



LODGE LLC DEVELOPMENT PTY LTD

Flagstone LLC

Stormwater Management Plan

01164_0001-REP-001-1

11 NOVEMBER 2024

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2024/1532

Date: 25 March 2025



EXECUTIVE SUMMARY

Lodge LLC Development Pty Ltd (Lodge) submitted a Material Change of Use (MCU) Priority Development Area (PDA) Development Application (DA) (Ref. DEV2024/1532) for the proposed Land Lease Community (LLC) located in Stages 2-3 of Flagstone City (shown below in Figure 1). A Further Issues Letter was received on 6 September 2024 which requested clarification and further justification of a range of stormwater and flooding items pertaining to the performance criteria of the Site. Most notably, it was requested that the development demonstrate that no flood impacts were predicted to be caused to the state-controlled rail corridor downstream of the LLC development.



Figure 1: Site Locality and Catchment Boundaries

This study was undertaken to determine the outlet configuration required at Basin B6 to ensure no predicted flood impacts downstream and clearly demonstrate that all performance criteria relevant to stormwater quantity, waterway stability and stormwater quality are satisfied. It is proposed that Basin B4 and Basin B6 are updated in accordance with the below:

- Basin B4 filter area is increased by 50 sqm from 735 sqm to 785 sqm to satisfy the legislated load-based pollutant reductions for stormwater quality treatment.
- Basin B6 outlet configuration is updated to:
 - Increase the basin crest level from RL 47.35 mAHD to RL 47.65 mAHD to increase the available storage within the basin; and,
 - Reflect the proposed outlet configuration summarised in Table 1 .

TABLE 1: PROPOSED BASIN B6 CONFIGURATION

Parameter	Basin B6
1% AEP Volume (m ³)	9800
1% AEP Basin Stage (mAHD)	47.5
5% AEP Basin Depth (m)	1.75
Outlet Configuration	675 mm RCP at RL 45.55 mAHD (low-flow outlet 1) 600 mm RCP at RL 45.85 mAHD (low-flow outlet 2) 6 m-wide weir at RL 47.20 mAHD (high-flow outlet) 50 m-wide weir at RL 47.50 mAHD (emergency overflow)

The proposed changes to infrastructure as outlined above are suitable to demonstrate compliance with the relevant performance criteria of the proposed LLC development.

DISCLAIMER

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Rev	Date	Description	Author	Reviewer	Project Mgr.	Approver
0	30/10/2024	Further Issues Response	Jesse Hunter	Mark Page	Jesse Hunter	Mark Page
1	11/11/2024	Further Issues Response	Jesse Hunter	Mark Page	Jesse Hunter	Mark Page

Signatures:






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1. INTRODUCTION

1.1 Scope of Works

Engeny Australia (Engeny) was engaged by Lodge LLC Development Pty Ltd (Lodge) to undertake stormwater quality and flood modelling of the proposed Land Lease Community (LLC) Development (the Site) located within Flagstone Stages 2-5. The proposed Site plans are provided in Appendix A.

An initial review of the stormwater infrastructure was undertaken and documented in the *Flagstone Stages 2-3 Land Lease Stormwater Assessment and Review (Engeny, July 2024) (Ref. 01164_0001-MEM-001-1)*. This report represents an updated and extended version of the original memo to include additional scope and analysis.

The scope of works included the following:

- Development of a Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model.
- Sizing of a treatment train to achieve the legislated load-based pollutant reductions for stormwater quality treatment.
- Development of a Pre-Development and Post-Development WBNM hydrologic model of the Site for the 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP design events.
- Sizing of 63.2% AEP detention basins to satisfy the necessary waterway stability objectives.
- Development of a Pre-Development and Post-Development TUFLOW hydraulic model of the Site for the catchment discharging to the state-controlled rail corridor for the 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP design events.
- Sizing of a detention basin to mitigate Post-Development peak flows to Pre-Development peak flows at the discharge location to the state-controlled rail corridor for the 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP design events.
- Preparation of flood mapping and afflux mapping (level and velocity) to demonstrate no actionable nuisance within the state-controlled rail corridor.
- Preparation of an engineering response to the MCU PDA Development Application (Ref. DEV2024/1532) Further Issues Letter.
- Preparation of a flood report suitable for submission to EDQ.

1.2 Site Description

The proposed LLC development (the Site) is located within Flagstone Context Area 1 Stages 2 – 3 currently undergoing development. The Stages 2 – 3 area covers an approximate 55.4 ha land, with the LLC development covering 12 ha within this broader catchment as shown in Figure 1.1. The southern portion of Flagstone Stages 2 – 3 is already delivered with construction sequencing moving north towards Flagstone Creek. The development will discharge both north to Flagstone Creek at two separate locations and east to Sandy Creek at a single location. The catchment B6 detention and bioretention basin is already constructed and operational, with the detention and bioretention basins for catchments B4 and B5 currently undergoing design and approval.

1.3 Performance Criteria

Several objectives were adopted for the Flagstone City development with respect to the management of flooding and stormwater quality. The endorsed Stormwater IMP (Peet, July 2018) (ref. DEV2012/209/6/8) outlines the framework and performance criteria for management of stormwater quality, stormwater quantity and waterway stability which are summarised below:

- Stormwater Quality:
 - 80% reduction in total suspended solids.
 - 60% reduction in total phosphorus.
 - 45% reduction in total nitrogen.
 - 90% reduction in gross pollutants.
- Stormwater Quantity:

- No increase to peak flows downstream of the Flagstone City development up to the 1% AEP design storm event.
- No development within the 1% AEP flood extent unless peak flows are appropriately mitigated to ensure no increases across the range of design events.
- Existing watercourses to be maintained for conveyance of stormwater runoff.
- Waterway Stability:
 - Mitigation of the Post-Development 63.2% AEP peak flow to Pre-Development peak flow.

Cardno originally prepared the *Stormwater Management Report – Stage 2 – 5* (Cardno, August 2012) which outlined the proposed infrastructure required to meet the stormwater quality, stormwater quantity and waterway stability objectives of the development. This document has been superseded several times, and most recently superseded by the endorsed *Revised Stormwater Infrastructure for Stage 2-5 Flagstone* (Meinhardt, September 2019).

The following sections of this report demonstrates how the relevant performance criteria are satisfied following integration of the proposed LLC development.



Figure 1.1: Site Locality and Catchment Boundaries

2. STORMWATER QUANTITY MANAGEMENT

2.1 WBNM Model Development

A detailed summary of WBNM hydrologic model development assumptions and parameters is provided in Appendix B.

The Pre-Development and Post-Development catchment plans are shown below in Figure 2.1 and Figure 2.2.

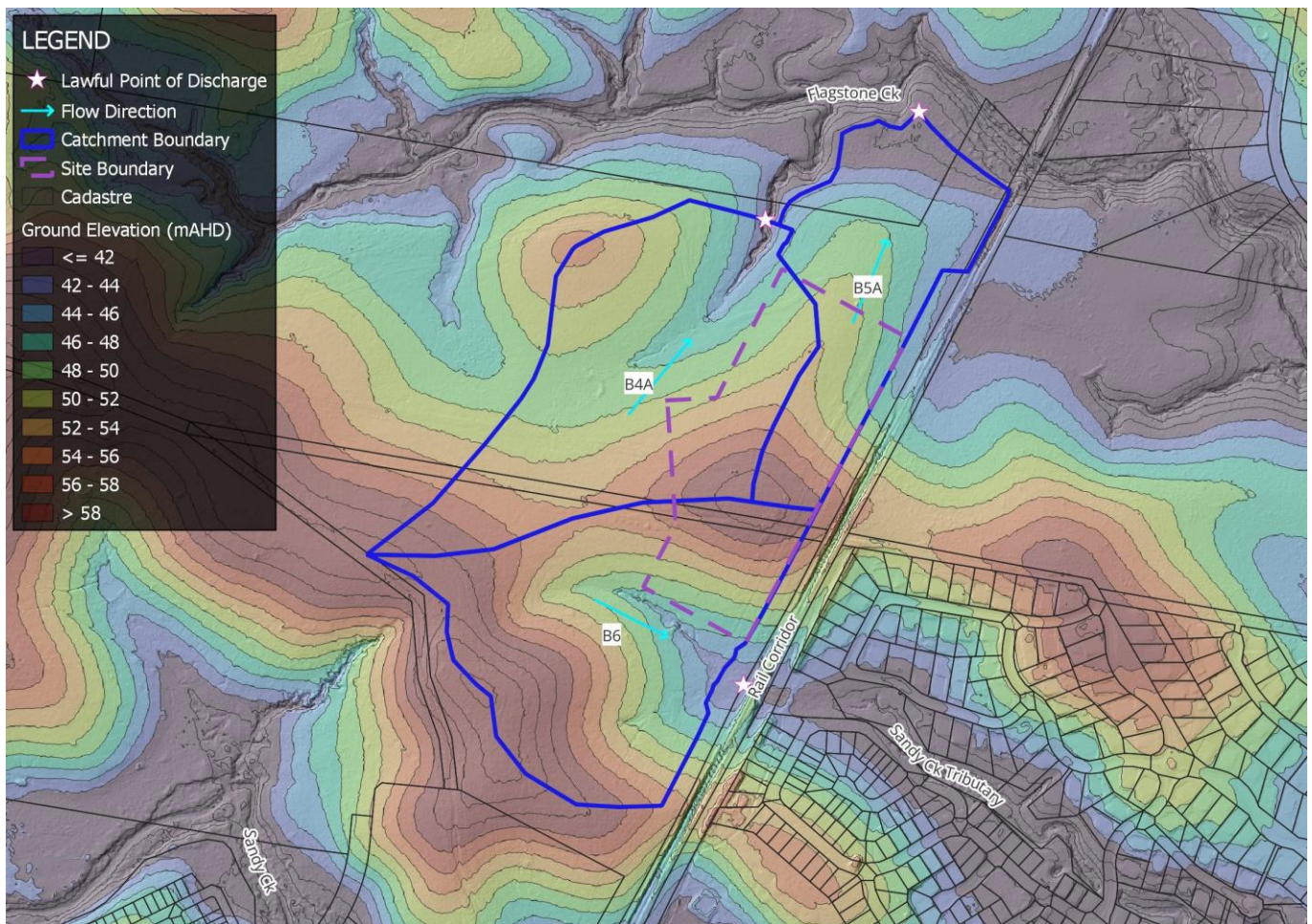


Figure 2.1: Pre-Development Sub-Catchments

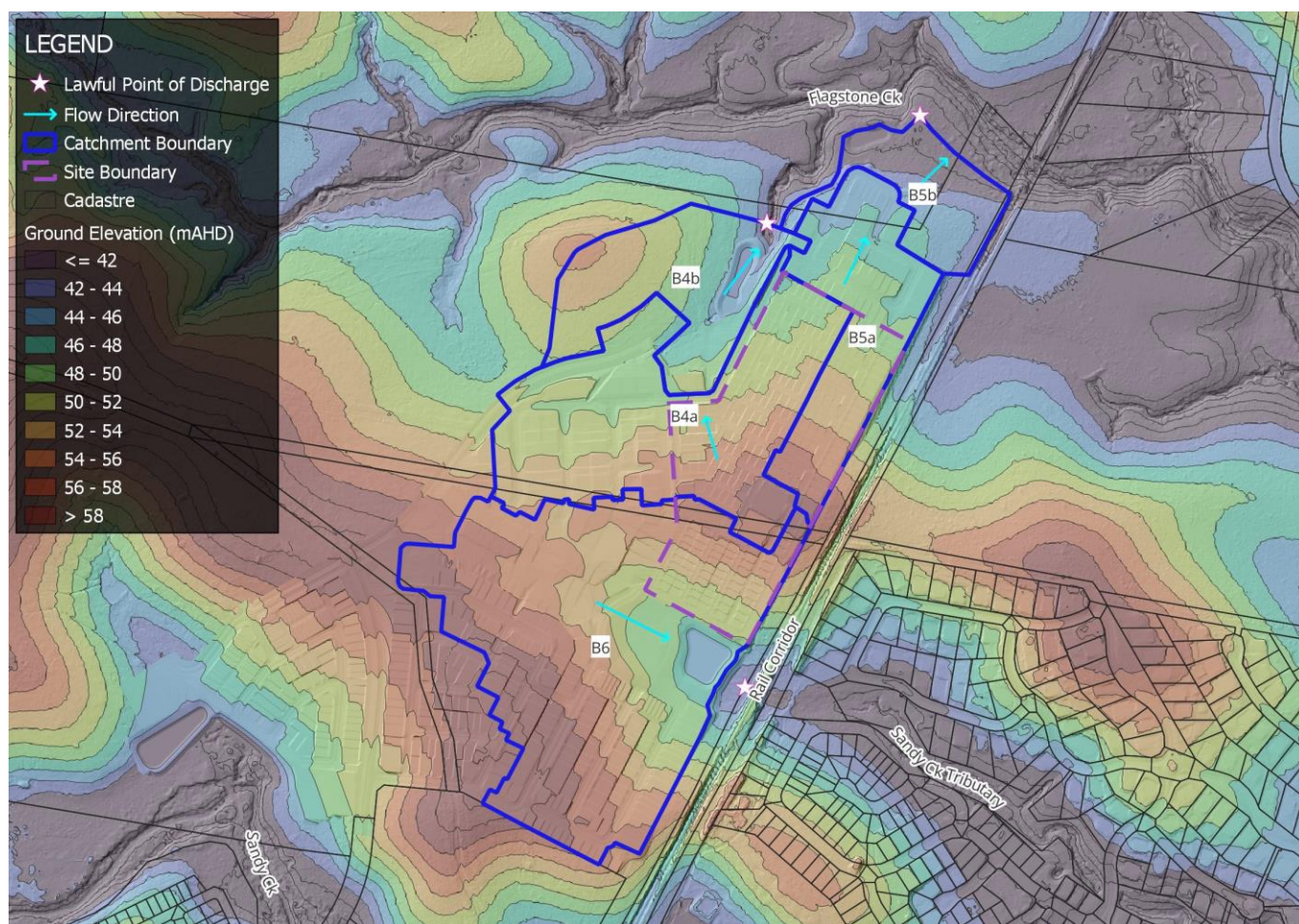


Figure 2.2: Post-Development Sub-Catchments

2.2 Proposed Mitigation Structures

Basin B6 is proposed to mitigate all peak flows from the 63.2% AEP to 1% AEP to satisfy the waterway stability and stormwater quantity performance objectives. Basin B6 is already constructed, however the outlet configuration is proposed to be modified to appropriately mitigate all peak flows up to the 1% AEP. The proposed basin configuration is summarised below in Table 2.1.

TABLE 2.1: PROPOSED BASIN B6 CONFIGURATION

Parameter	Basin B6
1% AEP Volume (m ³)	9800
1% AEP Basin Stage (mAHD)	47.5
5% AEP Basin Depth (m)	1.75
Outlet Configuration	675 mm RCP at RL 45.55 mAHD (low-flow outlet 1) 600 mm RCP at RL 45.85 mAHD (low-flow outlet 2) 6 m-wide weir at RL 47.20 mAHD (high-flow outlet) 50 m-wide weir at RL 47.50 mAHD (emergency overflow)

It is observed that the 5% AEP peak flood depth is predicted to exceed the 1.2 m maximum flood depth recommendation in QUDM, as such it is recommended that the civil engineer undertaking design of the proposed basin modifications consider implementation of adequate safety controls, this may include but is not limited to:

- Floodway warning signage,
- Flood depth indicators,
- Vegetative screening; and,
- Physical barrier and/or fences.

In addition to the augmentation of Basin B6 set out above, confirmation from Logan Water is being obtained to confirm acceptable freeboard to the existing sewer pump station switchboard located south of the Basin due to the proposed increase to peak water levels.

2.3 TUFLOW Model Development

A detailed summary of TUFLOW model development assumptions and parameters is provided in Appendix C.

2.4 TUFLOW Model Results

Appendix E includes results for flood depth, level, velocity, depth-velocity product, level afflux and velocity afflux for the Pre-Development and Post-Development scenarios. The flood afflux maps clearly demonstrate that there are no predicted flood impacts to the state-controlled rail corridor downstream.

Peak flow results for the Pre-Development and Post-Development scenarios immediately upstream of the state-controlled rail corridor are summarised below in Table 2.2. Peak flood level results within Basin B6 are provided in Table 2.3.

TABLE 2.2: BASIN B6 PEAK FLOW COMPARISON

AEP	Pre-Development (m ³ /s)	Peak Flow	Post-Development (m ³ /s)	Peak Flow	Peak Flow Difference (m ³ /s)
1%	3.8		3.7		-0.1
2%	3.2		2.5		-0.7
5%	2.7		2.0		-0.7
10%	2.2		1.7		-0.5
20%	1.7		1.3		-0.4
50%	0.7		0.7		0.0
63.2%	0.6		0.6		0.0

TABLE 2.3: BASIN B6 PEAK WATER LEVEL

AEP	Post-Development Peak Basin Stage (mAHD)
1%	47.5
2%	47.3
5%	47.0
10%	46.8
20%	46.6
50%	46.3
63.2%	46.2

2.5 Emergency Overflow Weir

The emergency overflow weir is proposed to be located at a base level of RL 47.5 mAHD, this level allows for the 1% AEP design event to be discharged through the high-flow weir located at a base level of RL 47.2 mAHD without engaging the emergency weir. As outlined in Table 6.1, the emergency weir is proposed to be 50 m wide at the base and is to be designed with a 1 in 4 side batter. The proposed high-flow weir and emergency weir parameters allow for safe discharge of the 1% AEP Post-Development Scenario unmitigated basin inflow under full blockage conditions of the pipe outlets. A summary of the predicted emergency overflow weir performance is summarised below in Table 2.4.

TABLE 2.4: EMERGENCY OVERFLOW WEIR CAPACITY

Parameter	Value
1% AEP Unmitigated Basin Inflow (m ³ /s)	6.3
Combined Weir Capacity at RL 47.2 mAHD (m ³ /s)	0
Combined Weir Capacity at RL 47.5 mAHD (m ³ /s)	1.9
Combined Weir Capacity at RL 47.65 mAHD (m ³ /s)	7.8

3. WATERWAY STABILITY MANAGEMENT

3.1 WBNM Model Development

A detailed summary of WBNM model development assumptions and parameters is provided in Appendix B.

The Pre-Development and Post-Development catchment plans are provided in Figure 2.1 and Figure 2.2.

3.2 Proposed Mitigation Structures

It is proposed that Basin B4 and Basin B5 are sized to mitigate the 63.2% AEP peak flows to satisfy the waterway stability performance objectives. The proposed design basin configurations are summarised below in Table 3.1, noting that Basin B5 is already assessed and endorsed for Compliance Assessment. Neither Basin B4 or Basin B5 outlet configurations are required to be modified beyond current design documents to comply with the performance objectives of the Site.

TABLE 3.1: PROPOSED BASIN B4 AND B5 CONFIGURATION

Parameter	Basin B4	Basin B5
63.2% AEP Volume (m ³)	530	300
63.2% AEP Basin Stage (mAHD)	44.3	38.3
Outlet Configuration	0.9 m x 0.9 m field inlet at USIL 38.43 mAHD into 525 mm RCP at USIL 36.97 mAHD	0.9 m x 0.9 m field inlet at USIL 43.97 mAHD into 600 mm RCP at USIL 42.64 mAHD

3.3 WBNM Model Results

The pre-development and post-development peak flows for the 63.2% AEP basins are provided below in Table 3.2 at the lawful points of discharge into Flagstone Creek. The peak flow results at Basin B6 for the 63.2% AEP are provided above in Table 2.2 which show no increases in accordance with the performance objectives.

The peak flow results clearly demonstrate that that waterway stability performance objectives are satisfied.

TABLE 3.2: BASIN B4 AND BASIN B5 PEAK FLOW COMPARISON

Parameter	63.2% AEP Pre-Development Peak Flow (m ³ /s)	63.2% AEP Post-Development Peak Flow (m ³ /s)	Peak Flow Difference (m ³ /s)
Basin B4	0.7	0.3	-0.4
Basin B5	0.5	0.2	-0.3

4. STORMWATER QUALITY MANAGEMENT

4.1 MUSIC Model Development

A detailed summary of MUSIC model development assumptions and parameters is provided in Appendix D.

Catchment areas were adopted in accordance with the WBNM catchments provided in Figure 2.1 and Figure 2.2.

4.2 Proposed Treatment Train

It is proposed that a bioretention basin is installed at the discharge location from each catchment B4A, B5A and B6. Details of the proposed bioretention basins is provided in Table 4.1. It is noted that a 50 sqm filter media area increase is required in Basin B4 to achieve the necessary water quality objectives and load-based pollutant reductions, this is required due to a change in the contributing catchment.

