Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2025/140

LOCATION OF AFFECTED AREA

15 LUKAARLIA DRIVE, BRIDGEWATER

DESCRIPTION OF DEVELOPMENT PROPOSAL

BOND STORE BUILDING (7 UNITS) & CONJOINED WAREHOUSE (2)

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M, MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS IN ACCORDANCE WITH S.57(5) OF THE LAND USE PLANNING AND APPROVALS ACT 1993 CONCERNING THIS APPLICATION UNTIL 4:45 P.M. ON **08/01/2026**. ADDRESSED TO THE CHIEF EXECUTIVE OFFICER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au. REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
Chief Executive Officer

SCAN ME

Brighton
going places

MC Planners Ref: 25087

27th August 2025

Chief Executive Officer

Brighton Council

Via email – development@brighton.tas.gov.au

Attention: Planning Department – Jo Blackwell

Dear Jo,

DEVELOPMENT APPLICATION – 2 CONJOINED WAREHOUSES & 7 BOND STORAGE UNITS – 15 LUKAARLIA DRIVE, BRIDGEWATER

This letter details the proposed development and provides an assessment against the provisions of the *Tasmanian Planning Scheme – Brighton* ('the Planning Scheme').

In our assessment the application generates the following discretions under the planning scheme:

- C2.5.1 Car parking numbers (P1);
- C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction (P1);
- C9.5.1 Activities with potential to cause emissions (P1);
- C12.5.1 Uses within a flood-prone hazard area (P1 and P3);
- C12.6.1 Buildings and works within a flood-prone hazard area (P1);
- C13.5.2 Hazardous uses (P1).

The following documents are enclosed in support of the application:

- Attachment 1 – Proposal Plans
- Attachment 2 – Civil Plans
- Attachment 3 - Stormwater Report
- Attachment 4 - Traffic Impact Assessment
- Attachment 5 - Flood Hazard Report
- Attachment 6 - Bushfire Hazard Report
- Attachment 7 – Title Information
- Attachment 8 – Landowner Notification Letter

1. Site Location and Context

The development is located at 15 Lukaarlia Drive, Bridgewater, which is identified by PID 9638588 and CT 186550/1. The site has a total area of 1.431ha and has 12m of frontage onto Lukaarlia Drive (see Figure 1).

The site is a cleared vacant lot with a south-easterly gradient of ~1 in 10, located at the western perimeter of the Brighton Industrial Estate. The site adjoins rural land to the west, rural living properties to the south-west, and undeveloped industrial properties to the north and south-east. A Council reserve for Ashburton Creek is located to the east and TasWater's Bridgewater Reservoir is to the west.

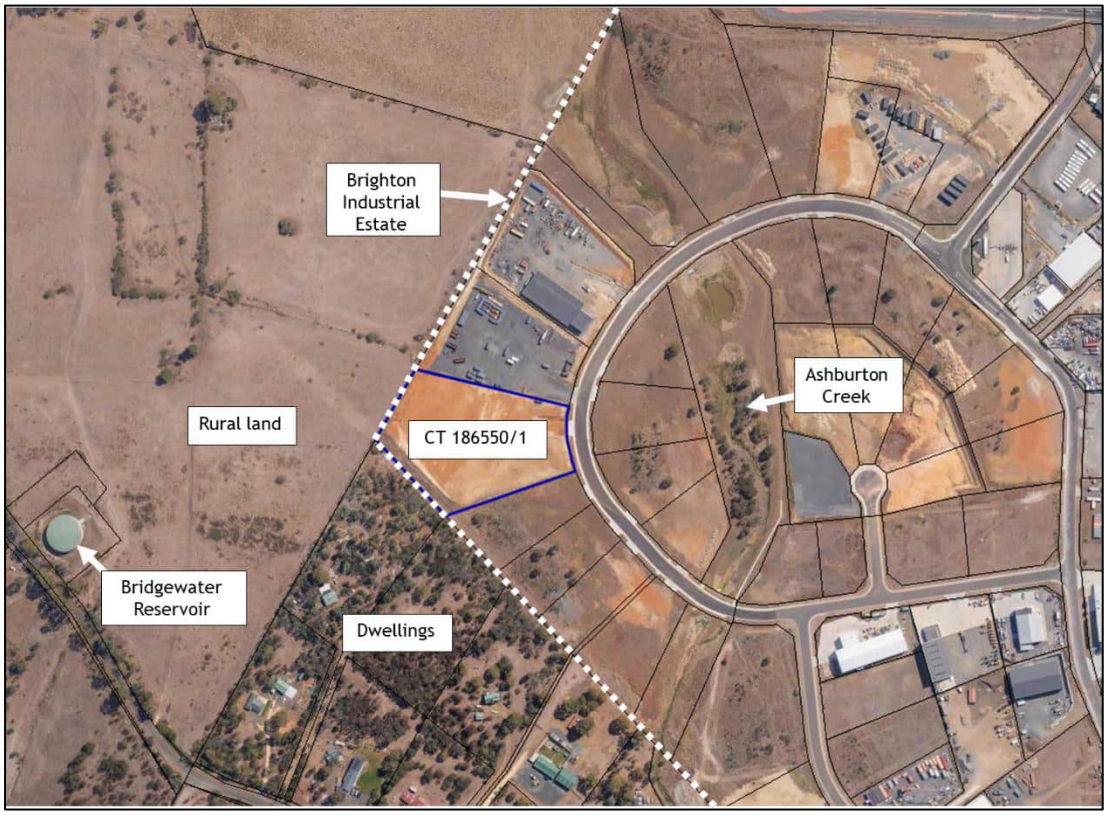


Figure 1. Subject Site and Surroundings (source: LISTmap, accessed 04/08/2025; annotated)

Refer to the titles at Attachment 7.

2. Proposed Use and Development

The proposal represents Stages 2 and 3 of a multi-stage project. Approval is sought for the development of a warehouse building containing 7 bond storage units ('Stage 2') and 2 additional conjoined warehouses ('Stage 3'). The scope of each development stage is represented in the Proposal Plans.

The proposed bond storage units will house alcoholic beverages stored in barrels. The conjoined warehouses will be used for storage.

The bond store ('Stage 2') is located to the rear of the site, with minimum setbacks of 8.425m from the south-east boundary, 12.878m from the south-west boundary and 21.157m from the north-west boundary. The building has overall dimensions of 25.75m x 70m and a maximum building height of 8.55m, with a total building area of 1,802.5m^2. Each storage unit is served by a separate roller door at the front and pedestrian entrances at the front and rear, and has a storage capacity of 2,592 barrels, equating to 518,400 litres. In total, the facility will have a storage capacity of 3.6288 mega-litres.

The two conjoined warehouses ('Stage3') are to be located at the south-east side of the site, with minimum setbacks of 6.02m from the south-east boundary and 12.565m from the frontage. The conjoined warehouse building has overall dimensions of 24.7m x 66.2m

(excluding external stairs) and a maximum building height of 8.85m. The conjoined warehouses have a total building area of 1,590.18m^2.

The site access was previously approved under Stage 1 of the project and does not form part of the current proposal. The uses for Stage 2 and Stage 3 will rely on the previously approved access. The current proposal includes the vehicle circulation area, 31 car parking spaces, 7 bicycle parking spaces and a designated loading area, as well as pedestrian pathways. Landscaping of the frontage setback is also proposed.

Cut and fill with a maximum depth of ~1.55m is proposed to provide a level building area. A retaining wall is to support the cut along the south-west side of the bond store building, with a setback of ~1.2m from the building and ~12.3m from the boundary. A battered retaining wall with a height of up to 3m and an associated ag-drain are proposed along the western perimeter of the vehicle circulation area, supporting an existing site cut with the addition of backfill between the retaining wall and the existing ground level. A battered retaining wall with a height of up to 3m and ag-drain are proposed along the south-east boundary, supporting fill associated with the 'Stage 3' development.

The proposal also includes works to address requirements for the stormwater drainage system in accordance with the permit for 'Stage 1'. Stormwater detention tanks are proposed between the two proposed buildings (and adjoining the previously approved 'Stage 1' warehouse), and an underground stormfilter and stormwater detention tank is to be located within the frontage setback. Connections to stormwater, sewer and water mains are proposed, with works for the water connection extending into the road reserve.

Refer to the Proposal Plans (Attachment 1), Civil Plans (Attachment 2) and Stormwater Report (Attachment 3) for details of the proposal.

Previous Permits

'Stage 1' of the project was previously approved under DA2024-093. Construction of the approved development is underway.

3. Policy Assessment

The applicable planning instrument in the assessment of the application is the *Tasmanian Planning Scheme – Brighton* ('the Planning Scheme').

The proposed use is for Storage (bond store and warehouses). The development site is located on land zoned 'General Industrial' (see Figure 2) and is wholly within a Bushfire-Prone Areas overlay (Figure 3) and the Brighton Industrial Hub Specific Area Plan (Figure 4). The Flood-Prone Areas overlay does not apply, but the site is understood to be subject to flood risk (see the Flood Hazard Report at Attachment 5). Similarly, there is no mapped Attenuation Area overlay on the site; however, the proposed use has an associated 500m attenuation area. The nature of the proposal and the location of the site require the proposal be considered against the following Scheme elements:

- General Industrial Zone (19.0);
- Brighton Industrial Hub Specific Area Plan (BRI-S10.0);
- Parking and Sustainable Transport Code (C2.0);
- Road and Railway Assets Code (C3.0);
- Attenuation Code (C9.0);
- Flood-Prone Areas Hazard Code (C12.0); and
- Bushfire-Prone Areas Code (C13.0).

No Exemptions (4.0) or General Provisions apply (7.0).

The following section provides an assessment of the proposal against each of the above-listed Scheme elements.

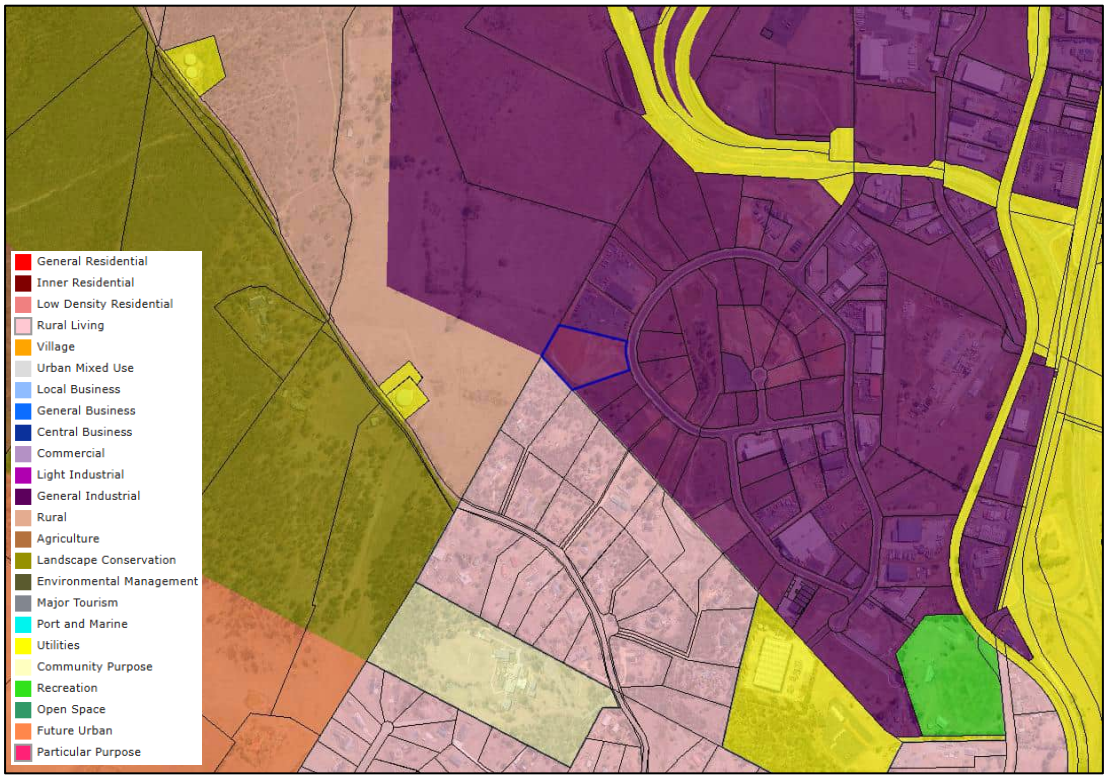


Figure 2. Zoning context; subject site outlined in blue (source: LISTmap, accessed 04/08/2025; annotated)

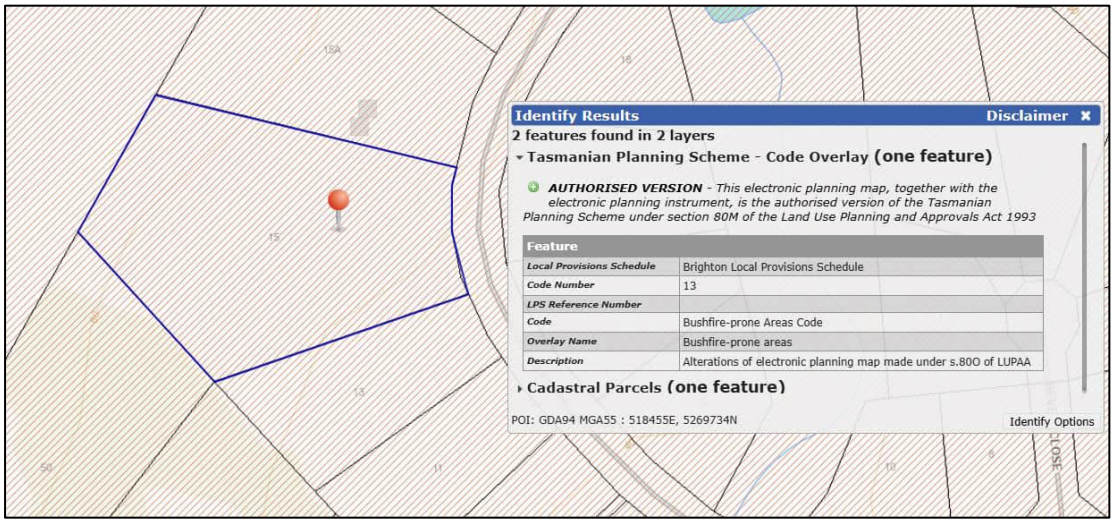


Figure 3. Bushfire-prone areas overlay (source: LISTmap, accessed 26/08/2025)

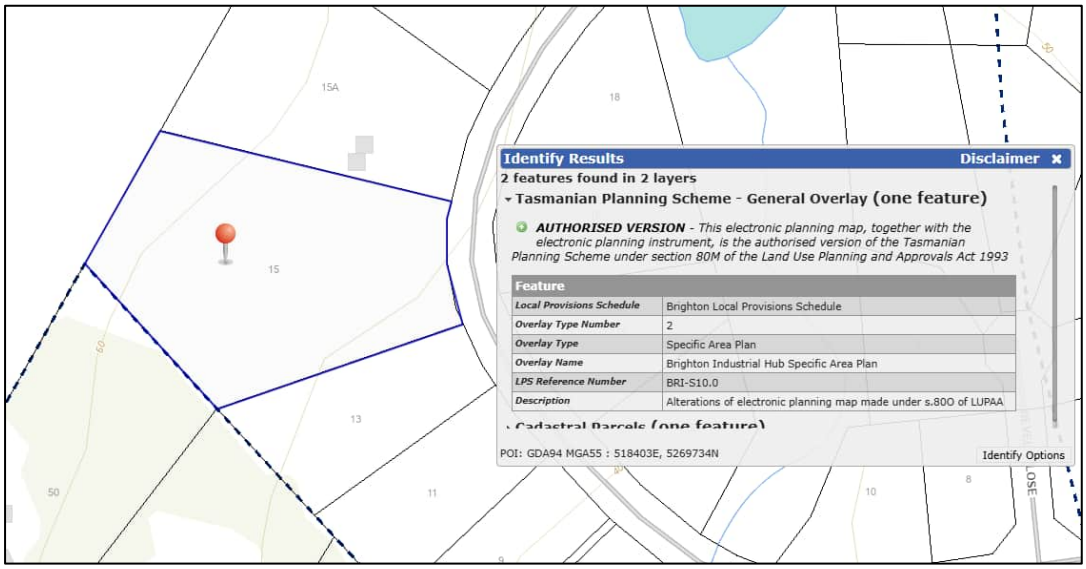


Figure 4. Brighton Industrial Hub Specific Area Plan overlay (source: LISTmap, accessed 26/08/2025)

Tasmanian Planning Scheme - Brighton

Brighton Industrial Hub Specific Area Plan (BRI-S10.0)

The specific area plan applies to the area of land designated at Brighton Industrial Hub Specific Area Plan on the overlay maps. The site is within the overlay, and the specific area plan applies.

The specific area plan does not include a Use Table, Local Area Objectives or Development Standards.

BRI-S10.6 Use Standards

BRI-S10.6.1 Sensitive Use

A1 *Use or development is not for sensitive use.*	*P1* *No Performance Criteria.*

The standard substitutes clause *C9.5.2 Sensitive Use within an attenuation area* under the Attenuation Code. The proposal is not for a sensitive use and the standard therefore does not apply.

There are no applicable standards under the specific area plan.

General Industrial Zone (19.0)

19.2 Use Table

Storage use has Permitted status under the zone Use Table, with no qualifications.

19.3 Use Standards

19.3.1 Discretionary Uses

No Discretionary use is proposed, and the standard does not apply.

19.4 Development Standards for Buildings and Works

19.4.1 Building height

A1 *Building height must not be more than 20m.*	*P1* *…*

The maximum proposed building height is 8.85m, complying with A1.

19.4.2 Setback

A1 *Buildings must have setback from a frontage of:* *(a) not less than 10m;* *(b) not less than existing buildings on the site; or* *(c) not more or less than the maximum and minimum setbacks of the buildings on adjoining properties.*	*P1* *…*

The minimum proposed building setback from the frontage is 12.565m, complying with A1.

19.4.3 Landscaping

A1 *If a building is set back from a road, landscaping treatment must be provided along the frontage of the site:* *(a) to a depth of not less than 6m; or* *(b) not less than the frontage of an existing building if it is a lesser distance.*	*P1* *…*

Landscaping with a minimum depth of ~8m is proposed along the frontage of the site (refer to the Landscaping Plan in the Proposal Plans), complying with A1.

19.5 Development Standards for Subdivision

No subdivision is proposed and thus the standard does not apply.

Parking and Sustainable Transport Code (C2.0)

The Parking and Access Code applies to all use and development, and there are no exemptions from the code (C2.2.1); therefore, provisions under C2.0 must be considered.

C2.5 Use Standards

C2.5.1 Car Parking numbers

A1 *The number of on-site car parking spaces must be no less than the number specified in Table C2.1, less the number of car parking spaces that cannot be provided due to the site including container refund scheme space, excluding if:* *(a) the site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan;* *(b) the site is contained within a parking precinct plan and subject to Clause C2.7;* *(c) the site is subject to Clause C2.5.5; or* *(d) it relates to an intensification of an existing use or development or a change of use where:* *(i) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or* *(ii) the number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C= Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.*	*P1.1* *The number of on-site car parking spaces for uses, excluding dwellings, must meet the reasonable needs of the use, having regard to:* *(a) the availability of off-street public car parking spaces within reasonable walking distance of the site;* *(b) the ability of multiple users to share spaces because of:* *(i) variations in car parking demand over time; or* *(ii) efficiencies gained by consolidation of car parking spaces;* *(c) the availability and frequency of public transport within reasonable walking distance of the site;* *(d) the availability and frequency of other transport alternatives;* *(e) any site constraints such as existing buildings, slope, drainage, vegetation and landscaping;* *(f) the availability, accessibility and safety of on-street parking, having regard to the nature of the roads, traffic management and other uses in the vicinity;* *(g) the effect on streetscape; and* *(h) any assessment by a suitably qualified person of the actual car parking demand determined having regard to the scale and nature of the use and development.* *P1.2* *The number of car parking spaces for dwellings must meet the reasonable needs of the use, having regard to:* *(a) the nature and intensity of the use and car parking required;* *(b) the size of the dwelling and the number of bedrooms; and* *(c) the pattern of parking in the surrounding area.*

A Traffic Impact Assessment (TIA) for the proposal (Attachment 4) has calculated a requirement for 84 car parking spaces, reflecting a combination of requirements for the current Storage proposal and the previously approved use and development. A total of 31 spaces are proposed, and the proposal is therefore assessed under the Performance Criteria.

P1.1 has been assessed in the TIA, which finds that the parking will meet the reasonable needs of the uses on the site. P1.2 relates to parking spaces for dwellings and thus does not pertain to the proposal.

The proposal meets the Performance Criteria and complies with the standard.

C2.5.2 Bicycle parking numbers

A1 *Bicycle parking spaces must:* *(a) be provided on the site or within 50m of the site; and* *(b) be no less than the number specified in Table C2.1.*	*P1* *…*

The TIA has identified a requirement for one bicycle parking space. The proposal includes 7 onsite bicycle parking spaces, complying with A1.

C2.5.3 Motorcycle parking numbers

Clause C2.5.3 does not apply to development in the Storage Use Class (clause C2.2.2) and does not pertain to the proposal.

C2.5.4 Loading bays

A1 *A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.*	*P1* *…*

Each proposed bond store has a floor area of 259.43m^2 and the proposed conjoined warehouses each have floor areas of ~795m^2. The proposal therefore does not trigger a requirement for a loading bay. Nevertheless, the bond store building will be served by an adjacent loading bay (refer to the Proposal Plans), while the conjoined warehouses include internal loading bays. The TIA affirms that the proposal complies with A1.

C2.5.5 Number of car parking spaces within the General Residential Zone and Inner Residential Zone

The site is in the General Industrial Zone and clause C2.5.5 therefore does not apply.

C2.6 Development Standards for Buildings and Works

C2.6.1 Construction of parking areas

A1 *All parking, access ways, manoeuvring and circulation spaces must:* *(a) be constructed with a durable all weather pavement;* *(b) be drained to the public stormwater system, or contain stormwater on the site; and* *(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.*	*P1* *…*

The TIA confirms that the proposal complies with A1.

C2.6.2 Design and layout of parking areas

A1.1 *Parking, access ways, manoeuvring and circulation spaces must either:* *(a) comply with the following:* *(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6;* *(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;* *(iii) have an access width not less than the requirements in Table C2.2;* *(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;* *(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;* *(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and* *(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or* *(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.* *A1.2* *Parking spaces provided for use by persons with a disability must satisfy the following:* *(a) be located as close as practicable to the main entry point to the building;* *(b) be incorporated into the overall car park design; and* *(c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities. 1*	*P1* *…*

The TIA confirms that the proposal complies with A1.1 and A1.2.

C2.6.3 Number of accesses for vehicles

A1 *The number of accesses provided for each frontage must:* *(a) be no more than 1; or* *(b) no more than the existing number of accesses, whichever is the greater.*	*P1* *…*

One existing access will be utilised, complying with A1.

A2 *Within the Central Business Zone or in a pedestrian priority street no new access is provided unless an existing access is removed.*	*P2* *…*

The site is not in the Central Business Zone or in a pedestrian priority street and standard A2 does not apply.

C2.6.4 Lighting of parking areas within the General Business Zone and Central Business Zone

The site is in the General Industrial Zone, and the standard does not apply.

C2.6.5 Pedestrian access

A1.1 *Uses that require 10 or more car parking spaces must:* *(a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by:* *(i) a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or* *(ii) protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and* *(b) be signed and line marked at points where pedestrians cross access ways or parking aisles.* *A1.2* *In parking areas containing accessible car parking spaces for use by persons with a disability, a footpath having a width not less than 1.5m and a gradient not steeper than 1 in 14 is required from those spaces to the main entry point to the building.*	*P1* *…*

The TIA confirms that the proposal complies with A1.1 and A1.2.

C2.6.6 Loading bays

A1 *The area and dimensions of loading bays and access way areas must be designed in accordance with Australian Standard AS 2890.2-2002, Parking facilities, Part 2: Off-street commercial vehicle facilities, for the type of vehicles likely to use the site.*	*P1* *…*

The TIA confirms that the proposal complies with A1 (see page 24 of the TIA).

A2 *The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities - Off-street commercial vehicle facilities.*	*P2* *…*

Swept paths are shown on the Civil Plans and in the TIA demonstrating compliance with A2.

C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone

The site is in the General Industrial Zone, and the standard does not apply.

C2.6.8 Siting of parking and turning areas

A1 *Within an Inner Residential Zone, Village Zone, Urban Mixed Use Zone, Local Business Zone or General Business Zone, parking spaces and vehicle turning areas, including garages or covered parking areas must be located behind the building*	*P1* *…*

line of buildings, excluding if a parking area is already provided in front of the building line.	

The site is in the General Industrial Zone, and the standard does not apply.

A2 *Within the Central Business Zone, on-site parking at ground level adjacent to a frontage must:* *(a) have no new vehicle accesses, unless an existing access is removed;* *(b) retain an active street frontage; and* *(c) not result in parked cars being visible from public places in the adjacent roads.*	*P2* *…*

The site is in the General Industrial Zone, and the standard does not apply.

C2.7 Parking Precinct Plan

A1 *Within a parking precinct plan, on-site car parking must:* *(a) not be provided; or* *(b) not be increased above existing parking numbers.*	*P1* *…*

The site is not within a parking precinct plan and the standard does not apply.

Road and Railway Assets Code (C3.0)

The proposal will increase the amount of vehicular traffic (C3.2.1) and there are no exemptions from the Road and Railway Assets Code (C3.4.1); therefore, provisions under C3.0 must be considered.

C3.5 Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

A1.1 *For a category 1 road or a limited access road, vehicular traffic to and from the site will not require:* *(a) a new junction;* *(b) a new vehicle crossing; or* *(c) a new level crossing.* *A1.2* *For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.* *A1.3* *For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.* *A1.4* *Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:*	*P1* *Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:* *(a) any increase in traffic caused by the use;* *(b) the nature of the traffic generated by the use;* *(c) the nature of the road;* *(d) the speed limit and traffic flow of the road;* *(e) any alternative access to a road;* *(f) the need for the use;* *(g) any traffic impact assessment; and* *(h) any advice received from the rail or road authority.*

(a) the amounts in Table C3.1; or *(b) allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road.* *A1.5* *Vehicular traffic must be able to enter and leave a major road in a forward direction.*	

A1.1 – A1.3 do not apply. A1.5 is met as detailed above under C2.6.6 (A2). The TIA identifies that the proposal will increase traffic using the access by more than 20%. The proposal is therefore unable to comply with A1.4 and is considered under P1.

The TIA confirms that the proposal will not adversely affect road safety or efficiency and meets P1.

C3.6 Development Standards for Buildings and Works

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area

The proposal is not for a sensitive use and the standard does not apply.

C3.7 Development Standards for Subdivision

No subdivision is proposed, and the standard does not apply.

Attenuation Code (C9.0)

The Attenuation Code applies to activities listed in Table C9.1 (C9.2.1), which includes storage of chemicals. The code and the administrative provisions do not define 'chemical,' which therefore has its ordinary meaning (3.1.1). Alcoholic beverages contain ethanol, which is listed as a hazardous chemical by Safe Work Australia[1].

The proposal does not require assessment as a Level 2 activity and is therefore not exempt (C9.4.1).

The code therefore applies.

C9.5 Use Standards

C9.5.1 Activities with potential to cause emissions

A1 *The attenuation area of an activity listed in Tables C9.1 or C9.2 must not include:* *(a) a site used for a sensitive use which is existing;* *(b) a site that has a planning permit for a sensitive use; or* *(c) land within the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone.*	*P1* *An activity listed in Tables C9.1 or C9.2 must not cause:* *(a) an unreasonable loss of amenity or unreasonable impacts on health and safety of a sensitive use which is existing, or has a planning permit; or* *(b) unreasonable impacts on land within the relevant attenuation area that is in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A,*

[1] https://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=1888

	Rural Living Zone B, Village Zone or Urban Mixed Use Zone, having regard to: *(i) operational characteristics of the activity;* *(ii) scale and intensity of the activity;* *(iii) degree of hazard or pollution that may be emitted from the activity;* *(iv) hours of operation of the activity;* *(v) nature of likely emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste;* *(vi) existing emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste; and* *(vii) measures to eliminate, mitigate or manage emissions from the activity.*

The proposed alcoholic beverage storage entails an attenuation area of 500m for emissions such as odour and noise. The attenuation area for the proposed use includes dwellings on land within the Rural Living Zone A. The proposal is unable to meet A1 and is therefore considered under P1.

The proposed alcoholic beverage storage will not cause an unreasonable loss of amenity or health and safety for the nearby residential uses (a) or unreasonable impacts on the Rural Living Zone A land containing those uses (b). In particular, the alcoholic beverages will be stored in barrels in a fully enclosed warehouse, with access provided from the opposite side of the building, which will mitigate noise from traffic movements or barrel handling and largely prevent any odour emissions from impacting adjacent residential land (i and vii). The scale of the proposed use accords with the scale of the site and its industrial context; and as the role of a bond storage for alcoholic beverages is to 'age' the product, the extent of associated activity is less than would normally be expected for a warehouse use (ii). A Bushfire Hazard Report (Attachment 6) for the proposal addresses potential safety issues (iii). There are no standards for hours of operation for the General Industrial Zone that applies to the site; nevertheless, operational activities are expected to generally be within business hours (iv). Minimal emissions would be expected to be associated with the use, noting that the product would be contained within barrels (v). There are no identified existing emissions from the site, although it is noted that the proposal will seal existing unsealed surfaces and may therefore be expected to reduce dust emissions (vi).

The proposal meets P1 and complies with the standard.

C9.5.2 Sensitive use within an attenuation area

This standard is substituted by clause BRI-S10.6, and no sensitive use is proposed. The standard does not apply.

C9.6 Development Standards for Subdivision

No subdivision is proposed, and the standard does not apply.

Flood-prone Areas Hazard Code (C12.0)

The land is identified in the Flood Hazard Report (FHR) at Attachment 5 as being subject to risk from flood, and the code therefore applies (C12.2.3). None of the code exemptions apply (C12.4.1); therefore, the provisions under C12.0 must be considered.

C12.5 Use Standards

C12.5.1 Uses within a flood-prone hazard area

A1 *No Acceptable Solution.*	*P1.1* *A change of use that, converts a non-habitable building to a habitable building, or a use involving a new habitable room within an existing building, within a flood-prone hazard area must have a tolerable risk, having regard to:* *(a) the location of the building;* *(b) the advice in a flood hazard report; and* *(c) any advice from a State authority, regulated entity or a council.* *P1.2* *A flood hazard report also demonstrates that:* *(a) any increase in the level of risk from flood does not require any specific hazard reduction or protection measures; or* *(b) the use can achieve and maintain a tolerable risk from a 1 % annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.*

There is no Acceptable Solution, and the proposal is considered under the Performance Criteria.

No change of use converting or altering an existing building is proposed (P1.1).

The FHR demonstrates that there is no increase in risk from the pre-development scenario (P1.2 (a)) and that the level of risk is tolerable (P1.2(b)).

The proposal meets P1 and complies with the standard.

C12.5.2 Critical use, hazardous use or vulnerable use

A1 *No Acceptable Solution.*	*P1* *A critical, hazardous, or vulnerable use within a flood-prone hazard area must achieve a tolerable level of risk from flood, having regard to:* *(a) the type form and duration of the use; and* *(b) a flood hazard report that demonstrates that:* *(i) any increase in the level of risk from flood does not warrant any specific hazard reduction or protection measures; or* *(ii) the use can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.*

The proposed bond storage use is a hazardous use as storage of more than 2,500L of ethanol (a category 2 flammable liquid) on a site constitutes a hazardous chemical of a manifest quantity[2]. The standard therefore applies. There is no Acceptable Solution, and the proposal is considered under the Performance Criteria.

[2] https://www.safeworkaustralia.gov.au/safety-topic/hazards/chemicals/hazardous-chemical-records-and-signs-workplaces/placard-and-manifest-threshold-quantities and https://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=1888

Compliance with the code is addressed in the FHR.

A2 *No Acceptable Solution.*	*P2* *In addition to the requirements in clause C12.5.2 P1, a critical use within a flood-prone hazard area must achieve and maintain a tolerable risk, having regard to:* *(a) the ability of the use to function and maintain service during the flood event and recovery period;* *(b) any interruption to the operation of the critical use in locations external to the immediate impact of the flood;* *(c) the creation of risk to the health or safety of people from damage or disruption to:* *(i) a water supply service; or* *(ii) the drainage and treatment of wastewater;* *(d) the advice contained in a flood hazard report; and* *(e) any advice from a State authority, regulated entity or a council.*

The use is not a critical use and thus the standard does not apply.

A3 *No Acceptable Solution.*	*P3* *In addition to the requirements in clause C12.5.2 P1, the impact of flood on a hazardous use within a flood-prone hazard area must achieve and maintain a tolerable risk, having regard to:* *(a) the health and safety of people;* *(b) any impact on property;* *(c) any impact on the environment;* *(d) the advice contained in a flood hazard report; and* *(e) any advice from a State authority, regulated entity or a council.*

There is no Acceptable Solution, and the proposal is considered under the Performance Criteria.

Compliance with the code is addressed in the FHR.

A4 *No Acceptable Solution.*	*P4* *In addition to the requirements in clause C12.5.2 P1, a vulnerable use within a flood-prone hazard area, must be protected from flood, having regard to:* *(a) any protection measures, existing or proposed;* *(b) the ability and capability of people in a flood event who may live, work or visit the site, to:* *(i) protect themselves;* *(ii) evacuate in an emergency; and* *(iii) understand and respond to instructions in the event of an emergency;* *(c) any emergency evacuation plan;* *(d) the level of risk for emergency personnel involved in evacuation and rescue tasks;* *(e) the advice contained in a flood hazard report; and*

	(f) any advice from a State authority, regulated entity or a council.

The use is not a vulnerable use, and the standard does not apply.

C12.6 Development Standards for Buildings and Works

C12.6.1 Buildings and works within a flood-prone hazard area

A1 *No Acceptable Solution.*	*P1.1* *Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to:* *(a) the type, form, scale and intended duration of the development;* *(b) whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures;* *(c) any advice from a State authority, regulated entity or a council; and* *(d) the advice contained in a flood hazard report.* *P1.2* *A flood hazard report also demonstrates that the building and works:* *(a) do not cause or contribute to flood on the site, on adjacent land or public infrastructure; and* *(b) can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.*

As there is no Acceptable Solution, the proposal is considered against the Performance Criteria.

The FHR demonstrates that the proposed development will achieve and maintain a tolerable risk from flood (P1.1). The application of the code was identified with reference to the Brighton Council flood maps (P1.1(c)) and is assessed with recommendations provided in the FHR (P1.1 (d)). Construction details specified in the FHR are integrated into the Civil Plans for the proposal (P1.1(a)), and the FHR indicates that no additional measures are required for the life of the development (P1.1(b)).

The FHR also demonstrates that the proposed development will not significantly increase flood flow or velocity (P1.2(a)) and will achieve a tolerable risk (P1.2(b)).

The proposal meets P1.1 and P1.2 and complies with the standard.

C12.7 Development Standards for Subdivision

No subdivision is proposed, and the standard does not apply.

Bushfire-Prone Areas Code (C13.0)

The Bushfire-Prone Areas Code applies to hazardous use on land within a bushfire-prone area (C13.2.1). The proposed bond store is a hazardous use as defined in the code (C13.3.1) and

the code exemptions do not apply (C13.4.1). The provisions under C13.0 must therefore be considered.

C13.5 Use Standards

C13.5.1 Vulnerable uses

The use is not a vulnerable use, and the standard does not apply.

C13.5.2 Hazardous uses

A1 *No Acceptable Solution.*	*P1* *A hazardous use must only be located in a bushfire-prone area if a tolerable risk from bushfire can be achieved and maintained, having regard to:* *(a) the location, characteristics, nature and scale of the use;* *(b) whether there is an overriding benefit to the community;* *(c) whether there is no suitable alternative lower-risk site;* *(d) the emergency management strategy (hazardous use) and bushfire management plan; and* *(e) other advice, if any, from the TFS.*

The use is a 'hazardous use' and there is no Acceptable Solution. The proposal is therefore considered under P1.

The Bushfire Hazard Report (BHR) for the proposal demonstrates that a tolerable risk from bushfire is achieved and maintained, complying with P1.

A2 *An emergency management strategy (hazardous use) endorsed by the TFS or accredited person.*	*P2* *No Performance Criterion.*

An endorsed emergency management strategy for the hazardous use is provided in the BHR, complying with A2.

A3 *A bushfire hazard management plan that contains appropriate bushfire protection measures that is certified by the TFS or an accredited person.*	*P3* *No Performance Criterion.*

The BHR includes a certified Bushfire Hazard Management Plan that includes appropriate protection measures, complying with A1.

C13.6 Development Standards for Subdivision

No subdivision is proposed, and the standard does not apply.

4. Conclusion

This proposal seeks approval for a Storage use for a bond store and warehouses, with development of 2 buildings and associated parking, access, services, landscaping and flood mitigation works at 15 Lukaarlia Drive, Bridgewater. The development is on land zoned General Industrial, which is subject to the Bushfire-prone areas and Brighton Industrial Hub Specific Area Plan overlays as well as Council flood mapping. The proposal is also subject to the Parking and Sustainable Transport Code, the Road and Railway Assets Code and the Attenuation Code.

The proposal has been considered against the development standards of zone and the applicable codes and generates the following discretions under the Scheme:

- C2.5.1 Car parking numbers (P1);
- C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction (P1);
- C9.5.1 Activities with potential to cause emissions (P1);
- C12.5.1 Uses within a flood-prone hazard area (P1 and P3);
- C12.6.1 Buildings and works within a flood-prone hazard area (P1);
- C13.5.2 Hazardous uses (P1).

The proposal has been assessed against all relevant scheme criteria and is found to either comply with the Acceptable Solutions or satisfy the relevant Performance Criteria. The application is considered to be acceptable with respect to the Planning Scheme requirements and therefore ought to be supported by the Planning Authority.

If Council requires any further information or clarification concerning this application, please contact us at planning@mcplanners.com.au or by phone at 6288 7248.

Yours faithfully

MC PLANNERS PTY LTD

Angela Dionysopoulos

PLANNER

ATTACHMENT 1

Proposal Plans

PINNACLE

PINNACLE

Type of construction required C2D2 NCC Vol. I 2022		
Rise in storeys	**Class of building 2, 3, 9**	**Class of building 5, 6, 7, 8**
4 or more	A	A
3	A	B
2	B	C
1	C	C

Changes List

Issue	Description of change	Date	Designer
Ch - 01	Landscaping Amendments for RFI	26/09/25	JRN
Ch - 02	Changed Rollerdoor to Steel doors	24/10/25	JRN
Ch - 03	Removed second access door on the front of the warehouse	24/10/25	JRN

Note: The images provided are artistic representations only and should not be used as references for final colours, finishes, or external/internal features.

15 Lukaarlia Dr, Bridgewater 7030

Owner(s) or Clients	Southern Steel Properties Pty Ltd	Title Reference	186550/1
Building Classification	7a	Zoning	General Industrial
Construction Type	C	Land Size	14306m^2
No. of Storeys	1	Design Wind Speed	N3
Designer	Jason Nickerson CC6073Y	Soil Classification	Class P (M)
Total Floor Area (Combined)	5795m^2	Climate Zone	7
Alpine Area	N/A	Corrosion Environment	Low
Other Hazards (e.g.. High wind, earthquake, flooding, landslip, dispersive soils, sand dunes, mine subsidence, landfill, snow & ice, or other relevant factors)	Bushfire-prone Areas	Bushfire Attack Level (BAL)	BAL 12.5

ID	Sheet Name	Issue
A.01	Proposed Site Plan	DA - 03
A.02	Landscaping Plan	DA - 03
A.03	Proposed Staging Plan	DA - 03
A.04	Floor Plan - Stage 02	DA - 03
A.05	Floor Plan - Stage 03	DA - 03
A.06	Stage 02 Elevations	DA - 03
A.07	Stage 02 Elevations	DA - 03
A.08	Stage 03 Elevations	DA - 03
A.09	Stage 03 Elevations	DA - 03

Legend

- Electrical Connection
- Electrical Turret
- Sewer Connection
- Stormwater Connection
- Telstra Connection
- Telstra Pit
- Water Meter
- Water Stop Valve
- Fire Hydrant
- Bollard
- Spotlight with sensor
- Pedestrian Path

Surface Water Drainage

Ground to fall away from building in all directions in compliance with AS2870 & N.C.C 2022 Volume I.

Surface water, resulting from a storm having an annual exceedance probability of 1%, must not enter the building.

Limitations

F1P2 does not apply to-

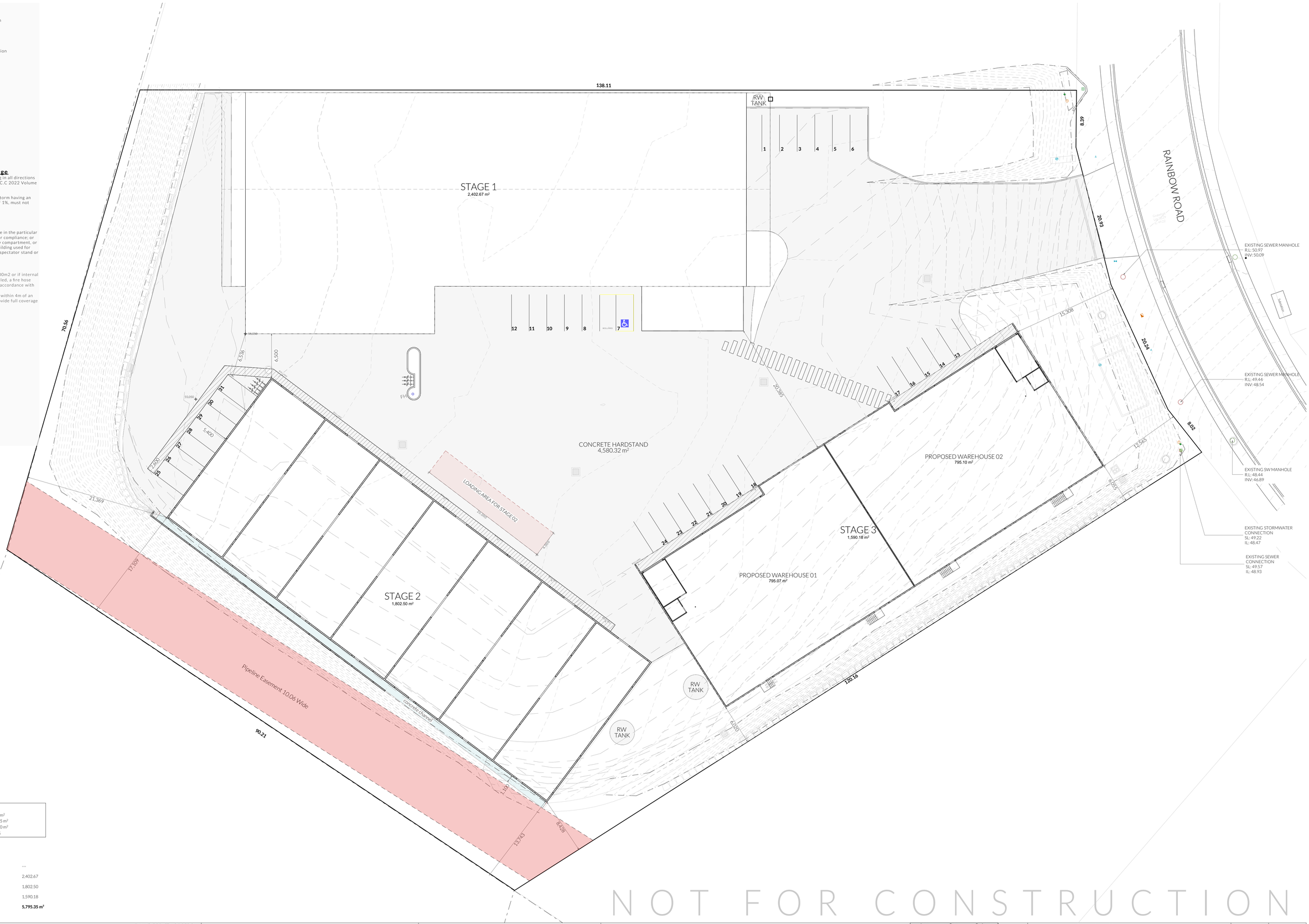
(a) a Class 7 or 8 building where in the particular case there is no necessity for compliance; or

(b) a garage, tool shed, sanitary compartment, or the like, forming part of a building used for other purposes; or an open spectator stand or open-deck carpark.

Fire Safety

Where a building is more than 500m2 or if internal fire hydrants are proposed/installed, a fire hose reel system must be provided in accordance with AS2441.

Fire hose reels must be installed within 4m of an exit or otherwise provided to provide full coverage to the building.



Site Areas

Site Area	14306 m²
Building Footprint	5795.35 m²
Driveway Area	3991.60 m²
Total Impervious Area	68.41%

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

PINNACLE

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www.pinnacledrafting.com.au
Licence: C C6073Y

Proposed Site Plan

Revision: DA - 03
Approved by: JRD

Scale: 1:250 @ A1
Pg. No: A.01

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

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Note

SDU footprint & access

1. SDU location and lid/maintenance points are shown on the plan.
2. A clear 1.5 m minimum unobstructed access zone is maintained around lids/valves for inspection and vacuum truck access.
3. No planting over lids, maintenance hatches, or within designated crane/maintenance swing areas.

Planting offsets & root management

1. No trees within 3.0 m of SDU chambers, lids and critical pipes.
2. Shrubs/groundcovers allowed within the offset where root barriers are detailed; deep-rooted species excluded.
3. Root barriers specified where services and planting interface (detail referenced on plan).

Species and water regime compatibility

1. Species in and around the SDU are tolerant of periodic inundation and dry-down.
2. Turfed/groundcover mixes selected for stabilising batters and facilitating maintenance.

Visual integration & streetscape

1. Low planting maintained in sight triangles at vehicle crossings; taller screening shrubs are massed to visually soften views of the SDU and hardstand from the street and adjoining lots.
2. Canopy trees are positioned to frame the frontage (outside SDU offsets) and to provide shade to parking/yard edges.

Drainage & durability

1. Mulch type, depths, and edging specified to prevent wash-off toward SDU inlets/outlets.
2. Surface falls and subsoil drainage (where shown) protect plant beds and SDU structures.

Maintenance

1. A landscape maintenance schedule is included (watering establishment, weed control, mulch top-up, replacement planting, inspection after storm events).
2. Maintenance access paths and hardstand nodes to SDU are kept clear of planting.

Ch - 01

STAGE 1
2,402.67 m²

1 2 3 4 5 6

RAINBOW ROAD

Ch - 01

12 11 10 9 8 7

FH

CONCRETE HARDSTAND
4,580.32 m²

PROPOSED WAREHOUSE 02
795.10 m²

13 14 15 16 17

STAGE 3
1,590.18 m²

18 19 20 21 22 23 24

PROPOSED WAREHOUSE 01
795.07 m²

25 26 27 28 29 30 31

5,400

2,400

LOADING AREA FOR STAGE 02

28,000

4,000

STAGE 2
1,802.50 m²

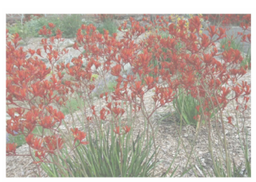
Pipeline Easement 10.06 Wide

concrete channel

Legend

- Proposed Landscaping Area
- Paved Concrete (Refer to Civil Documentation)
- Easement
- Landscaping clearnace area

Symbol	Name	Qty	Pot Size	Height	Spread
	Anigozanthos Flavidus - Kangaroo Paw	11	tube stock	450	1000
	Eucalypt Forrestiana - Fuchsia Gum	6	35L	5,000	3000
	Festuca Glauca - Blue Fescue	28	tube stock	300	150



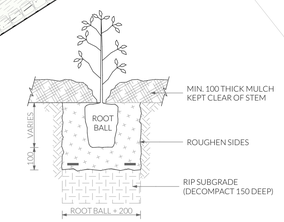
CLUMPINGS OF *Anigozanthos Flavidus* - KANGAROO PAW WITH EUCALYPT BARK MULCH TO ROADSIDE AREA

Note

Plants have been selected to be drought tolerant and low maintenance once established, it is recommended that a dripper system or similar be put into place until established. Plant locations are indicative and may be altered where suitable growing conditions cannot be met. Garden areas to be mulched with 75mm cover of selected mulch and plants are to fertilised 6 monthly or where required until established. Garden edges are to be timber, steel, or brick. Plantings that are unsuccessful will be replaced where required.

