment	Details
Risk area(s)	High, Moderate, Low
Investigation area	Not applicable
Isolation risk	Not applicable
River flooding	20% chance of a flood this size or larger happening in any given year
Creek flooding	May apply - subject to further study
Overland flow	Applies. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice. Overland flow is water (stormwater run-off) that travels over land during heavy rainfall events. It generally occurs quickly and for short durations.

Latest Flood Risk

The extract below comes from the flood risk map based on the latest (most recent) flood studies accepted by Council applicable for this property.



LEGEND

High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.

Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.

Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.

Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

The flood studies this map is based on consider the impacts of climate change, as required by Queensland's planning legislation and policies. The map considers the whole floodplain for Logan and reflects a risk-based approach that takes into account:

- How likely a flood of a given size is in any given year, and
- What the impact or level of danger of that flood is.

Flood Levels

The table below displays flood levels from the most recently accepted flood studies affecting this property. To view the flood study documents please see the Flood page on Council's website.

The levels are measured in Australian Height Datum (AHD), where sea level is approximately zero (0) metres. The level displayed in the table below is the maximum flood level on the property for that event (likelihood). For some properties, particularly large properties or those on a significant slope, flood levels can vary significantly.

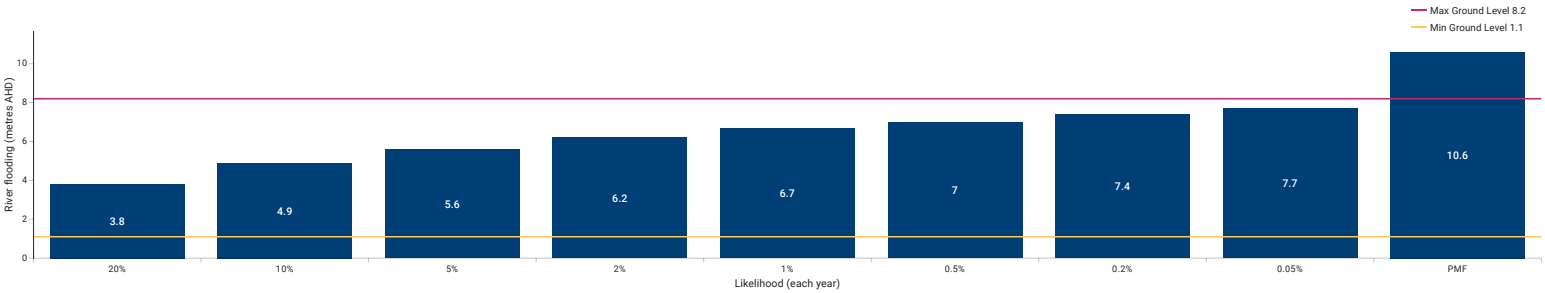
The most likely flood scenarios is shown at the top of the table, with the Probable Maximum Flood (PMF) at the bottom, being the least likely but most serious flood scenario.

Some properties may be impacted by only river flooding or only creek flooding, and some may be impacted by both. There may also be other sources of inundation that may impact the property and affect flood levels, based on overland flow or local creeks where studies have not yet been completed.

Study: Logan and Albert Rivers Flood Study 2023

Likelihood (each year)	River flooding
20% chance	3.8 metres AHD
10% chance	4.9 metres AHD
5% chance	5.6 metres AHD
2% chance	6.2 metres AHD
1% chance	6.7 metres AHD
0.5% chance	7.0 metres AHD
0.2% chance	7.4 metres AHD
0.05% chance	7.7 metres AHD
PMF	10.6 metres AHD

Flood and Ground Levels in metres AHD



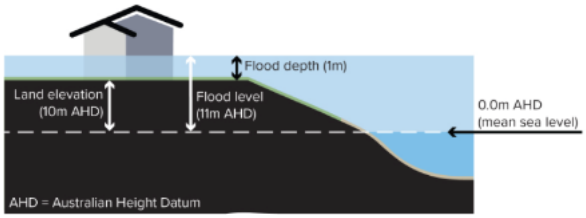
Ground Levels

Ground levels are based on an aerial LiDAR (Light Detection and Ranging) survey, which uses millions of laser point measurements to build a model of the ground surface. The source of the data is displayed in the table below so that you know when the survey was conducted.

Ground level	Details
Minimum ground level	1.1 metres AHD
Maximum ground level	8.2 metres AHD

Source: 2021 Digital elevation model (1 metre grid)

The projected flood depth (how deep the water may be above ground, in metres) is the difference between the flood levels in the section above and the ground levels in this table. The diagram below provides an example (land elevation is ground level).



Overland Flow

Overland flow is water (stormwater/rainfall run-off) that exceeds the capacity of drains, pipes and channels during heavy rainfall events and travels over land towards waterways. It generally occurs quickly and for shorter periods of time. The impact of overland flow is dependent on local conditions, so the mapping is a guide only. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice.

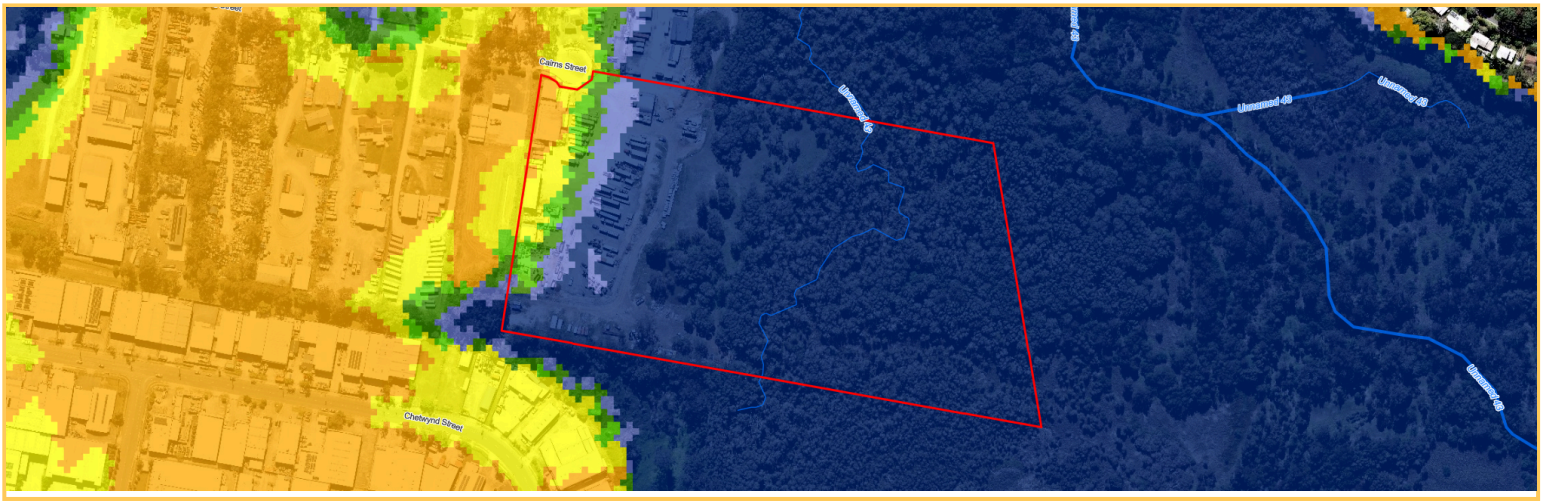


LEGEND

Overland flow extent (areas possibly impacted)

Future Climate Scenarios

This extract comes from the map showing the projected extent of flooding (affected areas) for multiple flood scenarios for all relevant flood studies, **including the projected impacts of climate change**. This map corresponds with the flood levels provided in the table above for the 5%, 2%, 1%, 0.5%, 0.05% and Probable Maximum Flood (PMF) scenarios.



LEGEND

5% chance
The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

2% chance
The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

1% chance
The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

0.5% chance
The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

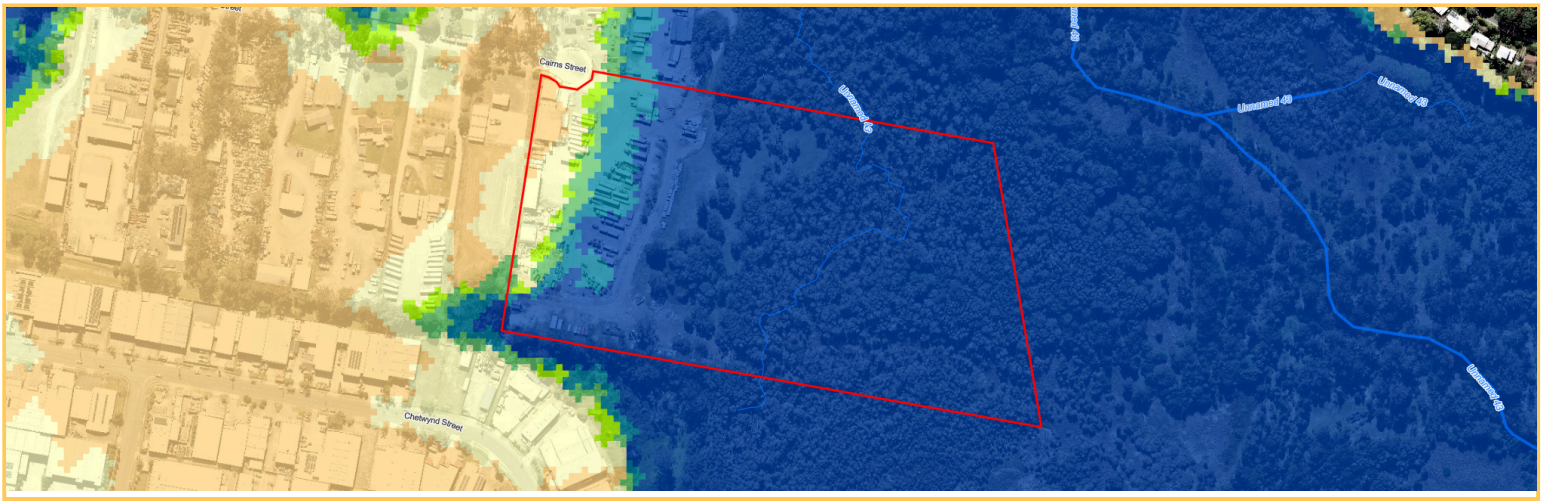
0.05% chance
The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

PMF
The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change.

Investigation area
Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

Current Climate Scenarios

This extract comes from the map showing flood affected areas **without** considering the impacts of climate change. This map represents modelled flooding under current conditions, and can be used for insurance purposes.



LEGEND

5% chance
The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

2% chance
The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

1% chance
The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

0.5% chance
The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

0.05% chance
The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

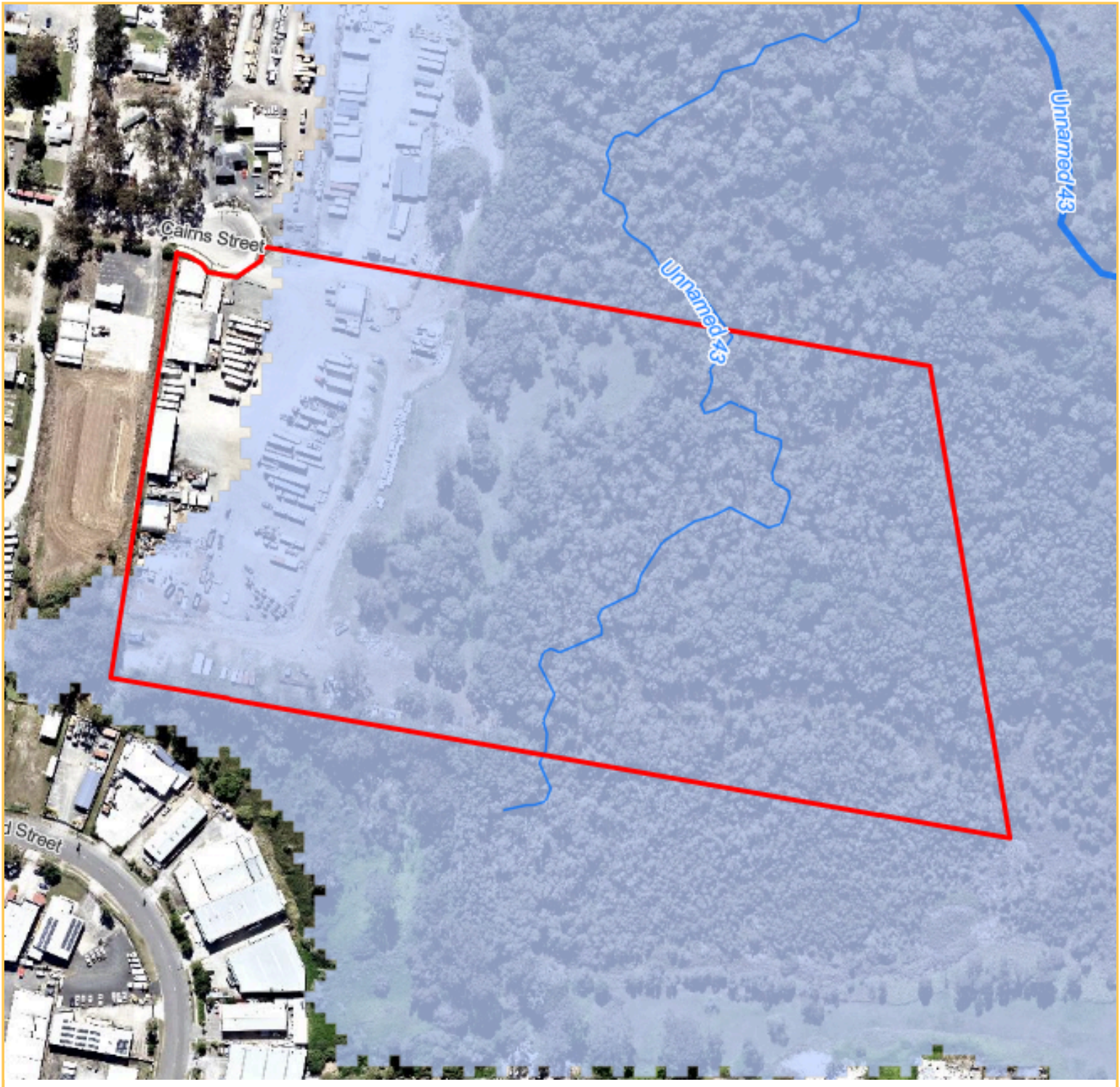
PMF
The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change

