

14 August 2026

File Ref: S523190_RFIR2_v1.0

Contact: Rob Siddle

Senior Urban Planner
Planning Services South
Development Services
Brisbane City Council
Brisbane Square, 266 George Street,
Brisbane Qld 4000



Attention: Joel Wake

42 REDHEAD STREET, DOOLANDELLA (A006866747) – RESPONSE TO INFORMATION REQUEST – FURTHER ISSUES

I refer to the above Brisbane City Council (BCC) issued Information Request letter to address further issues regarding the Change application for the proposed Development Permit for Material Change of Use – Multiple Dwellings (27 Townhouses) at 42 Redhead Street, Doolandella (herein referred to as the 'subject site'), dated 1st of June 2026. Specifically, this response letter aims to address Items 1-6 of the Information Request.

S5 Environmental's response on behalf of the proponent are as follows:

Bushfire

1) The site is mapped within the Bushfire overlay. A site-specific bushfire hazard assessment report and bushfire management plan for the proposed MCU development has not been submitted. The Bushfire overlay code requires development to demonstrate that development will not be exposed to intolerable levels of radiant heat (i.e. >29kW/m²) (PO1), minimises bushfire risk from build-up of fuels around buildings and structures (PO2), is designed to facilitate safe and efficient emergency services access and egress to/from the site (PO4) and makes adequate provision for fire-fighting requirements, including water supply (PO6). Assessment against Section A and Section B of the Bushfire overlay code is required. Consideration of the proposal as a staged development must also be addressed.

2) The submitted Vegetation Retention Plan BAL Setbacks (Drawing No. S523190_VRP_004, BCC received 05/05/2026) identifies proposed development, including Townhouses 12 and 13, within the bushfire management zones (i.e. areas exceeding a radiant heat flux of 29 kW/m²). This does not comply with PO1 of the Bushfire overlay code and is not supported.

3) Communal open space (COS) and deep planting areas are shown to be located within the bushfire management zone which has not been addressed. Landscaping must not create an unacceptable risk to people or property and must support the ongoing management of bushfire risk (PO13).

4) The following information is to be provided:

a. A site-specific bushfire hazard assessment and management plan prepared in accordance with the Bushfire Planning Scheme Policy or an alternative approved methodology. Bushfire Reporting and hazard assessment guidelines are available within the technical assessment guide for Bushfire reporting available on Council's website. The assessment must also consider the ecological requirements and increase in retained values and rehabilitation as outlined below.

S5 Response:

Please refer to **Appendix A** for attached Bushfire Hazard Assessment and Management Plan (BHAMP) prepared by S5 Environmental (S523190_BHAMP_v1.3).

b. An assessment against Sections A and B of the Bushfire overlay code, informed by the bushfire assessment and staged development context.

S5 Response:

Please refer to **Appendix A** for attached BHAMP prepared by S5 Environmental, which includes assessment against Sections A and B of the Bushfire overlay code.

c. Updated development plans incorporating required layout changes based on the bushfire assessment and overlay code provisions (i.e. development sited to achieve radiant heat flux of 29kW/m² or less). Plans must clearly identify bushfire management zones and setbacks within the staged development. Bushfire management zones are to be contained within the development footprint; impacts to, removal of or reduction in the ecological values will not be supported.

S5 Response:

Please refer to **Appendix B** for the updated Vegetation Retention Plan (S523190_VRP_001-006(F)) of which includes the updated development plans incorporating required changes based on the BHAMP, with the development sited to achieve a maximum radiant heat exposure of 29kW/m². The bushfire setbacks outlined within the attached BHAMP are shown on VRP004.

Ecological Values

5) The proposed development will impact the ecological values of the site, mapped under the Biodiversity areas overlay (HES/HES/KHA) and the Waterway corridors overlay (Local waterway corridor). While the mapped waterway corridor has been historically modified, it remains ecologically significant within the Blunder Creek catchment and contains in-situ values as identified in the submitted Ecological Assessment Report.

6) Amendments to the proposed development and updated supporting documentation are required to demonstrate compliance with PO4, PO7, and PO8 of the Biodiversity areas overlay code, and PO1 and PO6 of the Waterway corridors overlay code. Please refer to attached plan for required Environmental

Protection Zone to demonstrate the protection, conservation and restoration of the site's values. The following information is to be provided:

a. Updated proposed plans, Vegetation Retention Plan (VRP), Arborist Report, engineering plans and Concept Rehabilitation Plan (CRP): clearly identifying the

i. One (1) Environmental Covenant as required per Council's plan and Bushfire Covenants as determined by the bushfire reporting (note bushfire requirements above). No encroachment into the Environmental Covenant is permitted, except for essential sewer and stormwater infrastructure.

S5 Response:

The Council's plan outlining their requested Environmental Covenant is acknowledged. Whilst the amended proposed EPZ (Waterway Corridor) as shown in the updated proposed plans on the VRP within **Appendix A**, is still a reduced corridor width, the development footprint has undergone many iterations of civil design, enabling the corridor to be widened considerably, allowing the additional retention of Trees 5-9, 20-22, 24, 25 and 81. Additionally, the current proposal includes extensive rehabilitation and restoration within the waterway corridor, with the goal of improving the current environmental values of the waterway and riparian area. As outlined in the Detailed Ecological Assessment, the waterway corridor is currently highly modified and partially concreted, consisting of scattered canopies over mown turf and exotic vegetation. Rehabilitation will ultimately provide additional suitable fauna habitat and strengthen the east-west corridor for fauna movement (refer to **Appendix C** for the Concept Rehabilitation Plan).

ii. Retain T81, T56, T21, T22, T24, T25, and T9 within an Environmental Covenant, with no encroachment of development within their notional root zone (NRZ)/tree protection zone (TPZ).

S5 Response:

Please refer to the updated Vegetation Retention Plan within **Appendix B**, demonstrating the retention of T81, 56, 21, 22, 24, 25 and 9 within the Waterway Corridor. Acceptable levels of encroachment within the NRZ have been demonstrated and supported by the project arborist (please refer to the associated Arborist Report prepared by Independent Arboricultural Services).

iii. As required by the Project Arborist in the submitted Arborist Report removal of earthworks from the NRZ/TPZ of T7, T8, T92 and T94.

S5 Response:

Earthworks have been removed for the NRZ of T7, 92 and 94, and have been removed from T8 to an acceptable level and is supported for retention by the project arborist. Please refer to the updated arborist report by Independent Arboricultural Services and refer to the updated VRP within **Appendix B** for the updated extent of earthworks.

iv. Provide the sewer pipe specifications including location of start and end pits, depth and width of sewer pipes and all connection points. This includes detail for Stage 2 sewer works.

1. Identify if benching or shoring will be required, details of stockpile requirements and whether construction access is required along the side of the excavation.

2. Detail the construction methodology to undertake works in the channel of the creek, creek bed and creek banks, including any requirement for waterway barrier works.

3. Detail any ecological features potentially impacted within the construction alignment within the waterway corridor and appropriate mitigation measures/protection for these features.

S5 Response:

Please refer to the associated civil engineering plans for sewer pipe specifications and the updated VRP for impacts to vegetation. As stated above, the current proposal includes extensive rehabilitation and restoration within the waterway corridor, with the goal of improving the current environmental values of the waterway and riparian area. As outlined in the Detailed Ecological Assessment, the waterway corridor is currently highly modified and partially concreted, consisting of scattered canopies over mown turf and exotic vegetation. Rehabilitation will ultimately provide additional suitable fauna habitat and strengthen the east-west corridor for fauna movement (refer to Appendix C for the Concept Rehabilitation Plan).

v. Resolve the discrepancies regarding tree retention between the Arborist Report and the VRP (e.g. T59 and T60 are identified for retention in the Arborist Report but shown for removal in submitted plans).

S5 Response:

Trees 59 and 60 are to be removed and all plans have been updated to reflect this. Please refer to the associated Arborist Report prepared by Independent Arboricultural Services.

vi. Identify only vegetation proposed for retention or removal. Previously removed vegetation as identified in the Arborist Report is to be removed from plans.

S5 Response:

Previously removed vegetation has been removed from the VRP (please refer to **Appendix B**).

vii. An updated Concept Rehabilitation Plan that includes the sewer infrastructure and sewer easements and clearly outlines replacement planting constraints, removal protocols, and ongoing maintenance requirements.

S5 Response:



An updated Concept Rehabilitation Plan has been provided to include the sewer infrastructure, and an additional rehabilitation management unit has been added along the sewer easement which clearly outlines planting requirements and recommendations in this area (refer to **Appendix C**).



Should you wish to discuss the above, please do not hesitate to contact the undersigned on the number or email address below.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Siddle'.

Rob Siddle

Director

T: 07 3505 3053

A: Lv 3/12 Commercial Road, Newstead QLD 4006

E: rob@s5consulting.com.au

W: www.s5consulting.com.au

Enc: **Appendix A** Bushfire Hazard Assessment and Management Plan (Version 1.3)
 Appendix B Vegetation Retention Plan (Version F)
 Appendix C Concept Rehabilitation Management Plan (Version C)

APPENDIX A

Bushfire Hazard Assessment and Management Plan



ENVIRONMENTAL

BUSHFIRE HAZARD ASSESSMENT AND MANAGEMENT PLAN

42 Redhead Street, Doolandella

Client: Sunstate Civil Constructions
C/- Urban Strategies
Reference: S523190_BHAMP_v1.3
Date: 14th August 2026

Table of Contents

ABBREVIATIONS	V
1.0 INTRODUCTION	6
2.0 STATUTORY REQUIREMENTS	10
2.1 Development Applications in Bushfire Prone Areas	10
3.0 METHODOLOGY	12
3.1 Bushfire Hazard Assessment	12
3.2 Modification of Potential Intensity of Small Patches and Corridors	13
3.3 Radiant Heat Exposure Assessment	13
3.4 Short Fire Run	15
4.0 BUSHFIRE HAZARD ASSESSMENT	16
4.1 Potential Fire-line Intensity Assessment	16
4.2 Hazardous Vegetation	24
5.0 BUSHFIRE ATTACK LEVEL ASSESSMENT	26
6.0 BUSHFIRE MANAGEMENT PLAN	29
6.1 Bushfire Behaviour	29
6.2 Bushfire Damage Sources	30
6.3 Management and Mitigation Measures – Permanent Buildings	31
7.0 CONCLUSION	36
8.0 REFERENCES	37
APPENDIX A: BCC BUSHFIRE HAZARD OVERLAY CODE RESPONSE	39
APPENDIX B: FLAMESOL INPUTS AND OUTPUTS	48
APPENDIX C: SLOPE LINES AND CALCULATIONS	52

Figures

Figure 1. Site Aerial	7
Figure 2. Site Aerial	8
Figure 3. Proposed Plans	9
Figure 4. BCC Bushfire Hazard Mapping within and in Proximity to the Site	11
Figure 5. SPP Bushfire Prone Area Mapping within and in Proximity to the Site	11
Figure 6. Bushfire Attack Levels (BAL)	14
Figure 7. Schematic Diagram of Simple Elliptical Fire Growth Model	15
Figure 8. Extract of Vegetation Hazard Classes from the BRC MapViewer	16
Figure 9. Ground-truthed and Post-development Vegetation Hazard Classes	19
Figure 10. Step 3a – Shrinking of Patches of Continuous Fuel at the Interface with Non-Continuous Fuel	22
Figure 11. Step 3b – Dilation of Residual Continuous Fuel Pixels and the Removal of Fragmented Small Patches (<0.5 ha)	22
Figure 12. Finalized Pixelated Hazardous Vegetation within the Assessment Area	23
Figure 13. Smoothed Hazardous Vegetation to Reflect Ground-Truthed Conditions and Vegetation	23
Figure 14. Slope within and in Proximity to the Proposed Development	25
Figure 15. Potential Fire Line Intensity	25
Figure 16. Radiant Heat Flux Exposure	27
Figure 17. BAL Setbacks - North	28
Figure 18. BAL Setbacks - South	28
Figure 19. Effects of Topography on Bushfire	29
Figure 20. Australian Fire Danger Rating System	30
Figure 21. Ember Attack	30
Figure 22. Radiant Heat	31
Figure 23. Proposed Bushfire Management Zone	35

Tables

Table 1. Site Description	6
Table 2. Potential Bushfire Intensity Classification	12
Table 3. Steps to Downgrade Bushfire Intensity	13
Table 4. BAL and Radiant Heat Exposure	14
Table 5. Parameter inputs for Method 2 from AS3959-2018	14
Table 6 Summary of VHCs and their Associated Fuel Continuity and Loads	20
Table 7. Summary of Setbacks and Radiant Heat Exposure for the Proposed Development	26

Quality Control

Prepared for	Sunstate Civil Constructions C/- Urban Strategies
Prepared by	S5 Consulting Pty Ltd (ACN 600 187 844) 2/265 Sandgate Road, Albion T 07 3505 3053 www.s5consulting.com.au
Date	14 August 2026

Version Control

Version	Description	Date	Author	Reviewer	Approver
1.0	For submission	5 Dec 2023	SV (EnvSc.)	CH (Snr Ecologist)/SL (Principal Ecologist)	RS (Director)
1.1	For submission	16 Sept 2025	AN (Grad. Ecologist)	RS (Director)	RS (Director)
1.2	Updated Layout	24 July 2026	JD (EnvSc.)	DE (Snr Ecologist)	RS (Director)
1.3	Minor Layout Update	14 August 2026	CF (Ecologist)	JD (EnvSc.)	RS (Director)

S5 Consulting Pty Ltd has prepared this document for the sole use of the Client and for a specific purpose, each as expressly stated in the document. No other party should rely on this document without the prior written consent of S5 Consulting Pty Ltd. These materials or parts of them may not be reproduced in any form, by any method, for any purpose except with written permission from S5 Consulting Pty Ltd. Subject to these conditions, this document may be transmitted, reproduced or disseminated only in its entirety.

Disclaimer

S5 Consulting Pty Ltd trading as S5 Environmental has developed this Bushfire Hazard and Bushfire Attack Level Assessment, taking into consideration the Australian Standard (AS3959-2018) - Construction of Buildings in Bushfire-prone Areas, the State Planning Policy and relevant local authority policies and guidelines. However, there can be no guarantee that following the recommendations made in this assessment can guarantee safety of property and human life.

Fire is an element of nature, and as such fire events (small or large) can have disastrous outcomes even with the best planning in place. The authors of this report and S5 Consulting Pty Ltd accept no responsibility for any harm to property or human life caused by fire or any other cause to persons utilising property or structures.

Abbreviations

AHD	Australian Height Datum
AS 3959-2018	<i>Australian Standard 3959-2018 Construction of Buildings in Bushfire-prone Areas</i>
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BCC	Brisbane City Council
BMP	Bushfire Management Plan
BMZ	Bushfire Management Zone
BRC	Bushfire Resilient Communities
CFA	Country Fire Authority
DES	Department of Environment and Science
DNRME	Department of Natural Resources, Mines and Energy
DoR	Department of Resources
EPZ	Environmental Protection Zone
FFDI	Forest Fire Danger Index
ha	Hectares
NCC	National Construction Code
RE	Regional Ecosystem
SEQ	South East Queensland
SPP	<i>State Planning Policy, 2017</i>
VHC	Vegetation Hazard Class

1.0 INTRODUCTION

S5 Environmental was commissioned by Urban Strategies, on behalf of their client Sunstate Civil Constructions, to undertake a Bushfire Hazard Assessment and Management Plan (BHAMP) as supporting documentation for the proposed residential development located at 42 Redhead Street, Doolandella. Refer to **Table 1**.

The aim of this BHAMP is to undertake a site-specific bushfire hazard assessment, determine any set back required between the proposed development and hazardous vegetation and prepare a Bushfire Management Plan to ensure the proposed development is not exposed to an unacceptable bushfire risk and can comply with the relevant legislative bushfire requirements.

Table 1. Site Description

Street Address	42 Redhead Street, Doolandella	Lot on Plan	Lot 70 on RP90234
LGA	Brisbane City Council (BCC)	Area	10,190 m ²
Zone	Emerging Community	Neighbourhood Plan	Doolandella Neighbourhood Plan
Current State	Lot 70 on RP 90234, herein referred to as the 'subject site', is located in an area undergoing extensive residential development. The subject site currently contains a residential dwelling within the northern extent. Access to the site is achieved via a looped driveway off Redhead Street to the north. Landscaped garden beds are situated around the dwelling. A mix of native and exotic trees are scattered about northern portion of the site. A shallow BCC mapped waterway corridor bisects the site, entering from the north-west and exiting towards the south-eastern boundary. Dense vegetation is associated with this corridor outside of the subject site to the north-east and southeast. and Density of trees is increased along this site feature however within the site it is highly modified with limited mid and understorey and mown turf. The portion of the site south of the waterway is a mown grassed area, with a mix of native and exotic canopy trees and little understorey, primarily observed around the perimeter. It is understood a development application for a subdivision has been submitted for the adjacent lot to the east, and there are approved subdivisions further to the east and the south-east, all of which retain the vegetation associated with the waterway corridor. Refer to Figure 1.		
Proposed Development	S5 Environmental understand the client is seeking to subdivide the subject site for residential purposes, with the development in two areas comprising thirteen (13) townhouses north of the waterway to be accessed off Redhead Street, and thirteen		

townhouses south of the waterway to be accessed off Giant Street. Refer to **Figure 2** and **Figure 3** for the proposed development layout.

Potentially Hazardous Vegetation

Post development, potentially hazardous vegetation is situated to the north, east and south-east of the proposed development. This potentially hazardous vegetation was determined to reflect the regional ecosystem (RE) 12.5.3a, which is described as:

RE 12.5.3a: Mixed woodland to open forest usually containing *Corymbia intermedia*, *Eucalyptus racemosa* subsp. *racemosa* and at least a presence of *Eucalyptus seeana*. Other commonly associated species include *Angophora leiocarpa*, *E. siderophloia*, *E. microcorys*, *C. citriodora* subsp. *variegata* and *Lophostemon suaveolens*. Occurs on complex of remnant Tertiary surfaces +/- Cainozoic and Mesozoic sediments. Not a wetland.



Figure 1. Site Aerial (source: Nearmap, date: 3/12/2025)

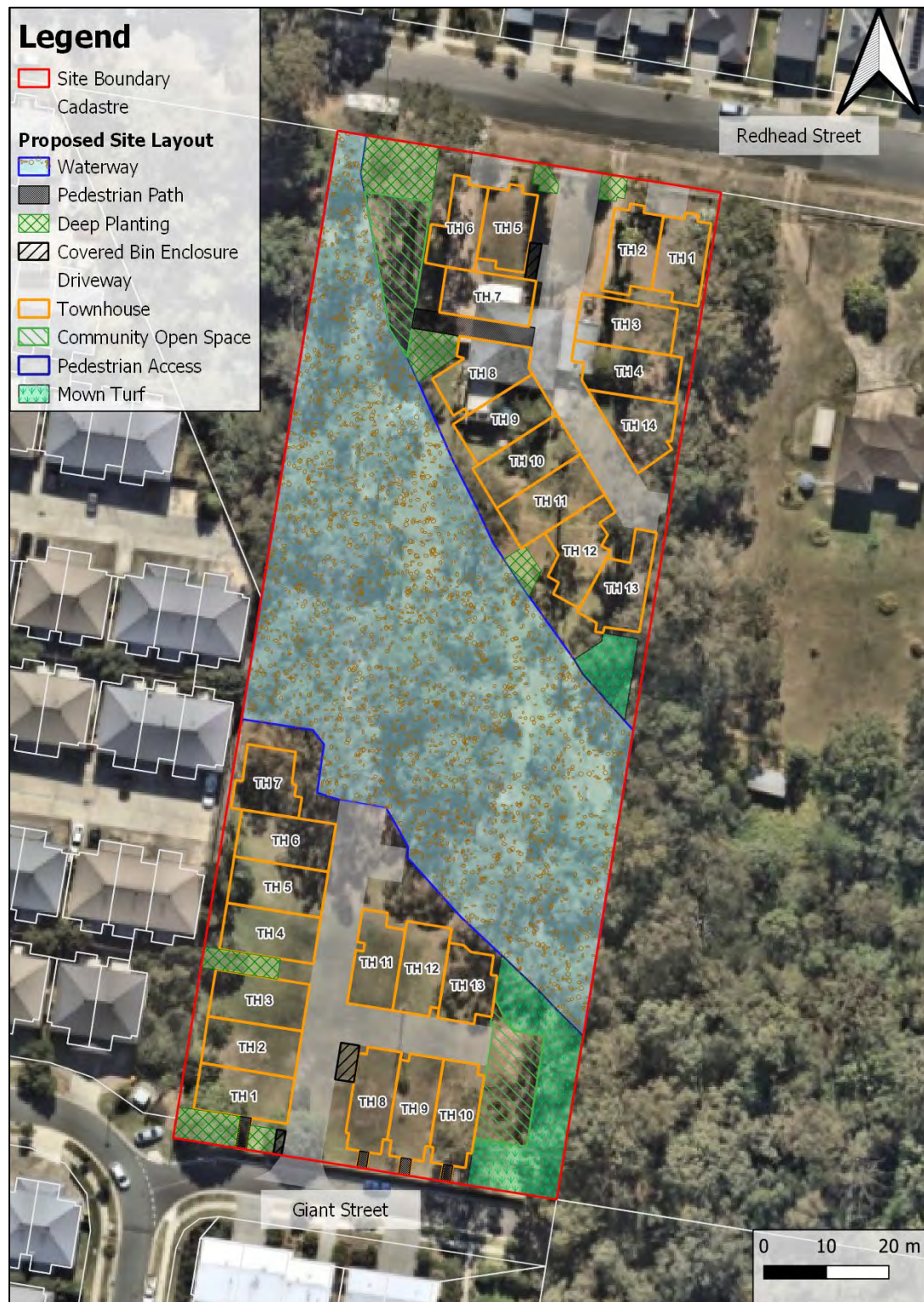


Figure 2. Site Aerial (source: Nearmap, date: 11/08/2023)