Eucalypt forrestiana - FUCHSIA GUM TO 5m HIGH x 3m SPREAD AS SHOWN TO ROADSIDE GARDEN AREA

CLUMPINGS OF *Festuca Glauca* - BLUE FESCUE WITH EUCALYPT BARK MULCH TO ROADSIDE AREA



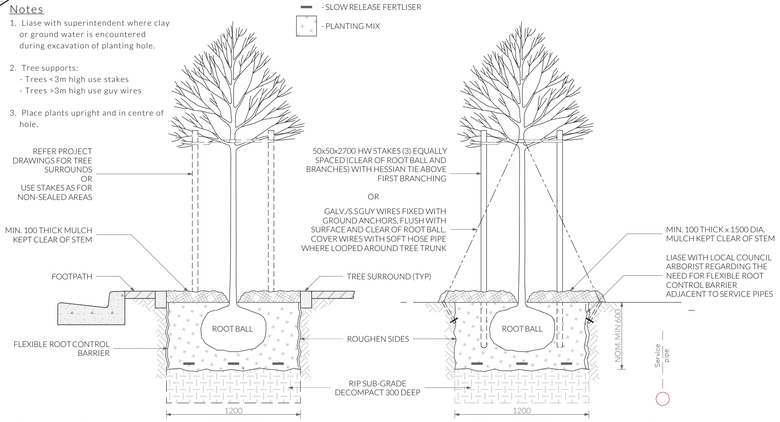
SMALL PLANTS AND SHRUBS
(100-450mm POTS)

KEY

- SLOW RELEASE FERTILISER
- PLANTING MIX

Notes

1. Liase with superintendent where clay or ground water is encountered during excavation of planting hole.
2. Tree supports:
   - Trees <3m high use stakes
   - Trees >3m high use guy wires
3. Place plants upright and in centre of hole.



Tree and Shrub Planting

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Landscaping Plan

Revision:
Approved by: JRD

Scale: 1:250 @A1
Pg. No: A.02

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer
Ch - 01	26/09/25	JRN

NOTE: Refer to cover page for further details on changes.

N

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Legend

- STAGE 01 (UNDER CONSTRUCTION)
- STAGE 02
- STAGE 03

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

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Proposed Staging Plan

Revision: DA - 03
Approved by: JRD

Scale: 1:250 @ A1
Pg. No: A.03

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

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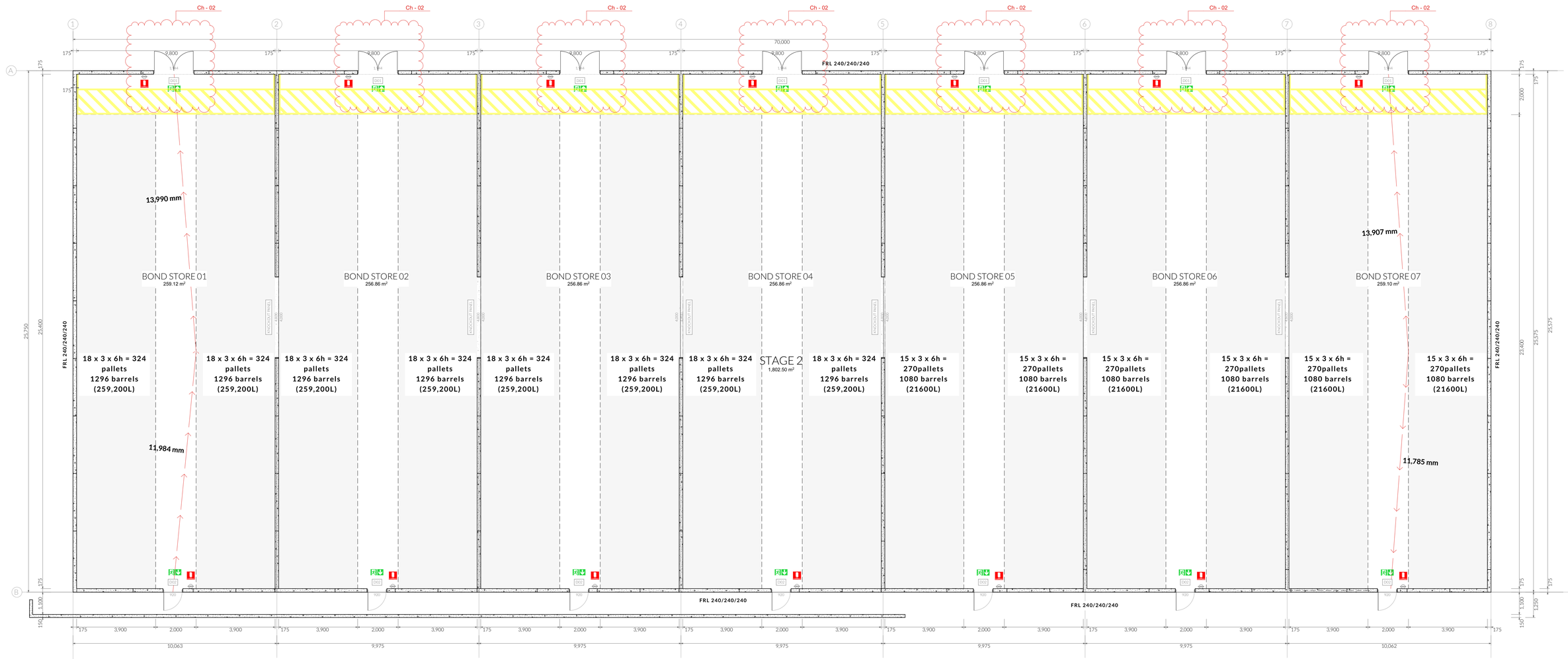

VOLUME OF LIQUID

BOND STORE 01	518,400L
BOND STORE 02	518,400L
BOND STORE 03	518,400L
BOND STORE 04	518,400L
BOND STORE 05	432,000L
BOND STORE 06	432,000L
BOND STORE 07	432,000L
TOTAL	3,369,600L

Area

BOND STORE 01	259.12
BOND STORE 02	256.86
BOND STORE 03	256.86
BOND STORE 04	256.86
BOND STORE 05	256.86
BOND STORE 06	256.86
BOND STORE 07	259.10

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

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Floor Plan - Stage 02

Revision: DA - 03
Approved by: JRD

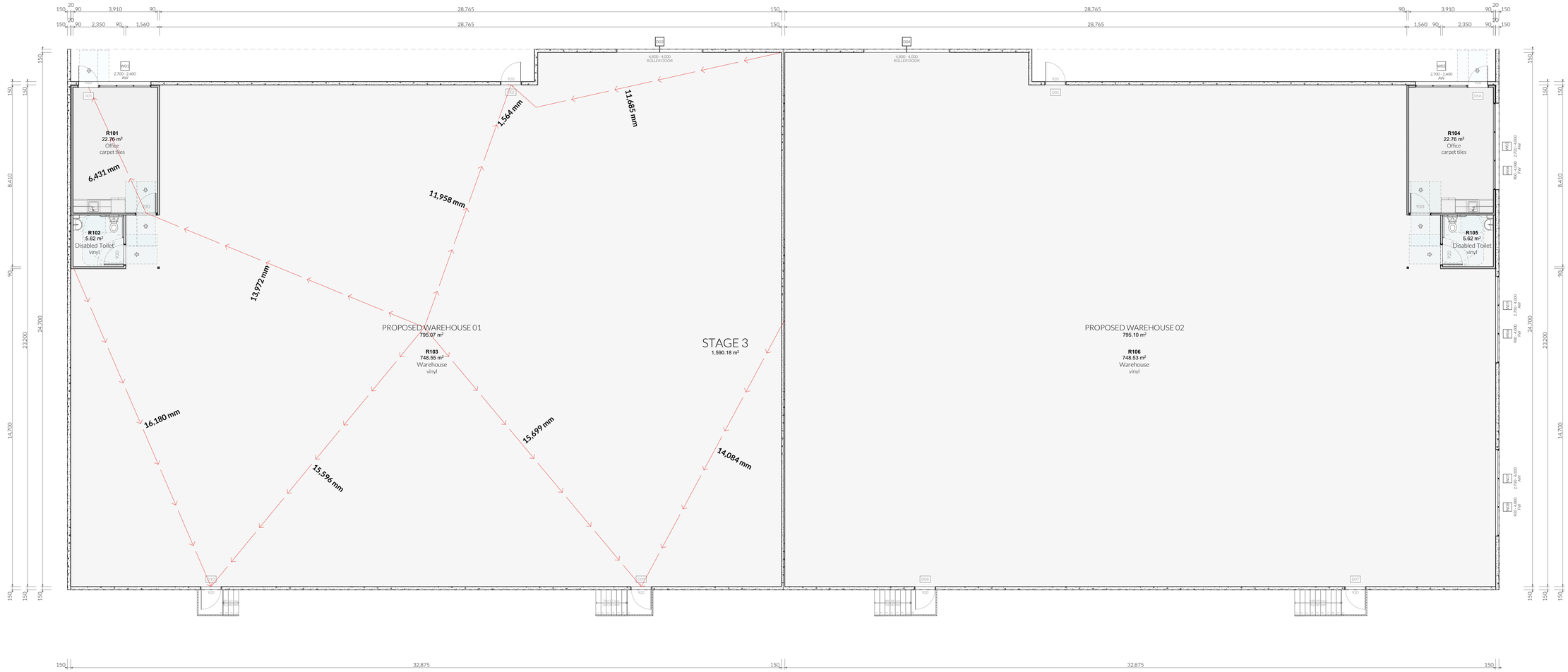
Scale: 1:100 @ A1
Pg. No: A.04

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer
CH - 02	24/10/25	JRN

NOTE: Refer to cover page for further details on changes.



Disabled Toilet	5.62
Disabled Toilet	5.62
Office	22.76
Office	22.76
Warehouse	748.55
Warehouse	748.53

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

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Floor Plan - Stage 03

Revision:
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.05

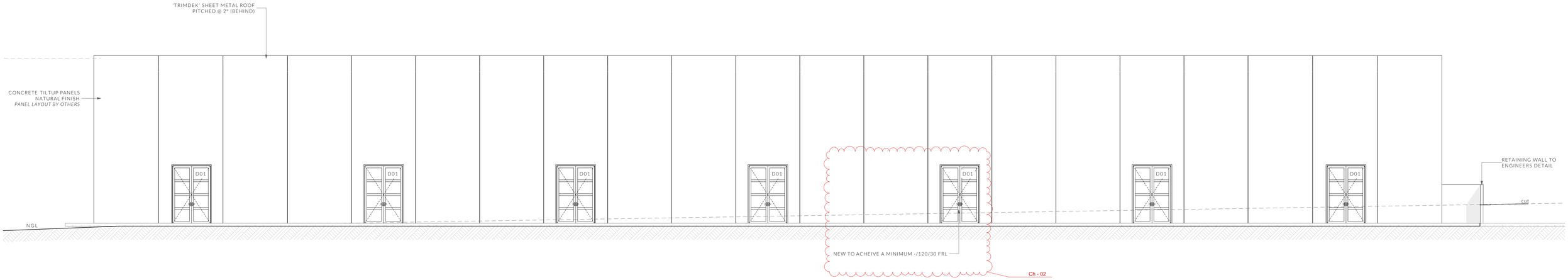
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

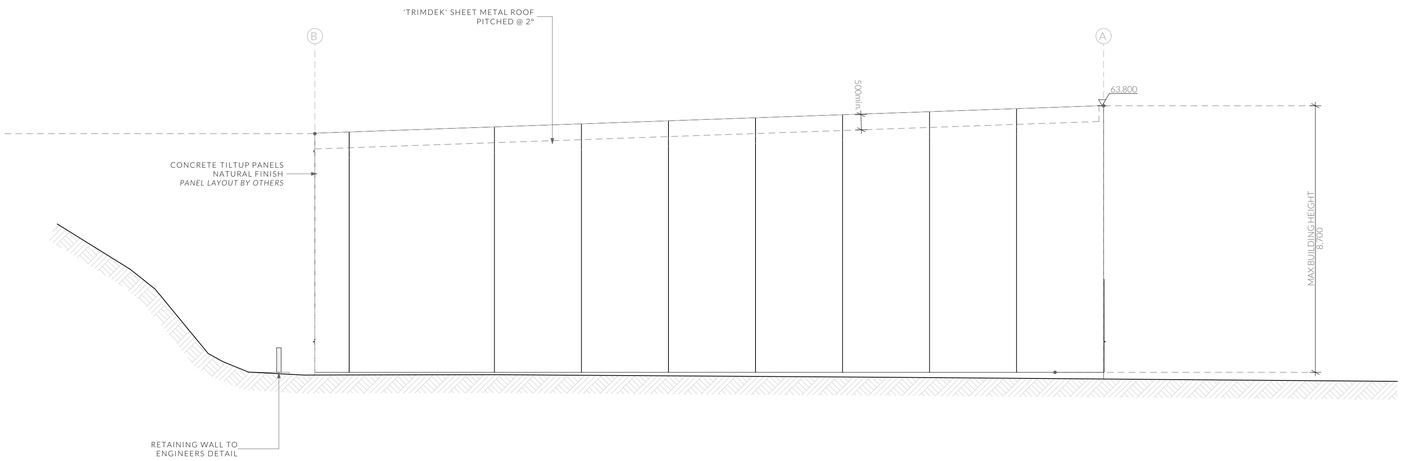
NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 02 - North Elevation

1:100



Stage 02 - East Elevation

1:100

NOT FOR CONSTRUCTION

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Stage 02 Elevations

Revision: DA - 03
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.06

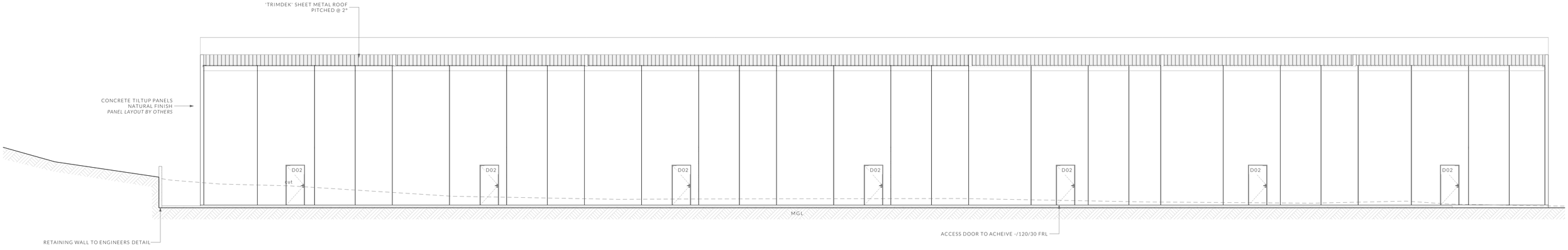
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer
Ch - 02	14/10/25	JRN

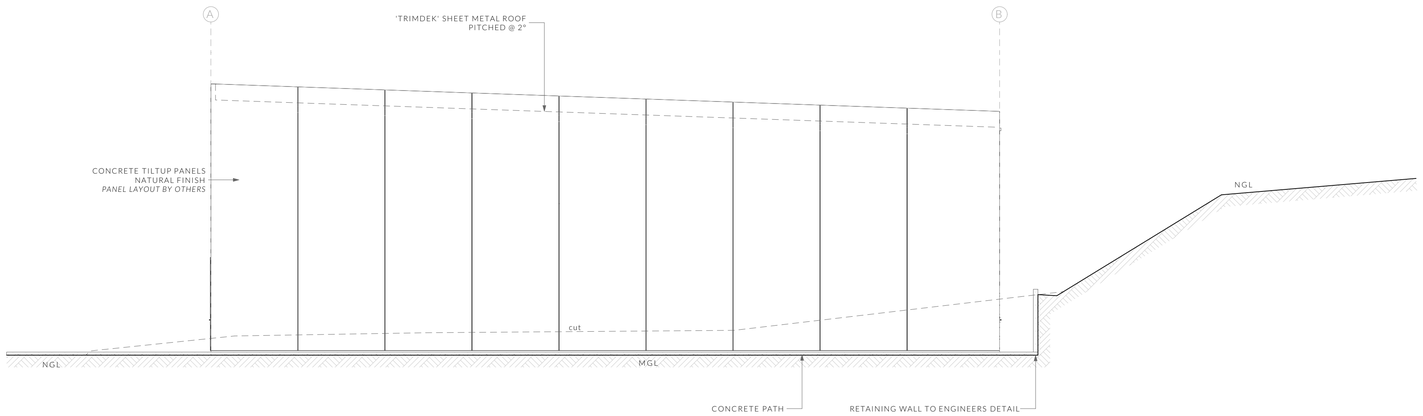
NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 02 - South Elevation

1:100



Stage 02 - West Elevation

1:100

NOT FOR CONSTRUCTION

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Stage 02 Elevations

Revision: DA - 03
Approved by: JRD

Scale: 1:100 @A1
Pg. No: A.07

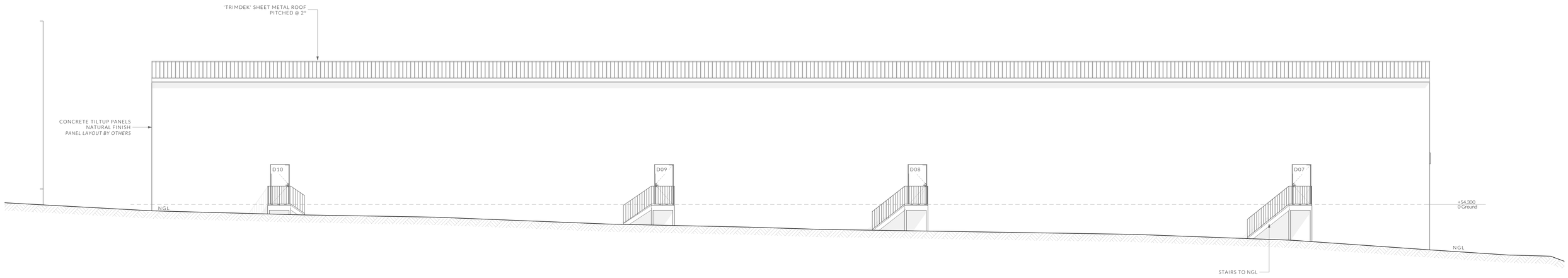
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

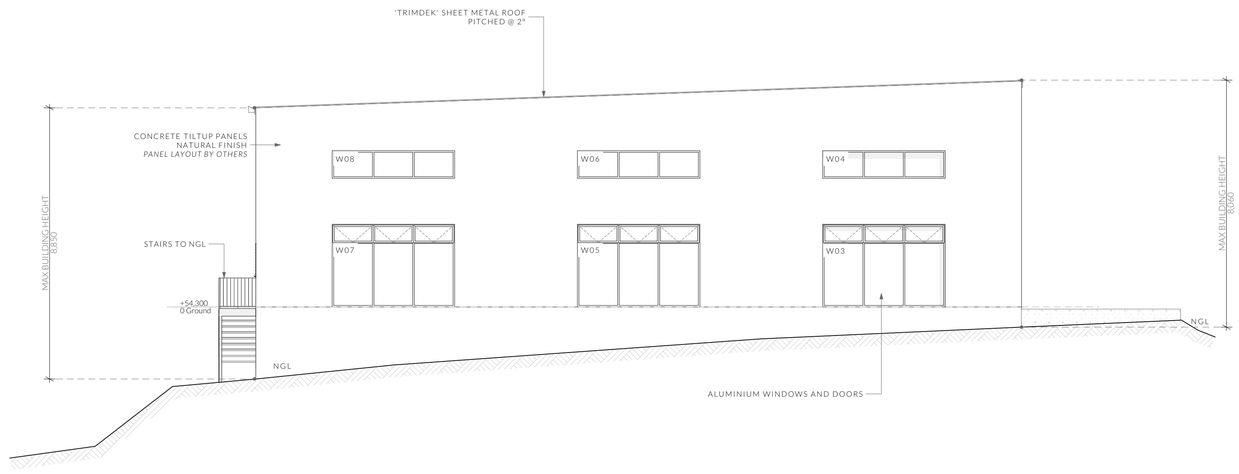
NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 03 - South Elevation

1:100



Stage 03 - East Elevation

1:100

NOT FOR CONSTRUCTION

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Stage 03 Elevations

Revision: DA - 03
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.08

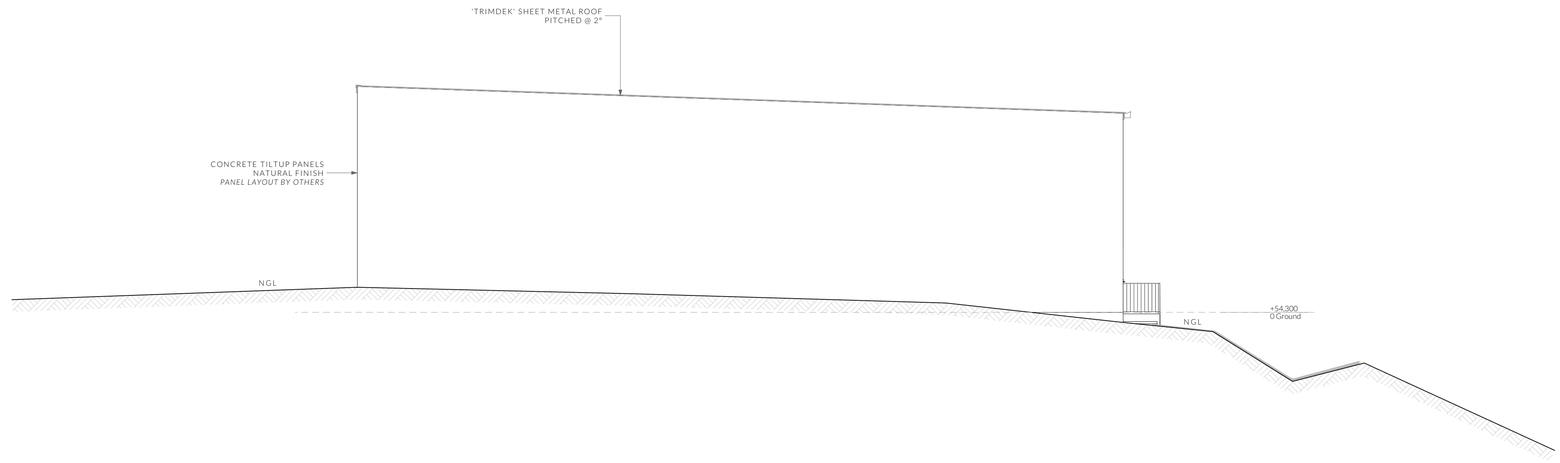
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

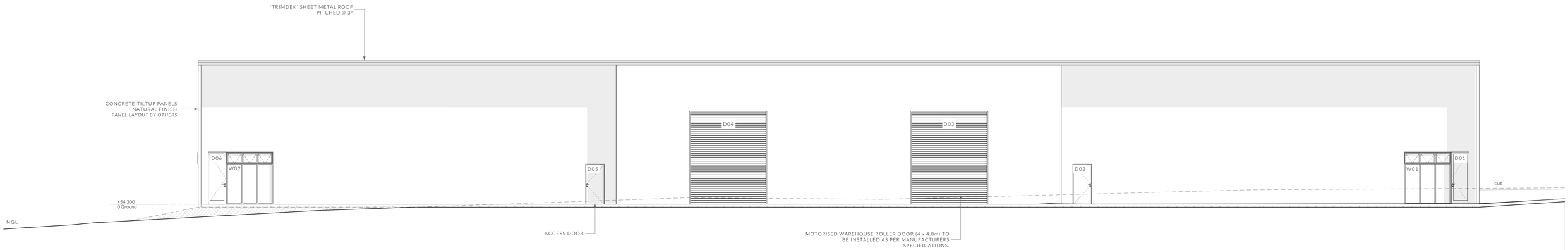
NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 03 - West Elevation

1:100



Stage 03 - North Elevation

1:100

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
7/3 Abernant Way,Cambridge 7170
03 6248 4218
admin@pinnacledrafting.com.au
www.pinnacledrafting.com.au
Licence: CC6073Y

Stage 03 Elevations

Revision: DA - 03
Approved by: JRD

Scale: 1:100 @A1
Pg. No: A.09

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Structural Engineer: Gandy & Roberts
Building Surveyor: LTBS
Civil Engineer: Aldanmark

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

ATTACHMENT 2

Civil Plans

SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
15 LUKAARLIA DRIVE
BRIDGEWATER

C001	COVER	B	26/09/2025
C002	ENGINEERING NOTES	B	26/09/2025
C101	SITE PLAN	B	26/09/2025
C102	STORMWATER PLAN	B	26/09/2025
C103	DRIVEWAY AND STORMWATER PLAN - SHEET 1	B	26/09/2025
C104	DRIVEWAY AND STORMWATER PLAN - SHEET 2	B	26/09/2025
C105	DRIVEWAY AND STORMWATER PLAN - SHEET 3	B	26/09/2025
C106	DRIVEWAY AND STORMWATER PLAN - SHEET 4	B	26/09/2025
C107	DRIVEWAY AND STORMWATER PLAN - SHEET 5	B	26/09/2025
C108	DRIVEWAY AND STORMWATER PLAN - SHEET 6	B	26/09/2025
C109	DRIVEWAY AND STORMWATER PLAN - SHEET 7	B	26/09/2025
C110	SEWER AND WATER PLAN	B	26/09/2025
C112	TURNPATH PLAN - SHEET 1	B	26/09/2025
C113	TURNPATH PLAN - SHEET 2	B	26/09/2025
C201	LONG SECTIONS	B	26/09/2025
C301	STORMWATER LONG SECTIONS - SHEET 1	B	26/09/2025
C302	STORMWATER LONG SECTIONS - SHEET 2	B	26/09/2025
C303	STORMWATER LONG SECTIONS - SHEET 3	B	26/09/2025
C304	STORMWATER LONG SECTIONS - SHEET 4	B	26/09/2025
C305	STORMWATER LONG SECTIONS - SHEET 5	B	26/09/2025
C306	SEWER LONG SECTIONS	B	26/09/2025
C401	CONSTRUCTION DETAILS - SHEET 1	B	26/09/2025
C402	CONSTRUCTION DETAILS - SHEET 2	B	26/09/2025
C403	CONSTRUCTION DETAILS - SHEET 3	B	26/09/2025
C404	CONSTRUCTION DETAILS - SHEET 4	B	26/09/2025

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
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			DESIGN: DE
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A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

ALDANMARK CONSULTING ENGINEERS
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03 6234 8666
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www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

ADDRESS: 15 LUKAARLIA DRIVE
BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: COVER

SCALE:

TOTAL SHEETS: 25

SIZE: A1

PROJECT No: 25 E 52 - 20

SHEET: C001

REV: B

GENERAL NOTES:

1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, HYDRAULIC AND STRUCTURAL DRAWINGS AND SPECIFICATIONS. STANDARDS REFERENCED ARE TO BE THE MOST CURRENT VERSION.
2. THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION UNLESS ENDORSED 'FOR CONSTRUCTION' AND AUTHORISED FOR ISSUE ACCORDINGLY.
3. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH IPWEA/LGAT STANDARD DRAWINGS AND SPECIFICATIONS, AUSTRALIAN STANDARDS, (WSAA SEWERAGE CODE OF AUSTRALIA & WATER SUPPLY CODE OF AUSTRALIA) AND TO THE SATISFACTION OF COUNCIL'S DEVELOPMENT ENGINEER.
4. IPWEA/LGAT STANDARD DRAWINGS TO BE READ IN CONJUNCTION WITH COUNCIL EXCLUSION SHEETS TSD-E01-v1 & TSD-E02-v1.
5. ALL WORKS ARE TO BE MAINTAINED IN A SAFE CONDITION.
6. CONFIRM ALL LEVELS ON SITE PRIOR TO THE COMMENCEMENT OF WORKS.
7. CONTRACTOR TO OBTAIN APPROVALS, SERVICE CLEARANCES AND COORDINATE WORK WITH ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT.
8. A "START OF WORKS NOTICE" MUST BE OBTAINED FROM COUNCIL PRIOR TO ANY WORKS COMMENCING.
9. SURVEY DATA UNDERTAKEN AND PROVIDED BY PDA SURVEYORS.
10. ARCHITECTURAL UNIT AND SITE LAYOUT UNDERTAKEN AND PROVIDED BY ALDANMARK.
11. FLOOR LEVELS SET BY ARCHITECT. DRIVEWAY GRADING BASED ON THESE

WORKPLACE HEALTH & SAFETY NOTES:

BEFORE THE CONTRACTOR COMMENCES WORK THE CONTRACTOR SHALL UNDERTAKE A SITE SPECIFIC PROJECT PRE-START HAZARD ANALYSIS / JOB SAFETY ANALYSIS (JSA) WHICH SHALL IDENTIFY IN DOCUMENTED FORM;

- THE TYPE OF WORK.
- HAZARDS AND RISKS TO HEALTH AND SAFETY.
- THE CONTROLS TO BE APPLIED IN ORDER ELIMINATE OR MINIMIZE THE RISK POSED BY THE IDENTIFIED HAZARDS.
- THE MANNER IN WHICH THE RISK CONTROL MEASURES ARE TO BE IMPLEMENTED.

THESE ARE TO BE SUBMITTED TO THE SUPERINTENDENT AND/OR OTHER RELEVANT WORKPLACE SAFETY OFFICERS.

FOR THIS PROJECT; POSSIBLE HAZARDS INCLUDE (BUT ARE NOT LIMITED TO):

- EXCAVATION OF ANY TYPE & DEPTHS
- CONTAMINATED SOILS
- CONSTRUCTION IN GROUND WITH HIGH WATER TABLE
- FELLING / LOPPING &/OR REMOVAL OF EXISTING TREES/VEGETATION
- UNDERGROUND STRUCTURES (MANHOLES / SUMPS / ETC)
- CONFINED SPACES
- OVERHEAD POWER LINES
- UNDERGROUND STORMWATER, WATER AND SEWER PIPES
- TELECOMMUNICATION CABLES - BOTH UNDERGROUND & OVERHEAD
- ELECTRICAL/POWER CABLES - BOTH UNDERGROUND & OVERHEAD
- WORKING AT HEIGHTS
- WORKING WITH ASBESTOS CONTAINING MATERIALS
- TRAFFIC MANAGEMENT

EARTHWORKS & DRIVEWAY NOTES:

1. ALL EARTHWORKS SHALL BE IN ACCORDANCE WITH AS3798 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS".
2. ALL VEGETATION AND TOPSOIL SHALL BE STRIPPED AND GRUBBED IN THE AREA OF PROPOSED WORKS.
3. NEW OR MODIFIED DRIVEWAY CROSSINGS SHALL BE IN ACCORDANCE WITH IPWEA STANDARD DRAWING TSD-R09-v2 AND MUST BE INSPECTED AND APPROVED BY COUNCIL.
4. EXCAVATED AND IMPORTED MATERIAL USED AS FILL IS TO BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5. FILL MATERIAL SHALL BE WELL GRADED AND FREE OF BOULDERS OR COBBLES EXCEEDING 150mm IN DIAMETER UNLESS APPROVED TO BE OTHERWISE.
6. FILL REQUIRED TO SUPPORT DRIVEWAYS INCLUDING FILL IN EMBANKMENTS THAT SUPPORT DRIVEWAYS SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
   - TOP SOIL AND ORGANIC MATTER SHALL BE STRIPPED TO A MINIMUM OF 100mm.
   - THE SUB GRADE SHALL HAVE A MINIMUM BEARING CAPACITY OF 100 kPa.
   - FILL IN EMBANKMENTS SHALL BE KEYED 150mm INTO NATURAL GROUND.
   - THE FILL SHALL BE COMPACTED IN HORIZONTAL LAYERS OF NOT MORE THAN 200mm.
   - EACH LAYER SHALL BE COMPACTED TO A MINIMUM DENSITY RATIO OF 95% STD, IT IS THE BUILDERS RESPONSIBILITY TO ENSURE THAT THIS IS ACHIEVED.
7. WHERE THE ABOVE REQUIREMENTS CANNOT BE ACHIEVED THE ENGINEER SHALL BE CONSULTED AND THE FORMATION SHALL BE PROOF ROLLED (UNDER SUPERVISION OF THE ENGINEER) TO CONFIRM AN APPROVED BASE.
8. CONCRETE PAVEMENTS SHALL BE CURED FOR A MINIMUM OF 3 DAYS USING A CURRENT BEST PRACTICE METHOD.
9. SAWN CONTROL JOINTS SHALL BE CONSTRUCTED AS SOON AS POSSIBLE WITHOUT RAVELLING THE JOINT, GENERALLY THIS SHALL BE WITHIN 24 HOURS.
10. BATTERS SHALL BE SET TO A SAFE ANGLE OF REPOSE IN ACCORDANCE WITH THE BCA VOL 2 AS INDICATED BELOW:

SOIL TYPE (* REFER BCA 3.2.4)		EMBANKMENT SLOPES H:L	
		COMPACTED FILL	CUT
STABLE ROCK (A*)		2:3	8:1
SAND (A*)		1:2	1:2
SILT (P*)		1:4	1:4
CLAY	FIRM CLAY	1:2	1:1
	SOFT CLAY	NOT SUITABLE	2:3
SOFT SOILS (P)		NOT SUITABLE	NOT SUITABLE

NOTE: WHERE SITE CONDITIONS ARE UNSUITABLE FOR A BATTERED BANK CONSULT THE ENGINEER FOR A SUITABLE RETAINING WALL DESIGN. EMBANKMENTS THAT ARE TO BE LEFT EXPOSED MUST BE STABILISED BY VEGETATION OR SIMILAR WORKS TO PREVENT SOIL EROSION.

DRAINAGE AND SERVICES NOTES:

1. ALL WORKS ASSOCIATED WITH PUBLIC STORMWATER INFRASTRUCTURE IS TO BE CARRIED OUT IN ACCORDANCE WITH IPWEA (TAS) LGAT STANDARD DRAWINGS AND SPECIFICATION AND TO THE SATISFACTION OF COUNCIL.
2. ALL WORKS ASSOCIATED WITH PUBLIC SEWER AND WATER ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE WATER SUPPLY CODE OF AUSTRALIA WSA 03 -2011-3.1 VERSION 3.1 MRWA EDITION V2.0 AND SEWERAGE CODE OF AUSTRALIA MELBOURNE RETAIL WATER AGENCIES CODE WSA 02--2014-3.1 MRWA VERSION 2 AND TASWATER'S SUPPLEMENTS TO THESE CODES AND TO THE SATISFACTION OF TASWATER.
3. ALL CONNECTIONS TO EXISTING MAINS TO BE CARRIED OUT BY THE REGULATING AUTHORITY AT COST TO BUILDER UNLESS APPROVED OTHERWISE.
4. HYDRAULIC LAYOUT TO BE COORDINATED WITH OTHER SERVICES. HYDRAULIC LAYOUT AS SHOWN IS NOTIONAL, LAYOUT TO BE CONFIRMED ON SITE.
5. ALL EXISTING SERVICES TO BE LOCATED ON SITE PRIOR TO THE COMMENCEMENT OF WORKS.
6. GENERAL MATERIALS, INSTALLATION & TESTING SHALL COMPLY WITH AS3500 AND THE NCC VOLUME 3 (PCA)
7. INSTALL ALL SUB-SOIL DRAINS TO THE REQUIREMENTS OF AS3500, PART 3.1.3 OF THE NCC 2019 - VOLUME 2 AND PART FP2 OF THE NCC 2019 - VOLUME 3.
8. PAVEMENT AND HARDSTAND AREAS SHALL FALL AT A MINIMUM OF 1% (1:100) TOWARD AN APPROVED DISCHARGE POINT.
9. ALL PIPE WORK UNDER TRAFFICABLE AREAS, INCLUDING DRIVEWAYS, IS TO BE BACKFILLED WITH COMPACTED FCR.
10. DRAINAGE PIPES TO BE MIN. uPVC CLASS SN4, PIPES UNDER TRAFFICABLE AREAS TO BE SN8 U.N.O.
11. MINIMUM GRADES FOR PRIVATE DRAINAGE PIPES SHALL BE 1% FOR STORMWATER AND 1.67% FOR SEWER U.N.O.
12. MINIMUM COVER FOR PRIVATE DRAINAGE PIPES SHALL BE 300mm FOR STORMWATER AND 500mm FOR SEWER U.N.O.
13. TASWATER SEWER MAINS TO BE MINIMUM DWV CLASS SN8 DN150 RRJ WITH MINIMUM CLASS SN10 DN100 PROPERTY CONNECTIONS.
14. STORMWATER MAINS TO BE MINIMUM DWV CLASS SN8 DN225 RRJ OR APPROVED EQUIVALENT UNLESS NOTED OTHERWISE.
15. WATER PIPES TO BE MIN. DN20 POLY PN16 AND FITTINGS TO BE MIN. CLASS 16 U.N.O.
16. WATER CONNECTIONS SHALL BE PROVIDED WITH METERAGE AND BACKFLOW PREVENTION AS PER TASWATER STANDARD DRAWING TWS-W-0002.
17. ALL PIPEWORK TO BE INSPECTED BY COUNCIL PRIOR TO BACKFILL.
18. PIT DIMENSIONS SHOWN HAVE BEEN DESIGNED BY PIT CAPACITY TABLES. THESE PITS MAY NEED TO BE INCREASED IN MINIMUM INTERNAL SIZE DUE TO THE DEPTH AS PER AS3500.3 AS PER TABLE BELOW WHICH IS THE CONTRACTORS RESPONSIBILITY TO ENSURE COMPLIANCE TO AS3500:

DEPTH TO INVERT OF OUTLET		MINIMUM INTERNAL DIMENSIONS mm	
		WIDTH	LENGTH
	≤600	450	450
>600	≤900	600	600
>900	≤1200	600	900
>1200		900	900

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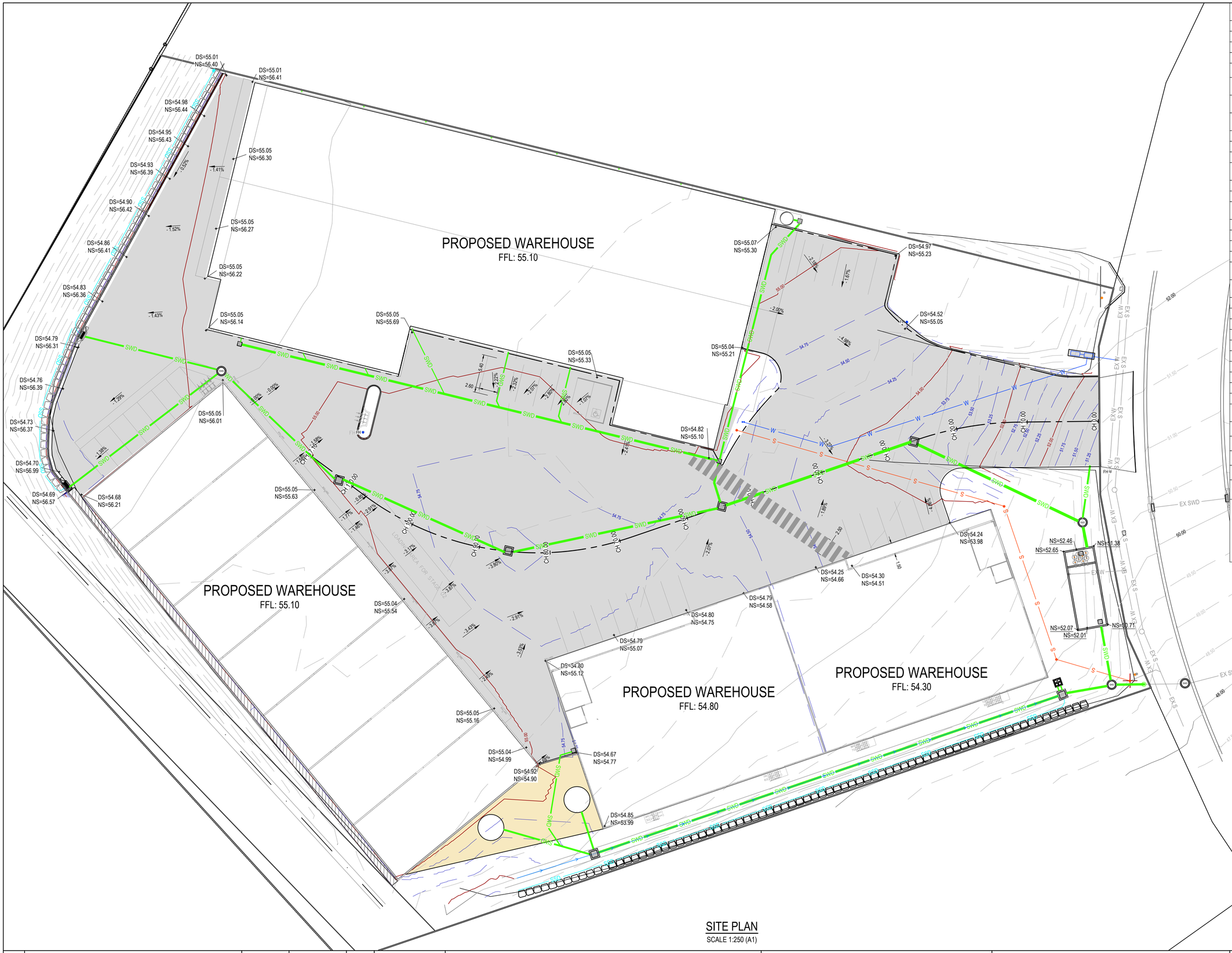
PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: ENGINEERING NOTES
SCALE:
TOTAL SHEETS: 25
SIZE: A2
PROJECT No: 25 E 52 - 20
SHEET: C002
REV: B



SITE PLAN
SCALE 1:250 (A1)

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
	SEWER FIXTURE
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP OP	EXISTING TELSTRA
FOC	EXISTING NBN
G G	EXISTING GAS

PAVEMENT LEGEND

	ASPHALT
	CONCRETE DRIVEWAY
	CONCRETE FOOTPATH
	GRAVEL

NOTES

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BEWARE OF UNDERGROUND SERVICES:
THE LOCATION OF UNDER GROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT LOCATION SHOULD BE PROVEN ON SITE BY THE RELEVANT AUTHORITIES. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: SITE PLAN
SCALE: 1:250
TOTAL SHEETS: 25
SIZE: A3
PROJECT No: 25 E 52 - 20
SHEET: C101
REV: B

NOTES

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SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
//	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP OP	EXISTING TELSTRA
FOC	EXISTING NBN
G G	EXISTING GAS

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

DN150 PVC SN6 STORMWATER

MIN. 8,000L RAINWATER DETENTION TANK INSTALLED AS PER MANUFACTURERS SPECIFICATIONS. FITTED WITH 55mm LOW FLOW ORIFICE AND DN225 OVERFLOW. REFER DETAIL FOR TYPICAL INSTALLATION

PROPOSED WAREHOUSE
FFL: 55.10

PROPOSED WAREHOUSE
FFL: 55.10

PROPOSED WAREHOUSE
FFL: 54.80

PROPOSED WAREHOUSE
FFL: 54.30

MIN. 1000 W x 0.35 D (AT START) CONCRETE CHANNEL UNDER FOOTPATH WITH FRP OR APPROVED EQUIVALENT GRATED MESH OVER TO PROVIDE OVERLAND FLOW AROUND REAR OF STAGE 2 WAREHOUSE IN 1% AEP EVENT. CHANNEL TO HAVE MIN. 0.5% FALL, RESULTING IN DEPTH OF MIN. 710mm AT TERMINATION. REFER CROSS SECTIONS FOR DETAILS

RETAINING WALL TO REAR OF WAREHOUSE TO BE CONSTRUCTED FOR EMBANKMENT STABILITY ONLY. RETAINING WALL IS NOT A FLOOD PREVENTION STRUCTURE

0.45m x NOM. 1.0m WIDE EARTH BUND TO BE CONSTRCUTED AT TOP OF EMBANKMENT AS PER FLOOD REPORT RECOMMENDATIONS. BUND TO PREVENT SEDIMENT FROM ENTERING PROPOSED CONCRETE CHANNEL TO REAR OF STAGE 2 WAREHOUSE

MIN. 1500 X 150 DEEP TABLE DRAIN WITH MIN. 1:200 FALL TO OUTLET REFER SHEET C304 FOR LONGSECTION

TERMINATION OF CONCRETE CHANNEL UNDER FOOTPATH WITH FRP OR APPROVED EQUIVALENT GRATED MESH OVER TO PROVIDE OVERLAND FLOW AROUND REAR OF STAGE 2 WAREHOUSE IN 1% AEP EVENT. TERMINATION TO BE ROCK LINED WITH NOM. 100 DIA. FRESH DOLERITE PLACED ON GEOFABRIC LINER FOR EROSION PROTECTION

EXISTING STORMWATER CONNECTION
LID LEVEL: 49.22
INVERT LEVEL: 48.47
PROPERTY CONNECTION TO BE RAISED TO SURFACE WITH I.O LOCATED IN PATH BOX

EXISTING DN300 STORMWATER CONNECTION
UPSTREAM INVERT: 48.47
DOWNSTREAM INVERT: 47.82
CONNECTION AT APPROX. 11.7% FALL
ESTIMATED CAPACITY OF NOM. 370 L/s

EXISTING STORMWATER MANHOLE AS PER PDA SURVEY
LID LEVEL: 48.44
INVERT LEVEL: 46.89

EXISTING DN300 STORMWATER MAIN AS PER PDA SURVEY
UPSTREAM INVERT LEVEL: 46.891
DOWNSTREAM INVERT LEVEL: 46.752
MAIN AT APPROX. 1.1% FALL
ESTIMATED CAPACITY OF NOM. 115 L/s

EXISTING DN300 STORMWATER MAIN AS PER PDA SURVEY

EXISTING GRATED PIT AS PER PDA SURVEY
LID: 50.29
IL:49.22

EXISTING DN450 STORMWATER MAIN AS PER PDA SURVEY

EXISTING DN450 STORMWATER MAIN AS PER PDA SURVEY
INVERT LEVEL: 44.107
MAIN AT APPROX. 9.2% FALL
ESTIMATED CAPACITY OF NOM. 978 L/s

STORMWATER PLAN

SCALE 1:250 (A1)

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25m

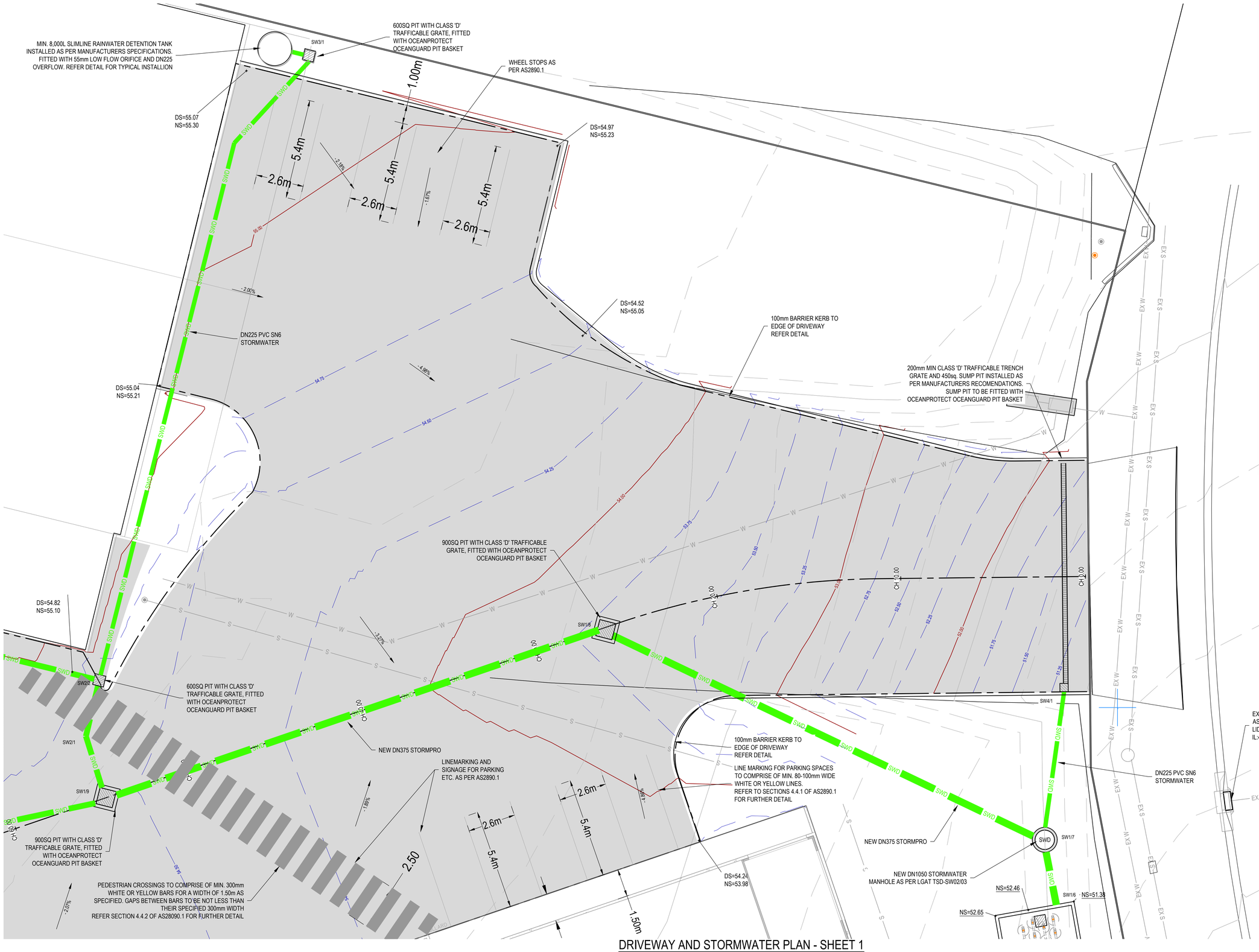
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: STORMWATER PLAN

