



Attachment to item number 5.1 -

*Geotechnical Assessment;
Wastewater Report; and
Bushfire Risk Assessment*



Sorell Council

Development Application: Subdivision
Application - 15 Gatehouse Drive, Sorell.pdf

Plans Reference: P1
Date Received: 25/08/2023

GEOTECH 23-047

ROCK SOLID GEOTECHNICS PTY LTD

3/5/2023

CLIENT:

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Geotechnical Assessment

Subdivision of Land at 15 Gatehouse Drive, Sorell

This report assesses the onsite wastewater potential of the land designated for a subdivision at 15 Gatehouse Drive, Sorell. Malcolm Crawford has proposed a three-lot subdivision of the property (Figure 1).

It is proposed to subdivide the land into three blocks.

Lot A	1217m ²	Plate 1
Lot B	1195m ²	Plate 2
Lot – Balance of Land		Residence block (Plate 3)

The Sorell Council have requested the following;

- Provide a Site & Soil Evaluation Report in accordance with AS/NZS 1547-2012 detailing the site & soil conditions and the suitability for onsite wastewater disposal.
- Demonstrate compliance with 10.6.3 P2 – of the *Tasmanian Planning Scheme – Sorell 2022*.
 - 10.6.3 P2 states;
Each Lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must be capable of accommodating an on-site wastewater treatment system adequate for the future use and development of the land.

For this report, it is reasonable to assume that a likely future use of proposed Lots A and B is the development of a three-bedroom residence and associated infrastructure.

All of the proposed Lots can sustain an onsite wastewater system for a single, three-bedroom dwelling.

INVESTIGATION

A field survey was completed on Tuesday 4 April and Wednesday 26 April, 2023, encompassing field mapping of geological and geomorphological features and hazards to assess the site for onsite wastewater disposal potential.

Test holes were completed on each Lot utilising a 4WD mounted SAMPLA25 mechanical auger with 100mm diameter solid flight augers. The locations of the Test Holes are marked on Figure 1.

The 1:50000 Mines Department Geological Map "Sorell" indicates that the site is underlain by Tertiary basalt

The land designated for subdivision lies downslope and to the north of Gatehouse Drive. The new lots (Lots A & B) will be accessed via a driveway running down the western property boundary from Gatehouse Drive.

A stormwater drainage easement and open dam lies on the property to the immediate north of proposed Lots A & B.

Lot A - 1217m²

Lot A lies in the northeastern corner of the property. The block generally slopes at between 4 and 5 degrees to the northwest (Plate 1). The block is covered in grass pasture, and minor shrubs and trees. Open surface cracks in the topsoil were observed over the site.

The profile encountered in Test Hole A consisted of;

0.00 – 0.60m	sandy CLAY: high plasticity, black, to 20% fine to medium grained sand, trace roots & rootlets in upper 200mm
0.60 – 0.70m	gravelly SAND: fine to medium grained, brown, to 20% fine to medium angular basalt gravel, dry – EXTREMELY WEATHERED BASALT
0.70m+	Mechanical auger refusal on basalt bedrock

Groundwater was not encountered in the test hole.

The site is classified as CLASS 6 - CLAY (AS1547) w.r.t. onsite wastewater disposal. If a limiting layer is encountered within the upper 1m of the soil profile, then the area required must be calculated based on the requirements for Category 6 soil.

Lot A will require the utilisation of secondary treated wastewater effluent, most probably an Aerated Wastewater Treatment System (AWTS), preferably with a shallow sub-surface irrigation Land Application Area (LAA). On this site some sandy LOAM topsoil will need to be imported to enable installation of the dripline irrigation.

The size of the Land Application Area (LAA) / subsurface irrigation zone is conditional on the potential wastewater load entering the system and the permeability of the site. The potential wastewater load is determined by the number of bedrooms in the dwelling (as mentioned above this assessment is based on ensuring that each of the proposed blocks can sustain a residence with a minimum of three bedrooms).

A Design Irrigation Rate (DIR) of 2mm/day is appropriate (Class 6 CLAY / BEDROCK site).

3-bedroom residence	5 persons occupancy	
Reticulated water	150 litres/person/day	
Wastewater Load	5 x 150 litres/person/day	750 litres/day
Design Irrigation Rate (DIR)	2mm/day	Secondary treated effluent
Irrigation Area	$750 / 2 = 375m^2$	

Calculated size of the required wastewater LAA = 375m².

It is also prudent to note that any onsite wastewater system must be installed in accordance with the 2016 Director's Guidelines for Onsite Wastewater. The Director's compliance Table part 7 (Standards for Wastewater Land Application Areas) defines certain criteria that must be complied with when installing an onsite wastewater Land Application Area (LAA). Specifically critical to this site Criteria A3 states;

<p>A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</p>	<p>P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Complies with A3</p>
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Lot A can comply with A3, with the following boundary setbacks;

Secondary treated effluent

4° slope to northern property boundary

Setback required from lower-slope property boundary: $1.5m + (1m \times 4^\circ) = 5.5m$

Setbacks of the LAA of 1.5m are also required for the upslope and side-slope property boundaries.

Proposed Lot A has suitable area for a 375m² LAA.

Plate 1 – Lot A. Test Hole #A - Looking across-slope to the northeast.



Lot B - 1195m²

Lot B lies in the northwestern corner of the property. The block generally slopes at 4 degrees to the northwest (Plate 2). The block is covered in grass pasture, and minor shrubs and trees. Open surface cracks in the topsoil were observed over the site. The profile encountered in Test Hole B consisted of;

- | | |
|--------------|---|
| 0.00 – 0.95m | sandy CLAY: high plasticity, black, to 20% fine to medium grained sand, trace roots & rootlets in upper 200mm |
| 0.95 – 1.10m | gravelly SAND: fine to medium grained, brown, to 20% fine to medium angular basalt gravel, dry – EXTREMELY WEATHERED BASALT |
| 1.10m+ | Mechanical auger refusal on basalt bedrock |

Groundwater was not encountered in the test hole.

The site is classified as CLASS 6 - CLAY (AS1547) w.r.t. onsite wastewater disposal.

Lot B will require the utilisation of secondary treated wastewater effluent, most probably an Aerated Wastewater Treatment System (AWTS), preferably with a shallow sub-surface irrigation Land Application Area (LAA). On this site some sandy LOAM topsoil will need to be imported to enable installation of the dripline irrigation.

The size of the Land Application Area (LAA) / subsurface irrigation zone is conditional on the potential wastewater load entering the system and the permeability of the site. The potential wastewater load is determined by the number of bedrooms in the dwelling (as mentioned above this assessment is based on ensuring that each of the proposed blocks can sustain a residence with a minimum of three bedrooms).

A Design Irrigation Rate (DIR) of 2mm/day is appropriate (Class 6 CLAY site).

3-bedroom residence	5 persons occupancy	
Reticulated water	150 litres/person/day	
Wastewater Load	5 x 150 litres/person/day	750 litres/day
Design Irrigation Rate (DIR)	2 mm/day	Secondary treated effluent
Irrigation Area	$750 / 2 = 375m^2$	

Calculated size of the required wastewater LAA = 375m².

It is also prudent to note that any onsite wastewater system must be installed in accordance with the *2016 Director's Guidelines for Onsite Wastewater*. The Director's compliance Table part 7 (Standards for Wastewater Land Application Areas) defines certain criteria that but be complied with when installing an onsite wastewater Land Application Area (LAA). Specifically critical to this site Criteria A3 states;

<p>A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</p>	<p>P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Complies with A3</p>
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Lot B can comply with A3, with the following boundary setbacks;

Secondary treated effluent

4° slope to northern property boundary

Setback required from lower-slope property boundary: $1.5m + (1m \times 4^\circ) = 5.5m$

Setbacks of the LAA of 1.5m are also required for the upslope and side-slope property boundaries.

Proposed Lot A has suitable area for a 375m² LAA.

Plate 2 – Lot B. Looking down-slope to the northwest.



Lot – Balance of Land

The current 3-bedroom residence will be retained on the Balance of Land portion of the property. The residence is currently serviced with an onsite wastewater system consisting of;

- Blackwater collected in a septic tank and discharging to trenches / raised bed sited to the north of the residence.
- Greywater discharging to absorption trenches.

The trenches will be impacted by the proposed subdivision, so the current onsite wastewater system will need to be changed. The system has not been functioning well (likely due to the extremely low permeability of the subsoils (Class 6 CLAY)). It is proposed to decommission and replace the current system. The new, proposed system design is the subject of the accompanying Onsite Wastewater Assessment / System Design (GEOTECH 23-048).

The block generally slopes at 4 degrees to the northwest (Plate 3). The block is covered in grass, and minor shrubs and trees. Open surface cracks in the topsoil were observed over the site.