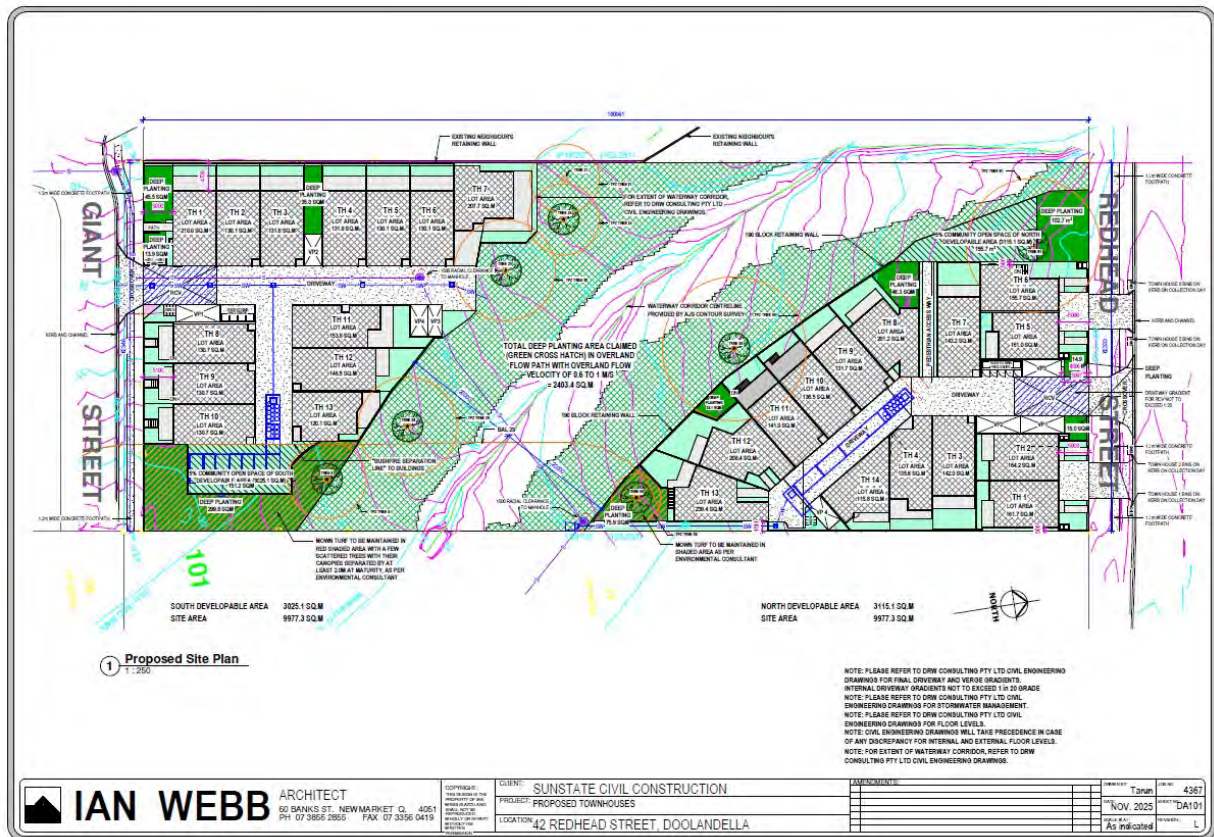


Figure 3. Proposed Plans (source: Ian Webb Architect, Job 4367, Rev L, Sheet DA101, Nov 2025)

2.0 STATUTORY REQUIREMENTS

2.1 Development Applications in Bushfire Prone Areas

Bushfire Prone Areas are identified at both the State and Local Government Level. The State Planning Policy (SPP) Bushfire Prone Area map was developed by CSIRO to map areas with Very High, High and Medium Potential Bushfire Intensity. The SPP also maps a 100 m Potential Impact Buffer.

The Brisbane City Council (BCC) *City Plan 2014* implements the Bushfire hazard overlay code which acts as a development constraint within the BCC locality. It is understood that the *City Plan 2014* has not integrated all aspects of the SPP: Safety and Resilience to Hazards (Natural Hazards, Risk and Resilience – Bushfire Prone Areas). As such the SPP bushfire hazard mapping, as well as BCC's Bushfire hazard overlay, were consulted to determine the preliminary bushfire hazard ratings of the site and locality (within 150 m), refer to **Figure 4** and **Figure 5**.

The BCC Bushfire hazard overlay has mapped the balance of the assessment area under a combination of all four Bushfire Hazard categories (i.e., High hazard area, Medium hazard area, High hazard buffer area and Medium hazard buffer area). The footprint of the proposed residential subdivision within the southern extent of the subject site is mapped primarily under Medium hazard area and Medium hazard buffer area.

The SPP Bushfire prone areas overlay maps vegetation to the south-east of the subject site under Medium potential bushfire intensity, with Potential impact buffer extending off this mapping. Potential impact buffer mapping is also located to the south and west of the subject site within the assessment area. The balance of the assessment area is not mapped under SPP Bushfire Prone Areas mapping.

Due to potentially hazardous vegetation being mapped within and around the proposed development site, further investigation of the site-specific bushfire hazard characteristics has been undertaken to determine the actual hazard of the site.

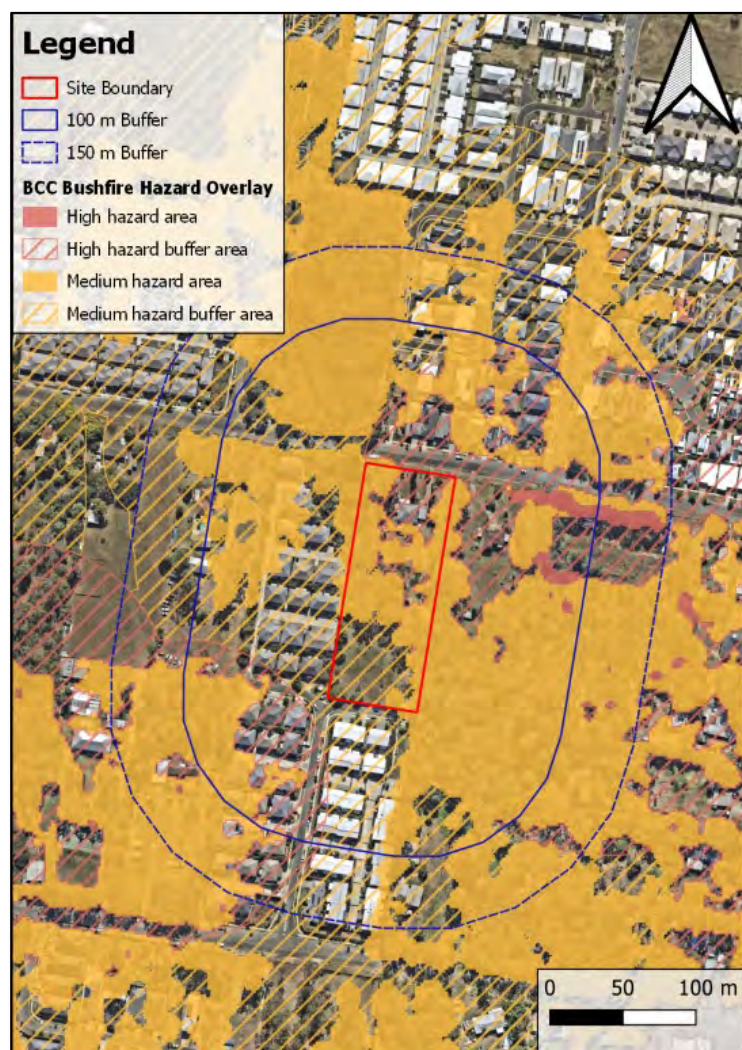


Figure 4. BCC Bushfire Hazard Mapping within and in Proximity to the Site

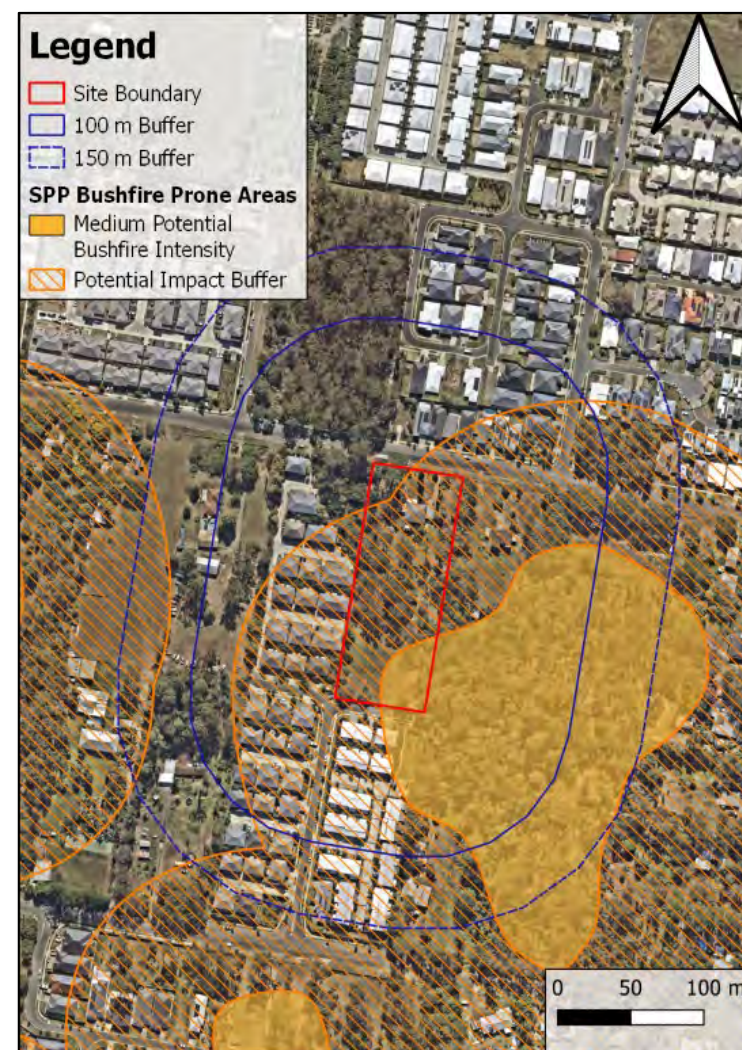


Figure 5. SPP Bushfire Prone Area Mapping within and in Proximity to the Site

3.0 METHODOLOGY

3.1 Bushfire Hazard Assessment

The SPP Potential Bushfire Intensity classifications are based on the *New Methodology for State-wide Mapping of Bushfire Prone Areas in Queensland* (Leonard *et al.* 2014). This State-wide mapping methodology was developed to identify Bushfire Prone Areas in support of bushfire hazard provisions of Queensland's State Planning Policy. The new methodology scales bushfire hazard based on the Potential Fire-line Intensity (PFLI) of a severe bushfire and can be used to predict the radiation profile of areas located adjacent to potentially hazardous vegetation and an associated Potential Impact Buffer.

Accordingly, the classification of an area's PFLI is calculated as a combination of the following three metrics, using the below equation (Leonard *et al.* 2014):

- Total fuel load (W);
- The McArthur Forest Fire Danger Index (FFDI), and
- Maximum Landscape Slope (θ in $^{\circ}$).

$$FI = 0.62 W^2 FFDI \exp(0.069 \theta)$$

For the purposes of the bushfire hazard assessment, S5 Environmental have utilised data from the Queensland Fire Department (QFD) published to the Queensland Government's Queensland Spatial Catalogue (QSpatial) for fuel load and FFDI. PFLI is delineated into a number of hazard categories shown in **Table 2**, and each patch of hazardous vegetation can be classed as Very High, High, Medium, Grassland or low hazard according to the PFLI determined for that specific patch. Any patch of hazardous vegetation classed as Very High, High or Medium is buffered by 100 m called the Potential Impact Buffer.

The Potential Impact Buffer is also considered a Bushfire Prone Area, along with hazardous vegetation with a PFLI of Very High, High or Medium. Any development within a bushfire prone area requires further assessment of radiant heat exposure, assessment against the relevant local planning scheme bushfire code and/or an assessment against the SPP assessment benchmarks for Natural hazards, risk and resilience relevant to bushfire and the development of a site-specific bushfire management plan to ensure that the proposed development is exposed to an acceptable or tolerable bushfire risk.

Table 2. Potential Bushfire Intensity Classification

Potential Bushfire Intensity Class	Potential Fire-line Intensity (PFLI)
Very high	>40,000kW/m
High	20,000 – 40,000kW/m
Medium	4,000 – 20,000kW/m
Low	<4,000kW/m

3.2 Modification of Potential Intensity of Small Patches and Corridors

In accordance with Section 4.2.6 of the Bushfire Resilient Communities (BRC) methodology (The State of Queensland 2019b), small patches and narrow corridors of hazardous vegetation within 150 m of the proposed development were removed from the hazardous vegetation mapping. These areas were excluded because small, isolated and/or narrow patches are unlikely to be large enough to support a fully developed fire. The BRC methodology states that these areas are unlikely to reach a potential fire-line intensity greater than 4,000 kW/m²; therefore, they are considered low hazard and are not classified as Bushfire Prone Areas. The *SPP Technical Reference Guide - Bushfire Resilient Communities* (2019), which summarises research by Leonard and Opie (2017), identifies four steps for filtering out small patches and narrow corridors of continuous fuel, as outlined in **Table 3**, below.

Table 3. Steps to Downgrade Bushfire Intensity

Step	Description
1	Remove small, isolated patches of continuous fuel (< 1ha) surrounded completely by either discontinuous fuel or no fuel. These patches must be further than 100 m from other continuous fuel patches greater than 2 ha in area.
2	Downgrade intensity of small patches (0.5 to 3 ha) of continuous vegetation surrounded completely by either discontinuous or no fuel, which is more than 100 m from other continuous fuel patches greater than 2 ha in area.
3	Remove narrow corridors of continuous fuel (50 m, or less in width). The process erodes, then dilates by 25 m in width all continuous fuel patches in relation to discontinuous areas.
4	Remove small fragments (< 0.5 ha) of shrub-dominated or hazardous tree vegetation.

3.3 Radiant Heat Exposure Assessment

Radiant heat exposure for the proposed development was calculated using Method 2 of AS 3959-2018, *Construction of Buildings in Bushfire-prone Areas*. Method 2 determines the Bushfire Attack Level (BAL) by calculating the minimum separation distance required between hazardous vegetation and the proposed development to achieve each BAL rating. As BAL is directly related to radiant heat exposure, this assessment indicates the level of bushfire risk applicable to the proposed development (see **Table 4** and **Figure 6**).

The online Flamesol Minimum Distance Calculator (FPA, 2023) was used to calculate the setbacks required from hazardous vegetation to achieve an acceptable level of radiant heat exposure for the proposed development.

S5 Environmental understands that CMB accepts a single set of inputs for Method 2 calculations under AS 3959-2018 and the Bushfire Resilient Communities (BRC) methodology. The inputs adopted for this BAL/radiant heat exposure assessment are summarised in **Table 5**, below. This approach is considered conservative and accurate because it incorporates higher fuel loads and flame temperature, together with a site-specific FFDI.

Table 4. BAL and Radiant Heat Exposure

BAL Score	Radiant Heat Exposure
Low	-
12.5	12.5 kW/m ²
19	19 kW/m ²
29	29 kW/m ²
40	40 kW/m ²
Flame zone (FZ)	> 40 kW/m ²



Figure 6. Bushfire Attack Levels (BAL) (Source: WAPC, 2024)

Table 5. Parameter inputs for Method 2 from AS3959-2018

Parameter	AS Method 2
Surface fuel load (t/ha)	Surface fuel load for identified VHC (surface + near surface)
Overall fuel load (t/ha)	Total fuel load for identified VHC
Flame temperature	1,200 K
FDI/FFDI	From BRC MapViewer/QSpatial
Standard inputs	Bushfire Resilient Communities (QG 2019b)
Effective slope	Measured as the slope under the hazardous vegetation.
Site slope	Measured as the slope between the hazardous vegetation and the site.
Flame Width	Flame width is assumed to be 100 m (AS 3959-2018) unless a short-fire run.

3.4 Short Fire Run

Small or narrow patches of hazardous vegetation are unlikely to support a fully developed bushfire due to their limited size (see **Figure 7** for a schematic representation of how fire moves across a landscape, demonstrating this). As such, the flame width and height in these small patches will not reach the standard inputs for the Method 2 from AS3959-2018 as these standard inputs are based on a fully developed bushfire. In these cases, a short fire run calculation can be used. The short fire run methodology can only be applied when there is a maximum fire run of 150 m as measured on the effective slope. In these cases where a short fire run can be justified, and thus a reduced flame width and height for a Method 2 calculation, the method from the *Short Fire Run: Methodology for Assessing Bush Fire Risk for Low Risk Vegetation* (NSW Rural Fire Service, 2019) is adopted. This methodology was not utilised for this assessment.

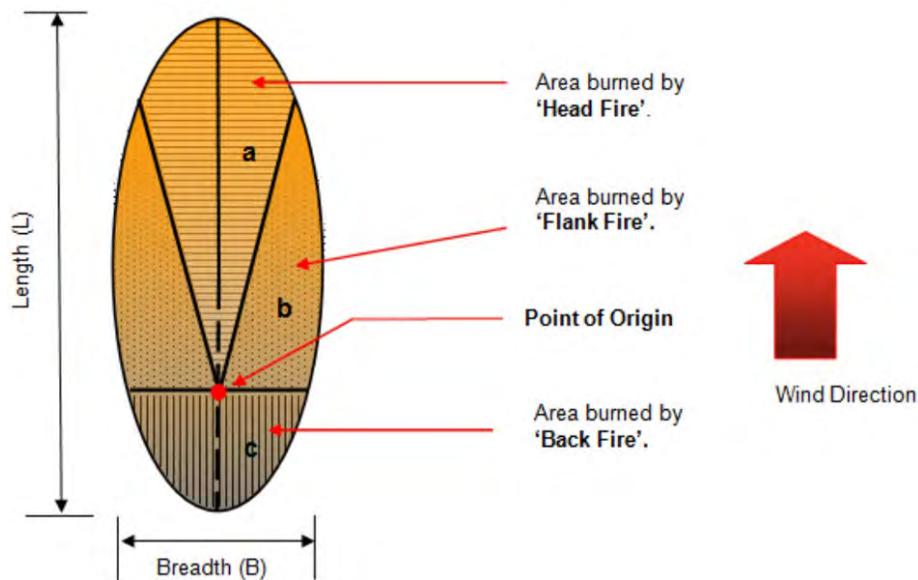


Figure 7. Schematic Diagram of Simple Elliptical Fire Growth Model (Van Wagner 1969) from NSW Rural Fire Surface (2019)

Where applied, the Short Flame Run formula utilised to calculate the flame width is as follows:

$$\frac{\text{Length of Vegetation along effective slope (xx m)}}{1.0 + 0.0012 (\text{Wind speed (30km/hr)})^{2.154}} = \text{Flame Width (xx m)}$$

4.0 BUSHFIRE HAZARD ASSESSMENT

4.1 Potential Fire-line Intensity Assessment

In accordance with *A New Methodology for State-wide mapping of bushfire prone areas in Queensland* (Leonard *et al.* 2014), fuel loads derived from ground-truthed Vegetation Hazard Classes (VHCs), effective slope and FFDI were used to calculate the PFLI of hazardous vegetation within 150 m of the proposed development and hazardous into the relevant PFLI category. The following sections discuss how these parameters were determined to calculate PFLI for hazardous vegetation in the investigation area.

4.1.1 Vegetation Hazard Class Mapping

In accordance with the *New Methodology for State-wide Mapping of Bushfire Prone Areas in Queensland* (Leonard *et al.* 2014), potential fuel loads are assigned to vegetation categories (VHCs) by amalgamating land use and vegetation types with a moderately consistent fuel load and structure.

The potential fuel load assigned to each VHC is intended to reflect the upper range of fuel loads expected for the characteristic vegetation types, landscape features and site conditions for the class. It is based on an estimate of the **80th percentile (%) fuel load of the “long unburnt condition”** for the class (typically greater than 10 years without burning). Using the QFD BRC MapViewer, numerous VHCs were mapped within and adjacent to the subject site, an extract is shown below in **Figure 8**.

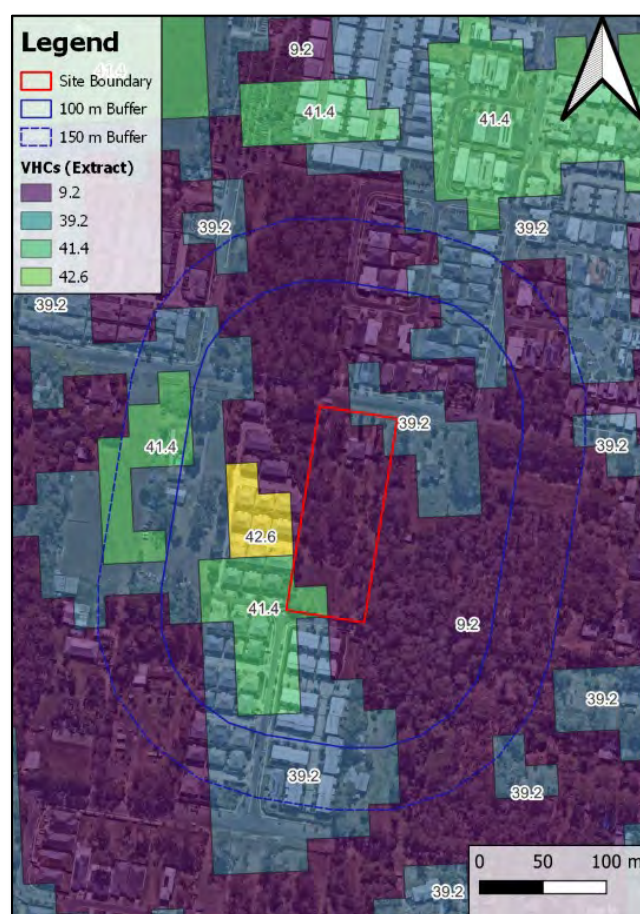


Figure 8. Extract of Vegetation Hazard Classes from the BRC MapViewer

4.1.2 Vegetation Hazard Class Verification

To ground-truth the State Government VHCs mapped within and adjacent to the subject site, S5 Environmental's Ecologist and Environmental Scientist conducted a site visit on the 3rd of November 2021 and a follow up inspection on the 9th March, 2026. Subsequently a Reliability Assessment has been undertaken in accordance with BRC comparing available bushfire and vegetation mapping with on-ground conditions. The reliability assessment incorporated a comprehensive review of available aerial mapping of the site, including a 150 m buffered area, external to the proposed development.