TABLE 4.1: TREATMENT TRAIN PARAMETERS

Catchment	Basin B4	Basin B5	Basin B6
Filter Media Area (m ²)	785	555	1320
Filter Media Depth (m)	0.5	0.4	0.4

4.3 MUSIC Model Results

Performance of the proposed bioretention basin through load-based pollutant reductions is summarised in Table 4.2. The proposed treatment trains are demonstrated to achieve the performance criteria of the Site.

TABLE 4.2: LOAD-BASED POLLUTANT REDUCTIONS

Catchment	Basin B4	Basin B5	Basin B6
Total Suspended Solids (%)	80.4	85.7	84.6
Total Phosphorus (%)	72.9	79.2	77.3
Total Nitrogen (%)	47.6	52.6	51.6
Gross Pollutants (%)	100	100	100

5. EDQ FURTHER ISSUES RESPONSE

A Further Issues letter was submitted to Lodge LLC Development Pty Ltd on 6 September 2024 following EDQ assessment of the MCU PDA Development Application (Ref. DEV2024/1532). Table 5.1 provides engineering responses to the Further Issues items relating to stormwater and flooding.

TABLE 5.1: DEV2024/1532 FURTHER ISSUES ENGINEERING RESPONSES

No.	Item	Consultant Response
15	Pre-Development Condition. Provide information to verify the existing drainage characteristics of the site, particularly in relation to the railway corridor. All legal points of discharge for the development site should be identified.	Details of the WBNM modelling and TUFLOW modelling of the Pre-Development conditions is provided in Appendix B and Appendix C. Flood mapping of the Pre-Development conditions is provided in Appendix E. This item is considered satisfied.
16	Catchment Analysis. Provide pre-development and post-development catchment plans that clearly identify all internal catchments on the site, external catchments draining into the site, the flow paths (direction of flow) within each catchment, the size of each catchment and the legal point of discharge for each catchment.	Detailed catchment plans are provided in Appendix B which provide all information requested by EDQ. This item is considered satisfied.
17	Provide confirmation that the existing and to-be-constructed detention basins have been adequately designed and sized to incorporate this proposed development for all events up to 1% AEP. If the basins do not adequately cater for the proposed development, submit plans showing how the basins will be augmented to handle this development.	This report provides the necessary engineering details of modifications to Basin B6 to ensure peak flows and downstream flood impacts are mitigated for all events up to the 1% AEP. The revised basin sizing included in this report is also sufficient to cater for the LLC development and relevant analysis is provided in Section 2 and Appendix C. This item is considered satisfied.
18	Flood Impact Assessment - Submit an addendum to the approved Flood Impact Assessment Report that includes a hydraulic and hydrological analysis demonstrating the design flood peak discharges for the site and surrounding area which exist in the pre and post development scenarios for all flood and stormwater events up to a 1% Annual Exceedance Probability. This should include at least the following flood and stormwater events: 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP. The flood model needs to adequately encompass the railway corridor. Mapping (afflux, water level/depth and velocity impact maps) should be provided to clearly illustrate the pre-development scenario, and post-development impacts for all relevant design events. Ensure the modelling results are provided for all location where water discharges to the railway corridor.	The requested hydrologic and hydraulic analysis was undertaken and documented in this report which clearly demonstrates that flood impacts are managed for all flood events between the 63.2% and 1% AEP. Flood modelling was undertaken for Basin B6 only as this structure is proposed to mitigate peak flows up to the 1% AEP as outlined in the <i>Revised Stormwater Infrastructure for Stage 2-5 Flagstone (Meinhardt, September 2019)</i> tech memorandum. Flood modelling was not undertaken for catchments B4 and B5 as these catchments only require consideration and management of stormwater quality and waterway stability performance objectives under the current approved Stormwater IMP for Flagstone. This item is considered satisfied.
19	Water quantity assessment. The peak discharge analysis should be based on current rainfall IFD data for the following flood and stormwater events: 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP and provide adequate details of the pre and post development impervious area of the site. The design flood peak discharges should be shown for the mitigated case to demonstrate the detention basins will ensure there is no worsening impact on the railway corridor.	Relevant WBNM model details are provided in Appendix B which has adopted the most recent rainfall IFDs for modelling of all events between the 63.2% and 1% AEP. Flood mapping provided in Appendix E clearly demonstrates that flood impacts within the state-controlled rail corridor are mitigated to ensure no actionable nuisance or flood level increases within 10 mm. This item is considered satisfied.

6. CONCLUSION

Based on the stormwater quantity, waterway stability and stormwater quality analysis undertaken for the proposed Flagstone LLC development, it is proposed that Basin B4 and B6 are modified to satisfy the performance criteria applicable to the Site. Details of the proposed modifications are listed below:

- Basin B4 filter area is increased by 50 sqm from 735 sqm to 785 sqm to satisfy the legislated load-based pollutant reductions.
- Basin B6 outlet configuration is updated to:
 - Increase the basin crest level from RL 47.35 mAHD to RL 47.65 mAHD; and,
 - Reflect the proposed outlet configuration summarised in Table 6.1.

TABLE 6.1: PROPOSED BASIN B6 CONFIGURATION

Parameter	Basin B6
1% AEP Volume (m ³)	9800
1% AEP Basin Stage (mAHD)	47.5
5% AEP Basin Depth (m)	1.75
Outlet Configuration	675 mm RCP at RL 45.55 mAHD (low-flow outlet 1) 600 mm RCP at RL 45.85 mAHD (low-flow outlet 2) 6 m-wide weir at RL 47.20 mAHD (high-flow outlet) 50 m-wide weir at RL 47.50 mAHD (emergency overflow)

It is considered that the proposed development will comply with the stormwater quality, stormwater quantity and waterway stability performance criteria once the changes outlined above have been adopted and implemented. The contents of this report are also considered suitable to respond to the EDQ Further Issues letter received 6 September 2024 in relation to the MCU PDA Development Application (Ref. DEV2024/1532).

In addition to the augmentation of Basin B6 set out above, confirmation from Logan Water is being obtained to confirm acceptable freeboard to the existing sewer pump station switchboard located south of the Basin due to the proposed increase to peak water levels.

7. QUALIFICATIONS

- (a) In preparing this document, including all relevant calculation and modelling, Engeny Australia Pty Ltd (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.
- (b) Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.
- (c) Engeny reserves the right to review and amend any aspect of the works performed including any opinions and recommendations from the works included or referred to in the works if:
 - (i) Additional sources of information not presently available (for whatever reason) are provided or become known to Engeny; or
 - (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.
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- (f) If any claim or demand is made by any person against Engeny on the basis of detriment sustained or alleged to have been sustained as a result of reliance upon the Report or information therein, Engeny will rely upon this provision as a defence to any such claim or demand.
- (g) This Report does not provide legal advice.

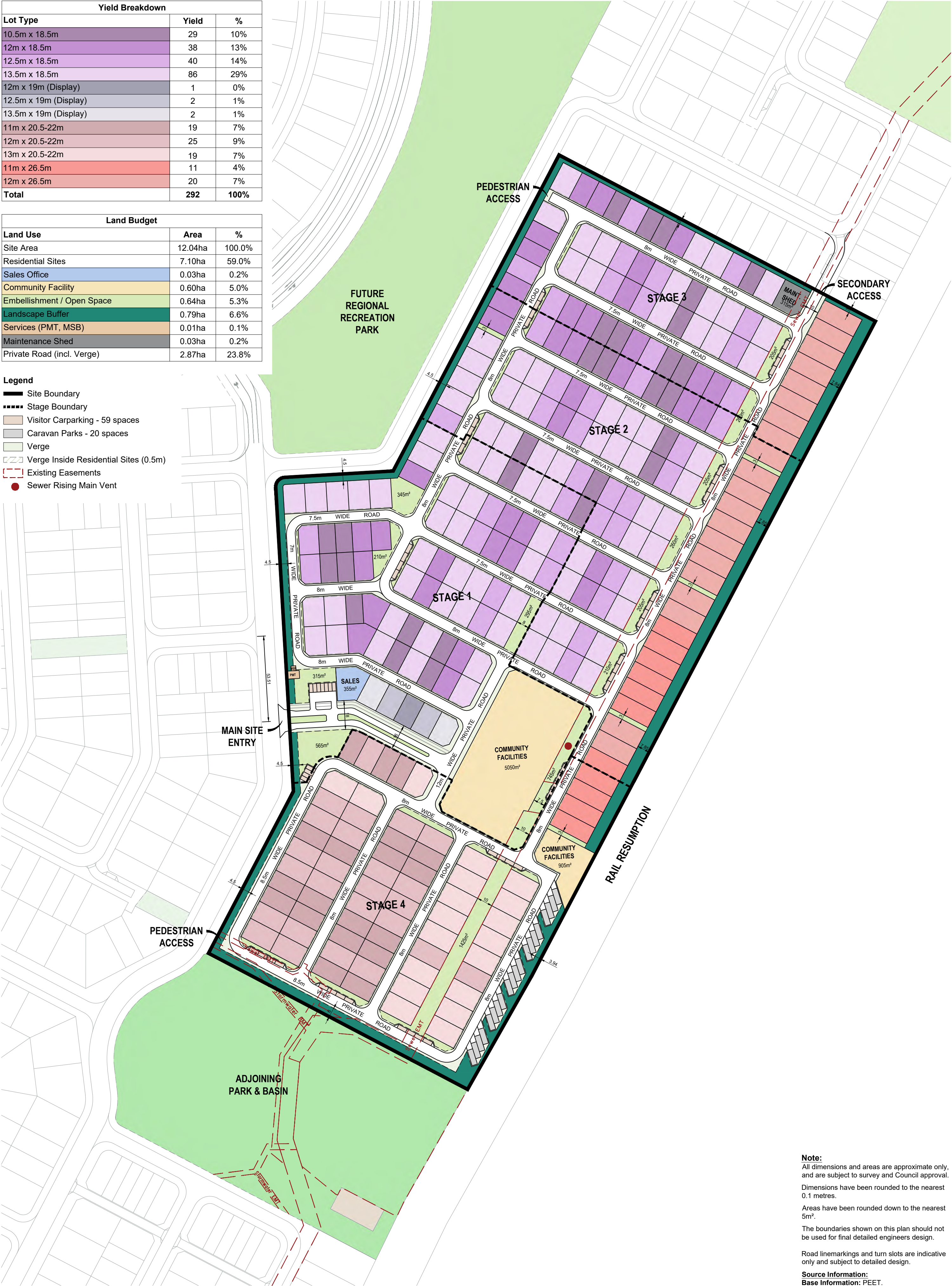
APPENDIX A: SITE LAYOUT PLANS



Yield Breakdown		
Lot Type	Yield	%
10.5m x 18.5m	29	10%
12m x 18.5m	38	13%
12.5m x 18.5m	40	14%
13.5m x 18.5m	86	29%
12m x 19m (Display)	1	0%
12.5m x 19m (Display)	2	1%
13.5m x 19m (Display)	2	1%
11m x 20.5-22m	19	7%
12m x 20.5-22m	25	9%
13m x 20.5-22m	19	7%
11m x 26.5m	11	4%
12m x 26.5m	20	7%
Total	292	100%

Land Budget		
Land Use	Area	%
Site Area	12.04ha	100.0%
Residential Sites	7.10ha	59.0%
Sales Office	0.03ha	0.2%
Community Facility	0.60ha	5.0%
Embellishment / Open Space	0.64ha	5.3%
Landscape Buffer	0.79ha	6.6%
Services (PMT, MSB)	0.01ha	0.1%
Maintenance Shed	0.03ha	0.2%
Private Road (incl. Verge)	2.87ha	23.8%

- Legend**
- Site Boundary
 - Stage Boundary
 - Visitor Carparking - 59 spaces
 - Caravan Parks - 20 spaces
 - Verge
 - Verge Inside Residential Sites (0.5m)
 - Existing Easements
 - Sewer Rising Main Vent



Note:
All dimensions and areas are approximate only, and are subject to survey and Council approval. Dimensions have been rounded to the nearest 0.1 metres. Areas have been rounded down to the nearest 5m². The boundaries shown on this plan should not be used for final detailed engineers design. Road linemarkings and turn slots are indicative only and subject to detailed design.

Source Information:
Base Information: PEET.

PLAN REF: AU14602-05H
DATE: 02 OCTOBER 2024
CLIENT: LAND LEASE PROPERTY
DRAWN BY: MD
CHECKED BY: MD

FLAGSTONE LAND LEASE COMMUNITY CONCEPT MASTERPLAN

URBAN DESIGN
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Fortitude Valley QLD 4006
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W rpsgroup.com



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APPENDIX B: HYDROLOGIC MODELLING



B.1 WBNM Model Development

B.1.1 Catchment Parameters

Sub-catchment delineation of the contributing Site catchments to the discharge locations to Flagstone Creek and Sandy Creek was undertaken. Catchment delineation was undertaken using a combination of the 2023 and 2013 LiDAR to represent both Post-Development and Pre-Development conditions. Data dated 2023 was adopted for any catchment area external to the Flagstone City and LLC developments to represent current catchment conditions, with data dated 2013 adopted within the development areas to represent the Pre-Development catchment conditions. The Post-Development Scenario sub-catchment delineation was updated with data dated 2023 as well as design information within the development areas.

Fraction impervious values for the catchment was determined using a combination of historical aerial imagery and LCC Planning Scheme zoning for the Pre-Development model. The Post-Development model included allowance for the overall Site development plan for both Flagstone City (Peet) and LLC (Lodge) developments. Fraction impervious values for each of the adopted land-uses are summarised below in Table B.1. The sub-catchment delineation and adopted sub-catchment parameters are provided in Table B.2, Figure B.1, and Figure B.2.

TABLE B.1: LAND USE FRACTION IMPERVIOUS VALUES

Land Use	Fraction Impervious (%)
Open Space	5
Low Density Residential (<600m ²)	60
Low Density Residential (<500m ²)	65
Low Density Residential (>600m ²)	50
LLC Residential	85
LLC Community Facilities	85
Basin	0
Minor Road	70
Major Road	50

TABLE B.2: SUB-CATCHMENT PARAMETERS

Catchment	Pre-Development (ha)	Area	Pre-Development Fraction Impervious (%)	Post-Development (ha)	Area	Post-Development Fraction Impervious (%)
B4A	20.2	0		13.1	65	
B4B	-	-		6.5	11	
B5A	11.5	0		6.8	69	
B5B	-	-		3.6	0	
B6	18.8	0		21.3	58	

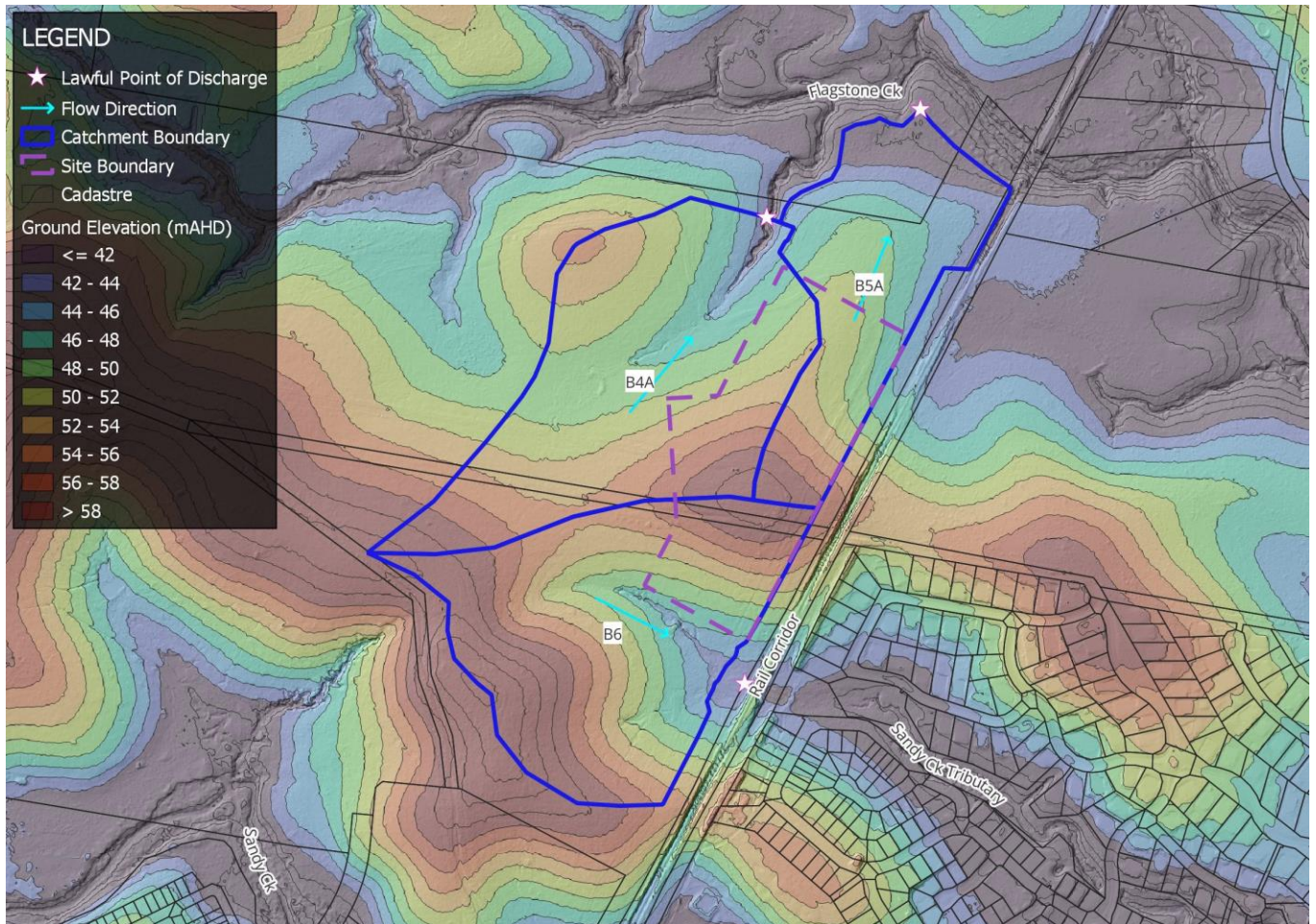


FIGURE B.1: PRE-DEVELOPMENT SUB-CATCHMENTS

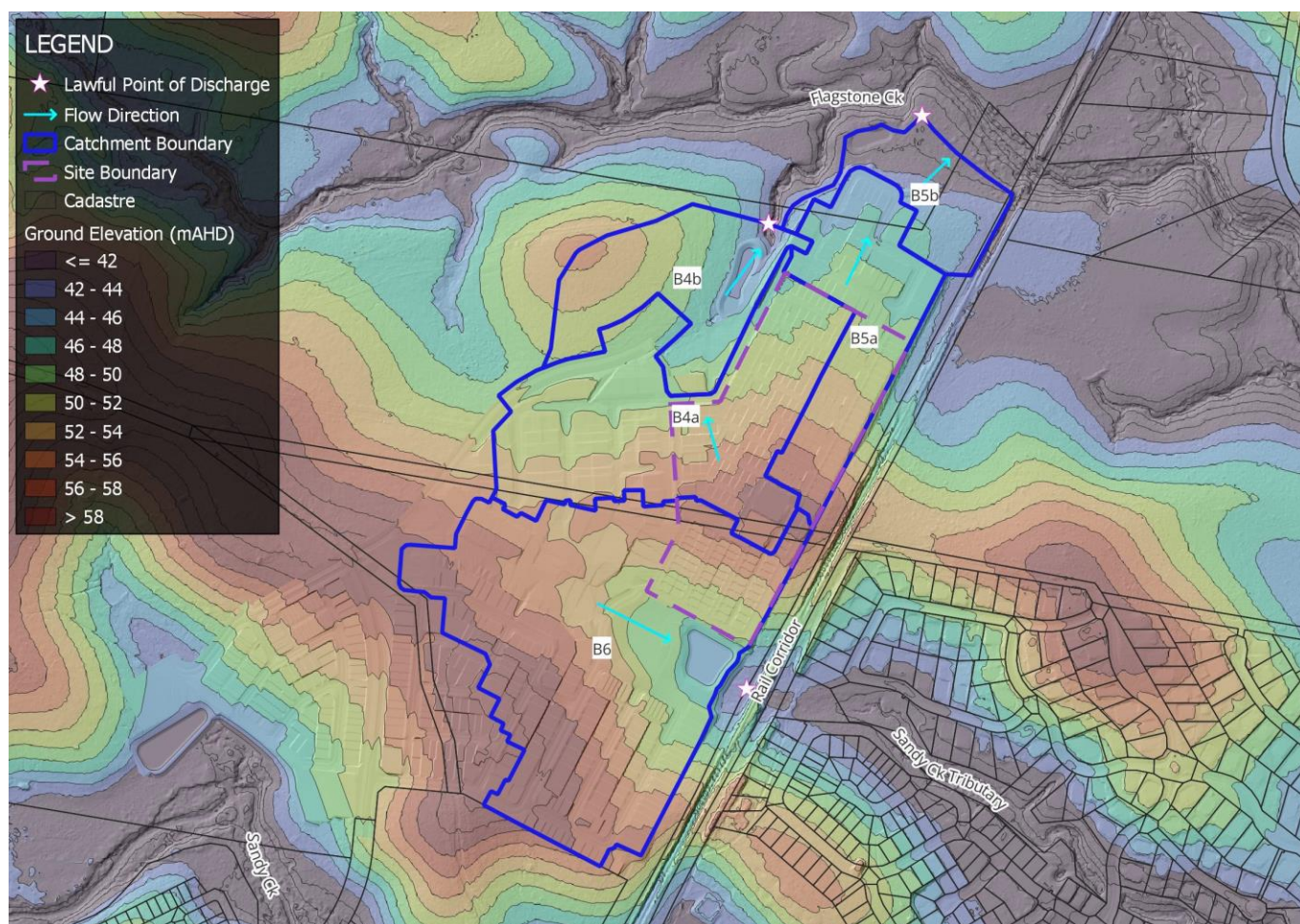


FIGURE B.2: POST-DEVELOPMENT SUB-CATCHMENTS

B.1.2 Rainfall-Loss Parameters

The rainfall-loss parameters adopted in WBNM are summarised as follows:

- Application of storm initial loss of 24 mm, as per ARR 2019 specifications, for all pervious surfaces.
- Application of storm continuing loss of 1.6 mm/h, as per ARR 2019 specifications, for all pervious surfaces.
- Application of initial and continuing losses of 1 mm and 0 mm/h, respectively, for all impervious surfaces.
- Application of ARR 2019 rainfall depths sourced from the Bureau of Meteorology (BoM), as per ARR 2019 specifications.
- Application of ARR 2019 median pre-burst rainfall depths, as per ARR 2019 specifications, prior to main burst.
- Simulation of the full ensemble of the 10 ensemble temporal patterns for the East Coast North region, as per ARR 2019 specifications.
- No application of Areal Reduction Factors.
- WBNM default value of $C = 1.6$ was adopted.