The profile encountered in Test Hole B consisted of;

0.00 – 0.65m	sandy CLAY: high plasticity, black, to 20% fine to medium grained sand, trace roots & rootlets in upper 200mm
0.65 – 1.60m	gravelly SAND: fine to medium grained, brown, to 20% fine to medium angular basalt gravel, dry – EXTREMELY WEATHERED BASALT
1.60m+	Mechanical auger refusal on basalt bedrock

Groundwater was not encountered in the test hole.

The site is classified as CLASS 6 - CLAY (AS1547) w.r.t. onsite wastewater disposal.

The site will require the utilisation of secondary treated wastewater effluent, most probably an Aerated Wastewater Treatment System (AWTS), preferably with a shallow sub-surface irrigation Land Application Area (LAA). On this site some sandy LOAM topsoil will need to be imported to enable installation of the dripline irrigation.

A Design Irrigation Rate (DIR) of 2mm/day is appropriate (Class 6 CLAY site).

3-bedroom residence	5 persons occupancy	
Reticulated water	150 litres/person/day	
Wastewater Load	5 x 150 litres/person/day	750 litres/day
Design Irrigation Rate (DIR)	2mm/day	Secondary treated effluent
Irrigation Area	$750 / 2 = 375m^2$	

Calculated size of the required wastewater LAA = 375m².

It is also prudent to note that any onsite wastewater system must be installed in accordance with the 2016 Director's Guidelines for Onsite Wastewater. The Director's compliance Table part 7 (Standards for Wastewater Land Application Areas) defines certain criteria that but be complied with when installing an onsite wastewater Land Application Area (LAA). Specifically critical to this site Criteria A3 states;

<p>A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</p>	<p>P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Complies with A3</p>
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The block can comply with A3, with the following boundary setbacks;

Secondary treated effluent

4° slope to northern property boundary

Setback required from lower-slope property boundary: $1.5m + (1m \times 4^\circ) = 5.5m$

Setbacks of the LAA of 1.5m are also required for the upslope and side-slope property boundaries.

This proposed block has suitable area for a 375m² LAA.

Plate 3 – Lot Balance of Land. Test Hole #C - Looking across-slope to the northeast.



ONSITE WASTEWATER SUITABILITY

All Lots are classified as Class 6 (CLAY or BEDROCK) in accordance with Australian Standard AS1547:2012 and the 2016 Building Act – *Director’s Guidelines for Onsite Wastewater Systems*.

The 2016 Building Act – *Director’s Guidelines for Onsite Wastewater Systems* define the minimum area required for Onsite Wastewater Land Application Areas (LAA) depending on the site permeability, the quality of effluent disposal (primary or secondary), and the slope of the land.

130m² of LAA is required per bedroom for a site with a slope of <10%. Therefore, the maximum required LAA for a three-bedroom residence on any of these proposed blocks is 390m².

The type, size and position of onsite wastewater system will need to be determined by site specific investigation, when the details of the individual developments are determined. All the proposed blocks will require the installation of systems that treat the effluent to a secondary treated level.

Each of the proposed Lots can sustain an onsite wastewater system for a single, three-bedroom dwelling.

SITE AND SOIL EVALUATION REPORT

<u>Soil Category:</u> (as stated in AS/NZS 1547-2000) 1,...2,...3,...4,...5,...6	Modified Emerson Test Required If Yes, Emerson Class No.	No
<u>Soil Profile:</u>	The locations of the test holes are nominated on the site plan.	
<u>Measured or Estimated Soil Permeability (m/d):</u>	<0.06m/d	
Design Irrigation Rate (DIR)	2mm/day (Secondary Treated Effluent)	
<u>Geology:</u>	Tertiary basalt.	

<u>Slope:</u>	4 degrees
<u>Drainage lines / water courses:</u>	Nil
<u>Vegetation:</u>	Grass
<u>Site History: (land use)</u>	Residential block

<u>Aspect:</u>	NW
<u>Pre-dominant wind direction:</u>	Northwest to southwest
<u>Site Stability:</u> Will on-site wastewater disposal affect site stability?	No
<u>Is geological advice required?</u>	No
<u>Drainage/Groundwater:</u>	Not encountered
<u>Depth to seasonal groundwater (m):</u>	Not Encountered
<u>Are surface or sub-surface drains required upslope of the land application area</u>	Yes
<input checked="" type="checkbox"/> Public Supply	
<u>Date of Site Evaluation:</u>	4/4/2023
<u>Weather Conditions:</u>	Fine

CONDITIONS OF INVESTIGATION

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The results & interpretation of conditions presented in this report are current at the time of the investigation only. The investigation has been conducted in accordance with the specific client's requirements &/or with their servants or agent's instructions. This report contains observations & interpretations based often on limited subsurface evaluation. Where interpretative information or evaluation has been reported, this information has been identified accordingly & is presented based on professional judgement. RSG does not accept responsibility for variations between interpreted conditions & those that may be subsequently revealed by whatever means.

Due to the possibility of variation in subsurface conditions & materials, the characteristics of materials can vary between sample & observation sites. RSG takes no responsibility for changed or unexpected variations in ground conditions that may affect any aspect of the project. The classifications in this report are based on samples taken from specific sites. The information is not transferable to different sites, no matter how close (ie if the development site is moved from the original assessment site an additional assessment will be required).

It is recommended to notify the author should it be revealed that the sub-surface conditions differ from those presented in this report, so additional assessment & advice may be provided.

Investigations are conducted to standards outlined in Australian Standards:

- AS1726-1993: Geotechnical Site Investigations
- AS1547-2012: Onsite Domestic Wastewater Management

& as specified in 'Guidelines for Geotechnical Assessment of Subdivisions and Recommended Code of Practise for Site Classification to AS2870 in Tasmania' - Institute of Engineers, Tasmanian Division.

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RECCOMENDATIONS

All proposed Lots can sustain onsite wastewater systems for single, three-bedroom dwellings, in compliance with the *Land Use Planning and Approvals Act 1993* and the *Tasmanian Planning Scheme – Sorell Council*.



PETER HOFTO

ROCK SOLID GEOTECHNICS PTY LTD



77m

B. 1195m²

35.7m

A. 1217m²

34m

6m wide, 190m²

7m wide, 720m²



GATEHOUSE DRIVE

GEOTECH 23-048

Malcolm Crawford
tal62@iprimus.com.au

3/5/2023

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Onsite Wastewater System Design – 15 Gatehouse Drive, Sorell

Below find the assessment to determine of the type and size of wastewater treatment system, and the allocation of a Land Application Area (LAA) for the 3-bedroom residence at 15 Gatehouse Drive, Sorell (Figure 1). This assessment should be read in conjunction with Site & Soil Evaluation Report (GEOTECH 23-048) - enclosed.

The current, 3-bedroom residence has an onsite wastewater system that consists of:

- Blackwater collected in a septic tank and discharging to trenches / raised bed sited to the north of the residence.
- Greywater discharging to absorption trenches.

The system has not been functioning well (likely due to the extremely low permeability of the subsoils (Class 6 CLAY). It is proposed to decommission and replace the current system.

The block generally slopes at 4 degrees to the northwest (Plate 3). The block is covered in grass, and minor shrubs and trees. Open surface cracks in the topsoil were observed over the site.

The profile encountered in Test Hole B consisted of;

0.00 – 0.65m	sandy CLAY: high plasticity, black, to 20% fine to medium grained sand, trace roots & rootlets in upper 200mm
0.65 – 1.60m	gravelly SAND: fine to medium grained, brown, to 20% fine to medium angular basalt gravel, dry – EXTREMELY WEATHERED BASALT
1.60m+	Mechanical auger refusal on basalt bedrock

Groundwater was not encountered in the test hole.

The site is classified as CLASS 6 - CLAY (AS1547) w.r.t. onsite wastewater disposal.

The site will require the utilisation of secondary treated wastewater effluent via an Aerated Wastewater Treatment System (AWTS), with a shallow sub-surface irrigation Land Application Area (LAA). On this site some sandy LOAM topsoil will need to be imported to enable installation of the dripline irrigation.

A Design Irrigation Rate (DIR) of 2mm/day is appropriate (Class 6 CLAY site).

3-bedroom residence	5 persons occupancy	
Reticulated water	150 litres/person/day	
Wastewater Load	5 x 150 litres/person/day	750 litres/day
Design Irrigation Rate (DIR)	2mm/day	Secondary treated effluent
Irrigation Area	$750 / 2 = 375m^2$	

Calculated size of the required wastewater LAA = 375m². It is proposed to install 2 x 190m² Irrigation Zones, intermittently dosed utilising an Indexing Valve.

It is proposed to add 150mm of sandy LOAM to the site to assist with installation of the pipework. This site modification will require approximately 60m³ of sandy LOAM.

Plate 1 – Looking across-slope to the northeast – proposed LAA.