SCALE: 1:250 | TOTAL SHEETS: 25 | SIZE: A4

PROJECT No: 25 E 52 - 20 | SHEET: C102 | REV: B



DRIVEWAY AND STORMWATER PLAN - SHEET 1

SCALE 1:100 (A1)

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

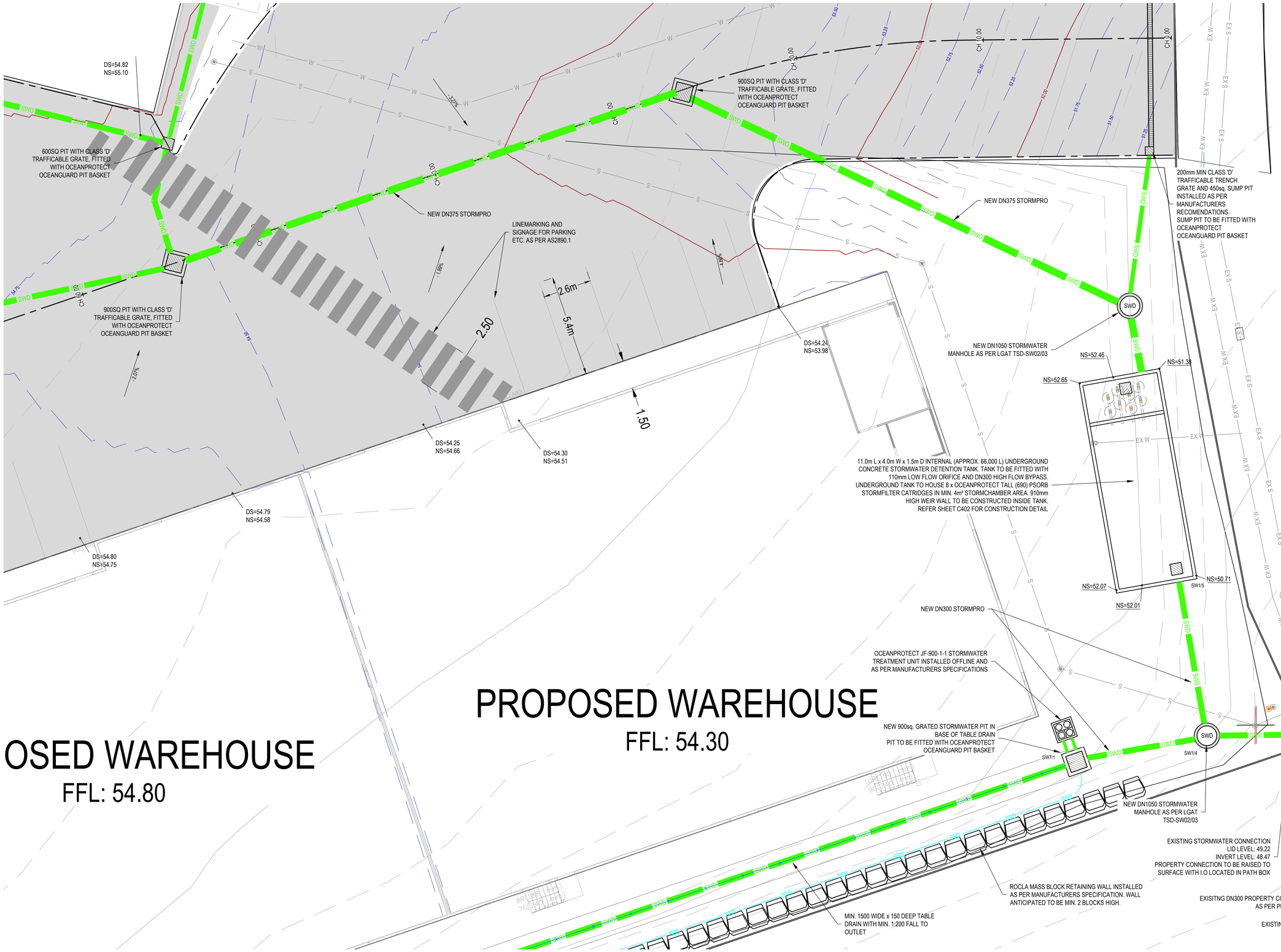
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 1

SCALE: 1:100 | TOTAL SHEETS: 25 | SIZE: A5

PROJECT No: 25 E 52 - 20 | SHEET: C103 | REV: B



OSED WAREHOUSE
FFL: 54.80

PROPOSED WAREHOUSE
FFL: 54.30

DRIVEWAY AND STORMWATER PLAN - SHEET 2
SCALE 1:100 (A1)

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
SWD	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
S	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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			CHECKED: LG
			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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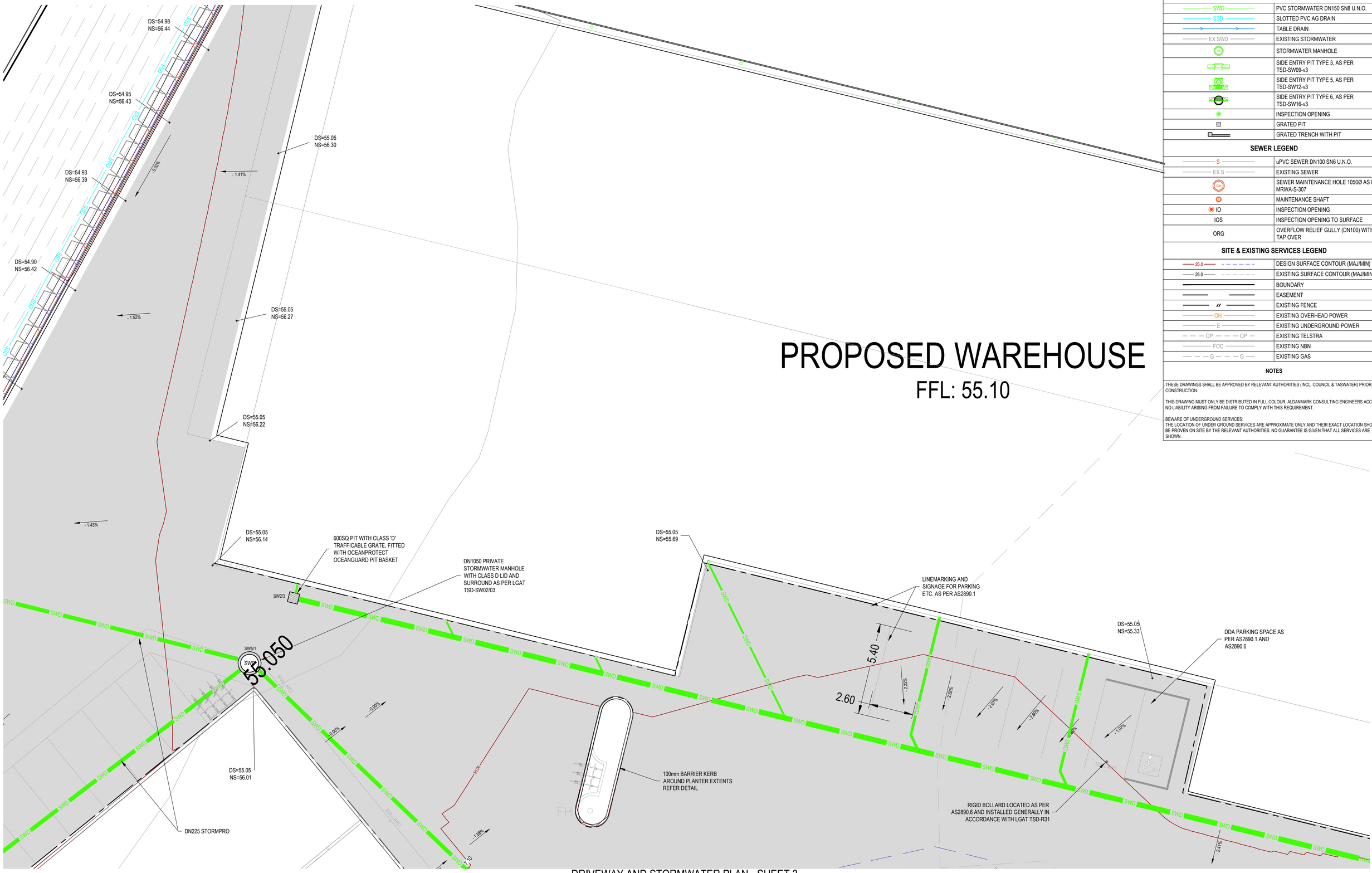
Lower Ground
199 Macquarie Street
Hobart TAS 7000
03 6234 8666
mail@aldanmark.com.au
www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 2
SCALE: 1:100
TOTAL SHEETS: 25
SIZE: A6
PROJECT No: 25 E 52 - 20
SHEET: C104
REV: B



PROPOSED WAREHOUSE

FFL: 55.10

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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DRIVEWAY AND STORMWATER PLAN - SHEET 3

SCALE 1:100 (A1)

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03 6234 8666
mail@aldanmark.com.au
www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 1 2 3 4 5 6 7 8 9 10m

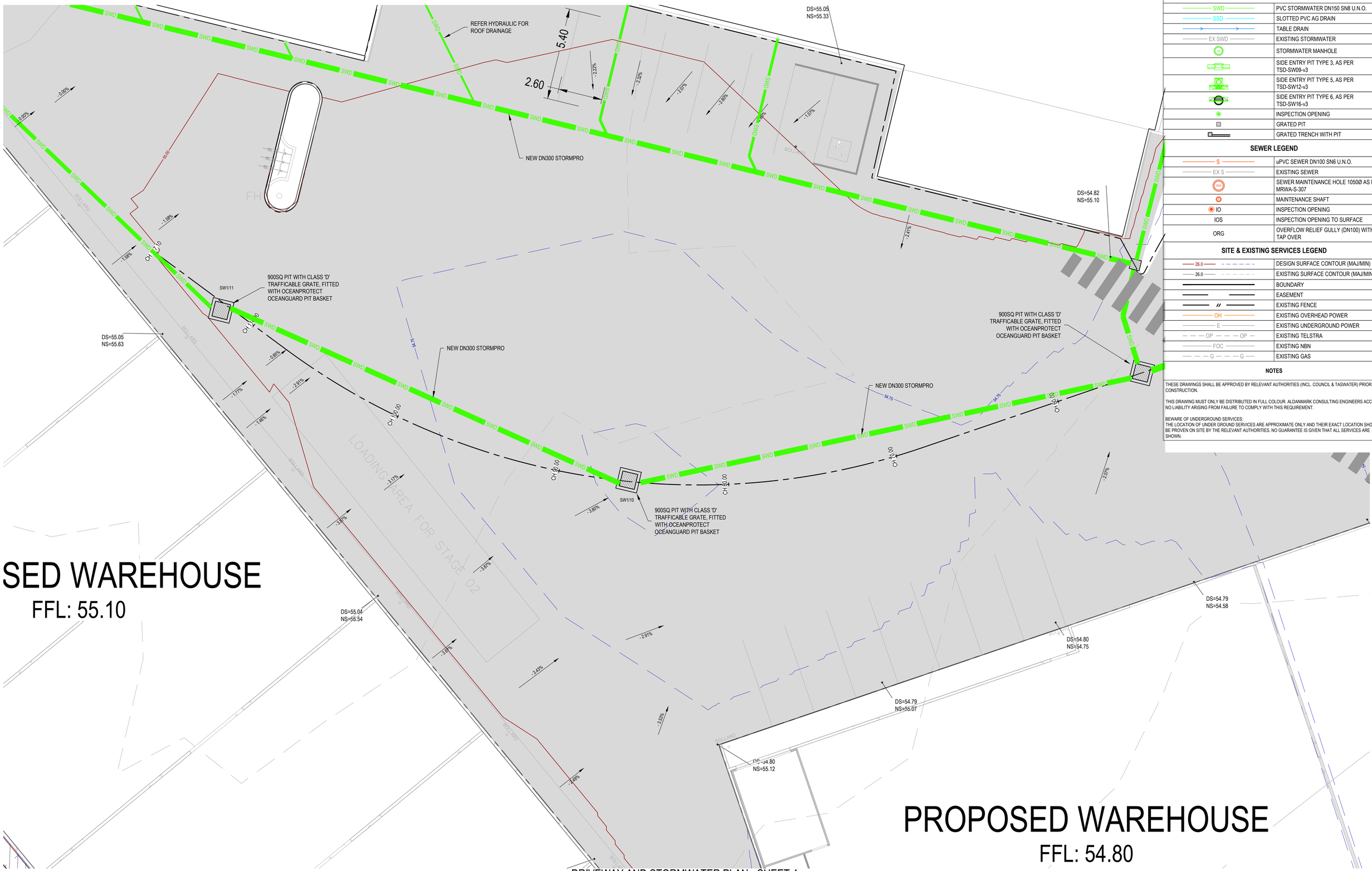
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 3

SCALE: 1:100 | TOTAL SHEETS: 25 | SIZE: A7

PROJECT No: 25 E 52 - 20 | SHEET: C105 | REV: B



STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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DRIVEWAY AND STORMWATER PLAN - SHEET 4

SCALE 1:100 (A1)

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			DRAWN: DE

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mail@aldanmark.com.au
www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

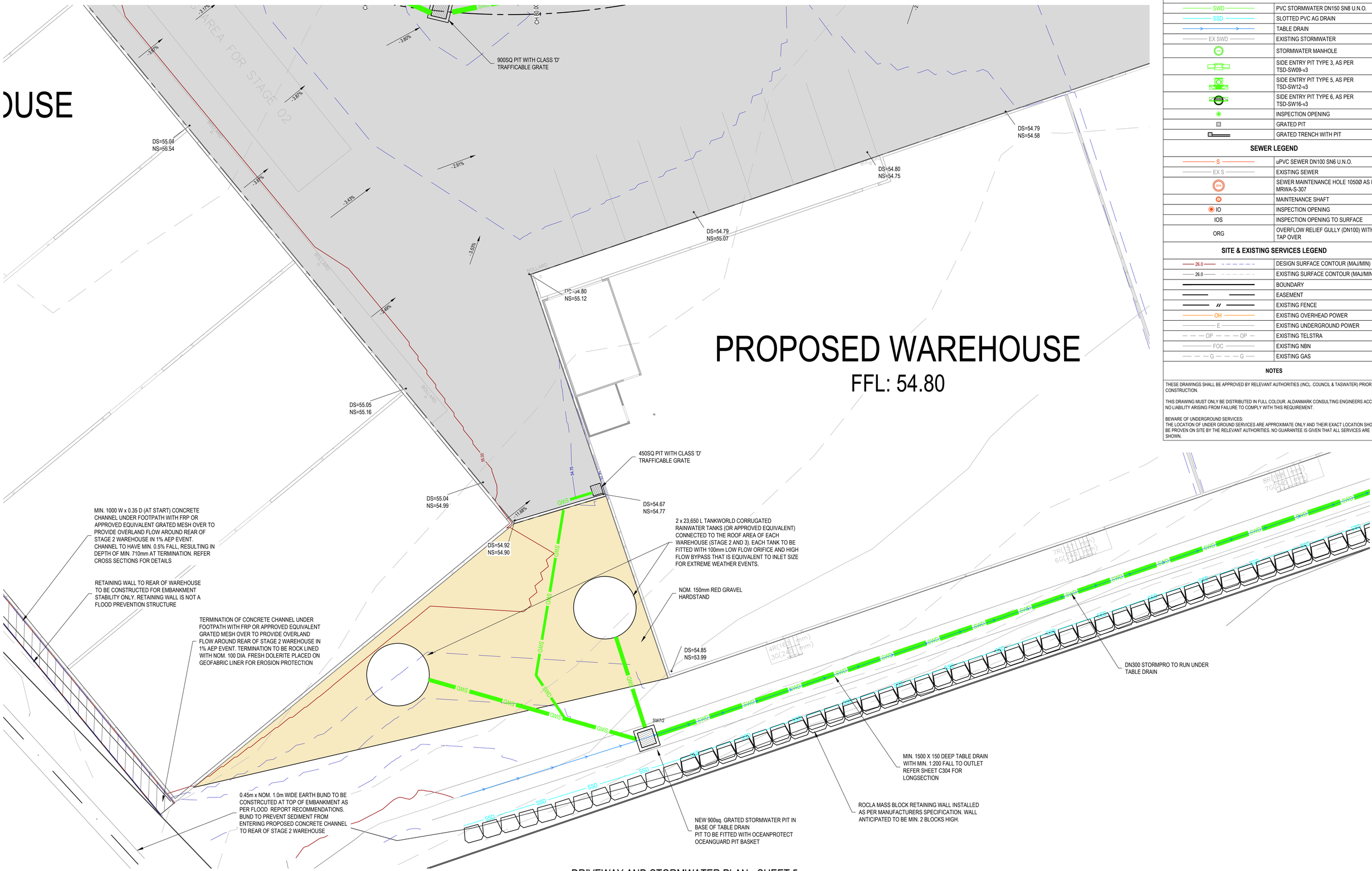
CLIENT: SOUTHERN STEEL PROPERTIES

0 1 2 3 4 5 6 7 8 9 10m

SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 4

SCALE: 1:100 | TOTAL SHEETS: 25 | SIZE: A8

PROJECT No: 25 E 52 - 20 | SHEET: C106 | REV: B



STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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DRIVEWAY AND STORMWATER PLAN - SHEET 5

SCALE 1:100 (A1)

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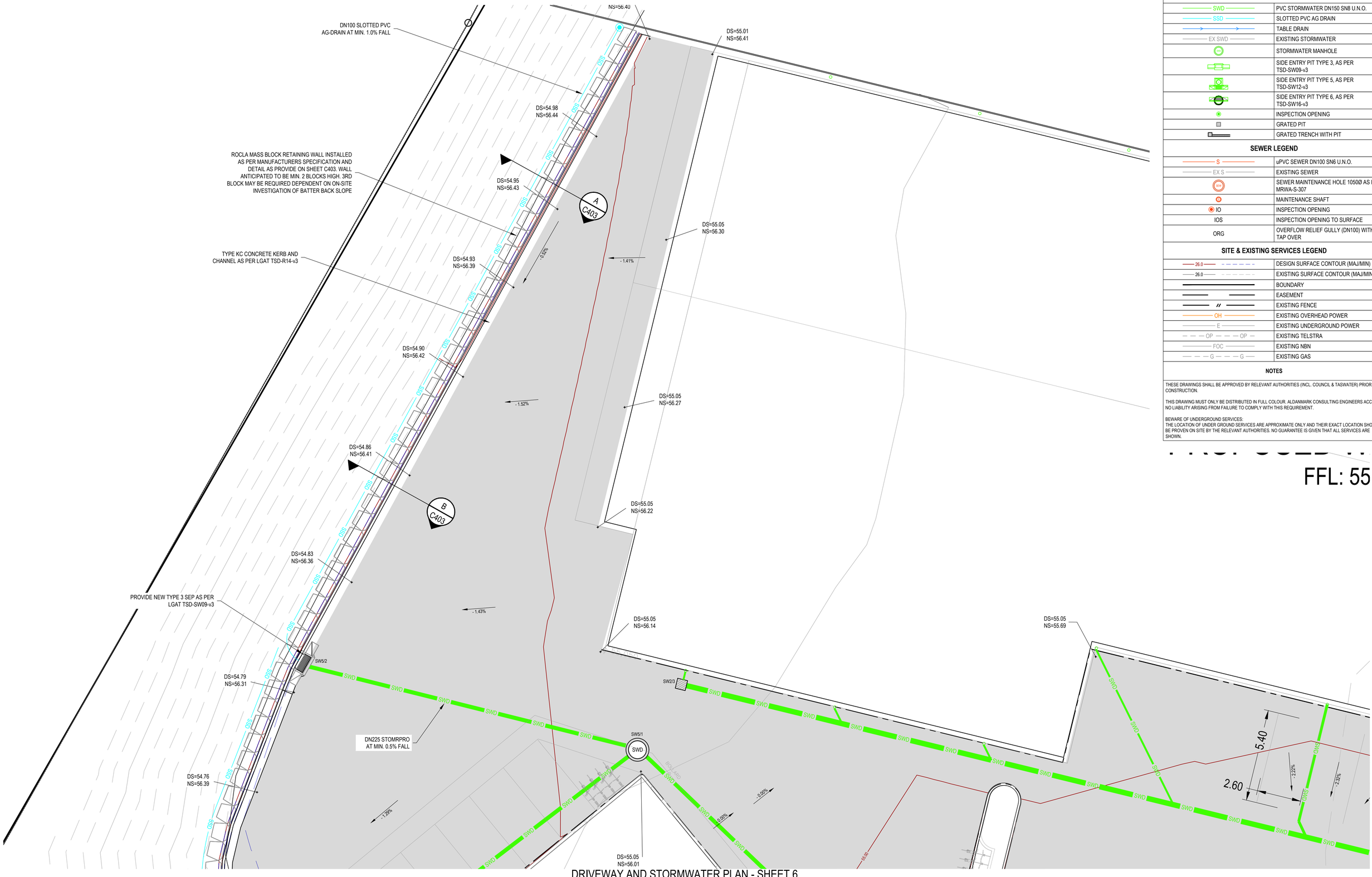
mail@aldanmark.com.au
www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 5
SCALE: 1:100
TOTAL SHEETS: 25
SIZE: A9
PROJECT No: 25 E 52 - 20
SHEET: C107
REV: B



STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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PROPOSED

DRIVEWAY AND STORMWATER PLAN - SHEET 6

SCALE 1:100 (A1)

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Hobart TAS 7000
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mail@aldanmark.com.au
www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

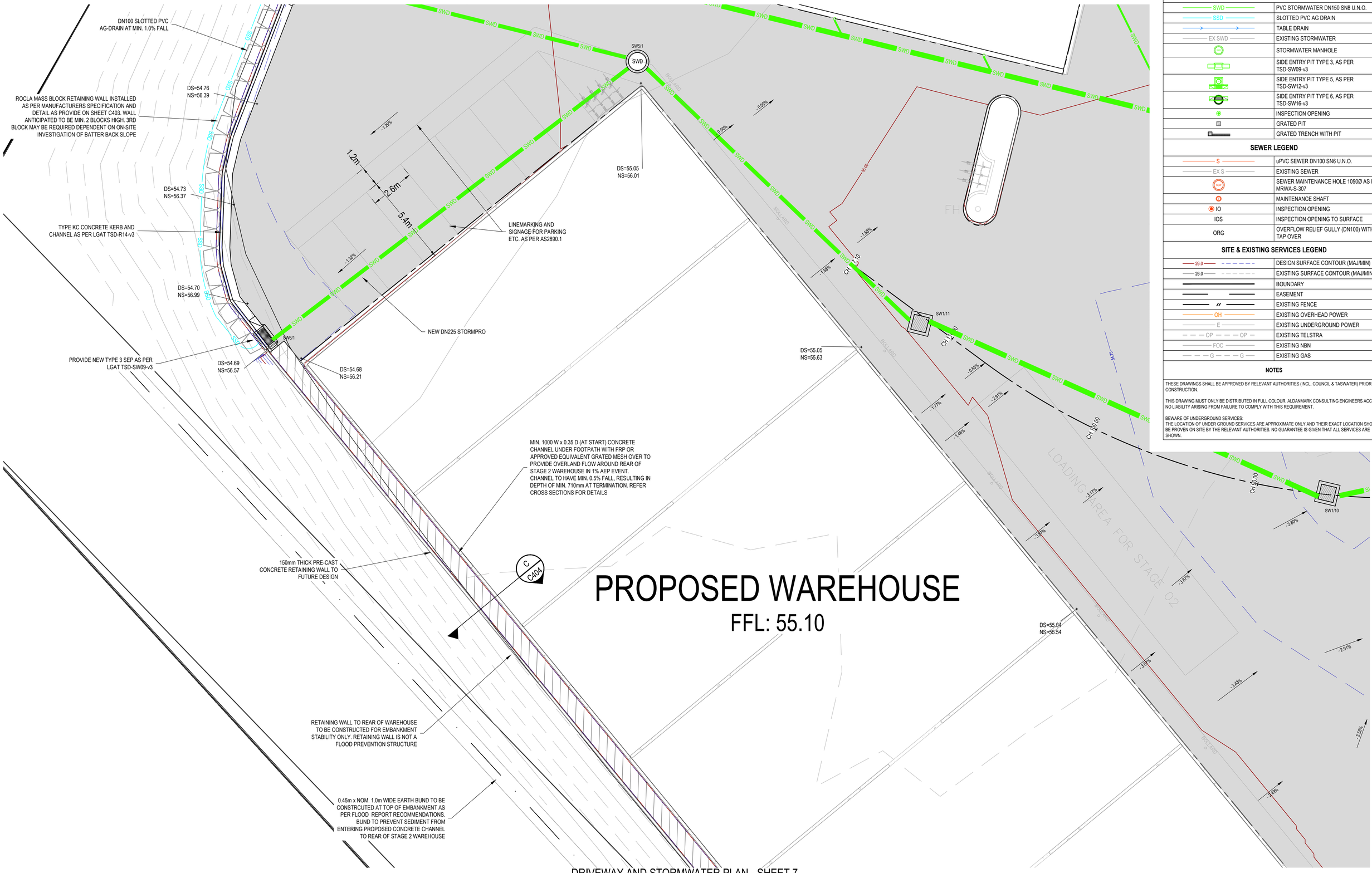
ADDRESS: 15 LUKAARLIA DRIVE
BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 6

SCALE: 1:100 | TOTAL SHEETS: 25 | SIZE: A10

PROJECT No: 25 E 52 - 20 | SHEET: C108 | REV: B



STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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DRIVEWAY AND STORMWATER PLAN - SHEET 7

SCALE 1:100 (A1)

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 1 2 3 4 5 6 7 8 9 10m

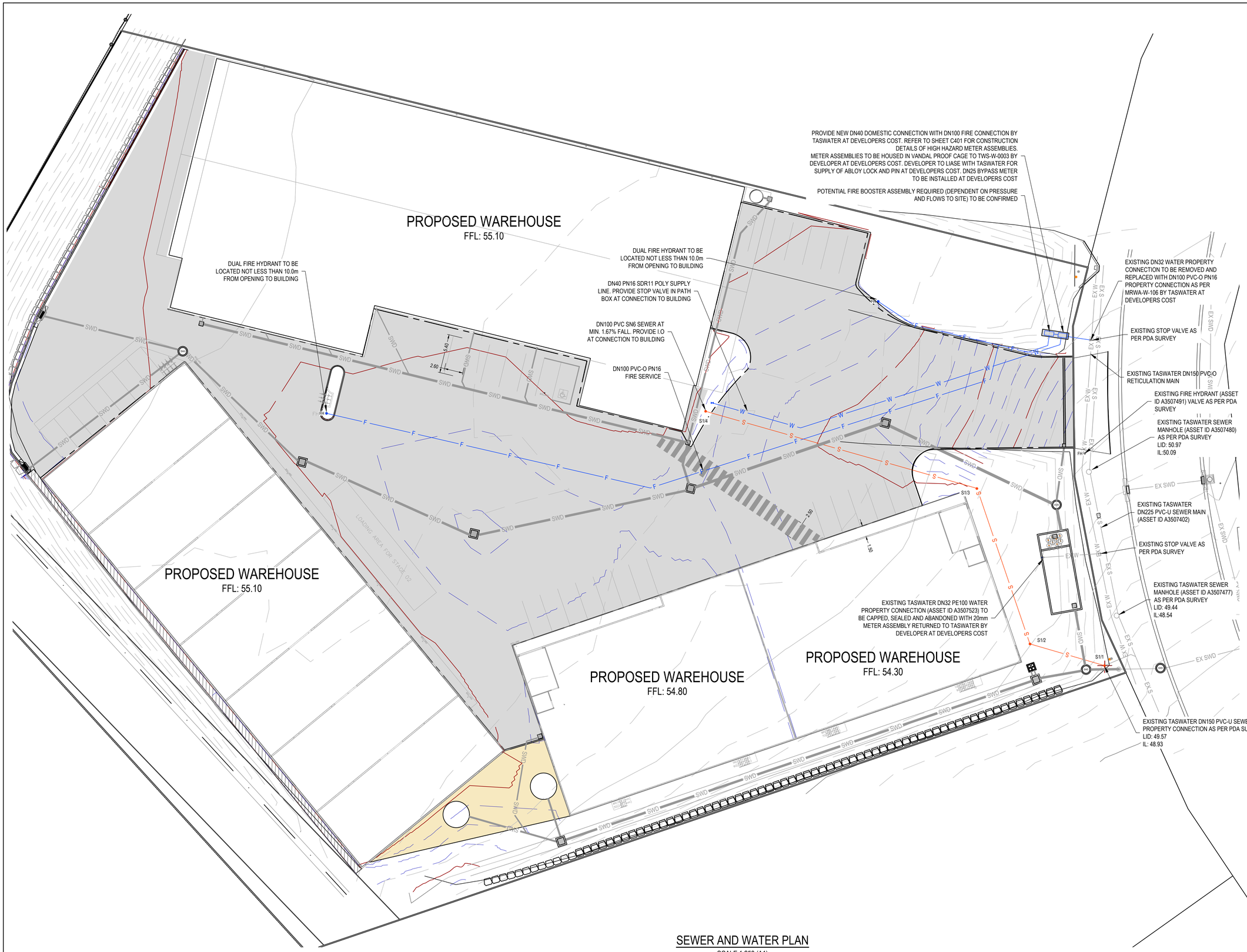
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: DRIVEWAY AND STORMWATER PLAN - SHEET 7

SCALE: 1:100 | TOTAL SHEETS: 25 | SIZE: A11

PROJECT No: 25 E 52 - 20 | SHEET: C109 | REV: B



SEWER AND WATER PLAN

SCALE 1:250 (A1)

STORMWATER LEGEND

SWD	PVC STORMWATER DN150 SN8 U.N.O.
SSD	SLOTTED PVC AG DRAIN
	TABLE DRAIN
EX SWD	EXISTING STORMWATER
	STORMWATER MANHOLE
	SIDE ENTRY PIT TYPE 3, AS PER TSD-SW09-v3
	SIDE ENTRY PIT TYPE 5, AS PER TSD-SW12-v3
	SIDE ENTRY PIT TYPE 6, AS PER TSD-SW16-v3
	INSPECTION OPENING
	GRATED PIT
	GRATED TRENCH WITH PIT

SEWER LEGEND

S	uPVC SEWER DN100 SN6 U.N.O.
EX S	EXISTING SEWER
	SEWER MAINTENANCE HOLE 1050Ø AS PER MRWA-S-307
	MAINTENANCE SHAFT
	SEWER FIXTURE
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
ORG	OVERFLOW RELIEF GULLY (DN100) WITH TAP OVER

WATER SERVICES LEGEND

W	DN150 O-PVC PN16 WATER MAIN OR APPROVED EQUIVALENT UNO
W	HDPE WATER
EX W	EXISTING WATER MAIN
25OD W	250D POLY (20ID) CONNECTION WITH 20mm WATER METER INCL. OF BACKFLOW PREVENTION AS PER TWS-W-0002
W	DN100 CONDUIT TO ROAD CROSSING
	CHECK VALVE
SV	WATER VALVE
FH	HYDRANT

SITE & EXISTING SERVICES LEGEND

26.0	DESIGN SURFACE CONTOUR (MAJ/MIN)
26.0	EXISTING SURFACE CONTOUR (MAJ/MIN)
	BOUNDARY
	EASEMENT
	EXISTING FENCE
OH	EXISTING OVERHEAD POWER
E	EXISTING UNDERGROUND POWER
OP	EXISTING TELSTRA
FOC	EXISTING NBN
G	EXISTING GAS

NOTES

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WATER & SEWER NOTES

ALL WORKS ARE TO BE IN ACCORDANCE WITH THE WATER SUPPLY CODE OF AUSTRALIA WSA 03 - 2011-3.1 VERSION 3.1 MRWA EDITION V2.0 AND SEWERAGE CODE OF AUSTRALIA MELBOURNE RETAIL WATER AGENCIES CODE WSA 02 - 2014-3.1 MRWA VERSION 2 AND TASWATER'S SUPPLEMENTS TO THESE CODES

WATER METER ASSEMBLY TO BE HOUSED IN VANDAL PROOF CAGE AS PER TWS-W-0003. DEVELOPER TO LIAISE WITH TASWATER FOR SUPPLY OF ABLOY LOCK AND PIN AT DEVELOPERS COST

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www.aldanmark.com.au

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 1 2 3 4 5 6 7 8 9 10m

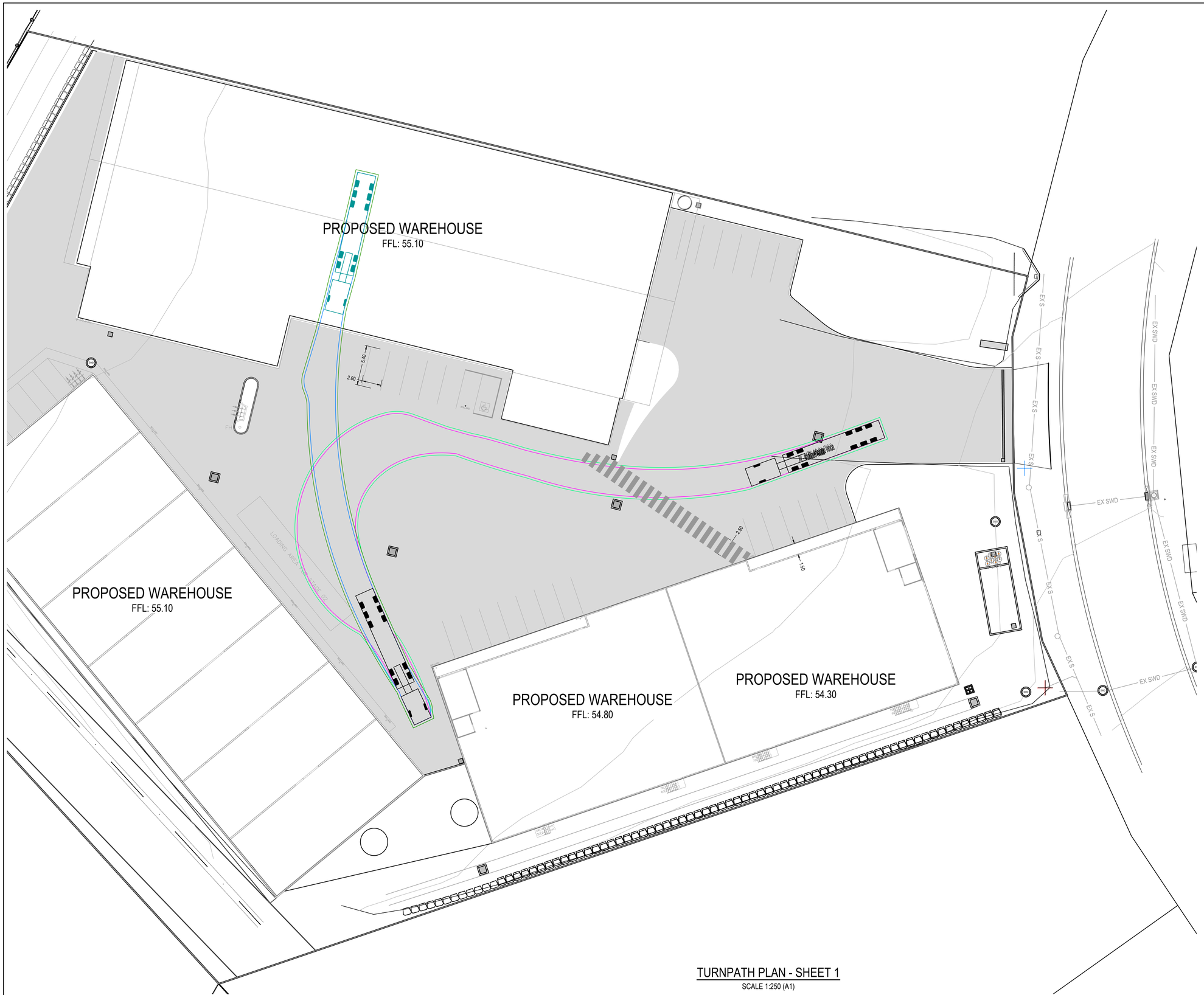
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

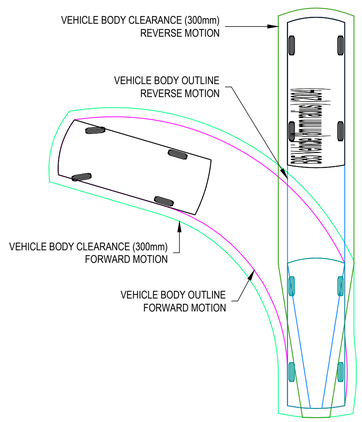
CLIENT: SOUTHERN STEEL PROPERTIES

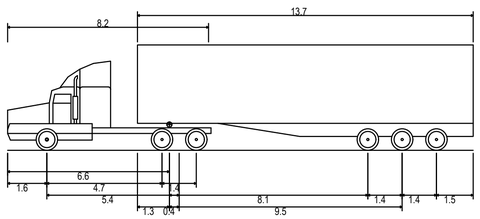
SHEET: SEWER AND WATER PLAN

SCALE: 1:250 | TOTAL SHEETS: 25 | SIZE: A12

PROJECT No: 25 E 52 - 20 | SHEET: C110 | REV: B







AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

VEHICLE TURNPATH - LEGEND

SCALE 1:100 (A1)

FROM AUTOCAD CIVIL 3D VEHICLE TRACKING SOFTWARE

TURNPATH PLAN - SHEET 1

SCALE 1:250 (A1)

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B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
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0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25m

PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

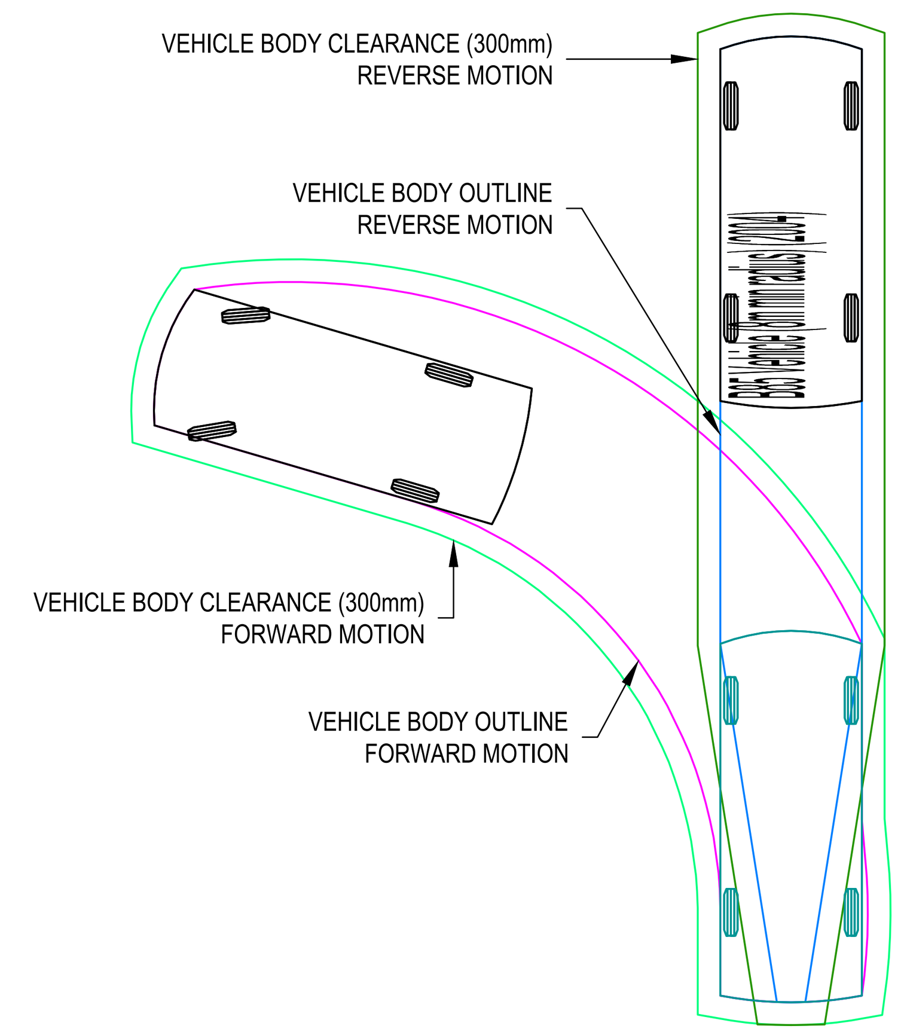
SHEET: TURNPATH PLAN - SHEET 1

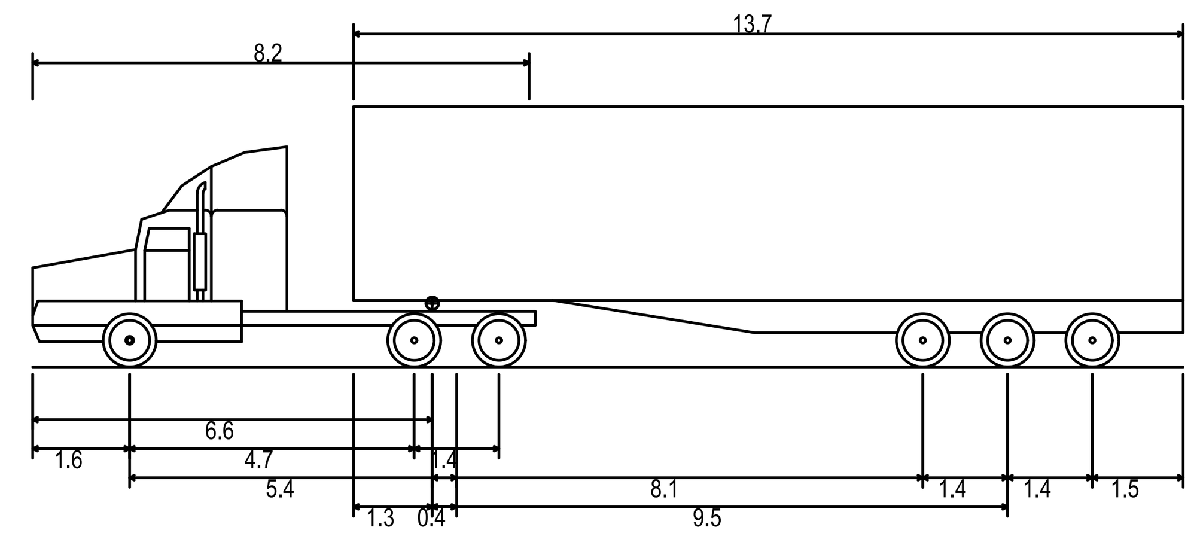
SCALE: 1:250 | TOTAL SHEETS: 25 | SIZE: A14

PROJECT No: 25 E 52 - 20 | SHEET: C112 | REV: B

TURNPATH PLAN - SHEET 2

SCALE 1:250 (A1)





AV - Articulated Vehicle	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

VEHICLE TURNPATH - LEGEND

SCALE 1:100 (A1)

FROM AUTOCAD CIVIL 3D VEHICLE TRACKING SOFTWARE

DIAL BEFORE YOU DIG www.1100.com.au

REV	ISSUE	DATE	APPROVAL	
			DRAWN:	DE
			CHECKED:	LG
			DESIGN:	DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:	
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:	

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25m

ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: TURNPATH PLAN - SHEET 2

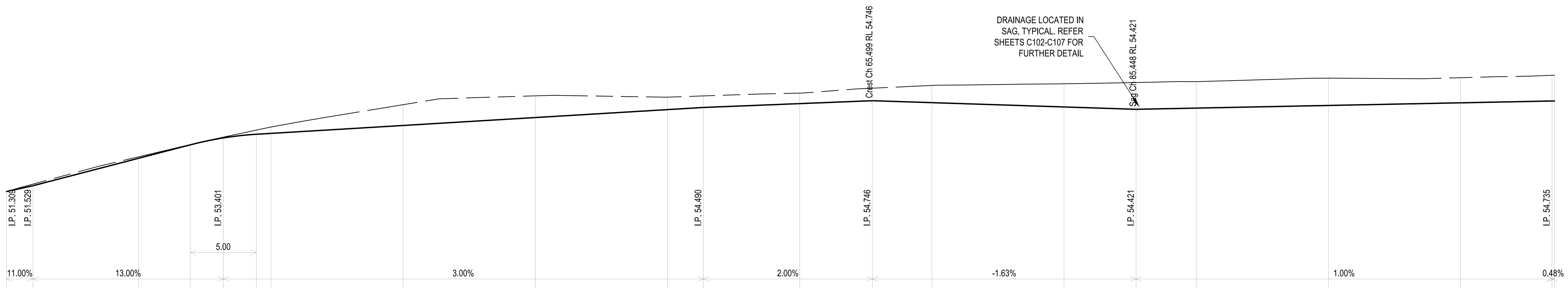
SCALE: 1:250	TOTAL SHEETS: 25	SIZE: A15
PROJECT No: 25 E 52 - 20	SHEET: C113	REV: B

NOTES

THESE DRAWINGS SHALL BE APPROVED BY RELEVANT AUTHORITIES (INCL. COUNCIL & TASWATER) PRIOR TO CONSTRUCTION.

THIS DRAWING MUST ONLY BE DISTRIBUTED IN FULL COLOUR. ALDANMARK CONSULTING ENGINEERS ACCEPTS NO LIABILITY ARISING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT.

BEWARE OF UNDERGROUND SERVICES:
THE LOCATION OF UNDER GROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT LOCATION SHOULD BE PROVEN ON SITE BY THE RELEVANT AUTHORITIES. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.