Investigation area
Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

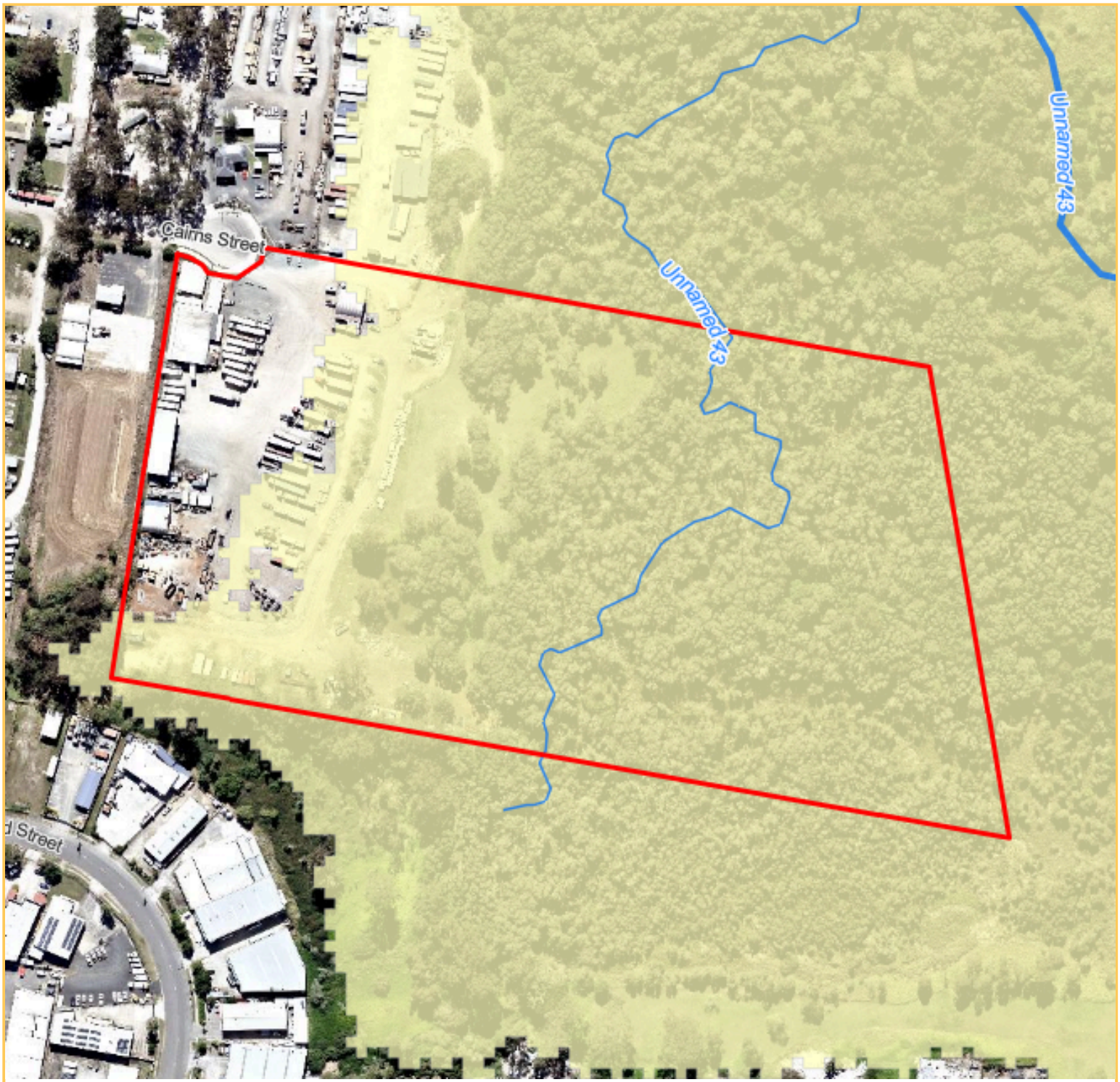
Historic Flood Events

Based on the best information available to Council, the table below indicates whether or not the selected property may have been impacted by significant historic flood events. It is possible that other creek flooding or overland flow, which is not included in Council's mapping of these events, may have impacted the property.

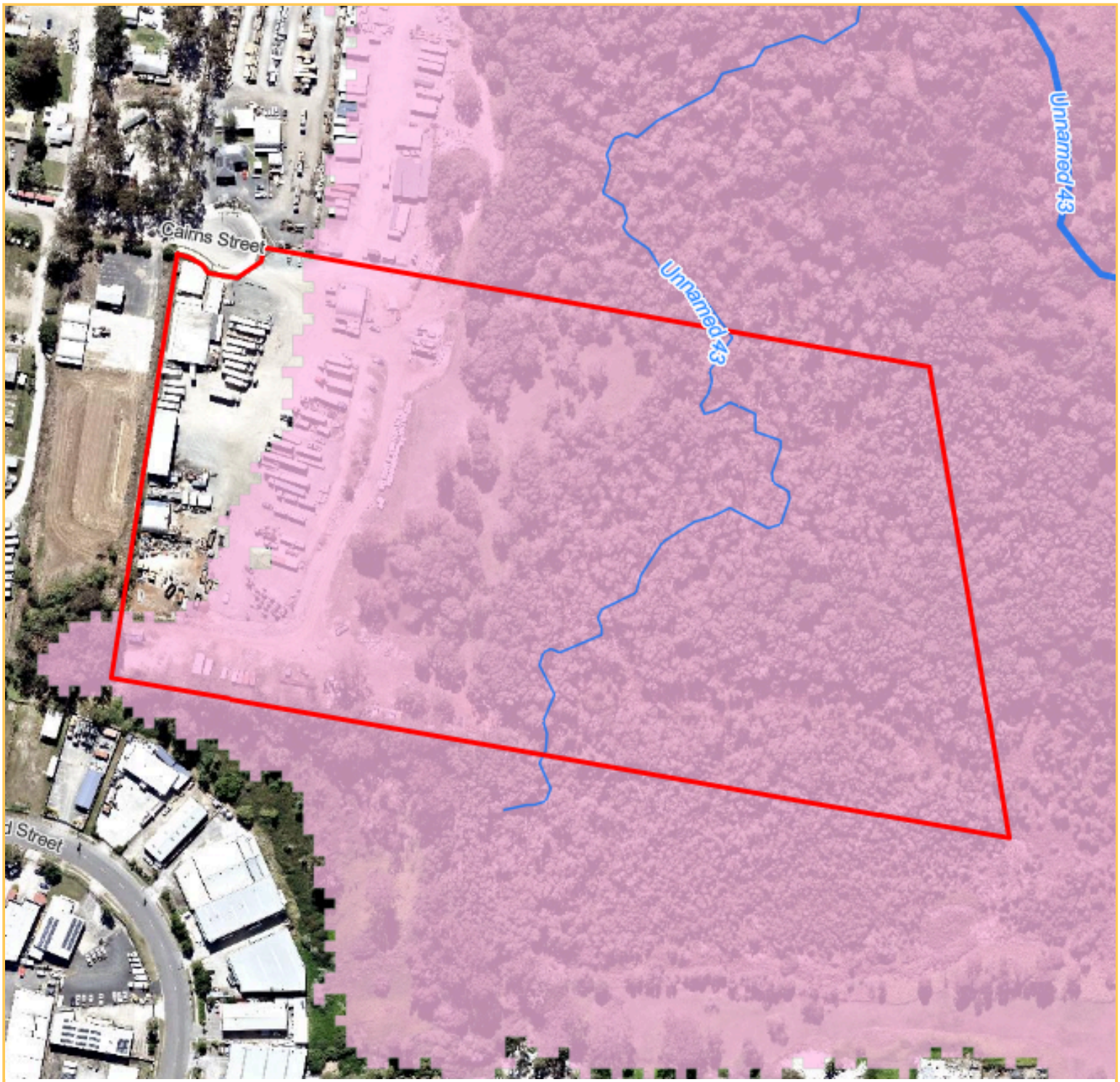
Flood event	Property impacted
1974	Yes
2017 (after ex Tropical Cyclone Debbie)	Yes
2022 (late February / early March)	Yes



1974



2017



2022

Planning Scheme Maps

The selected property is shown below on an extract of the Flood Overlay Maps from the Logan Planning Scheme 2015 V9.2 with TLPI No. 1/2024. Various provisions of the planning scheme which refer to properties affected by the Flood Overlay Maps will apply to the flood affected areas for the purposes of planning and development. This may include, for example, raised building floor levels and achieving safe vehicle access to the road network.

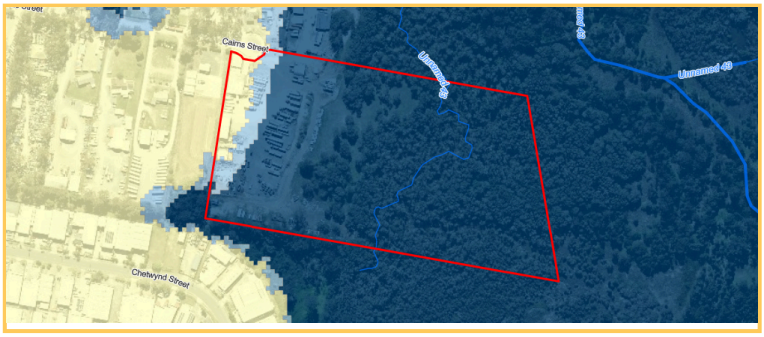
OM-05.01 Isolated islands



OM-05.02 High flow area



OM-05.04 Flood risk areas



MAP LEGEND

High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.

Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.

Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.

Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

CITY OF LOGAN

MAP LEGEND

High flow area
High hazard areas of flooding where significant (deeper, faster) flow of water occurs and in which a building is vulnerable to structural damage or failure from floodwater. Classified as H5 or H6 in the Australian Institute of Disaster Resilience (AIDR) Guideline 7-3 'Flood Hazard'.

High flood island
Areas which are isolated from flood-free land (surrounded by floodwater) but retain a portion of the area as flood free in a probable maximum flood (PMF).

Low flood island
Areas which are surrounded by floodwater and at first isolated from flood-free land, then completely inundated by floodwater (submerged) as the flood continues to rise.

Meadowbrook flood assessment area
Area where the function of important community infrastructure needs to be maintained. Flood mitigation measures and comprehensive emergency management planning is required to adequately manage the risk for flood events.

If more recent flood studies have been completed and accepted by Council, the Latest Flood Risk Map shown at the top of this report may be different from the planning scheme map. The latest flood information should be used to inform development decisions and will be incorporated into the planning scheme in a future amendment.

Further Information

1. Floods are highly unpredictable and variable, and properties may be affected by other sources of potential flooding. Each flood and its impact is different. Areas that were not flooded previously may be affected by future events. Areas that have been previously flooded may be impacted in different ways. This online report cannot take all of this into account.
2. The flood mapping and levels in this report are based on data from flood studies undertaken at a particular time and are subject to change. For example, if the method for calculating flood levels is updated, industry guidelines are updated or more recent information becomes available, this may result in changes to the information in this report. In areas where development is ongoing, the flood mapping and levels may not reflect developed conditions.
3. Flood studies do not create risk. They help us to understand the risk, based on relevant legislation and Queensland Government policies and guidelines. Flood studies also consider a range of other factors such as rainfall and river level information from recent events, climate change and trends, the impacts of development, changes to catchment conditions, new technologies and industry best practice (which help to improve accuracy).
4. Flood studies and models are developed from the best information available at the time. They do not tell you how the flood waters might behave, how quickly they may rise, or how dangerous the flooding will be. The models also cannot represent changes that have occurred since they were developed which may impact flood behaviour, such as earthworks, new developments or road infrastructure.
5. This report is not a substitute for independent professional advice. You should engage the services of a Registered Professional Engineer of Queensland (RPEQ) to get site specific information regarding the flood risk to your property, and how that might affect any proposed building or development work.
6. While Logan City Council takes reasonable care in producing this report, it does not guarantee that the information is accurate, complete or current. Logan City Council does not accept any responsibility for any loss or damage (however it was caused) in connection with the use of or reliance on the information in this report.

Contact Information

Where to go for further information depends on the type of information you need. Please refer to the Flood Risk Fact Sheet or contact Council using the details below.