Compliance with the 2016 Director's Guidelines for Onsite Wastewater Disposal

Compliance Table		Directors Guidelines for OSWM
Acceptable Solutions	Performance Criteria	Compliance achieved by
<p>7. Standards for Wastewater Land Application Areas</p> <p>A1 Horizontal separation distance from a building to a LAA must comply with one of the following: a) be no less than 6m; b) be no less than: (i) 3m from an upslope boundary or level building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.</p>	<p>P1 The LAA is located so that the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.</p>	<p>Complies with A1</p> <p>Distance between residence & LAA >3.</p>
<p>A2 Horizontal separation distance from downslope surface water to a LAA must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.</p>	<p>P2 Horizontal separation distance from downslope surface water to a LAA must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Complies with A2</p> <p>LAA 100m from downslope surface water.</p>
<p>A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</p>	<p>P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Complies with P3</p> <p>LAA 1.5m from side-slope property boundary. ⁴⁰ slope. Secondary treated effluent. Lower slope boundary required; $1.5m + (1m \times 4^\circ) = 5.5m$ Measured down the slope</p>
<p>A4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.</p>	<p>P4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable.</p>	<p>Complies with A4</p> <p>No known potable bores within 50m of the site.</p>

<p>A5 Vertical separation distance between groundwater & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent</p>	<p>P5 Vertical separation distance between groundwater and a LAA must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable.</p>	<p>Complies with A5 Groundwater encountered: not</p>
<p>A6 Vertical separation distance between a limiting layer & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent</p>	<p>P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.</p>	<p>Complies with A6 Secondary treated effluent. Separation > 0.50m.</p>

LAND APPLICATION AREA

The Land Application Area should be constructed as per the following specifications:

- Establishment and maintenance of a minimum of 375m² of LAA in 2 x 190m² zones.
- The area is to consist of sub-surface irrigation under designated lawns.
- Landscaping of the irrigation area is to be maintained in good order at all times. Such maintenance includes the mowing of the lawns.
- The irrigation area is not to be used for growing vegetables.
- The drip lines must be rated for use with wastewater (pressure compensated), and organized to cover the entire 2 x 190m² zones @ 0.8m spacings.
- The driplines should be covered with a minimum of 150mm thickness of sandy LOAM.
- Vacuum Breaker Valves should be provided at the high point of the LAAs, and placed in Valve boxes to enable inspection.
- Flush Valves should be provided for the LAAs, with piping returning the flush water to the treatment plant. The Flush Valves are to be installed in Valve boxes to allow inspection and servicing.
- An inline strainer (150-200 mesh) is to be installed to prevent solids from entering the irrigation system.
- The area should not be driven on, as compaction of the subsurface driplines will render the system unserviceable.
- A 200mm high and 300mm wide earth bund should be constructed immediately upslope from the LAA to divert overground water flow to the northwest.



77m

35.7m

34m

B. 1195m²

A. 1217m²

6m wide, 190m²

7m wide, 720m²

GATEHOUSE DRIVE





1:500

77m

B. 1195m²

35.7m

A. 1217m²

34m

6m wide, 190m²

12.5m
30m

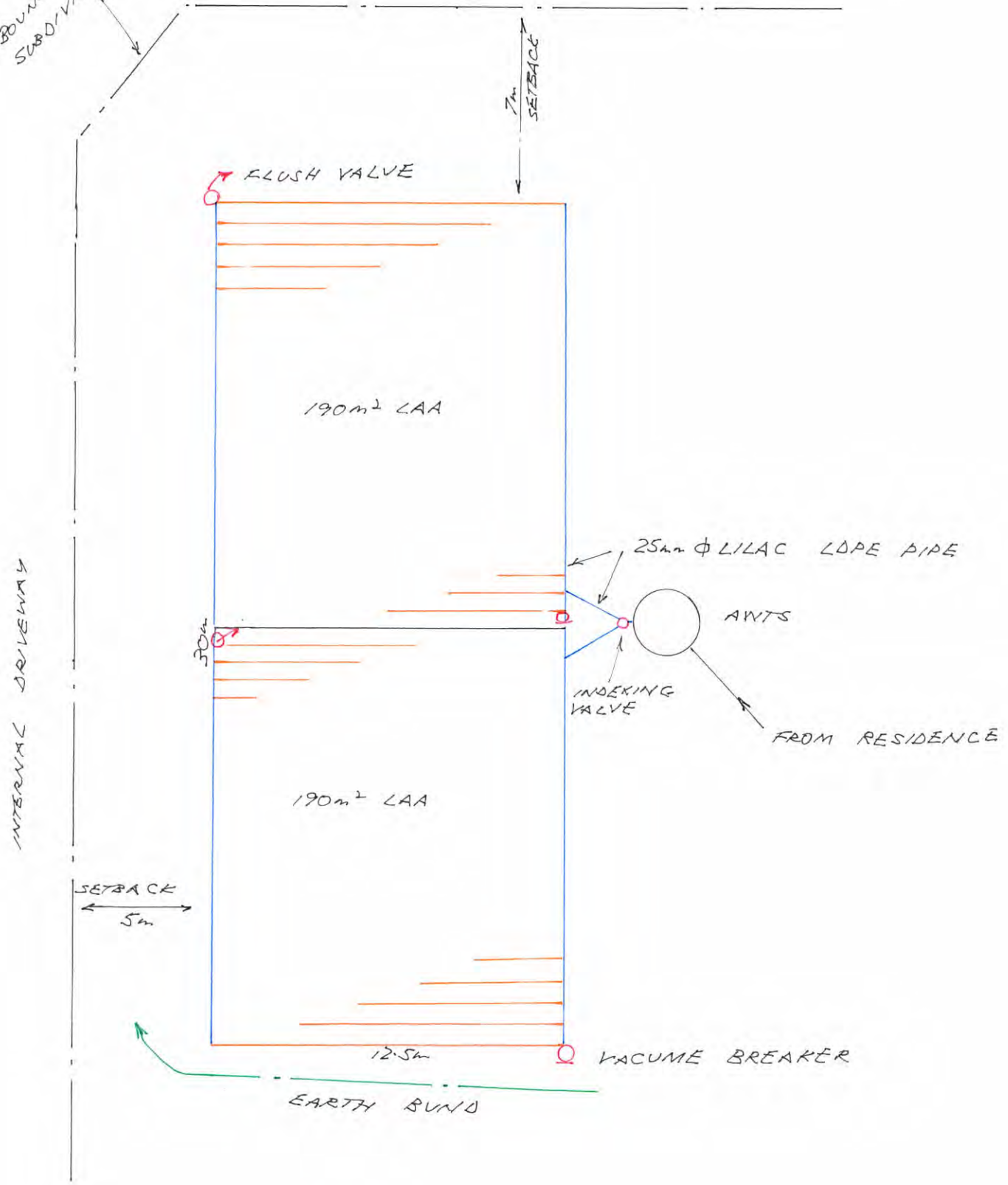
7m wide, 720m²

#15

GATEHOUSE DRIVE

BOUNDARIES SUBJECT TO
SUBDIVISION APPLICATION

PLAN LAA
1:200



SITE AND SOIL EVALUATION REPORT

<u>Soil Category:</u> (as stated in AS/NZS 1547-2000) 1,...2,...3,...4,...5,...6	Modified Emerson Test Required If Yes, Emerson Class No.	No
<u>Measured or Estimated Soil Permeability (m/d):</u>	<0.06m/d	
Design Irrigation Rate (DIR)	2mm/day (Secondary Treated Effluent)	
<u>Geology:</u>	Tertiary basalt.	
<u>Slope:</u>	4 degrees to the northwest.	
<u>Drainage lines / water courses:</u>	Nil	
<u>Vegetation:</u>	Grass, minor trees	
<u>Site History: (land use)</u>	Residential block	
<u>Aspect:</u>	Northwest	
<u>Pre-dominant wind direction:</u>	Northwest to southwest	
<u>Site Stability:</u> Will on-site wastewater disposal affect site stability?	No	
<u>Is geological advice required?</u>	No	
<u>Drainage/Groundwater:</u>	Not encountered	
<u>Depth to seasonal groundwater (m):</u>	Not Encountered	
<u>Are surface or sub-surface drains required upslope of the land application area</u>	Yes – earth bund	
<input checked="" type="checkbox"/> Town Supply		
<u>Date of Site Evaluation:</u>	4/4 and 26/4/2023	
<u>Weather Conditions:</u>	Fine	

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
 Section 106
 Section 129
 Section 155

Form **35**

To: Owner name

Address

Designer details:

Name: Category:

Business name: Phone No:

Business address:

Fax No:

Licence No: Email address:

Details of the proposed work:

Owner/Applicant Designer's project reference No.