CUT (-) FILL (+)	+0.00	-0.06	-0.05	-0.01	-0.03	-0.15	-0.24	-0.79	-0.82	-0.47	-0.44
DESIGN CENTRE LINE	51.309	51.529	52.569	53.076	53.338	53.476	53.509	53.809	54.109	54.409	54.490
EXISTING SURFACE	51.31	51.59	52.62	53.09	53.37	53.63	53.75	54.60	54.93	54.88	54.93
CHAINAGE	0.00	2.00	10.00	13.90	16.40	18.90	20.00	30.00	40.00	50.00	52.71

CUT (-) FILL (+)	-0.39	-0.47	-0.65	-0.88	-1.01	-1.00	-1.03	-0.95	-0.97	-0.97
DESIGN CENTRE LINE	54.636	54.746	54.672	54.509	54.421	54.466	54.566	54.666	54.735	54.736
EXISTING SURFACE	55.03	55.22	55.32	55.39	55.43	55.47	55.60	55.62	55.71	55.71
CHAINAGE	60.00	65.50	70.00	80.00	85.45	90.00	100.00	110.00	116.91	117.10

CENTRELINE ALIGNMENT CL-1

From 0.000m To 117.103m Scales: H 1:200 V 1:100

LONG SECTIONS

SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL	
			DRAWN:	DE
			CHECKED:	LG
			DESIGN:	DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:	
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:	

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

0 2 4 6 8 10m H1:200
0 1 2 3 4 5m V1:100

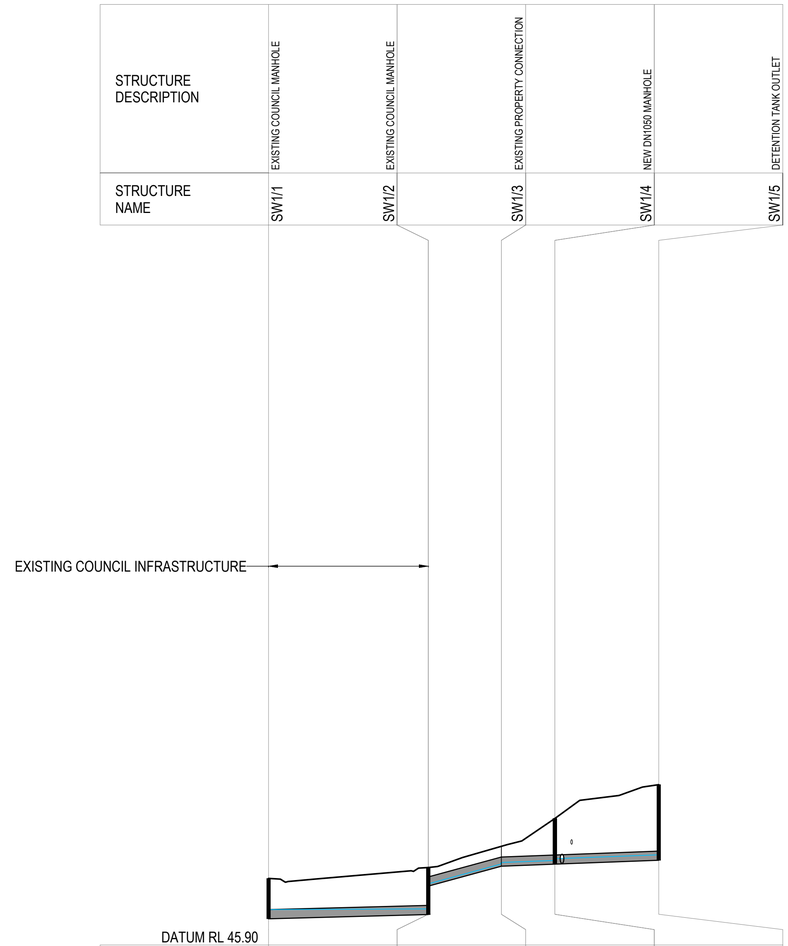
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: LONG SECTIONS

SCALE: 1:250 H 1:100 V | TOTAL SHEETS: 25 | SIZE: A16

PROJECT No: 25 E 52 - 20 | SHEET: C201 | REV: B



PIPE SIZE / MATRIAL	DN300 StormPRO		DN300 StormPRO	DN300 StormPRO	DN300 StormPRO
GRADE %	1.07%		10.90%	1.51%	1.50%
PIPE VELOCITY	0.84 m/s		0.84 m/s	0.84 m/s	0.33 m/s
PIPE HGL CAPACITY	154 L/s		539 L/s	187 L/s	186 L/s
DESIGN FLOW	60 L/s		60 L/s	60 L/s	24 L/s
DEPTH TO INVERT	1.32	1.54	0.61 0.65	1.49	2.47
INVERT LEVEL	46.752	46.891 47.820	48.470	48.536	48.663
FINISHED SURFACE	48.07	48.43	49.12	50.03	51.13
EXISTING SURFACE	48.07	48.43	49.12	50.03	51.13
CHAINAGE	0.00	13.04	19.00	23.37	31.85
	13.04m		5.96m	4.37m	8.48m

DRAINAGE LONGITUNDINAL SECTION FOR LINE 1

SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STORMWATER LONG SECTIONS - SHEET 1

SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
			CHECKED: LG
			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

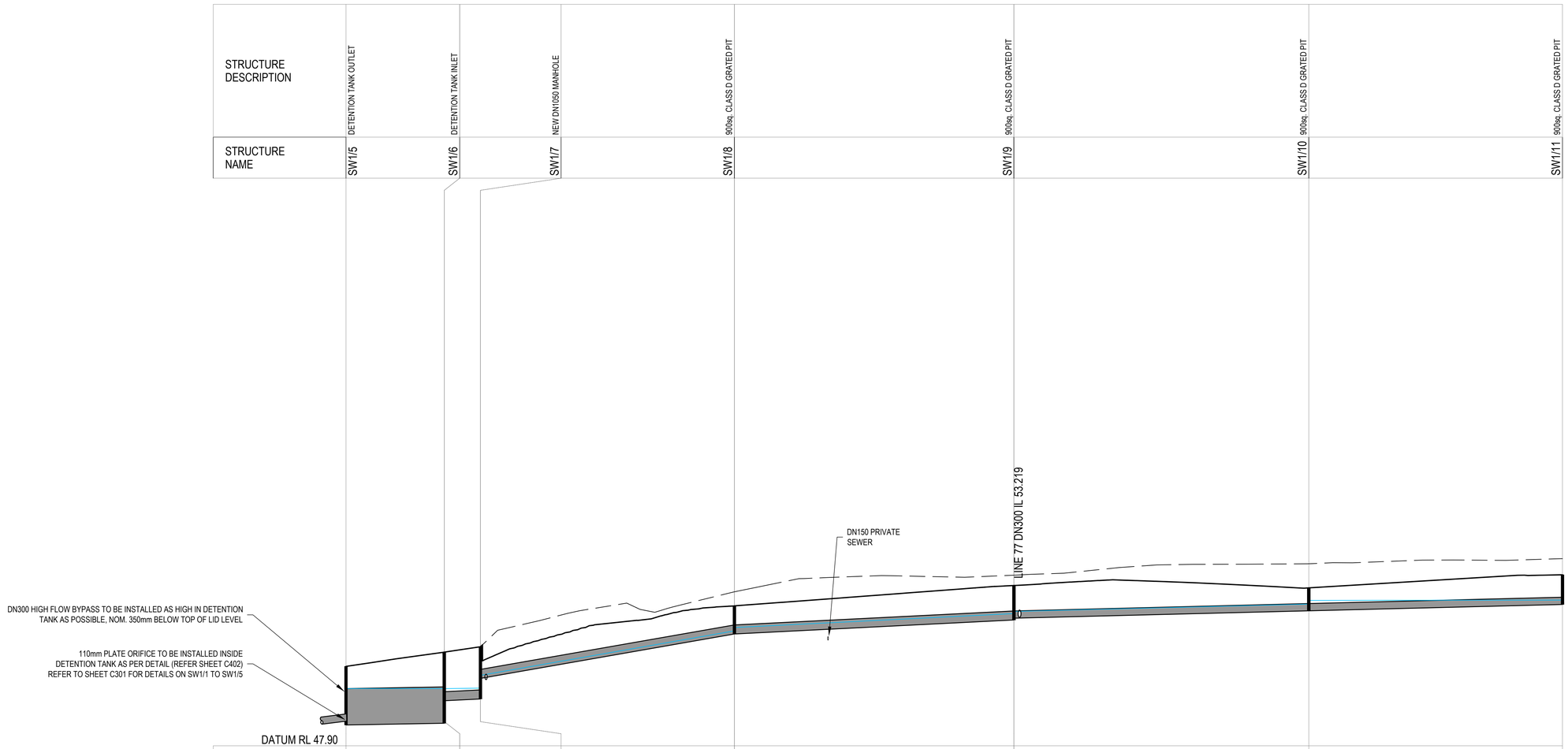
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: STORMWATER LONG SECTIONS - SHEET 1

SCALE: 1:250 H 1:100 V | TOTAL SHEETS: 25 | SIZE: A17

PROJECT No: 25 E 52 - 20 | SHEET: C301 | REV: B



STRUCTURE DESCRIPTION	DETENTION TANK OUTLET	DETENTION TANK INLET	NEW DN1050 MANHOLE	900sq. CLASS D GRATED PIT	900sq. CLASS D GRATED PIT	900sq. CLASS D GRATED PIT	900sq. CLASS D GRATED PIT
STRUCTURE NAME	SW1/5	SW1/6	SW1/7	SW1/8	SW1/9	SW1/10	SW1/11
PIPE SIZE / MATRIAL	DN1500 Class 4 RRJ	DN375 StormPRO	DN375 StormPRO	DN375 StormPRO	DN300 StormPRO	DN300 StormPRO	
GRADE %	0.70%	2.00%	7.00%	2.00%	1.00%	1.00%	
PIPE VELOCITY	0.10 m/s	1.66 m/s	1.51 m/s	1.29 m/s	1.22 m/s	0.41 m/s	
PIPE HGL CAPACITY	7637 L/s	388 L/s	759 L/s	388 L/s	149 L/s	149 L/s	
DESIGN FLOW	182 L/s	182 L/s	166 L/s	141 L/s	86 L/s	29 L/s	
DEPTH TO INVERT	2.43	2.94 2.01	2.16 1.31	1.16 1.43	1.35 0.95	1.23	
INVERT LEVEL	48.763	48.834 49.765	49.840 50.690	52.531 53.109	53.183 53.489	53.751	
FINISHED SURFACE	51.19	51.78 52.00	53.69 54.54	54.44	54.98		
EXISTING SURFACE	51.19	51.78 52.00	54.28 54.96	55.44	55.65		
CHAINAGE	0.00	10.17 13.92	40.21 69.15	99.68	125.95		
	10.17m	3.75m	26.30m	28.94m	30.53m	26.27m	

DRAINAGE LONGITUNDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STORMWATER LONG SECTIONS - SHEET 2
SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:
			DESIGN: DE
			CHECKED: LG
			DRAWN: DE

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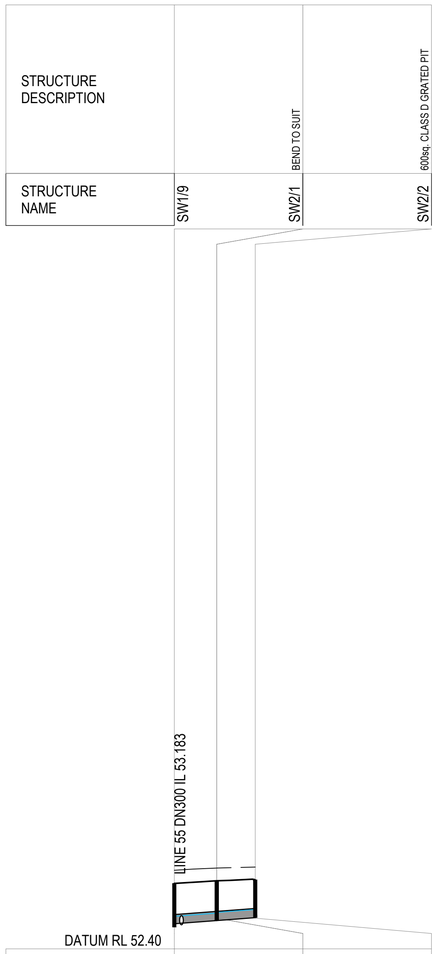
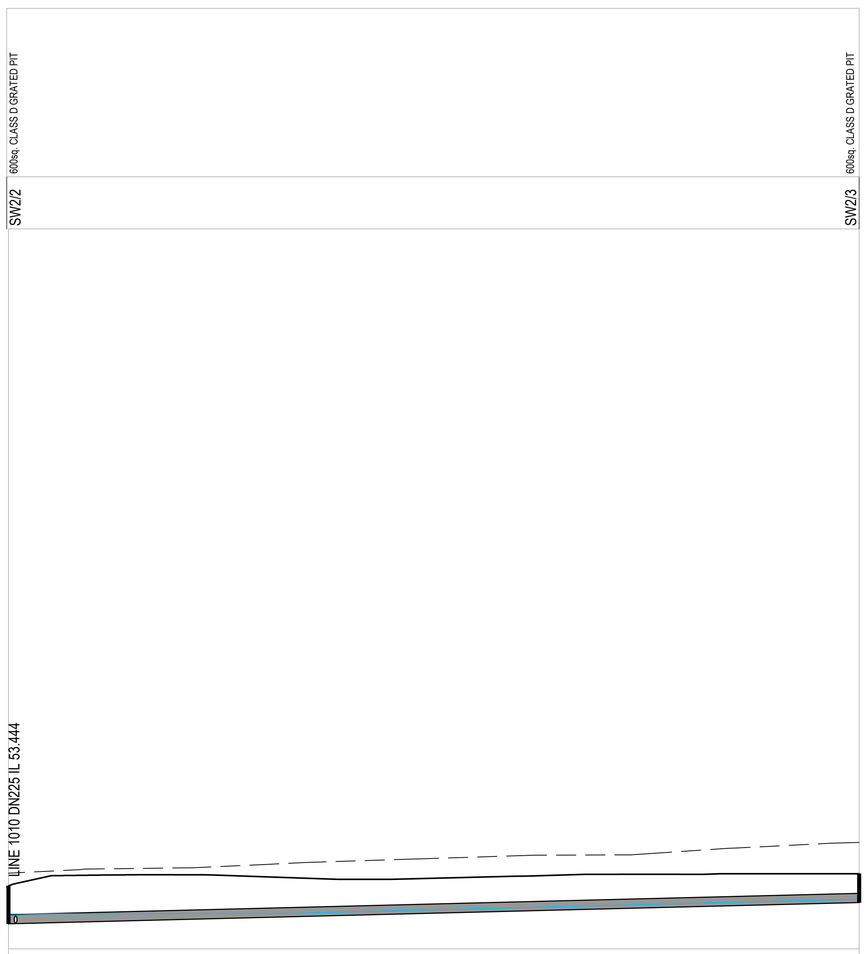
PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: STORMWATER LONG SECTIONS - SHEET 2
SCALE: 1:250 H 1:100 V
TOTAL SHEETS: 25
SIZE: A18
PROJECT No: 25 E 52 - 20
SHEET: C302
REV: B



STRUCTURE DESCRIPTION		BEND TO SUIT	600sq. CLASS D GRATED PIT
STRUCTURE NAME	SW1/9	SW2/1	SW2/2
PIPE SIZE / MATRIAL	DN300 StormPRO		DN300 StormPRO
GRADE %	3.00%		3.00%
PIPE VELOCITY	0.70 m/s		0.70 m/s
PIPE HGL CAPACITY	270 L/s		270 L/s
DESIGN FLOW	49 L/s		49 L/s
DEPTH TO INVERT	1.32	1.30	1.24
INVERT LEVEL	53.219	53.323	53.417
FINISHED SURFACE	54.54	54.62	54.65
EXISTING SURFACE	54.96	55.04	55.07
CHAINAGE	0.00	3.46	6.60
		3.46m	3.14m

DATUM RL 52.40

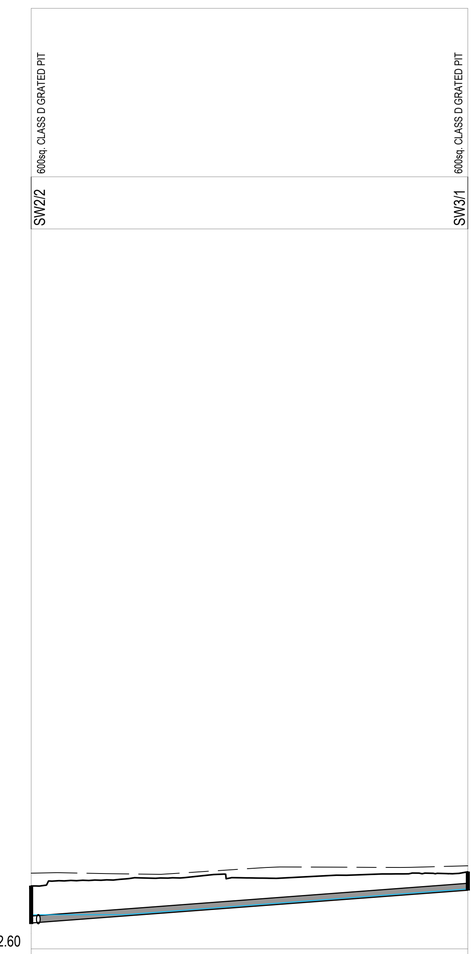
DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:250 VERTICAL 1:100



SW2/2			SW2/3
600sq. CLASS D GRATED PIT			600sq. CLASS D GRATED PIT
PIPE SIZE / MATRIAL	DN300 StormPRO		
GRADE %	1.00%		
PIPE VELOCITY	0.57 m/s		
PIPE HGL CAPACITY	149 L/s		
DESIGN FLOW	40 L/s		
DEPTH TO INVERT	1.24		0.94
INVERT LEVEL	53.417		54.111
FINISHED SURFACE	54.65		55.05
EXISTING SURFACE	55.07		56.07
CHAINAGE	6.60		76.04
		69.44m	

DATUM RL 52.60

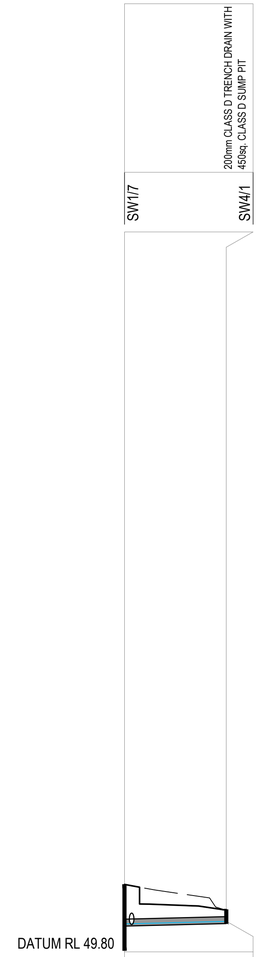
DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:250 VERTICAL 1:100



SW2/2		SW3/1
600sq. CLASS D GRATED PIT		600sq. CLASS D GRATED PIT
PIPE SIZE / MATRIAL	DN225 StormPRO	
GRADE %	3.00%	
PIPE VELOCITY	0.23 m/s	
PIPE HGL CAPACITY	128 L/s	
DESIGN FLOW	9 L/s	
DEPTH TO INVERT	1.21	0.60
INVERT LEVEL	53.444	54.513
FINISHED SURFACE	54.65	55.11
EXISTING SURFACE	55.07	55.31
CHAINAGE	0.00	35.64
	35.64m	

DATUM RL 52.60

DRAINAGE LONGITUNDINAL SECTION FOR LINE 3
SCALES: HORIZONTAL 1:250 VERTICAL 1:100



SW1/7		SW4/1
		200mm CLASS D TRENCH DRAIN WITH 450sq. CLASS D SUMP PIT
PIPE SIZE / MATRIAL	DN225 StormPRO	
GRADE %	1.00%	
PIPE VELOCITY	0.36 m/s	
PIPE HGL CAPACITY	70 L/s	
DESIGN FLOW	15 L/s	
DEPTH TO INVERT	1.36	0.46
INVERT LEVEL	50.639	50.722
FINISHED SURFACE	52.00	51.18
EXISTING SURFACE	52.00	51.19
CHAINAGE	0.00	8.31
	8.31m	

DATUM RL 49.80

DRAINAGE LONGITUNDINAL SECTION FOR LINE 4
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STORMWATER LONG SECTIONS - SHEET 3

SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:
			DESIGN: DE
			CHECKED: LG
			DRAWN: DE

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

ADDRESS: 15 LUKAARLIA DRIVE
BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: STORMWATER LONG SECTIONS - SHEET 3

SCALE: 1:250 H 1:100 V | TOTAL SHEETS: 25 | SIZE: A19

PROJECT No: 25 E 52 - 20 | SHEET: C303 | REV: B

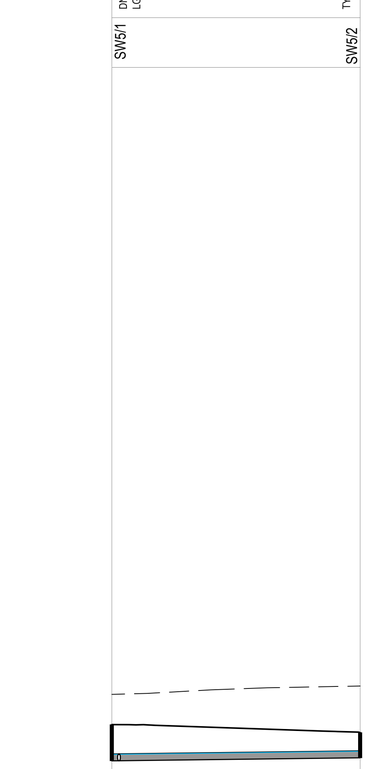
STRUCTURE DESCRIPTION	900sq. CLASS D GRATED PIT	DN1050 MANHOLE AS PER LGAT TSD-SW02/03-v3
STRUCTURE NAME	SW11/11	SW5/1

DATUM RL 52.90

PIPE SIZE / MATRIAL	DN225 StormPRO	
GRADE %	0.50%	
PIPE VELOCITY	0.48 m/s	
PIPE HGL CAPACITY	48 L/s	
DESIGN FLOW	19 L/s	
DEPTH TO INVERT	1.23	1.18
INVERT LEVEL	53.751	53.862
FINISHED SURFACE	54.98	55.05
EXISTING SURFACE	55.65	56.03
CHAINAGE	0.00	22.19
	22.19m	

DRAINAGE LONGITUNDINAL SECTION FOR LINE 5
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STRUCTURE DESCRIPTION	DN1050 MANHOLE AS PER LGAT TSD-SW02/03-v3	TYPE 3 SEP AS PER TSD-SW09
STRUCTURE NAME	SW5/1	SW5/2

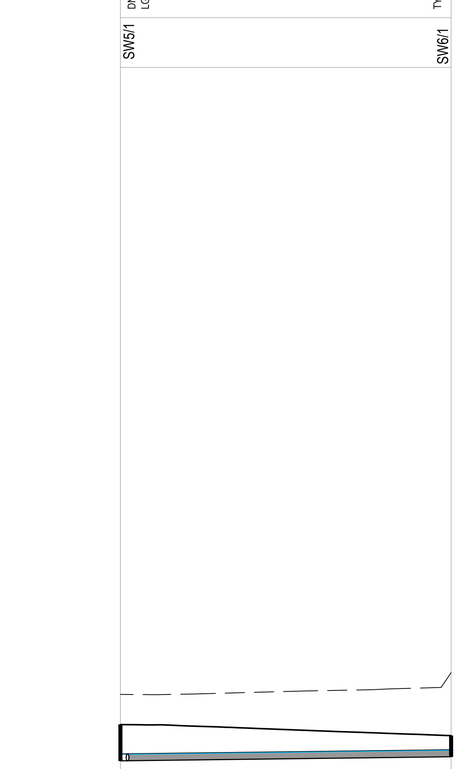


DATUM RL 53.00

PIPE SIZE / MATRIAL	DN225 StormPRO	
GRADE %	0.50%	
PIPE VELOCITY	0.22 m/s	
PIPE HGL CAPACITY	48 L/s	
DESIGN FLOW	9 L/s	
DEPTH TO INVERT	1.18	0.82
INVERT LEVEL	53.862	53.963
FINISHED SURFACE	55.05	54.79
EXISTING SURFACE	56.03	56.31
CHAINAGE	22.19	42.46
	20.27m	

DRAINAGE LONGITUNDINAL SECTION FOR LINE 5
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STRUCTURE DESCRIPTION	DN1050 MANHOLE AS PER LGAT TSD-SW02/03-v3	TYPE 3 SEP AS PER TSD-SW09
STRUCTURE NAME	SW5/1	SW6/1



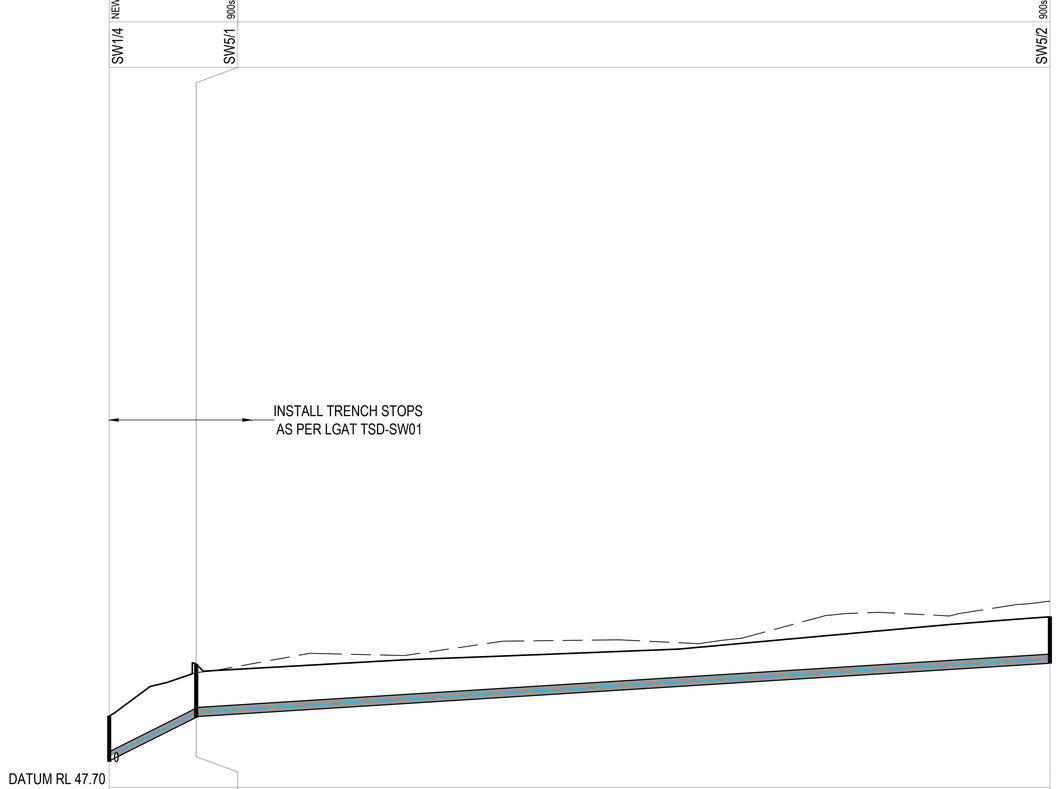
DATUM RL 53.00

PIPE SIZE / MATRIAL	DN225 StormPRO	
GRADE %	0.50%	
PIPE VELOCITY	0.22 m/s	
PIPE HGL CAPACITY	48 L/s	
DESIGN FLOW	9 L/s	
DEPTH TO INVERT	1.18	0.69
INVERT LEVEL	53.862	53.997
FINISHED SURFACE	55.05	54.68
EXISTING SURFACE	56.03	56.74
CHAINAGE	0.00	26.99
	26.99m	

DRAINAGE LONGITUNDINAL SECTION FOR LINE 6
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STRUCTURE DESCRIPTION	NEW DN1050 MANHOLE	900sq. GRATED PIT	900sq. GRATED PIT
STRUCTURE NAME	SW1/4	SW5/1	SW5/2

INSTALL TRENCH STOPS
AS PER LGAT TSD-SW01



DATUM RL 47.70

PIPE SIZE / MATRIAL	DN300 StormPRO	DN300 StormPRO	
GRADE %	20.00%	2.50%	
PIPE VELOCITY	0.51 m/s	0.51 m/s	
PIPE HGL CAPACITY	743 L/s	245 L/s	
DESIGN FLOW	36 L/s	36 L/s	
DEPTH TO INVERT	1.47	1.74 / 1.71	1.52
INVERT LEVEL	48.561	49.981 / 50.006	51.748
FINISHED SURFACE	50.03	51.72	53.27
EXISTING SURFACE	50.03	51.45	53.77
CHAINAGE	0.00	7.10	76.78
	7.10m	69.68m	

DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:250 VERTICAL 1:100

STORMWATER LONG SECTIONS - SHEET 4

SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
			CHECKED: LG
			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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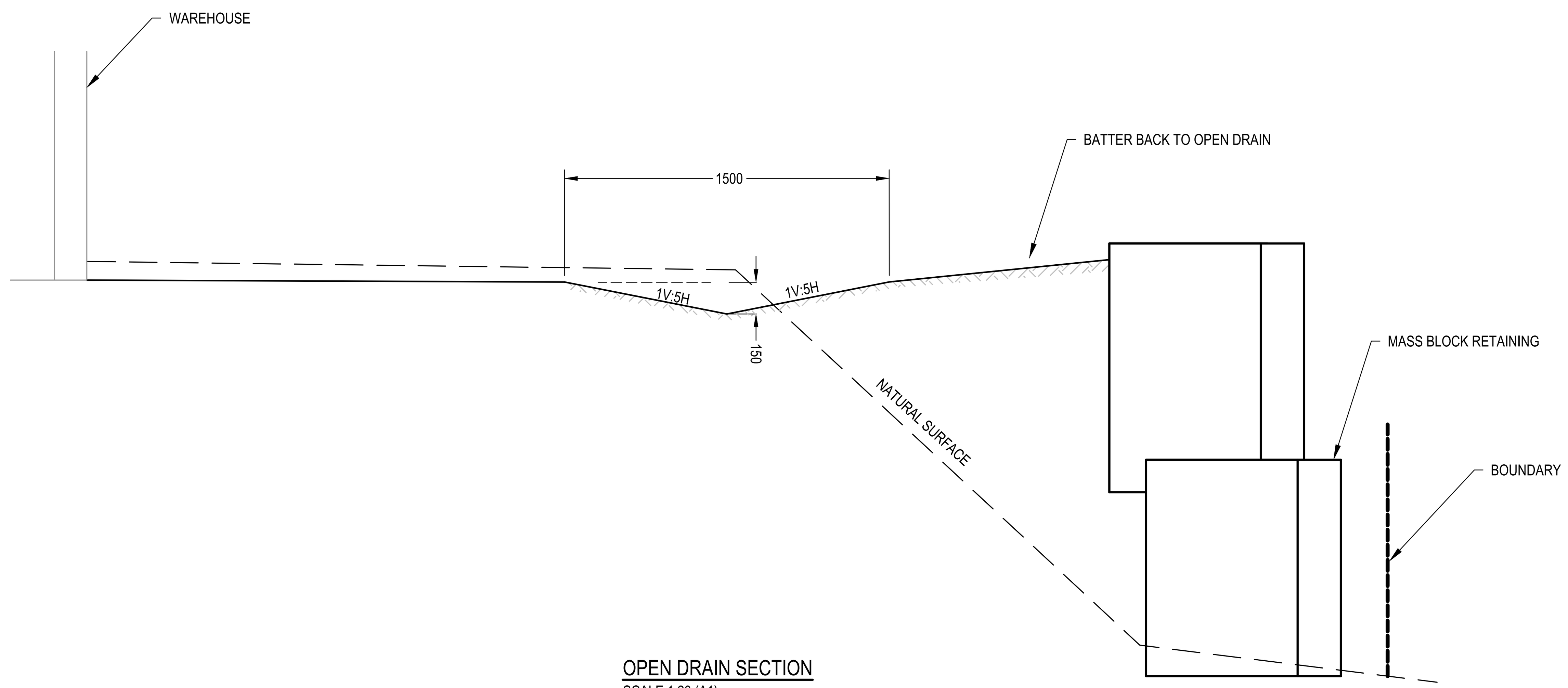
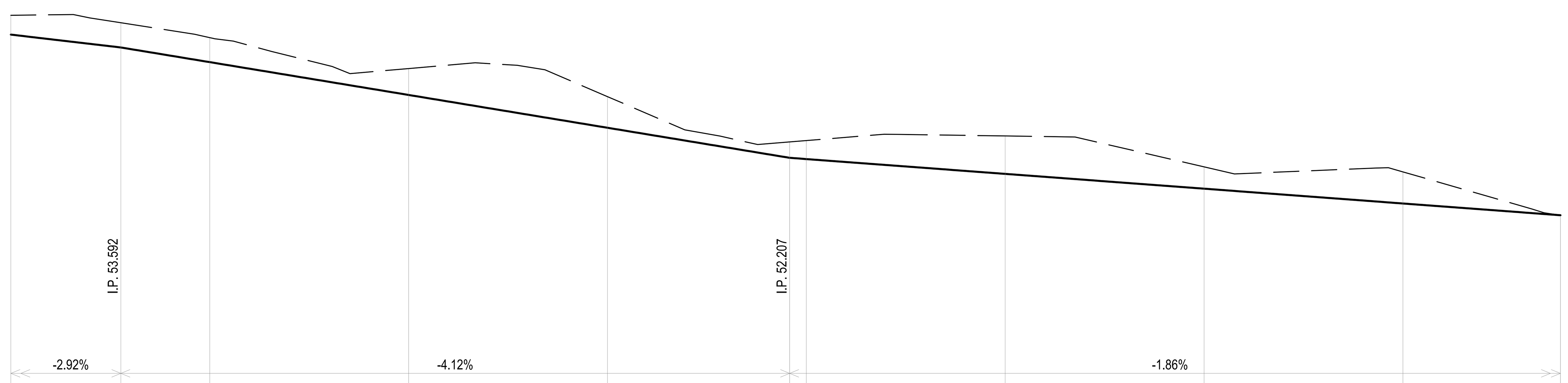
PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: STORMWATER LONG SECTIONS - SHEET 4
SCALE: 1:250 H 1:100 V
TOTAL SHEETS: 25
SIZE: A20
PROJECT No: 25 E 52 - 20
SHEET: C304
REV: B



OPEN DRAIN SECTION
SCALE 1:20 (A1)



R.L. 49.00

CUT (-) FILL (+)	-0.25	-0.31	-0.31	-0.33	-0.40	-0.20	-0.23	-0.47	-0.27	-0.40	+0.00
DESIGN CENTRE LINE	53.75	53.59	53.41	53.00	52.58	52.21	52.19	52.01	51.82	51.63	51.49
EXISTING SURFACE	54.00	53.90	53.72	53.33	52.98	52.41	52.42	52.48	52.09	52.03	51.49
CHAINAGE	0.00	5.53	10.00	20.00	30.00	39.16	40.00	50.00	60.00	70.00	77.92

OPEN CUT OFF DRAIN ALIGNMENT CL-2

From 0.000m To 77.920m Scales: H 1:200 V 1:50

STORMWATER LONG SECTIONS - SHEET 5

AS INDICATED

REV	ISSUE	DATE	APPROVAL	
			DRAWN:	DE
			CHECKED:	LG
			DESIGN:	DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:	
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:	

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

ADDRESS: 15 LUKAARLIA DRIVE
BRIDGEWATER

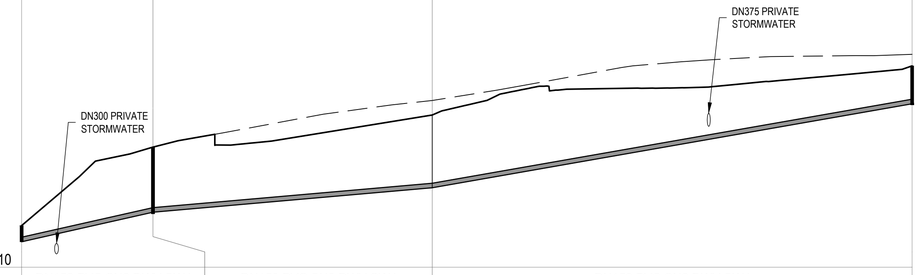
CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: STORMWATER LONG SECTIONS - SHEET 5

SCALE: AS INDICATED | TOTAL SHEETS: 25 | SIZE: A21

PROJECT No: 25 E 52 - 20 | SHEET: C305 | REV: B

STRUCTURE DESCRIPTION	EXISTING SEWER PROPERTY CONNECTION	BEND TO SUIT I.O TO SURFACE	BEND TO SUIT I.O TO SURFACE	I.O TO SURFACE
STRUCTURE NAME	S1/1	S1/2	S1/3	S1/4



DATUM RL 48.10

PIPE SIZE / MATRIAL	DN150 PVC SN8 DWV SWJ	DN150 PVC SN8 DWV SWJ	DN150 PVC SN8 DWV SWJ
GRADE %	9.00%	3.50%	7.00%
DEPTH TO INVERT	0.53 2.13	2.37	1.24
INVERT LEVEL	48.930 49.895	50.692	53.434
FINISHED SURFACE	49.46 52.02	53.07	54.67
EXISTING SURFACE	49.46 52.02	53.54	55.05
CHAINAGE	0.00 10.72	33.51	72.68
	10.72m	22.79m	39.17m

SEWER LONG SECTIONS

SCALE 1:250 H 1:100 V (A1)

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
			CHECKED: LG
			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3

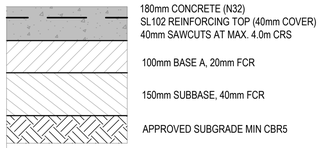
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER

CLIENT: SOUTHERN STEEL PROPERTIES

SHEET: SEWER LONG SECTIONS

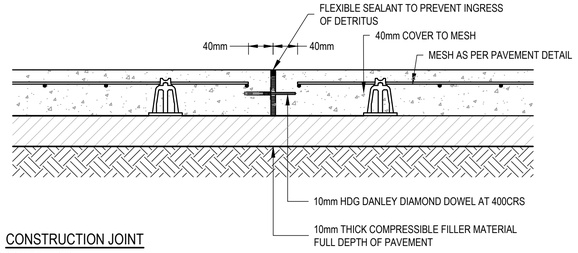
SCALE: 1:250 H 1:100 V | TOTAL SHEETS: 25 | SIZE: A22

PROJECT No: 25 E 52 - 20 | SHEET: C306 | REV: B



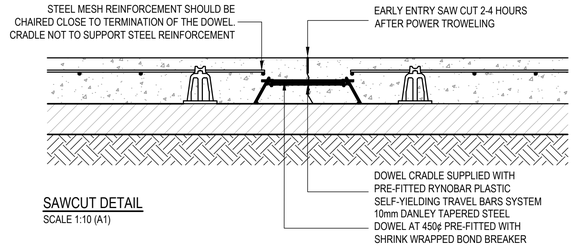
NOTE: CONCRETE PAVEMENT NOT DESIGNED FOR SPECIAL SURFACE FINISHES SUCH AS EXPOSED AGGREGATE.

CONCRETE PAVEMENT DETAIL



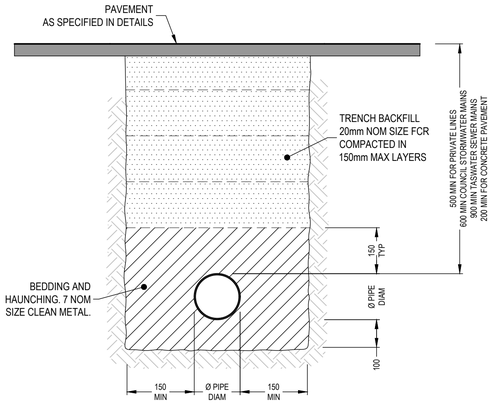
CONSTRUCTION JOINT

SCALE 1:10 (A1)



SAWCUT DETAIL

SCALE 1:10 (A1)



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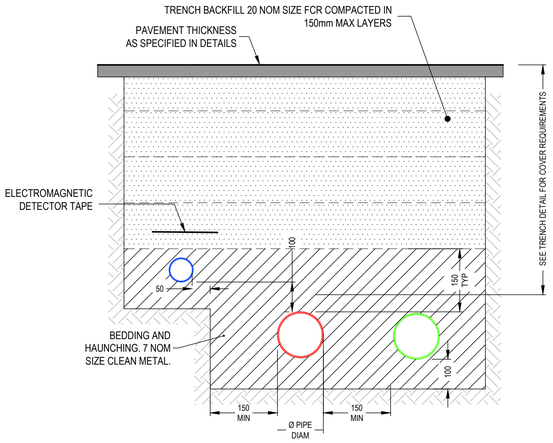

SHARED SERVICE TRENCH DETAIL - TRAFFICABLE

SCALE 1:10 (A1)

NOTES

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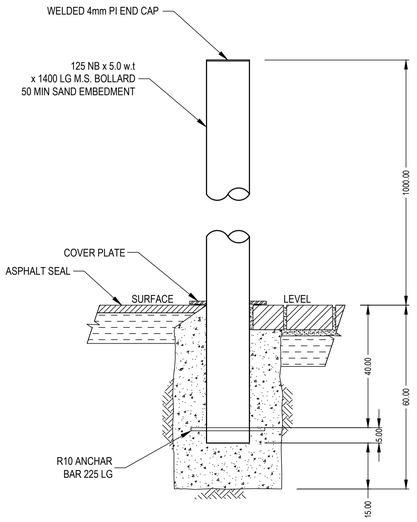

TYPE F

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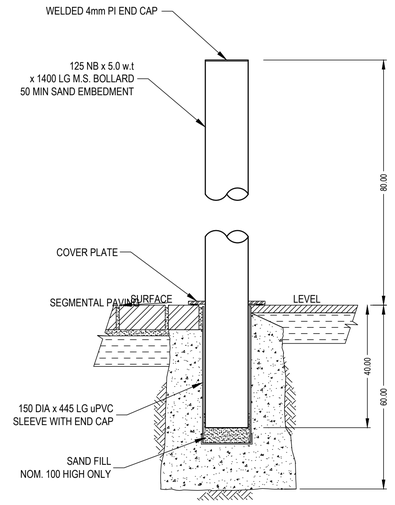

TYPE R

(REMOVEABLE)
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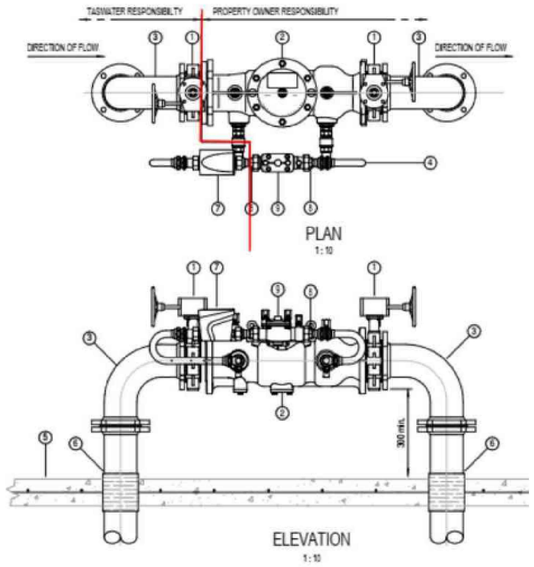
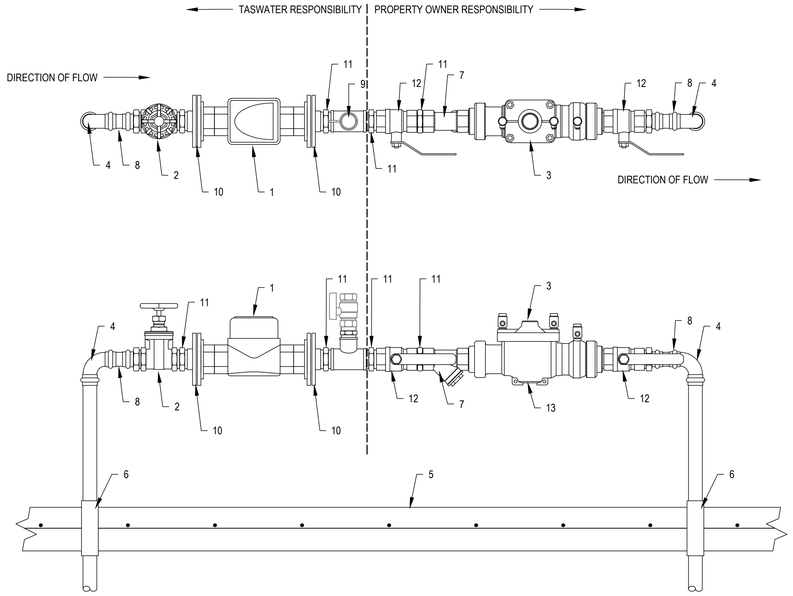
TYPICAL DETAIL - BOLLARD

SCALE 1:10 (A1)



DN100 MEDIUM HAZARD FIRE SERVICE ASSEMBLY

BOUNDARY CONNECTION PARTS LIST		
No.	DESCRIPTION	COMMENTS
1	DN.100 Lug type Butterfly Valve with Worm Gear Actuator	1 x Supplied by TasWater
2	Medium Hazard 'ValvCheQ' DN.100 DCDA03 DOUBLE DETECTOR CHECK VALVE DN25 DOUBLE CHECK BYPASS	Owned, operated and maintained by Property Owner
3	DN.100 PN16 Metallic Water Pipe	Copper not to be used
4	LOW FLOW BYPASS INCLUDED WITH PART 2	
5	100mm (minimum) Reinforced Concrete Slab	SL72 placed central
6	Pipe Wrapped where Concrete will contact Pipe	(Refer Note 3)
7	'Sensus' Meter size for Low Flow Bypass	DN.25 Bypass for DN.100 - DN.150
8	DN25 BRASS NIPPLE	
9	DOUBLE CHECK VALVE INCL. WITH DN100 DOUBLE DETECTOR CHECK PART 2	Owned, operated and maintained by Property Owner



BOUNDARY CONNECTION PARTS LIST		
No.	DESCRIPTION	COMMENTS
1	DN.40 'Sensus' Iperl Water Meter with Dual Check Valve	Supplied by TasWater
2	DN.40 Gate Valve	Supplied by TasWater
3	High Hazard DN.32 'ValvCheQ' RPZD RP03 Valve Only - or equivalent	Owned, operated and maintained by Property Owner
4	DN.40 "Type A" Copper Water Pipe	
5	100mm (minimum) Reinforced Concrete Slab	SL72 placed central
6	Pipe Wrapped where Concrete will contact Pipe	(Refer Note 3)
7	DN.40 Strainer	Owned, operated and maintained by Property Owner
8	B-Press Fittings or Equivalent	
9	DN.40 x 25 Fem x Fem BSP Reducing Tee	
10	DN.40 BSP to Table E Flange Adaptor	
11	DN.40 Nipple	
12	DN.40 Ball Valve - Lockable Quarter Turn brass DZR with brass handle, resilient seated	
13	Vent only applies to RPZD	

DN40 HIGH HAZARD DOMESTIC CONNECTION

NOT TO SCALE

CONSTRUCTION DETAILS - SHEET 1

AS INDICATED

REV	ISSUE	DATE	APPROVAL
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			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
SHEET: CONSTRUCTION DETAILS - SHEET 1
AS INDICATED
CLIENT: SOUTHERN STEEL PROPERTIES
SCALE: AS INDICATED
TOTAL SHEETS: 25
SIZE: A23
PROJECT No: 25 E 52 - 20
SHEET: C401
REV: B