Topic	Contact Details
Flood studies and modelling information, and the flood risk on your property	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au. Further information about flooding and flood studies is available on the Flood page on Council's website.
Planning and development enquiries or proposals	Contact Council on 07 3412 3412 or email development@logan.qld.gov.au. Before lodging a development application, pre-lodgement advice is recommended.
Building information	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au. You can also contact a private building certifier.
Properties in Priority Development Areas	Contact Economic Development Queensland. Council is not the planning authority for these properties.
Independent advice about flooding on your property	Contact a registered engineer through the Board of Professional Engineers of Queensland: Phone: 07 3210 3100 Email: admin@bpeq.qld.gov.au Web: Home - Board of Professional Engineers Queensland (bpeq.qld.gov.au)

CITY OF LOGAN

PROPERTY FLOOD REPORT

Property Details

Address: 64-66 Cairns Street LOGANHOLME QLD 4129

Lot/Plan: Lot 120 SP 320462

Size/Area: 97,599 m^2

Property Key: 392316

Catchment(s): Logan River, Unnamed_43

View Logan's catchments and waterways map (PDF)

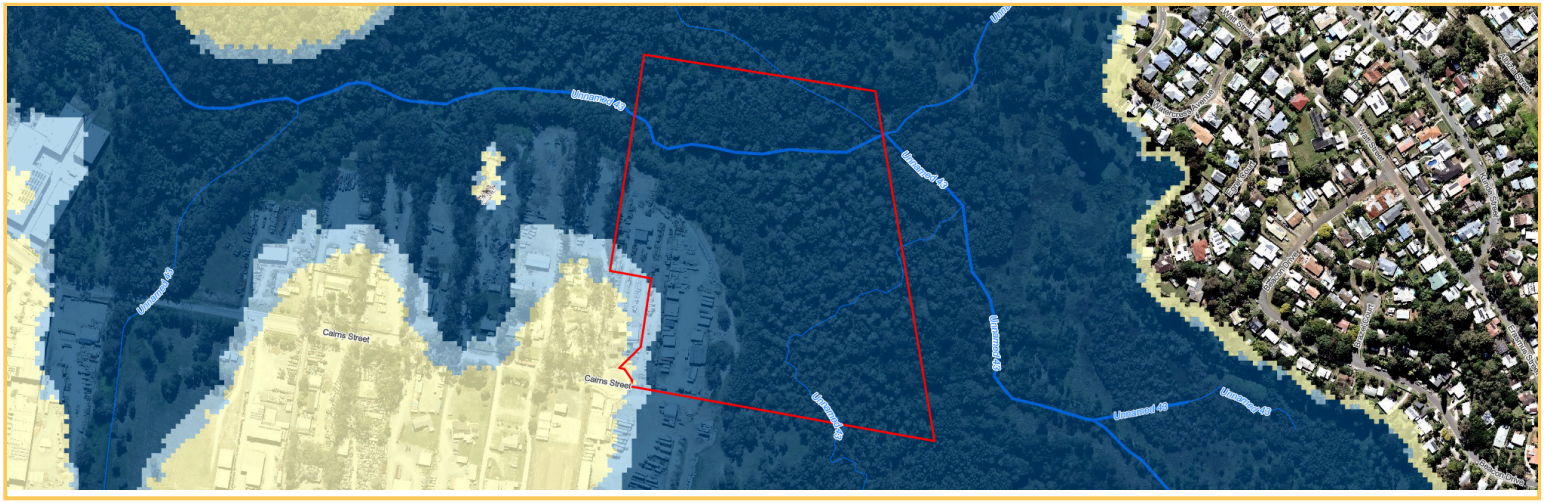
Summary Flood Assessment

The table below presents the flood risks applicable to the selected property. There may be multiple studies and flood scenarios affecting the property, particularly for larger sites.

Assessment	Details
Risk area(s)	High, Moderate, Low
Investigation area	Not applicable
Isolation risk	Not applicable
River flooding	20% chance of a flood this size or larger happening in any given year
Creek flooding	May apply - subject to further study
Overland flow	Applies. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice. Overland flow is water (stormwater run-off) that travels over land during heavy rainfall events. It generally occurs quickly and for short durations.

Latest Flood Risk

The extract below comes from the flood risk map based on the latest (most recent) flood studies accepted by Council applicable for this property.



LEGEND

High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.

Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.

Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.

Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

The flood studies this map is based on consider the impacts of climate change, as required by Queensland's planning legislation and policies. The map considers the whole floodplain for Logan and reflects a risk-based approach that takes into account:

- How likely a flood of a given size is in any given year, and
- What the impact or level of danger of that flood is.

Flood Levels

The table below displays flood levels from the most recently accepted flood studies affecting this property. To view the flood study documents please see the Flood page on Council's website.

The levels are measured in Australian Height Datum (AHD), where sea level is approximately zero (0) metres. The level displayed in the table below is the maximum flood level on the property for that event (likelihood). For some properties, particularly large properties or those on a significant slope, flood levels can vary significantly.

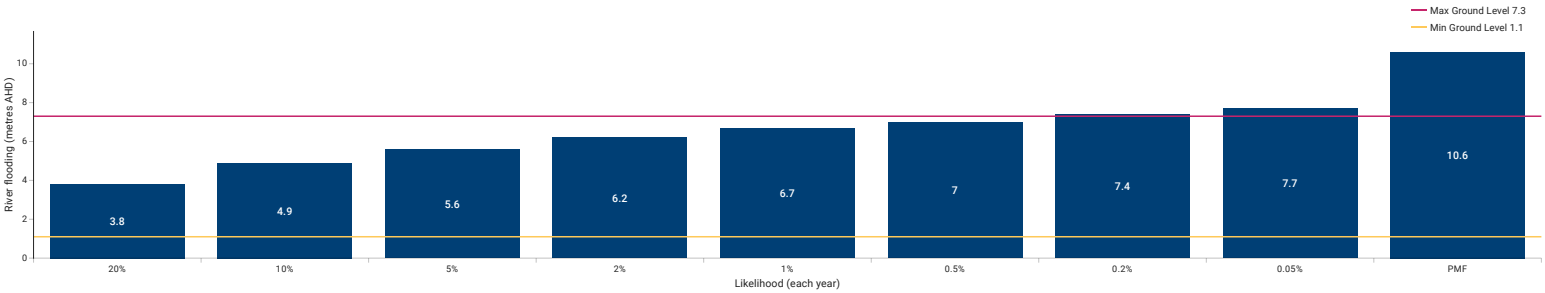
The most likely flood scenarios is shown at the top of the table, with the Probable Maximum Flood (PMF) at the bottom, being the least likely but most serious flood scenario.

Some properties may be impacted by only river flooding or only creek flooding, and some may be impacted by both. There may also be other sources of inundation that may impact the property and affect flood levels, based on overland flow or local creeks where studies have not yet been completed.

Study: Logan and Albert Rivers Flood Study 2023

Likelihood (each year)	River flooding
20% chance	3.8 metres AHD
10% chance	4.9 metres AHD
5% chance	5.6 metres AHD
2% chance	6.2 metres AHD
1% chance	6.7 metres AHD
0.5% chance	7.0 metres AHD
0.2% chance	7.4 metres AHD
0.05% chance	7.7 metres AHD
PMF	10.6 metres AHD

Flood and Ground Levels in metres AHD



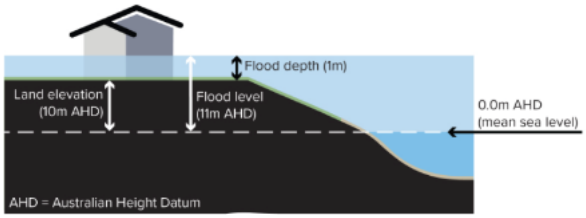
Ground Levels

Ground levels are based on an aerial LiDAR (Light Detection and Ranging) survey, which uses millions of laser point measurements to build a model of the ground surface. The source of the data is displayed in the table below so that you know when the survey was conducted.

Ground level	Details
Minimum ground level	1.1 metres AHD
Maximum ground level	7.3 metres AHD

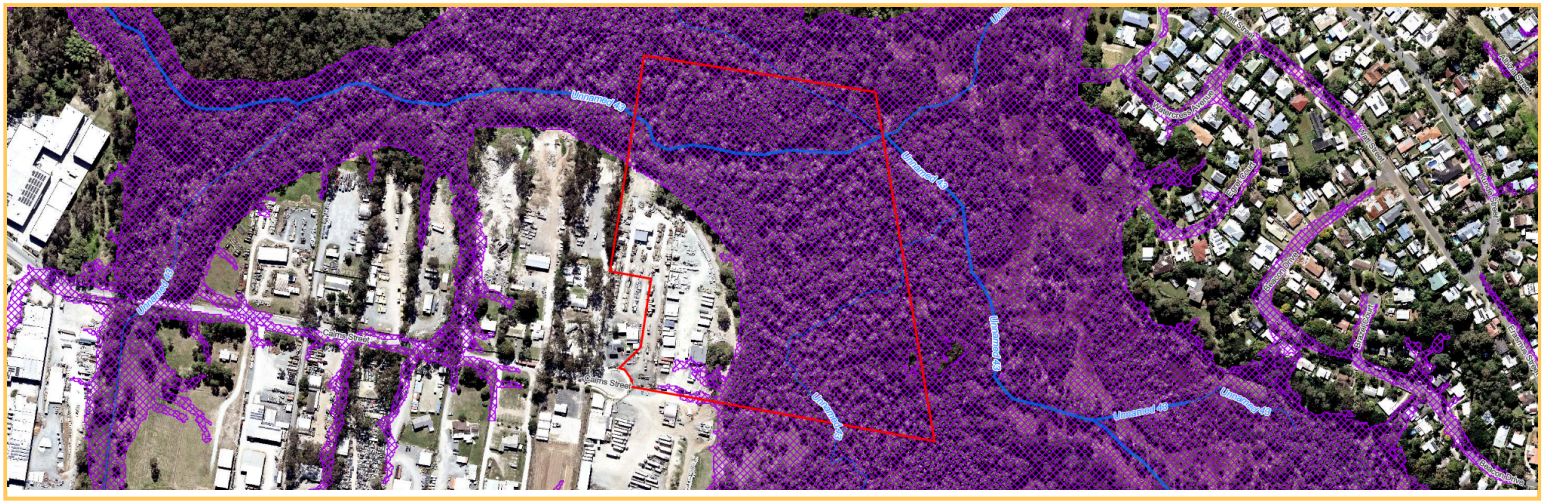
Source: 2021 Digital elevation model (1 metre grid)

The projected flood depth (how deep the water may be above ground, in metres) is the difference between the flood levels in the section above and the ground levels in this table. The diagram below provides an example (land elevation is ground level).



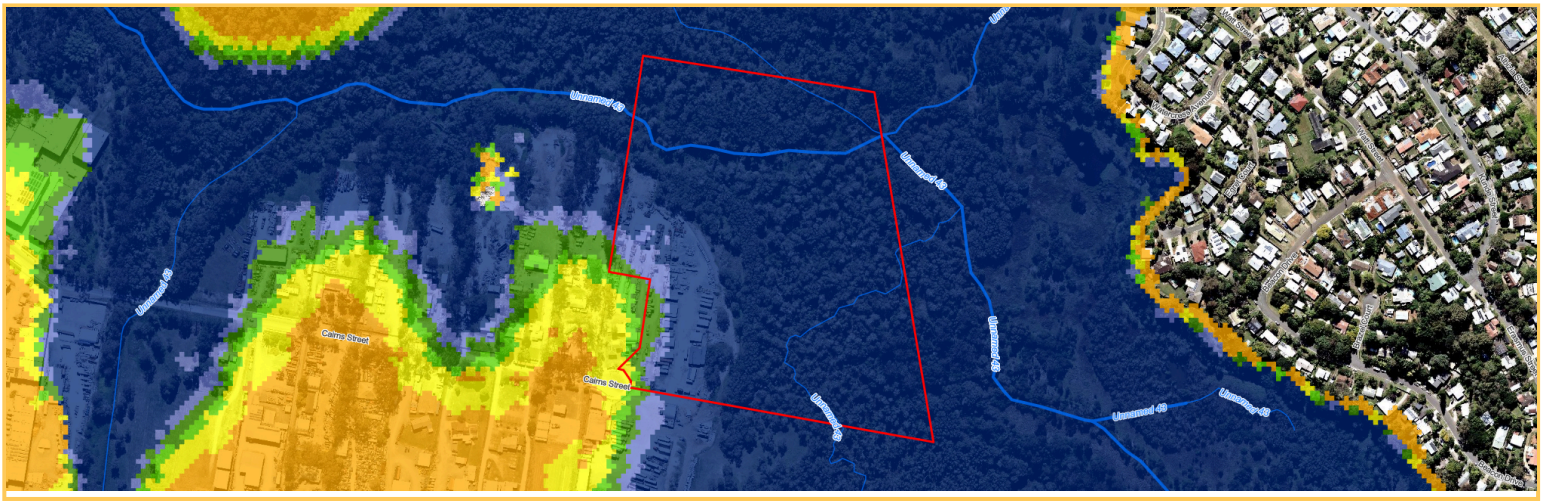
Overland Flow

Overland flow is water (stormwater/rainfall run-off) that exceeds the capacity of drains, pipes and channels during heavy rainfall events and travels over land towards waterways. It generally occurs quickly and for shorter periods of time. The impact of overland flow is dependent on local conditions, so the mapping is a guide only. It is possible that flooding from a local waterway which has not yet been studied may also impact the property. Please contact Council for further advice.