The *Slacks and Scrubby Creeks Flood Study (WRM, September 2018)* is a joint-calibrated hydrologic and hydraulic model of a catchment in the region, standard ARR Data hub initial losses were adopted for design event analyses. However, continuing losses for design event analyses was based on the calibrated continuing losses which were adopted as 1.1 mm/h for catchment less than 30% impervious. Therefore, it is considered that the continuing losses adopted for the Flagstone Creek and Sandy Creek catchments in accordance with ARR 2019 are within an acceptable range of continuing losses adopted for surrounding calibrated catchments.

B.1.3 Proposed Mitigation Structures

It is proposed that Basin B4 and Basin B5 are sized to mitigate the 63.2% AEP peak flows to satisfy the waterway stability performance objectives. The proposed design basin configurations are summarised below in Table B.3.

Basin B6 is proposed to mitigate all peak flows from the 63.2% AEP to 1% AEP to satisfy the water stability and stormwater quantity performance objectives. Basin B6 is already constructed, however the outlet configuration is proposed to be modified to appropriately mitigate all peak flows. The proposed basin configuration is summarised below in Table B.4.

TABLE B.3: PROPOSED BASIN B4 AND B5 CONFIGURATION

Parameter	Basin B4	Basin B5
63.2% AEP Volume (m ³)	530	300
63.2% AEP Basin Stage (mAHD)	44.3	38.3
Outlet Configuration	0.9 m x 0.9 m field inlet at USIL 38.43 mAHD into 525 mm RCP at USIL 36.97 mAHD	0.9 m x 0.9 m field inlet at USIL 43.97 mAHD into 600 mm RCP at USIL 42.64 mAHD

TABLE B.4: PROPOSED BASIN B6 CONFIGURATION

Parameter	Basin B6
1% AEP Volume (m ³)	9800
1% AEP Basin Stage (mAHD)	47.5
5% AEP Basin Depth (m)	1.75
Outlet Configuration	675 mm RCP at RL 45.55 mAHD (low-flow outlet 1) 600 mm RCP at RL 45.85 mAHD (low-flow outlet 2) 6 m-wide weir at RL 47.50 mAHD (high-flow outlet) 50 m-wide weir at RL 47.65 mAHD (emergency overflow)

B.1.4 Model Results

The pre-development and post-development peak flows for the 63.2% AEP basins are provided below in Table B.5 at the lawful points of discharge into Flagstone Creek.

TABLE B.5: BASIN B4 AND BASIN B5 PEAK FLOW COMPARISON

Parameter	63.2% AEP Pre-Development Peak Flow (m ³ /s)	63.2% AEP Post-Development Peak Flow (m ³ /s)	Peak Flow Difference (m ³ /s)
Basin B4	0.7	0.3	-0.4
Basin B5	0.5	0.2	-0.3

APPENDIX C: HYDRAULIC MODELLING



C.1 TUFLOW Model Development

The TUFLOW model was developed as a sub-model of the flood model prepared for the over-arching Flagstone City development. Details of the over-arching flood models are included in the *Flagstone City Masterplan Flood Management Strategy (Engeny, August 2024) (Ref. QC4012_002-REP-001-4)* which was submitted to Council for review with the Flagstone CA3 South Further Issues response (Ref. DEV2024/1491). Relevant details of the sub-model setup are provided in the following sections in this Appendix.

C.1.1 Model Solver and Simulations

A hydrologic inflow model was developed to simulate the flooding behaviour of Sandy Creek and the associated tributary downstream of Basin B6. The model has utilised the TUFLOW HPC Solver which allows for an adaptive timestep to produce more accurate flood extents and characteristics. The 2023 TUFLOW engine (2023-03-AB) was utilised for simulation of the storm events.

The model has been simulated for a range of critical storm durations within the catchment, these include the following storm durations:

- 1-hour;
- 1.5-hour;
- 2-hour;
- 3-hour;
- 6-hour;
- 9-hour;
- 12-hour;
- 18-hour; and;
- 24-hour.

All 10 ensemble temporal patterns were initially modelled in TUFLOW for the 63.2%, 50%, 20%, 10%, 5%, 2% and 1% AEP design events, the median storm temporal pattern was adopted for each storm duration to determine a measure for the average catchment response for each AEP. Detailed analysis of the median storm temporal patterns estimated by the hydraulic model was undertaken to select a single representative temporal pattern for each storm duration. These representative storm temporal patterns were adopted for analysis of all design events other than the 1% AEP. It is acknowledged that the 1% AEP is critical for determination of habitable floor levels, and it is therefore considered necessary to simulate all temporal patterns to most accurately define the 1% AEP flood extent. However, design events other than the 1% AEP are used for comparative assessments and risk analysis only, and therefore a single temporal pattern is considered appropriate for the purposes of this study.

The range of adopted temporal patterns are provided in Table C.1.

TABLE C.1: ADOPTED STORM TEMPORAL PATTERNS

AEP	Duration	Temporal Pattern
1% AEP	1-hour	Full ensemble
	1.5-hour	Full ensemble
	2-hour	Full ensemble
	3-hour	Full ensemble
	6-hour	Full ensemble
2% AEP	1-hour	10
	1.5-hour	5
	2-hour	3
	3-hour	9
	6-hour	10
	9-hour	10
	12-hour	2
	18-hour	8
	24-hour	1
5% AEP	1-hour	8
	1.5-hour	6
	2-hour	9
	3-hour	4
	6-hour	10
	9-hour	5
	12-hour	7
	18-hour	6
	24-hour	9
10% AEP	1-hour	8

AEP	Duration	Temporal Pattern
	1.5-hour	7
	2-hour	9
	3-hour	4
	6-hour	10
	9-hour	10
	12-hour	7
	18-hour	6
	24-hour	9
20% AEP	1-hour	4
	1.5-hour	7
	2-hour	7
	3-hour	8
	6-hour	6
	12-hour	4
	9-hour	5
	12-hour	4
	18-hour	9
	24-hour	5
50% AEP	1-hour	4
	1.5-hour	4
	2-hour	5
	3-hour	8
	6-hour	3
	12-hour	4
	9-hour	7
	12-hour	4

AEP	Duration	Temporal Pattern
63.2% AEP	18-hour	9
	24-hour	10
	1-hour	2
	1.5-hour	7
	2-hour	8
	3-hour	4
	6-hour	3
	12-hour	4
	9-hour	7
	12-hour	4
	18-hour	9
	24-hour	10

C.1.2 Terrain and Extent

The model DEM was developed using the following data input sources for the Pre-Development Scenario:

- 2013 LiDAR across the developed areas within Flagstone City to represent pre-development conditions; and,
- 2021 LiDAR sourced from LCC.

The model DEM was developed using the following data input sources for the Post-Development Scenario:

- 2021 LiDAR sourced from LCC.
- Design DEM for the Flagstone City Stage 3L detention basin.
- Design DEM for the LLC development.

The TUFLOW model has adopted a grid cell size of 3 m, this is considered to provide suitable resolution within waterways whilst also retaining appropriate model simulation time.

The proposed basin crest raise was represented in the model using 2D z-shapes along the embankment for a single cell width of 3 m.

7.1.1 Boundary Conditions

Inflows were applied within the 2D model domain using the hydrographs determined from the WBNM model, all flows were applied locally.

The location of the model boundaries is shown in Figure C.1. It is noted that catchment inflow S010a matches the B6 catchment shown in Figure B.1 and Figure B.2. The remainder of catchment inflows are determined from the over-arching WBNM and TUFLOW model as documented in *Flagstone City Masterplan Flood Management Strategy (Engeny, August 2024) (Ref. QC4012_002-REP-001-4)*.

7.1.2 Stormwater Culverts

Culverts were modelled as 1D structures dynamically linked to the 2D domain; details of the proposed basin outlets is provided in Table B.4.

The details of the existing culvert structures at the state-controlled rail corridor downstream of Basin B6 is provided below in Table C.2.

The Basin B6 outlet configuration, including pipes and weirs were represented as 1D elements, details are provided in Table B.4.

TABLE C.2: STATE-CONTROLLED RAIL CORRIDOR CULVERT DETAILS

Parameter	Value
Pipe Size	1500 mm RCP
USIL (mAHD)	42.01
DSIL (mAHD)	41.78

7.1.3 Hydraulic Roughness

The hydraulic roughness was selected based on the inspection of the most up-to-date aerial imagery, typical industry-standards and values adopted for Creek Flood Studies in other nearby catchments (i.e., Henderson Creek, Windaroo Creek, Slacks and Scrubby Creeks).

The adopted Manning's roughness values are summarised in Table C.3 and shown in Figure C.1.

TABLE C.3: ADOPTED HYDRAULIC ROUGHNESS

Land Use	Manning's 'n' Roughness
Road Reserve	0.025
Recreation and Open Space	0.045
Waterway (lightly vegetated)	0.050
Waterway (moderately vegetated)	0.060
Waterway (densely vegetated)	0.080
Emerging Community	0.250
Low-Density Residential	0.200

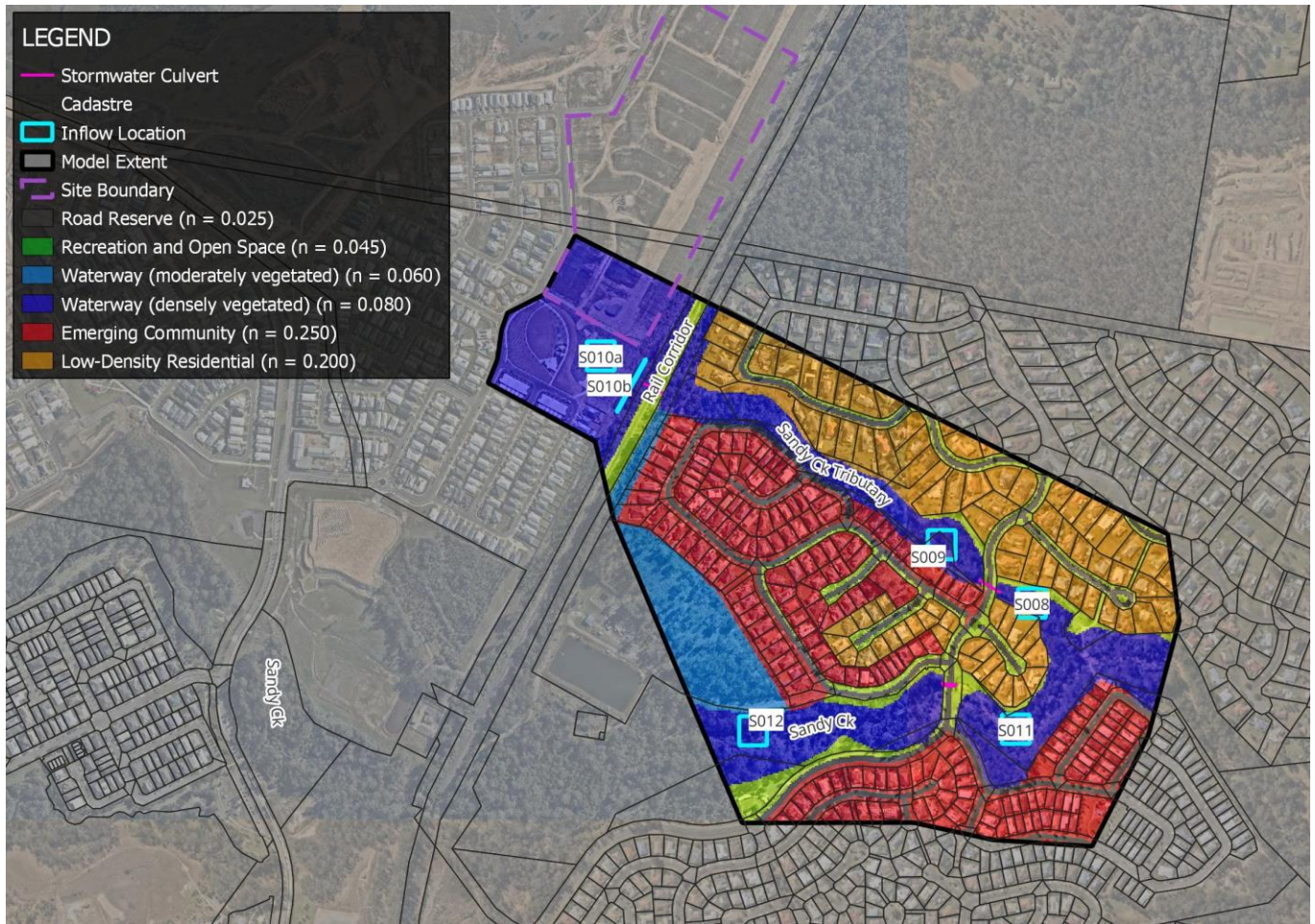


Figure C.1: TUFLOW Model Layout

C.1.3 TUFLOW Model Results

Appendix E includes the flood depth, level, velocity, depth-velocity, level afflux and velocity afflux results for the Pre-Development and Post-Development scenarios. The flood afflux maps clearly demonstrate that there are no predicted flood impacts to the state-controlled rail corridor downstream.

Peak flow results for the Pre-Development and Post-Development scenarios immediately upstream of the state-controlled rail corridor are summarised below in Table C.4. Peak flood level results within Basin B6 are provided in Table C.5.

TABLE C.4: BASIN B6 PEAK FLOW COMPARISON

AEP	Pre-Development (m ³ /s)	Peak Flow	Post-Development (m ³ /s)	Peak Flow	Peak Flow Difference (m ³ /s)
1%	3.8		3.7		-0.1
2%	3.2		2.5		-0.7
5%	2.7		2.0		-0.7
10%	2.2		1.7		-0.5
20%	1.7		1.3		-0.4
50%	0.7		0.7		0.0
63.2%	0.6		0.6		0.0

TABLE C.5: BASIN B6 PEAK WATER LEVEL

AEP	Post-Development Peak Basin Stage (mAHD)
1%	47.5
2%	47.3
5%	47.0
10%	46.8
20%	46.6
50%	46.3
63.2%	46.2

APPENDIX D: STORMWATER QUALITY MODELLING

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D.1 MUSIC Model Development

A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model was prepared to assess the performance of the existing bioretention basin within Basin B6 and proposed bioretention basins within Basin B4 and B5. Input parameters for the B6 bioretention basin was sourced from the design drawings prepared by Peak Urban (now Colliers), it is understood that the bioretention basin was retrofitted to the existing detention basin. Input parameters for Basin B4 and B5 were sourced from Colliers' design drawings currently undergoing development.

Climate data for the catchment was sourced from the Bureau of Meteorology (BOM). Rainfall data was obtained from the Greenbank Thompson Road station (ID 40659) for the 10 years between 1980 and 1989 at six (6) minute intervals, resulting in a mean annual rainfall of 784 mm.

The stormwater quality SUB-catchments were adopted in accordance with the WBNM model as shown in Figure B.2 and Table B.2. The layout of the MUSIC model is shown below in Figure D.1.