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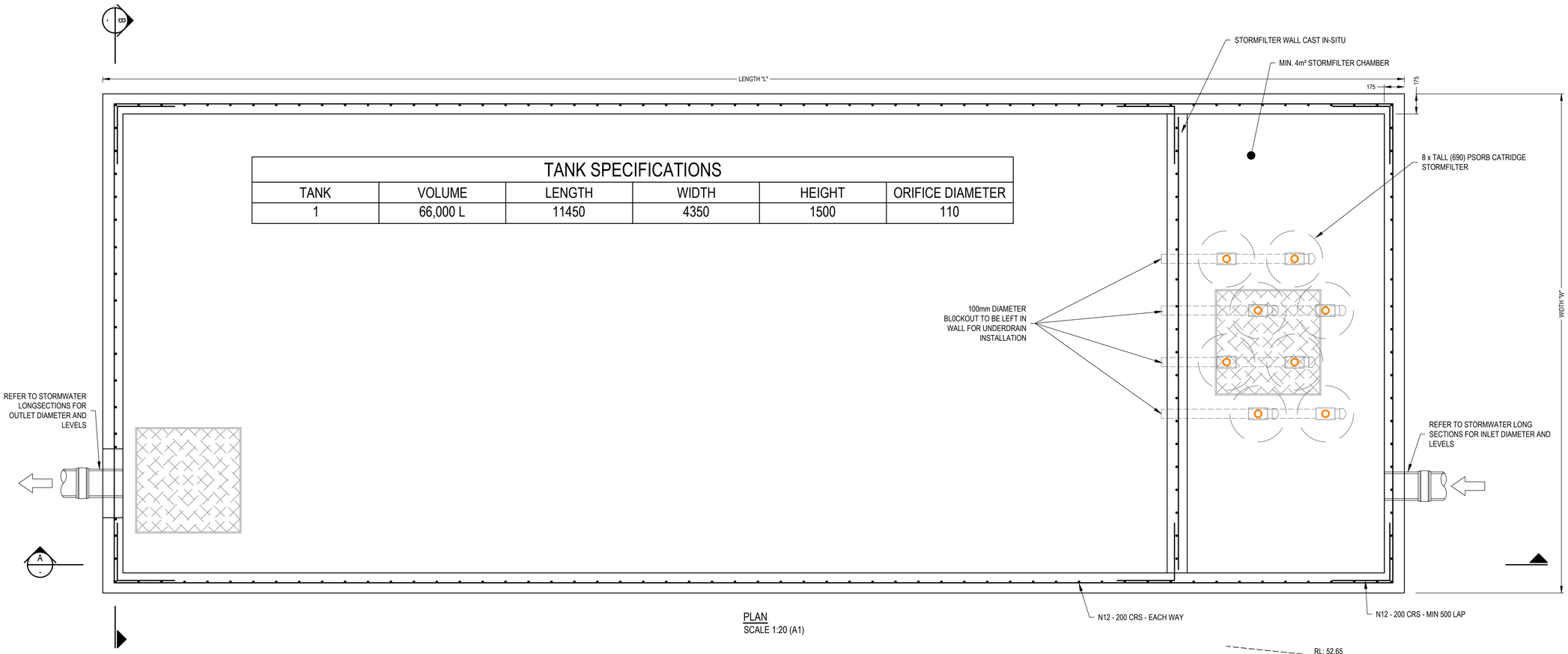
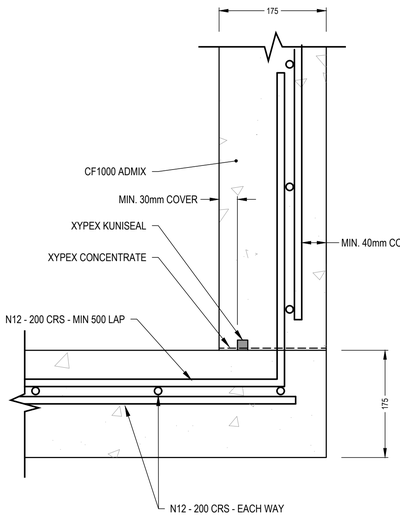
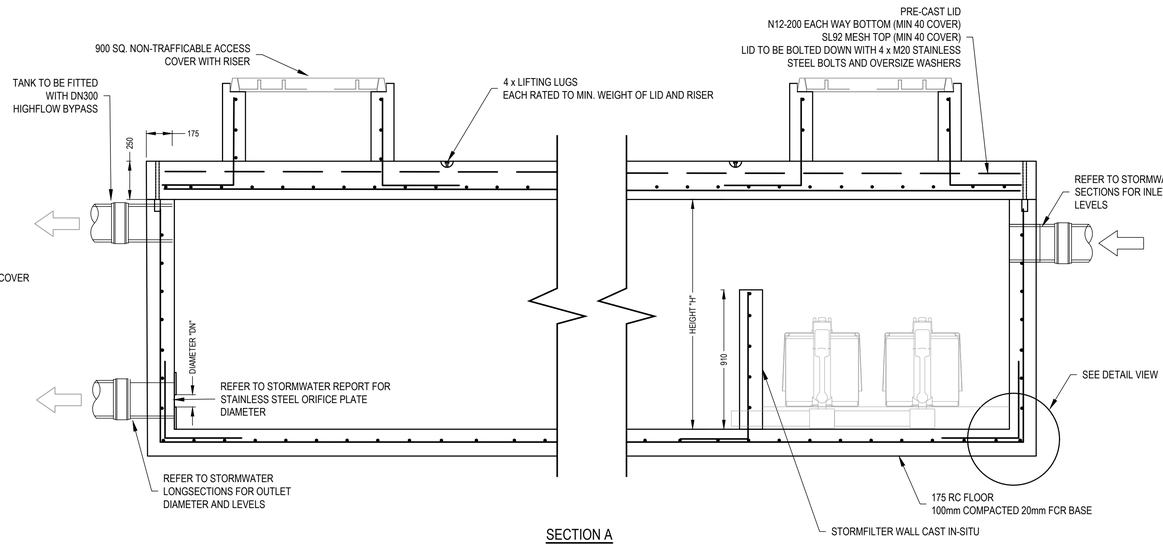
TANK SPECIFICATIONS					
TANK	VOLUME	LENGTH	WIDTH	HEIGHT	ORIFICE DIAMETER
1	66,000 L	11450	4350	1500	110



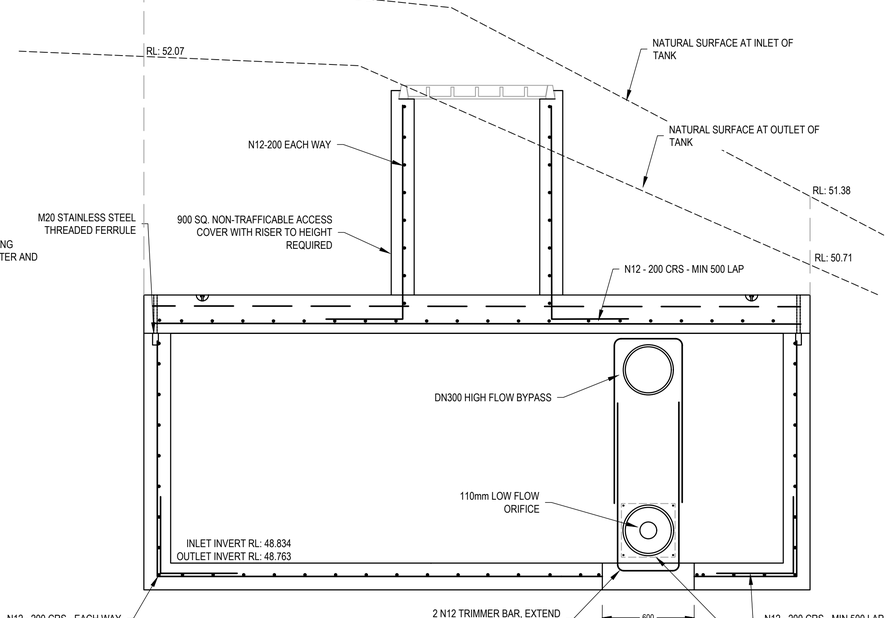
PLAN
SCALE 1:20 (A1)



DETAILVIEW-
SCALE 1:5 (A1)



SECTION A
SCALE 1:20 (A1)



SECTION B
SCALE 1:20 (A1)

CONSTRUCTION DETAILS - SHEET 2

AS INDICATED

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
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B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
AS INDICATED
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: CONSTRUCTION DETAILS - SHEET 2
SCALE: AS INDICATED
TOTAL SHEETS: 25
SIZE: A24
PROJECT No: 25 E 52 - 20
SHEET: C402
REV: B

NOTES

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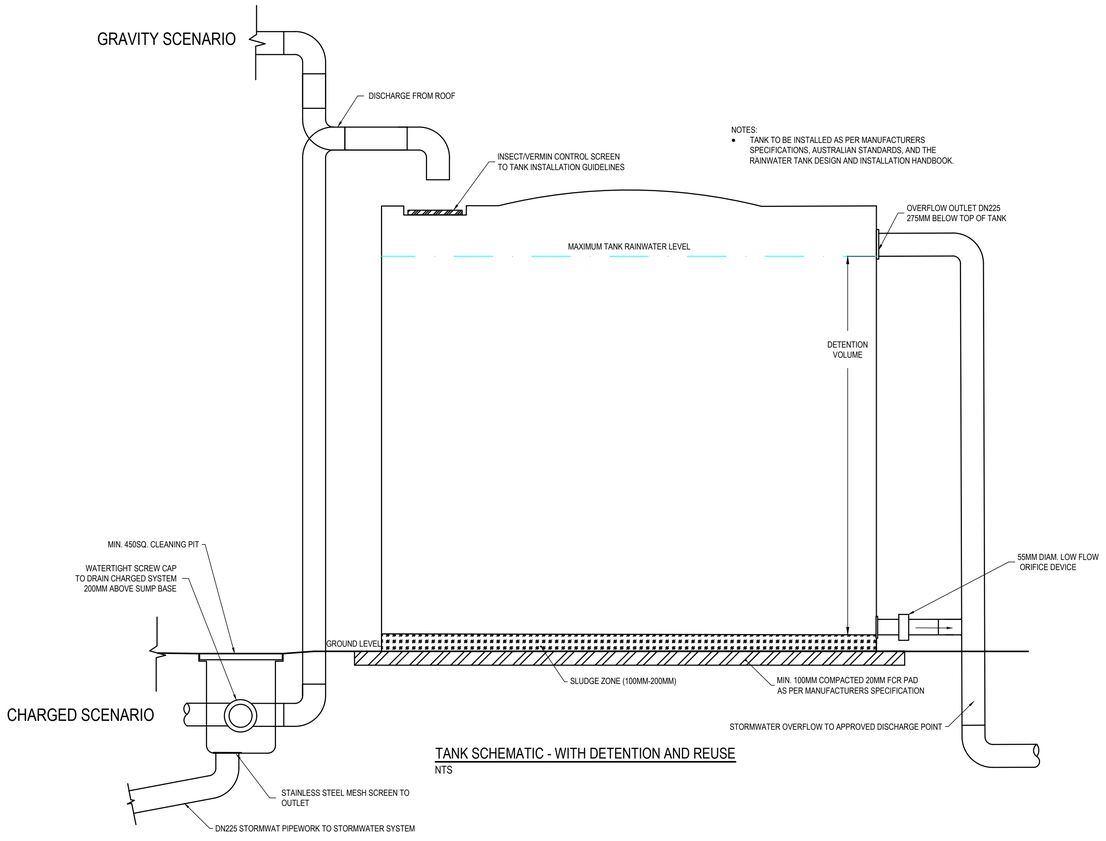
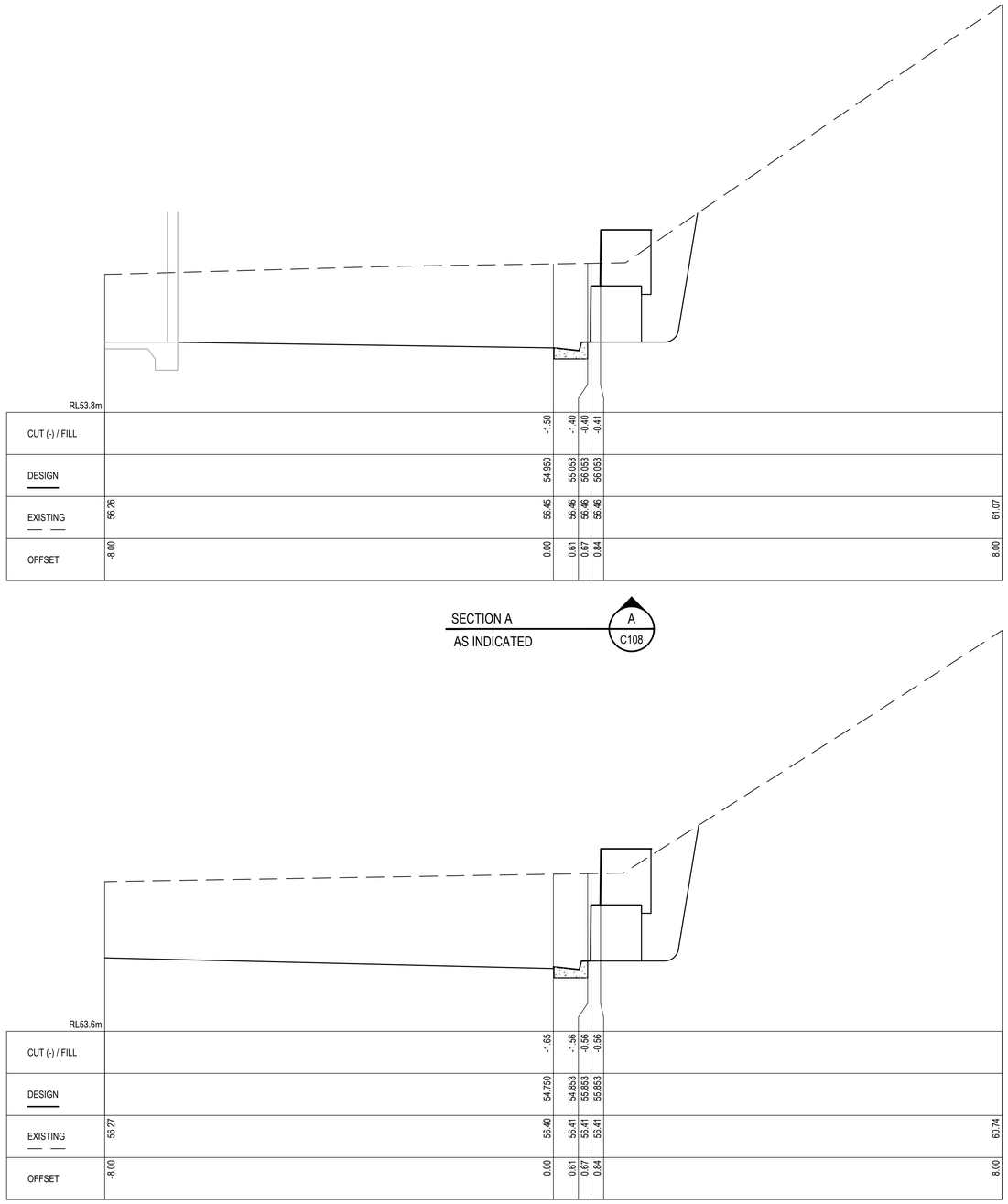
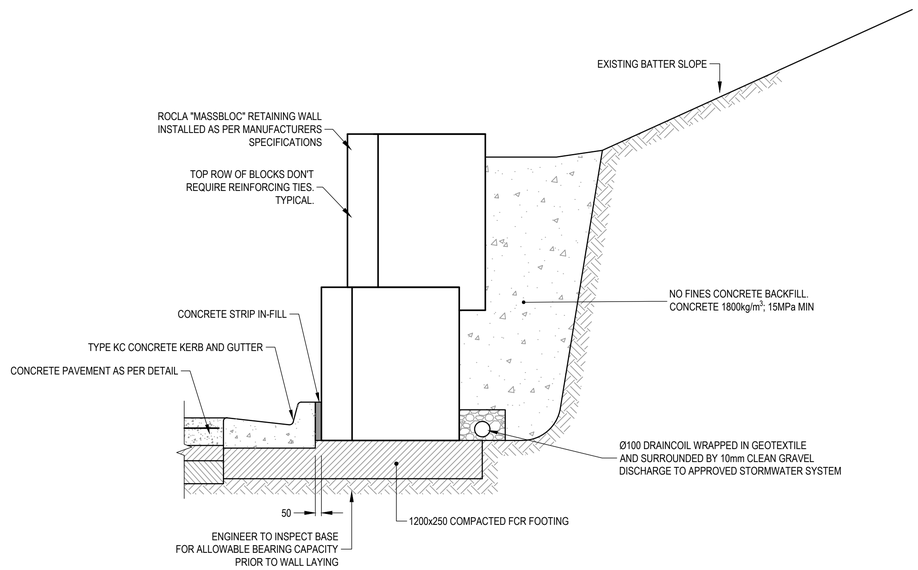


TANK SCHEMATIC - WITH DETENTION AND REUSE
NTS



SECTION A
AS INDICATED
A C108



'MASSBLOC' RETAINING WALL DETAIL - 3.0m HIGH
SCALE 1:20 (A1)

SECTION B
AS INDICATED
B C108

CONSTRUCTION DETAILS - SHEET 3
AS INDICATED

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
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			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
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PROJECT: SOUTHERN STEEL WAREHOUSE - STAGE 2 & 3
AS INDICATED
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
CLIENT: SOUTHERN STEEL PROPERTIES
SHEET: CONSTRUCTION DETAILS - SHEET 3
SCALE: AS INDICATED
TOTAL SHEETS: 25
SIZE: A25
PROJECT No: 25 E 52 - 20
SHEET: C403
REV: B

NOTES

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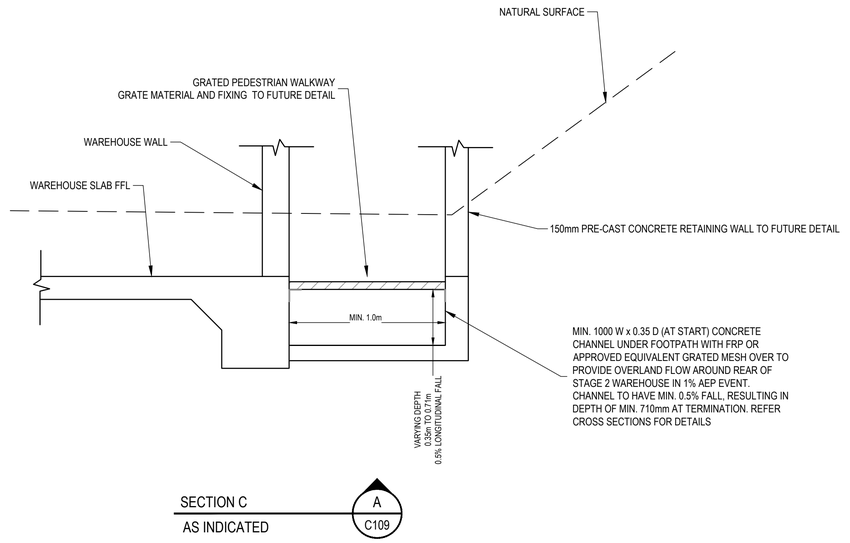

CONCRETE OVERLAND FLOW CHANNEL

SCALE 1:20 (A1)

CONSTRUCTION DETAILS - SHEET 4

AS INDICATED

REV	ISSUE	DATE	APPROVAL
			DRAWN: DE
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			DESIGN: DE
B	DEVELOPMENT APPROVAL	26/09/2025	CHECKED:
A	DEVELOPMENT APPROVAL	14/08/2025	VERIFIED:

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AS INDICATED
ADDRESS: 15 LUKAARLIA DRIVE BRIDGEWATER
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SHEET: CONSTRUCTION DETAILS - SHEET 4
SCALE: AS INDICATED
TOTAL SHEETS: 25
SIZE: A25
PROJECT No: 25 E 52 - 20
SHEET: C404
REV: B

ATTACHMENT 3

Stormwater Report

STORMWATER REPORT

Southern Steel Properties
Stage 2 and 3
15 Lukaarlia Drive
Bridgewater TAS 7030

250812 SR 53 E 52 - 20 REV A

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ABN 79 097 438 714

PROJECT INFORMATION

DOCUMENT TITLE	Stormwater Report - 25 E 52 - 20 Rev A
PROJECT LOCATION	15 Lukaarlia Drive, Bridgewater TAS 7030
CLIENT ORGANISATION	Southern Steel
CLIENT REFERENCE	Southern Steel Properties
CLIENT CONTACT/S	David Meechan
ALDANMARK REFERENCE	25 E 52 – 20
ALDANMARK CONTACT/S	Danton Evans (devans@aldanmark.com.au)

DOCUMENT CONTROL

REVISION	DATE	REVISION DETAILS	PREPARED	VERIFIED	APPROVED
A	12/08/2025	Building Approval	DE	MG	MG

TABLE OF CONTENTS

1. INTRODUCTION

Aldanmark have been engaged to provide a stormwater report for the subsequent Stage 2 and 3 buildings of the previously proposed development at 15 Lukaarlia Drive, Bridgewater.

The previous Stage 1 design was covered in a prior stormwater report (250516 SR 23E99-98 Rev B) and therefore this report will include and build upon the previously approved stormwater detention system.

The parameters and limitations for the stormwater quantity and quality requirements of the development remain the same as Stage 1, and are as follows:

As a condition of the Approved Permit – DA2024-093, the stormwater drainage system for the proposed development must be designed to comply with the following.

- Peak stormwater flows from the site to the public stormwater system for up to a 2% AEP event are limited to flows that can be accommodated in the existing DN300 property connection; Alternatively, the downstream public stormwater infrastructure must be upgraded to accommodate any increase.
- Stormwater quality from the site must meet the following:
    - Standard Stormwater Treatment Requirements specified in Table 3 Water Quality Treatment Targets in DEP and LGAT TASMANINJA STORMWATER POLICY GUIDANCE AND STANDARDS FOR DEVELOPMENT 2021 V1.
    - Runoff from the developments must be 'visually free' of hydrocarbons prior to entering the public stormwater system.

This report aims to demonstrate that the inclusion of Stages 2 and 3 of the development at 15 Lukaarlia Drive, Bridgewater comply with the above stormwater quality and quantity requirements.

2. SITE OVERVIEW

The undeveloped site is green field in nature, and totals approximately 14,130 square metres. Stage 1 of the proposed development involved the construction of a single large warehouse and associated concrete and gravel hard stand areas. Stages 2 and 3 include the construction of further warehouse buildings, with small adjustments to the previously constructed concrete hardstands and surrounding gravel areas.

2.1 MODIFIED RATIONAL METHOD

The modified rational method was applied within the software Autodesk Storm and Sanitary Analysis (SSA) to determine the increase in runoff between the pre-development and post-development conditions. The SSA model was then used to determine the volume and configuration of on-site detention required to reduce the site runoff below the pre-development condition for the 5% AEP storm.

2.2 DESIGN RAINFALL DEPTHS

Rainfall depths for the model were retrieved from the Bureau of Meteorology website (http://www.bom.gov.au/water/designRainfalls/revised-ifd/). The 5-minute duration of the 5% AEP storm was analysed.

TABLE 1: IFD DESIGN RAINFALL DEPTH (ARR DATA HUB)

DESIGN RAINFALL EVENT	DESIGN RAINFALL (MM/HR)
2% AEP 5 minute	99.50
2% AEP 10 minute	76.4
2% AEP 30 minute	41.4
2% AEP 60 minute	26.4

TABLE 2: PRE-DEVELOPMENT SITE CATCHMENTS

CATCHMENT	AREA (m²)	RUNOFF COEFFICENT C
Pre-development pervious areas	14,310	0.40

TABLE 3: POST-DEVELOPMENT SITE CATCHMENTS

CATCHMENT	AREA (m²)	RUNOFF COEFFICENT C
Post-development impervious roofed areas	5,911	1.00
Post-development impervious paved areas	4,379	0.90
Post-development semi-impervious gravel areas	186	0.70
Post-development pervious areas	3,834	0.35

2.3 PROPERTY CONNECTION CAPACITY

As per the Permit condition, the outflow of the site is limited to the capacity of the existing DN300 stormwater property connection. Upon review of the survey data as collected by PDA surveyors, it was found that the downstream DN300 road crossing is at a lesser gradient to the property connection, therefore this pipe was used to determine the maximum possible outflow.

The following calculations were utilised to estimate the capacity of the DN300 road crossing (refer Aldanmark Civil Drawings sheet C102 for further details).

Diameter: $300mm$
Freeboard: $5mm$ (assumed)
Slope, S: 1.07% (as calculated from PDA Surveyors investigation)
Manning's Coefficient: 0.012 (for PVC pipe)

Radius, r: $0.15m$ $\quad r = \frac{Diameter/2}{1000}$

Theta, θ: $2.88\ Rads$ $\quad \theta = \pi - \cos^{-1}\left(\frac{Radius - \frac{Freeboard}{1000}}{r}\right)$

$165.16\ Degrees$ $\quad Degs = \frac{\theta \times 180}{\pi}$

Area (Hydraulic): $0.07m^2$ $\quad A_h = r^2 \times \left(\theta - (\sin\theta \times \cos\theta)\right)$

Radius (Hydraulic):	$0.08m^2$	$R_h = \frac{A_h}{2 \times r \times \theta}$
Velocity:	$1.62m/s$	$V = \frac{R_h^{2/3} \times S^{1/2}}{Manning's\ Coefficient}$
Flow:	$114.06L/s$	$Q = (V \times A) \times 1000$

The maximum allowable outflow for the site is therefore set at 114 L/s during a 2% AEP storm event.

2.4 DETENTION MODEL RESULTS

The results of the Stormwater and Sanitary Analysis (SSA) model showed that the post-development site runoff is increased by 148.733 L/s over pre-existing runoff quantities for a 2% AEP, 5-min duration event, as shown in Table 4.

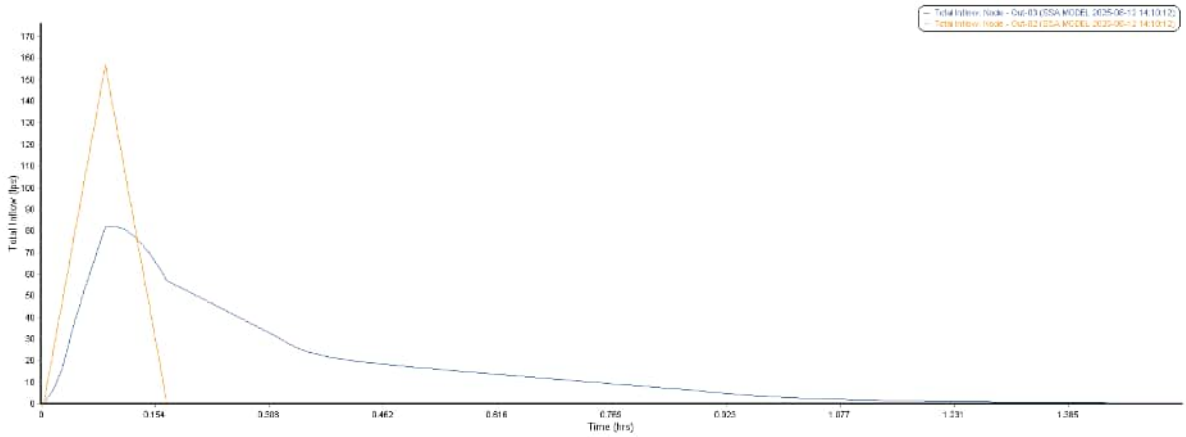
To reduce the post-development site outflow below pre-development quantities, an on-site detention system comprising of poly rainwater tanks in series with a large underground concrete detention tank connected to the warehouse roof and concrete hardstand was simulated in Autodesk SSA. Runoff collected from the gravel hardstand and landscape areas bypass the detention and are sent straight to the outflow node of the SSA model.

Figure 1 below shows the site outflow hydrograph for the pre-development condition compared to the post-development condition mitigated by on-site detention (2% AEP, 5-min duration event).

TABLE 4: PEAK FLOW RATE SUMMARY (2% AEP, 5 – MIN DURATION EVENT)

SCENARIO	SITE RUNOFF (L/s)
Pre-development	158.205
Post-development unmitigated	306.938
Post-development with OSD	85.59

FIGURE 1: SITE RUNOFF HYDROGRAPHS



The model was analysed over several differing durations of 2% AEP event, with the final detention system comprising of the following:

Stage 1 (already installed):

- A min. 8,000 L slimline poly rainwater tank with a 55mm low-flow orifice connected to approx. 1,118 square metres of warehouse roof (the North facing pitch) connected in series with;
- A 66,000 L underground concrete detention tank with a 110mm low flow orifice.

Stage 2 and 3 (proposed):

- 2 x 23,650 L TankWorld Round Corrugated Tank or approved equivalent (1 fitted to Stage 2 warehouse roof, 1 fitted to Stage 3 warehouse roof), each with a 100mm low flow orifice.

All above mentioned detention tanks are to be fitted with high-flow overflow pipes equivalent to the inlet size for use in the case of extreme weather events. Full specifications for the required on-site detention system are given in **Error! Reference source not found.**5, while Table 6 summarises the maximum tank volumes determined for differing duration events.

Stage 1 (already installed):

TABLE 5: DETENTION TANK PARAMETERS

TANK ID	Underground Concrete Tank
DESCRIPTION	66,000 L (11m L x 4m W x 1.5m D)
BASE AREA (M^2)	44
TANK HEIGHT (M)	1.5
INLET HEIGHT (M)	1.05 (from base of tank)
DETENTION CAPACITY (L)	Approx. 66,000
ORIFICE DIAMETER (MM)	110
OVERFLOW PIPE DIAMETER (MM)	300
PEAK DISCHARGE RATE (L/S)	31.01 (30-min event)
MAX. VOLUME 2% AEP (L)	65,560 (30-min event)
EMPTYING TIME (MINS)	Approx. 174
CONTRIBUTING AREA (M^2)	2495 Roof, 4379 Concrete Hardstand

TANK ID	Slimline Poly Tank
DESCRIPTION	8,000 L (3.5m L x 1.15m W x 2.02m H)
BASE AREA (M^2)	4.025
TANK HEIGHT (M)	2.02
INLET HEIGHT (M)	2.02 (from base of tank)
DETENTION CAPACITY (L)	Approx. 8,000
ORIFICE DIAMETER (MM)	55
OVERFLOW PIPE DIAMETER (MM)	225
PEAK DISCHARGE RATE (L/S)	9.27 (5-min event)
MAX. VOLUME 2% AEP (L)	7,889 (10-min event)
EMPTYING TIME (MINS)	Approx. 71
CONTRIBUTING AREA (M^2)	1,118 Roof

Stage 2 and 3 (already installed):

TANK ID	Stage 2 - 23,650 L TankWorld Round Corrugated Tank
DESCRIPTION	23,650L (3.67m Dia. x 2.380 Inlet Height)
BASE AREA (M^2)	10.57
TANK HEIGHT (M)	2.67
INLET HEIGHT (M)	2.38 (from base of tank)
DETENTION CAPACITY (L)	Approx. 23,650
ORIFICE DIAMETER (MM)	100
OVERFLOW PIPE DIAMETER (MM)	Equivalent to Inlet
PEAK DISCHARGE RATE (L/S)	18.38 (5-min event)
MAX. VOLUME 2% AEP (L)	9,407 (10-min event)
EMPTYING TIME (MINS)	Approx. 95
CONTRIBUTING AREA (M^2)	1,761 Roof

TANK ID	Stage 3 - 23,650 L TankWorld Round Corrugated Tank
DESCRIPTION	23,650L (3.67m Dia. x 2.380 Inlet Height)
BASE AREA (M^2)	10.57
TANK HEIGHT (M)	2.67
INLET HEIGHT (M)	2.38 (from base of tank)
DETENTION CAPACITY (L)	Approx. 23,650
ORIFICE DIAMETER (MM)	100
OVERFLOW PIPE DIAMETER (MM)	Equivalent to Inlet
PEAK DISCHARGE RATE (L/S)	17.66 (5-min event)
MAX. VOLUME 2% AEP (L)	8,667 (10-min event)
EMPTYING TIME (MINS)	Approx. 64
CONTRIBUTING AREA (M^2)	1,655 Roof

TABLE 6: DETENTION TANK MAXIMUM VOLUMES

66,000 L UNDERGROUND TANK

STORM AEP AND DURATION	UNDERGROUND CONCRETE TANK VOL. (L)
2% AEP 5-min	39,160
2% AEP 10-min.	55,440
2% AEP 15-min	60,720
2% AEP 20-min	63,800
2% AEP 25-min.	65,120
2% AEP 30-min	65,560
2% AEP 45-min	61,610
2% AEP 60-min	56,320

8,000 L SLIMLIME POLY TANK

STORM AEP AND DURATION	UNDERGROUND CONCRETE TANK VOL. (L)
2% AEP 5-min	6,359
2% AEP 10-min.	7,889
2% AEP 15-min	7.808
2% AEP 20-min	7,486
2% AEP 25-min.	7,125
2% AEP 30-min	6,721
2% AEP 45-min	5,353
2% AEP 60-min	4,347

STAGE 2 – 23,650 L TANKWORL ROUND CORRUGATED TANK

STORM AEP AND DURATION	UNDERGROUND CONCRETE TANK VOL. (L)
2% AEP 5-min	8,530
2% AEP 10-min.	9,407
2% AEP 15-min	8,561
2% AEP 20-min	7,821
2% AEP 25-min.	7,081
2% AEP 30-min	6,447
2% AEP 45-min	4,650
2% AEP 60-min	3,699

STAGE 3 – 23,650 L TANKWORL ROUND CORRUGATED TANK	
STORM AEP AND DURATION	**UNDERGROUND CONCRETE TANK VOL. (L)**
2% AEP 5-min	7,716
2% AEP 10-min.	8,667
2% AEP 15-min	7,927
2% AEP 20-min	7,081
2% AEP 25-min.	6,447
2% AEP 30-min	5,813
2% AEP 45-min	4,228
2% AEP 60-min	3,276

Detention tank volumes for the 66,000 L underground concrete detention tank as installed in Stage 1 has not been recalculated, given the small reduction in impervious pavement area. The roof area connected to the 8,000 L slimline tank has also remained the same, therefore the previous calculations as shown above are still accurate.

3. STORMWATER QUALITY MODEL

3.1 STORMWATER QUALITY MODEL

In accordance with the Brighton Council Planning Permit DA 2024/00093, Condition 23, the Stormwater Quality from the site must meet the following:

- Standard Stormwater Treatment Requirements specified in Table 3 Water Quality Treatment Targets in DEP AND LGAT TASMANIAN STORMWATER POLICY GUIDANCE AND STANDARDS FOR DEVELOPMENT 2021 V1.
- Runoff from the developments must be 'visually free' of hydrocarbons prior to entering the public stormwater system.

Aldanmark Engineers have collaborated with OceanProtect, utilising Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software to model the site and the effectiveness of various treatment devices to achieve the stormwater quality targets.

- An 80% reduction in the average load of total suspended solids (TSS)
- An 45% reduction in the average annual load of total phosphorous (TP)
- An 45% reduction in the average annual load of total nitrogen (TN)

Proprietary devices by OceanProtect were utilised to meet the water quality targets. The propriety devices include:

- OceanGuard pit baksets with 200µm mesh bags (OG-200) fitted to all external stormwater pits
- 8 x Tall (690) PSorb Stormfilter Catridges fitted in a 4m^2 StormChamber area inside the underground concrete detention tank
- 1 x JellyFish Unit (JF-900-1-1) installed offline

Figure 3 below shows a MUSIC model screenshot of the effectiveness of the above system.

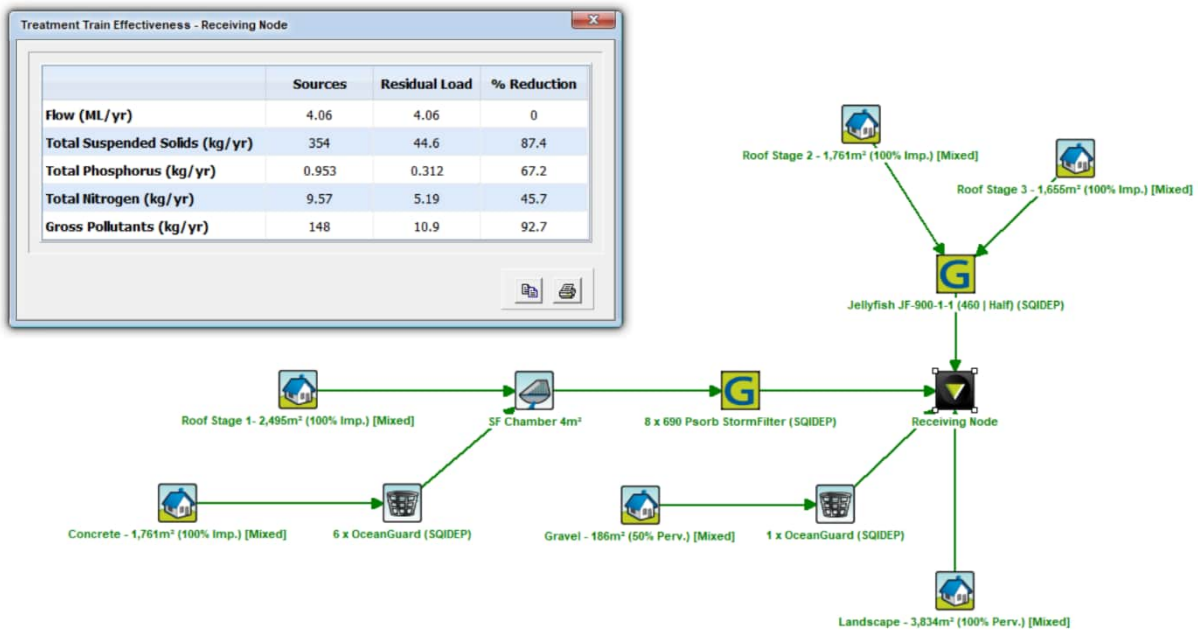


FIGURE 2: MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION OUTPUT

4. MAINTENANCE

The recommended maintenance schedule for the on-site detention and stormwater treatment devices specified in this report are outlined in Table 7 and Table 8.

The manufacturer's maintenance requirements for the stormwater detention and treatment devices that are installed will form part of the project's Plumbing Maintenance Schedule.

TABLE 7: MAINTENANCE FOR OCEAN PROTECT OCEANGUARDS AND STORMFILTERS

OCEANGUARDS	FREQUENCY
MINOR SERVICE Filter bat inspection and evaluation Removal of capture pollutants Disposal of material	1 – 6 times annually
MAJOR SERVICE Filter bag replacement Support frame rectification	As required
STORMFILTERS & JELLYFISH	
VISUAL INSPECTION Removal of larger gross pollutants Minimal rectification works as needed	Every 6 months
MINOR SERVICE Evaluation of cartridges and media Removal of accumulated sediment Wash down of chamber.	Every 12 Months
MAJOR SERVICE Replacement of catridge media	As required

TABLE 8: MAINTENANCE PLAN FOR UNDERGROUND TANK

ACTIVITY	FREQUENCY
Visual inspection of rainwater detention tank for sediment accumulation, sludge, and algae growth, and clogging at outlet orifice.	Every 6 months
Vacuum truck sediment removal/desludging of rainwater detention tank	Approximately every 2-3 years or if sediment/'sludge' is evident upon inspection
Inspection and cleaning of gutters	Every 6 months

5. CONCLUSION

This report has demonstrated that the proposed development at 15 Lukaarlia Drive, Bridgewater complies with the stormwater quantity conditions of Brighton Council's planning permit.

Note:

- No assessment has been undertaken of Council's stormwater infrastructure and its capacity.
- This report assumes the Council stormwater main has capacity for the pre-development peak discharge.
- It is the responsibility of Council to assess their infrastructure and determine the impact (if any) of altered inflows into their stormwater network.

Please contact me at devans@aldanmark.com.au if you require any additional information.

Yours faithfully,

Danton Evans BEng (Hons)
Civil Engineer

ATTACHMENT 4

Traffic Impact Assessment

TRAFFIC IMPACT ASSESSMENT

Hubble Traffic

Updated - September 2025

ADDITIONAL WAREHOUSES 15 LUKAARLIA DRIVE, BRIDGEWATER

Disclaimer: This report has been prepared based on and in reliance upon the information provided to Hubble Traffic Pty Ltd by the client and gathered by Hubble Traffic Pty Ltd during the preparation of the report. Whilst all reasonable skill, care and diligence has been used in preparation of the report, Hubble Traffic Pty Ltd take no responsibility for errors or omissions arising from misstatements by third parties.

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Version	Date	Reason for Issue
Draft	July 2025	Draft issued for client feedback
Final	August 2025	Final issued
Updated	September 2025	Response to Council's RFI

Table of Contents

1. Introduction

Aldanmark Consulting Engineers has engaged Hubble Traffic to prepare an independent Traffic Impact Assessment, to consider the traffic impacts from the provision of three additional warehouses at 15 Lukaarlia Drive, Bridgwater.

This assessment has taken into account the functional requirements of the proposed businesses, the size and location of the lot, the existing surrounding road network, the necessity to accommodate articulated vehicle deliveries, and the need to ensure sufficient on-site parking while maintaining safe and efficient access.

Although the site will be developed in three stages, this traffic impact assessment evaluates the effects assuming the site is fully developed.

This development has been assessed against the Tasmanian Planning Scheme C2 Parking and Sustainable Transport Code, C3 Road and Railway Assets Code, and the Australian Standard 2890.1:2004 (The Standard).

This report has been prepared to satisfy the requirements of Austroads, Guide to Traffic Management Part 12: Traffic Impacts of Developments, 2019, and referred to the following information and resources:

- Tasmanian Planning Scheme (Brighton)
- Road Traffic Authority NSW (RTA) Guide to Traffic Generating Developments
- Australian Standards AS2890 parts 1, 2 and 6
- Austroads series of Traffic Management and Road Design
  - Part 4: Intersection and crossings, General
  - Part 4a: Unsignalised and Signalised Intersections
  - Part 12: Traffic Impacts of Development
- Department of State Growth
- Autoturn Online vehicle turning software
- LIST – Land Information System Tasmania Database

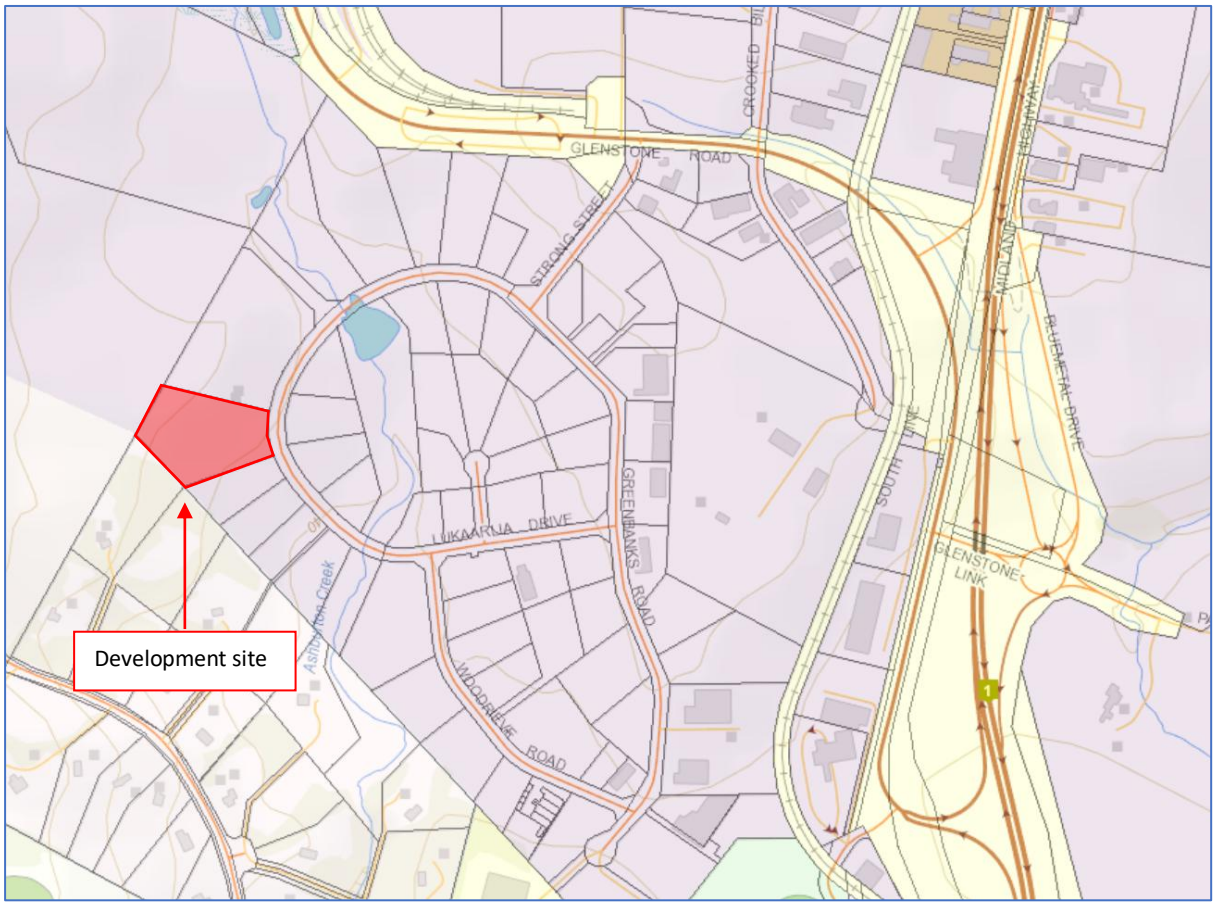
A development application was submitted to Council, who have requested additional information, specifically ensuring that the designated loading area for the bond store does not interfere with access for delivery vehicles. Section 8.6 of this assessment demonstrates that no adverse impact will occur from a vehicle occupying this designated loading area.

2. Site Description

Located at 15 Lukaarlia Drive, Bridgewater, the development site is a large parcel of land, with an existing concrete crossover onto Lukaarlia Drive. The site is located within a new subdivision, in an established industrial area, with a new warehouse currently under construction.

According to Land Information System Tasmania (LIST) Database, the site is located within a General Industrial zone. The entire industrial zone is serviced by Glenstone Road, which connects back onto the Midland Highway, with the surrounding roads built to cater for industrial traffic.

Diagram 2.0 – Extract from LIST Database



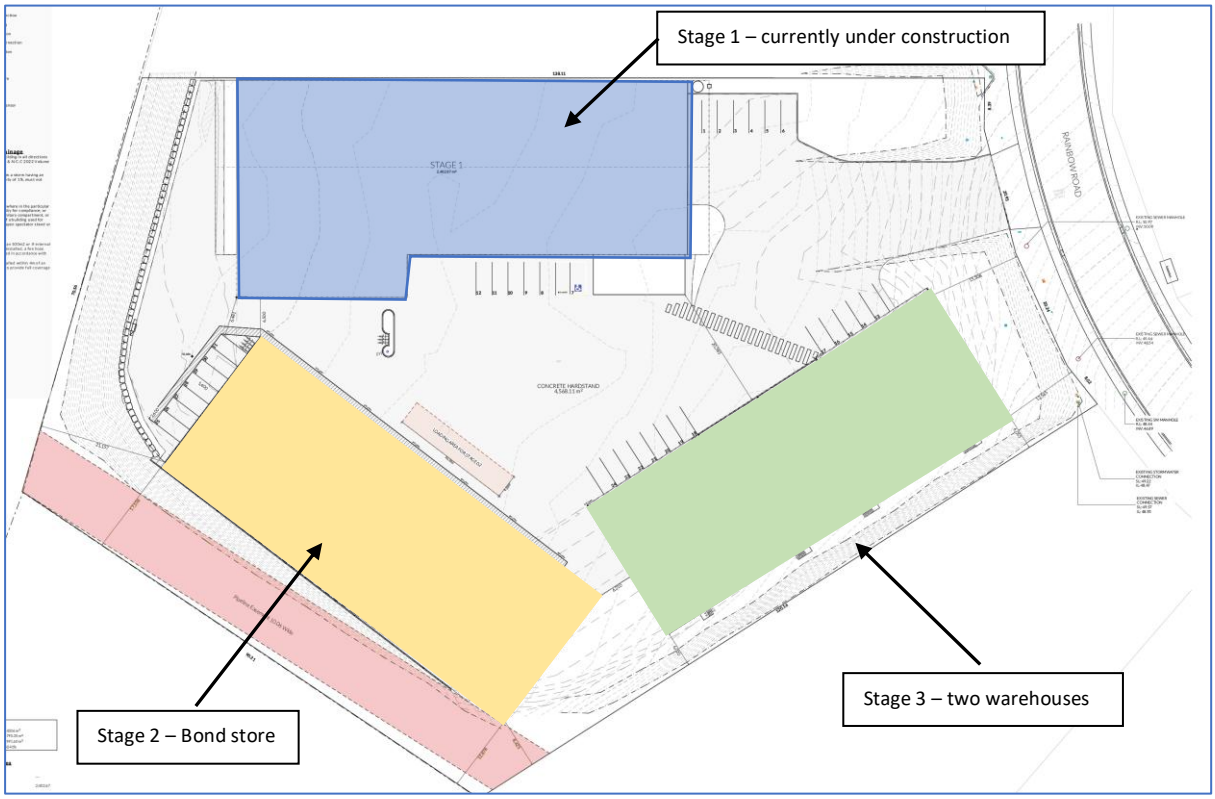
3. Development proposal

The development proposal seeks to progress the second and third stages of the project, with the first stage already approved and currently under construction. This expansion will result in a total of four warehouses, all of which will continue to utilise the existing concrete crossover onto Lukaarlia Drive.

Stage two involves the construction of Warehouse 2, which is intended to function as a bond store for the storage of whisky barrels. A bond store is a secure storage facility where goods can be stored for extended periods. This warehouse will be divided into seven sections, with a designated loading and unloading area situated at the front.

Stage three will involve the construction of the remaining two warehouses, each designed for storage use. Each warehouse will have a floor area of approximately 748 square metres and will include a small ancillary office space and staff amenities (toilets). Large roller doors will be installed within these warehouses.

Diagram 3.0 – Proposed development layout



4. Trip generation by this development

A trip in this report is defined as a one way vehicular movement from one point to another excluding the return journey. Therefore, a return trip to and from a land use is counted as two trips.

4.1. Existing trips from warehouse under construction

Hubble Traffic previously conducted a Traffic Impact Assessment for the first stage in July 2024, estimating the number of vehicle trips likely to be generated by the initial warehouse. As this warehouse is currently under construction, it is anticipated to be operational before the completion of stages two and three.

The previous assessment estimated that this warehouse would generate approximately 42 daily trips, with nine trips expected during the morning and evening peak periods.

4.2. Trips generated by the new warehouses

To determine the number of trips likely to be generated by the three additional warehouses, reference has been taken from the RTA Guide to Traffic Generating Developments, section 3.10.2 Warehouses.

The RTA Guide indicates the following traffic generation for a warehouse use:

- Daily vehicle trips of 4 trips per 100 square metres of gross floor area, and
- Morning peak hour vehicle trips of 0.5 trips per 100 square metres of gross floor area.