Address: Lot No:

Type of work: Building work Plumbing work

Description of the Design Work (Scope, limitations or exclusions): *(X all applicable certificates)*

Certificate Type:	Certificate	Responsible Practitioner
	X Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer

<input type="checkbox"/> Other (specify)		
Deemed-to-Satisfy: X	Performance Solution: <input type="checkbox"/> (<i>X the appropriate box</i>)	
Drawing numbers:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/5/2023
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/5/2023
Computations:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/5/2023
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/5/2023

Standards, codes or guidelines relied on in design process:	
AS1547-2012	
BUILDING ACT 2016	

Attribution as designer:	
--------------------------	--

I PETER HOFTO – ROCK SOLID GEOTECHNICS P/L am responsible for the design of that part of the work as described in this certificate;

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2016* and sufficient detail for the builder or plumber to carry out the work in accordance with the documents and the Act;

This certificate confirms compliance and is evidence of suitability of this design with the requirements of the National Construction Code.

	<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
Designer:	<input type="text" value="PETER HOFTO"/>	<input type="text" value="PHO"/>	<input type="text" value="3/5/2023"/>
Licence No:	<input type="text" value="CC 6159I"/>		

Assessment of Certifiable Works: (TasWater)

Note: single residential dwellings and outbuildings on a lot with an existing sewer connection are not considered to increase demand and are not certifiable.

If you cannot check ALL of these boxes, LEAVE THIS SECTION BLANK.

TasWater must then be contacted to determine if the proposed works are Certifiable Works.


I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- The works will not increase the demand for water supplied by TasWater
- The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- The works will not damage or interfere with TasWater's works
- The works will not adversely affect TasWater's operations
- The works are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- I have checked the LISTMap to confirm the location of TasWater infrastructure
- If the property is connected to TasWater's water system, a water meter is in place, or has been applied for to TasWater.

Certification:

I PETER HOFTO – ROCK SOLID GEOTECHNICS P/L being responsible for the proposed work, am satisfied that the works described above are not Certifiable Works, as defined within the *Water and Sewerage Industry Act 2008*, that I have answered the above questions with all due diligence and have read and understood the Guidelines for TasWater CCW Assessments. Note: The Guidelines for TasWater Certification of Certifiable Works Assessments are available at: www.taswater.com.au

Designer:

<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
PETER HOFTO		3/5/2023

Malcolm Crawford
talc62@iprimus.com.au

ROCK SOLID GEOTECHNICS PTY LTD
Peter Hofto
163 Orielton Rd
Orielton
TAS 7172
0417960769
peter@rocksolidgeotechnics.com.au

3/5/2023

Loading Certificate for Onsite Wastewater System - 15 Gatehouse Drive, Sorell

- 1 System Capacity: (medium/long term)
 - 5 persons total 750 litres/day

- 2 Design Criteria Summary:
 - Secondary Treated Effluent Aerated Wastewater Treatment System (AWTS)
 - Soil Category Class 6 CLAY + 150mm additional LOAM
 - Land Application System 375m² of subsurface irrigation

- 3 Reserve Area:
 - Suitable reserve area if required in the future.

- 4 Variation from design flows etc:
 - The system should successfully assimilate additional peak loadings which may result from occasional social gatherings provided that this does not exceed use by more than 10 persons in a 24-hour period. Visitors should be advised of the requirement to minimise time spent in showers, not unduly running taps, and other common-sense water conservation measures.

- 5 Consequences of overloading the system:
 - Long term use by more than 5 residents or equivalent may result in overloading of the system, surfacing of effluent, public and environmental health nuisances, pollution of surface water etc.

- 6 Consequences of under-loading the system:
 - Nil.

- 7 Consequences of lack of operation, maintenance and monitoring attention:
 - The AWTS must be maintained by a contracted maintenance provider.

Peter Hofto

Rock Solid Geotechnics Pty Ltd

CONDITIONS OF INVESTIGATION

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This report should not be used for submission for Building or Development Application until RSG has been paid in full for its production. RSG accepts no liability for the contents of this report until full payment has been received.

The results & interpretation of conditions presented in this report are current at the time of the investigation only. The investigation has been conducted in accordance with the specific client's requirements &/or with their servants or agent's instructions.

This report contains observations & interpretations based often on limited subsurface evaluation. Where interpretative information or evaluation has been reported, this information has been identified accordingly & is presented based on professional judgement. RSG does not accept responsibility for variations between interpreted conditions & those that may be subsequently revealed by whatever means. Due to the possibility of variation in subsurface conditions & materials, the characteristics of materials can vary between sample & observation sites. RSG takes no responsibility for changed or unexpected variations in ground conditions that may affect any aspect of the project. The classifications in this report are based on samples taken from specific sites. The information is not transferable to different sites, no matter how close (ie. if the development site is moved from the original assessment site an additional assessment will be required).

It is recommended to notify the author should it be revealed that the sub-surface conditions differ from those presented in this report, so additional assessment & advice may be provided.

- **AS1547-2012: Onsite Domestic Wastewater Management**

Any assessment that has included an onsite wastewater system design will require a further site visit / inspection once the system has been installed. **It is the responsibility of the client / plumber to inform the author as to when the wastewater system is being installed, and to arrange the final inspection.** After the inspection to verify that the system has been installed as per RSG's design a statement will be provided. An additional fee applies for the site visit & issuing the certificate.

RSG is not responsible for the correct installation of wastewater systems. Any wastewater installation is the sole responsibility of the owner/agent and certified plumber. Any variation to the wastewater design must be approved by RSG, and an amended Special Plumbing Permit obtained from the relevant council. The registered plumber must obtain a copy and carefully follow the details in the council issued Special Plumbing Permit. A "Certificate of Completion" will be based on surface visual inspection only, to verify the location of the system. All underground plumbing works are the responsibility of the certified plumber.

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PETER HOFTO

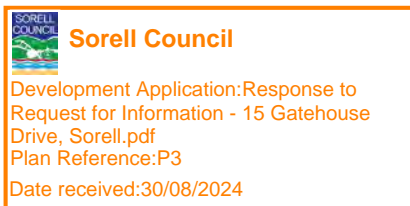
ROCK SOLID GEOTECHNICS PTY LTD

Bushfire Risk Assessment and Management Measures

Proposed Residential Subdivision

15 Gatehouse Drive, Sorell

Title Reference: 39266/6



August 2024

AVK Environmental Management

Bushfire Risk Assessment and Management Measures

Proposed Residential Subdivision

15 Gatehouse Drive, Sorell

Title Reference: 39266/6

Owner: M. A. Crawford

Site inspected by: Axel von Krusenstierna **On:** 15 Jun 2023

Plan prepared by: Axel von Krusenstierna **TFS Accreditation No:** BFP-100

Plan certified: *A. von Krusenstierna* **Date:** 20 August 2024

AVK Environmental Management

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Appendices: Subdivision plan

Bushfire hazard management plan

Certificate of Compliance with the Bushfire Prone Areas Code

LIMITATIONS

- If correctly implemented and maintained for the life of the development, the bushfire risk reduction measures in this report will reduce the bushfire risk to the proposed development to a level considered acceptable in Tasmania. They will not guarantee that buildings will not be damaged or destroyed by bushfire in all circumstances, particularly when the Fire Danger Rating is Severe or higher. The bushfire risk can be further reduced by increasing the width of the hazard management area, constructing buildings to a higher Bushfire Attack Level in Australian Standard 3959 – 2018 and reducing nearby fire hazards.
- The BAL classification may change if the conditions on and surrounding the site change from those noted in the report.
- This report may only be used for the purpose for which it was commissioned.
- This report is not an authority to clear land. Vegetation clearing for bushfire protection recommended in this report may require permits and approvals from various authorities.

EXECUTIVE SUMMARY

DEVELOPMENT LOCATION

Lot 39266/6 (15 Gatehouse Drive) on the northern outskirts of Sorell.

PROPOSED DEVELOPMENT

Subdivision of Lot 39266/6 into 2 new residential lots with sizes of 2068m² and 2023m², and a balance lot of 5296m² (see attached subdivision plan). The existing dwelling on the property would be retained on the balance lot.

SITE DESCRIPTION

The proposed new lots are located at the rear of an existing developed lot on the northern side of Sorrell and have a slight north-westerly aspect. The proposed lots are in a broad valley surrounded by other cleared and developed lots. Slopes on the proposed new lots are in the 0 to 5 degree range. The vegetation on the proposed new lots is currently mown grass.

The proposed subdivision is on land zoned "Low Density Residential" in the Tasmanian Planning Scheme – Sorell.

FLORA, FAUNA AND PLANT COMMUNITIES OF CONSERVATION VALUE

15 Gatehouse Drive has been cleared and is managed as a garden with mainly exotic plants. There are no records of any threatened flora or fauna species on or near the lot in the Natural Values Atlas.

BUSHFIRE RISK

The proposed subdivision is within the Bushfire Prone Land overlay of the Tasmanian Planning Scheme – Sorell. As the proposed subdivision is on the northern side of Sorell with higher density developments to the west and south, the major bushfire threat would come from fires approaching across the larger "Rural Living" lots to the north and "Low Density Residential" lots to the east. Fire approach from the north and east would be slightly downslope.