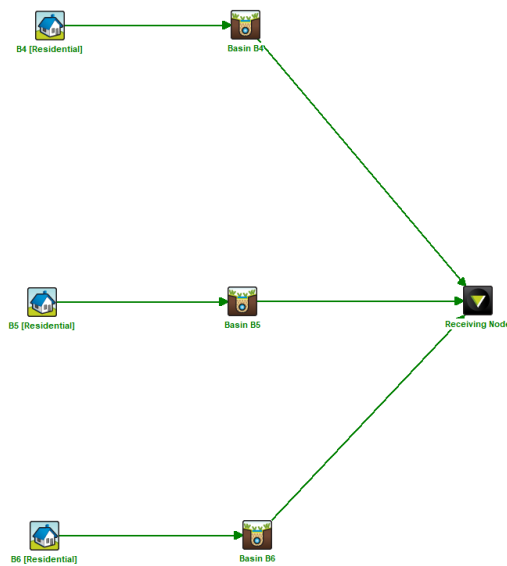


FIGURE D.1: MUSIC MODEL LAYOUT

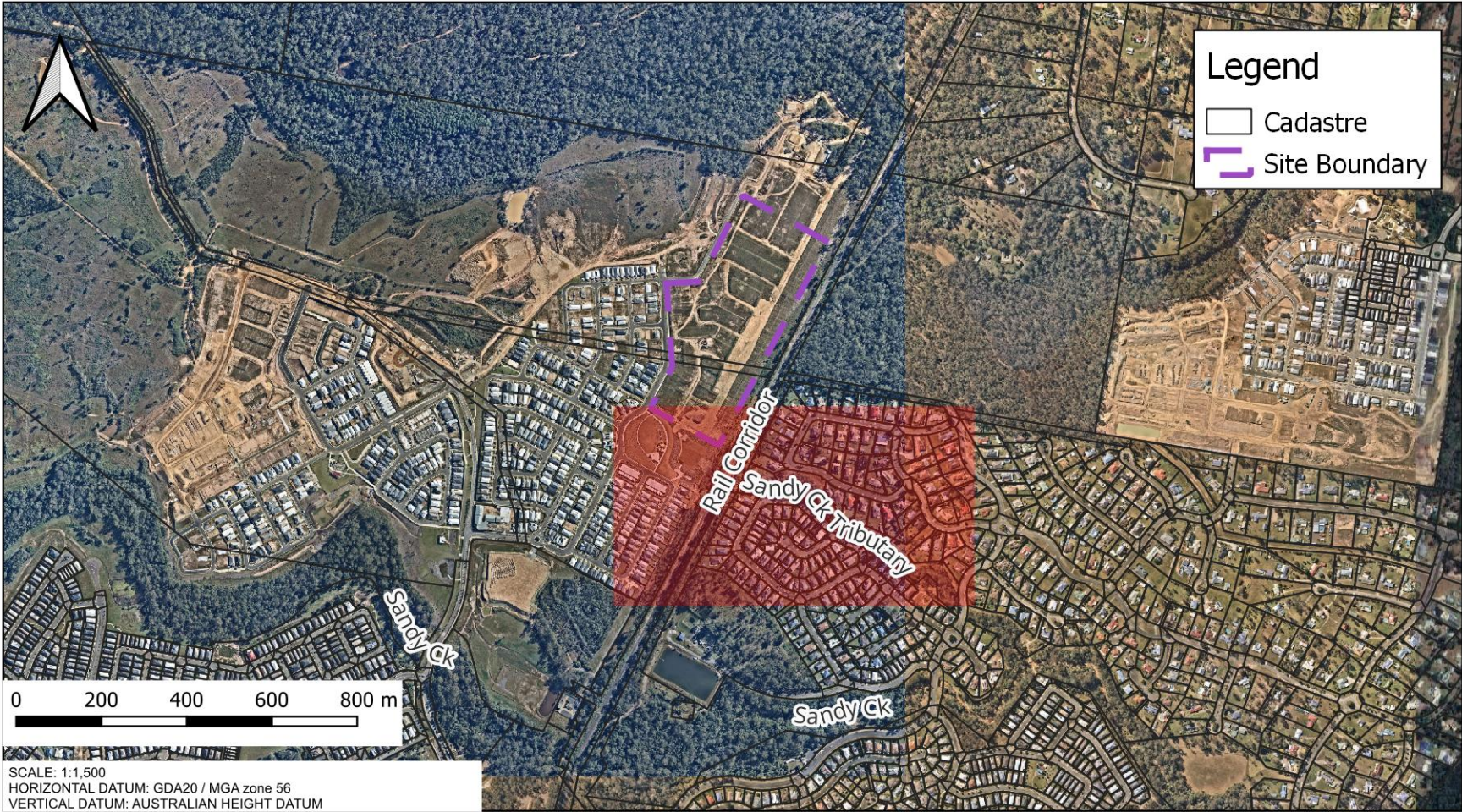
APPENDIX E: FLOOD MAPPING



SHEET NO.	DRAWING TITLE
01164_0001-SKE-01-001	Pre-Development Scenario 63.2% AEP Flood Depth
01164_0001-SKE-01-002	Pre-Development Scenario 50% AEP Flood Depth
01164_0001-SKE-01-003	Pre-Development Scenario 20% AEP Flood Depth
01164_0001-SKE-01-004	Pre-Development Scenario 10% AEP Flood Depth
01164_0001-SKE-01-005	Pre-Development Scenario 5% AEP Flood Depth
01164_0001-SKE-01-006	Pre-Development Scenario 2% AEP Flood Depth
01164_0001-SKE-01-007	Pre-Development Scenario 1% AEP Flood Depth
01164_0001-SKE-01-008	Pre-Development Scenario 63.2% AEP Flood Level
01164_0001-SKE-01-009	Pre-Development Scenario 50% AEP Flood Level
01164_0001-SKE-01-010	Pre-Development Scenario 20% AEP Flood Level
01164_0001-SKE-01-011	Pre-Development Scenario 10% AEP Flood Level
01164_0001-SKE-01-012	Pre-Development Scenario 5% AEP Flood Level
01164_0001-SKE-01-013	Pre-Development Scenario 2% AEP Flood Level
01164_0001-SKE-01-014	Pre-Development Scenario 1% AEP Flood Level
01164_0001-SKE-01-015	Pre-Development Scenario 63.2% AEP Flood Velocity
01164_0001-SKE-01-016	Pre-Development Scenario 50% AEP Flood Velocity
01164_0001-SKE-01-017	Pre-Development Scenario 20% AEP Flood Velocity
01164_0001-SKE-01-018	Pre-Development Scenario 10% AEP Flood Velocity
01164_0001-SKE-01-019	Pre-Development Scenario 5% AEP Flood Velocity
01164_0001-SKE-01-020	Pre-Development Scenario 2% AEP Flood Velocity
01164_0001-SKE-01-021	Pre-Development Scenario 1% AEP Flood Velocity

SHEET NO.	DRAWING TITLE
01164_0001-SKE-01-022	Pre-Development Scenario 63.2% AEP Flood Depth-Velocity
01164_0001-SKE-01-023	Pre-Development Scenario 50% AEP Flood Depth-Velocity
01164_0001-SKE-01-024	Pre-Development Scenario 20% AEP Flood Depth-Velocity
01164_0001-SKE-01-025	Pre-Development Scenario 10% AEP Flood Depth-Velocity
01164_0001-SKE-01-026	Pre-Development Scenario 5% AEP Flood Depth-Velocity
01164_0001-SKE-01-027	Pre-Development Scenario 2% AEP Flood Depth-Velocity
01164_0001-SKE-01-028	Pre-Development Scenario 1% AEP Flood Depth-Velocity
01164_0001-SKE-01-029	Pre-Development Scenario 63.2% AEP Flood Hazard
01164_0001-SKE-01-030	Pre-Development Scenario 50% AEP Flood Hazard
01164_0001-SKE-01-031	Pre-Development Scenario 20% AEP Flood Hazard
01164_0001-SKE-01-032	Pre-Development Scenario 10% AEP Flood Hazard
01164_0001-SKE-01-033	Pre-Development Scenario 5% AEP Flood Hazard
01164_0001-SKE-01-034	Pre-Development Scenario 2% AEP Flood Hazard
01164_0001-SKE-01-035	Pre-Development Scenario 1% AEP Flood Hazard
01164_0001-SKE-01-036	Post-Development Scenario 63.2% AEP Flood Depth
01164_0001-SKE-01-037	Post-Development Scenario 50% AEP Flood Depth
01164_0001-SKE-01-038	Post-Development Scenario 20% AEP Flood Depth
01164_0001-SKE-01-039	Post-Development Scenario 10% AEP Flood Depth
01164_0001-SKE-01-040	Post-Development Scenario 5% AEP Flood Depth
01164_0001-SKE-01-041	Post-Development Scenario 2% AEP Flood Depth
01164_0001-SKE-01-042	Post-Development Scenario 1% AEP Flood Depth

SHEET NO.	DRAWING TITLE
01164_0001-SKE-01-043	Post-Development Scenario 63.2% AEP Flood Level
01164_0001-SKE-01-044	Post-Development Scenario 50% AEP Flood Level
01164_0001-SKE-01-045	Post-Development Scenario 20% AEP Flood Level
01164_0001-SKE-01-046	Post-Development Scenario 10% AEP Flood Level
01164_0001-SKE-01-047	Post-Development Scenario 5% AEP Flood Level
01164_0001-SKE-01-048	Post-Development Scenario 2% AEP Flood Level
01164_0001-SKE-01-049	Post-Development Scenario 1% AEP Flood Level
01164_0001-SKE-01-050	Post-Development Scenario 63.2% AEP Flood Velocity
01164_0001-SKE-01-051	Post-Development Scenario 50% AEP Flood Velocity
01164_0001-SKE-01-052	Post-Development Scenario 20% AEP Flood Velocity
01164_0001-SKE-01-053	Post-Development Scenario 10% AEP Flood Velocity
01164_0001-SKE-01-054	Post-Development Scenario 5% AEP Flood Velocity
01164_0001-SKE-01-055	Post-Development Scenario 2% AEP Flood Velocity
01164_0001-SKE-01-056	Post-Development Scenario 1% AEP Flood Velocity
01164_0001-SKE-01-057	Post-Development Scenario 63.2% AEP Flood Depth-Velocity
01164_0001-SKE-01-058	Post-Development Scenario 50% AEP Flood Depth-Velocity
01164_0001-SKE-01-059	Post-Development Scenario 20% AEP Flood Depth-Velocity
01164_0001-SKE-01-060	Post-Development Scenario 10% AEP Flood Depth-Velocity
01164_0001-SKE-01-061	Post-Development Scenario 5% AEP Flood Depth-Velocity
01164_0001-SKE-01-062	Post-Development Scenario 2% AEP Flood Depth-Velocity
01164_0001-SKE-01-063	Post-Development Scenario 1% AEP Flood Depth-Velocity
01164_0001-SKE-01-064	Post-Development Scenario 63.2% AEP Flood Hazard
01164_0001-SKE-01-065	Post-Development Scenario 50% AEP Flood Hazard
01164_0001-SKE-01-066	Post-Development Scenario 20% AEP Flood Hazard
01164_0001-SKE-01-067	Post-Development Scenario 10% AEP Flood Hazard
01164_0001-SKE-01-068	Post-Development Scenario 5% AEP Flood Hazard
01164_0001-SKE-01-069	Post-Development Scenario 2% AEP Flood Hazard
01164_0001-SKE-01-070	Post-Development Scenario 1% AEP Flood Hazard
01164_0001-SKE-01-071	Post-Development Scenario - Pre-Development Scenario 63.2% AEP Flood Level Afflux
01164_0001-SKE-01-072	Post-Development Scenario - Pre-Development Scenario 50% AEP Flood Level Afflux
01164_0001-SKE-01-073	Post-Development Scenario - Pre-Development Scenario 20% AEP Flood Level Afflux
01164_0001-SKE-01-074	Post-Development Scenario - Pre-Development Scenario 10% AEP Flood Level Afflux
01164_0001-SKE-01-075	Post-Development Scenario - Pre-Development Scenario 5% AEP Flood Level Afflux
01164_0001-SKE-01-076	Post-Development Scenario - Pre-Development Scenario 2% AEP Flood Level Afflux
01164_0001-SKE-01-077	Post-Development Scenario - Pre-Development Scenario 1% AEP Flood Level Afflux
01164_0001-SKE-01-078	Post-Development Scenario - Pre-Development Scenario 63.2% AEP Flood Velocity Afflux
01164_0001-SKE-01-079	Post-Development Scenario - Pre-Development Scenario 50% AEP Flood Velocity Afflux
01164_0001-SKE-01-080	Post-Development Scenario - Pre-Development Scenario 20% AEP Flood Velocity Afflux
01164_0001-SKE-01-081	Post-Development Scenario - Pre-Development Scenario 10% AEP Flood Velocity Afflux
01164_0001-SKE-01-082	Post-Development Scenario - Pre-Development Scenario 5% AEP Flood Velocity Afflux
01164_0001-SKE-01-083	Post-Development Scenario - Pre-Development Scenario 2% AEP Flood Velocity Afflux
01164_0001-SKE-01-084	Post-Development Scenario - Pre-Development Scenario 1% AEP Flood Velocity Afflux



This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	63.2% AEP Flood Depth	
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size	Eng No.
			A3	01164_0001-SKE-01-001	
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 50% AEP Flood Depth	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size A3	Eng No. 01164_0001-SKE-01-002
					Rev. 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 20% AEP Flood Depth	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-003
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 10% AEP Flood Depth	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-		
				Original size A3	Eng No: 01164_0001-SKE-01-004
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	5% AEP Flood Depth	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-005
Status				Rev:	0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	2% AEP Flood Depth	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-006
					0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

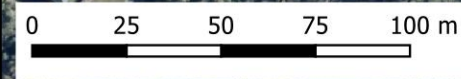
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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Pre-Development Scenario	
1% AEP Flood Depth	
Original size	Eng No.
A3	01164_0001-SKE-01-007
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	63.2% AEP Flood Level	
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size	Rev:
			A3	01164_0001-SKE-01-008	0



0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 50% AEP Flood Level	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-009	
				Rev:	
				0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Pre-Development Scenario			
20% AEP Flood Level			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-010	0	



0 25 50 75 100 m

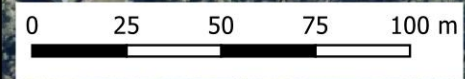
SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 10% AEP Flood Level	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-011	
				Rev: 0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Pre-Development Scenario	
5% AEP Flood Level	
Original size	Eng No.
A3	01164_0001-SKE-01-012
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	2% AEP Flood Level	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-013
					0



This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
			REFERENCE DOCUMENTS	

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Pre-Development Scenario	
1% AEP Flood Level	
Original size	Eng No.
A3	01164_0001-SKE-01-014
	Rev: 0



Legend

□ Cadastre

▬ Site Boundary

Flood Velocity (m/s)

□ 0 - 0.5

■ 0.5 - 1

■ 1 - 1.5

■ 1.5 - 2

■ 2 - 3

■ > 3

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd		
Flagstone LLC		
Pre-Development Scenario		
63.2% AEP Flood Velocity		
Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-015	0



Legend

Cadastre

Site Boundary

Flood Velocity (m/s)

0 - 0.5

0.5 - 1

1 - 1.5

1.5 - 2

2 - 3

> 3

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 50% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-016
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 20% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-017
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 10% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size A3	Eng No. 01164_0001-SKE-01-018
					Rev. 0



Legend

Cadastre

Site Boundary

Flood Velocity (m/s)

0 - 0.5

0.5 - 1

1 - 1.5

1.5 - 2

2 - 3

> 3

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY

ENGENY

FOR INFORMATION ONLY

Ph. 07 3221 7174	DESIGNED	JH	CHECKED	MP
Level 2	DRAWN	JH	CHECKED	MP
500 Queen St	APPROVED	MP	DATE	25-10-24
Brisbane QLD	RPEQ	-	RPEQ No.	-
www.engeny.com.au				

Lodge LCC Development Pty Ltd

Flagstone LLC

Pre-Development Scenario

5% AEP Flood Velocity

Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-019	0



Legend

□ Cadastre

▬ Site Boundary

Flood Velocity (m/s)

□ 0 - 0.5

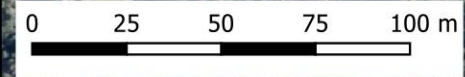
■ 0.5 - 1

■ 1 - 1.5

■ 1.5 - 2

■ 2 - 3

■ > 3



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Pre-Development Scenario			
2% AEP Flood Velocity			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-020	0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 1% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size A3	Eng No. 01164_0001-SKE-01-021
					Rev. 0



Legend

Cadastre

Site Boundary

Flood Depth-Velocity (m2/s)

<= 0.3

0.3 - 0.4

0.4 - 0.5

0.5 - 0.6

> 0.6

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd		
Flagstone LLC		
Pre-Development Scenario		
63.2% AEP Flood Depth-Velocity		
Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-022	0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 50% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-		
Original size		Eng No.		Rev.	
A3		01164_0001-SKE-01-023		0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	20% AEP Flood Depth-Velocity	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-024
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	10% AEP Flood Depth-Velocity	
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size	Rev:
				A3	0
				01164_0001-SKE-01-025	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	5% AEP Flood Depth-Velocity	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-026
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



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Level 2	DRAWN	JH	CHECKED	MP
500 Queen St	APPROVED	MP	DATE	25-10-24
Brisbane QLD	RPEQ	-	RPEQ No.	-
www.engeny.com.au				

Lodge LCC Development Pty Ltd

Flagstone LLC

Pre-Development Scenario
2% AEP Flood Depth-Velocity

Original size: A3
Eng No: 01164_0001-SKE-01-027



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

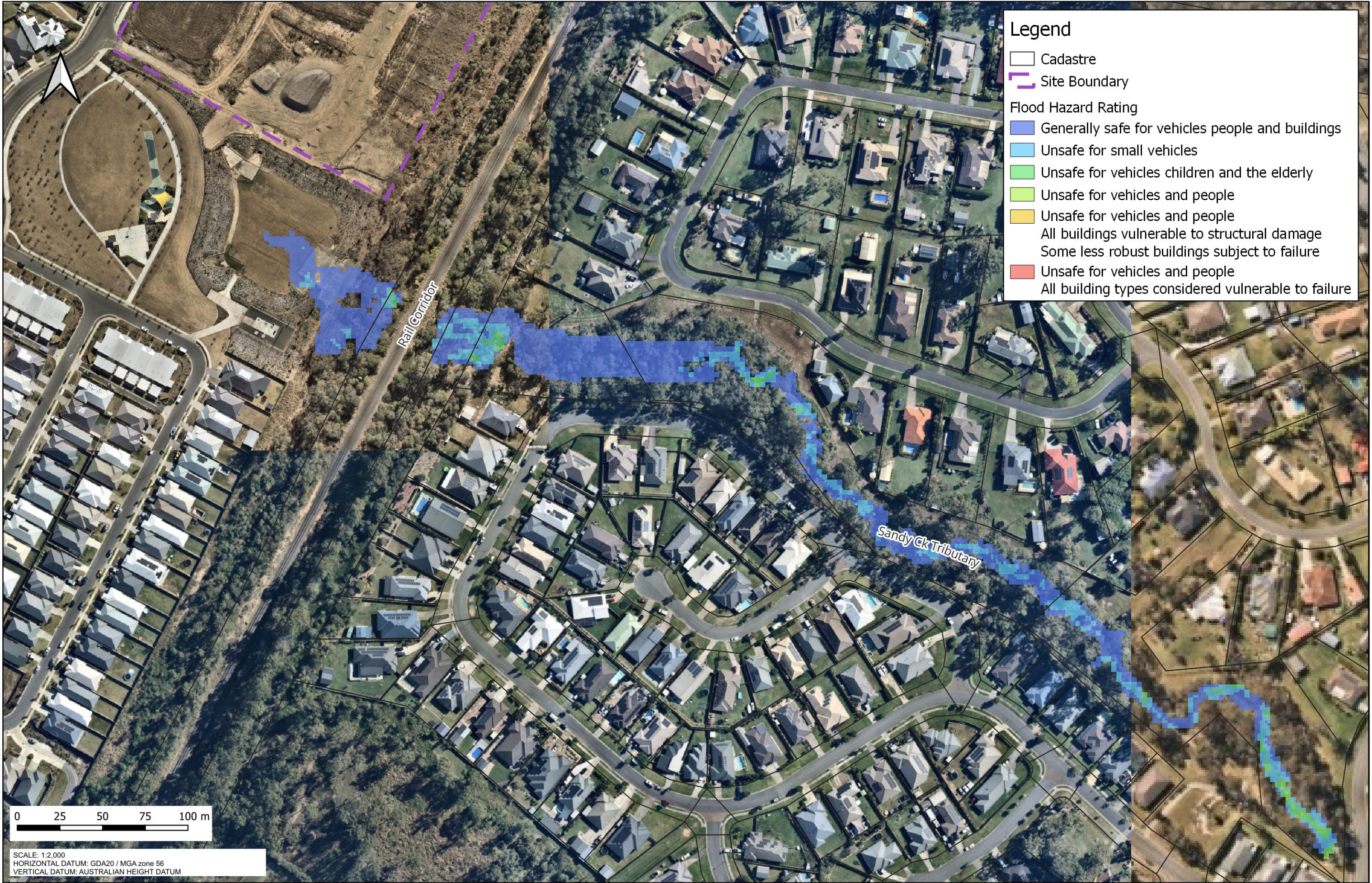
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Pre-Development Scenario	
1% AEP Flood Depth-Velocity	
Original size	Eng No.
A3	01164_0001-SKE-01-028
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

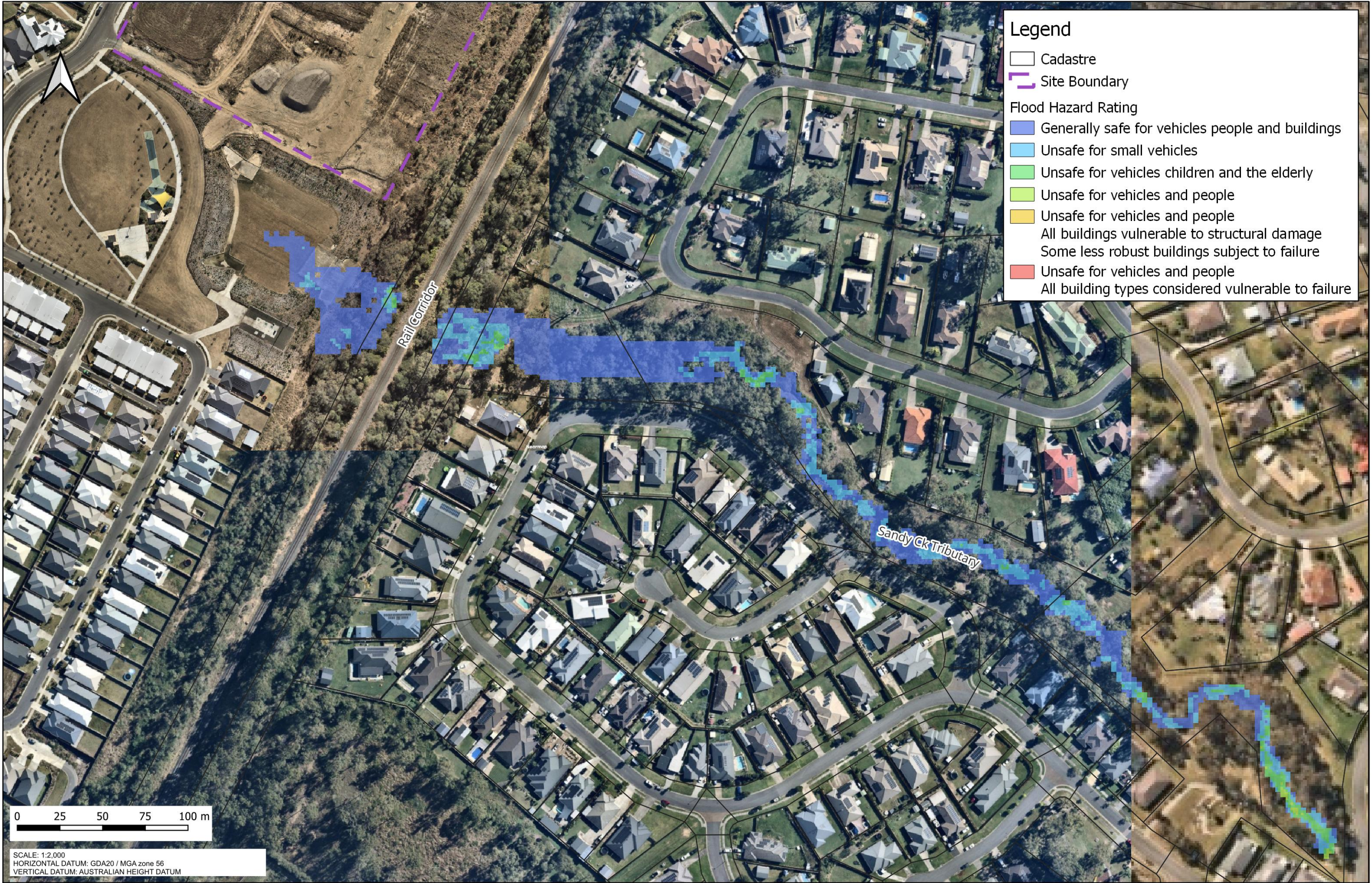
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
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No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