Wilsons Creek
Wilsons Creek
Wilsons Creek

Future Climate Scenarios

This extract comes from the map showing the projected extent of flooding (affected areas) for multiple flood scenarios for all relevant flood studies, **including the projected impacts of climate change**. This map corresponds with the flood levels provided in the table above for the 5%, 2%, 1%, 0.5%, 0.05% and Probable Maximum Flood (PMF) scenarios.



LEGEND

5% chance
The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

2% chance
The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

1% chance
The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

0.5% chance
The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

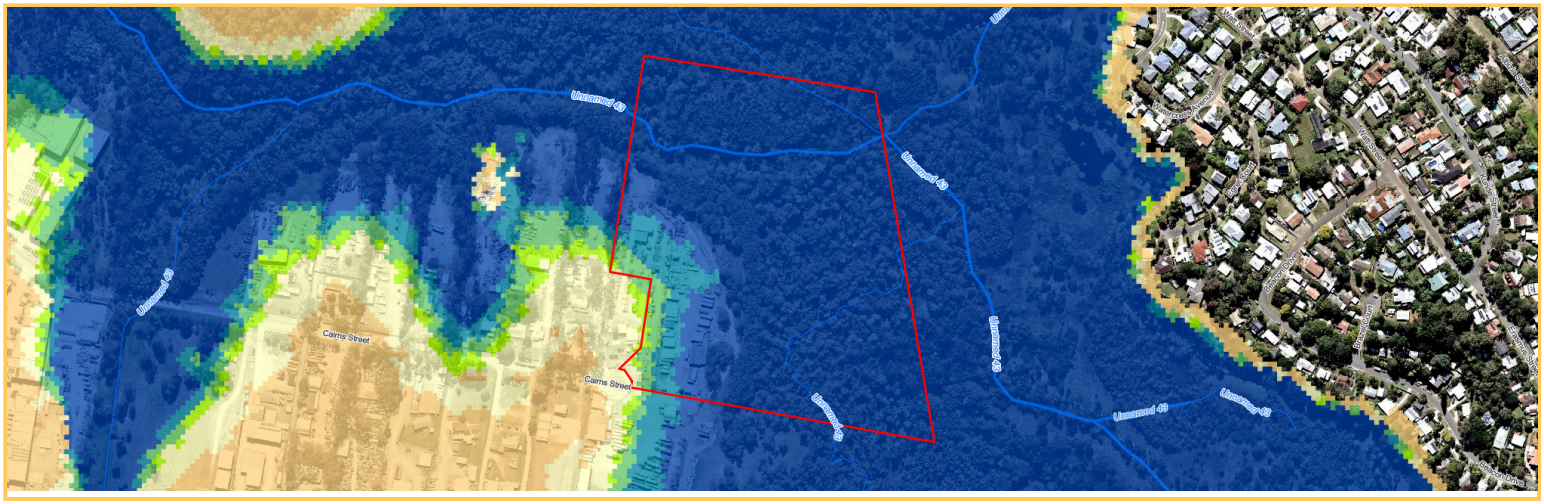
0.05% chance
The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

PMF
The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change.

Investigation area
Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

Current Climate Scenarios

This extract comes from the map showing flood affected areas **without** considering the impacts of climate change. This map represents modelled flooding under current conditions, and can be used for insurance purposes.



LEGEND

5% chance

The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

2% chance

The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

1% chance

The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

0.5% chance

The areas modelled to be impacted by a flood that has a 0.5% (or 1 in 200) chance of happening in any given year, or 15% chance over a 30 year period, which is the common term of a mortgage. This modelling is based on **current (present day) conditions** and does not take into account the impacts of climate change.

0.05% chance

The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

PMF

The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change

Investigation area

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Historic Flood Events

Based on the best information available to Council, the table below indicates whether or not the selected property may have been impacted by significant historic flood events. It is possible that other creek flooding or overland flow, which is not included in Council's mapping of these events, may have impacted the property.

Flood event	Property impacted
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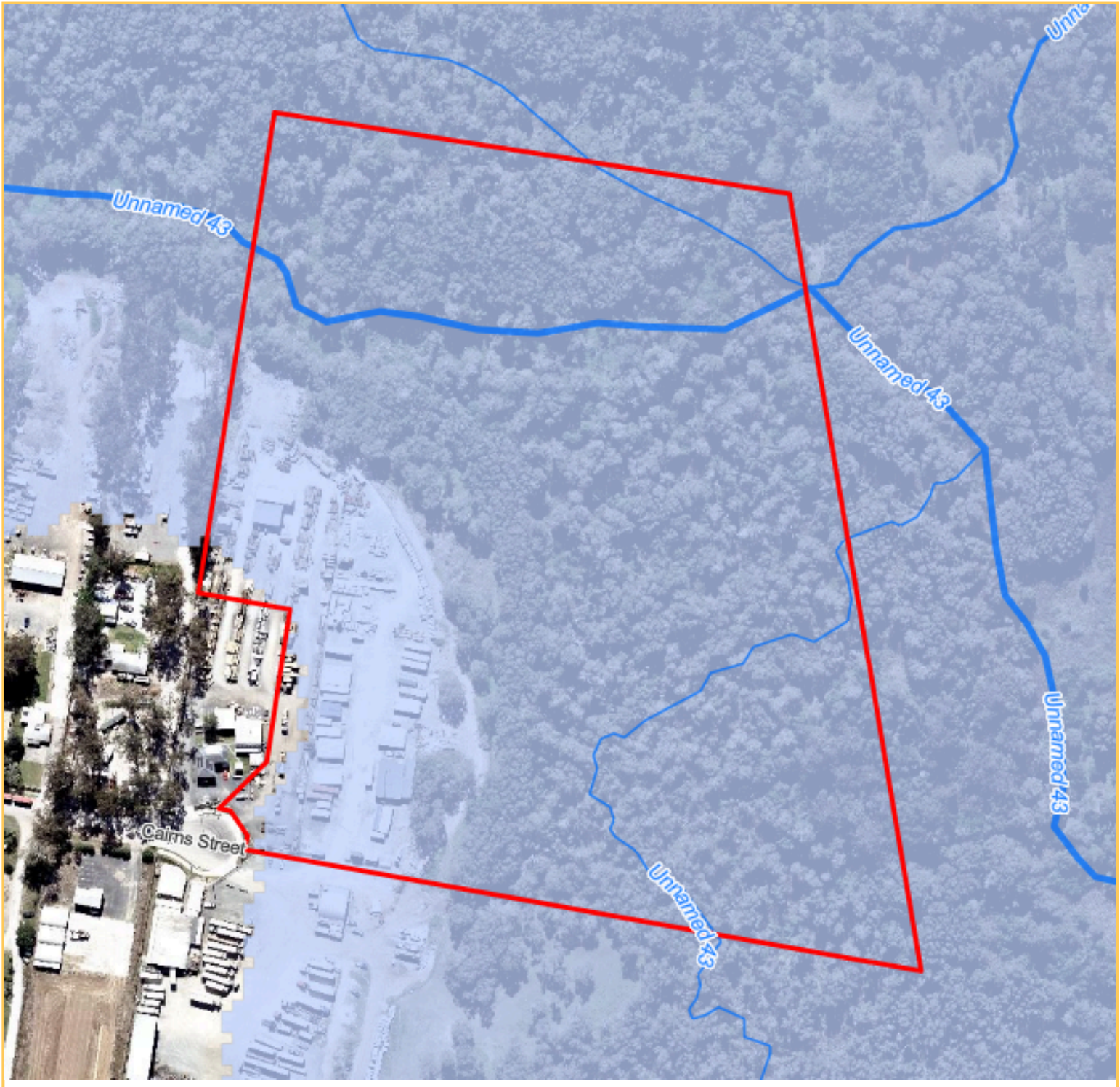
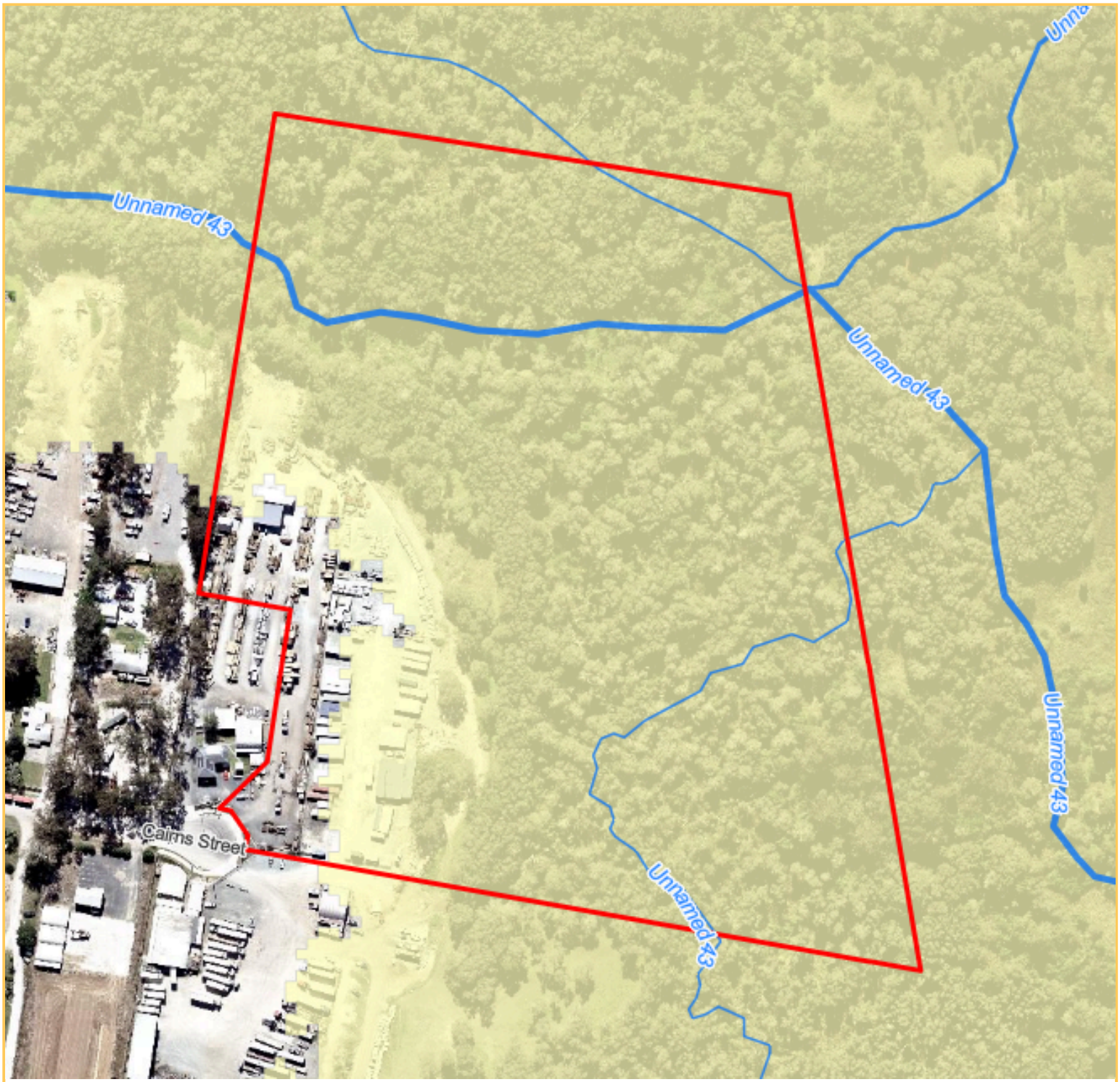
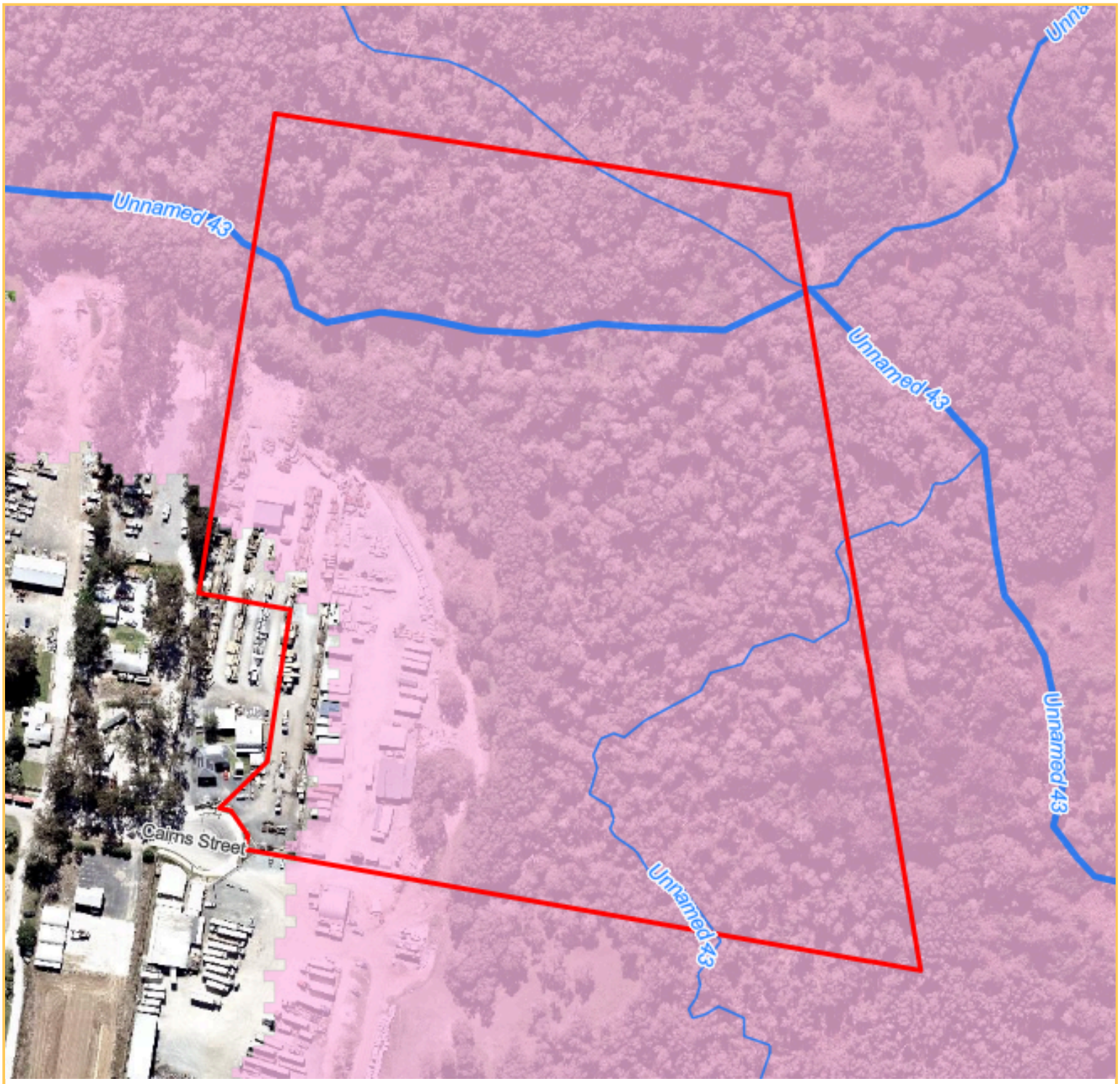
2017 (after ex Tropical Cyclone Debbie)	Yes
2022 (late February / early March)	Yes