The last major bushfire in the area was one of the large fires burning on 7 February 1967 when the area was much less developed.

The proposed new lots would be accessed via an approximately 120m long private driveway from Gatehouse Drive, a sealed, 2-way, through road.

The level of bushfire risk on and surrounding the site of the proposed subdivision is not considered to preclude the proposed development provided the bushfire risk reduction measures recommended in this report are incorporated into the development.

REQUIREMENTS (SEE SECTION 6 FOR FURTHER DETAILS)

The proposed subdivision can meet the acceptable solutions in the Bushfire-prone Areas Code in the Tasmanian Planning Scheme – Sorrell.

Building Construction

1. All new Class 1 to 9 buildings (and any Class 10 buildings within 6m of a Class 1 to 9 building) to be constructed to BAL-19 specifications in AS 3959-2018 Construction of Buildings in Bushfire-prone Areas.

Hazard Management Area

2. Maintenance of the minimum hazard management area for BAL-19 around future Class 1 to 9 buildings (and any Class 10 buildings within 6m of a Class 1 to 9 building) as specified in Section 6.1 of this report.
3. An agreement under Part 5 of the *Land Use Planning and Approvals Act 1993* be entered into to allow the owner of new Lot 1 to maintain the portion of the hazard management area required for BAL-19 on the adjoining Lot 2 if Lot 2 has not been developed before Lot 1.
4. Any landscaping within the hazard management area around future dwellings should create a living fuel component that is both discontinuous and of low flammability, any dead fuel should be regularly removed (see Section 6.1.1).

Access for Fire Brigade Vehicles

5. Subdivision access driveway to the new lots to be constructed to the specifications in Section 6.2 of this report.

Water Supply for Fire Fighting

6. The proposed subdivision will be provided with a reticulated water supply. A new fire hydrant will be installed on the DN100 water main extension on the side of Gatehouse Drive opposite the driveway to the existing dwelling. This would provide a compliant firefighting water supply for the existing dwelling, however the distance of this hydrant to the proposed new lots exceeds the maximum 120m. Therefore each new dwelling on new Lots 1 & 2 require a minimum 10,000 litre stored water supply dedicated for fire fighting to the specifications in Section 6.3 of this report. The supply must be accessible by fire brigade vehicles.

Limitations and Maintenance

7. The bushfire protection measures recommended in this report are the minimum requirements for buildings in this location when the forest fire danger rating is Very High. The effectiveness of the bushfire protection measures incorporated into the development will be reduced if they are not properly maintained.

1 Introduction

This revised report has been prepared for M. A. Crawford of 15 Gatehouse Drive, Sorell, by AVK Environmental Management. It evaluates the bushfire risks associated with the proposed subdivision of Lot 39266/6 (15 Gatehouse Drive) due to any bushfire hazard on, or surrounding, the site of the subdivision and replaces an earlier report dated 8 August 2023. The revision was required due to changes in the size of the proposed new lots and an upgraded water supply

This report includes an assessment of the bushfire hazard on the site of the proposed subdivision and its immediate surrounds, and recommended measures to reduce the risk of loss of life and property during bushfires. The report also takes into account any constraints on the siting of building areas due to natural values and other hazards.

1.1 Proposed Development

The proposed development involves subdivision of Lot 39266/6 into 2 new residential lots with sizes of 2068m² (Lot 1), 2023m² (Lot 2) and a balance lot of approximately 5296m². The existing dwelling on the property would be retained on the balance lot.

1.2 Site Description

The proposed subdivision is located on the northern outskirts of the town of Sorell and has an overall north-westerly aspect (see location map in Section 4). Slope on the property is in the 0 to 5 degree range. Altitude ranges from approximately 30m in the northwest to 40m on the south-eastern boundary.

The proposed new lots are on land zoned "Low Density Residential" in the Tasmanian Planning Scheme – Sorell.

The proposed subdivision is included in the following code overlays:

- Bushfire-prone areas
- Safeguarding of airports (airport obstacle limitation area).

1.2.1 Vegetation

The area of the proposed subdivision is on the side of a shallow valley. The proposed new lots are on an existing cleared and developed lot. The two new lots are surrounded by cleared land on developed lots ranging in size from around 0.5ha to 1.3ha. The predominant vegetation is grass with some scattered trees and shrubs, mostly garden plantings (see aerial photo in Section 4 and site photos in Section 5).

1.3 Natural Values

15 Gatehouse Drive has been cleared and is managed as a garden with mainly exotic plants. There are no records of any threatened flora or fauna species on or near the lot in the Natural Values Atlas. No native vegetation would need to be cleared for the proposed subdivision. The property is not subject to the Natural Areas Code of the Tasmanian Planning Scheme – Sorell.

2 Bushfire-Prone Land

The proposed subdivision and adjoining properties to the north, east and west are within the Bushfire-prone Land overlay of the Tasmanian Planning Scheme – Sorell and therefore the Bushfire-Prone Areas Code in the Tasmanian Planning Scheme – Sorell applies to the proposed subdivision.

Due to the bushfire hazard on and surrounding the proposed subdivision it is not considered to be exempt from the Bushfire-prone Areas Code under Clause 13.4.1(a) of the Code.

The Bushfire-Prone Areas Code provides development standards for subdivisions that include acceptable solutions for:

- hazard management areas
- roads and property access
- fire trails
- water supply for fire fighting purposes

Compliance with these requirements is addressed in Section 6 of this report and the attached bushfire hazard management plan.

3 Bushfire Hazard and Risk Assessment

Fire History

Tasmania Fire Service records show that the last major bushfire in the area was one of the large fires burning on 7 February 1967. It is likely the area was far less developed at that time.

Bushfire Hazard

Bushfire hazard is a combination of slope and fine fuel loads. The vegetation on the proposed subdivision is mown grass with a few shrubs. The remainder of the garden around the existing dwelling would be retained on the balance lot. The fuel hazard on the surrounding lots is similar, however there was evidence of tree and shrub planting on the recently developed larger lots to the north. This could lead to an increase in the bushfire hazard if the current maintenance of surface and near surface fuels is neglected in the future (see aerial photo in Section 4).

Bushfire Attack

The proposed subdivision is on the northern side of Sorell with higher density developments with low threat vegetation further to the west and south. Therefore the major bushfire threat to future dwellings on the proposed new lots would come from fires approaching across the larger “Rural Living” lots to the north and “Low Density Residential” lots to the east. Fire approach from the north and east would be slightly downslope.

Overall Risk Assessment

The level of bushfire risk on and surrounding the site of proposed development is not considered to preclude the proposed subdivision provided the bushfire risk reduction measures recommended in this report are incorporated into the development.

4 Site Location Map



Arrow shows the location of the proposed 2 lot subdivision
FH - existing fire hydrant

5 Photos of the Site



Site of the proposed subdivision looking north across proposed new Lot 1.



Looking west across proposed Lot 1 from proposed Lot 2



Looking north across proposed Lot 2



Looking west across the balance lot from proposed Lot 1

6 Bushfire Protection Measures for the Residential Lots

Appropriate bushfire protection measures have been determined with reference to Australian Standard (AS) 3959-2018 Construction of Buildings in Bushfire-prone Areas and Planning Directive No. 5.1 Bushfire-prone Areas Code (2022).

6.1 Hazard Management Area

Explanation

The Bushfire-prone Areas Code requires class 1 to 9 buildings in bushfire-prone areas to be constructed to AS 3959-2018 and to have a hazard management area with the minimum dimensions required for the specified Bushfire Attack Level (BAL) in AS 3959-2018.

The hazard management area extends outwards from the walls of the building being protected and provides a space around the building with minimal fine fuel that protects it from direct flame contact and intense radiant heat thereby allowing it to be defended from lower intensity bushfires. Fine fuel consists of dead plant matter less than 6mm in diameter and live plant matter less than 2mm in diameter (including grasses, bracken, leaves, bark, and twigs and branches). The hazard management area also reduces the risk of wind-blown burning debris from bushfires starting spot fires close to buildings.

The Bushfire-prone Areas Code allows hazard management areas to be located on land external to the proposed subdivision if the application is accompanied by the written consent of the owner of that land to enter into an agreement under Part 5 of the *Land Use Planning and Approvals Act 1993* that will be registered on the title of the neighbouring property providing for the affected land to be managed in accordance with the bushfire hazard management plan.

Assessment of the Proposed Subdivision

The acceptable solution for hazard management areas in new subdivisions in table E1.6.1 of the Bushfire-prone Areas Code is for the proposed plan of subdivision to show hazard management areas between bushfire-prone vegetation and each building area that have dimensions equal to, or greater than, the separation distances required for BAL-19 in Table 2.6 of AS 3959-2018.