The State VHC mapping has mapped the subject site as largely containing VHC 9.2 '*Moist to dry eucalypt woodland on coastal lowlands and ranges*', which is not reflective of the current condition of the subject site which has been heavily modified, the northern extent containing a dwelling and gardens, a highly modified waterway corridor and the southern extent being open, mown grass with scattered canopy. S5 Environmental note BCC maps a local waterway corridor running north-west to south-east through the centre of the site. The rehabilitation of this waterway corridor has been recommended within the accompanying Detailed Ecological Assessment (DEA) (refer to **S23190_DEA_v1.4**). Proposed rehabilitation works seek to achieve the mapped pre-clear regional ecosystem (RE) of 12.5.3a, equivalent to a VHC of 9.2. The residential development has been proposed in two sections, to the north and south of the waterway corridor. These proposed development areas have been modified from VHC 41.4 '*discontinuous low grass or tree cover*' to VHC 42.6 '*Nil to very low vegetation cover*', to reflect the limited extent of vegetation throughout the future residential lots.

Residential development containing limited vegetation is located to the north, south and north-west of the subject site, a new development is under construction to the west. A development application for the adjacent property to the east is well advanced and will develop the area north of the waterway corridor, retaining vegetation through the southern extent of the site. The VHC has been modified to reflect VHC 42.6 based on this limited vegetation cover of the developed areas. Several corridors and patches of VHC 9.2 were observed in all directions of the subject site, with the proposed corridor of waterway rehabilitation within the subject site connecting to patches to the east and west. Several large areas of nearby lots were observed primarily containing mown grass either open or under canopy, and as such, were modified to reflect VHC 41.4. The State mapped several lots to the south and west of the subject site as VHC 39.2 '*Low to moderate tree cover in built-up areas*'. This mapping was refined to reflect the extent of tree cover more accurately.

The VHC mapping has, therefore, been modified to reflect the on-ground conditions more accurately, and to reflect the post-development state of the subject site and locality (see **Figure 7**). As spatially indicated in **Figure 7**, the modified VHCs have been restricted to a 150 m buffer from the development area, as the more distant areas are not relevant for the purposes of this Bushfire Hazard Assessment.

Plates 1 to 6 below show the various areas and communities existing across the site and throughout the assessment area.



Plate 1. View south from the northern extent, through the mapped waterway, to the southern development area.



Plate 2. View north through the southern development which has been modified to VHC 42.6.



Plate 3. View of the highly modified waterway through the centre of the subject site. Waterway corridor is to be rehabilitated (VHC 9.2).



Plate 4. View of VHC 9.2 to the north-west of the subject site.



Plate 5. View to adjacent vegetation in the south-eastern corner (VHC 9.2).



Plate 6. View of northern extent including the modified waterway corridor.

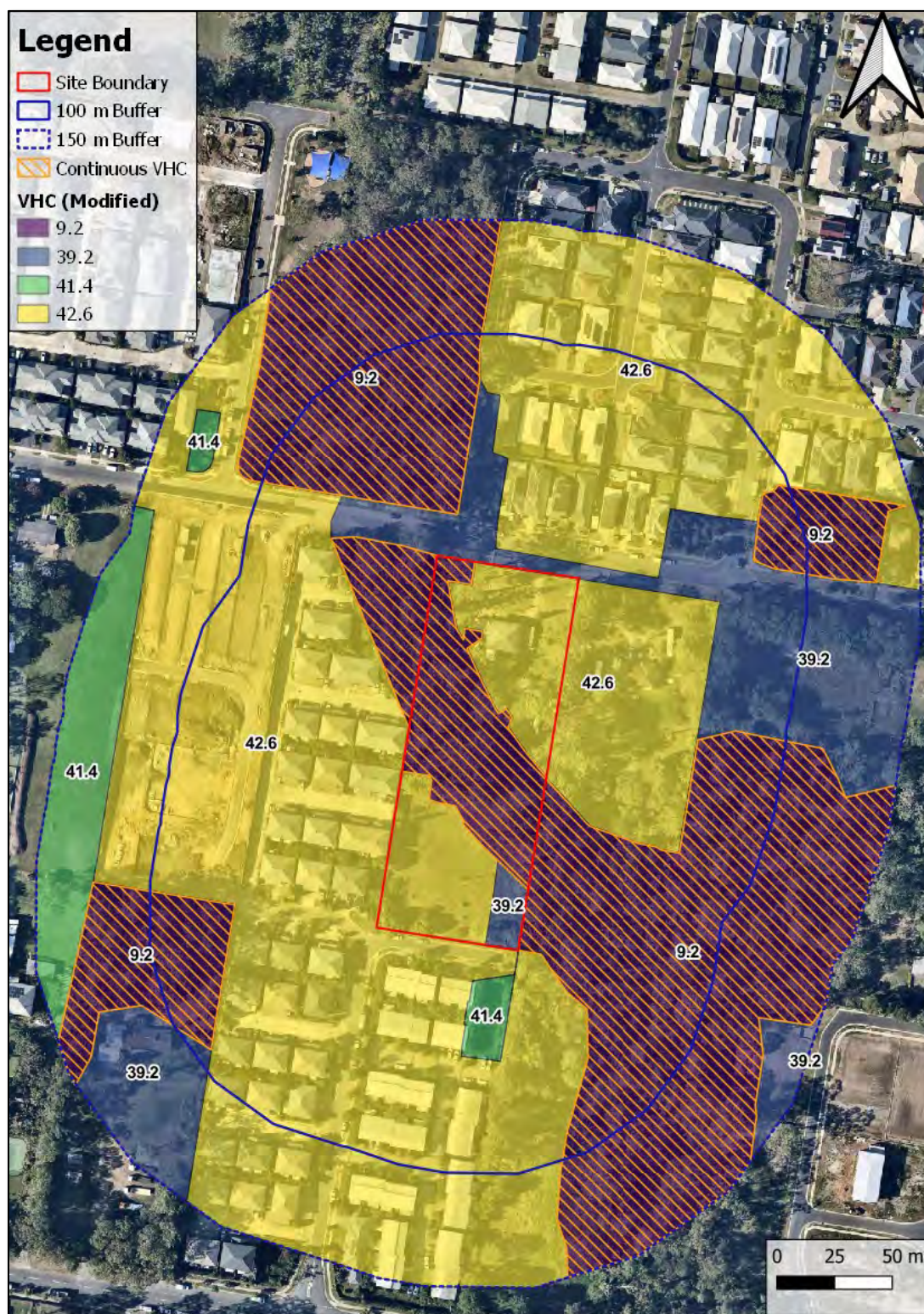


Figure 9. Ground-truthed and Post-development Vegetation Hazard Classes

4.1.3 Fuel Loads

Table 6 below, summarises the associated fuel loads of the final VHCs in relation to the proposed development.

Table 6 Summary of VHCs and their Associated Fuel Continuity and Loads

VHC	VHC Description	Fuel Continuity	Potential Fuel Load * (t/ha)
			Total
9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Continuous	17.2
39.2	Low to moderate tree cover in built-up areas	Discontinuous	8
41.4	Discontinuous low grass or tree cover	Discontinuous	3
42.6	Nil to very low vegetation cover	Discontinuous	2

*CSIRO A Methodology for State-wide Mapping of Annual Fuel Load and Bushfire Hazard in Queensland. Glenn Newnham, Kimberley Opie, Justin Leonard CSIRO Land and Water, 2017.

After ground-truthing the VHCs within the assessment area, continuous VHCs were rasterized to undergo the processing stages. Continuous and discontinuous fuel VHCs are defined as:

- **Continuous:** Vegetation and land uses which possess generally consistent fuel loads which can develop a full flame front; and
- **Discontinuous:** Vegetation and land uses which possess fuel loads which are incapable of supporting a full flame front.

The rasterization process extracts the attribute value of the polygon which occupies the centre of the raster pixel (a 25 m by 25 m cell) and uses it to populate the same cell within a raster layer. This will result in continuous VHCs within the assessment area being rasterized whilst discontinuous VHCs remain unrasterized. Refer to **Figure 10**.

4.1.4 Modification of Potential Intensity of Small Patches and Corridors

Following the rasterization of the continuous VHCs as outlined above (i.e., VHC 9.2), S5 Environmental have applied Step 3 in accordance with the downgrading stages outlined within both Leonard and Opie (2017) and Bushfire Resilient Communities (2017). Step 3 is separated into two parts:

- the shrinking of continuous fuel load pixels adjacent to discontinuous fuel loads (i.e., continuous fuel pixels adjacent to discontinuous fuel are removed); and
- the dilation of residual continuous fuel patches by one pixel (i.e., residual continuous fuel pixels are dilated back out one pixel).

This will result in the removal of narrow corridors less than 50 m in width, as following the initial shrinking of continuous fuel pixels adjacent to discontinuous vegetation (Step 3A), no residual pixels associated with the narrow corridor will remain and dilation cannot occur (Step 3B).

Two small patches of VHC 9.2 have been downgraded, one to the north-east and another to the south-west of the subject site. The narrow corridor of VHC 9.2 associated with the waterway through the subject site has been downgraded through implementing Step 3. Pixels remain at the completion of Step 3B however, this is a result of how the corridor is pixelated due to its angle, and the outcome does not accurately reflect the width of the corridor therefore, the residual pixels have been removed at the smoothing stage, as illustrated in **Figure 13**. The waterway corridor has been designed to reflect its width in the adjacent development to the east, which maintains its width at under 50 metres so that a bushfire risk is not introduced to the development, as at this width the vegetation cannot sustain a full flame front. Refer to **Figure 10** and **Figure 11**.

Following the implementation of the processing stages, continuous vegetation has been confirmed to the north-west and south-east of the proposed development (refer to **Figure 12**). This pixelated form of the finalized continuous vegetation was smoothed to reflect post-development conditions (refer to **Figure 13**).

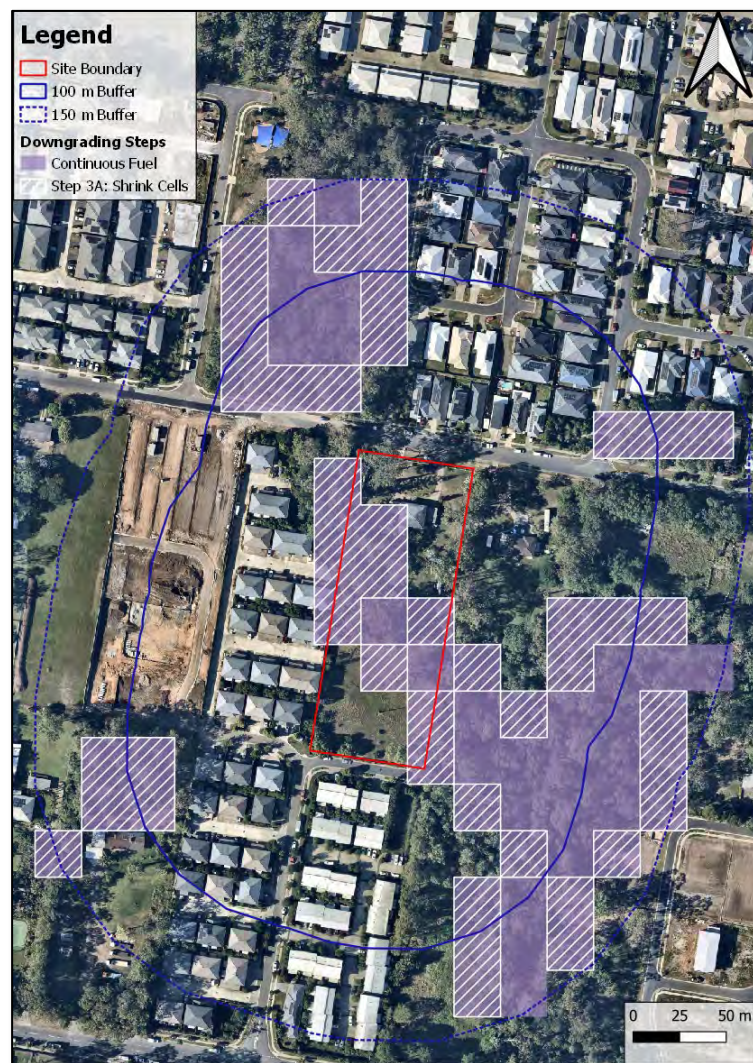


Figure 10. Step 3a – Shrinking of Patches of Continuous Fuel at the Interface with Non-Continuous Fuel

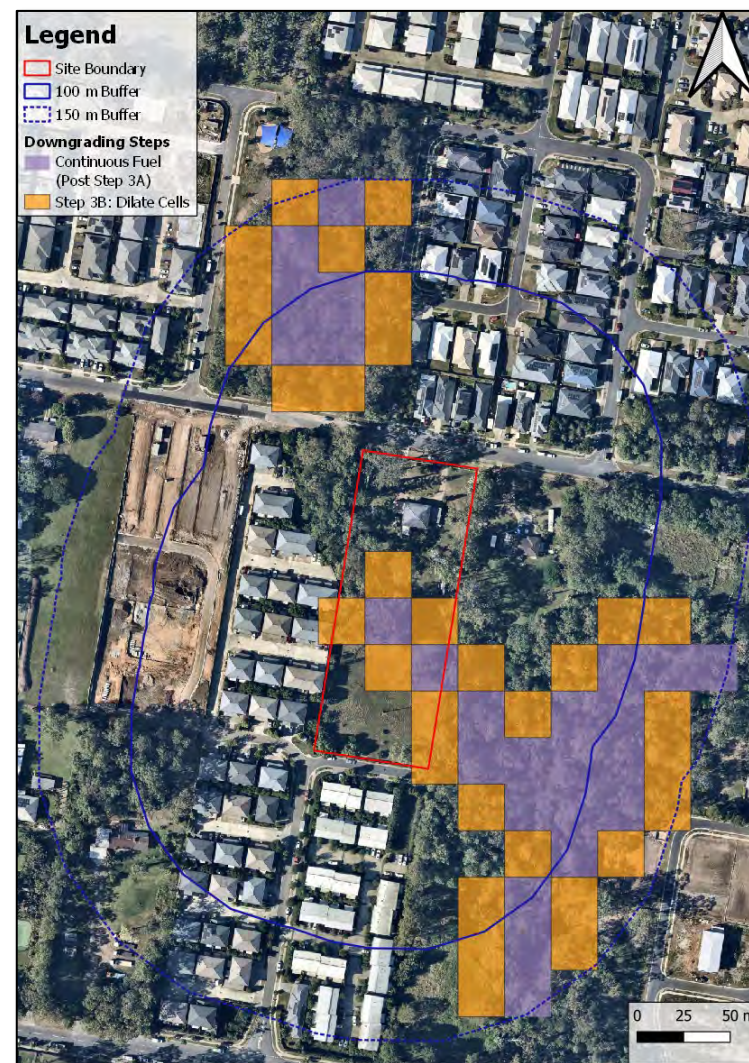


Figure 11. Step 3b – Dilation of Residual Continuous Fuel Pixels and the Removal of Fragmented Small Patches (<0.5 ha)

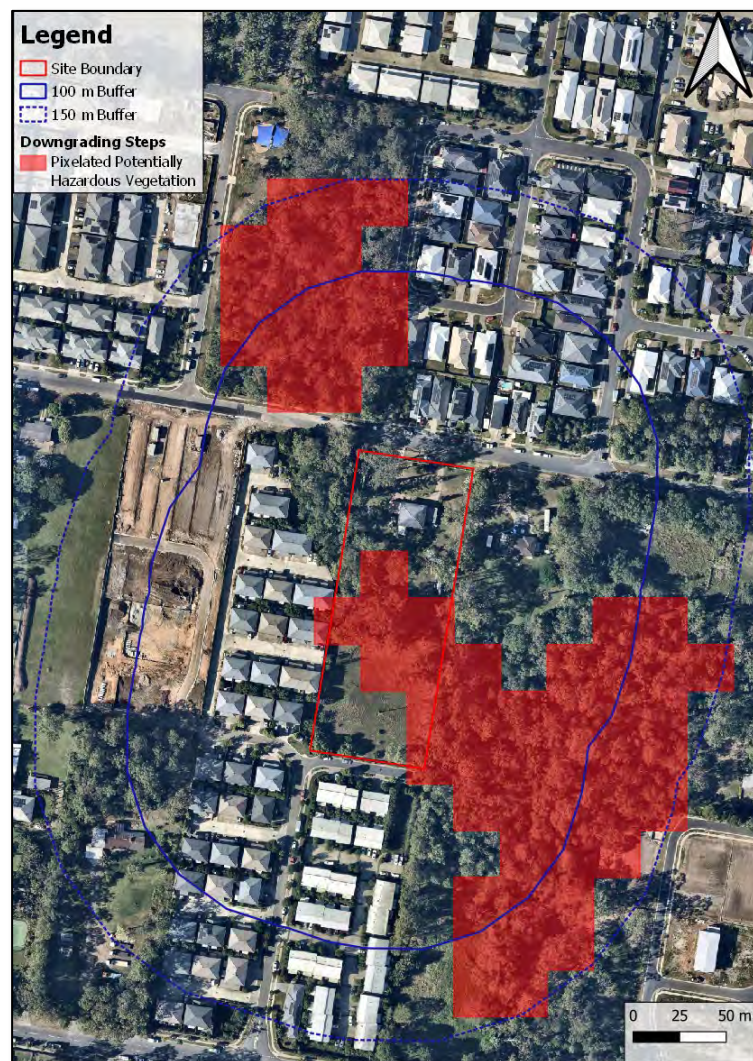


Figure 12. Finalized Pixelated Hazardous Vegetation within the Assessment Area

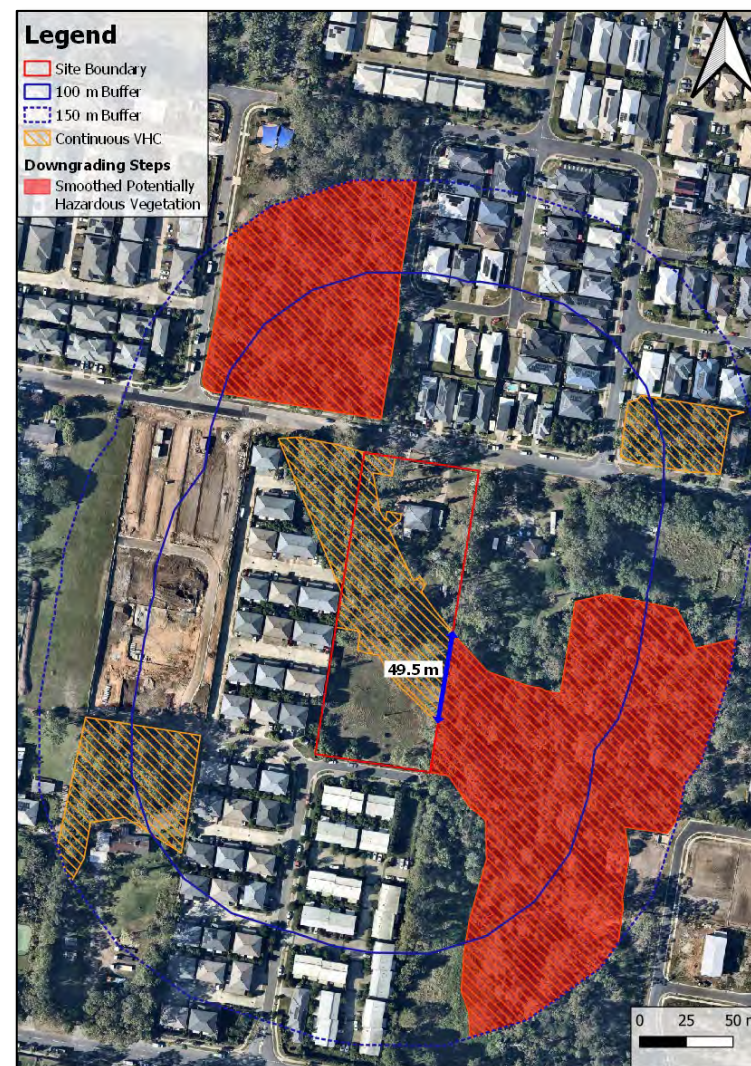


Figure 13. Smoothed Hazardous Vegetation to Reflect Ground-Truthed Conditions and Vegetation

4.1.5 Slope Assessment

The slope of vegetated land over which a bushfire passes has a strong influence on both the intensity and rate of spread of the bushfire. From a bushfire hazard assessment perspective, the relevant slopes to consider are the slopes beneath areas of potentially hazardous vegetation, defined as “effective slope” in AS 3959-2018, that would be retained within or adjacent to the proposed development site. Also relevant, is whether the vegetated land is situated upslope or downslope of the proposed development. As fire travels faster upslope, there is a significant reduction in risk and fire-line intensity for sites that sit below the vegetation. The potentially hazardous vegetation to the north-west is upslope and downslope to the east and south-east. Measurements for site and effective slope have been made for the radiant heat and BAL setback calculation (refer to **Figure 14** and **Appendix B**).

4.1.6 Forest Fire Danger Index

In accordance with Australian Standard (AS) 3959-2018, *Construction of Buildings in Bushfire-prone Areas*, the Fire Danger Index (FDI) provides an indication of the likelihood of a fire starting, its potential intensity, rate of spread and ease of suppression, based on combinations of relative humidity, air temperature, wind speed, and long- and short-term drought effects. The QFD BRC MapViewer indicates that the site-specific Forest Fire Danger Index (FFDI) for the subject site is **56**.