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Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Pre-Development Scenario			
63.2% AEP Flood Hazard			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-029	0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

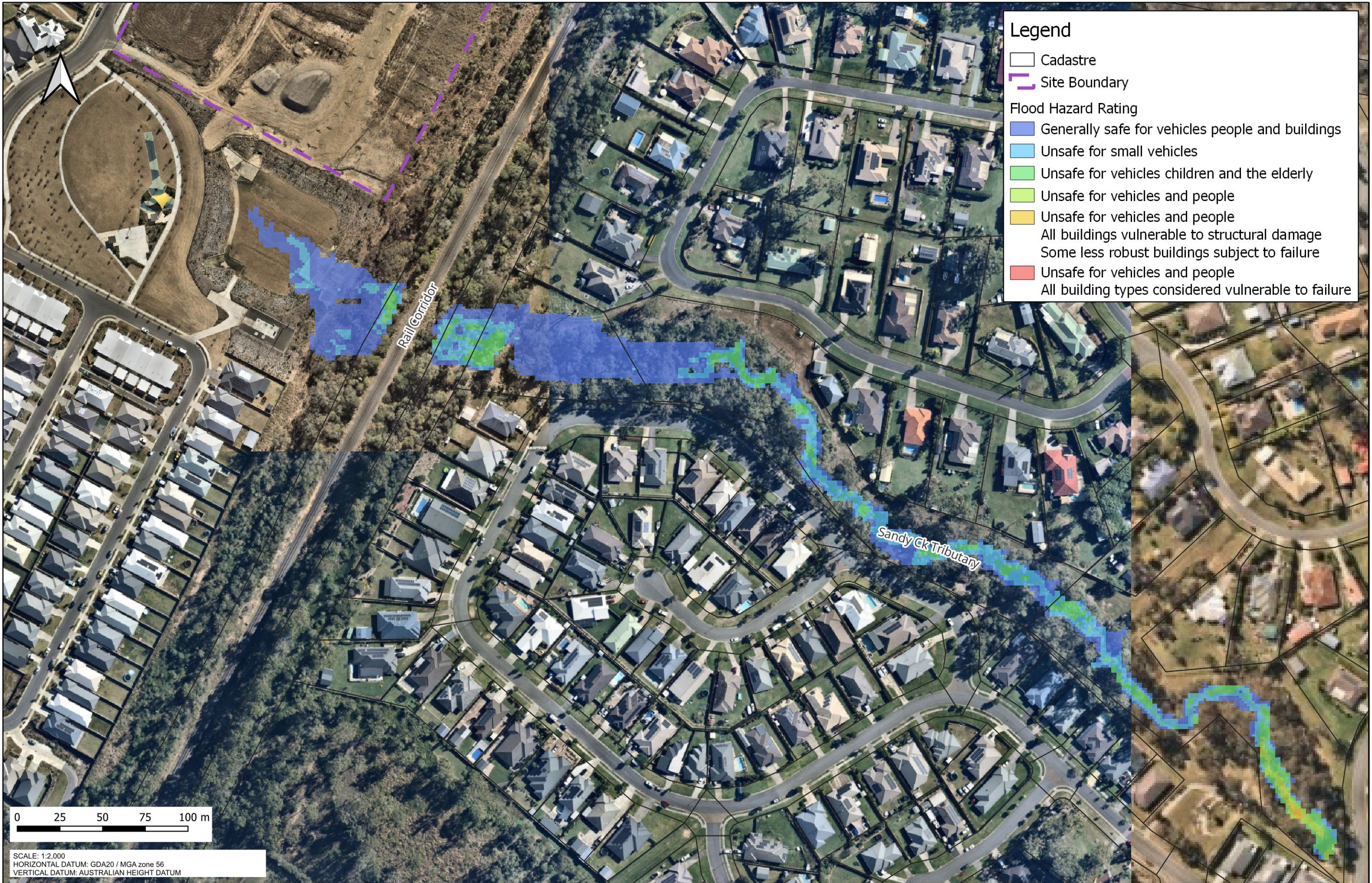
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
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No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

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Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Pre-Development Scenario			
50% AEP Flood Hazard			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-030	0	



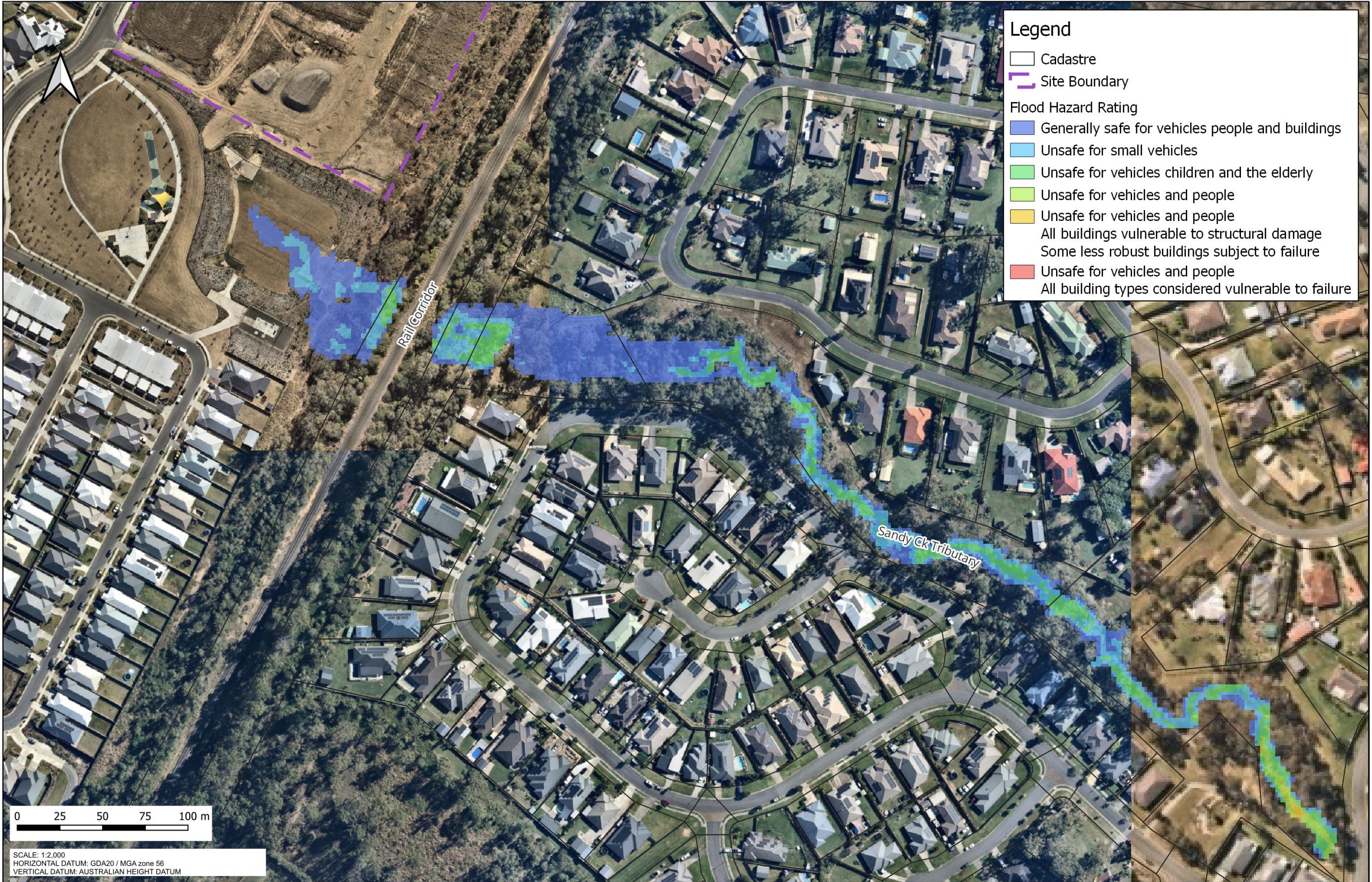
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

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Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
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Lodge LCC Development Pty Ltd	
Flagstone LLC	
Pre-Development Scenario	
20% AEP Flood Hazard	
Original size	Eng No.
A3	01164_0001-SKE-01-031
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

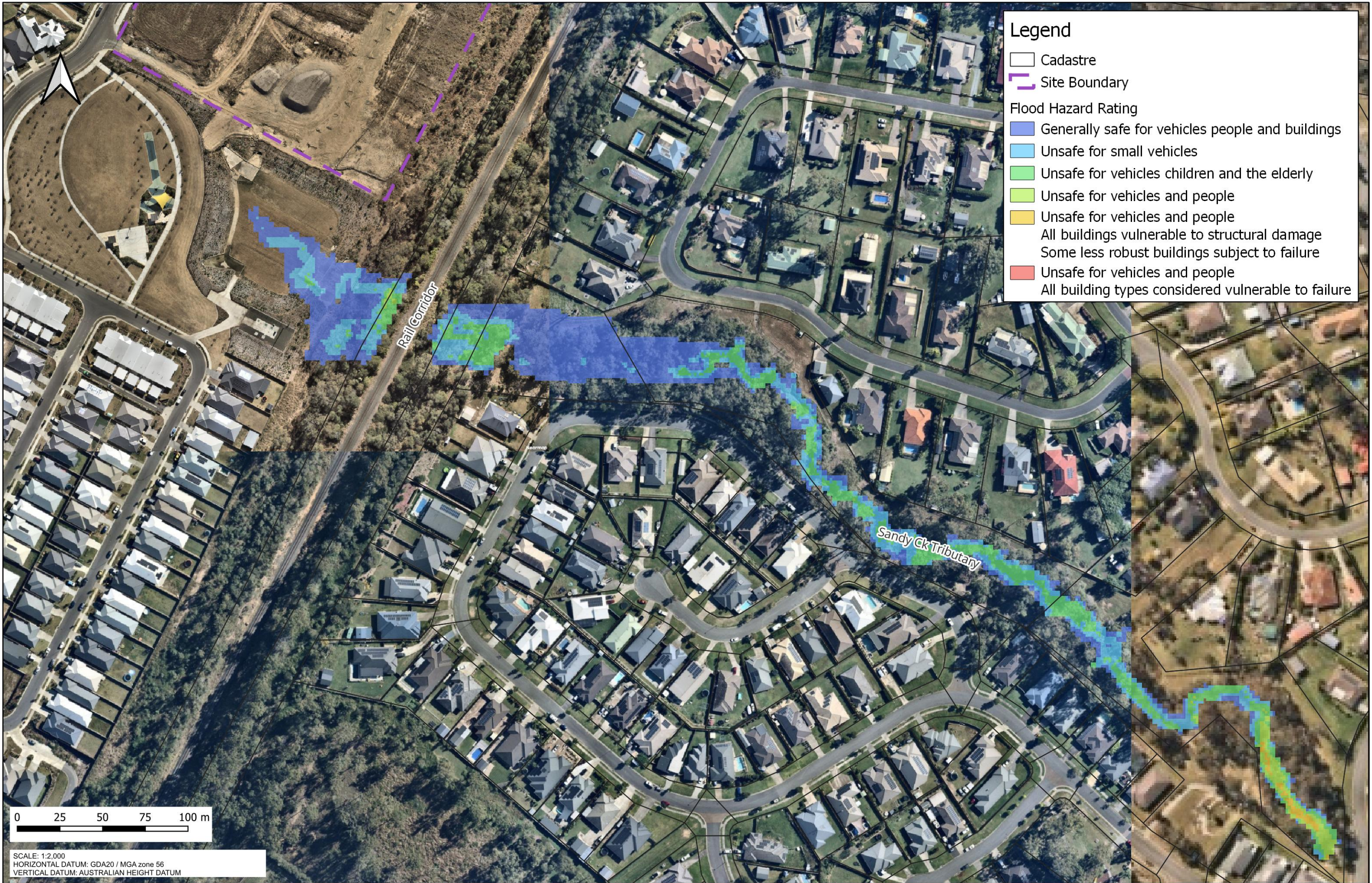
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



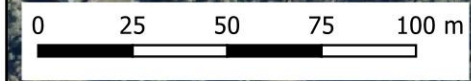
FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Pre-Development Scenario			
10% AEP Flood Hazard			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-032	0	



Legend

- Cadastre
- Site Boundary
- Flood Hazard Rating
 - Generally safe for vehicles people and buildings
 - Unsafe for small vehicles
 - Unsafe for vehicles children and the elderly
 - Unsafe for vehicles and people
 - Unsafe for vehicles and people
 - All buildings vulnerable to structural damage
 - Some less robust buildings subject to failure
 - Unsafe for vehicles and people
 - All building types considered vulnerable to failure



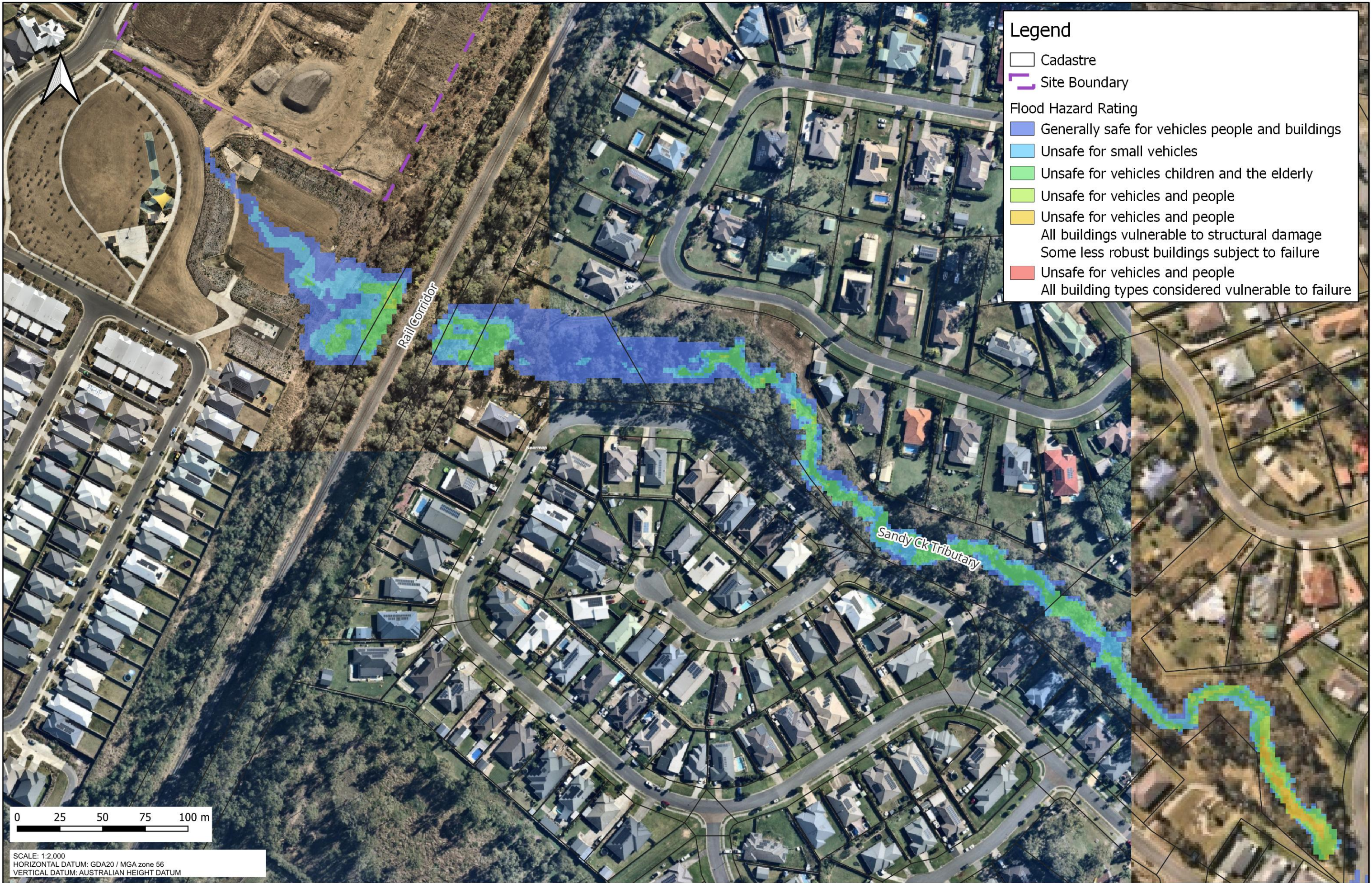
SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 5% AEP Flood Hazard	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-033	
				Rev:	
				0	



Legend

- Cadastre
- Site Boundary
- Flood Hazard Rating
 - Generally safe for vehicles people and buildings
 - Unsafe for small vehicles
 - Unsafe for vehicles children and the elderly
 - Unsafe for vehicles and people
 - Unsafe for vehicles and people
 - Unsafe for vehicles and people
 - All buildings vulnerable to structural damage
 - Some less robust buildings subject to failure
 - Unsafe for vehicles and people
 - All building types considered vulnerable to failure

0 25 50 75 100 m

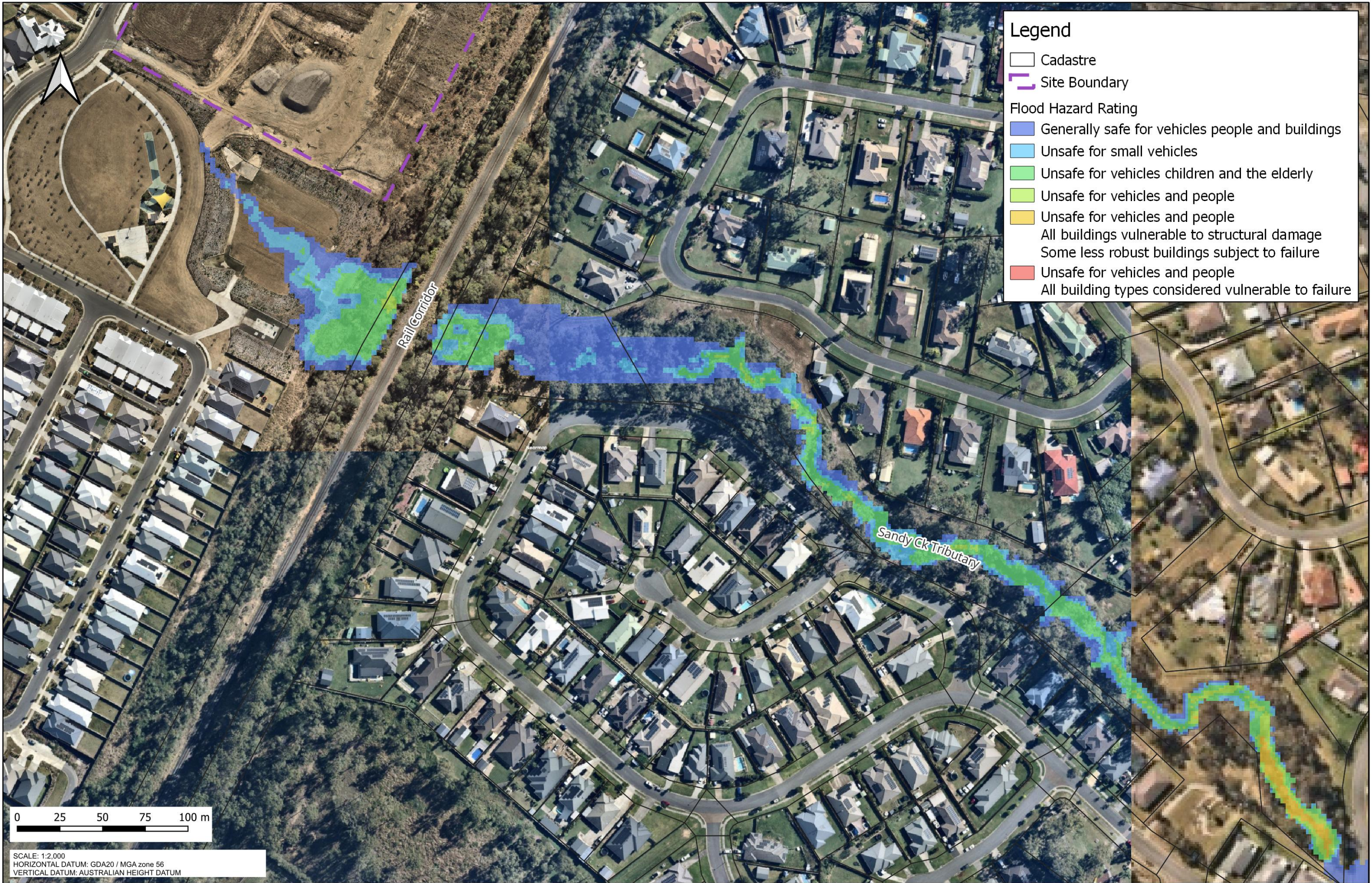
SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	2% AEP Flood Hazard	
APPROVED	MP	DATE	25-10-24	Original size	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-034
					0