The required hazard management area has been determined using Method 1 as described in Section 2 of AS 3959-2018. Using this method the required minimum width of the hazard management area varies with the surrounding vegetation class and slope as set out in Table 2.6 of AS 3959-2018. The minimum widths of the hazard management areas required for BAL-19 construction for different hazard (fuel) types and slopes is shown below:

VEGETATION (HAZARD) TYPE	LOCATION OF THE HAZARD RELATIVE TO THE BUILDING				
	Upslope or flat land	Downslope >0° to 5°	Downslope >5° to 10°	Downslope >10° to 15°	Downslope >15° to 20°
Forest	23 m	27 m	34 m	41 m	51 m
Woodland	15 m	18 m	23 m	28 m	36 m
Shrubland	13 m	15 m	17 m	19 m	22 m
Scrub	19 m	22 m	24 m	28 m	31 m
Grassland	10 m	11 m	13 m	15 m	17 m

The vegetation on existing Lot 39266/6 (15 Gatehouse Drive), and the immediately surrounding lots, is currently well managed and considered to be low threat vegetation as defined in Clause 2.2.3.2 of AS 3959-2018. However this may change if surrounding landowners neglect regular maintenance so a “grassland” vegetation type as described in Table 2.3 of AS 3959-2018 has been used to determine the minimum hazard management area widths for BAL-19 for the building areas in the proposed subdivision. A hazard management area has also been determined for the existing dwelling that will be retained on the balance lot in order to show that the proposed subdivision will not compromise hazard management for the existing dwelling. As this dwelling and nearby sheds were not constructed to AS 3959, a hazard management area for BAL-12.5 has been used to provide a reasonable degree of bushfire risk reduction.

Hazard management area (HMA) widths

Lot number	Direction	Hazard type	Hazard location	HMA width
1 BAL-19	N	grassland	flat land	10m
	S	grassland	upslope	10m
	E	grassland	upslope	10m
	W	grassland	downslope 0° to 5°	11m
2 BAL-19	N	grassland	flat land	10m
	S	grassland	upslope	10m
	E	grassland	upslope	10m
	W	grassland	downslope 0° to 5°	11m
Balance lot BAL-12.5	N	grassland	downslope 0° to 5°	16m
	S	grassland	upslope	14m
	E	grassland	upslope	14m
	W	grassland	downslope 0° to 5°	16m

Where the hazard is on an adjoining lot, these distances are the minimum setback of the building from the lot boundary, except where the hazard management area would overlap with a hazard management area on the adjoining lot or an area that does not contain bushfire prone vegetation. The hazard management areas for a 10m by 15m building envelope on new Lot 2 and the existing dwelling on the balance lot can be provided within each lot. The hazard management area for the proposed 10m by 15m building envelope on new Lot 1 would need to extend 4m onto new Lot 2 due to waste disposal area constraints. It would also need to include part of the access driveway to Lot 2 (see attached bushfire hazard management plan). If Lot 1 is developed before Lot 2 an agreement under Part 5 of the *Land Use Planning and Approvals Act 1993* will need to be entered into to allow the owner of new Lot 1 to maintain the portion of the hazard management area required for BAL-19 on the adjoining Lot 2 until Lot 2 is developed.

Requirements

All future Class 1 to 9 buildings in the proposed subdivision (and any Class 10 buildings within 6m of a Class 1 to 9 building) should be surrounded by a hazard management area having the minimum widths indicated in the table on page 7 for their particular location. The extent of this hazard management area for the building envelopes shown on the attached subdivision plan is shown on the attached bushfire hazard management plan.

If Lot 1 is developed before Lot 2, part of the hazard management area for the dwelling on Lot 1 will have to be maintained on Lot 2. To allow for this an agreement under Part 5 of the *Land Use Planning and Approvals Act 1993* should be entered into to allow the owner of new Lot 1 to maintain the portion of the hazard management area required for BAL-19 on the adjoining new Lot 2. This agreement must be completed prior to sealing the final subdivision plan and can cease when Lot 2 is developed.

6.1.1 Establishing and Landscaping Hazard Management Areas

The hazard management areas for the new lots 1 and 2 would be established on existing mown grass.

Any future landscaping within the hazard management areas in the proposed subdivision should aim to achieve a living fuel component which is both discontinuous and of low flammability. General recommendations for landscaping the hazard management area include:

- use only mown lawn, bare ground (driveways, paths etc.) or non-flammable succulent ground cover plants immediately adjacent to buildings (within 2 to 5 metres)
- maximum tree canopy cover should be less than 30%, and maximum shrub canopy cover less than 20%
- trees and shrubs should be isolated or in small clumps; avoid continuous canopies
- trees should not be planted closer to buildings than their expected full height
- avoid planting or retaining trees and shrubs with rough fibrous bark, or which retain shed bark in long strips (ribbon bark) (e.g. any of the stringybark group of eucalypts)
- avoid planting or retaining trees and shrubs that retain dead material in their canopies (e.g. most conifers, and most *Melaleuca* and *Leptospermum* species)
- avoid planting or retaining shrubs under trees
- avoid planting or retaining trees and shrubs that deposit large quantities of litter in a short period, particularly in spring and summer
- canopies of trees and shrubs should not touch walls or overhang the dwelling
- avoid vines on walls and pergolas
- use non flammable mulches such as gravel.
- Locate any combustible materials, such as woodpiles, flammable fuel stores etc., away from buildings.

Landscaping the hazard management area with indigenous and/or introduced species of relatively low flammability would be ideal. This would ensure that the vegetation itself is of relatively low flammability, and reduce the amount of maintenance required to maintain fuel free conditions. The Victorian Country Fire Authority publication *Landscaping for Bushfire: Garden Design and Plant Selection* includes an easy to use key for selecting relatively low flammability plants suitable for planting in a hazard management area.

6.2 Vehicle Access

Explanation

In order to defend a development from a bushfire, fire brigade vehicles require safe access to the buildings in the development, and room to turn the vehicle close to the buildings. Residents also require a safe route for evacuation should this be required during a bushfire. Section E1.6.2 of the Bushfire-Prone Areas Code has the objective that: "Access roads to, and the layout of roads, tracks and trails, in a subdivision:

- (a) allow safe access and egress for residents, fire fighters and emergency service personnel;
- (b) provide access to the bushfire-prone vegetation that enables both property to be defended when under bushfire attack and for hazard management works to be undertaken;
- (c) are designed and constructed to allow for fire appliances to be manoeuvred;
- (d) provide access to water supplies for fire appliances; and
- (e) are designed to allow connectivity, and where needed, offering multiple evacuation points."

Table E1 of the Bushfire-Prone Areas Code contains the requirements for public roads, Table E2 the requirements for private access roads and Table E3 the requirements for fire trails.

Assessment

There are no public roads within the proposed subdivision and no fire trails are required. New Lots 1 and 2 would be accessed along a shared private driveway within an approximately 100m long, 8m wide, right-of-way. This right of way connects the new lots to Gatehouse Drive, a sealed, two-way, through road and includes a fire appliance turning area at the entry to Lot 2 (see attached subdivision plan). As the length of the proposed driveway is less than 200m a vehicle passing bay is not required.

Gatehouse Drive and the proposed private driveway meet the access requirements in the Bushfire-Prone Areas Code for the proposed subdivision.

The existing dwelling on the property that would be retained on the balance lot has an existing driveway that complies with the Bushfire-Prone Areas Code.

Requirements

The private driveway to the proposed new lots from Gatehouse Drive would need to meet the requirements below unless the development standards in the zone require a higher standard:

- (a) all weather construction
- (b) load capacity of at least 20t, including for bridges and culverts;
- (c) minimum carriageway width of 4m;
- (d) minimum vertical clearance of 4m;
- (e) minimum horizontal clearance of 0.5m from the edge of the carriageway;
- (f) cross falls of less than 3 degrees (1:20 or 5%);
- (g) dips less than 7 degrees (1:8 or 12.5%) entry and exit angle;
- (h) curves with a minimum inner radius of 10m;
- (i) maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and
- (j) terminate with a turning area for fire appliances provided by one of the following:
 - (i) a turning circle with a minimum outer radius of 10m; or
 - (ii) a property access encircling the building; or
 - (iii) a hammerhead "T" or "Y" turning head 4m wide and 8m long.

6.3 Water Supply

Explanation

A plentiful water supply is essential for defending property from bushfires and for fighting internal (structural) fires. This can be provided from a fire hydrant if the proposed development has a reticulated supply, or from a water storage on site dedicated for fire fighting. The requirements for fire hydrants and stored water supplies are set out in Clause E1.6.3 of the Bushfire-prone Areas Code.