4.1.7 Final PFLI

A final PFLI for patches of hazardous vegetation (determined in **Section 4.1**) has been calculated using the PFLI equation in **Section 3.1**. Based on this PFLI calculation, the potentially hazardous vegetation to the north-west and east to south-east of the development associated with VHC 9.2, is of Medium potential bushfire intensity (i.e., 4,000 to 20,000 kW/m). Refer to **Figure 15**.

4.2 Hazardous Vegetation

Vegetation mapped as VHC 9.2 to the north-west and east to south-east, was determined to be the hazardous vegetation within the assessment area. As this vegetation is within 100 m of the proposed development area, the proposed residential subdivision is therefore within a Bushfire Prone Area, and a Bushfire Attack Level (BAL) assessment has been conducted to determine the radiant heat flux the future townhouses may be exposed to.

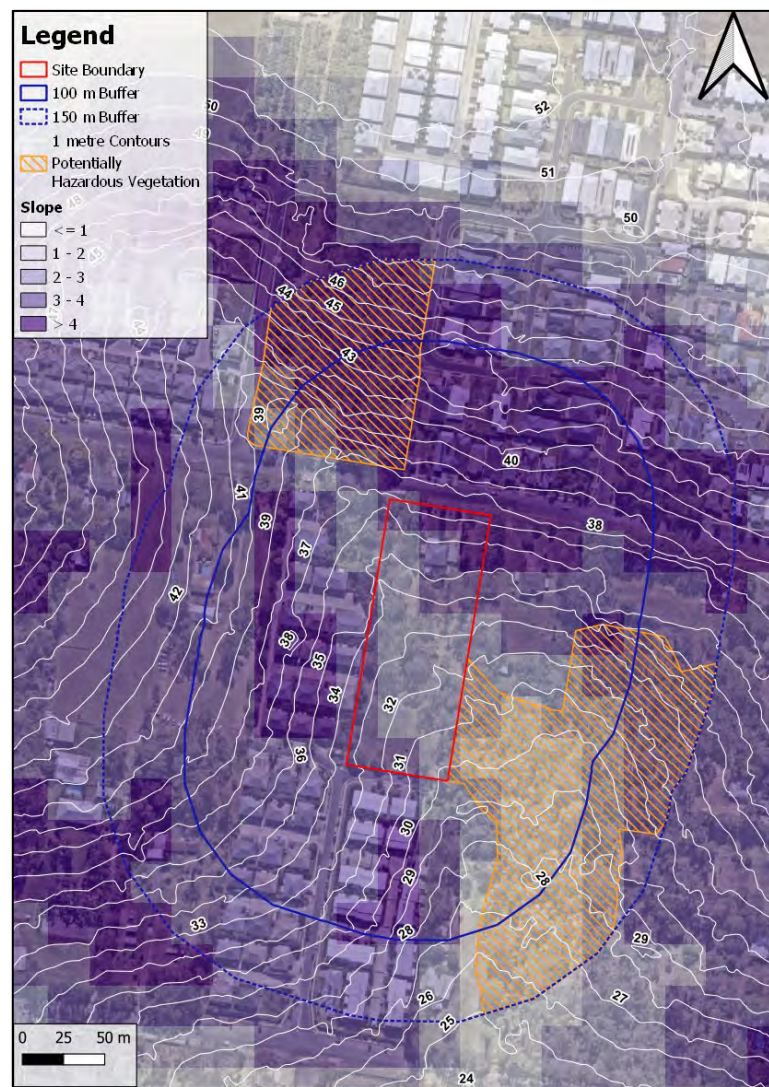


Figure 14. Slope within and in Proximity to the Proposed Development



Figure 15. Potential Fire Line Intensity

5.0 BUSHFIRE ATTACK LEVEL ASSESSMENT

This assessment has focused on the potential impact of a fire event in hazardous vegetation located within 100 m of the subject site. Hazardous vegetation in relation to the proposed development was determined to be the vegetation to the north-west and east to south-east of the development area (refer to **Figure 16**). A Method 2 assessment in accordance with AS3959-2018 utilising the online Flamesol Minimum Distance Calculator was undertaken to determine the required setbacks from hazardous vegetation (see **Table 7** and **Figure 16**). Refer to **Appendix B** for inputs and outputs from the Flamesol Minimum Distance Calculator.

Table 7. Summary of Setbacks and Radiant Heat Exposure for the Proposed Development

Radiant Heat Exposure (kW/m ²)	BAL	Distance from Hazardous Vegetation			
		North-West	South-East		East
			Extent of Development:		
			North	South-East	
-	Low	100 m	100 m	100 m	100 m
12.5	12.5	26.8 m	31.1 m	30.5 m	29.5 m
19	19	18.6 m	21.9 m	21.5 m	20.7 m
29	29	12.7 m	14.9 m	14.6 m	14.1 m
40	40	9.4 m	11.1 m	10.8 m	10.4 m
> 40	FZ	< 9.4 m	< 11.1 m	< 10.8 m	< 10.4 m

Refer to **Figures 16 to 19** for the Radiant Heat and BAL Setbacks. Based on the results of the BAL assessment, the proposed townhouses in the northern section, TH1 through to TH11, achieve a radiant heat exposure of 12 kW/m², equivalent to BAL 12.5. TH12 achieves BAL 19, and TH13 achieves BAL 29.

To the south, TH1 to TH7 and TH11, achieve BAL 12.5. TH8 and TH12 achieve BAL 19, and TH10 and TH13 achieve BAL 29. The setback for the southern extent (adjacent to TH10 and TH13) is 14.6 m off the boundary to achieve BAL 29.

As the townhouses are connected a building certifier should be consulted on appropriate building solutions to ensure each building meets the requirements of AS3959 and the National Construction Code.

A Bushfire Management Plan has been prepared and presented in **Section 6.0**.



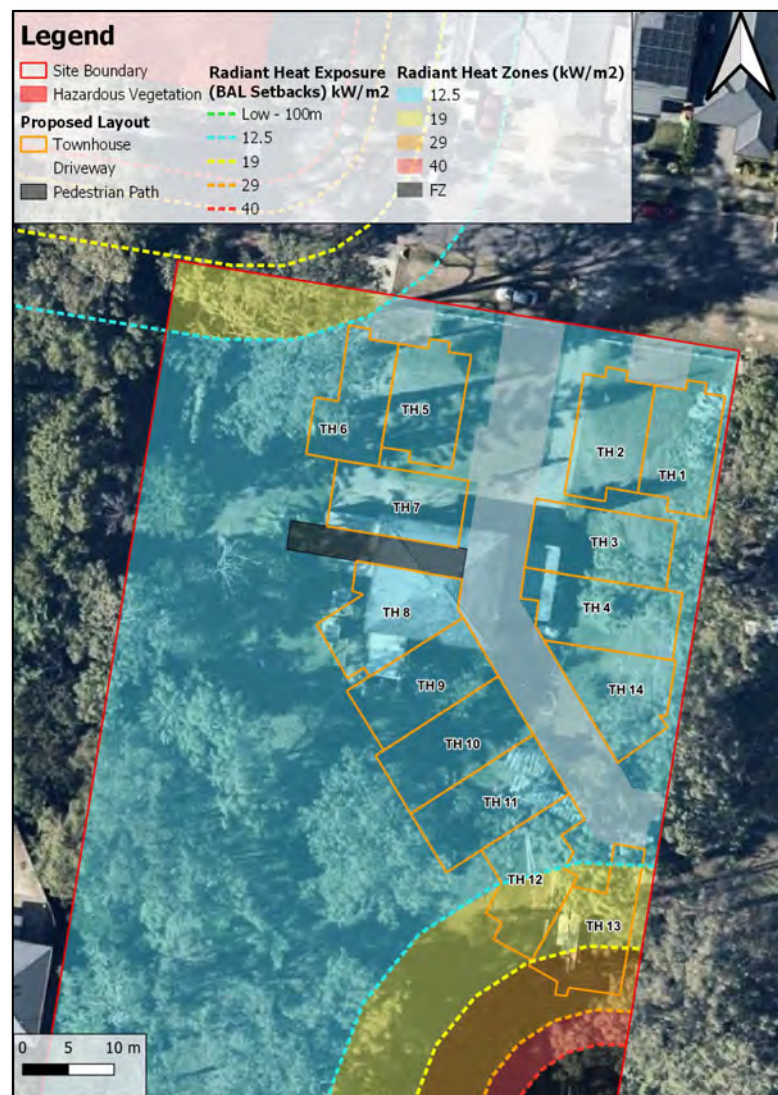


Figure 17. BAL Setbacks - North

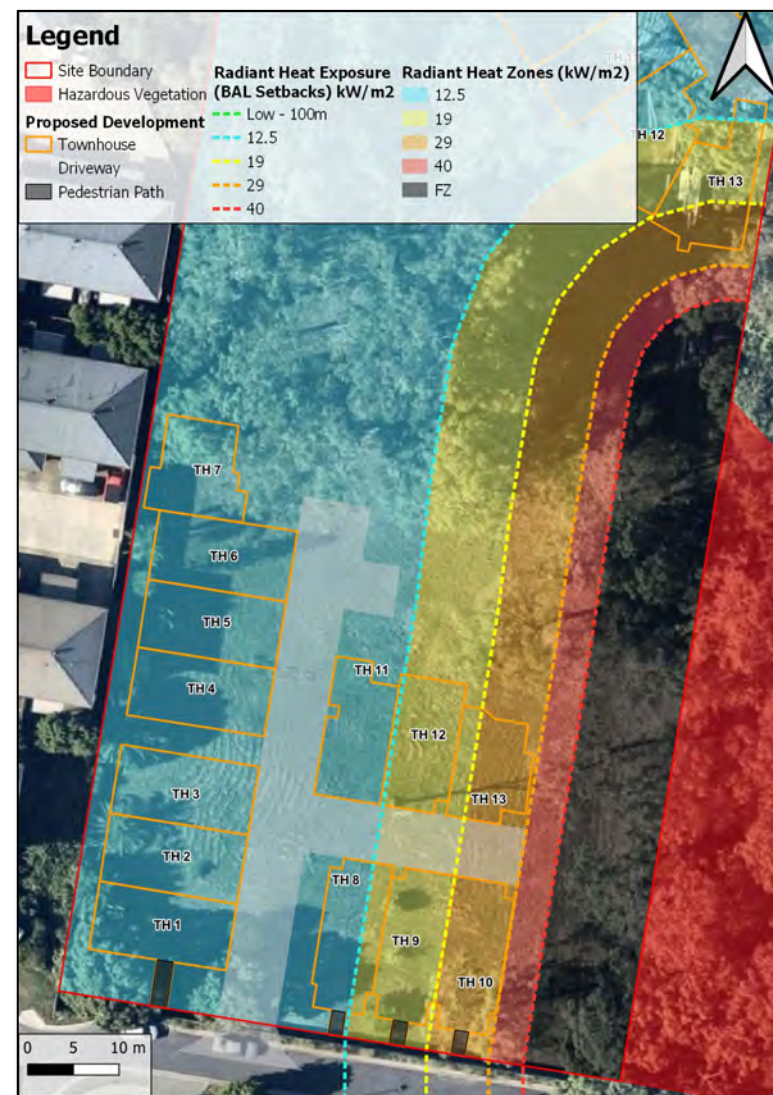


Figure 18. BAL Setbacks - South

6.0 BUSHFIRE MANAGEMENT PLAN

This Bushfire Management Plan (BMP) identifies management measures that must be implemented to ensure that the risk of bushfire attack is reduced to an acceptable level. It is first important to understand the processes that influence bushfire behaviour (**Section 6.1**), and the sources of damage that threaten people, infrastructure and property (**Section 6.2**).

6.1 Bushfire Behaviour

Understanding bushfire behaviour is imperative when planning new development. There are three main factors which influence fire behaviour as follows:

1) Topography

Slope influences the speed and intensity of a fire. Fire is known to burn faster uphill as flames and radiant heat preheat the vegetation ahead of the fire, drying it out and making it increasingly flammable. As a rule of thumb, for every 10 degrees slope, fire doubles in speed. Refer to **Figure 19**, below.

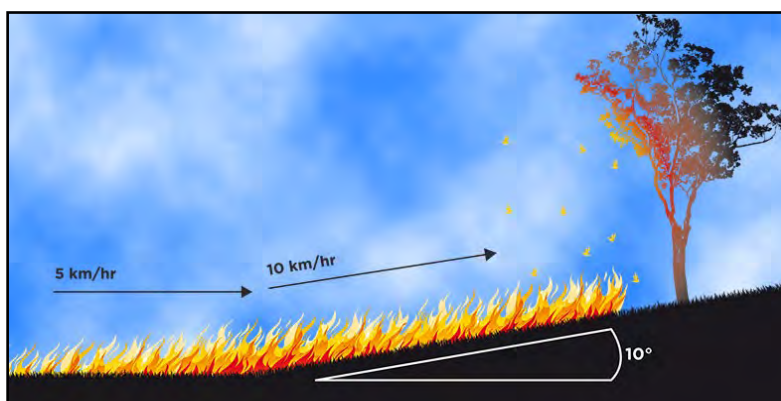


Figure 19. Effects of Topography on Bushfire (source: Country Fire Authority)

2) Weather Conditions

Bushfire weather conditions are fundamentally defined by temperature, humidity, wind, atmospheric conditions and past rainfall. For example, summer weather conditions increase the flammability of vegetation. Wind influences the speed and direction in which fire travels, fire intensity and possibility of spot fires from burning debris. A measure of weather conditions is the Forest Fire Danger Index (FFDI) and Grassland Fire Danger Index (GFDI). These measures are useful in determining the fire danger rating (refer to **Fire Danger Rating** in **Figure 20**).

3) Vegetation

Vegetation is the source of fuel for a bushfire. The amount of fuel surrounding a building can directly impact a buildings survival. Vegetation management, landscaping for bushfire and breaking the continuity of vegetation can limit the spread of fire.

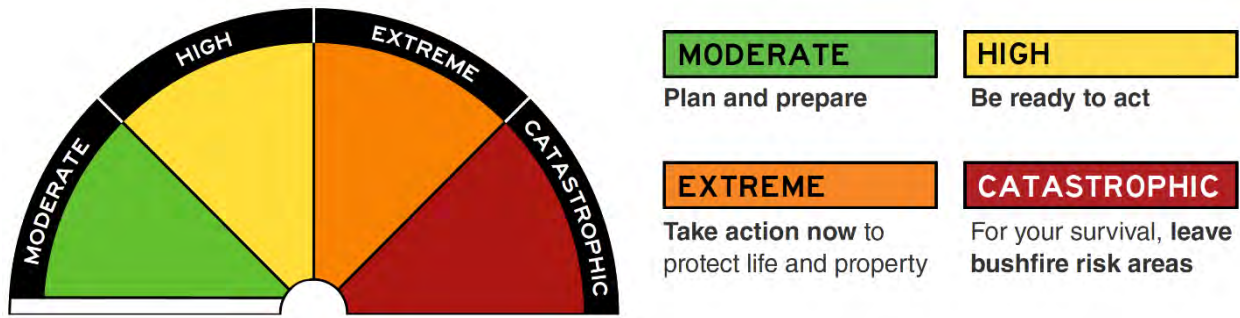


Figure 20. Australian Fire Danger Rating System (source: AFAC, 2025)

6.2 Bushfire Damage Sources

The Country Fire Authority (2012) states, “*Bushfires can vary in intensity and scale across the landscape*”. As the past bushfire events throughout Australia have illustrated, bushfires can be devastating and lead to long-running fires which are difficult to suppress. Building survival is influenced by many interacting factors. The four main ways buildings are destroyed during a bushfire include:

- Ember attack;
- Radiant heat;
- Direct flame contact; and
- Fire-driven wind.

Ember Attack

Research indicates that the most common way buildings catch on fire is through ember attack (80% of house loss). Ember attack occurs when small burning twigs, bark, leaf are carried by wind and land in and around a building. Embers can ignite flammable plants, leaf litter, fences, outdoor furniture and sheds (refer to **Figure 21**, below). Ember attack is addressed within the AS 3959-2018 through Construction Standard requirements.

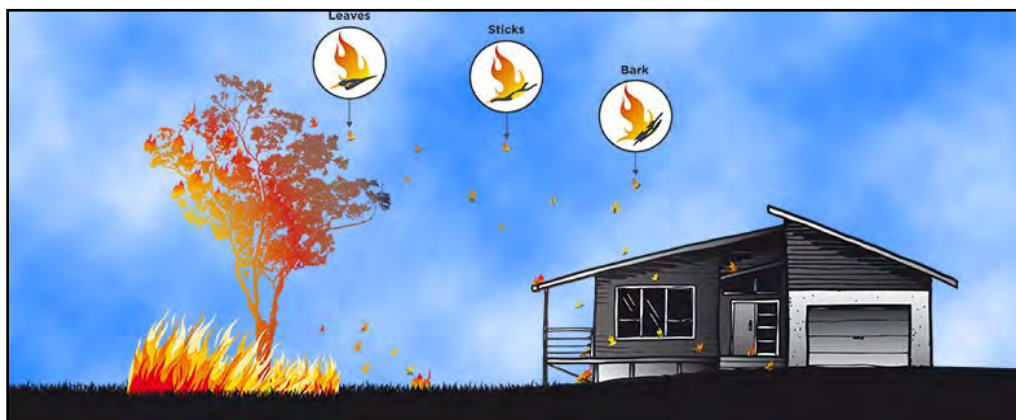


Figure 21. Ember Attack (source: Country Fire Authority)

Radiant Heat

Radiant heat is the heat created from burning fuel during a bushfire. Radiant heat can ignite surfaces without direct flame contact or ember attack, dry out vegetation ahead of the bushfire, crack glass (allowing embers to enter a building) and distort and melt materials (refer to **Figure 22**, below). The most common cause of loss of human life is via radiant heat (CFA, 2018).



Figure 22. Radiant Heat (source: Country Fire Authority)

Direct Flame Contact

Direct flame contact occurs when a fire front reaches a building, this is referred to as the 'Flame Zone'. Approximately 20% of house loss occurs when houses/buildings are directly adjacent to bushland.

Fire-driven Wind

Fire-driven wind can carry embers, cause trees to fall onto buildings, can break windows and destroy structures. The closer a building is to a fire front, the more severe the impact of fire-driven wind.

6.3 Management and Mitigation Measures – Permanent Buildings

Management and mitigation measures are generally outlined in relevant planning instruments at both the State and Local Government level.

Mitigation measures emphasize resilience to bushfire and are categorised into the following groups for the permanent structures within the site.

- Layout design;
- Building and construction requirements;
- Firefighting infrastructure;
- Bushfire emergency plan; and
- Vegetation management and landscaping

6.3.1 Layout Design

Access and Egress

S5 Environmental understands that access for townhouses in the northern extent of the proposed residential development will be from Redhead Street to the north, with townhouses 1-2 and 5-6 having direct access driveway access as they front Redhead Street, and townhouses 3-4 and 7-14 using an internal driveway.

Townhouses in the southern extent will access Giant Street to the south from an internal driveway, the townhouses adjacent to Giant Street (TH1 and 8-10) will have direct pedestrian access. Neither driveway exceeds 65 metres in length.

S5 Environmental recommend internal driveways/roads be constructed in accordance with the road design requirements as outlined within PO17 and 18 of the Bushfire Overlay Code and, where applicable, that internal roads be constructed to satisfy QFD '*Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*' to be confirmed by the Project Town Planner or Engineer.

Giant Street connects with Panda Street, then Cloverdale Road to the south. All local roads are considered suitable to carry emergency fire-fighting appliances, provide emergency evacuation and to prevent entrapment during a bushfire.

Siting of Development

The proposed development areas are of low PFLI. The layout has been designed so that the proposed townhouses will achieve a maximum radiant heat exposure of 29 kW/m², equivalent to BAL 29 or better.

A Bushfire Management Zone (BMZ) has been detailed within **Section 6.3.5** to assist with maintaining the radiant heat flux exposure as assessed.

Setbacks were modelled utilising the Flamesol BAL Minimum Distance Calculator (refer to **Appendix B**). The siting of the development is considered to ensure the proposed development is exposed to an acceptable level of bushfire risk.

6.3.2 Building and Construction Requirements

In accordance with the BCA, the AS 3959-2018 requirements for construction of buildings applies to any new Class 1, 2, 3 or 10a Building (when ancillary to a Class 1, 2, or 3 Building). Therefore, any future habitable Class 1, 2 and/or 3 buildings and their ancillary Class 10a building/s within the development must adhere to the relevant BAL construction Standards based on their location.

Given the connected nature of the townhouses, an accredited building certifier, builder or architect must be advised to ensure that construction requirements and building solutions are appropriate for the exposure as assessed, this may include shielding and fire rated walls. Note that where a dwelling straddles setback contours, the highest generally applies.

Early Warning Systems

Smoke alarms should be installed in accordance with the Building Code of Australia and the AS 3786-1993 - *Smoke Alarms*. The Queensland Fire and Emergency Services recommend photoelectric smoke alarms

(not ionization alarms). Photoelectric smoke alarms are generally more effective than ionization types as they detect visible particles of combustion.

6.3.3 Firefighting Infrastructure

The site is expected to be connected to a reticulated water supply network. It is expected that the reticulated water supply network within the area complies with the provisions outlined in the SEQ Water Supply, Sewage Design and Construction Code.

Fire hydrants are to be designed, sited and installed within the subdivision in accordance with AS2419.1-2009 and QFD '*Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*'.

6.3.4 Bushfire Emergency

In the event of a Bushfire Emergency, call triple zero (000)

The Durack Fire Station is located approximately 3.7 km (by road) to the north of the subject site. The contact details for the Durack Fire Station are:

- Address: 506 Blunder Road, Durack QLD 4077
- Phone: 3565 4181

6.3.5 Vegetation Management and Landscaping

Bushfire Management Zone

Bushfire Management Zones (BMZ) are recommended between the boundary and townhouses within the eastern extent of the development footprint, adjacent to Townhouse 13 in the northern extent, and Townhouses 10 and 13 in the southern extent and avoiding the waterway corridor (refer to **Figure 23**).