1974



2017

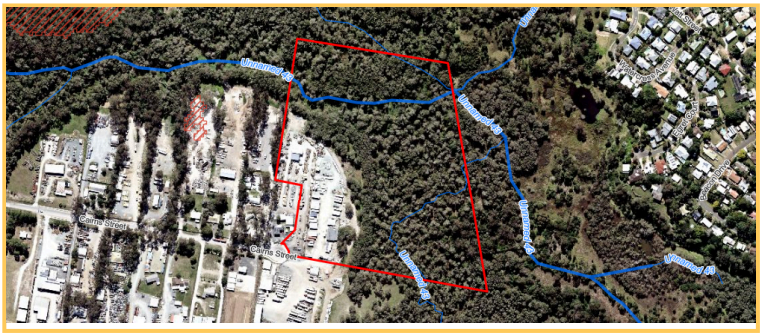


2022

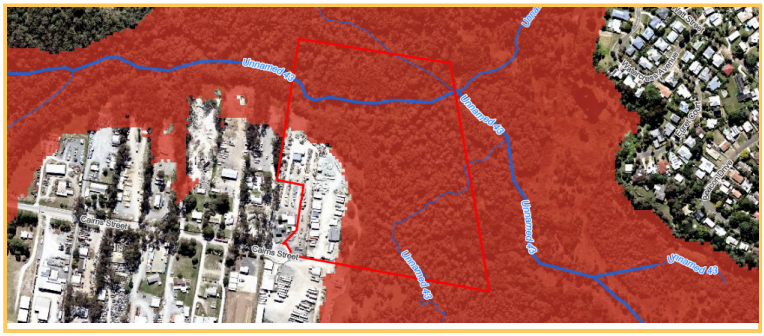
Planning Scheme Maps

The selected property is shown below on an extract of the Flood Overlay Maps from the Logan Planning Scheme 2015 V9.2 with TLPI No. 1/2024. Various provisions of the planning scheme which refer to properties affected by the Flood Overlay Maps will apply to the flood affected areas for the purposes of planning and development. This may include, for example, raised building floor levels and achieving safe vehicle access to the road network.

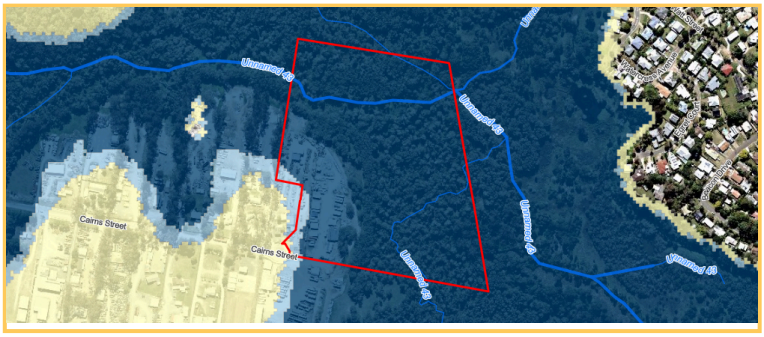
OM-05.01 Isolated islands



OM-05.02 High flow area



OM-05.04 Flood risk areas



MAP LEGEND

High

Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.

Moderate

Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.

Low

Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.

Investigation area

Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

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MAP LEGEND

High flow area
High hazard areas of flooding where significant (deeper, faster) flow of water occurs and in which a building is vulnerable to structural damage or failure from floodwater. Classified as H5 or H6 in the Australian Institute of Disaster Resilience (AIDR) Guideline 7-3 'Flood Hazard'.

High flood island
Areas which are isolated from flood-free land (surrounded by floodwater) but retain a portion of the area as flood free in a probable maximum flood (PMF).

Low flood island
Areas which are surrounded by floodwater and at first isolated from flood-free land, then completely inundated by floodwater (submerged) as the flood continues to rise.

Meadowbrook flood assessment area
Area where the function of important community infrastructure needs to be maintained. Flood mitigation measures and comprehensive emergency management planning is required to adequately manage the risk for flood events.

If more recent flood studies have been completed and accepted by Council, the Latest Flood Risk Map shown at the top of this report may be different from the planning scheme map. The latest flood information should be used to inform development decisions and will be incorporated into the planning scheme in a future amendment.

Further Information

1. Floods are highly unpredictable and variable, and properties may be affected by other sources of potential flooding. Each flood and its impact is different. Areas that were not flooded previously may be affected by future events. Areas that have been previously flooded may be impacted in different ways. This online report cannot take all of this into account.
2. The flood mapping and levels in this report are based on data from flood studies undertaken at a particular time and are subject to change. For example, if the method for calculating flood levels is updated, industry guidelines are updated or more recent information becomes available, this may result in changes to the information in this report. In areas where development is ongoing, the flood mapping and levels may not reflect developed conditions.
3. Flood studies do not create risk. They help us to understand the risk, based on relevant legislation and Queensland Government policies and guidelines. Flood studies also consider a range of other factors such as rainfall and river level information from recent events, climate change and trends, the impacts of development, changes to catchment conditions, new technologies and industry best practice (which help to improve accuracy).
4. Flood studies and models are developed from the best information available at the time. They do not tell you how the flood waters might behave, how quickly they may rise, or how dangerous the flooding will be. The models also cannot represent changes that have occurred since they were developed which may impact flood behaviour, such as earthworks, new developments or road infrastructure.
5. This report is not a substitute for independent professional advice. You should engage the services of a Registered Professional Engineer of Queensland (RPEQ) to get site specific information regarding the flood risk to your property, and how that might affect any proposed building or development work.
6. While Logan City Council takes reasonable care in producing this report, it does not guarantee that the information is accurate, complete or current. Logan City Council does not accept any responsibility for any loss or damage (however it was caused) in connection with the use of or reliance on the information in this report.

Contact Information

Where to go for further information depends on the type of information you need. Please refer to the Flood Risk Fact Sheet or contact Council using the details below.

Topic	Contact Details
Flood studies and modelling information, and the flood risk on your property	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au. Further information about flooding and flood studies is available on the Flood page on Council's website.
Planning and development enquiries or proposals	Contact Council on 07 3412 3412 or email development@logan.qld.gov.au. Before lodging a development application, pre-lodgement advice is recommended.
Building information	Contact Council on 07 3412 3412 or email council@logan.qld.gov.au. You can also contact a private building certifier.
Properties in Priority Development Areas	Contact Economic Development Queensland. Council is not the planning authority for these properties.
Independent advice about flooding on your property	Contact a registered engineer through the Board of Professional Engineers of Queensland: Phone: 07 3210 3100 Email: admin@bpeq.qld.gov.au Web: Home - Board of Professional Engineers Queensland (bpeq.qld.gov.au)

CITY OF LOGAN

PROPERTY FLOOD REPORT

Property Details

Address: 60-62 Cairns Street LOGANHOLME QLD 4129

Lot/Plan: Lot 121 SP 320462

Size/Area: 3,990 m^2

Property Key: 392317

Catchment(s): Logan River, Unnamed_43

View Logan's catchments and waterways map (PDF)

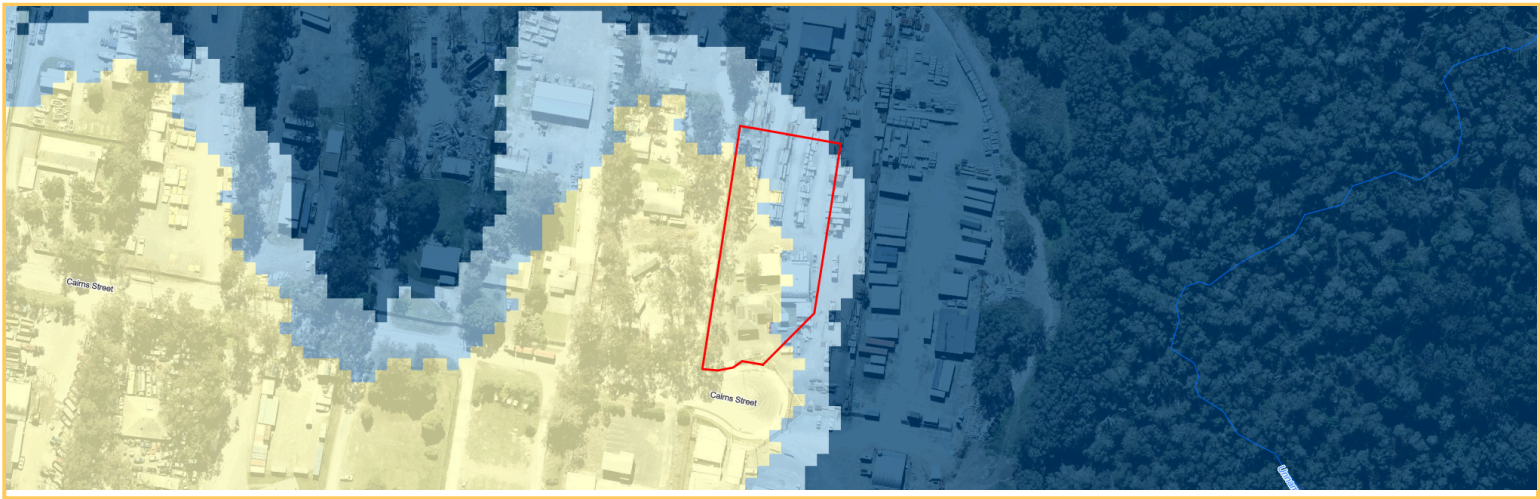
Summary Flood Assessment

The table below presents the flood risks applicable to the selected property. There may be multiple studies and flood scenarios affecting the property, particularly for larger sites.

Assessment	Details
Risk area(s)	High, Moderate, Low
Investigation area	Not applicable
Isolation risk	Not applicable
River flooding	2% chance of a flood this size or larger happening in any given year
Creek flooding	Not applicable
Overland flow	Not applicable

Latest Flood Risk

The extract below comes from the flood risk map based on the latest (most recent) flood studies accepted by Council applicable for this property.



LEGEND

High
Floodwaters may be deep or fast flowing, or have a relatively high chance of occurrence (e.g. 80% chance in 30 years). Conditions may pose a risk to life and cause damage to buildings, possibly severe. Limited development may be considered if not increasing the flood risk exposure for people or property. These areas are generally better suited to environmental, recreational and some agricultural uses.

Moderate
Less frequently affected by flooding or if more frequent, with shallow or slower moving floodwater. Conditions may pose an unacceptable risk to people or property if not mitigated. Development may be tolerable if measures are taken to address flood impacts, protect people and limit damage.

Low
Extremely unlikely chance of flooding (1% chance or less over a 30 year period) and/or relatively shallow or benign flooding conditions. Development is generally acceptable except for essential community infrastructure (e.g. emergency services). Vulnerable uses (e.g. childcare, aged care) may be ok subject to building, site access and safe shelter mitigation measures. Shows the full floodplain under the largest flood that could conceivably occur.

Investigation area
Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Development should avoid these areas until further investigation (updated flood study or localised risk assessment) is completed.

The flood studies this map is based on consider the impacts of climate change, as required by Queensland's planning legislation and policies. The map considers the whole floodplain for Logan and reflects a risk-based approach that takes into account:

- How likely a flood of a given size is in any given year, and
- What the impact or level of danger of that flood is.