Based on the three warehouses having a combined floor area of 3,393 square metres, the RTA Guide indicates that these three warehouses could generate up to 136 daily trips, with 17 trips likely to occur during the morning and evening peak periods.

4.3. Trips generation summary

When the site is fully developed and operational, it is estimated that the site could generate up to 178 daily trips, with 26 trips likely to occur within the morning and evening commuter peak periods.

5. Existing industrial road network

Lukaarlia Drive within the surrounding road network functions as an access road for the industrial businesses. All motorists arriving at and departing from the development site will use Strong Street to connect to the nearest arterial roads, Glenstone Road and Midland Highway.

5.1. Lukaarlia Drive characteristics

Lukaarlia Drive extends westward from the junction with Strong Street and Greenbanks Road, forming a loop road that reconnects with Greenbanks Road. The road is situated within rolling terrain and has a sweeping curve alignment, with a long continuous curve from the junction.

Adjacent to the development site, the road has been constructed to an urban standard, with a 10.5 metre wide bitumen surface, concrete kerb and channel, concrete footpaths on both sides and street lighting.

There is no posted speed limit, with the default 50 km/h urban speed limit applying.

Photograph 5.1 – Lukaarlia Drive standard

5.2. Surrounding road junctions

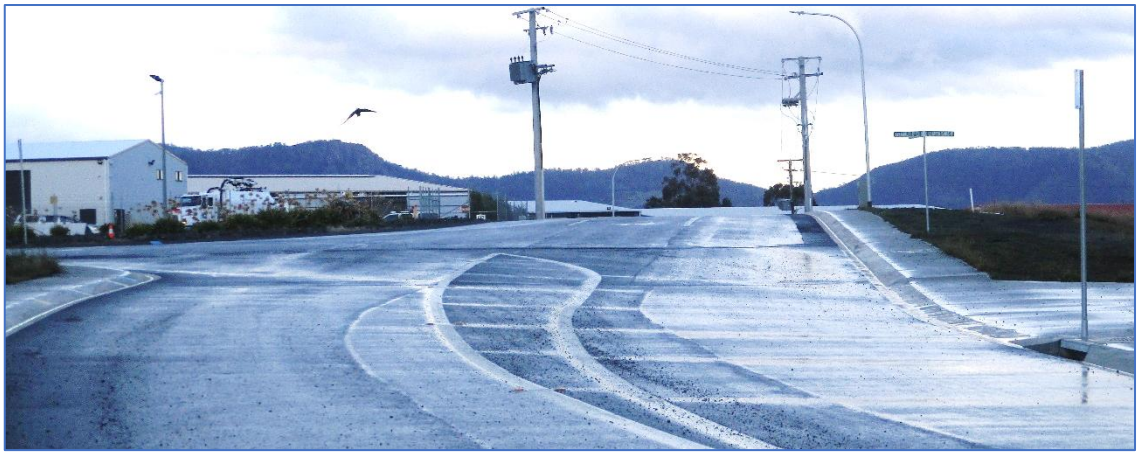
To access the nearest arterial roads being Glenstone Road and Midland Highway, all traffic generated by the development must travel through two junctions, Strong Street and Glenstone Road junction, and Strong Street, Greenbanks Road and Lukaarlia Drive junction.

Glenstone Road connects to the Midland Highway and is part of the State Road network. This industrial road is purpose built to accommodate the largest commercial and industrial vehicles arriving and leaving the Brighton Industrial Hub.

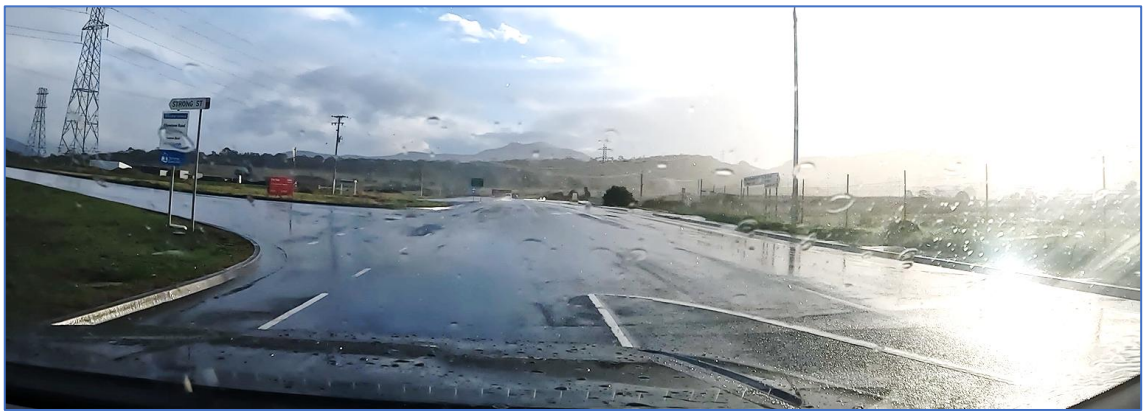
Strong Street connects Glenstone Road with Lukaarlia Drive, with proactive traffic control at both junctions. This includes dedicated right turn lanes, give way signs, appropriate road markings for delineation, and street lighting.

The geometrical layout of the junctions is of a high standard, designed to accommodate the swept paths of large industrial and commercial heavy vehicles. Both junctions provide adequate sight distance to enable motorists to operate in a safe and efficient manner.

Photograph 5.2A – Strong Street, Greenbanks Road and Lukaarlia Drive junction



Photograph 5.2B – Glenstone Road and Strong Street junction



5.3. Traffic flow on the surrounding industrial road network

In evaluating the traffic impact from the development, it is important to understand the current traffic flow on the surrounding road network. Manual traffic surveys were undertaken in 2024 at the following locations:

- Glenstone Road and Strong Street junction, and
- Strong Street, Greenbanks Road, and Lukaarlia Drive junction.

The surveys indicated that the surrounding industrial road network is lightly trafficked, with fewer than 150 two-way vehicles recorded on Greenbanks Road and Lukaarlia Drive. Both Strong Street and Glenstone Road have higher peak hour traffic flows, with two-way flows remaining below 300 vehicles, as illustrated in table 5.3A.

The vehicle fuel station located at the corner of the Glenstone Road and Strong Street junction generated a reasonably high number of vehicle movements at the junction. The survey found that approximately 40 to 50 percent of these movements were generated by commercial and industrial vehicles. Despite the longer time required for these large vehicles to clear the junction, no operational issues were observed.

Table 5.3A – Summary of traffic flows on the surrounding road network from 2024

Junction	**Road**	**Peak hour two-way flows**	
		Morning	**Evening**
Glenstone Rd and Strong St	Glenstone Rd west of junction	142	138
	Glenstone Rd east of junction	262	222
	Strong Street	200	176
Strong St, Greenbanks Rd and Lukaarlia Dr	Strong Street	94	144
	Greenbanks Road	86	118
	Lukaarlia Drive	12	26

To verify this traffic data, an additional traffic survey was conducted at the Strong Street, Greenbanks Road, and Lukaarlia Drive junction in June 2025. The surveys recorded higher traffic flows through the junction during the morning peak period, while the number of vehicles was lower during the evening peak period.

Table 5.3B – 2025 Traffic flows, Strong Street, Greenbanks Road and Lukaarlia Drive junctions

Junction	Road	Peak hour two-way flows	
		Morning	Evening
Strong St, Greenbanks Rd and Lukaarlia Dr	Strong Street	116	86
	Greenbanks Road	96	73
	Lukaarlia Drive	24	17

The 2025 survey revealed that morning peak traffic flows have increased by 19 percent compared to 2024. As a worst-case scenario, it is assumed that traffic flows will increase by 19 percent at each junction during both morning and evening peak times. Additionally, the predicted trips from the warehouse currently under construction will be added to each junction. These adjusted traffic flows will be used throughout this assessment.

Table 5.3C – Summary of adjusted traffic flows on the surrounding road network

Junction	Road	Peak hour two-way flows	
		Morning	Evening
Glenstone Rd and Strong St	Glenstone Rd west of junction	171	165
	Glenstone Rd east of junction	319	271
	Strong Street	248	218
Strong St, Greenbanks Rd and Lukaarlia Dr	Strong Street	125	181
	Greenbanks Road	96	141
	Lukaarlia Drive	33	40

5.4. Road safety of surrounding road network

The Department of State Growth maintains a database of reported road crashes, a check of this database found no crashes reported on Lukaarlia Drive.

6. Impact from traffic generated by this development

As determined in section 4, stages 2 and 3 of this development is estimated to generate an additional 136 daily trips, with 17 of these trips likely to occur during the morning and evening peak periods. Typically, industrial areas experience most trips arriving onsite in the morning and departing in the evening. For this assessment, it is assumed that 90 percent of trips will arrive during the morning peak and depart in the evening.

Level of Service (LOS) is a quantifiable assessment of the factors that contribute to the traffic performance, which includes traffic density, gaps in traffic streams, expected delays, and queues. The RTA Guide provides performance criteria for urban traffic lanes (diagram 6.1) and junctions (diagram 6.2), with five levels from A to E.

LOS A provides the highest level of traffic performance, where motorists are not expected to incur traffic delays or queues, with ample gaps in the traffic stream for vehicles to turn freely and safely without disrupting other users.

6.1. Lane capacity and level of service for surrounding road users

In evaluating the impact of additional vehicles on Strong Street, Lukaarlia Drive, Glenstone Road and Greenbanks Road users, it is important to understand the LOS motorists are currently receiving, which is done by comparing the peak hour traffic flow with diagram 6.1 from the RTA Guide, for urban environments.

From the manual traffic surveys, the surrounding roads are operating at the highest level of traffic efficiency, LOS A. This means that the traffic flow is free flowing, motorists have freedom to select their own operating speed, and there should be sufficient gaps in the traffic stream to enable vehicles to enter and leave, without causing adverse impacts.

Diagram 6.1 – Extract from the RTA Guide

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

The additional peak hour trips have been assigned to the surrounding road network, with the table below comparing the current directional traffic flow and level of performance, against the traffic flow and level of performance when the development is operating.

Table 6.1 demonstrates that the increase in vehicular trips is not expected to cause adverse traffic impact on the surrounding road network, as the level of service will not deteriorate, with all traffic lanes to continue to operate at LOS A.

Table 6.1 – Comparison of traffic performance on the surrounding roads

	Glenstone Road				**Strong Street**			
	Morning		**Evening**		**Morning**		**Evening**	
	EB	**WB**	**EB**	**WB**	**NB**	**SB**	**NB**	**SB**
Existing flows	174	145	150	121	108	140	140	78
Level of Service	A	A	A	A	A	A	A	A
With development	**176**	**156**	**161**	**122**	**110**	**155**	**155**	**80**
Level of Service	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

	Greenbanks Road				**Lukaarlia Drive**			
	Morning		**Evening**		**Morning**		**Evening**	
	EB	**WB**	**EB**	**WB**	**EB**	**WB**	**EB**	**WB**
Existing flows	50	46	41	100	7	26	40	0
Level of Service	A	A	A	A	A	A	A	A
With development	**50**	**46**	**41**	**100**	**9**	**41**	**55**	**2**
Level of Service	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

6.2. Traffic efficiency at the surrounding road junctions

The simplest method to determine the traffic performance at a junction is to use SIDRA Intersection traffic modelling software, which uses gap acceptance theory to determine the average delay, queue lengths, and degree of saturation, which are all measures of traffic congestion and level of service. The RTA Guide provides five levels of service for junctions and roundabouts as shown in the table below.

Diagram 6.2 – RTA Guide for level of service at junctions, intersections, and roundabouts

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Traffic models were developed within the SIDRA software with the adjusted peak hour traffic flows, to replicate the two surrounding junctions of Strong Street with Glenstone Road, and Strong Street, Greenbanks Road and Lukaarlia Drive.

The additional trips generated by the development was assigned to the traffic models, which allows the change in traffic performance to be quantified, with the comparison data shown in table 6.2. As both junctions are currently lightly trafficked, they operate at the highest traffic performance LOS A, with motorists not incurring any notable delays or traffic queues. The traffic modelling demonstrates that the additional development trips travelling through the junctions will not cause any deterioration in traffic performance, as the junctions will continue to operate at LOS A.

As the industrial area continues to grow and develop, the traffic flows of the surrounding road network are expected to grow over the next 10 years. This incremental traffic growth has been modelled at the two junctions, based on three percent growth per year for the next 10 years. The impact of this traffic growth is shown in table 6.2, and demonstrates the junctions have sufficient spare traffic capacity for incremental growth for the next 10 years, as the junctions are expected to continue to operate at LOS A.

This traffic analysis clearly demonstrates additional peak hour trips generated by this development, are not expected to cause any adverse traffic impact to the traffic performance of the surrounding junctions.

Table 6.2 – Traffic modelling comparison between existing and with development traffic

Junction	Scenario	Period	Total vehicles	DOS	Worst delay	LOS	Max queue
Glenstone Rd with Strong St	Existing	Morning peak	388	0.168	8.9 secs	A	6.9 metres
	With development		406	0.174	9.1 secs	A	7.2 metres
	3% growth		544	0.270	10.8 secs	A	11.7 metres
	Existing	Evening peak	344	0.185	8.2 secs	A	8.0 metres
	With development		362	0.205	8.2 secs	A	9.0 metres
	3% growth		486	0.303	9.5 secs	A	14.0 metres
Strong St with Greenbanks Rd and Lukaarlia Dr	Existing	Morning peak	135	0.070	6.6 secs	A	2.9 metres
	With development		153	0.088	6.6 secs	A	3.7 metres
	3% growth		205	0.121	6.9 secs	A	5.2 metres
	Existing	Evening peak	194	0.077	7.4 secs	A	3.7 metres
	With development		211	0.079	7.5 secs	A	3.7 metres
	3% growth		282	0.109	8.1 secs	A	5.2 metres

Printouts of traffic modelling can be found in Appendix B.

7. Access arrangement to and from the development site

7.1. Existing crossover with Lukaarlia Drive

The existing 14.5 metre wide concrete crossover with Lukaarlia Drive will be retained, as it is suitable to accommodate two-way traffic and heavy vehicle movements into and out of the site.

Vehicle swept path software has been used to verify that an articulated vehicle can turn left into the development and left out of the development without crossing the centre of the road. Swept paths diagrams can be found in Appendix C.

Photograph 7.1 – Existing crossover with Lukaarlia Drive

7.2. Sight distance at existing crossover

With the development generating commercial vehicles, it is important drivers have Safe Intersection Sight Distance (SISD), which is the highest sight distance parameter. Austroads Guide to Road Design provides guidance on sight distance and specifies SISD for a 50 km/h speed environment is 90 metres, based on a driver reaction time of 1.5 seconds and observation time of three seconds.

On-site measurements of the available sight distance were taken based on the driver leaving the access being 1.1 metres above the access surface, and an approaching vehicle being 1.2 metres high. The available sight distance in both directions exceeds 100 metres.

With the available sight distance exceeding the SISD, vehicles will be able to enter and leave the development site in a safe and efficient manner, without impacting other road users.

Photograph 7.2A – Available sight distance to the left

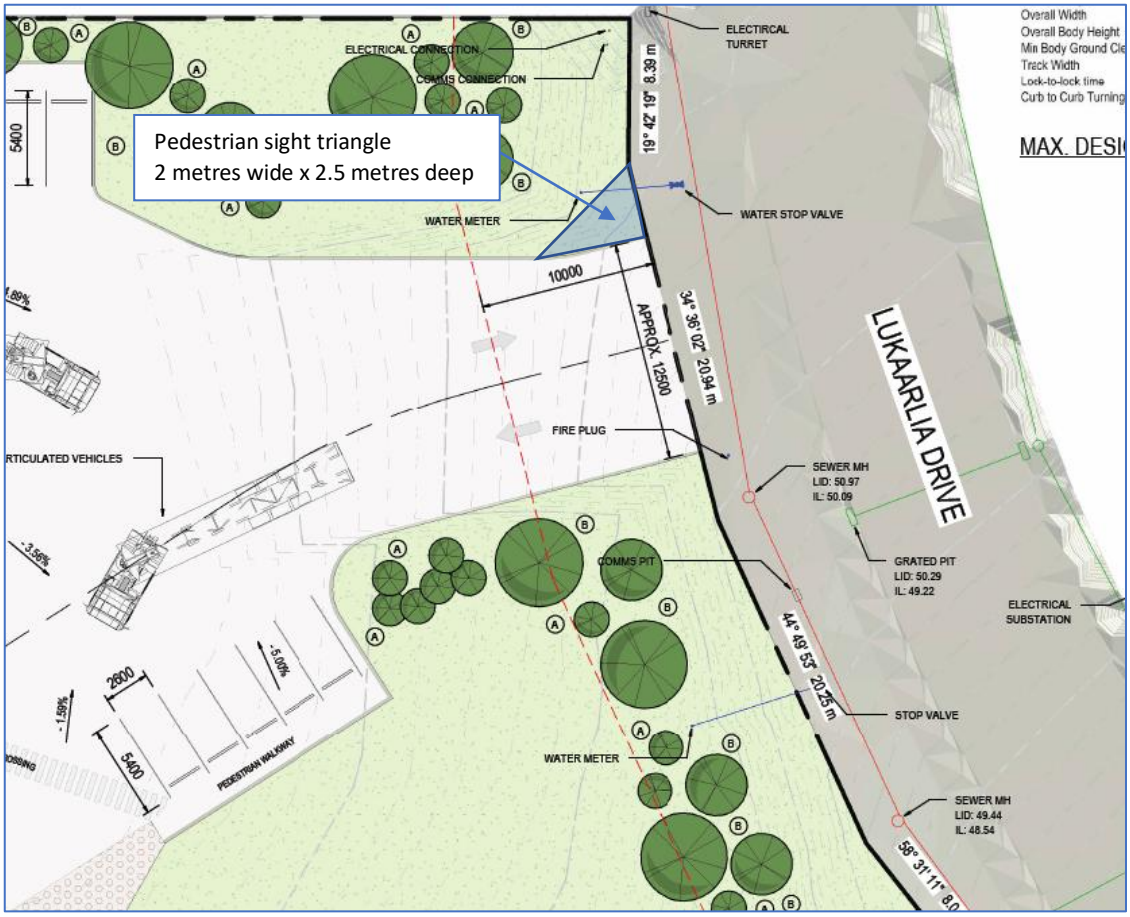
Photograph 7.2B – Available sight distance to the right

7.3. Pedestrian sight distance

It is important for drivers exiting the development site to have clear sight lines to pedestrians using the footpath along Lukaarlia Drive. These sight lines will be maintained by ensuring that there are no physical obstacles within the pedestrian sight triangle.

The diagram below demonstrates the pedestrian sight triangle for a driver leaving the site, as defined in the Standard figure 3.3.

Diagram 7.3 – Pedestrian sight triangle



8. On-site parking and internal road layout

8.1. Number of car parking spaces

The planning scheme table C2.1 specifies the number of on-site car parking spaces required based on the type of land use. The requirements are as follows:

- Business and Professional Services (Office): One space per 40 square metres of floor area.
- Manufacturing and Processing: One space per 200 square metres of floor area or two spaces per three employees, whichever is greater.
- Storage: One space per 200 square metres of site area or one space per two employees, whichever is greater.

Based on the site area and the floor area of the warehouse under construction, the development is required to provide a total of 84 on-site car parking spaces to meet the acceptable solution under the planning scheme.

Table 8.1 – Number of on-site car parking spaces

Activity	Use	Planning scheme requirements	Floor area	Number of parking spaces
Warehouse one (under construction)	Manufacturing and Processing	One space per 200m^2 of floor area or two spaces per three employees, whichever is greater	2,264m^2	11
	Office	One space per 40m^2 of floor area.	53m^2	1
Additional warehouses	Storage	One space per 200m^2 of the site area or one space per two employees, whichever is greater	14,400m^2	72
Total				**84**

8.2. Functional parking demand

Based on the site and floor areas, the planning scheme requires a total of 84 on-site car parking spaces for the combined uses, which is considered excessive for the type of operational use.

The intent of the planning scheme is to ensure the development has a sufficient number of on-site car parking spaces to eliminate parking overflow on the surrounding road network. For the warehouse under construction, 12 on-site car parking spaces will be provided, complying with the previous approved application.

The Stage 2 bond store is designed to accommodate approximately 200 whiskey barrels. Due to the long-term nature of this storage, regular traffic movements are not anticipated. The developer estimates that only two employee vehicles per month will be required for barrel rotation. Although this use will generate a low parking demand, there is sufficient area adjacent to this building to accommodate seven parking spaces, which can be shared with the other warehouses.

When determining the required number of car parking spaces for Stage 3, which involves the addition of two warehouses, the calculation was based on the anticipated number of employees for these facilities. This approach aligns with the planning scheme table C2.1, which stipulates one parking space for every two employees. The developer predicts that the combined workforce of the two warehouses will not exceed 12 employees; accordingly, 12 parking spaces will be provided adjacent to these warehouses to accommodate this requirement.

Based on functional demand, a total of 31 on-site parking spaces will be provided within the site. The parking supply can be shared between the various uses, which is expected to meet the parking demand and minimise the potential for parking overflow.

8.3. Design vehicles

The developer has indicated that Articulated Vehicles (AV), measuring 19 metres in length, will continue to be the largest vehicles on site. Each warehouse will feature large roller doors with a clearance height of 3.5 metres, allowing for internal unloading and loading, except for Warehouse 2, which will have a designated loading and unloading area adjacent to the warehouse.

Employees and visitors to the site are expected to generate light vehicle movements, with vehicles measuring less than 5.5 metres in length.

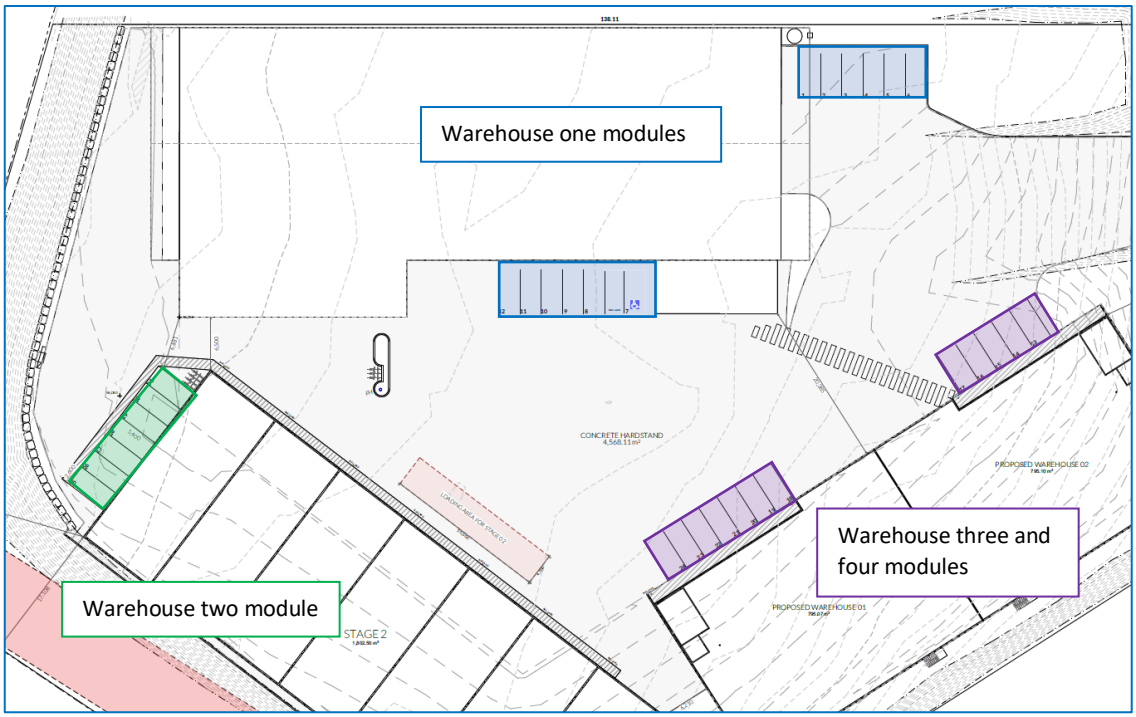
8.4. Layout and dimensions of on-site parking spaces

The design includes five parking modules: two for the warehouse under construction, one adjacent to the warehouse and another adjacent to the office building. The third module is located next to Warehouse 2, while the fourth and fifth modules are adjacent to Warehouses 3 and 4.

All on-site car parking spaces are designed to comply with the planning scheme parking dimensions in table C2.3, with ninety-degree parking spaces 2.6 metres wide and 5.4 metres long, supported with a minimum 6.4 metre manoeuvring area or access aisle. These parking dimensions will ensure that vehicles can enter and leave the spaces in an efficient manner.

The parking spaces will be delineated with pavement markings and supported with wheel stops and designed to be situated on a gradient less than five percent, in both longitudinal and transverse directions.

Diagram 8.4 – Location of on-site parking spaces



8.5. Heavy vehicle movements and delivery area

Warehouses three and four have been designed with large roller doors, allowing for loading and unloading to occur internally. While a dedicated loading and unloading zone will be provided at the front of warehouse two, with the design allowing for the delivery vehicle to enter, circulate, park in the designated area, and leave in a forward-driving direction.

Diagram 8.5 – Swept path of an AV using the designated loading area

8.6. Multiple heavy vehicle movements occurring at the same time

Vehicle swept path analysis has been undertaken to demonstrate that an articulated vehicle (AV) can safely enter, manoeuvre within, and exit the warehouse currently under construction.

This confirms that the AV can travel through the site and perform a turnaround manoeuvre on-site, enabling departure in a forward-driving direction. This movement remains achievable even when a separate vehicle is occupying the designated loading area, confirming that the internal layout supports simultaneous operations without conflict

Diagram 8.6A –AV accessing warehouse with a vehicle occupying the designated loading area

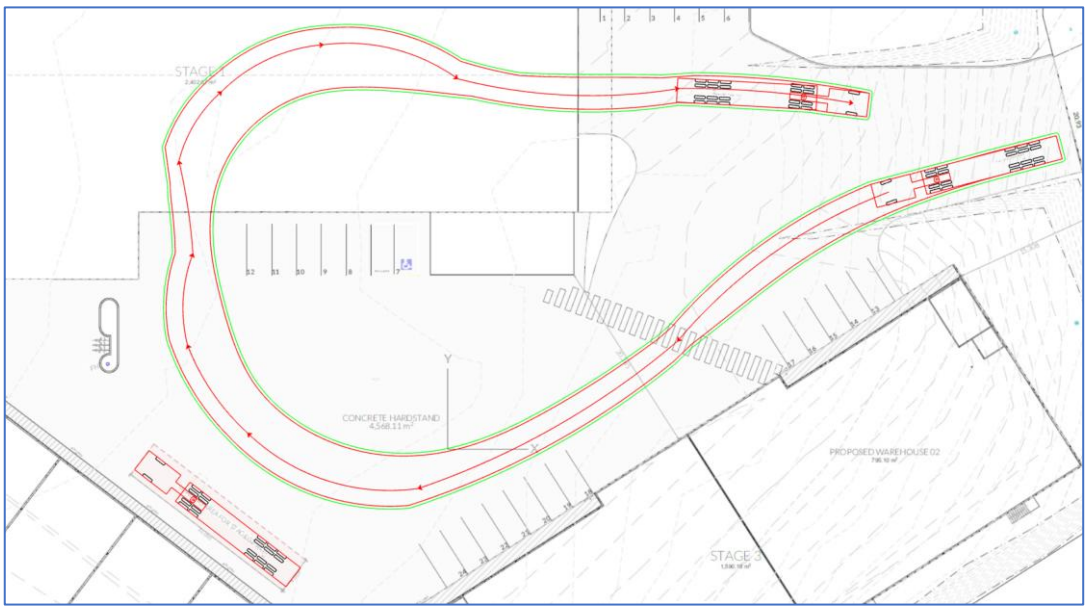
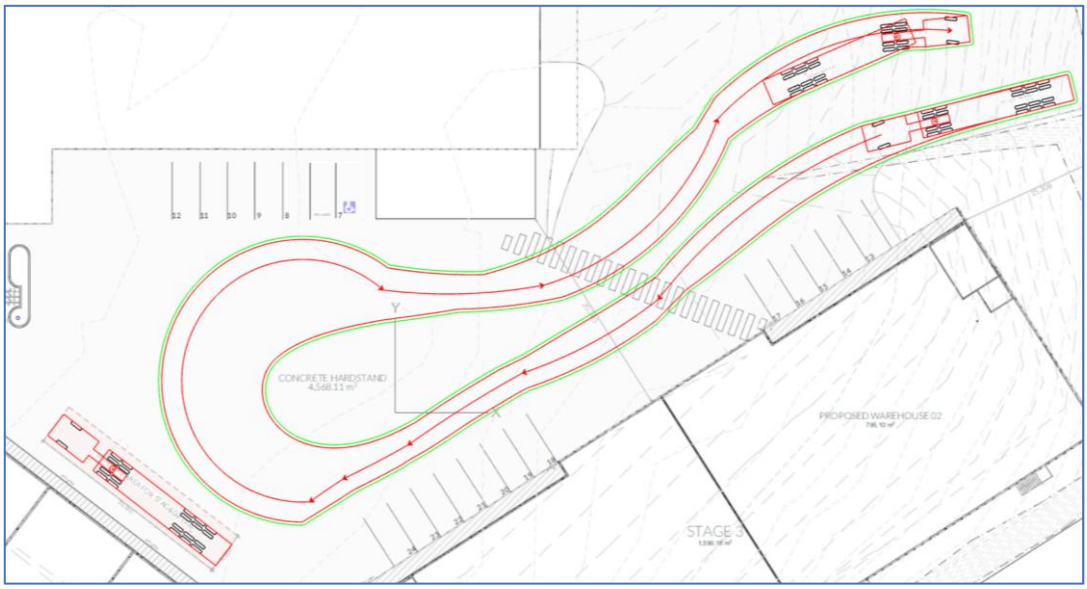


Diagram 8.6B –AV vehicle turning around with a vehicle occupying the designated loading area



8.7. Internal driveway and stormwater

The internal driveway leading off Lukaarlia Drive will be 12.5 metres wide to accommodate two-way flow for heavy vehicles, then widening into a large forecourt to allow heavy vehicles to turn around.

The driveway will be constructed with a hard-wearing concrete surface and a suitable camber to direct surface water to a series of stormwater pits located in the middle of the driveway, which will connect to an approved stormwater drainage system.

8.8. Internal driveway gradients

The driveway has been designed to comply with AS 2890.2:2018 part 2: Off-street commercial vehicle facilities (Commercial Standard), which specifies that the maximum gradient should be 15.4 percent for an AV design vehicle and that the change in grade should not exceed 6.25 percent over 10 metres of travel.

This assessment determined the gradient of the driveway complies with this Commercial Standard, to enable heavy vehicles to enter and leave the site in a safe and efficient manner without impacting other users.

8.9. Other parking requirements

Bicycle parking spaces

Table C2.1 of the planning scheme specifies the number of bicycle parking spaces required based on the type of land use. For Manufacturing and Processing, one space is required per five employees, while Office use requires one space per 500 square metres of floor area. Storage use has no requirement.

Seven bicycle parking spaces will be provided, exceeding the planning scheme requirement of one bicycle space

Motorcycle parking spaces

Dedicated motorcycle parking spaces are not required for Manufacturing and Processing or Storage uses.

Accessible parking spaces

According to the National Construction Code (NCC) the warehouses are classified as class 7b buildings, which are typically warehouses or storage buildings.

The NCC specifies that a class 7b building requires one accessible space for every 100 car parking spaces provided. One accessible space, supported with a shared zone, will be provided adjacent to warehouse one.

8.10. Internal pedestrian pathway

Suitable internal pathways will be provided within the site, connecting each parking module with the entrances to each new warehouse, as shown in diagram 8.9. The pathways will be a minimum of one metre wide and constructed with a hard-wearing concrete surface. Where the pathway crosses the internal road, it will be delineated with road markings, defining the pathway and pedestrian crossing area.

Wheel stops will be used to separate the pathway from the parking spaces, while bollards will be utilised to separate the pathway from the internal driveway. The proposed safety measures are expected to ensure pedestrians can move around the development site in a safe and convenient manner, meeting the objective of the planning scheme.

Diagram 8.10 – Internal pedestrian pathway

9. Planning scheme

9.1. C2.0 Parking and Sustainable Transport Code

C2.5.1 Car parking numbers

A total of 31 on-site car parking spaces will be provided, which is less than the acceptable solution of 84 spaces and must be assessed against the performance criteria P1.

Performance criteria	Assessment
The number of on-site car parking spaces for uses, excluding dwellings, must meet the reasonable needs of the use, having regard to:	
a) The availability of off-street public car parking spaces within reasonable walking distance to the site;	None.
b) The ability of multiple users to share spaces because of: (i) Variations in car parking demand over time; or (ii) Efficiencies gained by consolidation of car parking spaces;	Each warehouse will have the ability to share the on-site car parking spaces.
c) The availability and frequency of public transport within reasonable walking distance of the site;	The industrial area is not serviced by any public transport.
d) The availability and frequency of other transport alternatives;	Given the location of the development site, it is likely that most employees or visitors will arrive by private vehicle, with the possibility of some employees carpooling.
e) Any site constraints such as existing buildings, slope, drainage, vegetation and landscaping;	None.
f) The availability, accessibility and safety of on-street parking, having regard to the nature of the roads, traffic management and other uses in the vicinity;	Lukaarlia Drive has been constructed to serve the industrial area, with sufficient road width to allow on-street parking to occur, while maintaining two-way traffic flow.
g) The effect on streetscape; and	None.
h) Any assessment by a suitably qualified person of the actual car parking demand determined having regard to the scale and nature of the use and development.	A functional parking assessment has determined that the 31 on-site car parking spaces provided by the development, will meet the reasonable needs of the warehouses, minimising the potential of parking overflow to occur. This assessment takes into consideration the type of use, and estimated employee numbers.

C2.5.2 Bicycle parking numbers

The development will provide seven bicycle parking spaces, exceeding the one space required under planning scheme table C2.1, and complying with the acceptable solution A1.

C2.5.3 Motorcycle parking numbers

Section C2.2.2 of the planning scheme prescribes that dedicated motorcycle spaces are not required for a Manufacturing and Processing or Storage use.

C2.5.4 Loading bays

Three warehouses have been designed to cater for commercial vehicles to load and unload internally within the warehouse, while warehouse two will have a designated loading and unloading area adjacent to the warehouse, complying with the acceptable solution A1.

C2.6. Development standards

C2.6.1 Construction of parking areas.	The car parking spaces, and internal driveway will be constructed with a hard-wearing concrete surface, with appropriate camber to direct surface water to centrally located pits connected to an approved stormwater system, complying with the acceptable solution A1.
C2.6.2 Design and layout of parking areas.	Car parking spaces have been designed to comply with the dimensions in the planning scheme table C2.3, where each space will be 2.6 metres wide, 5.4 metres long, with a minimum manoeuvring area of 6.4 metres. This will ensure all vehicles will be able to enter and leave the development site in a forward-driving direction. The parking spaces shall be located on a gradient of less than five percent, delineated with line markings, and supported with wheel stops. The width of the driveway will exceed the minimum 5.5 metres for two-way traffic movements, complying with table C2.2 of the planning scheme. The roller doors into the warehouse where heavy vehicles are expected, will be 3.5 metres in height, with no other overhead structure restricting headroom clearance less than 2.1 metres. One accessible parking space and share zone will be provided as near as practical to the main entrance of warehouse one. Overall, the car parking layout complies with the acceptable solution A1.1, and A1.2, ensuring safe and efficient access.
C2.6.3 Number of accesses for vehicles.	The development will operate with a single vehicular access, using the existing concrete crossover onto Lukaarlia Drive, complying with the acceptable solution A1.

C2.6.4 Lighting of parking areas within the general business zone and central business zone	The development site will be provided with suitable lighting to ensure vehicles can enter, park, manoeuvre, and leave in a safe manner.
C2.6.5 Pedestrian access.	A delineated internal pedestrian pathway will be provided, connecting each parking module to the warehouses. The internal pathway will be a minimum of one metre wide and where possible separated from the internal driveway by bollards and parking spaces by wheel stops. Where the pathway crosses the driveway, it will be delineated with road markings, defining the pathway and pedestrian crossing areas. Overall, pedestrians will be able to move around the development site safely and efficiently, complying with the acceptable solution A1.1 and A1.2 of the planning scheme.
C2.6.6 Loading bays.	Three warehouses have been designed with large roller doors, allowing for loading and unloading to occur internally, while warehouse two will be provided with a designated loading and unloading area adjacent to the warehouse, complying with the acceptable solution A1.
C2.6.7 Bicycle parking and storage facilities	Bicycle parking spaces will be designed to comply with the planning scheme and Australian Standard 1158.3.1:2005 and be located within close proximity to the entrance of the warehouse one and office, complying with the acceptable solution A1 and A2.
C2.6.8 Siting of parking and turning areas.	Not applicable for a general industrial zone.

9.2. C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

The three additional warehouses will increase the use of the existing crossover with Lukaarlia Drive by more than 20 percent and will need to be assessed against the performance criteria P1.

Performance criteria	Assessment
Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:	
a) Any increase in traffic caused by the use;	The three additional warehouses are estimated to generate up to 136 daily trips, with 17 of these likely to occur within the peak periods. While the warehouse currently under construction is estimated to generate 42 daily trips, with nine of these likely to occur within the peak periods.
b) The nature of the traffic generated by the use;	The warehouses are located within an established industrial area and will generate both light vehicles (less than 5.5 metres) and heavy vehicle movements. Light vehicles will be generated by employees and visitors, while heavy vehicles (including articulated vehicles). These vehicle types are compatible with the existing traffic on the surrounding road network.
c) The nature of the road;	Lukaarlia Drive has been purposely constructed to accommodate industrial traffic and is suitable to accommodate the types of vehicles generated by this development. All traffic must enter and leave through two junctions, Strong Street and Glenstone Road, and Strong Street, Greenbanks Road and Lukaarlia Drive, with each junction constructed to a high standard to facilitate safe and efficient traffic movements for the industrial area. Available sight distance at the development access and junctions, exceeds Safe Intersection Sight Distance, ensuring vehicles can enter and leave in a safe manner.
d) The speed limit and traffic flow of the road;	There is no posted speed limit, with the urban default 50 km/h speed limit applying. Manual surveys found that the surrounding road network is lightly trafficked, with less than 350 two-way vehicles using Glenstone Road, Strong Street, Greenbanks Road and Lukaarlia Drive during the peak periods. Traffic modelling at the junctions found motorists are receiving the highest level of traffic performance and efficiency, and the additional traffic generated by the development is not expected to cause any deterioration in traffic performance or have an adverse impact of traffic flow.
e) Any alternative access to a road;	There is only one route to the development site, this assessment found this route is suitable to cater for the traffic movements, with the proposed access to the development expected to provide safe and efficient vehicle movements.
f) The need for the use;	The additional warehouses will create new employment opportunities within the Brighton municipality.

g) Any traffic impact assessment; and	A traffic impact assessment found no reason for this development not to proceed.
h) Any advice received from the rail or road authority.	Aware of none.

10. Conclusion

From a traffic engineering and road safety perspective, the additional traffic generated by this development is not expected to create any adverse safety, amenity, or traffic efficiency problems as:

- the amount of traffic generated is considered to be low and there if sufficient capacity within the current road network to absorb the extra traffic movements,
- the existing crossover onto Lukaarlia Drive has sufficient Safe Intersection Sight Distance, ensuring safe and efficient vehicle movements, without causing adverse impact to other users or surrounding properties,
- the development will have sufficient parking spaces to meet the expected demand, and
- commercial vehicles will be able to load and unload within the development site, preventing any overflow on to the public road network.

This Traffic Impact Assessment found no reason for this development not to proceed.

11. Appendix A – Traffic surveys

11.1. Glenstone Road and Strong Street junction (2024)

Diagram 11.1A – Morning peak hour traffic movements

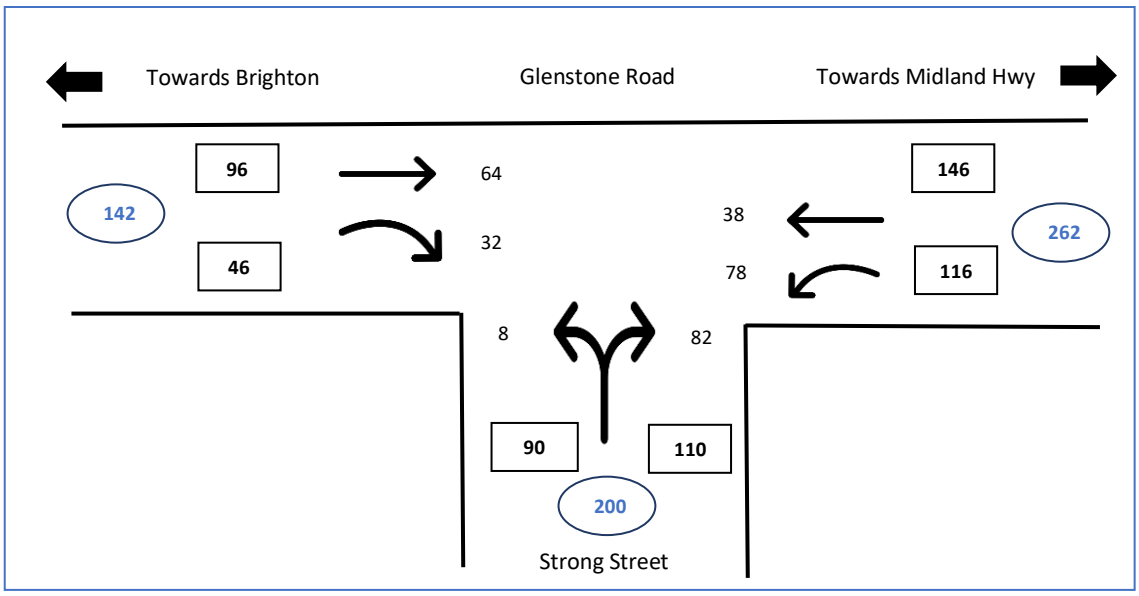
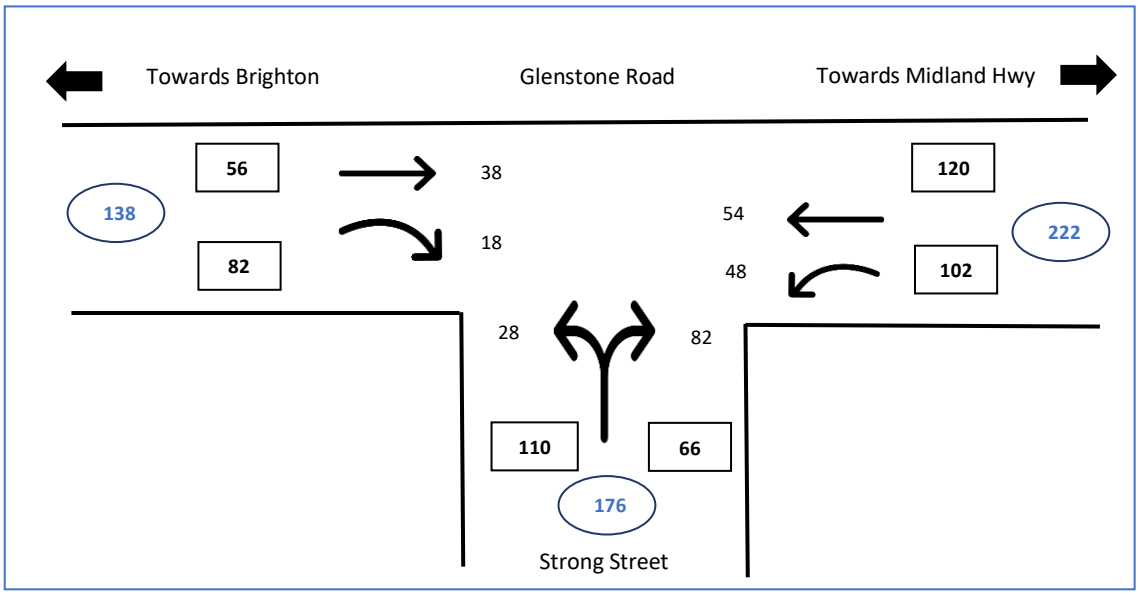


Diagram 11.1B – Evening peak hour traffic movements



11.2. Strong Street, Greenbanks Road and Lukaarlia Drive junction (2024)

Diagram 11.2A – Morning peak hour traffic movements

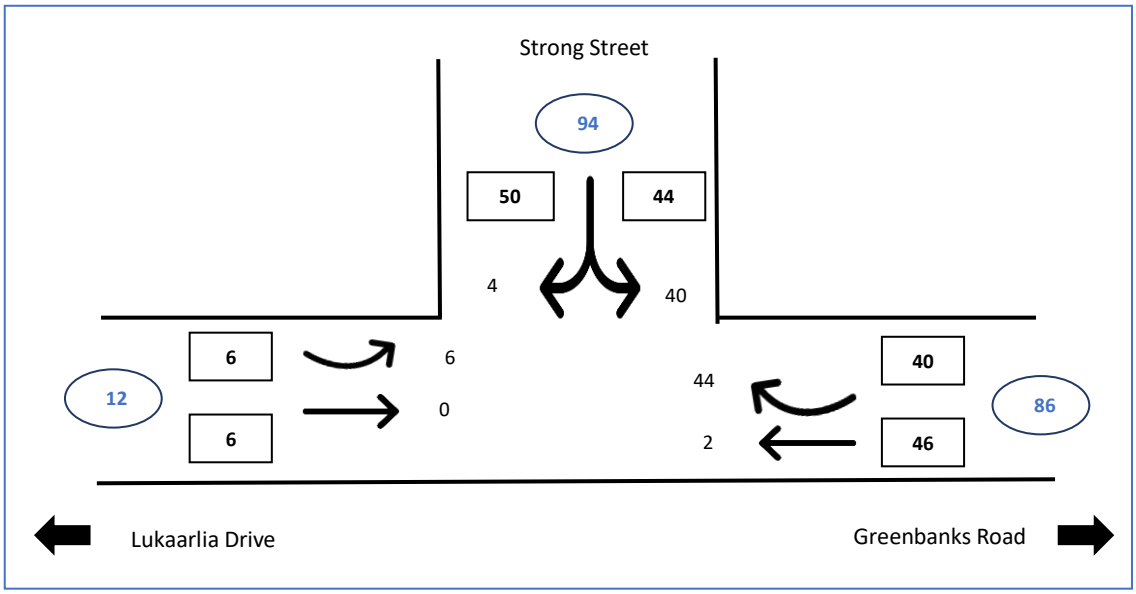
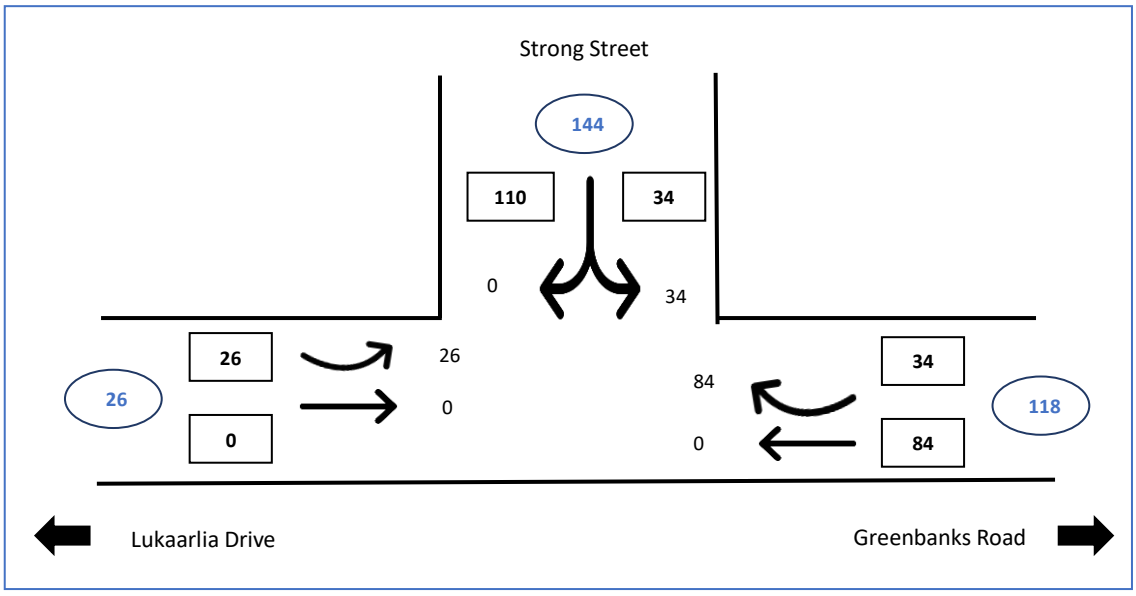