Each of these zones retain a landscape tree, the surface around these trees must be maintained as managed turf, no more than 100 mm in height at any time. The balance of the BMZ is to be maintained in a very low fuel state in perpetuity, to assist with maintaining the radiant heat exposure as assessed. Maintenance of the BMZ should be most strictly implemented prior to the bushfire season. Management measures are:

- Shrubs must not be located under tree canopies or within 3 metres of buildings;
- Individual clumps of shrubs must not exceed 5 square metres in area and each clump separated by at least 5 metres;
- The canopy of mature trees (existing and new trees, at their maturity) must be separated by at least 2 metres;
- Clearance of at least 2 metres between the lowest tree branches and ground level;
- Plants taller than 10cm in height are not to be placed within 3 metres of a window or glass feature of the habitable buildings;
- Any new fences to be constructed of non-combustible material (e.g. steel, masonry);
- Grass to be maintained at or below 100 mm;
- Leaves and vegetation not to accumulate and to be regularly removed;

- Mulched areas must not utilise flammable mulches. Non-combustible mulches such as pebbles, scoria, gravel are suitable;
- For new plantings - tree height at maturity must be 1.5 x the canopy height away from a dwelling; and
- Trees and shrubs must not overhang or touch any elements of the building.

Balance of Built Areas – Low Fuel

The balance of the development areas to the north and south of the waterway are within the bushfire prone area and outside of the proposed deep planting areas, are to be managed as per the landscaping recommendations below in addition to the following:

- Plants taller than 10cm in height are not to be placed within 3 metres of a window or glass feature of the habitable buildings.
- Grass to be maintained at or below 100 mm;
- Leaves and vegetation not to accumulate and to be regularly removed;
- Mulched areas must not utilise flammable mulches. Non-combustible mulches such as pebbles, scoria, gravel are suitable;
- Trees and shrubs must not overhang or touch any elements of the building.

Landscaping

S5 Environmental recommend that future lot owners adhere to the following advice (outlined in the SPP Technical Reference Guide – Bushfire Resilient Communities) on low flammability landscaping, ***particularly for areas located within 100 m of hazardous vegetation.***

Landscaping plays an important role in increasing a buildings' ability to endure bushfire attack. Landscaping for bushfire reduces the risk of ember attack which is the most common cause of building loss during bushfire. This includes utilisation of low flammability treatments such as rock mulches, concrete retaining blocks, and appropriate plantings.

Appropriate plant attributes to consider implementing in landscape design to reduce bushfire risk include:

- High leaf moisture content;
- Lower volatile oil content;
- Higher leaf mineral content;
- Broad-leaved species;
- Resilience to pruning;
- Low ignition likelihood;
- A low volume of persistent dead leaves/branches;
- Smooth or tightly held bark; and,
- Leaves and twigs that do not regularly fall,

Management of landscaped areas should ensure that there is no accumulation of litter and woody debris on garden beds. Grass areas within the proposed lots should never exceed 10 cm in height. Irrigation of garden and greenery areas could be considered to ensure a well-watered, low flammability landscape.

The Victorian Country Fire Authority (CFA) have produced an online Plant Selection Key which facilitates landscape designers and property owners to select fire wise garden plants. The CFA have also produced the publication 'Landscaping for Bushfire: Garden Design and Plant Selection' (CFA, 2022). This publication, in conjunction with the 'Bushfire Resilient Building Guidance for Queensland Homes' (QLD Government and CSIRO, 2020), outlines planning, designing, choosing suitable plants, maintaining gardens and provides a Plant Selection Key, and can be obtained from their website.



7.0 CONCLUSION

This Bushfire Hazard Assessment concluded that the proposed development is within 100m of potentially hazardous vegetation to the north-west, east and south-east. The AS 3959-2018 Method 2 Bushfire Attack Level assessment determined that future townhouses will be exposed a maximum radiant heat flux of 29 kW/m², equivalent to BAL 29. Accordingly, all buildings exposed to BAL 12.5 or greater will have to adhere to the relevant BAL construction requirements.

Proposed townhouses in the northern section, TH1 through to TH11, achieve a radiant heat exposure of 12 kW/m², equivalent to BAL 12.5. TH12 achieves BAL 19, and TH13 achieves BAL 29.

To the south, TH1 to TH7 and TH11, achieve BAL 12.5. TH8 and TH12 achieve BAL 19, and TH10 and TH13 achieve BAL 29. The setback for the southern extent (adjacent to TH10 and TH13) is 14.6 m off the boundary to achieve BAL 29.

As the townhouses are connected a building certifier should be consulted on appropriate building solutions to ensure each building meets the requirements of AS3959 and the National Construction Code.

A site-specific Bushfire Management Plan has been prepared to support the proposed residential development, recommending key mitigation measures to be implemented to address the risk to people, infrastructure and property so that it is minimised and acceptable. Measures include Bushfire Management Zones between hazardous vegetation and townhouses in the northern and southern extents in addition to landscaping recommendations for the balance of the development.

Overall, the proposed development complies with the relevant BCC bushfire related assessment benchmarks, refer to **Appendix A**.

8.0 REFERENCES

Australian and New Zealand National Council for fire and emergency services (AFAC), *Australian Fire Danger Rating System (AFDRS)*, 2025. <https://afdrs.com.au/#ratings>.

CFA 2012, *Planning for Bushfire Victoria*, Country Fire Authority, Version 2, November 2012.

CFA 2022, *Landscaping for Bushfire*, Country Fire Authority, Victoria, viewed June 2026, <<https://www.cfa.vic.gov.au/plan-prepare/landscaping>>.

CFA 2023, *How Fire Behaves*, Country Fire Authority, Victoria, viewed June 2026, <<https://www.cfa.vic.gov.au/plan-prepare/how-fire-behaves>>.

CSIRO and Queensland Government (QG) (2020). *The Bushfire Resilient Building Guidance for Queensland Homes*, CSIRO and QG, Brisbane.

FPA 2023, *Flamesol*, Fire Protection Association, Australia, viewed June 2026, <<http://flamesol.com.au/MDc.php>>.

Leonard, J, Opie, K, Newnham, G & Blanchi R 2014, 'A new methodology for state-wide mapping of bushfire prone areas in Queensland', CSIRO, Australia.

Leonard, J & Opie, K 2017, 'Estimating the potential bushfire hazard of vegetation patches and corridors', CSIRO, Australia.

Newnham, G, Opie, K & Leonard, J 2017, 'A methodology for state-wide mapping of annual fuel load and bushfire hazard in Queensland', CSIRO, Australia.

New South Wales Rural Fire Service 2019, '*Planning for Bush Fire Protection – A guide for councils, planners, fire authorities and developers*', State of New South Wales.

Standards Australia Committee FP – 020 2018, *Australian Standard – Construction of buildings in bushfire-prone areas (AS3959-2018)*, Council of Standards Australia, Sydney.

The State of Queensland 2016, *Natural hazards, risk and resilience*, Department of Infrastructure, Local Government and Planning, 1 William Street, Brisbane Qld 4000, Australia, viewed June 2026, <<https://dsdmipprd.blob.core.windows.net/general/spp-guideline-natural-hazards-risk-resilience.pdf>>.

The State of Queensland 2017a, *State Planning Policy Interactive Mapping System*, Department of Infrastructure, Local Government and Planning, Brisbane, viewed June 2026, <<https://sppims-dams.dsdlgp.qld.gov.au/spp/?tab=layers>>.

The State of Queensland 2017b, *State planning policy*, Department of Infrastructure, Local Government and Planning, 1 William Street, Brisbane Qld 4000, Australia, viewed June 2026, <<https://dsdmipprd.blob.core.windows.net/general/spp-july-2017.pdf>>.

The State of Queensland 2024, *Queensland Spatial Catalogue*, viewed June 2026, <<https://qldspatial.information.qld.gov.au/catalogue/custom/index.page>>.

The State of Queensland 2025, *Fire hydrant and vehicle access guidelines for residential, commercial and industrial lots*, Queensland Fire Department, Version 03/2025, viewed June 2026, <<https://www.fire.qld.gov.au/sites/default/files/2021-04/BFS-FireHydrant.pdf> >.

The State of Queensland 2019b, *Bushfire Resilient Communities*, Queensland Fire and Emergency Services (current: QFD), Queensland Government, Australia, viewed June 2026, <<https://www.fire.qld.gov.au/sites/default/files/2021-05/Bushfire-Resilient-Communities.pdf> >.

The State of NSW 2019, *Short Fire Run: Methodology for assessing bush fire risk for low-risk vegetation*, NSW Rural Fire Service, viewed June 2026.

Western Australian Planning Commission, State of Western Australia. *Planning for Bushfire Guidelines*, November 2024.

APPENDIX A

BCC Bushfire Hazard Overlay Code Response

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
Section A – If for accepted development subject to compliance with identified requirements (acceptable outcomes only) or assessable development)		
PO1 Development: a. minimises the bushfire hazard; b. maximises the protection of life and property from bushfire; c. addresses the bushfire hazard determined by a bushfire hazard assessment; d. where not in compliance with an approved bushfire management plan or development footprint: i. achieves a bushfire attack level that is less than or equal to BAL-29; or ii. achieves a bushfire attack level that is less than or equal to BAL-12.5 if for vulnerable uses, difficult to evacuate uses, assembly uses, essential community infrastructure or involving the handling or storage of hazardous	AO1.1 Development is designed and sited in compliance with: a. an approved bushfire management plan relevant to the full nature of the uses, which identifies the level of bushfire hazard and the location of hazardous vegetation affecting the development; or b. an approved development footprint identifying the development footprint plan and bushfire management footprint plan; or c. a bushfire hazard assessment and bushfire management plan prepared in accordance with the Bushfire planning scheme policy which: i. is undertaken by a suitably qualified person with technical expertise in the field of bushfire hazard identification and mitigation; ii. determines the relevant bushfire attack level for that part of the site in which development is proposed; iii. identifies the location of hazardous vegetation that poses a bushfire risk to the development.	Complies – S5 Environmental understand that, following the approval of this report, the proposed development will be designed and sited in compliance with an approved Bushfire Management Plan. Additionally, the above bushfire hazard assessment determined the proposed residential subdivision will be sited in an area of Low PFLI and the proposed townhouses will be exposed to a maximum radiant heat flux of 29 kW/m², equivalent to BAL 29, following the implementation of the proposed Bushfire Management Zones.

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
chemicals exceeding amount specified in Table 8.2.5.3.D; or iii. if on a site of an existing premises and not a vulnerable use, difficult to evacuate use, assembly use, essential community infrastructure or involving the handling or storage of hazardous chemicals exceeding amounts specified in Table 8.2.5.3.D: A. does not extend beyond the bounds of the existing development footprint; B. does not increase the GFA by 10% or 100m², whichever is the greater; C. does not involve a new use on the site; D. is supported by a bushfire risk assessment prepared by a suitably qualified person with technical expertise in the field of bushfire hazard identification and mitigation, which demonstrates that the bushfire risk is acceptable. Note—Bushfire hazard is generally assessed based on the vegetation existing on site, adjacent and nearby to the site at the	Note—Where a bushfire hazard assessment determines that the bushfire hazard for the part of the site in which development is proposed is 'low', no further assessment against this code is required. Note—A 'low' bushfire attack level must not be assumed for development in the Potential impact sub-category and in any areas subject to revegetation or regrowth vegetation even where the area is non-vegetated or vegetation is considered low threat in accordance with AS 3959 Construction of buildings in bushfire-prone areas. The Bushfire planning scheme policy provides advice about the sources of information to be consulted to determine areas subject to revegetation or regrowth vegetation and the hazard classification of that vegetation in its mature state. Note—A bushfire management plan is to be prepared having regard to any bushfire hazard assessment undertaken to prepare a neighbourhood plan. Note—Any bushfire management zone, asset protection zone or similarly defined area approved as part of a bushfire management plan used for bushfire management purposes is considered to be a bushfire management footprint plan. A building protection zone can compromise both the development footprint plan and the bushfire management footprint plan. AO1.2 Development where not in compliance with an approved bushfire management plan or development footprint identifying the development footprint plan and bushfire management footprint plan: a. achieves a bushfire attack level that is less than or equal to: - BAL-29; or - BAL-12.5 if for vulnerable uses, difficult to evacuate uses, assembly uses, essential community infrastructure or involving the handling or storage of	Following the approval of this report, the proposed development will be in compliance with an approved Bushfire Management Plan.

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
time of application. However, the level of bushfire hazard posed by any areas subject to revegetation or regrowth vegetation is assessed as if that area had reached its mature state. The Bushfire planning scheme policy provides advice about the sources of information to be consulted to determine areas subject to revegetation or regrowth vegetation and the hazard classification of that vegetation in its mature state. Note—Where a bushfire risk assessment is required it must be carried out in accordance with the State Planning Policy and the National Emergency Risk Assessment Guidelines prepared by the Australian Institute of Disaster Resilience.	hazardous chemicals exceeding the amount specified in Table 8.2.5.3.D. Note—Bushfire attack level (BAL) is the radiant heat flux that will be experienced during a bushfire and is a measure of heat energy impact expressed as kW/m². BAL is measured within the area of the nominated development footprint plan and excludes the area of any bushfire management footprint plan.	
PO2 – PO7 – Not Applicable – development is for a ROL.		
Additional performance outcomes and acceptable outcomes for all development in Biodiversity areas overlay if on a site larger than 2,500 m²		
PO8 Development through the siting, design, and construction of buildings, access routes and fire maintenance trails, and ongoing site management: - provides effective separation from sources of bushfire risk; - responds to the bushfire risk in that location; - maintains the safety and protection of people and property over time;	A08 Development locates building protection zones as shown on Figure b and Figure c, driveways and access routes and any fire maintenance trails: - outside of the Biodiversity areas overlay; or - within the existing disturbed, degraded or cleared areas, using natural fire breaks to avoid vegetation clearing and to avoid or otherwise minimise fragmentation or	Complies – S5 Environmental understand the subject site contains HES, HESS, MSES and Koala habitat area mapping associated with the waterway corridor and the northern half of the site. The proposed layout has been designed to minimise interference with this vegetation, with the proposed development footprint located entirely within the cleared northern and southern extents of the site. Further, the proposed development seeks to rehabilitate the waterway corridor as per the Detailed Ecological Assessment recommendations (refer to S523190_DEA_v1.4).

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
d. maximises the protection of vegetation in areas of high biodiversity value. Note—A bushfire management plan prepared in accordance with the Bushfire planning scheme policy can assist in demonstrating compliance with this performance outcome that ensures: - ongoing site management, such as the bushfire risk to buildings, does not increase beyond the standard to which they have been designed and constructed; - appropriate design and maintenance of the site, and access routes and driveways.	incursions into a habitat area, fauna movement corridor or remnant vegetation.	
Section B— Not Applicable – development is for a RoL.		
Section C – If for a RoL		
PO15 Development does not materially increase the number of premises exposed to unacceptable risk during bushfire events.	AO15 Development does not materially increase the number of people living or working in the Bushfire overlay area.	PS - Following the approval of this report, the proposed development will be designed and sited in compliance with an approved Bushfire Management Plan. The development is comparable to nearby approved developments and does not materially increase the number of premises exposed to unacceptable risk during bushfire events Specifically, the above bushfire hazard assessment determined the proposed residential development will be sited in an area of Low PFLI and as determined during the assessment and a maximum

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
		radiant heat exposure of 29kW/m ² will be achieved by any new dwelling.
Development is designed to: a. mitigate the risk of bushfire hazard to each lot; b. limit the spread of bushfire; c. achieve and maintain sufficient separation distance between development and hazardous vegetation to minimise bushfire hazard to future buildings during a bushfire; d. allow for emergency services access; e. locate buildings within a building protection zone Note—Lot size, location, configuration, dimensions and building measures are balanced to achieve an acceptable level of risk to future occupants. Note—A bushfire management plan prepared in accordance with the Bushfire planning scheme policy can assist in demonstrating compliance with this performance outcome.	AO16 Development requires that lot number, size, shape and layout allow for the siting of future buildings within the lowest hazard locations on the site being located: a. within a building protection zone in accordance with Figure b and Figure c; b. away from ridgelines and hilltop sites in compliance with Figure a; c. on land with a gradient less than 15%; d. preferably on east to south facing slopes and avoiding north to west facing slopes unless the slope is clear of vegetation and is not located in the High hazard buffer area sub-category or Medium hazard buffer area sub-category.	PS - The proposed residential development will be sited in an area of Low PFLI and as stipulated above, a maximum radiant heat exposure of 29kW/m² will be achieved by the proposed townhouses, following the implementation of the recommendations within the Bushfire Management Plan. The proposed development is not on a ridgeline, and has a gradient of less than 15% S5 Environmental have made bushfire management zone to provide separation between townhouses and hazardous vegetation in conjunction with landscaping recommendations for the balance of the two development areas (north and south of the waterway corridor), to limit the spread of bushfire throughout the proposed development. It is recommended that where applicable, proposed driveways are constructed in accordance with the recommendations within Table 8.2.5.3.C and the QFD document '<i>Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots</i>', to ensure sufficient access and egress is available for future residents and emergency services.

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
PO17 Development promotes safe site access, avoids creating a potential entrapment situation and supports accessibility and manoeuvring for fire fighting during bushfires. Note—This includes easements and boundary realignments. Note—A bushfire management plan prepared in accordance with the Bushfire planning scheme policy can assist in demonstrating compliance with this performance outcome.	AO17 Development provides a lot layout which: - provides direct road access and egress for new lots to public roads, rather than the creation of easements; - in an urban category, avoids creating a new lot less than or equal to 2,500m² which directly adjoins hazardous vegetation; - in an urban category, locates a future building protection zone to avoid a driveway of longer than 70m from the road frontage to a habitable building; - in a rural category, provides for an alternative access where the private access roads or driveways are longer than 200m to reach a public road.	Driveways are to be designed, where applicable, in accordance with the Table 8.2.5.3.C and the QFD document '<i>Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots</i>', to be confirmed by the Town Planner. Each extent of the proposed development (north and south) has either direct or access via a driveway onto either Redhead Street to the north, or Giant Street to the south. These roads and the local road network are considered suitable for emergency access and evacuation. Both roads allow for movement away from the hazardous vegetation. Driveways do not exceed 70m in length. Hazardous vegetation may be accessed at the end of Giant Street, or at the end of each driveway within the subject site.
PO18 Development ensures that the road layout and design provides: efficient emergency services access to sites and manoeuvring within the subdivision;	AO18.1 Development involving a new road or fire maintenance trail is designed and constructed in compliance with: - Table 8.2.5.3.C; or - an approved bushfire management plan. AO18.2	Driveways are to be designed, where applicable, in accordance with the Table 8.2.5.3.C and the QFD document '<i>Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots</i>', to be confirmed by the Town Planner.

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
b. safe and efficient movement of residents, workers and visitors out of the subdivision and away from an approaching bushfire; c. safe and efficient movement of emergency services into the subdivision; d. alternative egress routes considering the most likely bushfire scenarios; e. ongoing availability and maintenance of access and egress routes for the purposes of evacuation and emergency services access. Note—A bushfire management plan prepared in accordance with the Bushfire planning scheme policy can assist in demonstrating compliance with this performance outcome.	Development has a road layout and design which: a. provides for alternative access routes to the subdivision, by public roads that meet the requirements in Table 8.2.5.3.C and are able to access the arterial road network; b. excludes cul-de-sacs, except where a perimeter road with a cleared width of 20m isolates the development from hazardous vegetation; c. does not include dead-end roads or if a dead-end road is unavoidable, it is a maximum of 60m long, or 200m where located in the Environmental management zone, Conservation zone, Rural zone, or Rural residential zone, and an alternative emergency evacuation and egress route away from the most likely source of bushfire risk is provided for lots where multiple road access or exit points are not possible; d. links road within the subdivision to, or provides for future links to roads in adjacent subdivisions. Note—Where staged development occurs or development is in accordance with an approved master plan, a temporary perimeter road may be considered, subject to availability of reticulated water supply.	Where townhouses are adjacent to either Redhead Street or Giant Street, pedestrian access has been accommodated for these townhouses. Driveways do not exceed 70m in length. Each extent of the proposed development (north and south) has either direct or access via a driveway onto either Redhead Street to the north, or Giant Street to the south. These roads and the local road network are considered suitable for emergency access and evacuation. Both roads allow for movement away from the hazardous vegetation.
PO19 Development involving new premises provides adequate infrastructure to support fire fighting.	AO19.1 Development involving new premises ensures that: a. lots have access to reticulated water supply and water pressure available for fire-fighting requirements with	Complies -The development will be connected to a reticulated water supply to meet the water pressure requirements for fire-fighting requirements. The development can provide fire hydrants in accordance

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	COMMENTS
	water supply and pressure that accord with the standards specified by the relevant utilities provider; or b. where reticulated water supply is not available for: i. residential lots, there is a minimum water supply available and retained for fire-fighting purposes in compliance with Table 8.2.5.3.B, which may be in the form of a separate tank or a reserve section as part of a main water supply tank; ii. development other than residential lots, onsite water storage is provided which is appropriate to the proposed future use according to the standards specified by the relevant emergency services agency and is not less than 5,000 litres. Note—Water supply for fire-fighting is in addition to water supply for household use. Where a non-reticulated supply of water is required, swimming pools, creeks and dams should not be used as a substitute for a dedicated static supply as these sources of water are not reliable during drought conditions. AO19.2 Development provides fire hydrants in accordance with Central SEQ Distributor-Retailer Authority, Queensland Urban Utilities (incorporating Water Services Association of Australia) standards.	with Queensland Urban Utility standards, and where applicable is also to comply with the QFD document <i>'Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots'</i>

APPENDIX B

Flamesol Inputs and Outputs

Summary of Input Parameters for Hazardous Vegetation to the North-West

Parameter	Input	Note
FFDI	56	Source: QFD BRC MapViewer.
Surface Fuel Load	14.9 t/ha	Surface and Near Surface Fuel Load – QFD VHC 9.2.
Overall Fuel Load	17.2 t/ha	Total Fuel Load – QFD VHC 9.2.
Effective Slope	-2.6 °	Hazardous vegetation is upslope of the proposed development.
Site Slope	-4.41 °	Hazardous vegetation is upslope of the proposed development.
Flame Temperature	1,200 K	Standard input in accordance with BRC.
Flame Width	100 m	Standard input, in accordance with AS 3959-2018.