Flood Levels

The table below displays flood levels from the most recently accepted flood studies affecting this property. To view the flood study documents please see the Flood page on Council's website.

The levels are measured in Australian Height Datum (AHD), where sea level is approximately zero (0) metres. The level displayed in the table below is the maximum flood level on the property for that event (likelihood). For some properties, particularly large properties or those on a significant slope, flood levels can vary significantly.

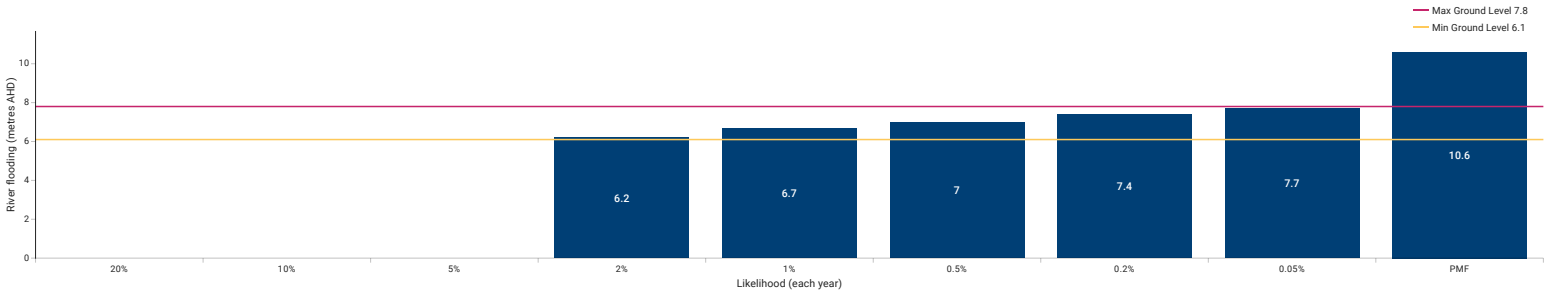
The most likely flood scenarios is shown at the top of the table, with the Probable Maximum Flood (PMF) at the bottom, being the least likely but most serious flood scenario.

Some properties may be impacted by only river flooding or only creek flooding, and some may be impacted by both. There may also be other sources of inundation that may impact the property and affect flood levels, based on overland flow or local creeks where studies have not yet been completed.

Study: Logan and Albert Rivers Flood Study 2023

Likelihood (each year)	River flooding
20% chance	Not applicable
10% chance	Not applicable
5% chance	Not applicable
2% chance	6.2 metres AHD
1% chance	6.7 metres AHD
0.5% chance	7.0 metres AHD
0.2% chance	7.4 metres AHD
0.05% chance	7.7 metres AHD
PMF	10.6 metres AHD

Flood and Ground Levels in metres AHD



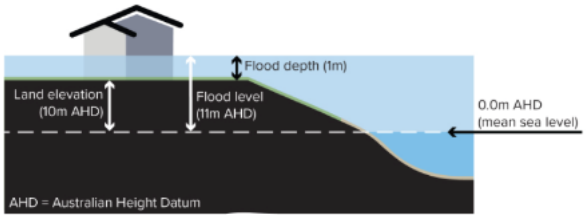
Ground Levels

Ground levels are based on an aerial LiDAR (Light Detection and Ranging) survey, which uses millions of laser point measurements to build a model of the ground surface. The source of the data is displayed in the table below so that you know when the survey was conducted.

Ground level	Details
Minimum ground level	6.1 metres AHD
Maximum ground level	7.8 metres AHD

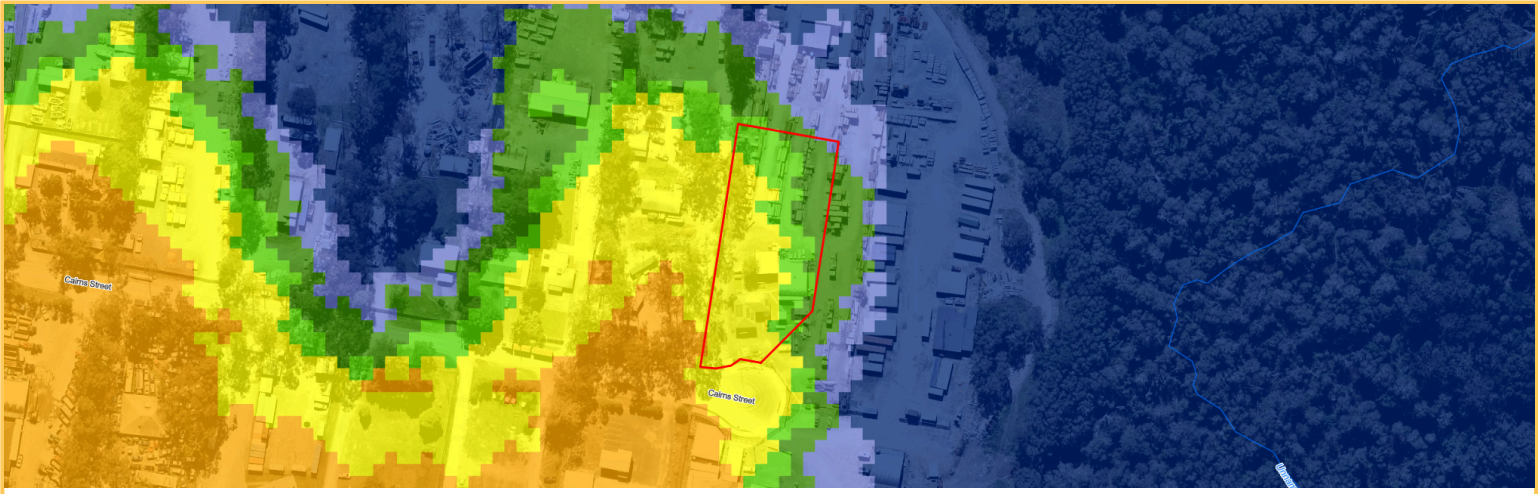
Source: 2021 Digital elevation model (1 metre grid)

The projected flood depth (how deep the water may be above ground, in metres) is the difference between the flood levels in the section above and the ground levels in this table. The diagram below provides an example (land elevation is ground level).



Future Climate Scenarios

This extract comes from the map showing the projected extent of flooding (affected areas) for multiple flood scenarios for all relevant flood studies, **including the projected impacts of climate change**. This map corresponds with the flood levels provided in the table above for the 5%, 2%, 1%, 0.5%, 0.05% and Probable Maximum Flood (PMF) scenarios.



LEGEND

5% chance
The areas modelled to be impacted by a flood that has a 5% (or 1 in 20) chance of happening in any given year, or 80% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

2% chance
The areas modelled to be impacted by a flood that has a 2% (or 1 in 50) chance of happening in any given year, or 45% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

1% chance
The areas modelled to be impacted by a flood that has a 1% (or 1 in 100) chance of happening in any given year, or 25% chance over a 30 year period, which is the common term of a mortgage. This modelling **includes the impacts of climate change** and represents our understanding of future risk.

0.5% chance
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0.05% chance
The areas modelled to be impacted by a flood that has a 0.05% (or 1 in 2000) chance of happening in any given year. This is an extremely unlikely flood event with a 1% chance of happening over a 30 year period, not including the impacts of climate change.

PMF
The PMF or probable maximum flood scenario represents the full extent of the floodplain, or the most serious flood that could be expected to occur. This is usually estimated based on the probable maximum rainfall, not including the impacts of climate change.

Investigation area
Locations where a current flood study has not been delivered and information to determine flood risk is not available. The approximation of the floodplain in these areas is based on a citywide overland flow study. Further investigation is needed.

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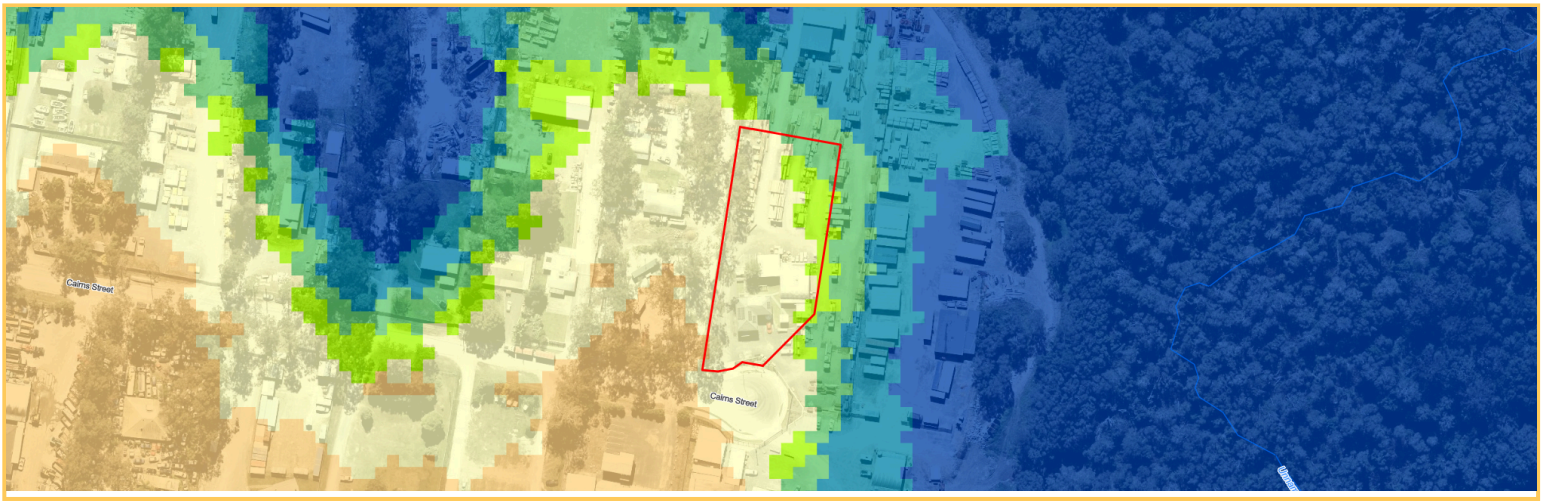

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1974



2017



2022

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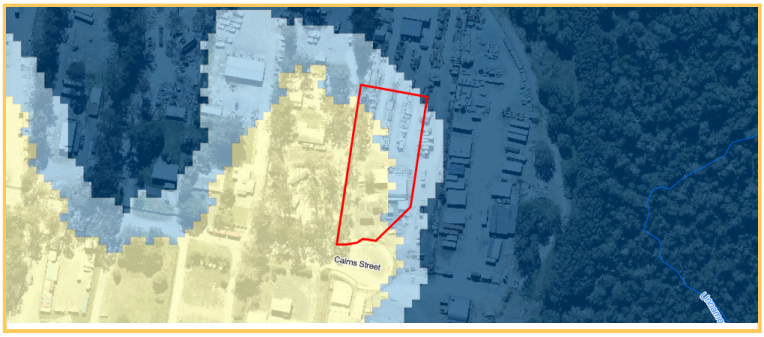
OM-05.01 Isolated islands



OM-05.02 High flow area



OM-05.04 Flood risk areas



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Independent advice about flooding on your property	Contact a registered engineer through the Board of Professional Engineers of Queensland: Phone: 07 3210 3100 Email: admin@bpeq.qld.gov.au Web: Home - Board of Professional Engineers Queensland (bpeq.qld.gov.au)

63 Cairns Street, Loganholme

Flood Assessment Report

Appendix E **Flood Code Response**

Context Engineering



Proposed Industrial Development
63 Cairns Street
Loganholme

Code Compliance Report

Prepared For Howell Constructions

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This Document Has Been Approved by The Following Appropriately Qualified and Experienced Professional Civil Engineer:



Nicholas Rees
BEng (Hons), MIEAust, CPEng, NER, Registered Professional Engineer of Queensland (RPEQ) No. 18700

Report Number: C_25145 - R003

Issue	Date	Details	Author	Checked	Approved
1	05.01.26	Issue for Approval	DT	EG	NR
2	04.03.26	Issue for Approval (Updated BEL & FSL)	DT	NR	NR

1. Introduction

This Code Compliance Report has been commissioned by Howell Constructions and forms part of the part of a 'Minor Change' application to be lodged for the proposed development located at 63 Cairns Street in Loganholme.

The proposed development involves the creation of a new commercial development ('subject site'), comprising of two (2) new tenancies, circulation driveway and carparking areas.

A summary of the investigation and outcomes presented in this report are as follows:

- **8.2.1 Acid Sulfate Soils Overlay Code –** Development complies with acceptable outcomes or presents performance solutions;
- **8.2.5 Flood Hazard Overlay Code –** Development complies with acceptable outcomes or presents performance solutions;
- **8.2.12 Waterway corridors and wetlands overlay code –** Development complies with acceptable outcomes or presents performance solutions;
- **9.4.2 Filling and Excavation Code –** Development complies with acceptable outcomes or presents performance solutions;
- **9.4.3 Infrastructure Code –** Development complies with acceptable outcomes or presents performance solutions; and

Based on the outcomes of the above investigations, this report provides civil engineering recommendations suitable to address compliance with Logan City Council requirements.

2. Acid Sulfate Soils Overlay Code

This section of the report assesses the proposed development against the relevant civil engineering items within Clause 8.2.1 of the Logan City Council Planning Scheme.