Diagram 11.2B – Evening peak hour traffic movements



11.3. Strong Street, Greenbanks Road and Lukaarlia Drive junction Traffic Data (2025)

Table 11.3A – Morning survey completed on Monday 23rd of June 2025

Time AM	Strong Street		Greenbanks Road		Lukaarlia Drive	
	Left onto Greenbanks Rd	Right onto Lukaarlia Dr	Right onto Strong St	Straight onto Lukaarlia Dr	Left onto Strong St	Straight onto Greenbanks Rd
7:30 - 7:45	16	7	6	0	1	0
7:45 - 8:00	11	3	7	0	3	1
8:00 - 8:15	11	4	15	0	0	0
8:15 - 8:30	10	3	18	0	1	1
8:30 - 8:45	13	2	12	0	1	0
8:45 - 9:00	11	2	8	0	3	0
Total	**72**	**21**	**68**	**0**	**9**	**2**
Peak total	**48**	**17**	**46**	**0**	**5**	**2**

Table 11.3B – Evening survey completed on Monday 23rd of June 2025

Time PM	Strong Street		Greenbanks Road		Lukaarlia Drive	
	Left onto Greenbanks Rd	Right onto Lukaarlia Dr	Right onto Strong St	Straight onto Lukaarlia Dr	Left onto Strong St	Straight onto Greenbanks Rd
4:00 - 4:15	12	3	16	0	7	0
4:15 - 4:30	6	1	15	0	2	0
4:30 - 4:45	4	0	9	1	0	0
4:45 - 5:00	3	0	6	1	2	0
5:00 - 5:15	4	1	25	0	1	0
5:15 - 5:30	0	0	11	0	0	0
Total	**29**	**5**	**82**	**2**	**12**	**0**
Peak total	**25**	**4**	**46**	**2**	**11**	**0**

11.4. Strong Street, Greenbanks Road and Lukaarlia Drive junction (2025)

Diagram 11.4A – Morning peak hour traffic movements

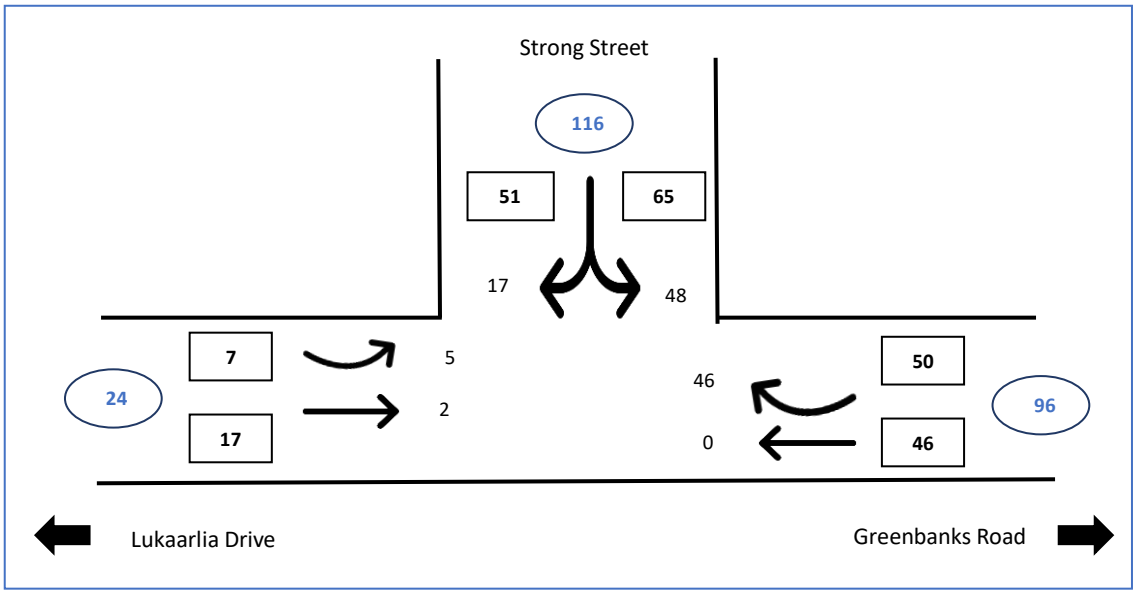
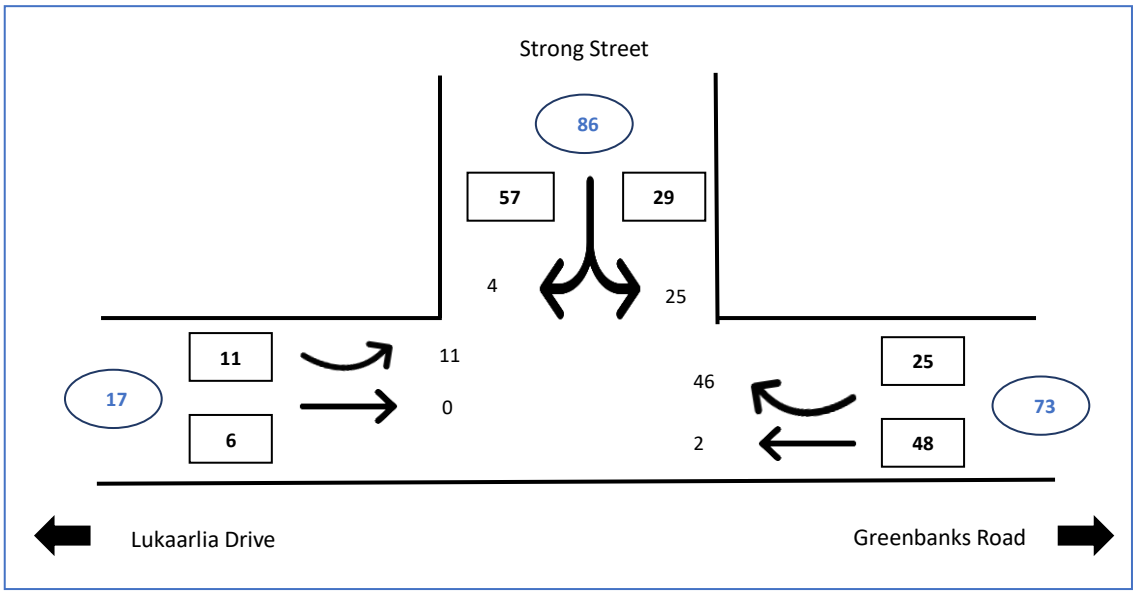


Diagram 11.4B – Evening peak hour traffic movements



12. Appendix B – Traffic modelling

Glenstone Road and Strong Street junction

Morning peak – Existing flows

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Current morning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	11	50.0	0.168	6.4	LOS A	0.7	6.9
3	R2	103	50.0	0.168	8.9	LOS A	0.7	6.9
Approach		114	50.0	0.168	8.7	LOS A	0.7	6.9
East: Glenstone								
4	L2	105	50.0	0.109	6.1	LOS A	0.0	0.0
5	T1	47	50.0	0.109	0.0	LOS A	0.0	0.0
Approach		153	50.0	0.109	4.2	NA	0.0	0.0
West: Glenstone								
11	T1	80	50.0	0.055	0.0	LOS A	0.0	0.0
12	R2	42	50.0	0.036	7.0	LOS A	0.2	1.6
Approach		122	50.0	0.055	2.4	NA	0.2	1.6
All Vehicles		388	50.0	0.168	5.0	NA	0.7	6.9

Evening peak – Existing flows

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Current evening]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	37	50.0	0.185	6.6	LOS A	0.8	8.0
3	R2	111	50.0	0.185	8.2	LOS A	0.8	8.0
Approach		147	50.0	0.185	7.8	LOS A	0.8	8.0
East: Glenstone								
4	L2	60	50.0	0.090	6.1	LOS A	0.0	0.0
5	T1	67	50.0	0.090	0.0	LOS A	0.0	0.0
Approach		127	50.0	0.090	2.9	NA	0.0	0.0
West: Glenstone								
11	T1	47	50.0	0.032	0.0	LOS A	0.0	0.0
12	R2	22	50.0	0.018	6.8	LOS A	0.1	0.8
Approach		69	50.0	0.032	2.2	NA	0.1	0.8
All Vehicles		344	50.0	0.185	4.8	NA	0.8	8.0

Morning peak - Existing flows with development traffic

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Morning with development]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	11	50.0	0.174	6.4	LOS A	0.7	7.2
3	R2	105	50.0	0.174	9.1	LOS A	0.7	7.2
Approach		116	50.0	0.174	8.8	LOS A	0.7	7.2
East: Glenstone								
4	L2	117	50.0	0.118	6.1	LOS A	0.0	0.0
5	T1	47	50.0	0.118	0.0	LOS A	0.0	0.0
Approach		164	50.0	0.118	4.4	NA	0.0	0.0
West: Glenstone								
11	T1	80	50.0	0.055	0.0	LOS A	0.0	0.0
12	R2	46	50.0	0.041	7.1	LOS A	0.2	1.8
Approach		126	50.0	0.055	2.6	NA	0.2	1.8
All Vehicles		406	50.0	0.174	5.1	NA	0.7	7.2

Evening peak – Existing flows with development traffic

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Evening with development]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	41	50.0	0.205	6.6	LOS A	0.9	9.0
3	R2	122	50.0	0.205	8.2	LOS A	0.9	9.0
Approach		163	50.0	0.205	7.8	LOS A	0.9	9.0
East: Glenstone								
4	L2	61	50.0	0.090	6.1	LOS A	0.0	0.0
5	T1	67	50.0	0.090	0.0	LOS A	0.0	0.0
Approach		128	50.0	0.090	2.9	NA	0.0	0.0
West: Glenstone								
11	T1	47	50.0	0.032	0.0	LOS A	0.0	0.0
12	R2	23	50.0	0.019	6.8	LOS A	0.1	0.8
Approach		71	50.0	0.032	2.2	NA	0.1	0.8
All Vehicles		362	50.0	0.205	5.0	NA	0.9	9.0

Morning peak - Existing flows with development traffic and traffic growth of three percent over 10 years

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Morning with development and growth]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	14	50.0	0.270	6.6	LOS A	1.2	11.7
3	R2	141	50.0	0.270	10.8	LOS B	1.2	11.7
Approach		155	50.0	0.270	10.5	LOS B	1.2	11.7
East: Glenstone								
4	L2	157	50.0	0.157	6.1	LOS A	0.0	0.0
5	T1	63	50.0	0.157	0.0	LOS A	0.0	0.0
Approach		220	50.0	0.157	4.4	NA	0.0	0.0
West: Glenstone								
11	T1	107	50.0	0.074	0.0	LOS A	0.0	0.0
12	R2	62	50.0	0.059	7.5	LOS A	0.3	2.6
Approach		169	50.0	0.074	2.8	NA	0.3	2.6
All Vehicles		544	50.0	0.270	5.6	NA	1.2	11.7

Evening peak – Existing flows with development traffic and traffic growth of three percent over 10 years

MOVEMENT SUMMARY

Site: 101 [Glenstone and Strong - Evening with development and growth]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Strong								
1	L2	55	50.0	0.303	6.8	LOS A	1.4	14.0
3	R2	164	50.0	0.303	9.5	LOS A	1.4	14.0
Approach		219	50.0	0.303	8.8	LOS A	1.4	14.0
East: Glenstone								
4	L2	82	50.0	0.121	6.1	LOS A	0.0	0.0
5	T1	91	50.0	0.121	0.0	LOS A	0.0	0.0
Approach		173	50.0	0.121	2.9	NA	0.0	0.0
West: Glenstone								
11	T1	63	50.0	0.043	0.0	LOS A	0.0	0.0
12	R2	32	50.0	0.028	7.1	LOS A	0.1	1.2
Approach		95	50.0	0.043	2.4	NA	0.1	1.2
All Vehicles		486	50.0	0.303	5.5	NA	1.4	14.0

Strong Street, Greenbanks Road and Lukaarlia Drive junction

Morning peak – Existing flows

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Current morning]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	48	50.0	0.034	6.1	LOS A	0.2	1.6
Approach		49	50.0	0.034	6.0	NA	0.2	1.6
North: Strong Street								
7	L2	51	50.0	0.070	6.1	LOS A	0.3	2.9
9	R2	27	50.0	0.070	6.6	LOS A	0.3	2.9
Approach		78	50.0	0.070	6.3	LOS A	0.3	2.9
West: Lukaarlia Drive (to Site)								
10	L2	5	50.0	0.005	6.1	LOS A	0.0	0.0
11	T1	2	50.0	0.005	0.0	LOS A	0.0	0.0
Approach		7	50.0	0.005	4.4	NA	0.0	0.0
All Vehicles		135	50.0	0.070	6.1	NA	0.3	2.9

Evening peak – Existing flows

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Current evening]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	105	50.0	0.077	6.3	LOS A	0.4	3.7
Approach		106	50.0	0.077	6.2	NA	0.4	3.7
North: Strong Street								
7	L2	43	50.0	0.034	6.1	LOS A	0.1	1.4
9	R2	1	50.0	0.034	7.4	LOS A	0.1	1.4
Approach		44	50.0	0.034	6.2	LOS A	0.1	1.4
West: Lukaarlia Drive (to Site)								
10	L2	42	50.0	0.031	6.1	LOS A	0.0	0.0
11	T1	1	50.0	0.031	0.0	LOS A	0.0	0.0
Approach		43	50.0	0.031	6.0	NA	0.0	0.0
All Vehicles		194	50.0	0.077	6.2	NA	0.4	3.7

Morning peak - Existing flows with development traffic

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Current morning with development]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	48	50.0	0.034	6.1	LOS A	0.2	1.6
Approach		49	50.0	0.034	6.0	NA	0.2	1.6
North: Strong Street								
7	L2	51	50.0	0.088	6.1	LOS A	0.4	3.7
9	R2	43	50.0	0.088	6.6	LOS A	0.4	3.7
Approach		94	50.0	0.088	6.4	LOS A	0.4	3.7
West: Lukaarlia Drive (to Site)								
10	L2	7	50.0	0.007	6.1	LOS A	0.0	0.0
11	T1	2	50.0	0.007	0.0	LOS A	0.0	0.0
Approach		9	50.0	0.007	4.8	NA	0.0	0.0
All Vehicles		153	50.0	0.088	6.1	NA	0.4	3.7

Evening peak – Existing flows with development traffic

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Current evening - with development]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	105	50.0	0.079	6.4	LOS A	0.4	3.7
Approach		106	50.0	0.079	6.3	NA	0.4	3.7
North: Strong Street								
7	L2	43	50.0	0.036	6.1	LOS A	0.1	1.4
9	R2	2	50.0	0.036	7.5	LOS A	0.1	1.4
Approach		45	50.0	0.036	6.2	LOS A	0.1	1.4
West: Lukaarlia Drive (to Site)								
10	L2	58	50.0	0.043	6.1	LOS A	0.0	0.0
11	T1	1	50.0	0.043	0.0	LOS A	0.0	0.0
Approach		59	50.0	0.043	6.0	NA	0.0	0.0
All Vehicles		211	50.0	0.079	6.2	NA	0.4	3.7

Morning peak - Existing flows with development traffic and traffic growth of three percent over 10 years

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Morning with development and growth]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	65	50.0	0.046	6.1	LOS A	0.2	2.1
Approach		66	50.0	0.046	6.0	NA	0.2	2.1
North: Strong Street								
7	L2	68	50.0	0.121	6.1	LOS A	0.5	5.2
9	R2	58	50.0	0.121	6.9	LOS A	0.5	5.2
Approach		126	50.0	0.121	6.5	LOS A	0.5	5.2
West: Lukaarlia Drive (to Site)								
10	L2	9	50.0	0.009	6.1	LOS A	0.0	0.0
11	T1	3	50.0	0.009	0.0	LOS A	0.0	0.0
Approach		13	50.0	0.009	4.6	NA	0.0	0.0
All Vehicles		205	50.0	0.121	6.2	NA	0.5	5.2

Evening peak – Existing flows with development traffic and traffic growth of three percent over 10 years

MOVEMENT SUMMARY

Site: 101 [Lukaarlia and Strong - Evening with development and growth]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Road								
5	T1	1	50.0	0.001	0.0	LOS A	0.0	0.0
6	R2	141	50.0	0.109	6.5	LOS A	0.5	5.2
Approach		142	50.0	0.109	6.5	NA	0.5	5.2
North: Strong Street								
7	L2	58	50.0	0.049	6.1	LOS A	0.2	2.0
9	R2	3	50.0	0.049	8.1	LOS A	0.2	2.0
Approach		61	50.0	0.049	6.2	LOS A	0.2	2.0
West: Lukaarlia Drive (to Site)								
10	L2	78	50.0	0.058	6.1	LOS A	0.0	0.0
11	T1	1	50.0	0.058	0.0	LOS A	0.0	0.0
Approach		79	50.0	0.058	6.0	NA	0.0	0.0
All Vehicles		282	50.0	0.109	6.3	NA	0.5	5.2

13. Appendix C – Vehicle swept paths

Diagram 13.0 – Swept path of AV turning into the development site

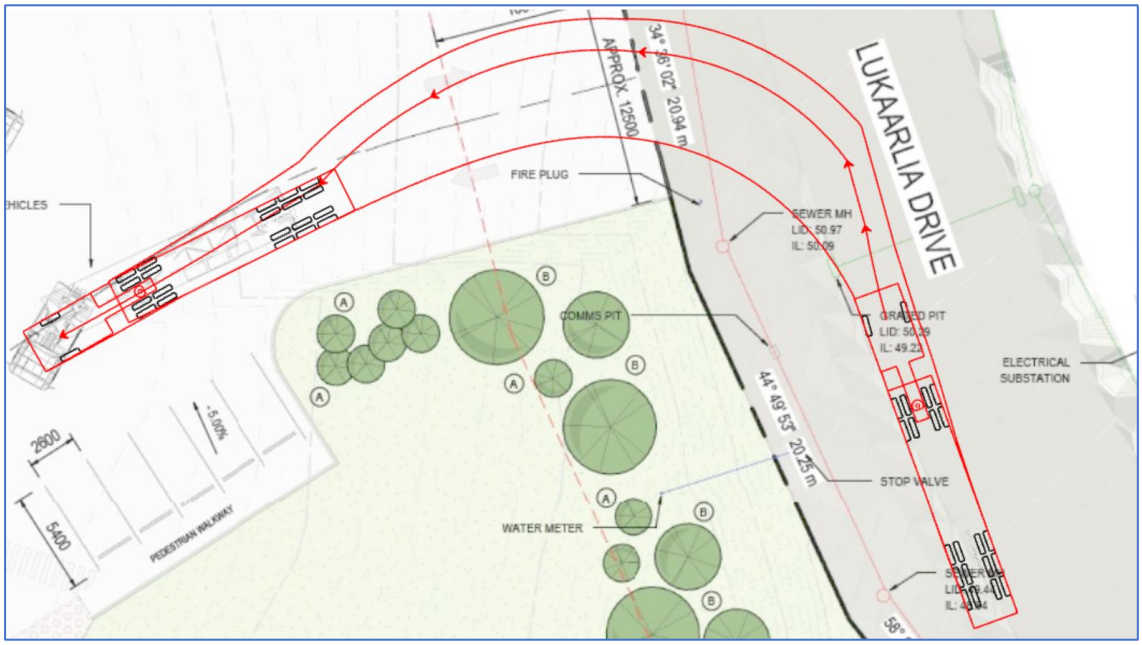


Diagram 13.1 – Swept path of AV turning out of the development site

ATTACHMENT 5

Flood Hazard Report

Prepared for

Southern Steel Properties

15 Lukaarlia Drive Bridgewater

FLOOD HAZARD REPORT

FE_24052

19 July 2024

flüssig Engineers

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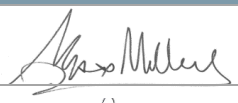
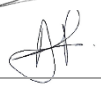
HOBART TASMANIA 7000
ABN: 16 639 276 181

Document Information

Title	*Client*	*Document Number*	*Project Manager*
15 Lukaarlia Drive, Bridgewater, Flood Hazard Report	**Southern Steel Properties**	FE_24052	Max W. Möller *Principal Hydraulic Engineer*

Document Initial Revision

REVISION 00	Staff Name	Signature	Date
Prepared by	Max W. Moller ***Principal Hydraulic Engineer***		01/07/2024
Prepared by	Ash Perera ***Senior Hydraulic Engineer***		01/07/2024
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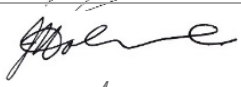
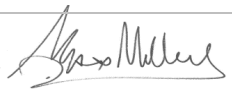
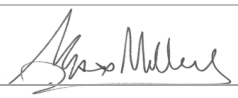
Reviewed by	John Holmes ***Senior Engineer***		18/07/2024
Reviewed by	Max W. Möller ***Principal Hydraulic Engineer***		18/07/2024
Authorised by	Max W. Moller ***Principal Hydraulic Engineer***		19/07/2024

Rev No.	Description	Prepared by	Authorised by	Date
01	Stage 2 and 3 Added	MM	MM	19.08.2025
02	Clause C12.5.2 P1 and P3 Added	MM	MM	26.09.2025

Contents

List of Tables

List of Figures

1. Introduction

Flüssig Engineers has been engaged by **Southern Steel Properties** to undertake a site-specific Flood Hazard Report for the development at 15 Lukaarlia Drive, Bridgewater in the **Brighton Council** municipality. The purpose of this report is to determine the flood characteristics on the existing and post-development hazard scenarios for the 1% AEP plus climate change, for the purpose of development.

1.1 Development

The proposed development consists of a proposed Stage 2 and Stage 3 warehouses, concrete handstand and gravel handstand. This development triggers the inundation code as the development falls within Brighton Council, flood prone area.

1.2 Objectives and Scope

This report is to assess the proposed development at 15 Lukaarlia Drive, Bridgewater under C12.0 Flood Prone Areas Hazard Code of the Tasmanian Planning Scheme 2021- Brighton (TPS 2021). The objectives of this study are:

- Provide an assessment of the site's flood characteristics under the combined 1% AEP plus climate change (CC) scenario.
- Provide comparison of flooding for post-development against acceptable solution and performance criteria.
- Provide flood mitigation recommendations for a potential future development, where appropriate.

1.3 Limitations

This study is limited to the objectives of the engagement by the clients, the availability and reliability of data, and including the following:

- The flood model is limited to a 1% AEP + CC worst case temporal design storm.
- All parameters have been derived from best practice manuals and available relevant studies (if applicable) in the area.
- All provided data by the client or government bodies for the purpose of this study is deemed fit for purpose and has not been checked for accuracy.
- The study is to determine the effects of the new development on flooding behaviour and should not be used as a full flood study outside the specified area without further assessment.

1.4 Relevant Planning Scheme Requirements

This report addresses the Tasmanian Planning Scheme codes C12.5.1 and C12.6.1 of the Flood Prone Areas Hazard Code of which the objective is to ensure that risk from riverine, watercourse or inland flooding is appropriately managed and takes into account the use of the buildings.

Table 1. TPS Planning Scheme Requirements

Planning Scheme Code	Objective
C12.5.1 Uses within a flood prone area	That a habitable building can achieve and maintain a tolerable risk from flood.
C12.5.2 Critical use, hazardous use or vulnerable use	That critical, hazardous and vulnerable uses, located within a flood-prone hazard area can achieve and maintain a tolerable risk from flood.
C12.6.1 Building and works within a flood prone area	(a) building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and
	(b) buildings and works do not increase the risk from flood to adjacent land and public infrastructure.

Specific details of this code and how this report addresses these requirements is shown in Table 8 and Table 9.

2. Model Build

2.1 Overview of Catchment

The contributing catchment for 15 Lukaarlia Drive, Bridgewater is approximately 58 ha stretching from the peak located approximately 600 m north of the end of Cobbs Hill Road to the development site with an average slope of 8 %.

The land use of the catchment is Landscape Conservation, Rural and General Industrial with the specific site being listed as General industrial. Figure 1 below outlines the approximate contributing catchment for the site at 15 Lukaarlia Drive, Bridgewater.

Figure 1. Contributing Catchment, 15 Lukaarlia Drive, Bridgewater

2.2 Hydrology

Table 2 states the adopted hydrological parameters for the RAFTS catchment, as per best practice guidelines.

Table 2. Parameters for RAFTS catchment

Catchment Area (ha)	Initial Loss Perv/imp (mm)	Continuing Loss Perv/imp (mm/hr)	Manning's N pervious	Manning's N impervious	Non-linearity factor
58	20/1	3.0/0.0	0.045	0.02	-0.285

2.2.1 Design Rainfall Events

Figure 2 shows the box and whisker output of the model run. The model shows that the 1% AEP 10-minute storm temporal pattern 5 was the worst-case median storm. Therefore, this storm event was used within the hydraulic model. This particular storm event was selected as the worst-case scenario for further integration into the hydraulic model. The utilisation of this specific storm pattern ensures a comprehensive assessment of the system's response under conditions representing a high level of hydrological stress, thereby enhancing the model's ability to simulate and address extreme weather scenarios.

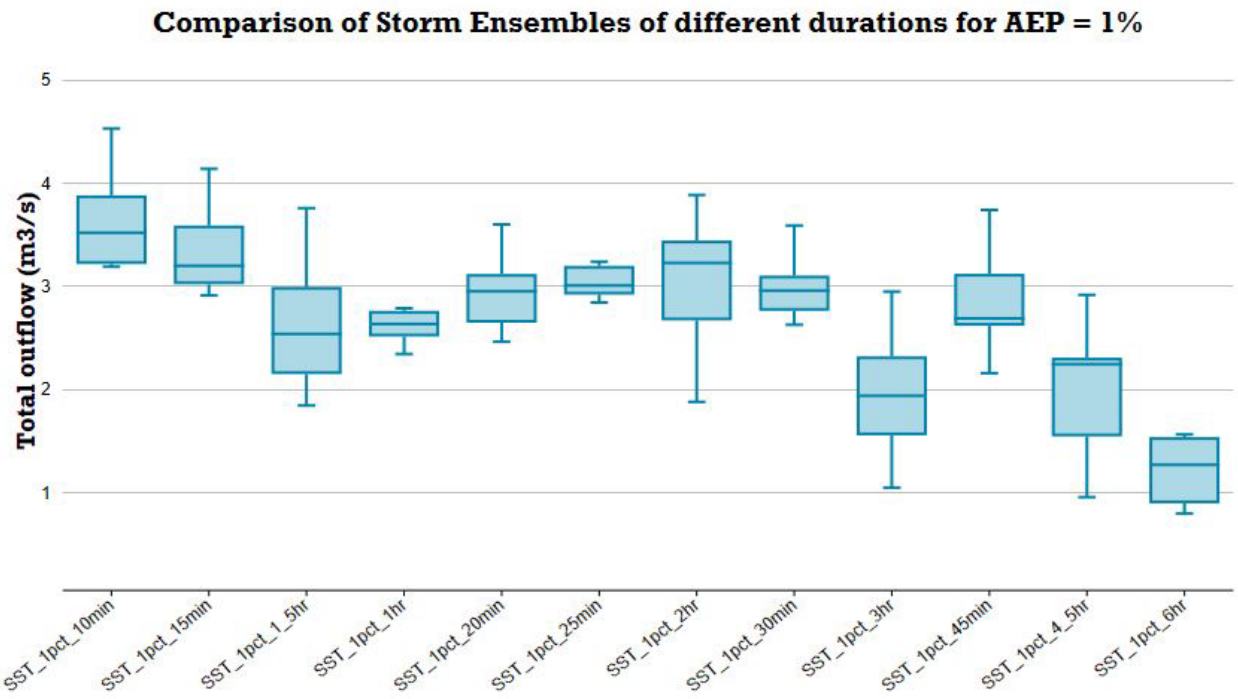


Figure 2. 1% AEP Flood Event Model, Box and Whisker Plot

2.2.2 Climate Change

As per the ARR 2019 Guide for Flood Estimation (Version 4.2), the recommended approach for estimating increases in rainfall due to climate change projections for the year 2100 scenario.

According to Table 3 of the guide, a multiplication factor of 1.86 is adopted for rainfall durations of less than 1 hour under the SSP5-8.5 at 2100 scenario for the localised catchment. This factor accounts for the anticipated intensification of extreme rainfall events due to climate change impacts.

Table 3. Climate Change Increases

Parameter	Localised Catchment SSP5-8.5 @ 2100
<1 - hour Rainfall Intensity	86% Increase

2.2.3 Calibration/Validation

There is no stream gauge within this immediate catchment to calibrate the model against actual storm events. Similarly, there is limited historical flood data and few previous studies available to validate the modelled flows.

The rainfall estimates used in the rain-on-grid approach were derived entirely from the RAFT model parameters for this catchment, as outlined in Table 2. A Regional Flood Frequency Estimation (RFFE) model was also run, but only for comparison purposes. The comparison values are shown in Table 4 below.

Table 4. Regional Flood Frequency Estimation model (RFFE) v/s Flussig Result.

AEP (%)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)	Discharge (m^3/s)	Flussig Discharge (m^3/s)
50	0.230	1.11	0.500	0.77
20	0.420	2.02	0.930	1.49
10	0.510	3.23	1.29	1.88
5	0.560	5.02	1.71	2.25
2	0.610	8.47	2.45	3.72
1	0.630	12.2	3.01	4.25
Input Data				
Date/Time			2024-07-09 15:40	
Catchment Name			Catchment1	
Latitude (Outlet)			-42.745	
Longitude (Outlet)			147.239	
Latitude (Centroid)			-42.686	
Longitude (Centroid)			147.167	
Catchment Area (km^2)			0.56	
Distance to Nearest Gauged Catchment (km)			23.43	
50% AEP 6 Hour Rainfall Intensity (mm/h)			4.150245	
2% AEP 6 Hour Rainfall Intensity (mm/h)			8.761337	
Rainfall Intensity Source (User/Auto)			Auto	
Region			Tasmania	
Region Version			RFFE Model 2016 v1	
Region Source (User/Auto)			Auto	
Shape Factor			4.46*	
Interpolation Method			Natural Neighbour	
Bias Correction Value			0.213	

2.3 Hydraulics

A 1D-2D hydraulic model was created to determine the flood level through the target area.

2.3.1 Survey

The 2D surface model was taken from a combination of Greater Hobart LIDAR DEM 2013 and received survey information to create a 1m/0.25m cell size DEM. For the purposes of this report, 1m cells are enough to capture accurate flow paths. The DEM with hill shading can be seen below (Figure 3).

The site excavation has been incorporated into the revised Digital Elevation Model (DEM) for both the pre and post-development scenario. This mesh has been fused with the ELVIS DEM to establish the ground conditions for existing and post development conditions.

Figure 3. 1m DEM (Hill shade) of Lot Area

2.3.2 Key Stormwater Assets including pipes and pits

Where available, data for the existing and new pipes and pits were modelled as 1D underground network within the catchment model included identified culverts at the Ashburton Creek. Underground pipes were connected via 1D/2D connected pits. For the purpose of the model, pits adopted an inlet flow limitation based off a double grated pit depth/flow curve to allow a more realistic inflow capacity into the existing pipe network because of the software limitation on rain on grid scenario adopted.

2.3.3 Roads

Roads often form the basis for overland flow in high frequency events, however the kerb and channel are not always picked up by DEM surface. To correct for the drainage lines, mesh polygons were used to delineate road corridors with the roads being incorporated a z-line along the gutter to ensure the kerb invert is represent in the mesh.

In our Digital Elevation Model (DEM), a "z-line" refers to a line representing a constant elevation or contour line. These lines connect the existing kerb points of equal elevation on the terrain surface, allowing for visualisation of the terrain's shape and elevation changes.

2.3.4 Buildings

Specifically, residential houses and commercial buildings were integrated into the DEM by elevating the corresponding grid cells representing these structures by a standardised height of 0.3 meters above the natural ground surface. Subsequently, the re-sampled grids were utilised to establish the Infoworks ICM model, thus forming a foundational framework for the subsequent analysis and simulation of flood dynamics.

This method allows for flow through the building if the flood levels/ pressure become great enough. The aim is to mimic flow through passageways such as doors, windows, and hallways.

2.3.5 Boundary Conditions

Infoworks ICM operates as a single-use software, streamlining the hydrology and hydraulic modelling processes within a unified framework. This unique feature eliminates the necessity for separate inflow boundary conditions, as the hydrology model seamlessly integrates with the hydraulic model through a 1D or 2D link.

The rain on grid model originated from Cobbs Hill to the west with the extents stretching further downstream of the site up to the Midland Highway.

2.3.6 Structures

In developing the two-dimensional grid for the floodplain ground surface, we began by re-sampling high-resolution LiDAR data in GIS software to create a digital elevation model (DEM). As part of this process, we identified and incorporated key features such as buildings, walls, and roads. Ensuring that these features were accurately represented in the re-sampled DEM was essential.

2.3.7 Roughness (Manning's n)

The model grid's roughness and equivalent Manning's n values were derived from land use data. Table 5 shows Manning's values used in the model. Values for this layer were derived from the ARR 2019 Guidelines. These parameters have proven effective in previous flood mapping projects undertaken in Tasmania.

Table 5. Manning's Coefficients (ARR 2019)

Land type	Equivalent Manning's 'n' (1/Roughness)
Built up areas	0.125
Open space	0.025
Waterways	0.029
Roads	0.013
Houses/ Buildings Roof	0.010

2.3.8 Walls

All significant fences and retaining structures were included as 2D linear wall structures within the 2D model. Fences were modelled 300 mm maximum above the ground level.

2.4 Development Runoff

Stormwater runoff from the development site has been assessed under pre- and post-development models to determine the potential impact the development at 15 Lukaarlia Drive, Bridgewater has on the immediate local flows. As per planning guidelines it is a requirement that this does not have a negative impact from pre to post development. Site Characteristics for the pre- and post-development model are summarised in Table 6.

Table 6. Site Characteristics

	Pre-Development		Post-Development	
Land Use	**Area (m²)**	**% of total**	**Area (m²)**	**% of total**
Total Impervious	9,410	66	9,563.1	66.8
Total Pervious	4,896	34	4742.9	33.2

3. Model Results

The result of 1% AEP + CC were run through the pre-development and post-development model scenarios to compare the changes to flooding onsite and to surrounding properties.

3.1 Pre-development Scenario

The pre-development model results (Figure 4) clearly illustrate the influence of the existing warehouse and adjacent gravel hardstand on the behaviour of overland flood flows across the site. The presence of these impermeable and semi-impermeable surfaces alters natural flow patterns, concentrating runoff and directing it along the lot boundaries. To address these effects, a 1.5 m wide and 0.15 m deep open drain has been constructed along the western and southern edges of the gravel hardstand area. This drains functions as a diversion channel, intercepting and conveying overland flow away from vulnerable areas and reducing the risk of inundation around the existing warehouse footprint.

When this drainage feature is incorporated into the pre-development flood model, results show that maximum flood depths within the lot remain below 0.28 m. These depths are confined to a small, localised area within the western portion of the lot and are attributed to the combined influence of the drain depth and the site grading undertaken during previous works. At the rear of the existing warehouse, adjacent to the northern boundary, shallow depths of up to 0.11 m are recorded. These minor depths present no operational or structural impact as the warehouse does not have any doorways or openings along that elevation, ensuring the building remains unaffected by flows in this area.

3.2 Post-Development Scenario

Figure 5 illustrates the effect of incorporating the proposed Stage 2 and Stage 3 warehouses, along with the associated hardstand areas, on overland flood flow behaviour across the site. The introduction of these additional structures alters surface runoff patterns, with the potential to concentrate flows in certain locations. To manage and redirect the overland flow path, it is proposed that a grated 1.0 m wide concrete channel, with depths ranging from 0.35 m to 0.71 m, be installed along the rear of the Stage 2 south-western warehouse. In addition, a 450 mm high earth bund will be constructed along the top of the embankment behind the warehouse to prevent sediment from entering the new concrete channel beneath the walkway. Collectively, these measures will capture and direct surface flows away from the buildings, ensuring effective protection of the development footprint against potential overland flow impacts.

Post-development flood modelling, incorporating the Stage 2 and Stage 3 warehouses, indicates a slight increase in localised ponding within the central portion of the existing hardstand and at the western edge of the Stage 2 warehouses. The maximum depths recorded in these locations remain below 0.30 m and are attributed to the combined effects of proposed site grading adjustments and the introduction of new building structures. These areas of ponding are minor, highly localised, and present no operational or structural concern, as the Stage 2 warehouses do not have any doorways or openings along the affected elevation.

The proposed concrete channel will discharge at approximately the same location along the lot boundary as under pre-development scenario, ensuring that the overall flow path leaving the site remains consistent with the existing conditions.

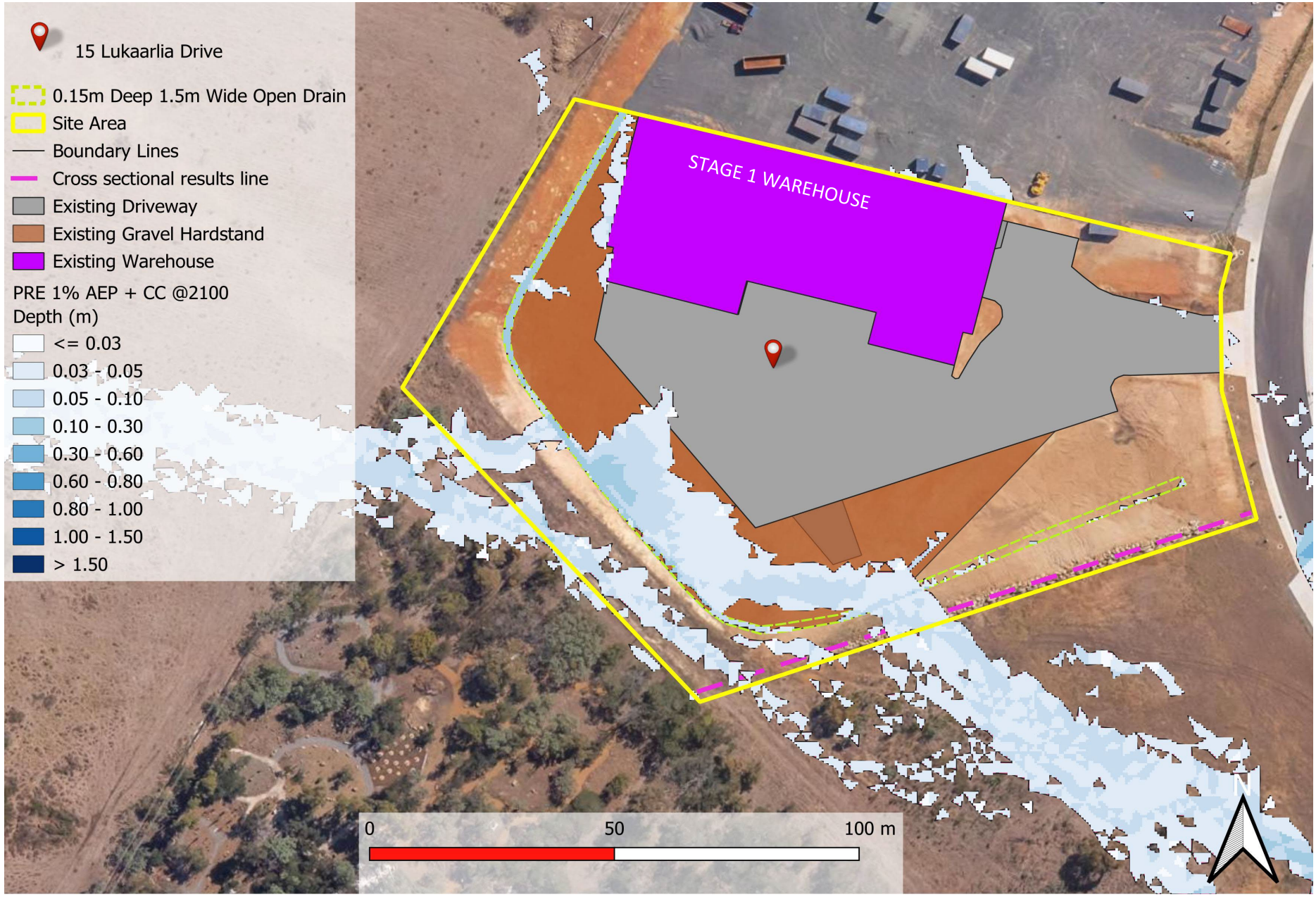


Figure 4. Pre-Development 1% AEP + CC Depth

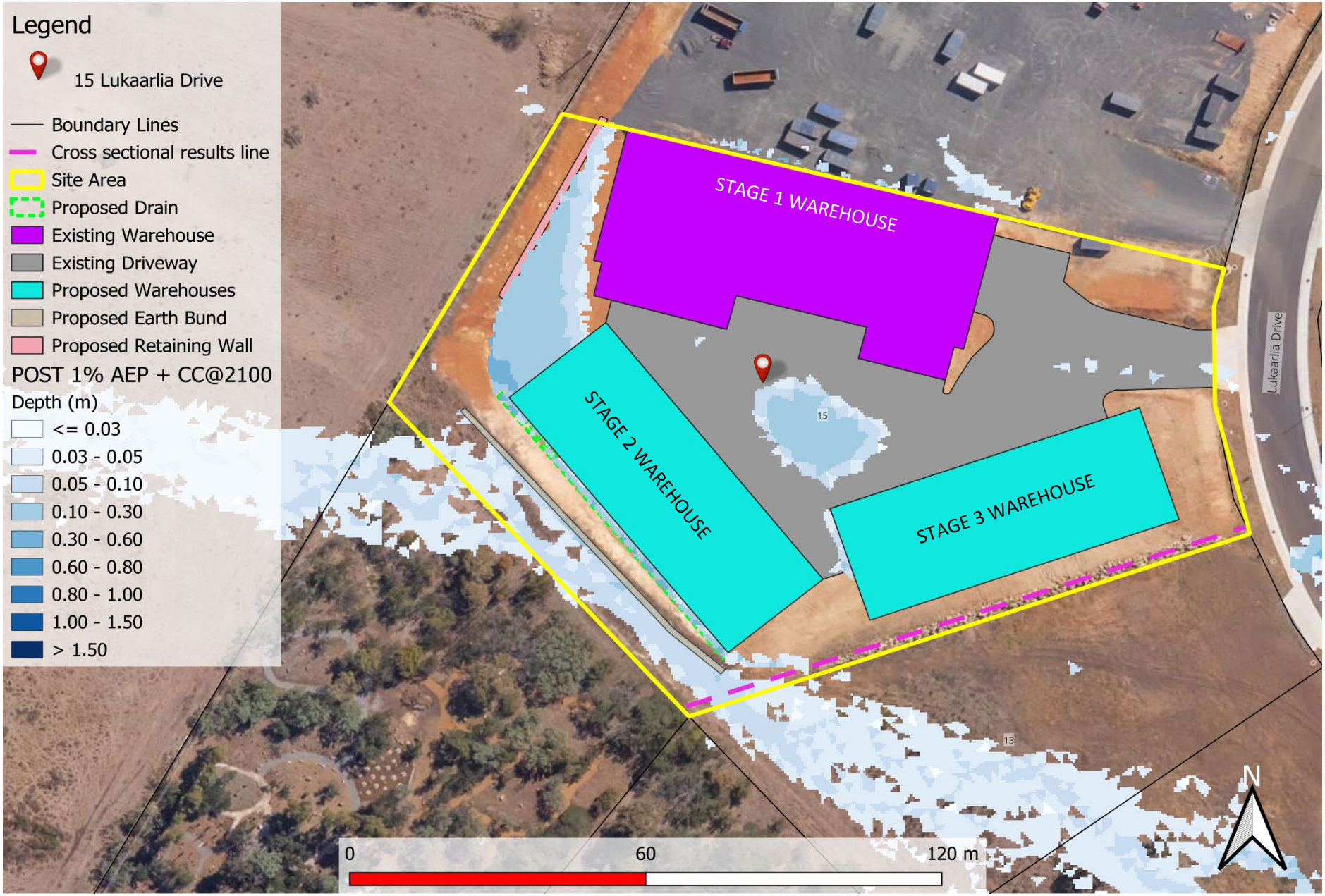


Figure 5. Post-Development 1% AEP + CC including Depth

3.3 Displacement of Overland Flow on Third Party Property

Post-development modelling results (Figure 5) indicate that, when compared with the pre-development scenario shown in Figure 4, there is a minor increase in flood depths on properties immediately south of the development site. Overland flow in this area continues to follow the natural drainage path towards the southern boundary of the lot. This increase is the result of the updated climate change increment applied in this revised model, analysis, and report, and is not associated with any increase in flood hazard.

The negligible rise in flood depth at the outlet of the proposed channel has no adverse impact on the neighbouring property to the north. Accordingly, it can be concluded that the proposed development will not result in any measurable impact on third-party properties.

3.4 Development Effects on Flooding

The proposed warehouse is within the natural overland flow path. However, with the recommended mitigation measures, the proposed warehouse has no adverse effect on flooding during a 1% AEP storm event, both within the lot and on surrounding areas. Velocities and depths in the post-development scenario are within the lowest hazard band, and therefore the post development models show that there is no increase to the risk rating on surrounding properties or infrastructure.

3.5 Development Effects on Stormwater Discharge

Figure 6 below shows the discharge hydrograph from the property boundary for the overland flow through the development area. The graph was captured in the model for both pre- and post-development runs and combined in graph format to demonstrate the change in net discharge. It demonstrates the discharge increasing by 0.05 m^3/s from 0.771 m^3/s to 0.781 m^3/s from the pre-development to post-development scenarios, while velocity shows a minor increase of 0.15 m/s from 0.75 m/s to 0.90 m/s.

As the discharge and velocity in the post-development scenario was taken into consideration the new ARR2019 climate change increase for the SSP5-8.5 for the 1% AEP storm duration under 1 hour of 86% from 16% from the Stage 1 original model analysis and report, the calculate amount is consistent in term, It is therefore deemed that the post development model net discharge would be minimum if the original assessment were included the latest climate change parameters.

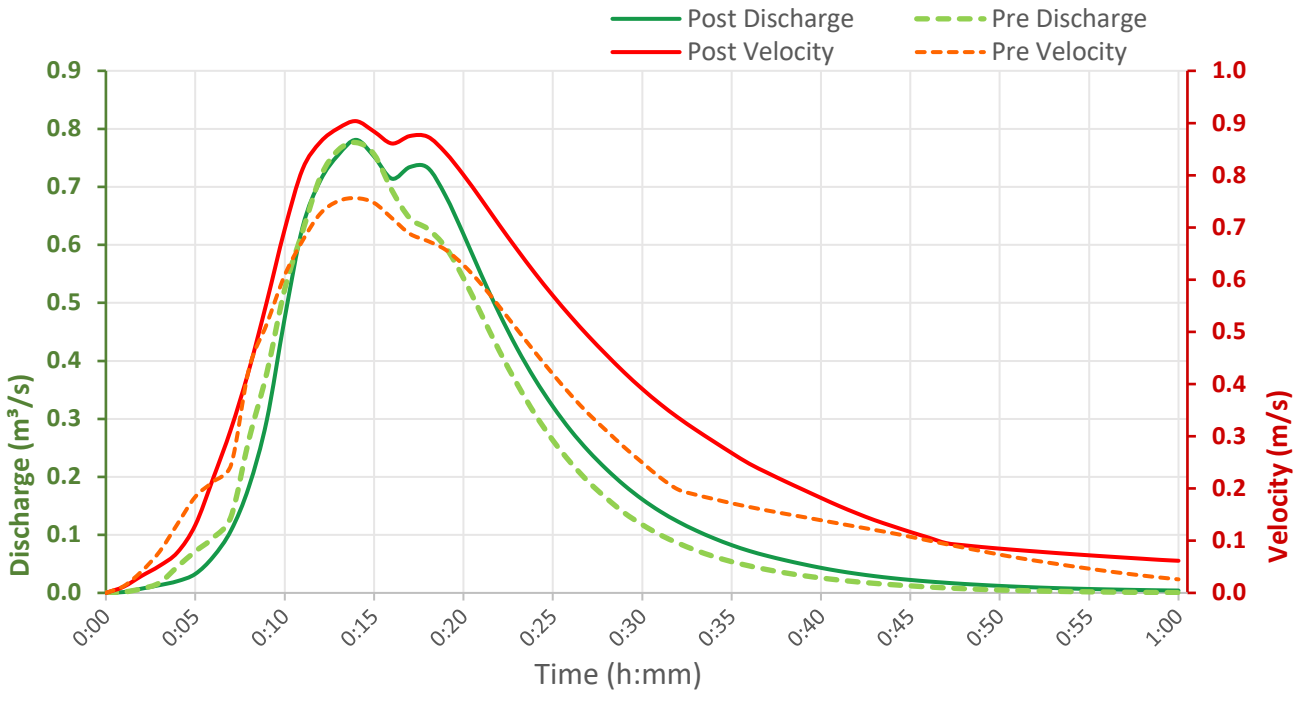


Figure 6. Pre and Post development net discharge and velocity 1% AEP + CC

3.6 New Habitable Building

To meet the performance criteria of the Building Regulations S.54, the construction of a new habitable building is required to have a habitable floor level > 300 mm above the 1% AEP + CC flood level. The new development at 15 Lukaarlia Drive, Bridgewater must meet this regulation in respect to the habitable office areas. (The floor level >1% AEP + CC flood level + 300mm does not apply for non-habitable areas).