Calculated July 2, 2026, 5:48 pm (MDC-wil9)

S523190 - North West

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	56	Rate of spread	0.83 km/h
Vegetation Classification	Forest	Flame length	7.5 m
Understorey fuel load	14.9 t/ha	Flame angle	62 °, 68 °, 74 °, 77 °, 78 ° & 81 °
Total fuel load	17.2 t/ha	Elevation of receiver	4.04 m, 4.46 m, 5.04 m, 5.72 m, 6.13 m & 9.93 m
Vegetation height	n/a	Fire intensity	7,436 kW/m
Effective slope	-2.6 °	Transmissivity	0.878, 0.865, 0.845, 0.823, 0.811 & 0.747
Site slope	-4.41 °	Viewfactor	0.4063, 0.2987, 0.2008, 0.1355, 0.1103 & 0.0299
Flame width	100 m	Minimum distance to < 40 kW/m²	9.4 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	12.7 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	18.6 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	26.8 m

Flamesol Calculator Output for Hazardous Vegetation to the North-West

Summary of Input Parameters for Hazardous Vegetation to the East

Parameter	Input	Note
FFDI	56	Source: QFD BRC MapViewer.
Surface Fuel Load	14.9 t/ha	Surface and Near Surface Fuel Load – QFD VHC 9.2.
Overall Fuel Load	17.2 t/ha	Total Fuel Load – QFD VHC 9.2.
Effective Slope	0 °	Hazardous vegetation is on-grade with the proposed development.
Site Slope	0 °	Hazardous vegetation is on grade with the proposed development.
Flame Temperature	1,200 K	Standard input in accordance with BRC.
Flame Width	100 m	Standard input, in accordance with AS 3959-2018.



Calculated July 2, 2026, 5:49 pm (MDC v1.9)

S523190 - East

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	56	Rate of spread	1 km/h
Vegetation Classification	Forest	Flame length	8.57 m
Understorey fuel load	14.9 t/ha	Flame angle	66 °, 72 °, 77 °, 80 °, 82 ° & 85 °
Total fuel load	17.2 t/ha	Elevation of receiver	3.91 m, 4.07 m, 4.17 m, 4.22 m, 4.24 m & 4.26 m
Vegetation height	n/a	Fire intensity	8,898 kW/m
Effective slope	0 °	Transmissivity	0.875, 0.86, 0.839, 0.816, 0.804 & 0.742
Site slope	0 °	Viewfactor	0.4072, 0.2997, 0.2023, 0.1368, 0.111 & 0.03
Flame width	100 m	Minimum distance to < 40 kW/m²	10.4 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	14.1 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	20.7 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	29.5 m

Flamesol Calculator Output for Hazardous Vegetation to the East

Summary of Input Parameters for Hazardous Vegetation to the South-East (for development north of the waterway)

Parameter	Input	Note
FFDI	56	Source: QFD BRC MapViewer.
Surface Fuel Load	14.9 t/ha	Surface and Near Surface Fuel Load – QFD VHC 9.2.
Overall Fuel Load	17.2 t/ha	Total Fuel Load – QFD VHC 9.2.
Effective Slope	1.2 °	Hazardous vegetation is slightly downslope of the proposed development.
Site Slope	0 °	Hazardous vegetation is at the boundary of the proposed development.
Flame Temperature	1,200 K	Standard input in accordance with BRC.
Flame Width	100 m	Standard input, in accordance with AS 3959-2018.




(Calculated July 3, 2025, 12:34 pm (MDO v.4.9))

S523190 - South East (Northern)

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	56	Rate of spread	1.08 km/h
Vegetation Classification	Forest	Flame length	9.13 m
Understorey fuel load	14.9 t/ha	Flame angle	66 °, 72 °, 77 °, 80 °, 81 ° & 85 °
Total fuel load	17.2 t/ha	Elevation of receiver	4.17 m, 4.34 m, 4.45 m, 4.49 m, 4.51 m & 4.54 m
Vegetation height	n/a	Fire intensity	9,666 kW/m
Effective slope	1.2 °	Transmissivity	0.873, 0.858, 0.836, 0.813, 0.8 & 0.74
Site slope	0 °	Viewfactor	0.4065, 0.3019, 0.2031, 0.1372, 0.1117 & 0.0301
Flame width	100 m	Minimum distance to < 40 kW/m²	11.1 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	14.9 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	21.9 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	31.1 m

Flamesol Calculator Output for Hazardous Vegetation to the South-East (for development north of the waterway)

Summary of Input Parameters for Hazardous Vegetation to the South-East (for development south of the waterway)

Parameter	Input	Note
FFDI	56	Source: QFD BRC MapViewer.
Surface Fuel Load	14.9 t/ha	Surface and Near Surface Fuel Load – QFD VHC 9.2.
Overall Fuel Load	17.2 t/ha	Total Fuel Load – QFD VHC 9.2.
Effective Slope	0.77 °	Hazardous vegetation is slightly downslope of the proposed development.
Site Slope	0 °	Hazardous vegetation is at the boundary of the proposed development.
Flame Temperature	1,200 K	Standard input in accordance with BRC.
Flame Width	100 m	Standard input, in accordance with AS 3959-2018.



Calculated July 3, 2026, 12:17 pm (MDic v.4.9)

S523190 - South East (Southern)

Minimum Distance Calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	56	Rate of spread	1.05 km/h
Vegetation Classification	Forest	Flame length	8.92 m
Understorey fuel load	14.9 t/ha	Flame angle	66 °, 72 °, 77 °, 80 °, 81 ° & 85 °
Total fuel load	17.2 t/ha	Elevation of receiver	4.07 m, 4.24 m, 4.34 m, 4.39 m, 4.4 m & 4.44 m
Vegetation height	n/a	Fire intensity	9,383 kW/m
Effective slope	0.77 °	Transmissivity	0.873, 0.859, 0.837, 0.814, 0.802 & 0.741
Site slope	0 °	Viewfactor	0.4084, 0.3013, 0.2024, 0.1371, 0.1113 & 0.0301
Flame width	100 m	Minimum distance to < 40 kW/m²	10.8 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	14.6 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	21.5 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m²	30.5 m

Flamesol Calculator Output for Hazardous Vegetation to the South-East (for development south of the waterway)

APPENDIX C

Slope Lines and Calculations

Project: 42 Redhead Street, Doolandella

Number: S523190



BUSHFIRE SLOPE CALCULATOR

Vegetation to the North West

Effective Slope

DirectionUpslope

Top Elevation37 m

Bottom Elevation38 m

Distance22 m

Slope %-4.55%

Slope (°)-2.60

Site Slope

DirectionUpslope

Top Elevation38 m

Bottom Elevation44 m

Distance78 m

Slope %-7.69%

Slope (°)-4.41

Vegetation to the East

Effective Slope

DirectionOn-grade

Top Elevation33 m

Bottom Elevation34 m

Distance37 m

Effective slope is generally on-grade - a slope of 0° has been adopted

Slope %-2.70%

Slope (°)-1.55

Site Slope

DirectionFlat

Top Elevation33 m

Bottom Elevation33 m

Distance62 m

Slope %0.00%

Slope (°)0.00

Vegetation to the South East (Northern Extent of Development)

Effective Slope

DirectionDownslope

Top Elevation32 m

Bottom Elevation28 m

Distance191 m

Slope %2.09%

Slope (°)1.20

Site Slope

DirectionAt Boundary

Top Elevation32 m

Bottom Elevation32 m

Distance15.4 m

Slope %0.00%

Slope (°)0.00

Vegetation to the South East (Southern Development)

Effective Slope

DirectionDownslope

Top Elevation30 m

Bottom Elevation28 m

Distance148.7 m

Slope %1.34%

Slope (°)0.77

Site Slope

DirectionAt Boundary

Top Elevation31 m

Bottom Elevation31 m

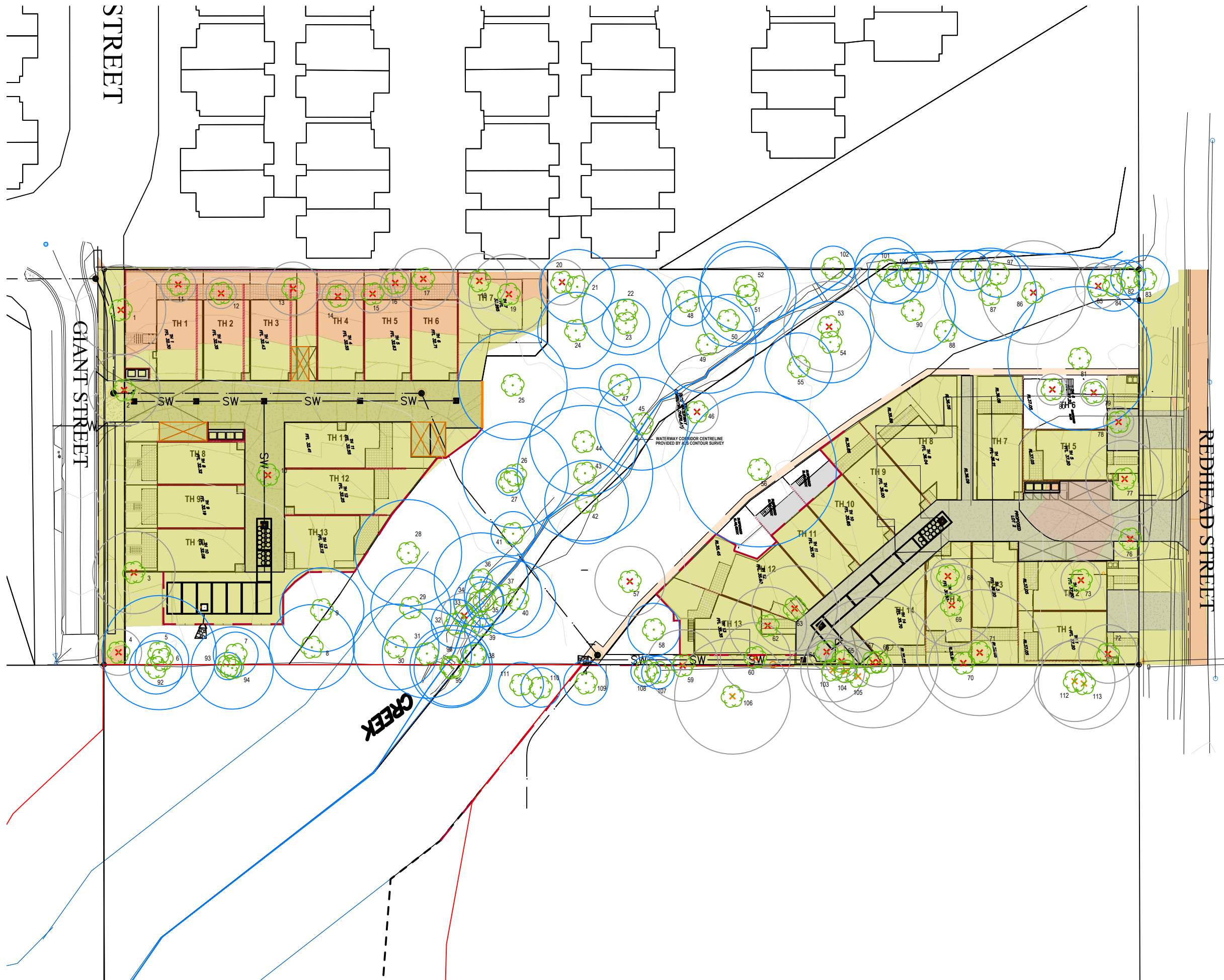
Distance14 m

Slope %0.00%

Slope (°)0.00

APPENDIX B

Amended Vegetation Retention Plan



LEGEND / NOTES

- 20 Tree Numbering
S5 GPS Located
- Tree Protection Zone
Retained Tree
- Tree To Be Removed
- Tree To Be Removed As Part
Of DA To The East
- Tree To Be Retained (Subject
To Arborist Inspection)
- QPP Waterway Centerline
- Proposed Retaining Walls
- Earthworks - Fill
- Earthworks - Cut
- Proposed Stormwater Line
- Proposed Sewer Line

NOTE:
- SURVEY PLAN

NORTHPOINT.

The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 (Section 10).

ISSUE	DESCRIPTION	DATE
A	FOR ISSUE	05/12/2023
B	LOT LAYOUT ADDED	17/09/2025
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
VEGETATION RETENTION PLAN

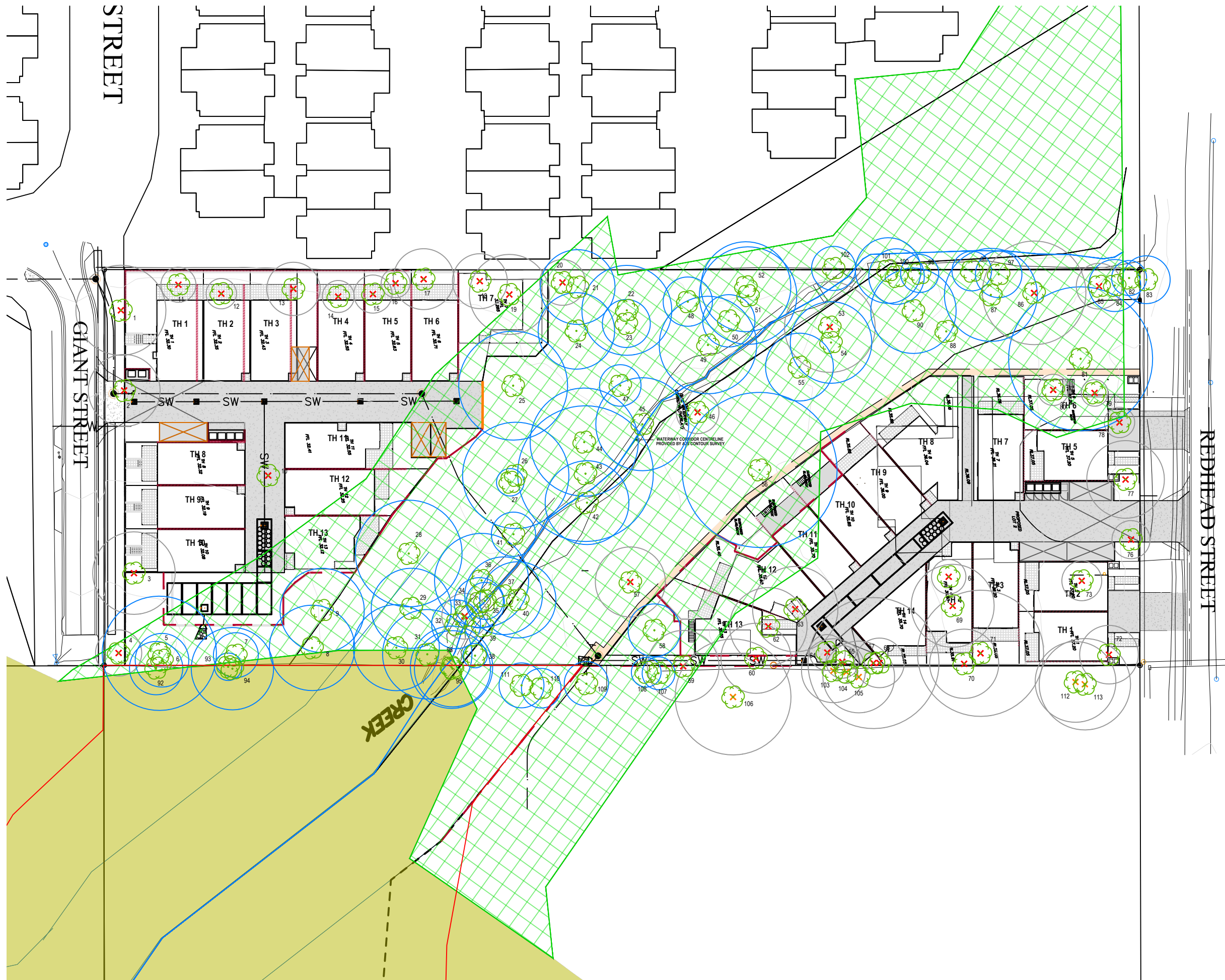
DRAWING NO.
S523190_VRP_001

SCALE	SHEET SIZE	DRAWN	APPROVED
1:600	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010
ph 3505 3053
www.s5consulting.com.au
ABN 82 440 704 793



ENVIRONMENTAL



LEGEND / NOTES

- 20 Tree Numbering
S5 GPS Located
- Tree Protection Zone
Retained Tree
- Tree To Be Removed
- Tree To Be Removed As Part
Of DA To The East
- Tree To Be Retained (Subject
To Arborist Inspection)
- QPP Waterway Centerline
- QPP Wetlands
- Proposed Retaining Walls
- BCC Biodiversity - HESS
- BCC Biodiversity - HES

NOTE:
- SURVEY PLAN

NORTHPOINT.



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
VEGETATION RETENTION PLAN
BIODIVERSITY OVERLAYS

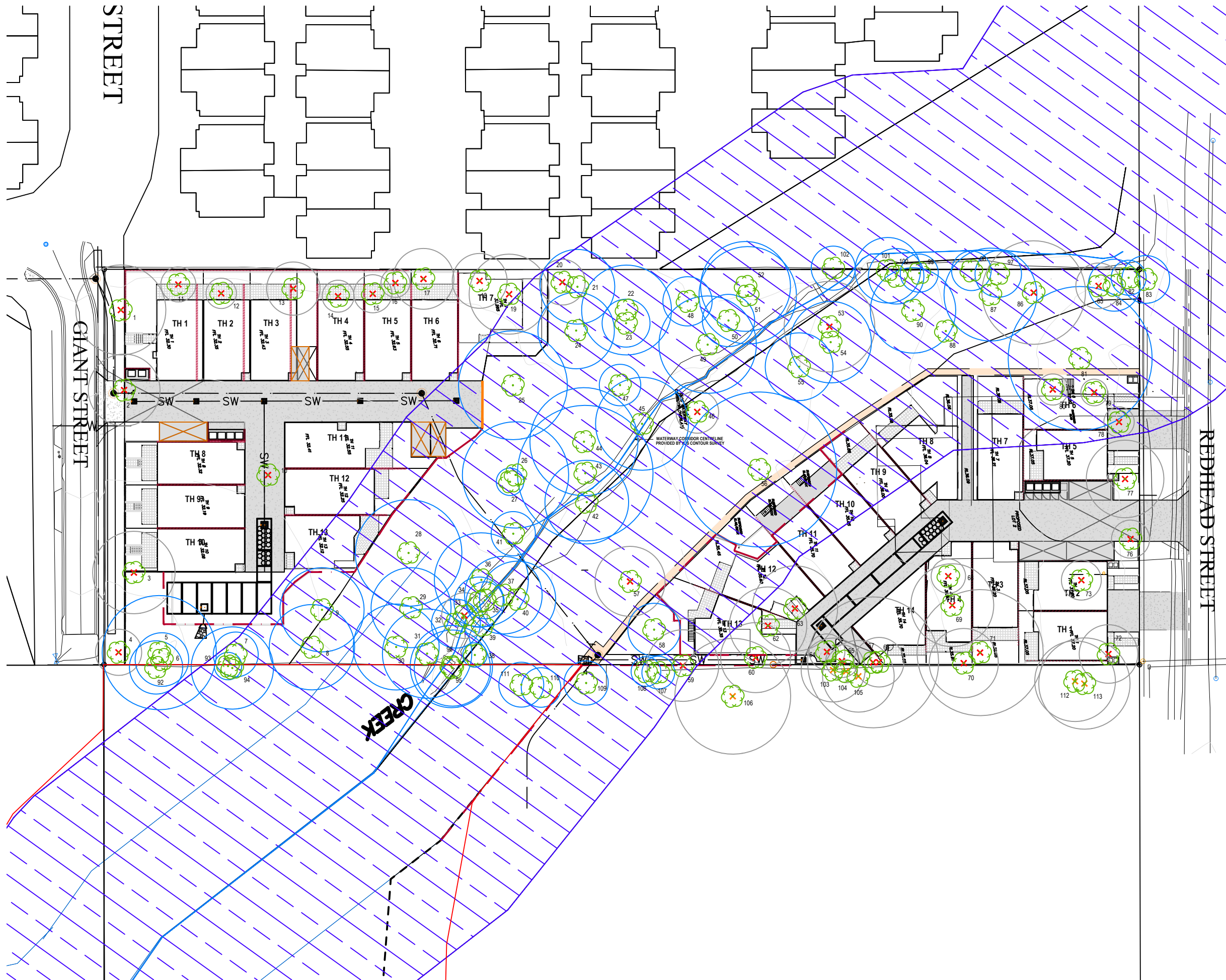
DRAWING NO.
S523190_VRP_002

SCALE	SHEET SIZE	DRAWN	APPROVED
1:600	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010
ph 3505 3053
www.s5consulting.com.au
ABN 82 440 704 793



ENVIRONMENTAL



LEGEND / NOTES

- 20 Tree Numbering
S5 GPS Located
- Tree Protection Zone
Retained Tree
- Tree To Be Removed
- Tree To Be Removed As Part
Of DA To The East
- Tree To Be Retained (Subject
To Arborist Inspection)
- QPP Waterway Centerline
- QPP Wetlands
- Proposed Retaining Walls
- BCC Waterway Corridor

NOTE:
- SURVEY PLAN

NORTHPOINT.