Assessment

The proposed subdivision would be provided with a reticulated water supply through an extension of the existing DN100mm watermain from the west of 15 Gatehouse Drive. A new fire hydrant would be installed at the end of this extension (see attached site plan). This new hydrant would meet the requirements for fire fighting water supply in Table E4(B) of the Bushfire-prone Areas Code for the existing dwelling that would be retained on the balance lot but would not meet the 120m hose lay requirement for the proposed new Lots 1 and 2. Therefore future dwellings on new Lots 1 & 2 would need to rely on stored water supplies for fire fighting. The Bushfire-prone Areas Code requires that a static water supply, dedicated to fire fighting, be provided and located compliant with Table E5 of the Code. Indicative locations for static water supply tanks for new Lots 1 & 2 are shown on the attached bushfire hazard management plan. They have been located adjacent to the fire appliance turning area that would provide the hardstand. The actual location

of the water supply for fire fighting on each new lot would need to be determined at the time of building design in accordance with the requirements below.

Requirements

The requirements for stored water supplies for fire fighting in Table E5 of the Bushfire-prone Areas Code are:

Element	Requirement
Distance between building area to be protected and water supply.	<p>The following requirements apply:</p> <ul style="list-style-type: none"> (a) the building area to be protected must be located within 90m of the fire fighting water point of a static water supply; and (b) the distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.
Static Water Supplies	<p>A static water supply:</p> <ul style="list-style-type: none"> (a) may have a remotely located off take connected to the static water supply; (b) may be a supply for combined use (firefighting and other uses) but the specified minimum quantity of fire fighting water must be available at all times; (c) must be a minimum of 10,000l per building area to be protected. This volume of water must not be used for any other purpose including fire fighting sprinkler or spray systems; (d) must be metal, concrete or lagged by non-combustible materials if above ground; and (e) if a tank can be located so it is shielded in all directions in compliance with section 3.5 of <i>Australian Standard AS 3959-2018 Construction of buildings in bushfire-prone areas</i>, the tank may be constructed of any material provided that the lowest 400mm of the tank exterior is protected by: <ul style="list-style-type: none"> (i) metal; (ii) non-combustible material; or (iii) fibre-cement a minimum of 6mm thickness.
Fittings, pipework and accessories (including stands and tank supports)	<p>Fittings and pipework associated with a fire fighting water point for a static water supply must:</p> <ul style="list-style-type: none"> (a) have a minimum nominal internal diameter of 50mm; (b) be fitted with a valve with a minimum nominal internal diameter of 50mm; (c) be metal or lagged by non-combustible materials if above ground; (d) if buried, have a minimum depth of 300mm; (e) provide a DIN or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment; (f) ensure the coupling is accessible and available for connection at all times; (g) ensure the coupling is fitted with a blank cap and securing chain (minimum 220mm length); (h) ensure underground tanks have either an opening at the top of not less than 250mm diameter or a coupling compliant with this Table; and (i) if a remote off take is installed, ensure the off take is in a position that is: <ul style="list-style-type: none"> (i) visible; (ii) accessible to allow connection by fire fighting equipment; (iii) at a working height of 450 – 600mm above ground level; and (iv) protected from possible damage, including damage by vehicles.

Element	Requirement
Signage for static water connections.	The fire fighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must: <ul style="list-style-type: none"> (a) comply with water tank signage requirements within Australian Standard AS 2304:2019 Water storage tanks for fire protection systems; or (b) comply with the Tasmania Fire Service Water Supply Guideline published by the Tasmania Fire Service.
Hardstand	A hardstand area for fire appliances must be: <ul style="list-style-type: none"> (a) no more than 3m from the fire fighting water point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like); (b) no closer than 6m from the building area to be protected; (c) a minimum width of 3m constructed to the same standard as the carriageway; and (d) connected to the property access by a carriageway equivalent to the standard of the property access.

6.4 Building Construction

Construction standards for buildings in bushfire-prone areas are set out in Australian Standard 3959-2018, Construction of Buildings in Bushfire-prone Areas. The Bushfire-prone Areas Code requires that new Class 1 to 9 buildings (and any Class 10 buildings within 6 m of a Class 1 to 9 building) within the proposed subdivision be constructed to BAL-19 in AS 3959-2018.

6.5 Limitations and Maintenance

The bushfire protection measures specified in this report are the minimum required to ensure a building has a reasonable level of protection from a bushfire on a day when the forest fire danger index is less than 50.

It should be emphasised that no development in a bushfire prone area, however well it is designed or sited, is entirely safe from fires. Any additional bushfire protection measures incorporated into the proposed development, as well as active protection of buildings during a bushfire, will increase their chances of surviving a major bushfire. It should be noted that a building provided with the level of protection recommended in this report will not necessarily be considered defensible by the Tasmania Fire Service, especially when the forest fire danger index exceeds 50.

The effectiveness of the bushfire protection measures incorporated into the proposed subdivision and future dwellings will be reduced if they are not properly maintained. Inspection and maintenance of bushfire protection measures should be carried out each year before the beginning of the bushfire danger period in November, and regularly during the bushfire danger period. Dead leaves, dry grass etc. within the hazard management areas should be regularly removed to ensure that there is not enough fuel on the ground to sustain a fire under extreme conditions.

7 References

Australian Standard 3959-2018 *Construction of Buildings in Bushfire-prone Areas*. Standards Australia, Sydney.

Country Fire Authority (2022) *Landscaping for Bushfire: Garden Design and Plant Selection*. Victorian Country Fire Authority, Melbourne.

Planning Directive No. 5.1 (2022) *Bushfire-Prone Areas Code*. Tasmanian Planning Commission, Hobart.

PLAN OF SUBDIVISION MA CRAWFORD 15 GATEHOUSE DRIVE SORELL

SCALE	DATE	REF. NO.
1:750 @ A3	MGA_04-08-2023	M A CRAWFORD
	AM'DC'12-08-2024	(93026)

NOTES

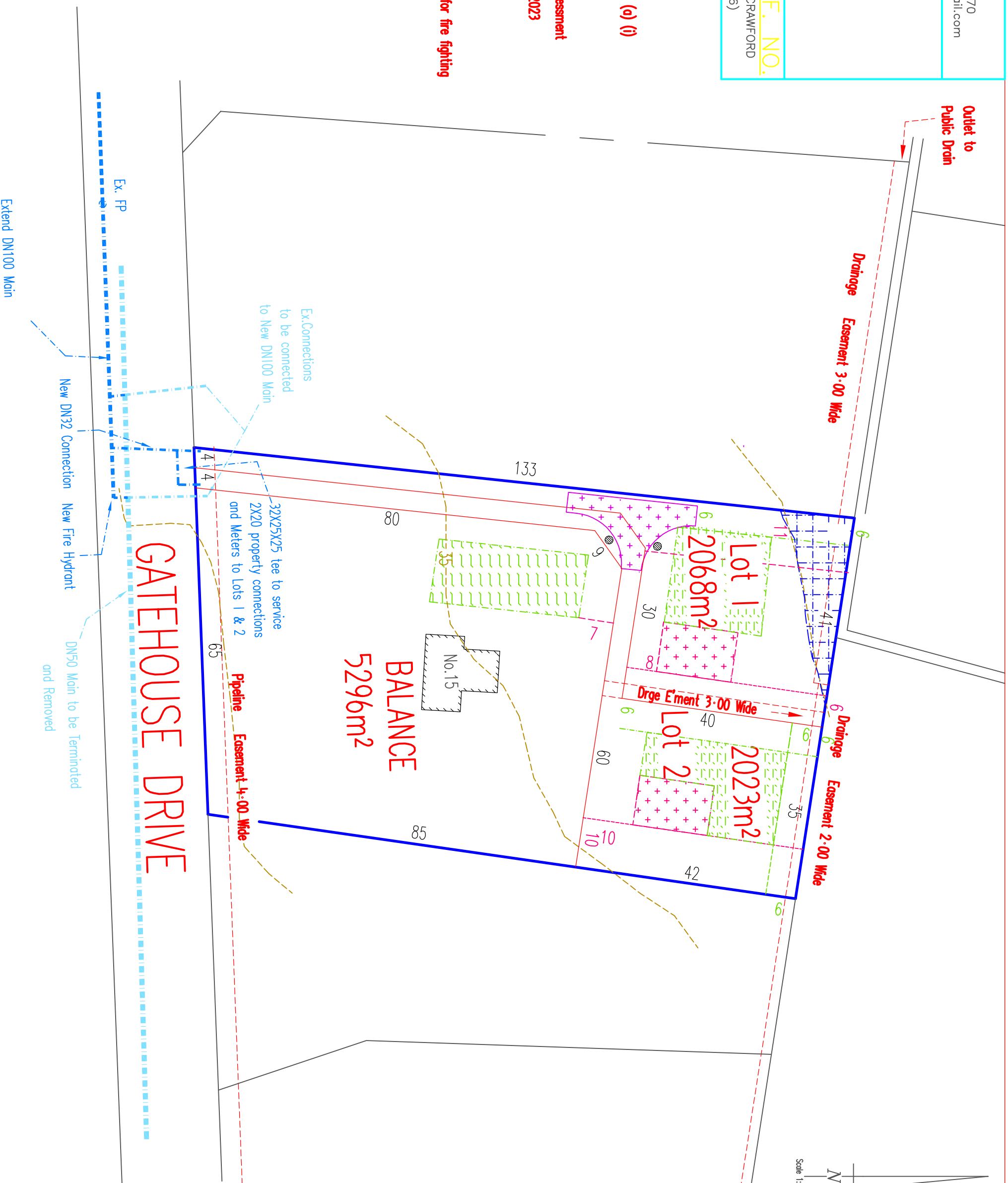
 15 X 10 Rectangle per CI10-6-1 AI (a) (i)

 LAA (>375m²) per Geotechnical Assessment by Rock Solid Geotechnics - 3-5-2023

 10,000 litre storage tank dedicated for fire fighting

 4-00m access with turning head

 Flood-prone Hazard area
Code CI2.0





Two 10,000 litre static water storage dedicated for fire fighting. See section 3 for requirements.