2.2 Land in the Potential and actual acid sulfate soil area

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO1 Development in the Potential and actual acid sulfate soil area identified on Acid sulfate soils overlay map OM-01.01 that involves disturbing soil or sediment at or below 5 metres AHD: a. Avoids disturbing acid sulfate soils; or b. Is managed to avoid the: i) Release of acid and metal contaminants. ii) Release of nutrients that contribute to coastal algal blooms.	**AO1.1** Development in the Potential and actual acid sulfate soils area at or below 5 metres AHD identified on Acid sulfate soils overlay map OM-01.01 does not involve: a. excavating or otherwise removing 100m3 or more of soil or sediment; or b. filling of land involving 500m3 or more of material with an average depth of 0.5 of a metre or greater; or c. extracting ground water. **AO1.2** Development in the Potential and actual acid sulfate soils area above 5 metres AHD and at or below 20 metres AHD area identified on Acid sulfate soils overlay map OM-01.01 does not involve excavating or otherwise removing 100m3 or more of soil or sediment at or below 5 metres AHD.	☐ **Complies** ☒ **Performance Solution** ☐ **Not Applicable** The proposed development is located within both the "Potential and Actual Acid Sulfate Soils at or below 5 metres AHD" area and the "Potential and Actual Acid Sulfate Soils above 5 metres AHD and at or below 20 metres AHD" area as identified on Acid Sulfate Soils Overlay Map OM-01.01. The works will predominantly involve site excavation, with preliminary estimates indicating an excavation volume of approximately 292m³. Disturbance of acid sulfate soils will be managed to avoid the release of acid, metals and nutrients through the preparation and implementation of an Acid Sulfate Soil Management Plan, to be developed in consultation with and based on the advice of a suitably qualified geotechnical engineer during the detailed design phase.	

2.3 Treatment and disposal of acid sulfate soils

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO2 Development manages the treatment and disposal of acid sulfate soils.	**AO2** Where acid sulfate soils are identified, the acid sulfate soils are managed in accordance with an acid sulfate soils management plan prepared in accordance with the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO2 applies. Disturbance of acid sulfate soils will be managed through the preparation and implementation of an Acid Sulfate Soil Management Plan, to be developed in consultation with and based on the advice of a suitably qualified geotechnical engineer during the detailed design phase.	

3. Flood Hazard Overlay Code

This section of the report assesses the proposed development against the relevant civil engineering items within Clause 8.2.5 of the Logan City Council Planning Scheme.

3.1 Part B – Resilient building location, design and operations (other than a Home-based business)

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO8 Buildings and structures are located outside of a High flow area.	**AO8.1** New buildings and structures, other than fences, are located outside of a High flow area identified on Flood hazard overlay map OM-05.02 **AO8.2** Enclosure of existing structures or areas underneath an existing building, such as an undercroft, does not occur in a High flow area identified on Flood hazard overlay map OM-5.02	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO8.1 applies. The area of works of the proposed development is located outside of the High flow area traversing the Eastern portion of the subject site identified on Flood hazard overlay map OM-05.02.	
PO9 A Hospital in the Meadowbrook flood assessment area identified on Flood hazard overlay map OM-05.03 ensures that the location, design and operation of development: a. mitigates the risk of flooding to buildings and structures; b. minimises risk of injury to life and damage to property and infrastructure; c. maintains functionality during and after all flood events,	**AO9** No acceptable outcome provided.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO9 does not apply. The proposed development involves the creation of an industrial complex in Loganholme.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
including the probable maximum flood.			
PO10 Buildings are designed to account for the potential risk of inundation during flood events by complying with the Minimum flood planning levels identified in Table 8.2.5.3.3 – Minimum flood planning levels.	**AO10** No acceptable outcome provided.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO10 applies to the proposed development, which involves the construction of Class 7(b) industrial and warehouse buildings. In accordance with Table 8.2.5.3.3 – Minimum Flood Planning Levels, the lowest proposed finished floor level has been set to align with the defined 1% AEP flood level of 6.7m AHD for the subject site. Essential building services will be located above this level with an additional freeboard of 500 mm.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO11 Vehicle manoeuvring areas and car parking (other than a Parking station) are only located below the defined flood event where there is no increase in risk to: a. pedestrian and vehicular safety; b. a building or other structure.	**AO11** Vehicle manoeuvring areas and car parking (other than a Parking station) are located above the defined flood event.	☐ **Complies** ☒ **Performance Solution** ☐ **Not Applicable**	
PO12 Basement access and openings are designed and located to: a. ensure safety during a flood event; b. improve resilience to flood events; c. reduce recovery time after flooding; d. minimise economic loss to individual and public assets stored in the basement	**AO12** All entry points and openings to a basement are located at or bove the Minimum flood planning levels identified in Table 8.2.5.3.3 – Minimum flood planning levels.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO12 does not apply. The proposed development does not include a basement.	
PO13 Essential building services and infrastructure is located or designed to ensure their continued function during and immediately after flood events that are up to and including the: a. defined flood event for uses other than Essential community	**AO13** The function of essential building services and infrastructure is maintained during a flood event by: a. locating the services and infrastructure outside of a High flood risk area identified on Flood hazard overlay map OM-05.04;	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO13 applies. Essential building services will be located above the defined flood level of 6.7m AHD for the site with an additional freeboard of 500 mm in accordance with	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
infrastructure activities or Vulnerable use activities; or b. probable maximum flood for Essential community infrastructure activities or Vulnerable use activities.	b. locating the services and infrastructure above the flood planning level in accordance with Table 8.2.5.3.3 - Minimum flood planning levels; or c. designing and constructing essential services and infrastructure to exclude water infiltration for flood events up to and including: i. the defined flood event where not involving Essential community infrastructure activities or Vulnerable use activities; ii. the probable maximum flood where for Essential community infrastructure activities or Vulnerable use activities.	Table 8.2.5.3.3 - Minimum flood planning levels.	
PO14 Screening the understorey of a building: a. does not impede the passage of floodwater or overland flow in a High flood risk area identified on Flood hazard overlay map OM-05.04; b. maintains an attractive streetscape interaction and interface as intended by the zone, precinct or local plan	**AO14** No acceptable outcome provided.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO14 does not apply. The understory of the suspended building pads within the development is not intended to be screened.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO15 Development protects public safety and the environment from release of hazardous materials into floodwaters by: a. locating hazardous materials and chemicals outside of a High flood risk area identified on Flood hazard overlay map OM-05.04 and OM-05.02; b. ensuring hazardous materials are stored to prevent the release or hazardous reaction of hazardous materials during flood events, including events rarer than the defined flood event.	**AO15.1** Development involving the manufacturing or storage of hazardous materials, or involving hazardous chemicals at a hazardous chemical facility is located outside of a: a. High flood risk area identified on Flood hazard overlay map OM-05.04; b. High flow area identified on Flood hazard overlay map OM-05.02. **AO15.2** Development in a Moderate flood risk area identified on Flood hazard overlay map OM-05.04: a. does not involve the manufacturing or storage of hazard materials or hazardous chemicals at a hazardous chemical facility; or b. ensures the storage of hazardous materials is located above the 0.2% AEP at 2100 flood event.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO15 does not apply. Hazardous materials are not intended to be stored on site.	

3.2 Part C – Access and evacuation (other than a Home-based business)

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO16 Development involving Vulnerable use activities, other than a Hospital in the Meadowbrook flood assessment area identified on Flood hazard overlay map OM-05.03, has a low flood hazard vehicle evacuation route that leads outside the floodplain to a suitable area that supports the needs of evacuees.	**AO16** No acceptable outcome provided.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO16 does not apply. The proposed development is not intended to involve vulnerable use activities.	
PO17 Development involving an accommodation land use has a low flood hazard vehicle route to a suitable flood-free area that contains essential goods to serve the needs of people	**AO17** During the defined flood event, development for an accommodation land use has a: a. flood-free vehicle access to a road above the flood level; b. flood-free vehicle route that leads to a suitable flood-free area that contains local goods and services to serve the daily needs of people.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO17 does not apply. The proposed development is not intended to involve accommodation land use or residential activities.	
PO18 Development has a low flood hazard vehicle or pedestrian route from dwellings to a flood-free or low flood hazard road.	**AO18** Development has a flood-free vehicle or pedestrian route from onsite dwellings to the flood-free road.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO18 does not apply. The proposed development does not include residential dwellings.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO19 Reconfiguring of a lot intended for a future dual occupancy (auxiliary unit), dwelling house or accommodation land use ensures each lot has internal low flood hazard vehicle access to a road and a low flood hazard vehicle route to a suitable flood-free area that contains essential goods to serve the needs of people.	**AO19** Reconfiguring of a lot in a residential zone category or Emerging community zone, or intended for a future dual occupancy (auxiliary unit), dwelling house or accommodation land use, ensures each lot during the defined flood event has a: a. flood-free vehicle access to a road above the flood level; b. flood-free vehicle route that leads to a suitable flood-free area that contains essential goods.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO19 does not apply. The proposed development application is for a 'Minor Change'.	
PO20 Development, other than where PO16-PO19 is applicable: a. ensures safe self-evacuation by having, for a period of at least 10 hours, low flood hazard vehicle access to a low flood hazard road; or b. is only isolated for a period of less than 4 hours from a low flood hazard road and there is a suitable area on site that is: i. above the defined flood event; ii. not a Low flood island identified on Flood hazard overlay map OM-05.01 or an area impacted by flash	**AO20** Where AO16-AO19 is not applicable, development has flood-free vehicle access to a road that is above the flood level during the defined flood event.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO20 applies to the proposed development. Vehicle manoeuvring and car parking areas are designed to tie into the site crossover at the Cairns Street frontage at approximately 7.0m AHD, which is above the defined flood event level of 6.7m AHD.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
flooding during the defined flood event.			
PO21 Development identified in Table 8.2.5.3.5 – Development requiring a flood emergency management plan appropriately plans for its safe operation and evacuation during a flood event to ensure there is no burden on emergency services, including during a probable maximum flood where involving Vulnerable use activities.	**AO21** No acceptable outcome provided.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO21 applies. Refer *C_25145 R003_Flood Assessment Report* by Context Engineering for details regarding operation and evacuation procedures relevant to the site during a flood event.	