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
VEGETATION RETENTION PLAN
WATERWAY OVERLAY

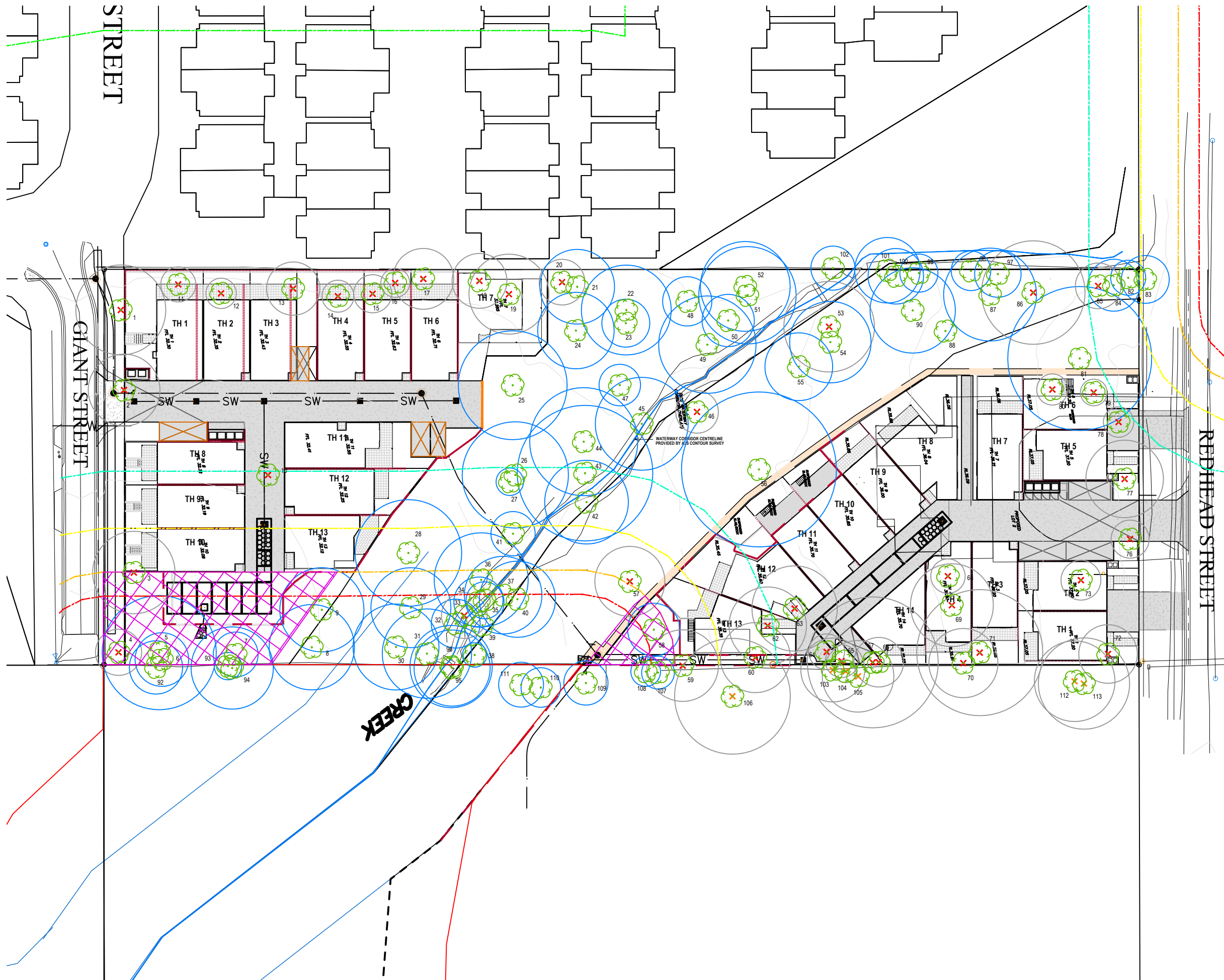
DRAWING NO.
S523190_VRP_003

SCALE	SHEET SIZE	DRAWN	APPROVED
1:600	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010
ph 3505 3053
www.s5consulting.com.au
ABN 82 440 704 793



ENVIRONMENTAL



LEGEND / NOTES

20

Tree Numbering
S5 GPS Located

Tree Protection Zone
Retained Tree

Tree To Be Removed

Tree To Be Removed As Part
Of DA To The East

Tree To Be Retained (Subject
To Arborist Inspection)

QPP Waterway Centerline

QPP Wetlands

Proposed Retaining Walls

BAL 40

BAL 29

BAL 19

BAL 12.5

BAL LOW

Bushfire Management Zone

NOTE:
- SURVEY PLAN

NORTHPOINT.

The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
VEGETATION RETENTION PLAN
BAL SETBACKS

DRAWING NO.
S523190_VRP_004

SCALE	SHEET SIZE	DRAWN	APPROVED
1:600	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

VEGETATION MANAGEMENT SCHEDULE																			
Site Address: 42 Redhead Street, Doolandella																			
Codes: FS = Fauna Scratches; SH = Small Hollow, MH = Medium Hollow, LH = Large Hollow, T = Termitaria; BN = Bird Nest, NB = Nest Box, SF = Evidence of Sap Feeding, F = Fruiting, FL = Flowering																			
No.	STATUS	SCIENTIFIC NAME	COMMON NAME	DBH 1 [mm]	DBH 2 [mm]	DBH 3 [mm]	DBH 4 [mm]	DBH 5 [mm]	DBH 6 [mm]	Total DBH [mm]	HEIGHT* [m]	SPREAD* [m]	NATIVE/E XOTIC	NJKHT	HEALTH	HABITAT	NOTES	TPZ [mm]	
1	Remove	Mangifera indica	Mango Tree	340	136	247	297	255		591	10	10	Exotic	-	Good			7092	
2	Remove	Mangifera indica	Mango Tree	272	136	130	260	120	177	472	5	10	Exotic	-	Good			5664	
3	Remove	Eucalyptus seeana	Narrow-leaved Red Gum	541						541	16	10	Native	Yes	Good	FS SH	criteria.	6492	
4	Remove	Ficus benjamina	Weeping Fig	303						303	16	10	Native	-	Good			3636	
5	Retain	Dead tree	Dead Tree	750						750			0	-	Good	MH SH		9000	
6	Retain	Eucalyptus siderophloia	Grey Ironbark	352						352	25	10	Native	Yes	Good	T		4224	
7	Retain	Corymbia intermedia	Pink Bloodwood	295						295	16	10	Native	Yes	Good			3540	
8	Retain	Eucalyptus tindaliae	Tindale's Stringbark	560						560	25	10	Native	Yes	Good			6720	
9	Retain	Eucalyptus baileyana	Bailey's Stringybark	553						553	25	7	Native	Yes	Good	SH BN		6636	
10	Remove	Dead tree	Dead Tree	430						430			0	-	Good	SH		5160	
11	Remove	Phoenix canariensis	Canary Island date palm	230						230	3	4	Exotic	-	Good			2760	
12	Remove	Phoenix canariensis	Canary Island date palm	200						200	3	4	Exotic	-	Good			2400	
13	Remove	Phoenix canariensis	Canary Island date palm	350						350	5	5	Exotic	-	Good		Phoenix canariensis x4	4200	
14	Remove	Livistona australis	Cabbage Palm	210						210	5	3	Native	-	Good			2520	
15	Remove	Phoenix canariensis	Canary Island date palm	250						250	4	5	Exotic	-	Good		Phoenix canariensis x3	3000	
16	Remove	Araucaria heterophylla	Norfolk Pine	190						190	15	2	Native	-	Good			2280	
17	Remove	Roystonea regia	Cuban royal palm	400						400	7	3	Native	-	Good			4800	
18	Remove	Archontophoenix alexandrae	Alexandra Palm	360						360	5	2	Native	-	Good			4320	
19	Remove	Taxodium distichum	Swamp cypress	525						525	12	8	Native	-	Good			6300	
20	Remove	Phoenix canariensis	Canary Island date palm	300						300	4	5	Exotic	-	Good		Phoenix canariensis x3	3600	
21	Retain	Eucalyptus tereticornis	Queensland blue gum	490						490	22	10	Native	Yes	Good	FS		5880	
22	Retain	Eucalyptus tereticornis	Queensland blue gum	590						590	17	9	Native	Yes	Good	FS		7080	
23	Retain	Corymbia intermedia	Pink Bloodwood	315						315	15	6	Native	Yes	Good	T		3780	
24	Retain	Eucalyptus tereticornis	Queensland blue gum	502						502	17	9	Native	Yes	Good	FS		6024	
25	Retain	Eucalyptus racemosa	Scribbly Gum	715						715	30	15	Native	Yes	Good	MH FS		8580	
26	Retain	Eucalyptus seeana	Narrow-leaved Red Gum	530	340	300				698	35	12	Native	Yes	Good	FS		8376	
27	Retain	Ficus watkinsiana	Strangler Fig	180						180	6	6	Native	-	Good			2160	
28	Retain	Eucalyptus tindaliae	Tindale's Stringbark	700						700	30	15	Native	Yes	Good			8400	
29	Retain	Eucalyptus tindaliae	Tindale's Stringbark	525						525	29	8	Native	Yes	Good	BN		6300	
30	Retain	Eucalyptus tindaliae	Tindale's Stringbark	565						565	25	10	Native	Yes	Good			6780	
31	Retain ²	Ficus benjamina	Weeping Fig	310	230	295	200	260		587	15	15	Native	-	Good		Significant Landscape Tree Overlay - Meets Criteria	7044	
32	Retain	Syzigium spp.	Lilly pilly	265	180					321	20	7	Native	-	Good			3852	
33	Remove	Phoenix dactylifera	Date Palm	300						300	4	4	Exotic	-	Good		4 trees in a dump	3600	
34	Retain	Eucalyptus propinqua	Grey Gum	330						330	22	6	Native	Yes	Good	FS		3960	
35	Retain	Lophostemon suaveolens	Swamp Box	243						243	11	5	Native	Yes	Good			2916	
36	Retain	Corymbia intermedia	Pink Bloodwood	280	550					618	20	8	Native	Yes	Good			7416	
37	Retain	Corymbia citriodora subsp. variegata	Spotted Gum	510						510	20	12	Native	Yes	Good	LH SH FS		6120	
38	Retain	Livistona australis	Cabbage Palm	160						160	4	4	Native	-	Good			1920	
39	Retain	Dead tree	Dead Tree	280	230					363			0	-	Good			4356	
40	Retain	Acoelorrhaphe wrightii	Everglades Palm	500						500	5	5	Native	-	Good			6000	
41	Retain	Corymbia intermedia	Pink Bloodwood	290						290	20	7	Native	Yes	Good			3480	
42	Retain	Melaleuca quinquenervia	Broad-leaved Paperbark	550						550	20	12	Native	Yes	Good			6600	
43	Retain	Ficus benjamina	Weeping Fig	320	250	280	210	645	300	891	15	20	Native	-	Good			10692	
44	Retain	Corymbia citriodora subsp. variegata	Spotted Gum	710						710	30	10	Native	Yes	Good	BN		8520	
45	Retain	Eucalyptus tindaliae	Tindale's Stringbark	610						610	40	15	Native	Yes	Good			7320	
46	Remove	Syagrus romanzoffiana	Cocos palm	280						280	10	5	Exotic	-	Good			3360	
47	Retain	Corymbia intermedia	Pink Bloodwood	272						272	17	7	Native	Yes	Good			3264	
48	Retain	Araucaria bidwillii	Bunya Pine	323						323	18	8	Native	-	Good			3876	
49	Retain	Corymbia citriodora subsp. variegata	Spotted Gum	640						640	20	9	Native	Yes	Good	FS		7680	
50	Retain	Corymbia citriodora subsp. variegata	Spotted Gum	343						343	20	10	Native	Yes	Good			4116	
51	Retain	Eucalyptus crebra	Narrow-leaved Ironbark	640						640	22	12	Native	Yes	Good			7680	
52	Retain	Eucalyptus tereticornis	Queensland blue gum	590						590	18	7	Native	Yes	Good	FS		7080	
53	Remove	Phoenix dactylifera	Date Palm	595						595	6	6	Exotic	-	Good			7140	
54	Retain	Eucalyptus tereticornis	Queensland blue gum	535						535	18	6	Native	Yes	Good	FS		6420	
55	Retain	Eucalyptus propinqua	Grey Gum	445						445	22	10	Native	Yes	Good	FS		5340	
56	Retain	Eucalyptus propinqua	Grey Gum	1018						1018	25	14	Native	Yes	Good	LH MH FS BN	Large hollow at base	12216	
57	Remove	Phoenix dactylifera	Date Palm	460						460	5	4	Exotic	-	Good		Elkhorns	5520	
58	Retain	Melaleuca linariifolia	Snow-in-summer	345						345	10	6	Native	-	Good			4140	
59	Remove	Eucalyptus tindaliae	Tindale's Stringbark	470						470	32	10	Native	Yes	Good			5640	
60	Remove	Eucalyptus tindaliae	Tindale's Stringbark	460						460	30	10	Native	Yes	Good			5520	

LEGEND / NOTES

NOTE:
- SURVEY PLAN

NORTHPOINT.



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
A	FOR ISSUE	05/12/2023
B	LOT LAYOUT ADDED	17/09/2025
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.

S523190

CLIENT

SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME

PROPOSED DEVELOPMENT

SITE

42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME

VEGETATION RETENTION PLAN
SCHEDULE SHEET 1 OF 2

DRAWING NO.

S523190_VRP_005

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS



2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

LEGEND / NOTES

NOTE:
- SURVEY PLAN



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
A	FOR ISSUE	05/12/2023
B	LOT LAYOUT ADDED	17/09/2025
C	TOWNHOUSE LAYOUT ADDED	11/03/2026
D	TOWNHOUSE LAYOUT AMENDED	15/04/2026
E	CIVILS ADDED	30/04/2026
F	CIVILS & UNIT LAYOUTS UPDATED	11/08/2026
G	TREE STATUS UPDATED	21/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
VEGETATION RETENTION PLAN
SCHEDULE SHEET 2 OF 2

DRAWING NO.
S523190_VRP_006

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010
ph 3505 3053
www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

VEGETATION MANAGEMENT SCHEDULE

Site Address: 42 Redhead Street, Doolandella

Codes: FS = Fauna Scratches; SH = Small Hollow; MH = Medium Hollow; LH = Large Hollow; T = Termitaria; BN = Bird Nest; NB = Nest Box; SF = Evidence of Sap Feeding; F = Fruiting; FL = Flowering

No.	STATUS	SCIENTIFIC NAME	COMMON NAME	DBH 1 [mm]	DBH 2 [mm]	DBH 3 [mm]	DBH 4 [mm]	DBH 5 [mm]	DBH 6 [mm]	Total DBH [mm]	HEIGHT* [m]	SPREAD* [m]	NATIVE/E XOTIC	NJKHT	HEALTH	HABITAT	NOTES	TPZ [mm]
62	Remove	<i>Roystonea Regia</i>	Cuban royal palm	508						508	10	5	Naïve	-	Good			6096
63	Remove	<i>Eucalyptus siderophloia</i>	Grey Ironbark	560						560	27	8	Naïve	Yes	Good			6720
64	Remove	<i>Hyophorbe lagenicaulis</i>	Bottle palm	235						235	3	2	Naïve	-	Good			2820
65	Remove	<i>Livistona australis</i>	Cabbage Palm	215						215	4	2	Naïve	-	Good			2580
66	Remove	<i>Eucalyptus tereticornis</i>	Queensland blue gum	325						325	10	8	Naïve	Yes	Good	FS		3900
67	Remove	<i>Eucalyptus siderophloia</i>	Grey Ironbark	860						860	20	12	Naïve	Yes	Good			10320
68	Remove	<i>Averrhoa carambola</i>	Carambola, Star Fruit	110	111	163				226	4	4	Naïve	-	Good			2712
69	Remove	<i>Cupressus glabra</i>	Pencil Pine	387	348	156				544	8	5	Naïve	-	Good			6528
70	Remove	<i>Araucaria heterophylla</i>	Norfolk Pine	454						454	17	7	Naïve	-	Good			5448
71	Remove	<i>Eucalyptus tindaliae</i>	Tindale's Stringbark	828						828	22	11	Naïve	Yes	Good			9936
72	Remove	<i>Bismarckia nobilis</i>	Bismarck Palm	385						385	8	5	Exotic	-	Good			4620
73	Remove	<i>Livistona australis</i>	Cabbage Palm	262						262	7	2	Naïve	-	Good			3144
76	Remove	<i>Thuja orientalis</i>	Oriental Arborvitae	250						250	5	4	Exotic	-	Good			3000
77	Remove	<i>Araucaria heterophylla</i>	Norfolk Pine	510						510	28	5	Naïve	-	Good			6120
78	Remove	<i>Thuja orientalis</i>	Oriental Arborvitae	200						200	5	3	Exotic	-	Good			2400
79	Remove	<i>Cupressus sempervirens glauca</i>	Pencil Pine	175						175	12	1	Exotic	-	Good			2100
80	Remove	<i>Cupressus sempervirens glauca</i>	Pencil Pine	205						205	15	1	Exotic	-	Good			2460
81	Retain	<i>Eucalyptus siderophloia</i>	Grey Ironbark	945						945	25	15	Naïve	Yes	Good	SH		11340
82	Retain	<i>Livistona australis</i>	Cabbage Palm	230						230	5	2	Naïve	-	Good			2760
83	Retain	<i>Eucalyptus propinqua</i>	Grey Gum	314						314	12	6	Naïve	Yes	Good	FS	Outside boundary (north)	3768
84	Retain	<i>Brachychiton rupestris</i>	Queensland Bottle Tree	341						341	4	2	Naïve	-	Good		Outside boundary	4092
85	Remove	<i>Fruit tree sp.</i>	Fruit Tree	300						300	4	5	Exotic	-	Good		Fruit tree, unknown	3600
86	Remove	<i>Ravenala Madagascarensis</i>	Travellers Palm	680						680	10	5	Exotic	-	Good			8160
87	Retain	<i>Araucaria heterophylla</i>	Norfolk Pine	610						610	20	5	Naïve	-	Good			7320
88	Retain	<i>Dead tree</i>	Dead Tree	460						460			0	-	Good			5520
90	Retain	<i>Glochidion ferdinandi</i>	Cheese Tree	560						560	11	6	Naïve	-	Good			6720
92	Retain	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	350						350	25	10	Naïve	Yes	Good		Monkey rope. Outside boundary	4200
93	Retain	<i>Allocasuarina littoralis</i>	Black She-oak	180						180	10	4	Naïve	-	Good		Outside boundary	2160
94	Retain	<i>Eucalyptus tereticornis</i>	Queensland blue gum	540						540	21	10	Naïve	Yes	Good	FS	criteria.	6480
95	Retain	<i>Eucalyptus tereticornis</i>	Queensland blue gum	500						500	28	10	Naïve	Yes	Good		criteria.	6000
96	Retain	<i>Corymbia intermedia</i>	Pink Bloodwood	540						540	25	10	Naïve	Yes	Fair		Outside boundary	6480
97	Retain	<i>Allocasuarina littoralis</i>	Black She-oak	230	200					305	8	3	Naïve	-	Good		Off boundary	3680
98	Retain	<i>Allocasuarina littoralis</i>	Black She-oak	260						260	12	4	Naïve	-	Good		Off boundary. Large nest box installed.	3120
99	Retain	<i>Allocasuarina littoralis</i>	Black She-oak	250						250	5	4	Naïve	-	Good		Off boundary	3000
100	Retain	<i>Lophostemon suaveolens</i>	Swamp Box	365						365	15	5	Naïve	Yes	Good		Off boundary	4380
101	Retain	<i>Eucalyptus propinqua</i>	Grey Gum	430						430	17	7	Naïve	Yes	Good		Off boundary. Large nest box installed.	5160
102	Retain	<i>Corymbia intermedia</i>	Pink Bloodwood	210	140	140				289	11	2	Naïve	Yes	Good		Off boundary	3468
103	Remove ³	<i>Corymbia intermedia</i>	Pink Bloodwood	420						420	16	9	Naïve	Yes	Good	T	Off boundary	5040
104	Remove ³	<i>Eucalyptus tereticornis</i>	Queensland blue gum	150						150	8	3	Naïve	Yes	Good		Off boundary	1800
105	Remove ³	<i>Corymbia intermedia</i>	Pink Bloodwood	470						470	8	10	Naïve	Yes	Good		Off boundary	5640
106	Remove ³	<i>Eucalyptus tindaliae</i>	Tindale's Stringbark	760						760	23	8	Naïve	Yes	Good		Vines. Off boundary	9120
107	Retain	<i>Eucalyptus tindaliae</i>	Tindale's Stringbark	215						215	8	6	Naïve	Yes	Good	T	Monkey rope vine. Off boundary	2580
108	Retain	<i>Lophostemon suaveolens</i>	Swamp Box	195						195	8	3	Naïve	Yes	Good		Off boundary	2340
109	Retain	<i>Corymbia torelliana</i>	Cadaghi	290						290	10	6	Naïve	-	Good		Off boundary	3480
110	Retain	<i>Allocasuarina littoralis</i>	Black She-oak	260						260	9	6	Naïve	-	Good		Off boundary	3120
111	Retain	<i>Eucalyptus propinqua</i>	Grey Gum	295						295	12	5	Naïve	Yes	Good		Off boundary	3540
112	Remove ³	<i>Corymbia intermedia</i>	Pink Bloodwood	530						530	18	12	Naïve	Yes	Good	T	Off boundary	6360
113	Remove ³	<i>Corymbia intermedia</i>	Pink Bloodwood	600						600	20	13	Naïve	Yes	Good		Off boundary	7200

² Significant Landscape Tree - Within Overlay Area and meets size criteria
NJKHT Counter = 54

³ To be removed as part of DA to the East
Note: NJKHT to be removed includes "Remove subject to Council/NALL/Neighbour approval"
Note 2: Trees 61, 74, 75, 89 and 91 were removed after this tree survey was undertaken, and therefore have been removed from this schedule
NJKHT to be removed = 7

* Estimated attributes

APPENDIX C

Concept Rehabilitation Management Plan



LEGEND / NOTES

20



Tree Numbering
S5 GPS Located



QPP Waterway Centerline



Proposed Retaining Walls



Proposed Stormwater Line



Proposed Sewer Line



Earthworks - Fill



Earthworks - Cut



RMU 1



RMU 2



RMU 3



Proposed Fauna Friendly
Fencing (If Required)



Pet Exclusion Fencing



Access Gate (Indicative Location)

NOTE:
- SURVEY PLAN

NORTHPOINT.