Legend

- Cadastre
- Site Boundary
- Flood Hazard Rating
 - Generally safe for vehicles people and buildings
 - Unsafe for small vehicles
 - Unsafe for vehicles children and the elderly
 - Unsafe for vehicles and people
 - Unsafe for vehicles and people
 - All buildings vulnerable to structural damage
 - Some less robust buildings subject to failure
 - Unsafe for vehicles and people
 - All building types considered vulnerable to failure

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Pre-Development Scenario 1% AEP Flood Hazard	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-		
				Original size A3	Eng No: 01164_0001-SKE-01-035
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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	DRAWN	JH	CHECKED	MP
	APPROVED	MP	DATE	25-10-24
	RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario 63.2% AEP Flood Depth			
Original size	Eng No.		Rev.
A3	01164_0001-SKE-01-036		0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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	DRAWN	JH	CHECKED	MP
	APPROVED	MP	DATE	25-10-24
	RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd		
Flagstone LLC		
Post-Development Scenario 50% AEP Flood Depth		
Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-037	0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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Ph. 07 3221 7174 Level 2 500 Queen St Brisbane QLD www.engeny.com.au	DESIGNED	JH	CHECKED	MP
	DRAWN	JH	CHECKED	MP
	APPROVED	MP	DATE	25-10-24
	RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd		
Flagstone LLC		
Post-Development Scenario 20% AEP Flood Depth		
Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-038	0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

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Ph. 07 3221 7174 Level 2 500 Queen St Brisbane QLD www.engeny.com.au	DESIGNED	JH	CHECKED	MP
	DRAWN	JH	CHECKED	MP
	APPROVED	MP	DATE	25-10-24
	RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario 10% AEP Flood Depth			
Original size	Orig No.		Rev.
A3	01164_0001-SKE-01-039		0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY

Ph. 07 3221 7174	DESIGNED	JH	CHECKED	MP
Level 2	DRAWN	JH	CHECKED	MP
500 Queen St	APPROVED	MP	DATE	25-10-24
Brisbane QLD	RPEQ	-	RPEQ No.	-
www.engeny.com.au				

Lodge LCC Development Pty Ltd			Rev:
Flagstone LLC			
Post-Development Scenario			
5% AEP Flood Depth			
Original size	Eng No:	Rev:	
A3	01164_0001-SKE-01-040	0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 2% AEP Flood Depth	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-041	
				Rev:	
				0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 1% AEP Flood Depth	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size A3	Eng No: 01164_0001-SKE-01-042
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario			
63.2% AEP Flood Level			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-043	0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 50% AEP Flood Level	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-044	
				Rev: 0	



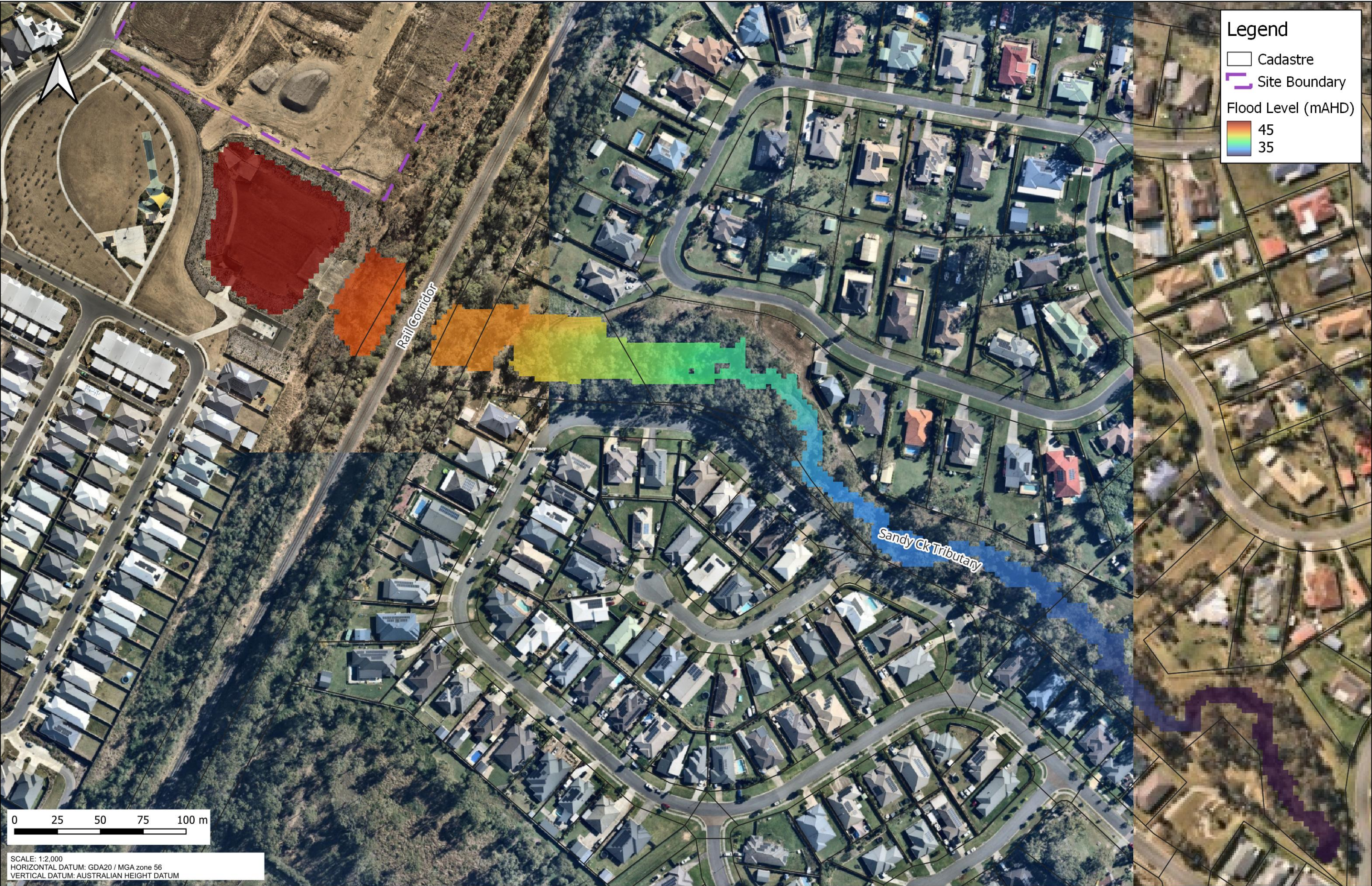
SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 20% AEP Flood Level	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-045
				Rev:	
				0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

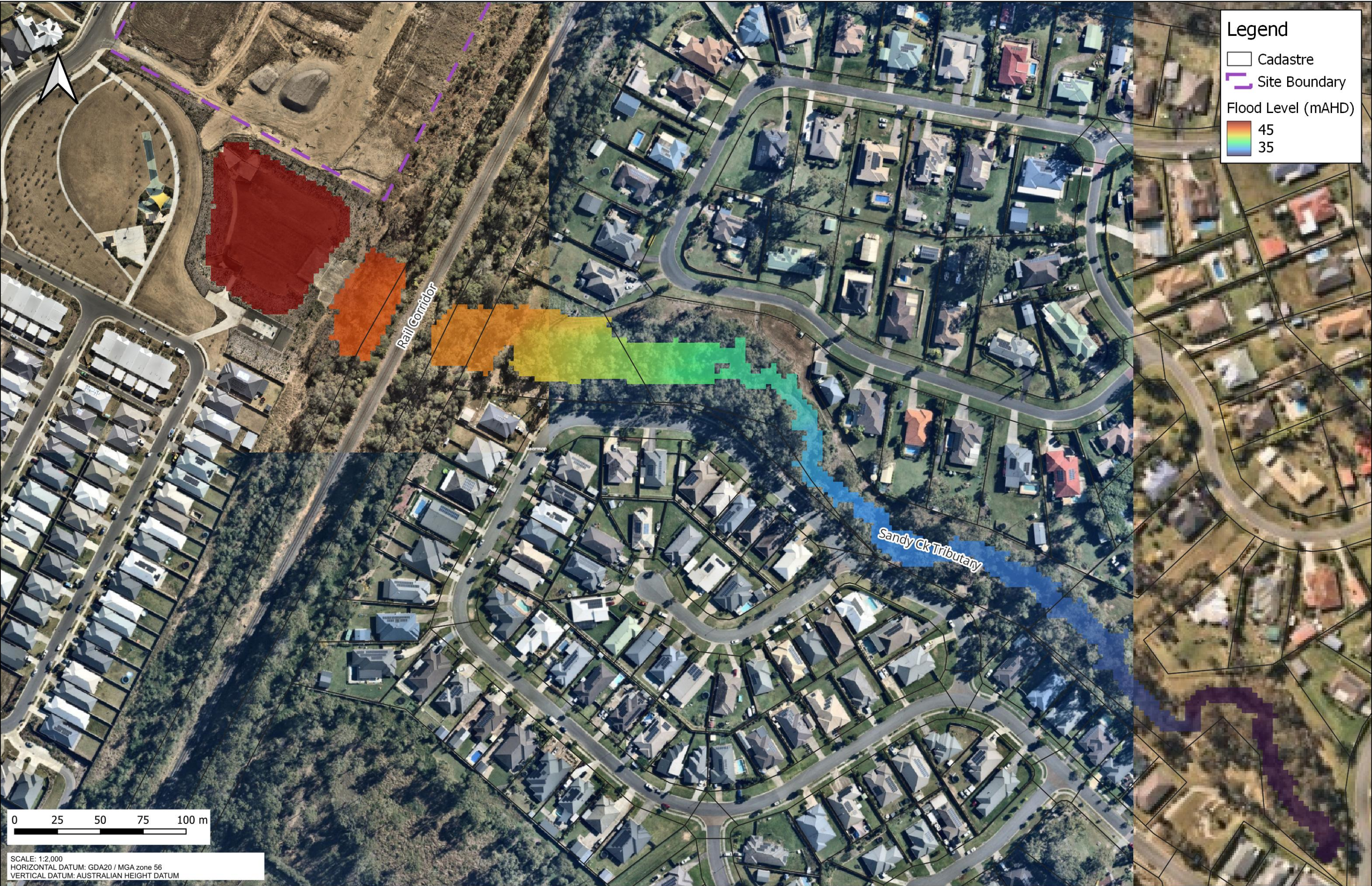
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario			
10% AEP Flood Level			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-046	0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 5% AEP Flood Level	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-047
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Post-Development Scenario	
2% AEP Flood Level	
Original size	Eng No.
A3	01164_0001-SKE-01-048
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 63.2% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size: A3	
APPROVED	MP	DATE	25-10-24	Eng No: 01164_0001-SKE-01-050	
RPEQ	-	RPEQ No.	-	Rev: 0	



Legend

Cadastre

Site Boundary

Flood Velocity (m/s)

0 - 0.5

0.5 - 1

1 - 1.5

1.5 - 2

2 - 3

> 3

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY

ENGENY

FOR INFORMATION ONLY

Ph. 07 3221 7174

Level 2

500 Queen St

Brisbane QLD

www.engeny.com.au

DESIGNED	JH	CHECKED	MP
DRAWN	JH	CHECKED	MP
APPROVED	MP	DATE	25-10-24
RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario

50% AEP Flood Velocity

Original size

A3

Eng No.

01164_0001-SKE-01-051

Rev.

0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 20% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-052
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 10% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	01164_0001-SKE-01-053
					Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 5% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-054	
				Rev:	
				0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 2% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-055	
				Rev: 0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.					
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 1% AEP Flood Velocity	
DRAWN	JH	CHECKED	MP		
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size A3	Eng No. 01164_0001-SKE-01-056
					Rev. 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY

ENGENY

FOR INFORMATION ONLY

Ph. 07 3221 7174	DESIGNED	JH	CHECKED	MP
Level 2	DRAWN	JH	CHECKED	MP
500 Queen St	APPROVED	MP	DATE	25-10-24
Brisbane QLD	RPEQ	-	RPEQ No.	-
www.engeny.com.au				

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario

63.2% AEP Flood Depth-Velocity

Original size

A3

Eng No.

01164_0001-SKE-01-057

Rev.

0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 50% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
				01164_0001-SKE-01-058	
				Rev:	
				0	



0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY

ENGENY

FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 20% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
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				Rev:	
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SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 10% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
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				Rev:	
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SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 5% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	A3	
RPEQ	-	RPEQ No.	-	01164_0001-SKE-01-061	
Rev: 0				0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 2% AEP Flood Depth-Velocity	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	A3	
RPEQ	-	RPEQ No.	-	01164_0001-SKE-01-062	
				Rev: 0	



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY

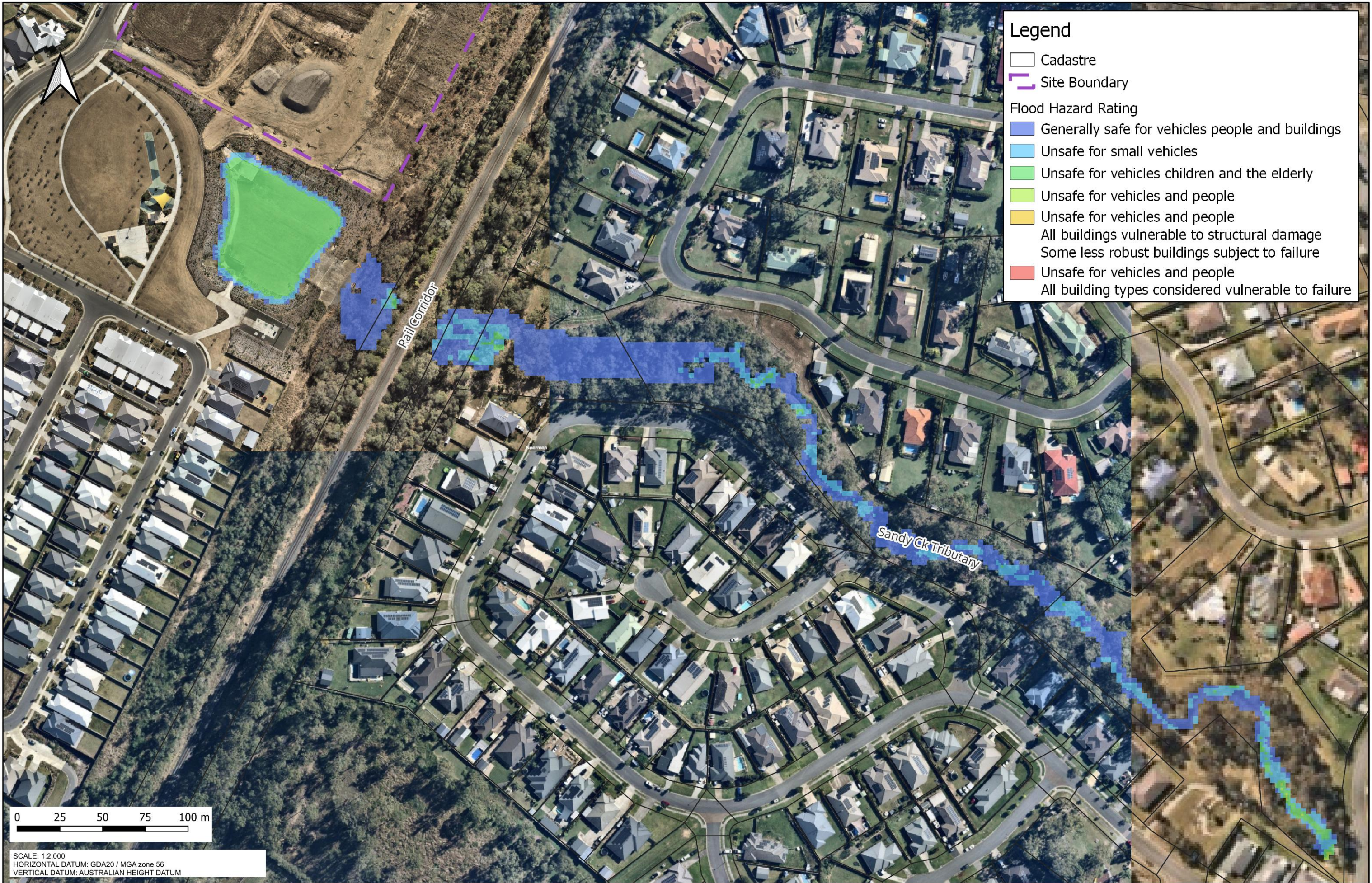
Ph. 07 3221 7174	DESIGNED	JH	CHECKED	MP
Level 2	DRAWN	JH	CHECKED	MP
500 Queen St	APPROVED	MP	DATE	25-10-24
Brisbane QLD	RPEQ	-	RPEQ No.	-
www.engeny.com.au				

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario
1% AEP Flood Depth-Velocity

Original size
A3
01164_0001-SKE-01-063



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

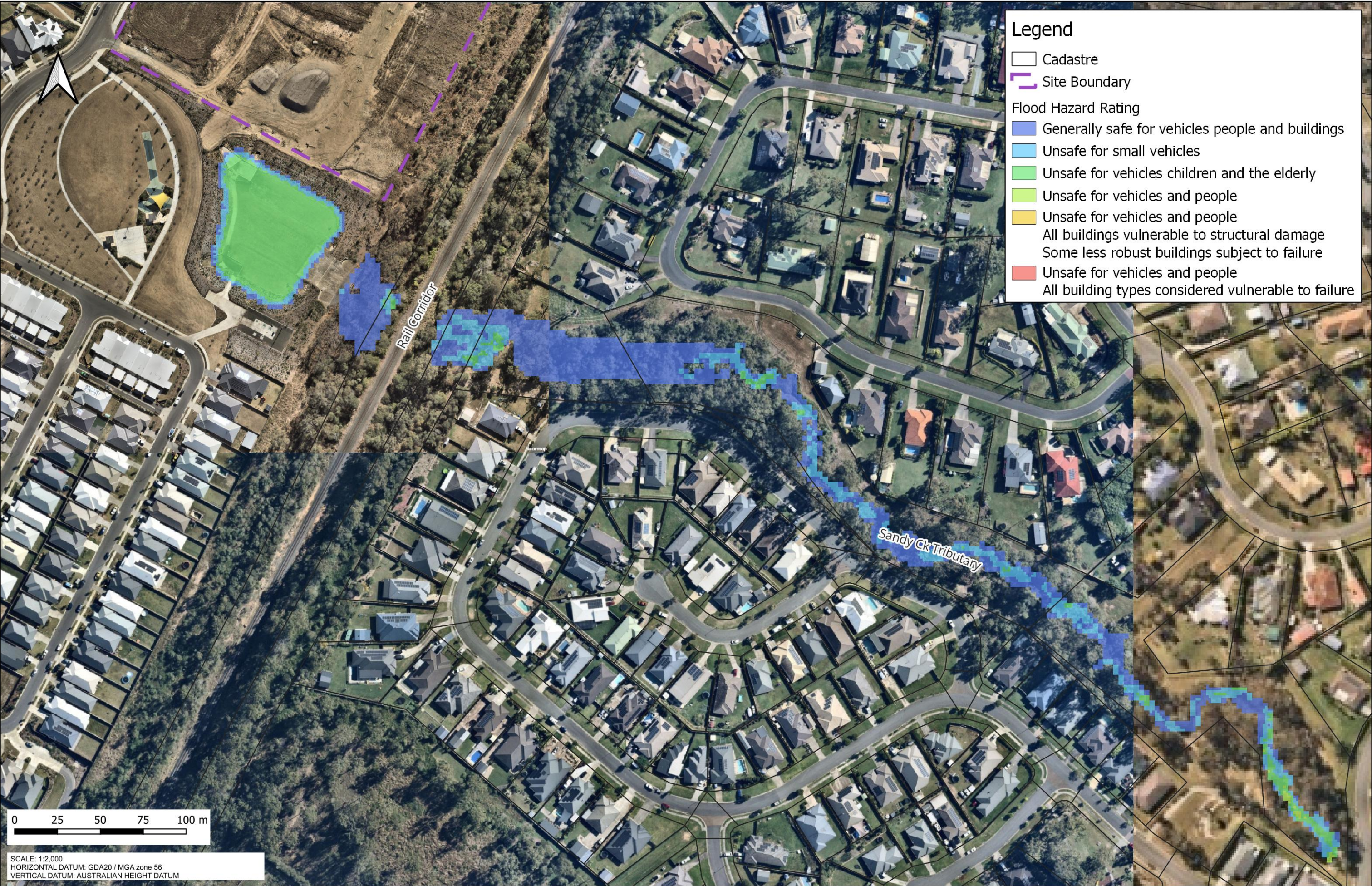
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No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd		
Flagstone LLC		
Post-Development Scenario		
63.2% AEP Flood Hazard		
Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-064	0