3.3 Part D – Preservation of floodplain function and overland flow paths (other than a Home-based business)

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO22 Filling and excavation ensures the conveyance function of a High risk flood area and Flood investigation area	**AO22** Where located in a High flood risk area or Flood investigation area identified on Flood hazard overlay map OM-05.01, filling and excavation, other than for a stormwater	☐ **Complies** ☒ **Performance Solution** ☐ **Not Applicable**	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
identified on the Flood hazard overlay map OM-05.04 is maintained.	quantity and quality infrastructure, does not exceed: a. a total volume of 20m^3; b. a total area of 2,000m^2.	The area of works for the proposed development encroaches into a High flood risk area in the eastern portion of the site. A majority of this area of works is proposed to be suspended above approved earthworks levels detailed in *Earthworks Plan* and *Earthworks Cross Sections* by Wilkinson Shaw and Associates under application OW/176/2020. The suspension of building pads ensures that the waterway corridor traversing the site functions as intended during flood events.	
PO23 Development does not involve earthworks that would either directly, indirectly or cumulatively cause a loss of floodplain storage below the defined flood event.	**AO23** The total volume of fill is equal to or less than the total volume of cut where earthworks are below the level of the defined flood event in a Moderate flood risk area identified on Flood hazard overlay map OM-05.04.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO23 applies. The proposed development does not involve earthworks that would directly, indirectly, or cumulatively result in a loss of floodplain storage below the defined flood event. Earthworks within the area of works are confined to the building footprints and associated site grading and are undertaken solely to facilitate stormwater conveyance and surface drainage. The existing floodplain storage regime is defined by the Earthworks Plan and Earthworks Cross Sections approved under Operational Works application OW/176/2020, which are adopted as the baseline condition for this	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
		assessment. No earthworks are proposed within the approved floodplain storage cut areas, and the approved compensatory cut volumes remain unaffected. Refer Section 3.4 of *C_25145 R003_Flood Assessment Report* by Context Engineering for further information.	
PO24 Development does not involve works that would either directly, indirectly or cumulatively: a. concentrate, intensify or divert floodwater or overland flow paths onto upstream, downstream or adjacent properties; b. result in an increase in flood levels or flood hazard on upstream, downstream or adjacent properties; c. result in a loss of floodplain storage up to and including the defined flood event; d. adversely impact the role and function of waterways and areas of ecological significance; e. adversely affect adjoining premises, infrastructure and the environment.	**AO24** No acceptable outcome provided.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO24 applies. Since the area of works of the proposed development includes a suspended area of buildings over earthworks levels approved under application OW/176/2020 with no alteration to the compensatory cut detailed within *Earthworks Plan* and *Earthworks Cross Sections* by Wilkinson Shaw and Associates, the function of the waterway corridor remains unchanged. Floodplain storage remains consistent from the pre to post developed case, ensuring that floodwaters are not concentrated or intensified, and adjoining premises and environmental features of the waterway corridor are not adversely affected in a way that is not consistent with the current scenario.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO25 Development does not adversely change the following flood characteristics for all flood events up to and including the defined flood event: a. peak flow; b. flow of any part of the flood before the peak; c. flood flow velocity; d. level of flooding; e. flood time to peak.	**AO25** No acceptable outcome provided.	☐ **Complies** ☒ **Performance Solution** ☐ **Not Applicable** Section 3.6.1.3 Stormwater Quantity Infrastructure within Schedule 6.2.5 (Infrastructure) of the Logan City Council Planning Scheme states that increases in post-development runoff are to be mitigated on site unless it can be demonstrated that downstream systems have adequate capacity to accommodate additional flows without adverse impacts. It is also noted that, within the Loganholme local plan area, development may discharge directly to mapped waterways in certain circumstances where non-worsening outcomes are demonstrated. Although the subject site is located outside the Loganholme local plan stormwater management area, it contains an internal waterway corridor that forms part of the same downstream catchment ("Unnamed 43") and conveys flows to the Logan River. The corridor within the subject site exhibits established vegetation and natural floodplain storage characteristics, indicating capacity to convey and attenuate local flows as part of the broader floodplain system. Post-development minor and major flows will be directed to this internal corridor. Given the scale of the proposed development relative	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
		to the overall catchment area and the available floodplain storage within the on-site corridor, any increase in runoff from the development is expected to be negligible in consideration of the overall waterway system. On this basis, the development is not expected to adversely change peak flow, pre-peak flow conditions, flood velocity, flood levels, or time to peak for flood events up to and including the defined flood event and therefore satisfies the performance intent of PO25. Refer Section 4 of *C_25145 R001_Stormwater Management Plan* by Context Engineering for further information.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO26 Development does not cause a rapid or unexpected increase in safety risks or flood damage during a flood event larger than the defined flood event, including flood events up to and including the probable maximum flood.	**AO26** No acceptable outcome provided.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO26 applies. The approved *Earthworks Plans* and *Earthworks Cross Sections* prepared by Wilkinson Shaw & Associates under Operational Works approval OW/176/2020 identify compensatory cut areas surrounding the primary development footprint. The proposed buildings are largely suspended over these compensatory cut areas, thereby maintaining existing floodplain storage associated with the on-site waterway corridor. The development has been designed with regard to the baseline minimum flood planning level corresponding to the defined 1% AEP flood event of 6.7m AHD. By maintaining floodplain storage and avoiding encroachment into key conveyance areas, the proposed works are not expected to increase flood damage potential or flood risk. Logan Flood Portal mapping indicates that the Probable Maximum Flood (PMF) event results in inundation of the broader Cairns Street locality. On this basis and having regard to the scale and form of the proposed development relative to the extent of existing PMF influence, the development is not expected to result in any material increase in	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
		flood damage or risk within the surrounding floodplain.	
P027 A stormwater quality improvement device is located to retain existing floodplain storage capacity and ensure functionality of the stormwater quality improvement device.	**AO27** A stormwater quality improvement high flow outlet device is located: a. above the 5% AEP flood event caused by local flooding; b. above the 5% AEP flood event caused by regional flooding.	☐ **Complies** ☒ **Performance Solution** ☐ **Not Applicable** Floodplain storage capacity within the site is maintained through the retention of compensatory cut areas detailed in the Earthworks Plans approved under application OW/176/2020, which remain unaffected by the proposed works. The stormwater quality improvement devices are located outside these compensatory cut areas to ensure that existing floodplain storage capacity and hydraulic function are preserved. The top of the inlet pipe to the stormwater quality improvement device, as well as the associated high-flow junction pit, are positioned above the 5% AEP flood level of 5.6 m AHD. In addition, backflow prevention measures are incorporated within the stormwater quality outlet pipe to prevent reverse flows and to restrict the ingress of silt	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
		and debris during elevated water levels. Refer *C_25145 DA46_Stormwater Structure Details* for further details.	
PO28 A stormwater quantity management device is located to retain existing floodplain storage capacity and ensure functionality of the stormwater quantity management device.	**AO28** A stormwater quantity management outlet device is located above the 2% AEP flood event.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO28 does not apply. The proposed development does not include stormwater quantity devices.	
PO29 Stormwater infrastructure does not result in a loss of floodplain storage below the defined flood event.	**AO29** Filling and excavation associated with stormwater quantity and quality infrastructure has a total volume of fill equal to or less than the total volume of cut where below the defined flood event.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO29 applies. Earthworks relating to stormwater quality infrastructure does not involve filling in the established area of compensatory cut detailed in *Earthworks Plan* and *Earthworks Cross Sections* prepared by Wilkinson Shaw & Associates under Operational Works approval OW/176/2020.	

4. Waterway Corridors and Wetlands Overlay Code

This section of the report assesses the proposed development against the relevant civil engineering items within Clause 8.2.12 of the Logan City Council Planning Scheme.

4.1 Part A – Requirements for accepted development (subject to requirements) and assessment benchmarks for assessable development

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO5 Development is designed, constructed, and managed to protect water quality of a Waterway corridors and wetlands area identified on Waterway corridors and wetlands overlay map OM-14.00 by: a. Providing vegetated buffers; b. Incorporating water sensitive urban design principles having regard to: i. Protecting water quality of surface and ground waters; ii. Minimising sewage discharges to the natural environment; c. Limiting discharge of sediments and pollutants into a Waterway corridors and wetlands area.	**AO5** Development: a. provides a vegetated riparian buffer in accordance with section 3.3.1 - Riparian corridor revegetation and weed control of Planning scheme policy 3 - Environmental management; b. provides effective erosion and sediment control in accordance with section 3.3 - Filling and excavation standards of Planning scheme policy 5 - Infrastructure; c. implements water sensitive urban design principles in accordance with section 3.6 - Stormwater infrastructure standards and section 3.7 - Landscaping standards of Planning scheme policy 5 - Infrastructure; d. excludes stock from a Waterway corridors and wetlands area by providing a permanent fence and	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO5 applies. Stormwater quality treatment for the development has been designed in accordance with the requirements detailed within section 3.6 - Stormwater infrastructure standards and stormwater quality objectives defined by the QLD State Planning Policy.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
	gate and utilises off-stream stock watering points.		

5. Filling and Excavation Code

This section of the report assesses the proposed development against the relevant civil engineering items within Clause 9.4.2 of the Logan City Council Planning Scheme.

5.1 Protection of natural process and ecosystems

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO1 The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	**AO1** The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. The development is in proximity to a waterway and will include sediment fences, wash down bays and gully inlet protection to prevent sediment and pollutants from entering the stormwater network. Refer *C_25145 DA80_Erosion and Sediment Control Layout Plan* for further details. Final design to be confirmed prior to construction works.	
PO2 Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	**AO2** Topsoil and spoil is stockpiled to comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. Contractor to ensure compliance as part of construction phase.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO3 Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	**AO3** Filling complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. Contractor to ensure compliance as part of construction phase.	

5.2 Protection of existing and planned infrastructure

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO4 Filling or excavation works do not adversely affect infrastructure, including any services.	**AO4** Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. The earthworks include cut and fill on each lot to establish building pads and the internal driveways. Works will also be required in the verge for the driveway connections. Contractor to ensure no infrastructure is affected as part of construction phase.	

5.3 Protection and enhancement of personal health and safety and premises

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO5 Filling or excavation works do not adversely affect personal health and safety.	**AO5** Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. Contractor to ensure compliance as part of construction phase.	

5.4 Surface water flow

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO6 Surface water drainage does not cause any of the following: a. ponding on any premises; or b. a hazard or adversely affect personal health and safety and premises; or c. diversion or concentration of flow from or onto adjoining premises or infrastructure.	**AO5** Surface water drainage complies with part 3.3 - Filling or excavation standards in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. The development proposes to direct flows from Lot A and B to the existing waterway corridor in the eastern portion of the site. Proposed stormwater infrastructure will capture and convey flows from each lot to the respective LPOD. Final design to be confirmed prior to construction works.	

5.5 Batters

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO7 A batter: a. does not adversely affect the natural physical processes and ecosystems; b. protects existing and planned infrastructure; c. is safe, stable and easily maintained; d. is landscaped to enhance visual amenity.	**AO7** A batter is designed and constructed to comply with the standards specified in 3.3.6 - Batters and retaining walls in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO7 does not apply. A batter is not designed for the development.	

5.6 Retaining walls

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO8 A retaining wall: a. is not constructed of timber and is not located on existing or proposed lot boundaries, or movement networks; b. does not adversely affect the natural physical processes and ecosystems; c. is located to avoid conflict with adjoining premises;	**AO8** A retaining wall is designed and constructed to comply with the standards specified in section 3.3.6.2 - Retaining walls in Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. Conceptual retaining wall locations are shown on *C_25145 DA10_Bulk Earthworks Plan.* Final design to be confirmed prior to construction works.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
d. is located such that existing and planned infrastructure is not adversely affected; e. protects the visual amenity of adjoining premises or a public open space; f. is located within the premises that is being filled; g. is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot; h. is safe and stable; i. enables easy access for maintenance.			

5.7 Filling of a dam

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO7 The filling of a dam: a. does not adversely affect the natural physical processes and ecosystems; b. creates a safe and stable surface; c. is integrated into the landscape	**AO7** The filling of a dam complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	☐ **Complies** ☐ **Performance Solution** ☒ **Not Applicable** PO7 is not applicable as there are no dams proposed as a part of the development.	

6. Infrastructure Code

This section of the report assesses the proposed development against the relevant civil engineering items within Clause 9.4.3 of the Logan City Council Planning Scheme.

6.1 Provision, design, construction and location of infrastructure

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.	**AO1** Reports, plans and drawings are provided in accordance with part 2 of Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO1 applies. Reports, plans, and drawings are included in *R001_Stormwater Management Plan* and *R002_Engineering Services Report*.	
PO2 Development: a. provides necessary infrastructure to service the development; b. provides that the design, construction and location of necessary infrastructure: i. protects existing and planned infrastructure networks; ii. services proposed development; iii. integrates with existing and planned infrastructure networks;	AO2 Development: a. in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; b. not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres; c. in a sewerage supply service area connects to the waste water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code;	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** AO2 applies. Water supply will be provided via the existing water mains located within the Cairns Street verge in accordance with SEQ-WAT-1111-6. The development will also be serviced by the existing sewer main that extends from Cairns Street along the sewer easement on the south-western boundary of the site, designed in accordance with the SEQ Water Supply and Sewerage Design and Construction Code. Refer to drawing *C_25145 DA50_Water & Sewer Layout Plan* for further detail. Final servicing design will be confirmed	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
iv. delivers a standard of service that is efficient and equitable; v. minimises the cost to the community for the life of the infrastructure by providing a suitable design life, ease of maintenance and ease of replacement; vi. protects personal health, safety and premises; vii. protects environmental values.	d. not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code; e. provides stormwater infrastructure in accordance with part 3.6 of Planning scheme policy 5 - Infrastructure; f. provides a movement network infrastructure in accordance with part 3.4 of Planning scheme policy 5 - Infrastructure; g. provides parks in accordance with part 3.12 of Planning scheme policy 5 - Infrastructure; h. provides road lighting in accordance with part 3.5 of Planning scheme policy 5 - Infrastructure; i. provides electricity reticulation in accordance with part 3.8 of Planning scheme policy 5 - Infrastructure; j. provides gas and telecommunications reticulation in accordance with part 3.9 of Planning scheme policy 5 - Infrastructure. k. is consistent with the general planning layouts in part 7.2 of Planning scheme policy 5 - Infrastructure.	at the detailed design and pre-construction phases.	

6.2 Location of development

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO3 Development is located to protect trunk infrastructure networks.	**AO7** Development is located outside a network identified in Local government infrastructure plan map LGIP-03.00 to 08.00 Plans for trunk infrastructure in Schedule 3 - Local government infrastructure plan mapping and tables.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** PO3 applies – the development has considered the location of trunk infrastructure networks. Refer relevant consultant documentation.	

6.3 Roof water drainage and surface water drainage

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO8 Development provides stormwater infrastructure for the drainage of the premises so as not to cause any of the following: a. ponding of stormwater on the premises; b. a hazard to personal health and safety; c. damage to premises; d. an increased risk of flooding to premises within the catchment.	**AO8** Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. The development proposes to direct flows from Lot A and B to the existing waterway corridor in the eastern portion of the site. Proposed stormwater infrastructure will capture and convey flows from each lot to the respective LPOD. Final design to be confirmed prior to construction works.	

6.4 Natural flow of surface water

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO9 Development provides that the natural flow of surface water is: a. not altered so as to cause a risk to personal health and safety or damage to property; b. not increased in intensity, velocity or frequency; c. not concentrated onto adjoining premises.	**AO9** Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. The development proposes to direct flows from Lot A and B to the existing waterway corridor in the eastern portion of the site. Proposed stormwater infrastructure will capture and convey flows from each lot to the respective LPOD. Final design to be confirmed prior to construction works.	

6.5 Water sensitive urban design

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
PO10 Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to: a. protecting existing natural features and ecological processes; b. protecting the natural hydrologic behaviour of catchments;	**AO10** Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.	☒ **Complies** ☐ **Performance Solution** ☐ **Not Applicable** It is anticipated that the development will readily comply. Each site will require quality treatment - this will be provided via the use of proprietary cartridges.	

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
c. protecting the existing natural flow and water quality regimes of waterways; d. protecting water quality of surface and ground waters; e. minimising demand on the water network; f. minimising sewage discharges to the natural environment; g. integrating water into the landscape to enhance visual and ecological values.			

7. Disclaimer

This report has been prepared on behalf of and for the exclusive use of and is subject to and issued in accordance with the agreement between Context Engineering.

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