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	FOR ISSUE	11/08/2026

PROJECT NO.

S523190

CLIENT

SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME

PROPOSED DEVELOPMENT

SITE

42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME

CONCEPT REHABILITATION
MANAGEMENT PLAN

DRAWING NO.

S523190_CRMP_001

SCALE	SHEET SIZE	DRAWN	APPROVED
1:600	A3	SAJ	RS



2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

Background Information

Address: 42 Redhead Street, Doolandella (Lot 70 on RP90234).

S5 Environmental have prepared this Concept Rehabilitation Management Plan (CRMP) for Sunstate Civil Constructions, for a Development Application for a Material Change of Use on the subject site at 42 Redhead Street, Doolandella. This CRMP was prepared to address Item 3a (v) of an Information Request issued by Brisbane City Council (BCC) on the 22/10/2025 (A006866747). S5 Environmental understands that the Client is proposing a staged townhouse development (27 townhouses) either side of the central waterway corridor that bisects the site. Stage 1 is to include the development of the southern portion of the site, including the proposed rehabilitation of the waterway corridor as detailed in this Rehabilitation Management Plan. Stage 2 is to include to development of the balance of the site to the north of the waterway corridor.

Associated Reports:

This CRMP should be read in conjunction with the following technical reports and agreements:

- S5 Environmental - Vegetation Retention Plan (S523190_VRP_001-006(F))
- S5 Environmental - Detailed Ecological Assessment (S523190_DEA_v1.4); and
- Chenoweth EPLa and Bushland Restoration Services (2012) South East Queensland Ecological Restoration Framework: manual. Prepared on behalf of SEQ Catchments and South East Queensland Local Governments, Brisbane.

Site Description

Lot 70 on RP 90234, herein referred to as the 'subject site', currently contains a residential dwelling located in the centre of the northern extent. Access is via a looped driveway off Redhead Street. The site was observed to have been largely historically cleared, particularly of midstorey and understorey vegetation. Landscaped garden beds are situated around the dwelling. A mix of native canopy and exotic species are scattered about the northern portion of the site with a mown understorey.

A shallow, ephemeral waterway corridor bisects the site, entering from the north-west and exiting towards the south-eastern boundary. Density of trees is increased along this site feature. The area south of the waterway is a mown grassed area, with a mix of native and exotic canopy trees, primarily around the perimeter with little understory. Canopy species included grey gum (*Eucalyptus propinqua*), QLD blue gum (*Eucalyptus tereticornis*), scribbly gum (*Eucalyptus racemosa*), Tindale's Stringbark (*Eucalyptus tindaliae*), pink bloodwood (*Corymbia intermedia*) and weeping fig (*Ficus benjamina*).

Refer to the Detailed Ecological Assessment (**S523190_DEA_v1.4**) and Vegetation Retention Plan (**S523190_VRP_001-006(F)**) for further information regarding the ecological state of the subject site, as well as the proposed development plans. Tree Protection Zones (TPZ) are additionally illustrated within the VRP in accordance with AS4970.

During S5 Environmental's site visit one declared weed species was identified, Singapore daisy (*Sphagneticola trilobata*), within the waterway corridor. Rehabilitation works are proposed along the central waterway corridor and will include weed removal/maintenance, and dense replanting to improve the environmental values of the waterway and riparian area and strengthen the east-west corridor for fauna movement and provide additional habitat.

Rehabilitation Objectives

Rehabilitation will be undertaken as part of Stage 1 of the proposed development. The rehabilitation approach aims to remove the majority of non-native vegetation along the ground-truthed waterway centreline and proposed waterway corridor,

including canopy (where required), shrub and ground level strata, and revegetation of the Waterway corridor (shown as RMU 1 and 2) with native flora. This will be achieved through:

- Removal of non-native flora species within the shrub and understory, as identified (but not limited to) the species listed on Page 4 of this document;
- Revegetate the Rehabilitation Management Units with a variety of native groundcover, shrub and canopy (where required) species that are locally appropriate, as per the planting palettes on Page 4 of this document; and
- Habitat creation, by strengthening native vegetation to enhance vegetation connectivity to neighbouring lots and waterway corridor.

Rehabilitation Strategy

The following Rehabilitation Management Units (RMUs) have been proposed in order to achieve these outcomes.

Rehabilitation Management Unit 1 – 915 m²

RMU 1 includes the waterway centreline and extends 5m to the north and south of the ground-truthed centreline. Rehabilitation within RMU 1 should comprise removal of concrete paving, weed removal and dense infill planting of riparian groundcover species from the ground-truthed RE 12.5.3a “Mixed woodland to open forest usually containing *Corymbia intermedia*, *Eucalyptus racemosa* subsp. *racemosa* and at least a presence of *Eucalyptus seeana*”. The planting palette below has prioritised shade and water tolerant species from the Queensland Herbariums' Technical Descriptions for this RE. RMU 1 may require sediment and erosion control treatments, including jute matting or jute squares securely pegged on four corners. Jute matting aims to prevent tube stock being washed away during periods of peak rainfall.

Rehabilitation Management Unit 2 – 2,742 m²

RMU 2 includes the balance of the proposed waterway corridor (excluding RMU 3 – refer below) and extends approximately 13m to the north and 15m to the south of RMU 1. RMU 2 has been delineated from RMU 1 to allow for more water tolerant, groundcover species to be planted along the centreline, noting that partial inundation may occur due to its ephemeral nature. Rehabilitation within RMU 2 should comprise weed removal and infill planting of groundcover and shrub species from the ground-truthed RE 12.5.3a. Due to existing canopy species density, infill planting of canopy species shall be where required. The planting palette below has been provided based on the Queensland Herbariums' Technical Descriptions for this RE.

Rehabilitation Management Unit 3 – 179m2

RMU 3 includes a 3m buffer either side of the proposed sewer line running north-west to south-east across the waterway corridor. RMU 3 has been delineated from RMU 1 and 2 to ensure appropriate planting of non-aggressive root systems occurs above and in proximity to the sewer pipe and for ease of sewer maintenance access. As per Urban Utilities recommendations, RMU 3 extends 3m either side of the proposed sewer line. Rehabilitation within RMU 3 should comprise weed removal and infill planting of groundcover and shrub species only, from the ground-truthed RE 12.5.3a. The planting palette below has been provided based on the Queensland Herbariums' Technical Descriptions for this RE.

Revegetation Specifications

Contractor

The contractor appointed for rehabilitation works must be experienced in bush regeneration techniques and retention of naturally regenerating vegetation. Any herbicide application is to be completed by a licenced ACDC contractor.

LEGEND / NOTES

NOTE:
- SURVEY PLAN



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	FOR ISSUE	11/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
CONCEPT REHABILITATION
MANAGEMENT PLAN - NOTES
SHEET 1 OF 4

DRAWING NO.
S523190_CRMP_002

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS



2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

Site Preparation and Weeding

All rubbish, paths and existing structure are to be removed from the rehabilitation areas. If replacement fencing is to be installed it is recommended that it be fauna friendly.

The following steps are recommended for weed treatment:

1. Identify existing State and Council restricted invasive pest plant species occurring within the Rehabilitation Area.
2. Physical weed removal, followed by stem inject, cut and paint, or foliar spray all remaining weedy vegetation in accordance with specific control techniques, outlined in the **Declared Weed and Waste Management Actions** Section;
3. Manual removal should only be used on species resistant to herbicide treatment, as applicable. Herbicides are to be registered for use within proximity to a waterway/aquatic area and must be used in accordance with the registered label, relevant legislation or applicable APVMA approved off-label permit;
4. Initial weeding will take into account all weeds identified within the rehabilitation area, with a primary treatment followed by a secondary treatment to account for regermination and reshooting; and
5. All understorey and ground-layer weed species are to be treated concurrently, unless there is a high risk of erosion, in which case, a staged approach to reduce soil exposure should be employed i.e. mosaic spraying or spraying of rings for tube stock.

Maintenance Access

Access into the EPZ shall be achieved via the internal driveway off Giant Street to the south, and as such a maintenance trail is not required. After the maintenance period is completed, the EPZ is to be accessed via a self-closing gate, that complies with BSD-7033 (Gate Natural Area), or approved equivalent, within the pet exclusion fencing between the EPZ and the southern extent of the proposed development footprint.

Mulching

Aged Forest mulch (free of deleterious/extraneous material) is to be installed across the balance of the RMU2, to an initial depth of 100mm to 150mm. Mulch must be placed so that any native vegetation remains uncovered and so that it does not touch plant stems (existing or planted). As there are no access issues and no steep slopes within the subject site, blanket mulching is appropriate across RMU2. No mulch is to be placed within the waterway (RMU1).

Exposed Soil and Slope Stabilisation

1. Exposed soil in the Rehabilitation Area will be revegetated with planting of native species;
2. Stumps of removed exotic canopy species are to remain in-situ to aid soil stabilisation; and
3. The installation of jute mat or equivalent and/or sediment fencing is to be used in accordance with direction from an erosion and sediment control certified person (CPESC), to ensure no sediment enters any RMU.

Planting

1. Tube stock sized plants should be used and should be at least 20 cm in height (dependent on the species), displaying healthy signs of growth. They should be adequately ‘sun hardened’, free from damage, pests and disease and be of local provenance;
2. All plants should be watered in pots before planting;
3. Plant species are to be selected in accordance with the planting palettes provided and placed as site conditions allow. Set out of plants and species is to be in accordance with the planting areas and densities as shown in this Rehabilitation Plan;

4. Plant placement of each species is to be generally randomised in keeping with a natural ecosystem and distributed to achieve the set densities prescribed; and
5. Water tolerant species are to be planted within RMU 1, allowing for a 5-metre buffer; and
6. Tree guards are to be installed where predation is evident during the establishment and maintenance period.

Pet-exclusion Fencing

1. Pet exclusion fencing must be erected along the interface of the proposed development and the waterway corridor to contain pets (refer CRMP001 above);
2. Pet exclusion fencing must be at least 1.5m high, and must be continuous with no gaps greater than 50 mm;
3. Metal sheeting and corrugated iron fencing must be capped;
4. Pet exclusion fencing within each lot to include a self-closing access gate to allow future access to the RMU for maintenance.

Fauna-friendly Fencing

1. If fencing is to be installed on the eastern and western boundaries of the waterway corridor (EPZ) as detailed on CRMP 001, the following is permitted as fauna-friendly fencing:

Wooden Pole Fence:

- Gap between ground and first rail is minimum 40cm;
- Gap between every other rail is 30cm minimum; and
- Fence is no greater than 1.2m in height.

Boxwire Fence:

- Squares no less than 15cm is used provided a 30cm gap between ground level and the mesh is provided; and
- Fence is no greater than 1.2m in height.

Strand Fence:

- Gap between ground and first strand is minimum 40cm;
 - Gap between every other strand is 30cm minimum; and
 - Fence is no greater than 1.2m in height.
2. Fencing shown as “Fauna-friendly Fencing (if required)” on CRMP001 is not required to be erected, however, should fencing be erected in these locations, it must be fauna-friendly fencing per the above specification unless agreed in writing with an Ecologist from Development Services, Brisbane City Council.

Habitat Creation

1. If recoverable log sections with hollows from trees to be cleared are identified, they are to be relocated to RMU 2 and integrated to provide habitat for resident fauna; and
2. Log sections should be limited, as not to reduce allowable densities for native revegetation, and attempt should be made to equally and ‘randomly’ distributed the logs within RMU 2 (i.e. north and south of the waterway).

Fertilising

1. An organic fertiliser suitable for use on Australian native vegetation, in pellet form, will be applied at time of planting. The fertiliser will be placed adjacent and not in contact with the root ball at 2 – 4 cm below the soil surface and under the mulch.

LEGEND / NOTES

NOTE:
- SURVEY PLAN



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	FOR ISSUE	11/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
CONCEPT REHABILITATION
MANAGEMENT PLAN - NOTES
SHEET 2 OF 4

DRAWING NO.
S523190_CRMP_003

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS



2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

Watering

1. Plants should be watered before planting;
2. All plants are then to be watered in at time of planting (approximately 5 – 10 L per plant);
3. Watering requirements will be influenced by site and climatic conditions and should be carried out as often as required to ensure establishment and active growth. Under extremely dry conditions, follow-up watering can be generally carried out as follows:

• Three times a week for the first month after planting;

• Twice a week or as needed 4-8 weeks after planting; and

• As required according to climatic conditions thereafter for the duration of the maintenance period;
4. Watering schedule may vary according to rainfall. If soil is moist, watering will not be necessary.

Maintenance and Monitoring

1. A 24-month maintenance period will commence from the date of practical implementation of all works;
2. The rehabilitation area will be periodically assessed to replace dead plants and control weeds. Weed removal, monitoring and maintenance will be ongoing as required;
3. Dead plants shall be replaced with suitable replacement species;
4. Weak or leaning plants should be staked, the stakes are to be removed once the plants become strong and established; and
5. By the end of the maintenance period, rehabilitation is to have achieved the prescribed species densities, with a minimum 90% mortality of weed species.

Note: - Monitoring and maintenance frequency will be increased on a reactive basis (where necessary) to ensure that rehabilitation works achieve compliance with the 'Rehabilitation Targets' (below) throughout the duration of the 24-month maintenance period.

Rehabilitation Targets

1. Any rubbish/debris is to be removed before rehabilitation commences;
2. A survival rate of 90% of native vegetation planting at end of maintenance period must be achieved; and
3. A removal rate of 90% of weed species cover/abundance at the end of the maintenance period must be achieved.

Planting Palette

Table 1: RMU 1 (RE 12.5.3a) – Waterway Centreline and 5m Buffer (Riparian Vegetation)			
Scientific Name	Common Name	Coverage*	RMU1 Plant Density Targets
Groundcover			
<i>Pteridium esculentum</i>	Bracken	4 plants per 1 m ²	
<i>Lomandra multiflora</i>	Lomandra		
<i>Lomandra longifolia</i>	Lomandra		
<i>Eustrephus latifolius</i>	Wombat berry		
<i>Dianella caerulea</i>	Flax lily		
<i>Gahnia aspera</i>	Rough saw-sedge		

Table 2: RMU 2 (RE 12.5.3a)			
Scientific Name	Common Name	Coverage*	RMU2 Plant Density Targets
Canopy			
<i>Eucalyptus seeana</i>	Narrow leaved blue gum	Dominant	1 plant per 10 m ²
<i>Corymbia intermedia</i>	Pink bloodwood	Dominant	
<i>Eucalyptus racemosa</i>	Scribbly gum	Co-Dominant	
<i>Eucalyptus tindaliae</i>	Tindale’s Stringybark	Associated	
<i>Angophora leiocarpa</i>	Rusty gum	Associated	
<i>Lophostemon suaveolens</i>	Swamp box	Associated	
<i>Corymbia citriodora subsp. variegata</i>	Spotted gum	Associated	
<i>Eucalyptus siderophloia</i>	Northern grey ironbark	Associated	
Shrubs/Midstorey			
<i>Acacia leiocalyx</i>	Black wattle	Dominant	1 plant per 3 m ²
<i>Alphotonia excelsa</i>	Soap tree	Dominant	
<i>Acacia disparrima subsp. disparrima</i>	Hickory wattle	Dominant	
<i>Allocasuarina littoralis</i>	Forest sheoak	Co-dominant	
<i>Jacksonia scoparia</i>	Dogwood	Associated	
<i>Melaleuca linariifolia</i>	Snow in summer	Associated	
Groundcover			
<i>Themeda triandra</i>	Kangaroo grass	1 plant per 1 m ²	
<i>Lepidosperma laterale</i>	Variable sword sedge		
<i>Entolasia stricta</i>	Wiry panic		
<i>Pteridium esculentum</i>	Bracken		
<i>Imperata cylindrica</i>	Blady grass		
<i>Cymbopogon refractus</i>	Barbed wire grass		
<i>Lobelia purpurascens</i>	White root		
<i>Goodenia rotundifolia</i>	Star goodenia		
<i>Lomandra multiflora</i>	Lomandra		
<i>Eustrephus latifolius</i>	Wombat berry		
<i>Hibbertia vestita</i>	Guinea flower		
Notes:			
- Canopy trees are not to be planted under existing canopy. No planting is to occur within 3 m of the property boundary to the south or within 6m of any dwelling. - Tube stock subject to commercial availability, noting any species substitutions to be approved by Council in writing. - The target density required following planting includes existing vegetation			

Table 3: RMU 3 (RE 12.5.3a) – Sewer Line and 3m Buffer			
Scientific Name	Common Name	Coverage*	RMU3 Plant Density Targets
Shrubs/Midstorey			
<i>Acacia leiocalyx</i>	Black wattle	Dominant	1 plant per 3 m ²

LEGEND / NOTES

NOTE:
- SURVEY PLAN



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	FOR ISSUE	11/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
CONCEPT REHABILITATION
MANAGEMENT PLAN - NOTES
SHEET 3 OF 4

DRAWING NO.
S523190_CRMP_004

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS



2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793

ENVIRONMENTAL

<i>Alphotonia excelsa</i>	Soap tree	Dominant	
<i>Acacia disparrima</i> subsp. <i>disparrima</i>	Hickory wattle	Dominant	
<i>Allocasuarina littoralis</i>	Forest sheoak	Co-dominant	
<i>Jacksonia scoparia</i>	Dogwood	Associated	
<i>Melaleuca linariifolia</i>	Snow in summer	Associated	

Groundcover			
<i>Themeda triandra</i>	Kangaroo grass	1 plant per 1 m ²	
<i>Lepidosperma laterale</i>	Variable sword sedge		
<i>Entolasia stricta</i>	Wiry panic		
<i>Pteridium esculentum</i>	Bracken		
<i>Imperata cylindrica</i>	Blady grass		
<i>Cymbopogon refractus</i>	Barbed wire grass		
<i>Lobelia purpurascens</i>	White root		
<i>Goodenia rotundifolia</i>	Star goodenia		
<i>Lomandra multiflora</i>	Lomandra		
<i>Eustrephus latifolius</i>	Wombat berry		
<i>Hibbertia vestita</i>	Guinea flower		

Notes:

- Tube stock subject to commercial availability, noting any species substitutions to be approved by Council in writing.
- The target density required following planting includes existing vegetation

Declared Plant, Weed and Waste Management Actions

Objectives

Prevent any weed presence from negatively impacting plant growth or survival by undertaking weeding for 24 months, with aims to remove at least 90% of exotic species at the end of the maintenance period.

Performance Criteria

1. Remove and control all environmental weeds;
2. Eliminate the spread of declared plants within the subject site as well as offsite; and
3. Remove all hardstand elements and waste from the site before rehabilitation works begin.

General Management Actions

1. A thorough weed treatment must be undertaken prior to planting to promote stock survival and diminish plant competition with exotic species;
2. Vehicles are not to enter the rehabilitation area after planting;
3. Storage areas are to be bunded to prevent chemical spills (petrol, oil, etc.) from discharging from the site and entering stormwater drains;
4. During works, environmental weed species (if applicable) are to be removed as per the State and Council Declared Pest Plant/Weed Treatment and Control Table. Declared and invasive plants must be stockpiled separately and disposed of at an appropriate waste disposal facility;
5. Stockpiles of vegetation are to be inspected for declared plant species prior to exporting offsite/mulching;
6. Declared plants as defined by the Biosecurity Act 2014 are not to be planted on-site; and
7. Fire as a management technique for controlling declared plants is not to be administered on the site.

Monitoring

1. Germination or regrowth of declared plant species; and
2. Site Supervisor to monitor declared plant control and ensure management strategies are adhered to.

Corrective Action

1. Undertake successive phases of declared plant control to treat newly germinated or remaining declared plants.

Reporting

1. Any incidents of non-compliance to be recorded in an Environmental Diary.

Fire Ants and Restricted Species

Upon review of the fire ant biosecurity map, the locality of Doolandella is within fire ant biosecurity Zone 2; covering suburbs yet to receive fire ant eradication treatment. Restrictions to fire ant carrier movements apply (National Red Imported Fire Ant Eradication Program 2016) including the movement of soil, mulch, manure, baled hay, straw, potted plants, turf, and compost. If any fire ants or restricted species are located within the subject site, a report to the Department of Agriculture and Fisheries must be made within 24 hours of suspected sighting. Refer to the Queensland Government's Fire ant biosecurity zone map at <https://www.fireants.org.au/> for further information.

LEGEND / NOTES

NOTE:
- SURVEY PLAN

NORTHPOINT.



The ideas, information and concepts contained in this document are the property of S5 Consulting. Photocopying or reproducing this document and passing it on to others without the express permission of S5 Consulting is an infringement of copyright and is a breach of S5 Consulting rights under the Commonwealth Copyright Act 1968 [Section 10].

ISSUE	DESCRIPTION	DATE
C	FOR ISSUE	11/08/2026

PROJECT NO.
S523190

CLIENT
SUNSTATE CIVIL CONSTRUCTION
C/- URBAN STRATEGIES

PROJECT NAME
PROPOSED DEVELOPMENT

SITE
42 REDHEAD STREET
DOOLANDELLA

DRAWING NAME
CONCEPT REHABILITATION
MANAGEMENT PLAN - NOTES
SHEET 4 OF 4

DRAWING NO.
S523190_CRMP_005

SCALE	SHEET SIZE	DRAWN	APPROVED
N.T.S.	A3	SAJ	RS

2/265 Sandgate Road
Albion Qld 4010

ph 3505 3053

www.s5consulting.com.au
ABN 82 440 704 793



ENVIRONMENTAL