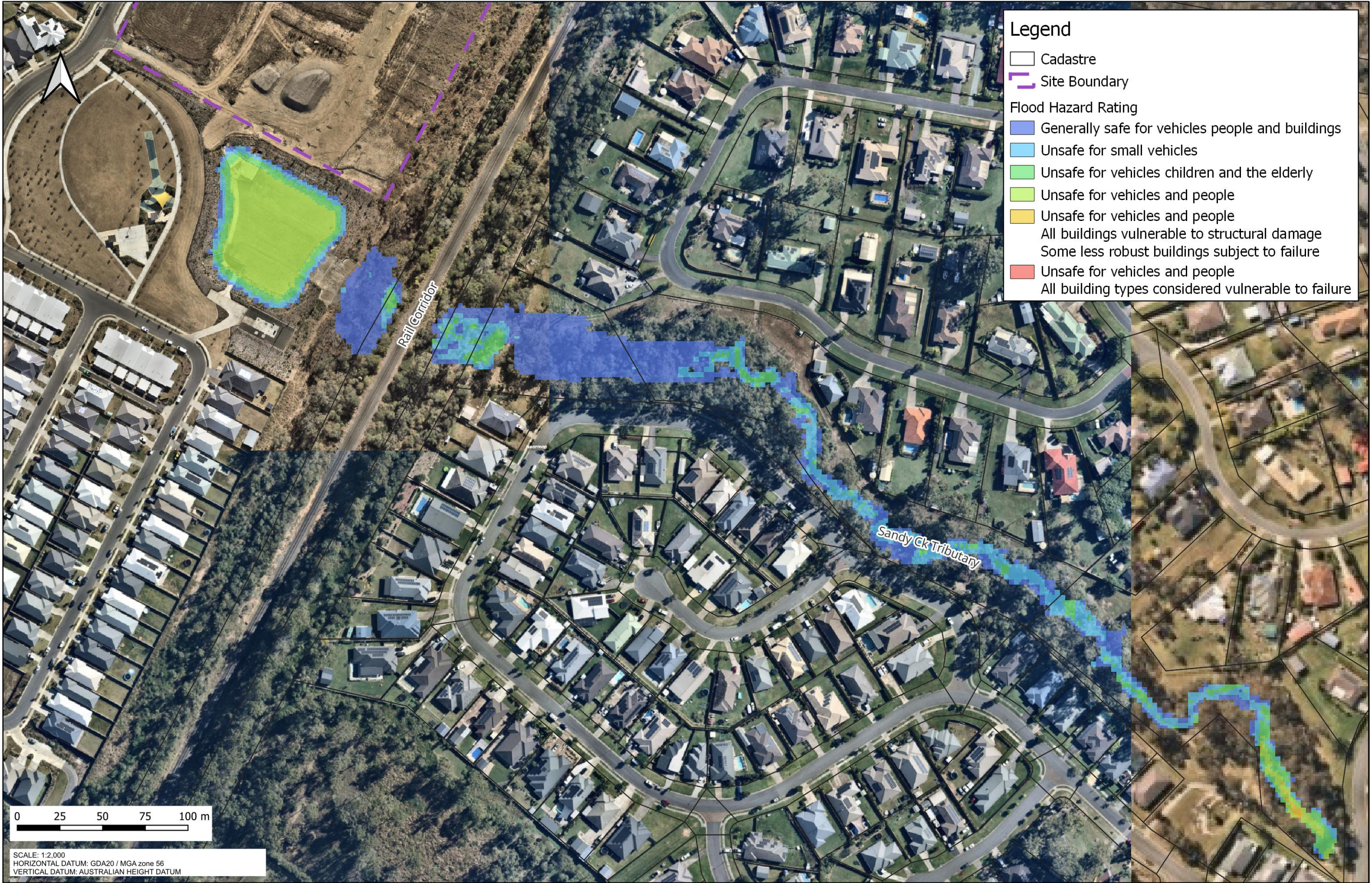
SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 50% AEP Flood Hazard	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No.	
RPEQ	-	RPEQ No.	-	01164_0001-SKE-01-065	
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SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

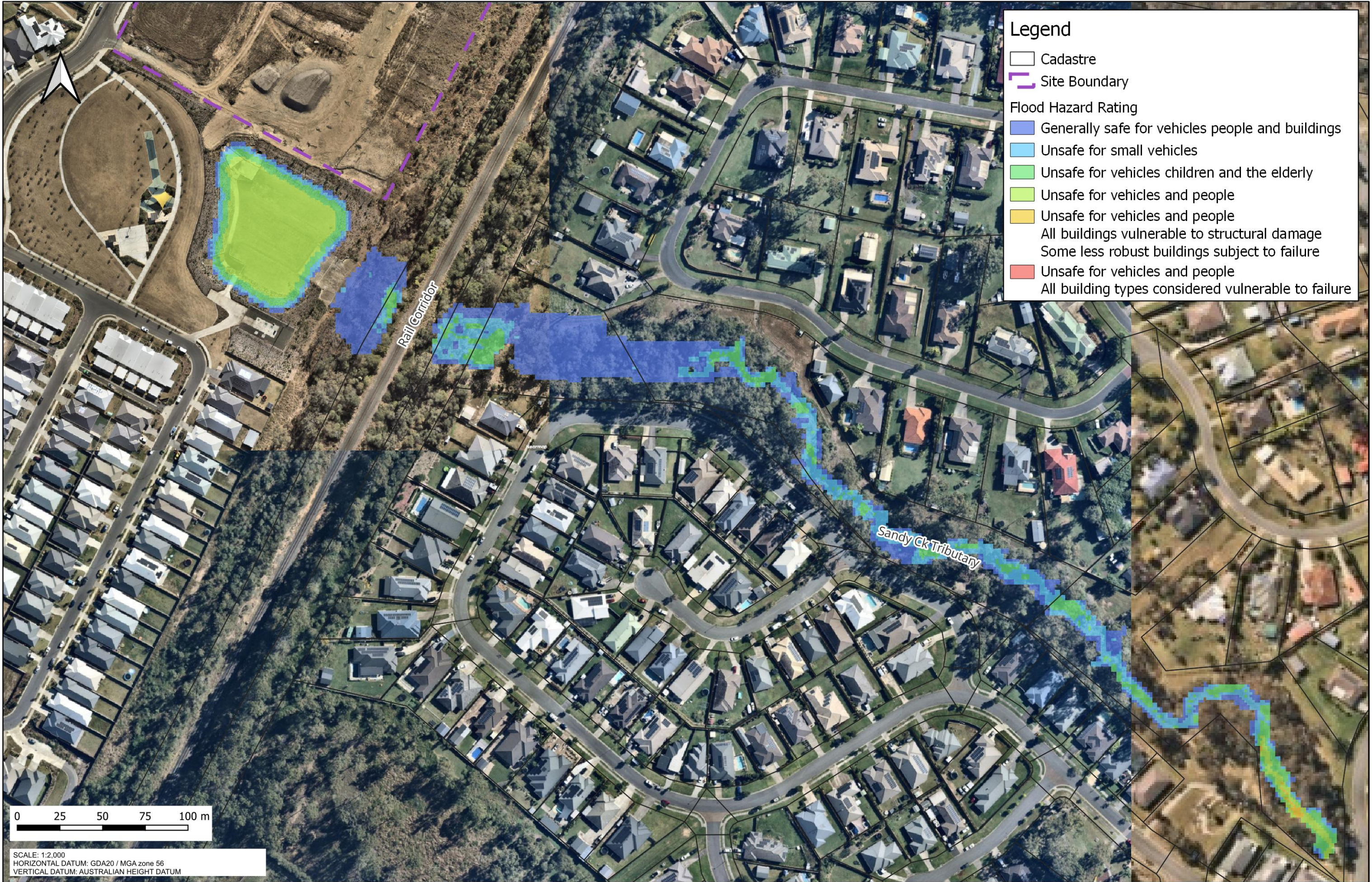
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
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No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY

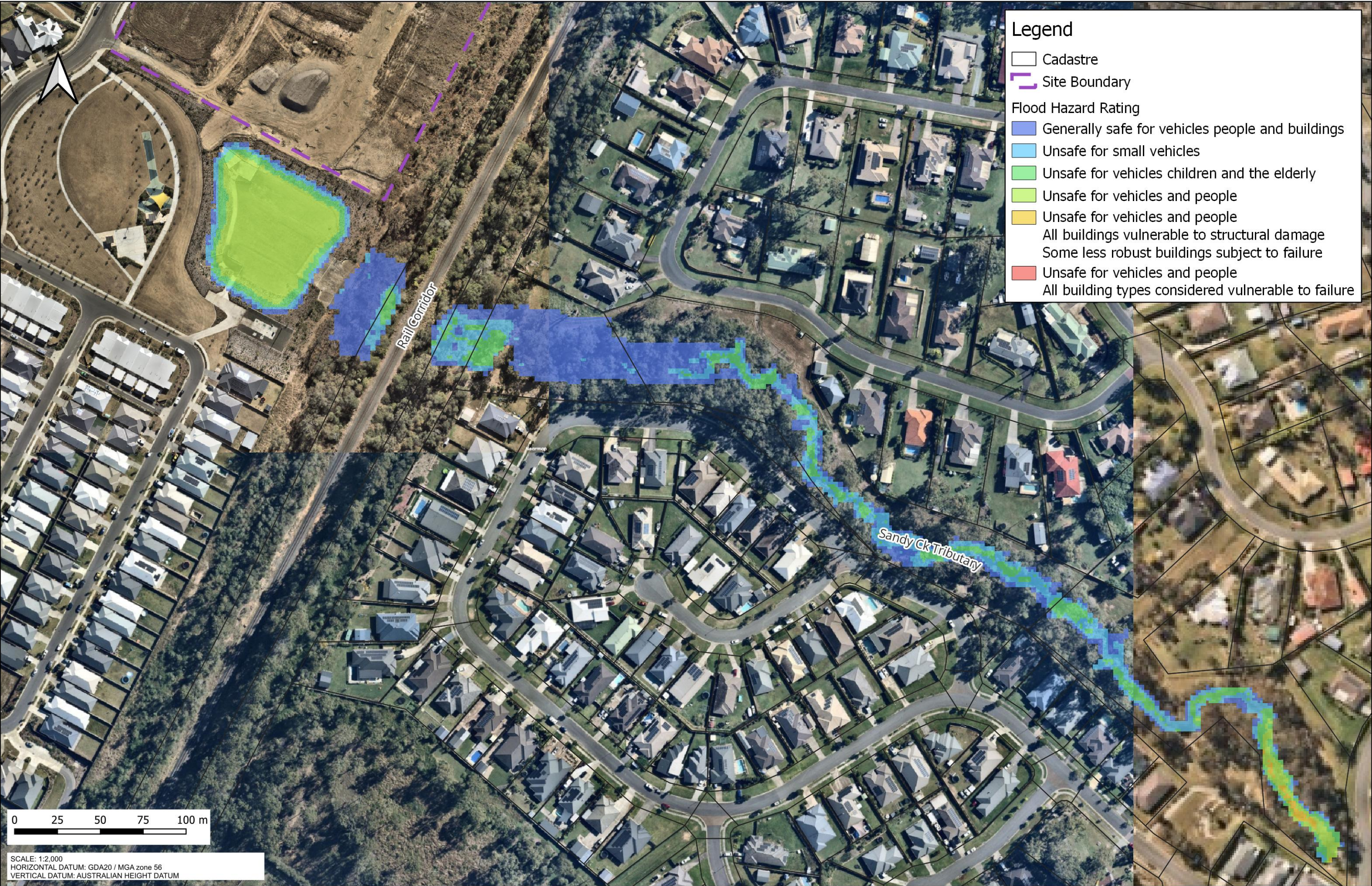


FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario			
20% AEP Flood Hazard			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-066	0	



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								Flagstone LLC			
								Post-Development Scenario			
								10% AEP Flood Hazard			
								Original size: A3			
								01164_0001-SKE-01-067			
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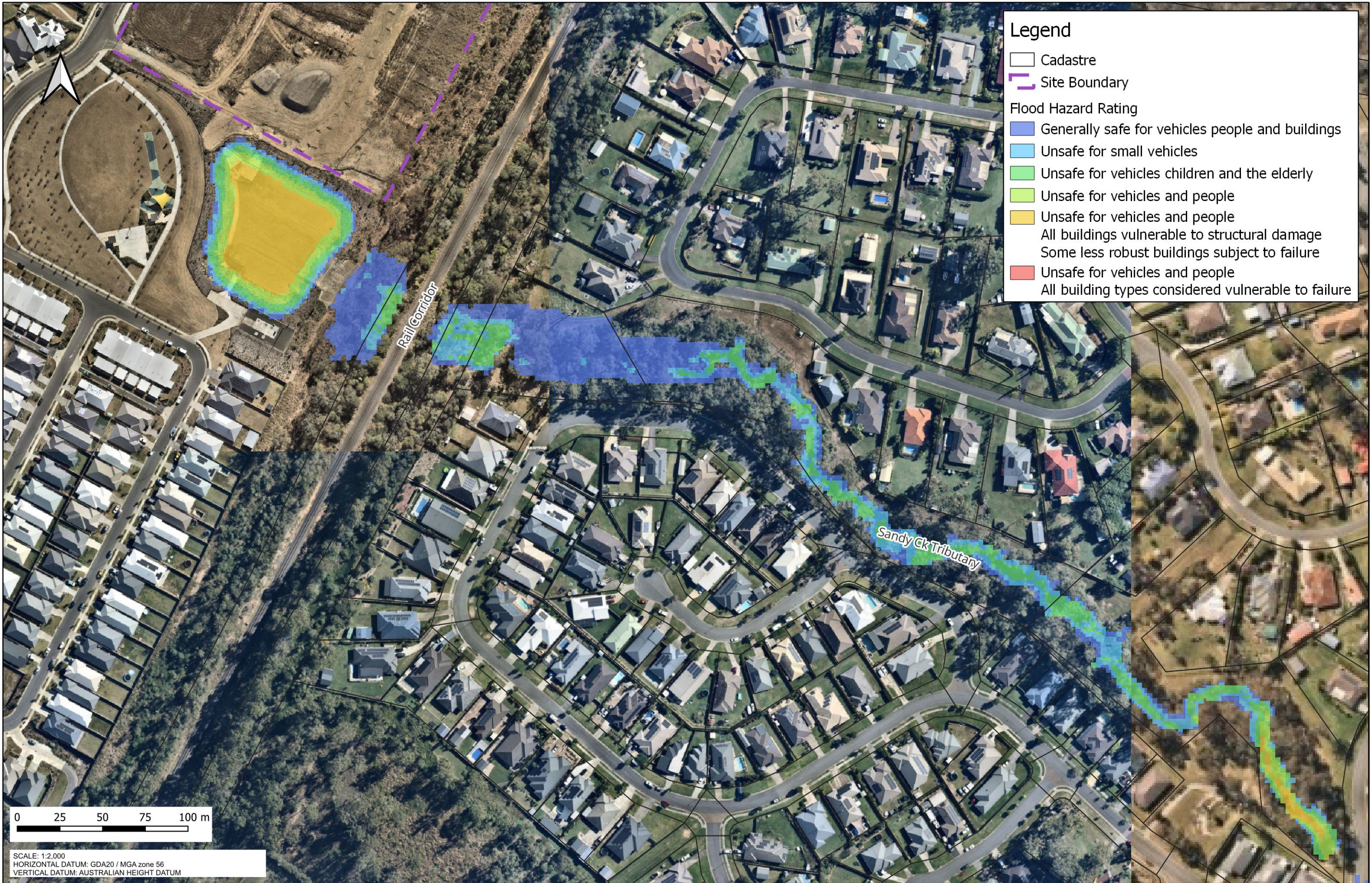
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HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
				REFERENCE DOCUMENTS

MILLBRAY



FOR INFORMATION ONLY				Lodge LCC Development Pty Ltd	
Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario 5% AEP Flood Hazard	
DRAWN	JH	CHECKED	MP	Original size	
APPROVED	MP	DATE	25-10-24	Eng No:	
RPEQ	-	RPEQ No.	-	A3	
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				Rev:	
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SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

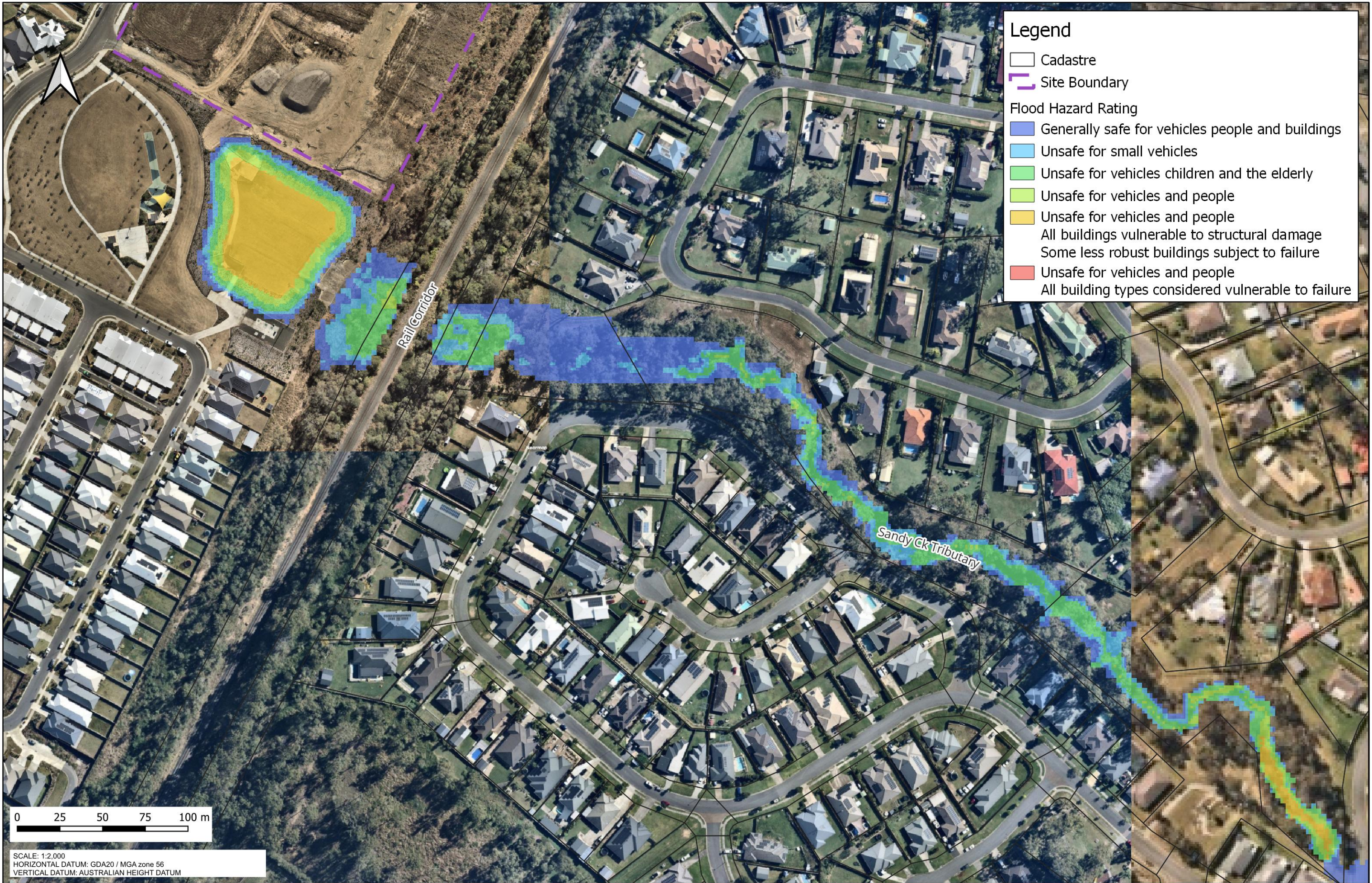
This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Post-Development Scenario	
2% AEP Flood Hazard	
Original size	Eng No.
A3	01164_0001-SKE-01-069
	Rev: 0