Fire appliance turning area. See section 2 for requirements.

Minimum extent of hazard management area. Separation distances as shown. See section 4 for requirements.

SCHEDULE OF REQUIREMENTS

1. Building Design and Construction

- Specified separation distances shown on this plan provide for BAL-19 solution.
- New habitable buildings, and non habitable buildings within 6m, must be designed and constructed to comply with AS 3959-2018 Section 3 for general requirements and Section 6 for BAL-19 requirements. Higher levels of construction are acceptable and encouraged.

2. Property and Fire Fighting Access

- Design and construction of private and fire fighting vehicle access is to comply with Table E2(B) of the Bushfire Prone Areas Code. Passing bays are not required.
- Install a "T" turning area with arms at least 8m long and 4m wide at the fork in the driveways to provide access to the fire fighting water storage tanks at the entrances to new Lots 1 and 2.
- Keep driveways clear of vegetation and other obstructions for 0.5m either side and 4m above the carriageway.

3. Static Water Supply for Fire Fighting

- For new Lots 1 and 2 install a metal or concrete fire fighting water tank with a minimum of 10,000 litres stored water within 90m of the furthest part of the building envelope. The stored water supplies must be within 3m of the vehicle turning area which functions as the hardstand area.
- Install a new hydrant at the end of the DN100 water main extension on Gatehouse Drive.
- Fittings and any pipework associated with the static water supplies must be in accordance with Table E5(C) of the of the Bushfire Prone Areas Code.
- The fire fighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location in accordance with Table E5(D) of the of the Bushfire Prone Areas Code

4. Hazard Management Area (HMA)

- Establish HMAs as dimensioned on this plan and maintain them in a low fuel condition in perpetuity, ensuring fuels are reduced sufficiently and other hazards are removed such that the fuels and other hazards do not significantly contribute to the bushfire attack.
- If Lot 1 is developed before Lot 2, a suitable legal agreement must be in place prior to occupancy to ensure the owner of Lot 1 can maintain the portion of the hazard management area for Lot 1 that is located on Lot 2 in a low fuel condition until Lot 2 is developed.

5. Vegetation Management within the HMA

- Limited amounts of low flammability plants are acceptable within the HMA; including maintained lawn (kept to a nominal height of 100mm), paths, paving, swimming pools, low flammability ornamental gardens, vegetable gardens and the like (see section 6.1.1 of the attached report).
- Do not plant adjacent to combustible walls and decks or within 2m of glazed elements. Regularly remove ground fuels including leaves, bark, fallen branches, mown grasses etc.
- Do not use pine bark and other flammable mulches within 2m of glazed elements and combustible parts of the building.
- Prune low-hanging tree branches; prune trees and shrubs to maintain a horizontal separation between canopies to create discontinuous rows and clumps.
- Do not store combustible materials such as firewood next to walls or under decks.
- Regularly remove accumulated leaf and other debris from roof gutters.
- Slash remaining grass on the property periodically to keep height <200mm.

GENERAL

Bushfire Attack Level has been determined using Method 1 in AS 3959-2018 Construction of Buildings in Bushfire-prone Areas.

Plan to be read in conjunction with the Bushfire Risk Assessment and Management Measures report by AVK Environmental Management, 20 August 2024.

Ensure that all relevant consultants and contractors are provided with a full copy of this plan and the supporting report.

Bushfire Hazard Management Plan

Proposed residential subdivision
15 Gatehouse Drive, Sorell
Title Reference: 39266/6
PID 7606259

AVK ENVIRONMENTAL MANAGEMENT
553 DORANS ROAD, SANDFORD 7020
Prepared by Axel von Krusenstierna on 20 August 2024
Accreditation No. BFP100, Scope: 1,2,3A,3B,3C
avkem@optusnet.com.au

LEGEND

- Proposed subdivision
- Minimum hazard management area
- New private access driveway
- Fire appliance turning area for Lots 1 & 2
- Indicative locations for static water supplies
- Existing driveway
- 10m by 15m building envelopes
- Cadastral boundary

BUSHFIRE-PRONE AREAS CODE

CERTIFICATE¹ UNDER S51(2)(d) *LAND USE PLANNING AND APPROVALS ACT 1993*

1. Land to which certificate applies

The subject site includes property that is proposed for use and development and includes all properties upon which works are proposed for bushfire protection purposes.

Street address:

15 Gatehouse Drive, Sorell 7172

Certificate of Title / PID:

39266/6

2. Proposed Use or Development

Description of proposed Use and Development:

Residential subdivision, 2 lots plus balance lot

Applicable Planning Scheme:

Tasmanian Planning Scheme - Sorell

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
Bushfire Risk Assessment and Management Measures, Proposed Residential Subdivision 15 Gatehouse Drive, Sorell	AVK Environmental Management	20 August 2024	revised
Bushfire Hazard Management Plan, Proposed residential subdivision, 15 Gatehouse Drive, Sorell, Title Reference 39266/6	AVK Environmental Management	20 August 2024	revised
Plan of Subdivision, MA Crawford, 15 Gatehouse Drive, Sorell	J. B. Medbury, Surveyor, 159 Cilwen Road, Cambridge 7170	12 August 2024	AM "DC"

¹ This document is the approved form of certification for this purpose and must not be altered from its original form.

4. Nature of Certificate

The following requirements are applicable to the proposed use and development:

<input type="checkbox"/> E1.4 / C13.4 – Use or development exempt from this Code	
Compliance test	Compliance Requirement
<input type="checkbox"/> E1.4(a) / C13.4.1(a)	Insufficient increase in risk

<input type="checkbox"/> E1.5.1 / C13.5.1 – Vulnerable Uses	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.5.1 P1 / C13.5.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/> E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
<input type="checkbox"/> E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

<input type="checkbox"/> E1.5.2 / C13.5.2 – Hazardous Uses	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.5.2 P1 / C13.5.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/> E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
<input type="checkbox"/> E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

<input checked="" type="checkbox"/> E1.6.1 / C13.6.1 Subdivision: Provision of hazard management areas	
Acceptable Solution	Compliance Requirement
<input type="checkbox"/> E1.6.1 P1 / C13.6.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/> E1.6.1 A1 (a) / C13.6.1 A1(a)	Insufficient increase in risk
<input checked="" type="checkbox"/> E1.6.1 A1 (b) / C13.6.1 A1(b)	Provides BAL-19 for all lots (including any lot designated as 'balance')
<input type="checkbox"/> E1.6.1 A1(c) / C13.6.1 A1(c)	Consent for Part 5 Agreement

<input type="checkbox"/>	E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access	
	Acceptable Solution	Compliance Requirement
<input type="checkbox"/>	E1.6.2 P1 / C13.6.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

<input type="checkbox"/>	E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes	
	Acceptable Solution	Compliance Requirement
<input type="checkbox"/>	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
<input type="checkbox"/>	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

5. Bushfire Hazard Practitioner

Name:

Axel von Krusenstierna

Phone No:

0412141955

Postal Address:

553 Dorans Road, Sandford, 7020

Email Address:

avkem@optusnet.com.au

Accreditation No:

BFP – 100,

Scope:

1, 2, 3A, 3B, 3C

6. Certification

I certify that in accordance with the authority given under Part 4A of the *Fire Service Act 1979* that the proposed use and development:

- Is exempt from the requirement Bushfire-Prone Areas Code because, having regard to the objective of all applicable standards in the Code, there is considered to be an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures, or
- The Bushfire Hazard Management Plan/s identified in Section 3 of this certificate is/are in accordance with the Chief Officer's requirements and compliant with the relevant **Acceptable Solutions** identified in Section 4 of this Certificate.

Signed:
certifier

A. von Krusenstierna

Name:

Axel von Krusenstierna

Date:

21 August 2024

Certificate
Number:

01/2024

(for Practitioner Use only)