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd			
Flagstone LLC			
Post-Development Scenario			
1% AEP Flood Hazard			
Original size	Eng No.	Rev.	
A3	01164_0001-SKE-01-070	0	



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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
REFERENCE DOCUMENTS				

MILLBRAY



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Post-Development Scenario - Pre-Development Scenario	
63.2% AEP Flood Level Afflux	
Original size	Eng No.
A3	01164_0001-SKE-01-071
Rev:	0



This drawing is confidential and shall only be used by Engeny's Client for which it was prepared.				
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)
No.	BY	DATE	REVISION	APPD
			REFERENCE DOCUMENTS	



FOR INFORMATION ONLY			
Ph. 07 3221 7174	DESIGNED	JH	CHECKED MP
Level 2	DRAWN	JH	CHECKED MP
500 Queen St	APPROVED	MP	DATE 25-10-24
Brisbane QLD	RPEQ	-	RPEQ No. -
www.engeny.com.au			

Lodge LCC Development Pty Ltd	
Flagstone LLC	
Post-Development Scenario - Pre-Development Scenario	
50% AEP Flood Level Afflux	
Original size	Eng No.
A3	01164_0001-SKE-01-072
	Rev: 0



0 25 50 75 100 m

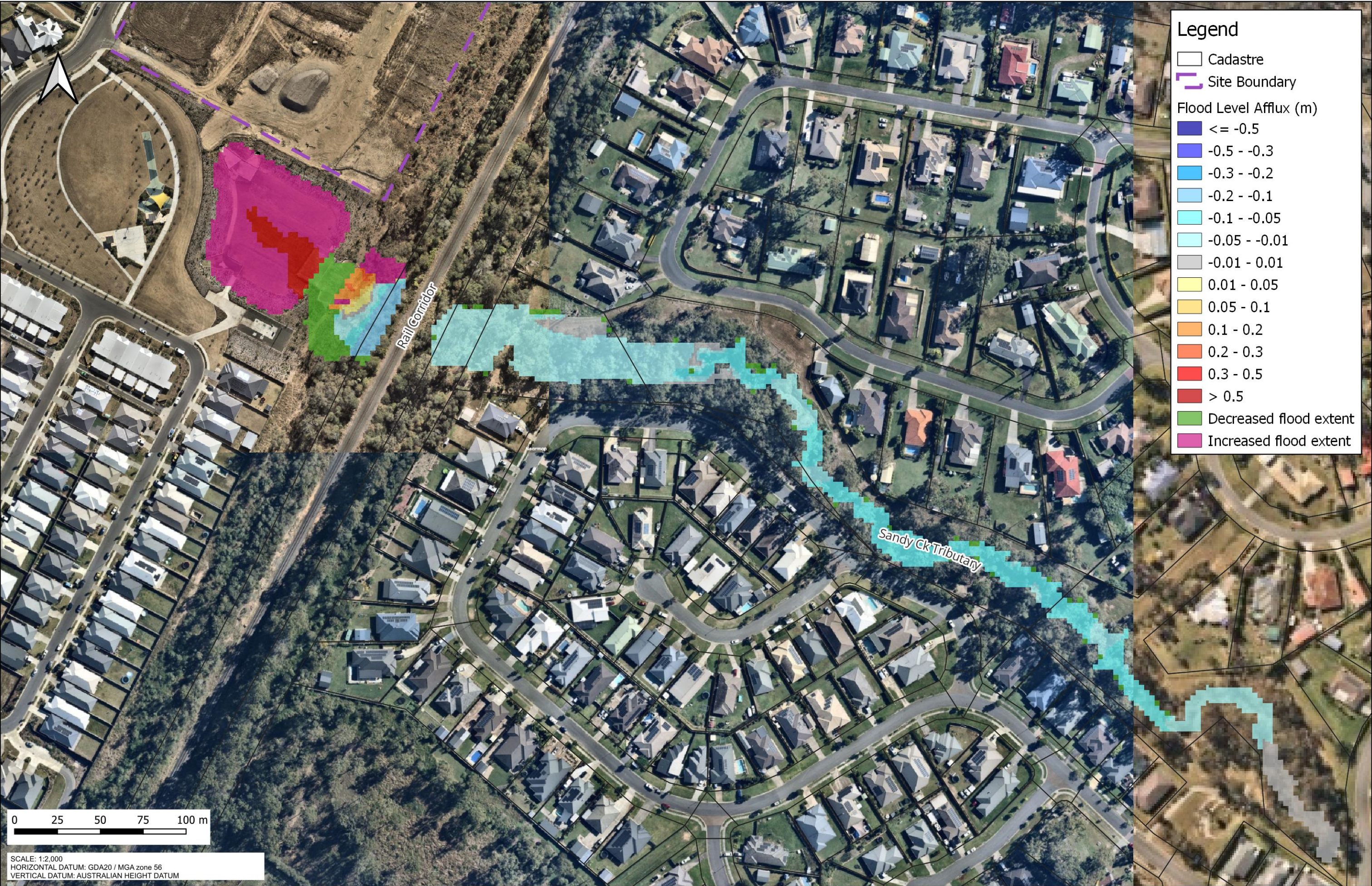
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HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)	
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS

MILLBRAY



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Level 2 500 Queen St Brisbane QLD www.engeny.com.au				Flagstone LLC	
DESIGNED	JH	CHECKED	MP	Post-Development Scenario - Pre-Development Scenario	
DRAWN	JH	CHECKED	MP	20% AEP Flood Level Afflux	
APPROVED	MP	DATE	25-10-24		
RPEQ	-	RPEQ No.	-	Original size	Rev:
			A3	01164_0001-SKE-01-073	0



Legend

Cadastre

Site Boundary

Flood Level Afflux (m)

<= -0.5

-0.5 - -0.3

-0.3 - -0.2

-0.2 - -0.1

-0.1 - -0.05

-0.05 - -0.01

-0.01 - 0.01

0.01 - 0.05

0.05 - 0.1

0.1 - 0.2

0.2 - 0.3

0.3 - 0.5

> 0.5

Decreased flood extent

Increased flood extent

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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DRAWN	JH	CHECKED	MP
APPROVED	MP	DATE	25-10-24
RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario - Pre-Development Scenario

10% AEP Flood Level Afflux

Original size

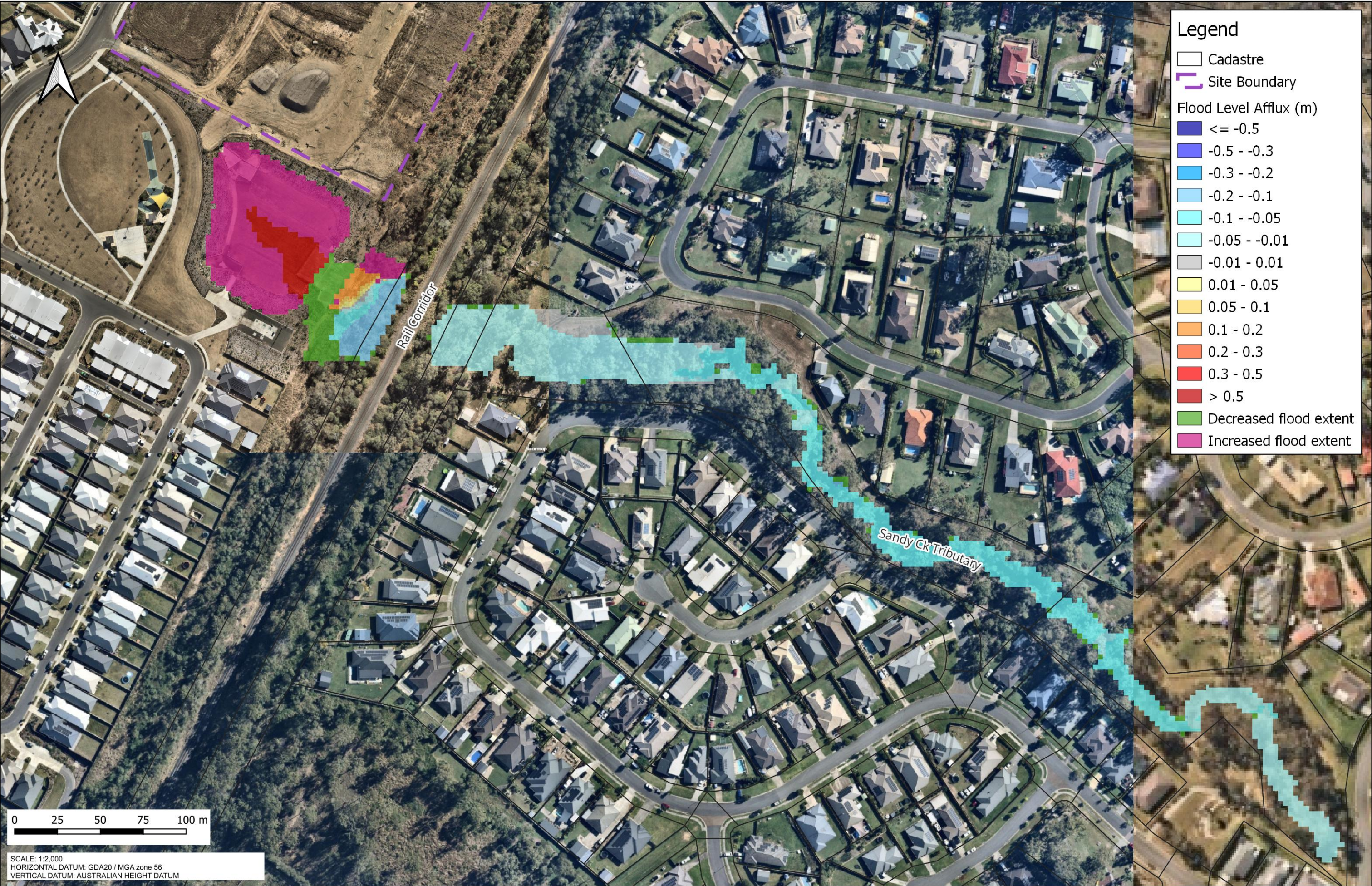
A3

Eng No.

01164_0001-SKE-01-074

Rev.

0



Legend

Cadastre

Site Boundary

Flood Level Afflux (m)

<= -0.5

-0.5 - -0.3

-0.3 - -0.2

-0.2 - -0.1

-0.1 - -0.05

-0.05 - -0.01

-0.01 - 0.01

0.01 - 0.05

0.05 - 0.1

0.1 - 0.2

0.2 - 0.3

0.3 - 0.5

> 0.5

Decreased flood extent

Increased flood extent

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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DRAWN	JH	CHECKED	MP
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RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario - Pre-Development Scenario

5% AEP Flood Level Afflux

Original size

A3

01164_0001-SKE-01-075

Rev:

0



Legend

Cadastre

Site Boundary

Flood Level Afflux (m)

<= -0.5

-0.5 - -0.3

-0.3 - -0.2

-0.2 - -0.1

-0.1 - -0.05

-0.05 - -0.01

-0.01 - 0.01

0.01 - 0.05

0.05 - 0.1

0.1 - 0.2

0.2 - 0.3

0.3 - 0.5

> 0.5

Decreased flood extent

Increased flood extent

0 25 50 75 100 m

SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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500 Queen St	APPROVED	MP	DATE	25-10-24
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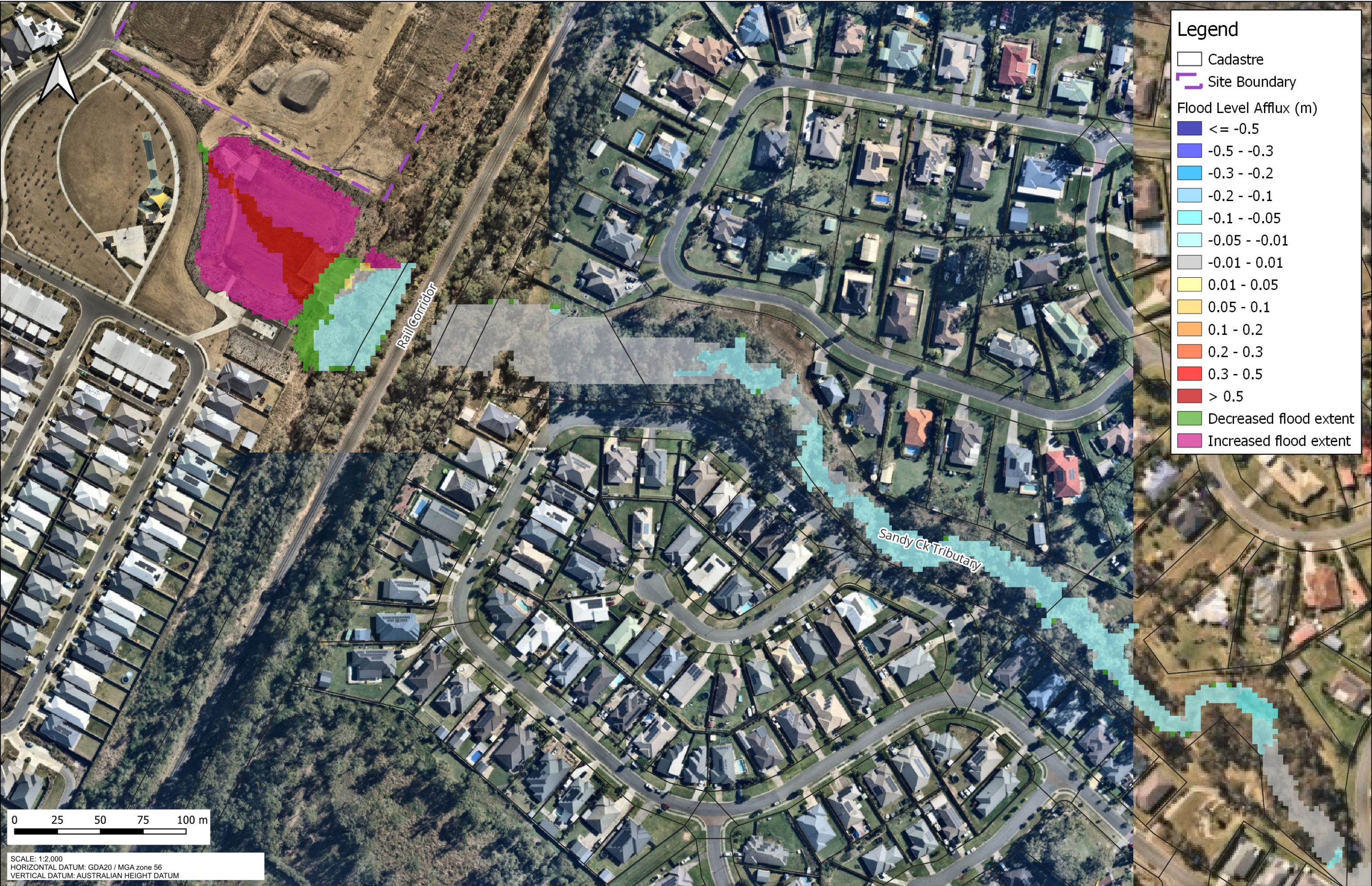
Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario - Pre-Development Scenario

2% AEP Flood Level Afflux

Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-076	0



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												Flagstone LLC						
												Post-Development Scenario - Pre-Development Scenario						
												1% AEP Flood Level Afflux						
0	JH	25-10-24	ISSUED FOR INFORMATION			(MP)												
No.	BY	DATE	REVISION			APPD	REFERENCE DOCUMENTS											
										Ph. 07 3221 7174					DESIGNED	JH	CHECKED	MP
										Level 2					DRAWN	JH	CHECKED	MP
										500 Queen St					APPROVED	MP	DATE	25-10-24
										Brisbane QLD					RPEQ	-	RPEQ No.	-
										www.engeny.com.au								
										Original size		Eng No.		Rev.				
										A3		01164_0001-SKE-01-077		0				



Legend

Cadastre

Site Boundary

Flood Velocity Afflux (m)

<= -0.5

-0.5 - -0.3

-0.3 - -0.2

-0.2 - -0.1

-0.01 - 0.01

0.1 - 0.2

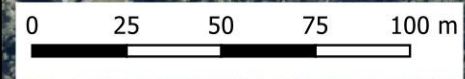
0.2 - 0.3

0.3 - 0.5

> 0.5

Decreased flood extent

Increased flood extent



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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DRAWN	JH	CHECKED	MP
APPROVED	MP	DATE	25-10-24
RPEQ	-	RPEQ No.	-

Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario - Pre-Development Scenario

63.2% AEP Flood Velocity Afflux

Original size

A3

Eng No.

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Rev.

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Lodge LCC Development Pty Ltd	
Flagstone LLC	
Post-Development Scenario - Pre-Development Scenario	
50% AEP Flood Velocity Afflux	
Original size	Eng No.
A3	01164_0001-SKE-01-079
	Rev.
	0



Legend

Cadastre

Site Boundary

Flood Velocity Afflux (m)

≤ -0.5

$-0.5 - -0.3$

$-0.3 - -0.2$

$-0.2 - -0.1$

$-0.01 - 0.01$

$0.1 - 0.2$

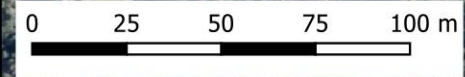
$0.2 - 0.3$

$0.3 - 0.5$

> 0.5

Decreased flood extent

Increased flood extent



SCALE: 1:2,000
HORIZONTAL DATUM: GDA20 / MGA zone 56
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM

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Lodge LCC Development Pty Ltd

Flagstone LLC

Post-Development Scenario - Pre-Development Scenario

20% AEP Flood Velocity Afflux

Original size	Eng No.	Rev.
A3	01164_0001-SKE-01-080	0



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						DESIGNED JH DRAWN JH APPROVED MP RPEQ -				Post-Development Scenario - Pre-Development Scenario 10% AEP Flood Velocity Afflux	
0	JH	25-10-24	ISSUED FOR INFORMATION	(MP)		CHECKED MP DATE 25-10-24 RPEQ No. -				Original size A3	Eng No. 01164_0001-SKE-01-081
No.	BY	DATE	REVISION	APPD	REFERENCE DOCUMENTS						Rev. 0



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													Flagstone LLC																				
													Post-Development Scenario - Pre-Development Scenario																				
													2% AEP Flood Velocity Afflux																				
0	JH	25-10-24	ISSUED FOR INFORMATION		(MP)																												
No.	BY	DATE	REVISION		APPD	REFERENCE DOCUMENTS																											
															Status					FOR INFORMATION ONLY					Lodge LCC Development Pty Ltd								
															Ph. 07 3221 7174					DESIGNED		JH		CHECKED		MP		Flagstone LLC					
															Level 2 500 Queen St Brisbane QLD					DRAWN		JH		CHECKED		MP		Post-Development Scenario - Pre-Development Scenario					
																				APPROVED		MP		DATE		25-10-24		2% AEP Flood Velocity Afflux					
															www.engeny.com.au					RPEQ		-		RPEQ No.		-		Original size		B3/3 No.		Rev.	
																												A3		01164_0001-SKE-01-083		0	



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												Flagstone LLC			
												Post-Development Scenario - Pre-Development Scenario			
												1% AEP Flood Velocity Afflux			
												Original size			
												A3			
												01164_0001-SKE-01-084			
												0			