As the proposed warehouse, its entrances and office area are free from inundation, this performance criteria do not apply.

3.7 Model Summary

Table 7. Pre-development and post-development at the cross-sectional line

	Pre-development	Post-development	Net Change
Depth (m)	0.078	0.083	+0.005
Velocity (m/s)	0.75	0.90	+0.15
Discharge (m^3/s)	0.77	0.78	+0.01

4. Flood Hazard

Under existing conditions prior to development, the proposed location of the buildings are subject to be inundated to < 0.18 m flood depth and < 0.73 m/s velocity. This places the hazard rating as adopted by Australian Flood Resilience and Design Handbook as a maximum H1 – *Generally safe for people, vehicles and buildings* as shown in Appendix A – Hazard maps.

The post-development scenario sees the depth at the lot boundary slightly increasing to 0.08 m from the pre-development level and the velocity showing an increase of 0.15 m/s which has no effect on the hazard rating that remains within the lowest hazard band of H1 for majority of the lot.

Only a small area is expected to have a temporary increase in hazard to H2 due to inlet control effects near the proposed concrete channel at the rear of the Stage 2 warehouse.

The assessment focuses on the development site, nearby properties, the road, and close infrastructure. Areas beyond this, such as broader public access routes, were not included in the analysis. This report covers flood behaviour and safety around the site only. During a flood event, occupants and visitors should remain indoors unless directed otherwise by emergency services. A summary of the hazard ratings is shown in Figure 7.

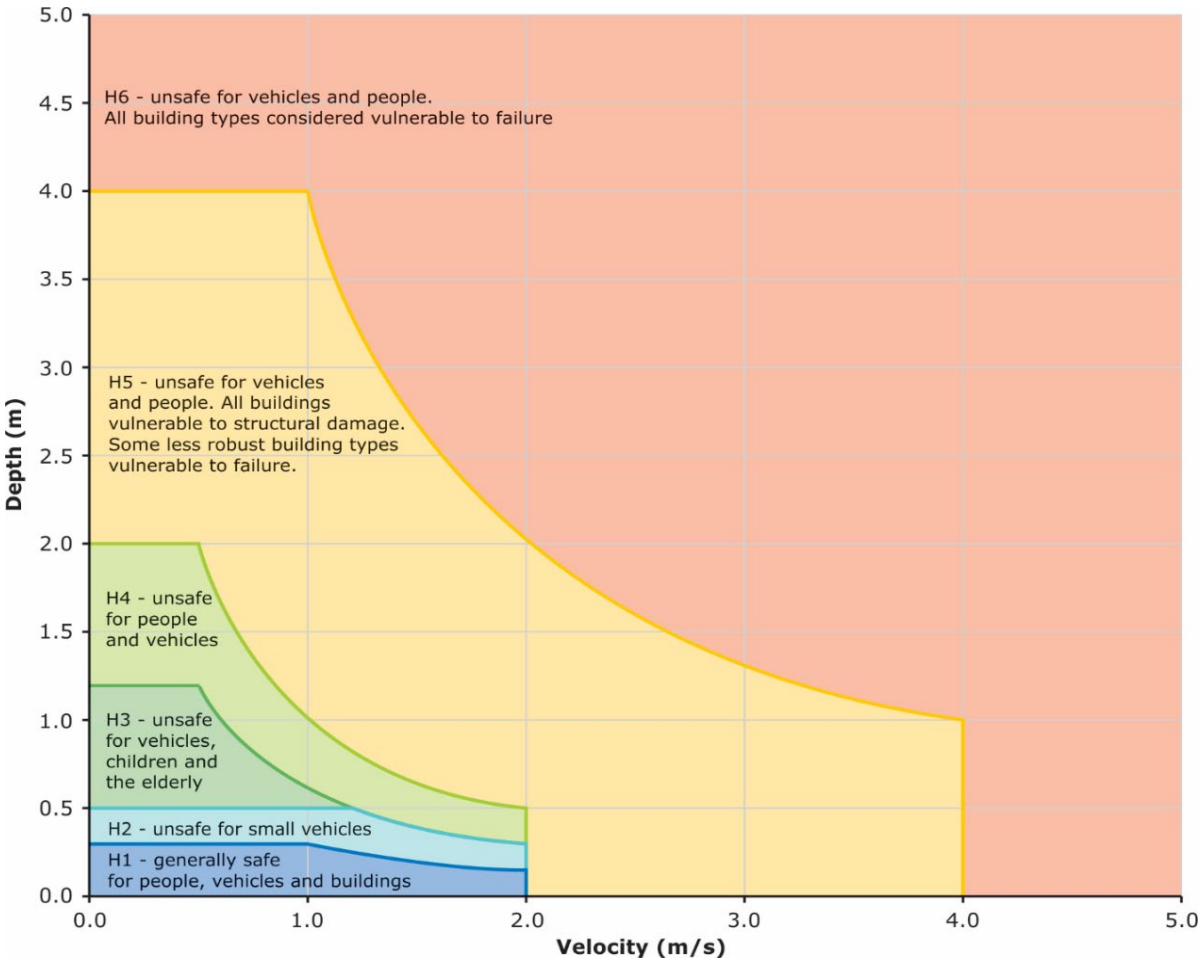


Figure 7. Hazard Categories Australian Disaster and Resilience Handbook

4.1 Tolerable Risk

The lot at 15 Lukaarlia Drive, Bridgewater is susceptible to a shallow, slow-moving flood plain flow, with the majority of the immediate surrounding region classified low (H1) hazard rating in the 1% AEP + climate change event. The hazard remains at H1 in the post development scenario with a limited section may experience a short-term rise in hazard level to H2, caused by inlet control influences around the proposed concrete channel located behind the Stage 2 warehouse. which means that it will not pose any risk to occupants or structures during a 1% AEP storm event.

Even at minor velocity and depths during a storm event, erosion and debris movement nevertheless pose a threat. If the recommendations in this report are implemented, the proposed structure, which is intended to be a class 7b structure with a 60-year asset life (BCA2022), can achieve a tolerable risk of flooding over its asset life.

Table 8. Tasmanian Planning Scheme – Brighton summary C12.5.1

C12.5.1 Uses within a flood prone hazard area			
Objectives: That a habitable building can achieve and maintain a tolerable risk from flood			
Performance Criteria			
P1.1		**P1.1**	
A change of use that, converts a non-habitable building to a habitable building, or a use involving a new habitable room within an existing building, within a flood-prone hazard area must have a tolerable risk, having regard to:		Response from flood report	
(a)	the location of the building;	(a)	Proposed warehouse and hardstand areas in a lot that lays within a shallow, slow-moving flood inundation area. Warehouse entrances, office and designated parking spaces are situated in an area away from inundated areas.
(b)	the advice in a flood hazard report; and	(b)	Assuming recommendations of this report are implemented, no additional flood protection measures required for the life expectancy of the building.
(c)	any advice from a state authority, regulated entity or a council;	(c)	N/A
P1.2		**P1.2**	
A flood hazard report also demonstrates that:		Response from flood report	
(a)	any increase in the level of risk from flood does not require any specific hazard reduction or protection measures; or	(a)	No increase in level of risk from pre-development scenario.
(b)	the use can achieve and maintain a tolerable risk from a 1 % annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures	(b)	Maximum hazard rating at the proposed development is H1 in both the pre-development and post-development scenarios. A small portion of the site could temporarily reach an H2 hazard level as a result of inlet control conditions near the proposed concrete channel behind the Stage 2 warehouse.

Table 9. Tasmanian Planning Scheme - Brighton Summary C12.5.2

C12.5.2 Critical use, hazardous use or vulnerable use			
Objectives: That critical, hazardous and vulnerable uses, located within a flood-prone hazard area can achieve and maintain a tolerable risk from flood			
Performance Criteria			
P2.1		**P2.1**	
A critical, hazardous, or vulnerable use within a flood prone hazard area must achieve a tolerable level of risk from flood, having regard to:		Response from flood report	
(a)	the type form and duration of the use; and	(a)	For the type, form, and duration of use, refer to the RiskCon Engineering Dangerous Goods Report.
(b)	a flood hazard report that demonstrates that: (i) any increase in the level of risk from flood does not warrant any specific hazard reduction or protection measures; or (ii) the use can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures	(b) (i) (ii)	There is no increase in the level of risk that would warrant specific hazard reduction or protection measures. The facilities are able to achieve and maintain a tolerable risk during a 1% AEP flood event for the intended lifespan of the use, without the need for additional flood protection measures.
P2.3		**P2.3**	
In addition to the requirements in clause C12.5.2 P1, the impact of flood on a hazardous use within a flood prone hazard area must achieve and maintain a tolerable risk, having regard to:		Response from flood report	
(a)	the health and safety of people;	(a)	Refer to RiskCon Engineering Dangerous Goods Report.
(b)	any impact on property;	(b)	No tangible impact on the property as a result of the 1% AEP flood inundation.
(c)	any impact on the environment;	(c)	No tangible impact on the environment as a result of the 1% AEP flood inundation.
(d)	the advice contained in a flood hazard report; and	(d)	Assuming recommendations of this report the proposed site and development can achieve a tolerable risk.
(e)	any advice from a State authority, regulated entity or a council.	(e)	N/A

Table 10. Tasmanian Planning Scheme – Brighton summary C12.6.1

C12.6.1 Building and works within a flood prone area			
Objective: (a) building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and, (b) buildings and works do not increase the risk from flood to adjacent land and public infrastructure.			
Performance Criteria			
P1.1		**P1.1**	
Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to:		Response from flood report	
(a)	the type, form, scale and intended duration of the development;	(a)	Proposed warehouse, office and hardstand areas.
(b)	whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures;	(b)	Assuming recommendations of this report are implemented, no additional flood protection measures required for the life expectancy of a habitable building.
(c)	any advice from a State authority, regulated entity or a council; and	(c)	N/A
(d)	the advice contained in a flood hazard report.	(d)	Flood report and recommendations provided within.
Performance Criteria			
P1.2		**P1.2**	
A flood hazard report also demonstrates that the building and works:		Response from Flood Report	
(a)	do not cause or contribute to flood on the site, on adjacent land or public infrastructure; and	(a)	No significant increase to flow and velocity from proposed development.
(b)	can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.	(b)	Assuming recommendations of this report the proposed site and development can achieve a tolerable risk to the 1% AEP storm event for the life expectancy of the building.

5. Conclusion

The Flood Hazard Report for 15 Lukaarlia Drive, Bridgewater development site has reviewed the potential development flood scenario.

The following conclusions were derived in this report:

1. A comparison of the post-development peak flows for the 1% AEP at 2100 were undertaken against C12.0 of the Tasmanian Planning Scheme – Brighton Flood Prone Areas code.
2. A slight increase of 0.05 m in depth at the property boundary at the cross-sectional result line.
3. Peak discharge sees a small increase of 0.01 m^3/s from both pre-development to post-development riverine flood scenario.
4. Velocity shows a slight increase of 0.15 m/s between pre- and post-development riverine flood scenarios.
5. Hazard from flooding within the lot remain at the majority category of H1 for both pre and post development riverine scenarios, including on neighbouring properties with a minor area may briefly reach an H2 hazard classification, influenced by inlet control at the proposed concrete channel situated to the rear of the Stage 2 warehouse.

6. Recommendations

Flüssig Engineers therefore recommends the following engineering design be adopted for the development and future use to ensure the works meets the Inundation Code:

1. A grated concrete channel 1.0 m wide, with depths ranging from 0.35 m to 0.71 m, will be built along the rear of the Stage 2 warehouse as shown in Figure 5.
2. A 450 mm high earth bund will be constructed along the top of the embankment behind the Stage 2 warehouse, to prevent sediment from entering the proposed concrete channel as shown in Figure 5.
3. All hardstand areas surrounding the proposed warehouses must be graded (minimum 2%) away from the building and equipped with adequate internal drainage to manage surface water effectively.
4. Any change in external building layout or addition of other solid structures will require further flood assessment.
5. The proposed warehouse must be designed to resist flood forces including debris for the given flood conditions.
6. All future proposed structures within the flood extent not shown within this report will require a separate design and report addressing their impacts.
7. This report must be read in conjunction with the civil and architectural drawings, as well as any other relevant reports associated with the development. Particular reference should be made to the *Dangerous Goods Report* prepared by RiskCon Engineering.

Under the requirements of this Flood Hazard Report, the proposed development will meet current acceptable solutions and performance criteria under the Tasmanian Planning Scheme 2021- Brighton.

7. Limitations

Flüssig Engineers were engaged by **Southern Steel Properties** on behalf of the developer, for the purpose of a site-specific Flood Hazard Report for 15 Lukaarlia Drive, Bridgewater as per C12.0 of the Tasmanian Planning Scheme – Brighton 2021. This study is deemed suitable for purpose at the time of undertaking the study. If the conditions of the site should change, the report will need to be reviewed against all changes.

This report is to be used in full and may not be used in part to support any other objective other than what has been outlined within, unless specific written approval to do otherwise is granted by Flüssig Engineers.

Flüssig Engineers accepts no responsibility for the accuracy of third-party documents supplied for the purpose of this Flood Hazard Report.

8. References

- Australian Disaster Resilience Guideline 7-3: Technical flood risk management guideline: Flood hazard, 2014, Australian Institute for Disaster Resilience CC BY-NC
- Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2019, Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia
- Grose, M. R., Barnes-Keoghan, I., Corney, S. P., White, C. J., Holz, G. K., Bennett, J. & Bindoff, N. L. (2010). Climate Futures for Tasmania: General Climate Impacts Technical Report.
- T.A. Remenyi, N. Earl, P.T. Love, D.A. Rollins, R.M.B. Harris, 2020, Climate Change Information for Decision Making –Climate Futures Programme, Discipline of Geography & Spatial Sciences, University of Tasmania.
- Riskcon Engineering, 2025, Dangerous Goods Report, 15 Lukaarlia Dr, Bridgewater

Appendices

Appendix A Flood Study Maps

Pre 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

Boundary Lines
Existing Driveway
Existing Gravel Hardstand
Existing Warehouse
Site Area
0.15m Deep 1.5m Wide Open Drain

PRE 1% AEP + CC @2100
Depth (m)
<= 0.03
0.03 - 0.05
0.05 - 0.10
0.10 - 0.30
0.30 - 0.60
0.60 - 0.80
0.80 - 1.00
1.00 - 1.50
> 1.50

0 20 40 m
meters

N

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Map CRS: GDA94 / MGA zone 55 EPSG:28355

Pre 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

Boundary Lines
Existing Driveway
Existing Gravel Hardstand
Existing Warehouse
Site Area
0.15m Deep 1.5m Wide Open Drain

PRE 1% AEP + CC @2100
Velocity (m/s)
<= 0.50
0.50 - 1.00
1.00 - 1.50
1.50 - 2.00
> 2.00

0 20 40 m
meters

N

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Pre 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

Boundary Lines
Existing Driveway
Existing Gravel Hardstand
Existing Warehouse
Site Area
0.15m Deep 1.5m Wide Open Drain

PRE 1% AEP + CC @2100
Hazard
H1
H2
H3
H4
H5
H6

0 20 40 m
meters

N

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POST 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

- Boundary Lines
- Site Area
- Proposed Drain
- Existing Warehouse
- Existing Driveway
- Proposed Warehouses
- Proposed Earth Bund
- Proposed Retaining Wall

POST 1% AEP + CC@2100

Depth (m)

- <= 0.03
- 0.03 - 0.05
- 0.05 - 0.10
- 0.10 - 0.30
- 0.30 - 0.60
- 0.60 - 0.80
- 0.80 - 1.00
- 1.00 - 1.50
- > 1.50

0 10 20 m

meters

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POST 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

- Boundary Lines
- Site Area
- Proposed Drain
- Existing Warehouse
- Existing Driveway
- Proposed Warehouses
- Proposed Earth Bund
- Proposed Retaining Wall

POST 1% AEP + CC@2100

Velocity (m/s)

- <= 0.50
- 0.50 - 1.00
- 1.00 - 1.50
- 1.50 - 2.00
- > 2.00

0 10 20 m

meters

N

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POST 1% AEP + CC @2100

Legend

15 Lukaarlia Drive

- Boundary Lines
- Site Area
- Proposed Drain
- Existing Warehouse
- Existing Driveway
- Proposed Warehouses
- Proposed Earth Bund
- Proposed Retaining Wall

POST 1% AEP + CC@2100

Hazard

- H1
- H2
- H3
- H4
- H5
- H6

0 10 20 m

meters

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ATTACHMENT 6

Bushfire Hazard Report

MATTHEW CLARK
PLANNERS

Bushfire Hazard Report

Warehouses and Bond Store

15 Lukaarlia Drive, Bridgewater

For Lyden Builders Pty Ltd

December 2025

Mat Clark BFP-180

Table of Contents

VERSION CONTROL				
Version	**Date**	**Author**	**Reviewer**	**Description**
1.0	12.09.25	MC	SG	TFS Issue
2.0	02.12.25	MC	SG	TFS Updates 1

1. Introduction

MC Planners have been engaged by Lyden Builders Pty Ltd to prepare a bushfire hazard assessment for the development of 3 new warehouses, one of which includes 7 bond storage units, with vehicle parking and loading areas and landscaping over 3 stages (Stage 1 is under construction under a separate approval). The address of the development is 15 Lukaarlia Drive. The author, Matthew Clark, is an Accredited Person under Part 4A of the *Fire Service Act 1979* (BFP-180) for 1 & 3a Provisional (2, 3b and 3c).

The proposed development of a warehouse is a 'hazardous use' within a bushfire-prone area, necessitating an assessment against the Bushfire-Prone Areas Code of the *Tasmanian Planning Scheme (Brighton)*.

This report considers:

- Whether the site is within a bushfire-prone area;
- The characteristics of the site and surrounding land;
- The proposed use and development that may be threatened by bushfire hazards;
- The applicable Bushfire Attack Level (BAL) rating;
- Appropriate bushfire hazard mitigation measures;
- Compliance with planning requirements pertaining to bushfire hazards; and
- Emergency Management Strategy.

In order to demonstrate compliance with the Bushfire-Prone Areas Code this report includes a Certificate of Compliance (for planning purposes) and an Emergency Management Strategy Report by DDEG is included in this report (Appendix D). The content derived from the DDEG report remains DDEG's intellectual property and cannot be used or distributed without consent.

2. Site Location and Context

The address of the subject site is 15 Lukaarlia Drive, Bridgewater which is identified by PID 9638588 and CT 186550/1 (refer to Figure 1). The subject site has an area of 1.431ha.

There is an existing warehouse at the site.

To the north of the site is industrial land and agricultural land. East of the site are vacant industrial lots, and a Council owned public open space lot which is vegetated with some small trees reaching 6m in height. There are rural residential lots located to the west of the site. The rural residential lots directly adjoining the subject site are moderately vegetated with trees reaching 11m in height. The land to the south of the site is open pasture and agricultural land.

There is one access to the site from Lukaarlia Drive, which is a Council road. Lukaarlia Drive is 21m wide.

The site is zoned General Industrial and is surrounded by the General Industrial Zone to the east, south-east and north-west, the Rural Living Zone A to the south and Rural Zone to the west (refer to Figure 2). There are no Code overlays on the site, except for the Bushfire Prone Areas overlay.

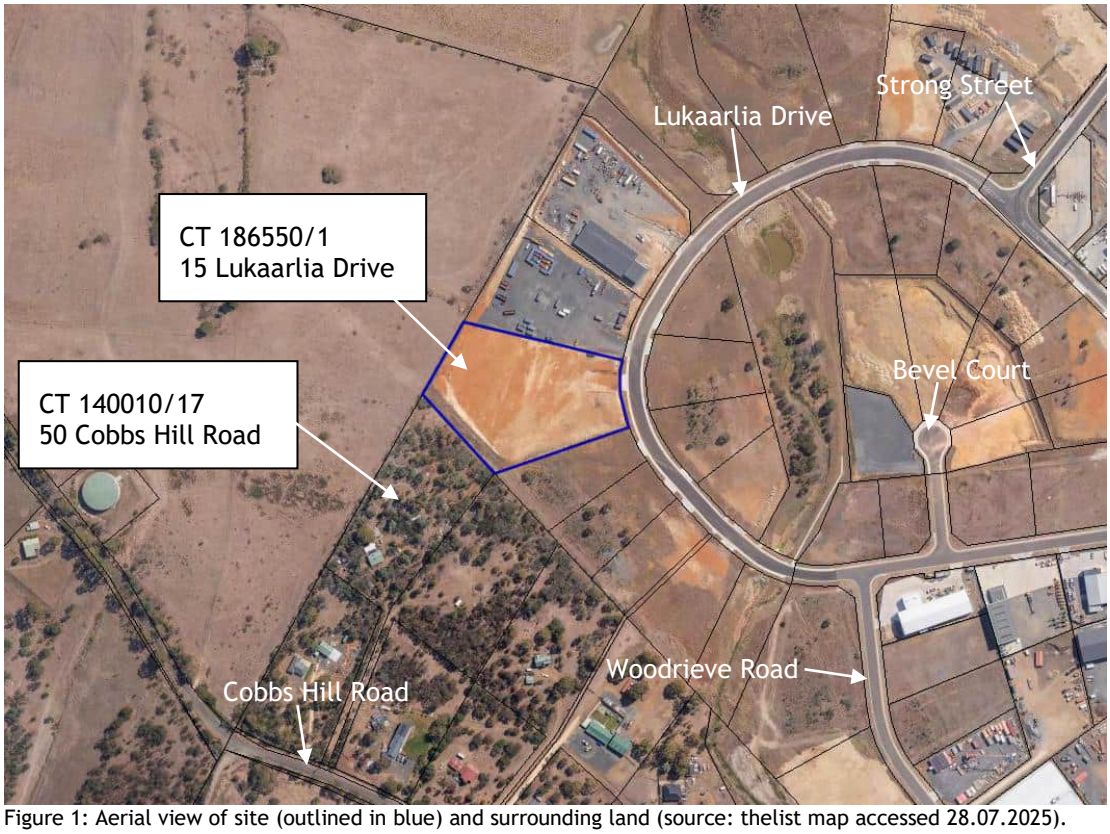


Figure 1: Aerial view of site (outlined in blue) and surrounding land (source: thelist map accessed 28.07.2025).

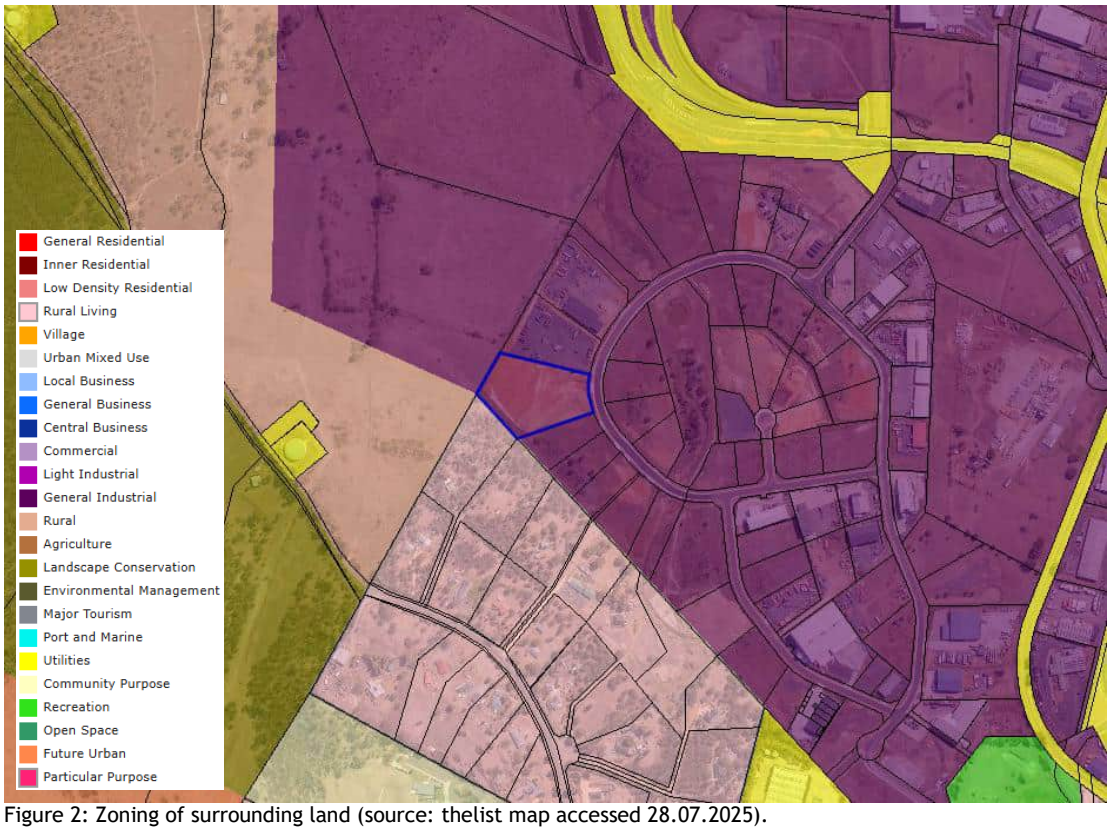


Figure 2: Zoning of surrounding land (source: thelist map accessed 28.07.2025).

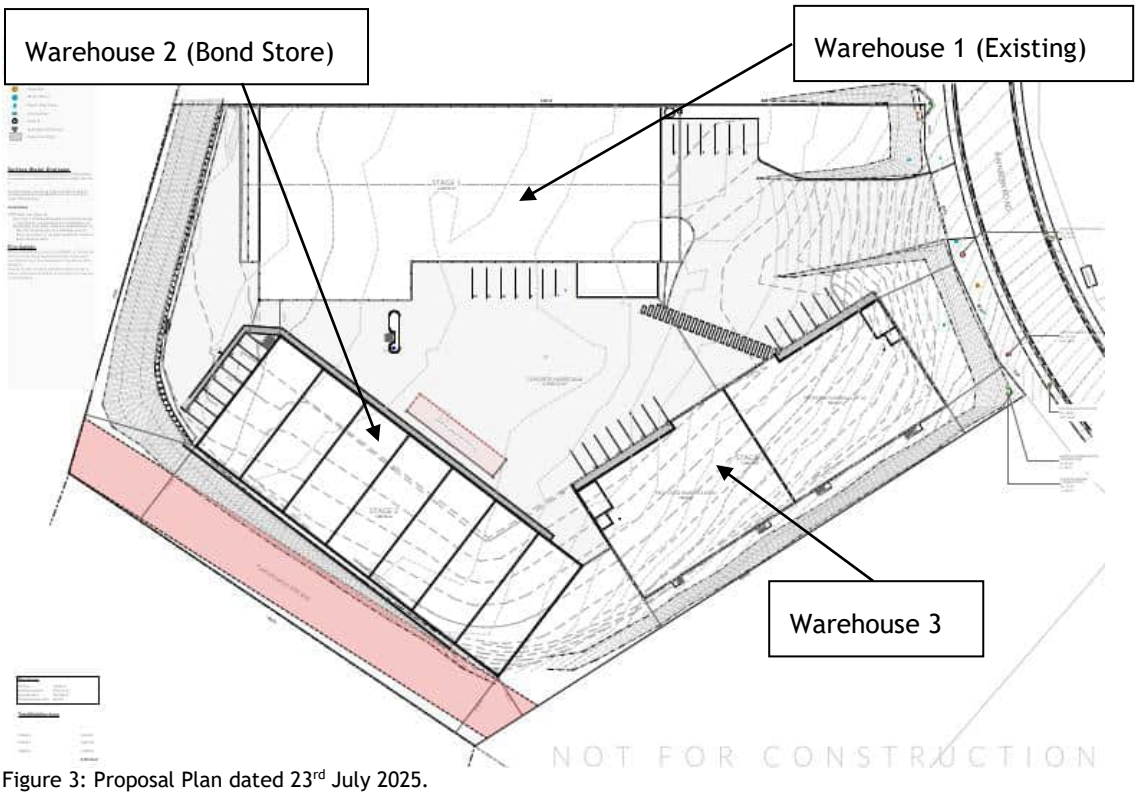


Figure 3: Proposal Plan dated 23rd July 2025.

3. Use and Development

The proposal is for 3 warehouses with a total floor area of 5795.35m^2 refer to Figure 3. The use of warehouse 2 (stage 2) is as a bond store (alcohol) and warehouses 3 (stage 3) are for storage (general).

The development has external finishes of concrete tilt-up panels and a trim-deck steel roof.

The proposed bond store is defined as a hazardous use under the planning scheme given the quantity of alcohol stored. The total volume of liquid is 3,628,800 litres.

The Building Construction is as follows:

- External walls/intertenancy – 175mm panels – 240/240/240 FRL;
- Steel Fire Doors – FRL -120/30;
- Bunding to building to contain liquid volume of 68.6kL (each compartment);
- Mechanical Ventilation design in accordance with AS1940;
- Separating walls between Bond Stores to be taken through main roof by at least 0.5m;
- Hose Reels with foam capabilities to reach all parts of the store; and
- Hydrant flow rate tested to 40L/s.

Details of the development are within Appendix A - Proposal Plans. The Dangerous Goods Report is within Appendix E.

4. Bushfire Hazard Assessment

Vegetation and Effective Slope

Vegetation and relevant effective slopes within 140m of the proposed building work has been assessed and classified in accordance with AS 3959:2018.

A site visit was conducted on the 30/7/2025.

Figure 4 shows the land within 100m of the proposed development in red. AS3959 C2.2.3.1 notes that *"in assessing vegetation, care should be exercised to ensure that a sufficient level of distance is used to determine predominant vegetation. This may necessitate the consideration of vegetation out to distances in excess of 100 metres from the site"*. As such, the land within 140m of the proposed development is outlined in green, as this is considered relevant. Figure 5 shows slope transects at 100m from warehouse 2 (bond store).

See Appendix C for site Photos.

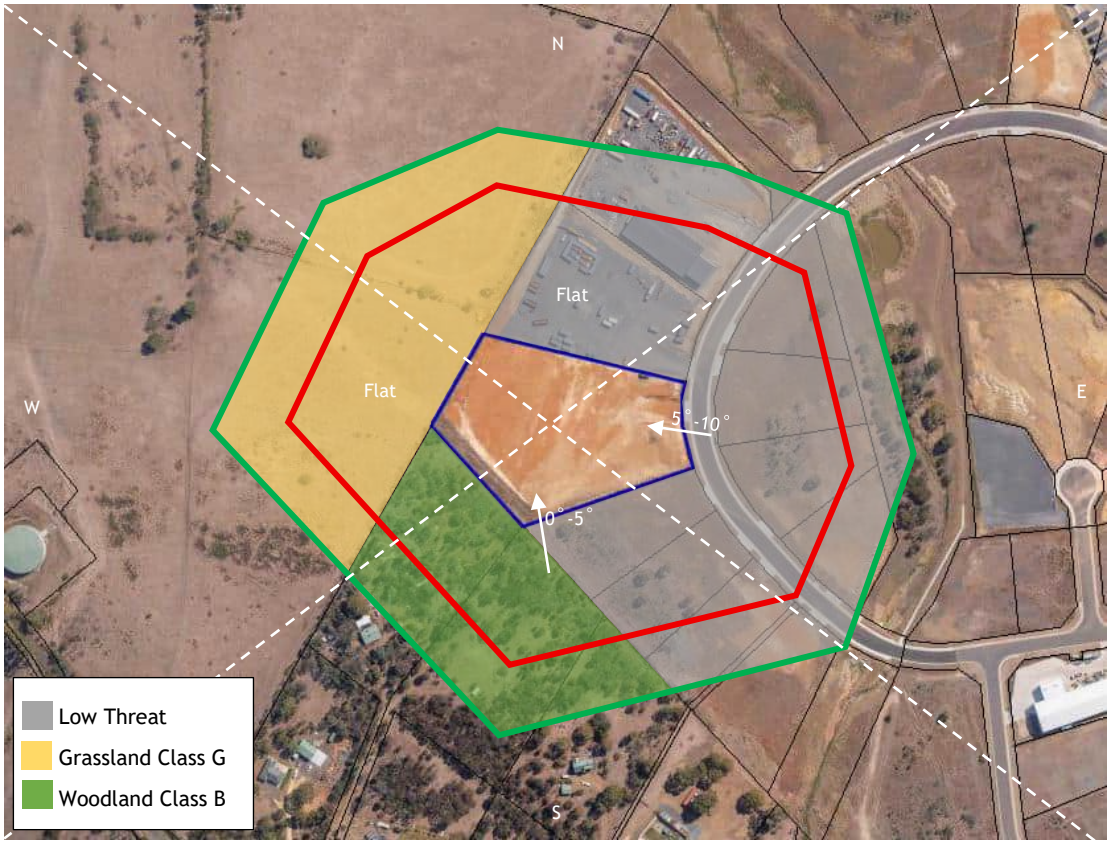


Figure 4: land within 100m of the proposed development (red) as this is the minimum area for consideration under AS 3959-2018. Land 140m away (green shown for context) (source: thelist map accessed 28.07.2025 - annotated).

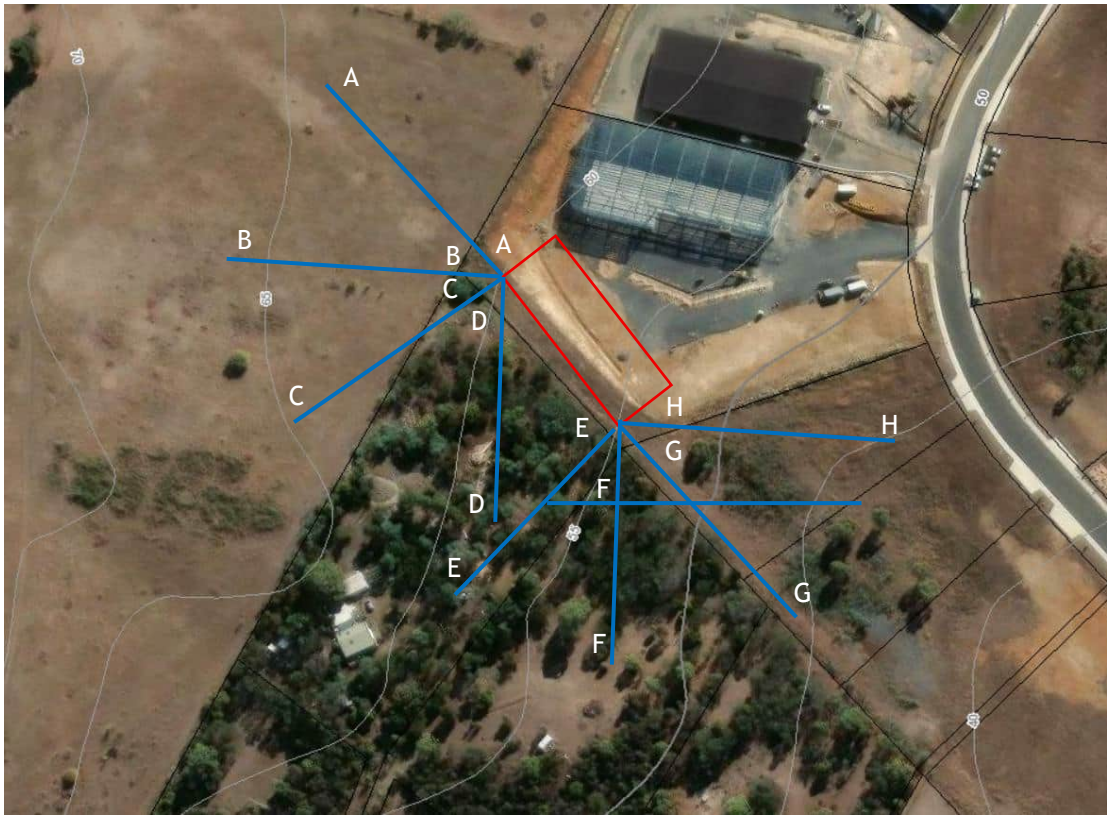


Figure 5: 100m transects from the Bond Store Building (source: thelist map accessed 28.07.2025 - annotated).

Table 1 100m Slope Transects

Bond Store 100m Transects			
	Upper AHD	Lower AHD	Slope over 100m
Transect A	64m	60m	4.0° (upslope)
Transect B	66m	60m	3.4° (upslope)
Transect C	65m	60m	2.9° (upslope)
Transect D	60m	56m	2.3°
Transect E	58m	55m	1.7°
Transect F	55m	52m	1.7°
Transect G	55m	46m	5.1°
Transect H	55m	45m	4.6°

The area to the south-west of the site is a well maintained woodland area with dwelling interspersed within the area, which is a relatively isolated 10Ha area surrounded by housing, rural grassland and the industrial area. A fire from this direction will only have a run of approximately 280m. The steepest slope of this south west direction is parallel with the site boundary (travelling south-east) and thus will have a lesser impact on the bond store building

as it will not strike the building directly. The more direct impact bond store building is from the south-west which is a lesser slope (refer to Figure 5 and Table 1). The threat from the west from Cobbs Hill is a much greater area of bushland but this is separated by over 500m of rural grassland.

Bushfire Attack Level

This section sets out the required separation distances from bushfire-prone vegetation to achieve the required BAL. The relevant fire danger index for this assessment is FDI 50. Table 2 below considers the effective slope and the required BAL separation distances.

Table 2 Vegetation, Slope and Seperation Assessment

Direction from site:	North	East	South	West
Vegetation Type:	Grassland G	Low Threat	Woodland B	Woodland B
Relationship to site:	Flat Land	Downslope	Downslope	Flat Land
Effective Slope	0°	0°-5°	0°-5°	0°
Required Separation Distance BAL-12.5:	14-<50m	N/A	26-<100m	22-<100m
Required Separation Distance BAL-19:	10-<14m	N/A	18-<26m	15>22m
Required Separation Distance BAL-29:	6-<10m	N/A	12-<18m	10-<15m
Required Separation Distance BAL-40:	5-<6m	N/A	9-<12m	7-<10m
Existing separation:	N/A	N/A	N/A	N/A
Proposed Separation	21.57m	N/A	12.878m	17.108m
Assessed BAL:	BAL- 12.5	BAL-Low	BAL-29	BAL-19
Proposed BAL:	BAL 29			

The applicable Bushfire Attack Level is: BAL-29.

5. Bushfire Protection Measures

During a bushfire event, a number of bushfire attack mechanisms may threaten buildings and occupants, including:

- Radiant heat;
- Direct flame contact;
- Ember attack; and

- Wind.

The key bushfire attack mechanism is wind-borne embers and debris.

A range of bushfire protection measures are recommended to improve the resilience of the proposed development and achieve a tolerable level of residual risk for occupants. The protection measures outlined in this section have been consolidated in a Bushfire Hazard Management Plan (BHMP - see Appendix B).

Additional measures to reduce and improve resilience are also recommended but are at the discretion of the developer and future developers within the development.

5.1 Hazard Management Area

The Hazard Management Area ('HMA') refers to land that is managed in a minimum fuel condition so as to reduce the potential exposure of habitable buildings and occupants to radiant heat and flames and to provide defendable space. The effectiveness of the hazard management areas is reliant on ongoing maintenance by landowners. A Hazard Management Area ('HMA') is to be established and maintained in a minimum fuel condition, as indicated on the BHMP.

Management prescriptions are provided in Table 2. Landscaping using fire-retardant species (including certain tree species) may be beneficial in terms of limiting wind velocity and providing shielding from ember attack (as well as limiting potential erosion and sedimentation).

Table 2 – Hazard Management Area Prescriptions

Within 10m of habitable buildings	No storage of flammable materials (e.g. firewood); Avoid locating flammable garden materials near vulnerable building elements such as glazed windows/doors, decks and eaves (e.g. non-fire- retardant plants and combustible mulches); Non-flammable features such as paths, driveways and paved areas are encouraged around habitable buildings.
Trees within HMA	Maintain canopy separation of approximately 2.0m; Ensure no branches overhang habitable buildings; Remove tree branches within 2.0m of ground level below; Locate any new tree plantings 1.5 x their mature height from buildings; Avoid planting trees with loose, stringy or ribbon bark.
Understory vegetation within HMA	Maintain grass cover at <100mm; Maintain shrubs to <2.0m height; Shrubs to be maintained in clumps so as to not form contiguous vegetation (i.e. clumps up to 10sqm in area, separated from each other by at least 10m); Avoid locating shrubs directly underneath trees; Periodically remove dead leaves, bark and branches from underneath trees and around habitable buildings.

The Bushfire Hazard Management Plan (BHMP) indicates that for the proposed warehouses to be managed to a low threat state, they must achieve suitable separation distances from the development buildings to the hazard to achieve the BAL-29 separation distances to the south and west. The Hazard Management Area (HMA) is to be established in accordance with the Bushfire Hazard Management Plan, implemented by the developer and verified by the building surveyor prior to occupancy.

The Hazard Management Area includes the area to protect the buildings, as well as the access and water supplies. Vegetation in the Hazard Management Area (the entire site) is to be managed and maintained in a minimum fuel condition, Low Threat vegetation in accordance with AS3959-2018.

Maintenance Schedule:

- Removal of fallen limbs, leaf & bark litter
- Cut lawns short (less than 100mm) and maintain
- Remove pine bark and other flammable garden mulch
- Complete under-brushing and thin out the understory
- Prune low hanging trees to ensure separation from ground litter
- Prune larger trees to establish and maintain horizontal and vertical canopy separation
- Minimise storage of petroleum fuels
- Maintain road access to the buildings to be defended and water storage area
- Remove fallen limbs, leaf & bark litter from roofs, gutters and around the building
- No flammable mulch is to be placed against external facades or under decks.

There is no requirement for Hazard Management Areas on adjoining land.

Applicable permitted constructions variations under AS 3959-2018 are outlined in Table 3 below.

Table 3 – Requirements for Hazard Management Areas (as per Table 4.4 of the Director's Determination)

Element	Requirement
Hazard management areas for new buildings or additions and alterations to buildings associated with hazardous use	A new building or an alteration or addition, including change of use, for a building determined as a hazardous use must: (a) Be located on the lot so as to be provided with a HMA no smaller than the required separation distances for the BAL determined in the certified bushfire hazard management plan; and (b) Have a HMA established in accordance with a certified bushfire hazard management plan.

5.2 Construction Standards

The external /intertenancy walls are 175mm concrete panels (240/240/240 FRL), have steel fire doors (FRL -120/30) and the building is compartmentalised with 68.6kL bunding to each compartment. The EMSR (Appendix D) recommends: The warehouses are Class 7b/8 buildings and are not required to comply with AS3959 bushfire construction provisions under Clause 2.3.1(1) of the Director's Determination DTS Provisions. Warehouse 2 will store manifest quantities of Class 3 flammable liquids (whisky). It will be designed in accordance with the NCC Deemed-to-Satisfy fire resistance provisions and AS 1940 – Storage and Handling of Flammable and Combustible Liquids. Where discrepancies occur between the NCC and AS 1940, the stricter requirement will apply. Although bushfire construction provisions are not mandated, the southern façade of Warehouse 2 is exposed to BAL-29 conditions. Fire-rated construction elements will therefore be incorporated to address radiant heat and ember

attack risks. Final specifications will be confirmed at detailed design stage in consultation with the building surveyor. For more details refer to the DDEG Emergency Management Strategy in Appendix D. The Dangerous Goods Report (Appendix E) recommends:

- Ensure fire doors and RSDs have an FRL of at least -/120/30;
- Separating walls between Bond Stores to be taken through main roof by at least 0.5m;
- Spillage containment of at least 68.6 kL to be provided per Bond Store.
- Mechanical ventilation should be provided in accordance with the requirements of AS 1940:2017;
- Provide hose reels with foam capabilities to reach all parts of the store; and
- Hydrant flow for the site to be capable of 30 L/s in addition to the requirements of AS 2419.1.

5.3 Access

The Code does not stipulate access requirements for hazardous uses so the Deemed To Satisfy provisions of the Directors Determination (cl. 2.3.2 (1) & (4)) and Table 2 Requirements for Property Accesses have been considered. The site will retain its existing access at Lukaarlia Drive which is approximately 21m in width. There appears to be adequate access and turning to the fire hydrant (located next to the bike rack), and access and turning at the western end of the site between Warehouses 1 & 2. There is apron access to the eastern ends of Warehouses 1 & 2 also. Whilst there is a retaining wall at the rear of Warehouse 2 (the bond store) this diminishes to zero at the western end of the building allowing access to the embankment to the south-west of Warehouse 2. Access could be further improved with landscaping stairs into the embankment at either end of Warehouse 2.

A fire trail is not proposed nor considered necessary.

Compliance with the Directors Determination Table 2 must be confirmed by the Building Surveyor prior to occupancy or as otherwise approved by the Tasmanian Fire Service under a performance solution (Directors Determination cl. 2.2 (4)(a)-(d)). A revised bushfire report addressing compliance with the Determination is required once the access requirements have been finalised and prior to the issue of a certificate of likely compliance.

Table 2 - Requirements for Property Access

Column 1		**Column 2**
Element		**Requirement**
A.	Property access length is less than 30 metres, or access is not required for a fire appliance to access a firefighting water point.	There are no specified design and construction requirements
B.	Property access length is 30 metres or greater, or access is required for a fire appliance to access a firefighting water point.	The following design and construction requirements apply to property access: (a) all-weather construction; (b) load capacity of at least 20 tonnes, including for bridges and culverts; (c) minimum carriageway width of 4 metres; (d) minimum vertical clearance of 4 metres; (e) minimum horizontal clearance of 0.5 metres from the edge of the carriageway, excluding gate posts; (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 10 metres; (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 10 metres; (ii) a property access encircling the building; or (iii) a hammerhead "T" or "Y" turning head 4 metres wide and 8 metres long.
C.	Property access length is 200 metres or greater.	The following design and construction requirements apply to property access: (a) complies with requirements for B above; and (b) passing bays of 2 metres additional carriageway width and 20 metres length provided every 200 metres.
D.	Property access length is greater than 30 metres, and access is provided to 3 or more properties.	The following design and construction requirements apply to property access: (a) complies with requirements for B above; and (b) passing bays of 2 metres additional carriageway width and 20 metres length must be provided every 100 metres.
E.	Additional requirements for Certain Class 9 Buildings	Refer to NCC Vol. 1 – Part G5 (incorporating TAS G5P1 and TAS G5P2) and Specification 43.

5.4 Water Supply for Firefighting

The Code does not stipulate water supply requirements for hazardous uses, so the Deemed To Satisfy provisions of the Directors Determination (cl. 2.3.3 (1)) and Table 3A Requirements for Reticulated Water Supply has been considered. There is an existing water hydrant on the crossover of the site at Lukaarlia Drive and a new hydrant has been proposed between Warehouses 1 and 2 (at the location of the bike rack). The hose lays from this location appear to meet the 120m hose lay required under Table 3A for Warehouse 2 (the bond store). Other warehouses also appear to be within 120m hose lays from either the existing or new hydrant locations. Hardstand is available on the proposed concrete apron.

Compliance with the Directors Determination Table 3A must be confirmed by the Building Surveyor prior to occupancy and a revised bushfire report addressing compliance with the Determination is required once the water supply requirements have been finalised and prior to the issue of a certificate of likely compliance.

Table 3A – Requirements for Reticulated Water Supply for Firefighting		
Element		Requirements
A.	Distance between building area to be protected and water supply.	The following requirements apply: (a) the building area to be protected must be located within 120m of a fire hydrant; 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
B.	Design criteria for fire hydrants.	The following requirements apply: (a) fire hydrant system must be designed and constructed in accordance with *TasWater Supplement to Water Supply Code of Australia, WSA 03-2011-3.1 MRWA 2nd edition*; and (b) fire hydrants are not installed in parking areas.
C.	Hardstand	A hardstand area for fire appliances must be provided: (a) no more than 3m from the hydrant, measured as a hose lay; (b) no closer than 6m from the building area to be protected;

		(c) with 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.
D.	Additional requirements for Certain Class 9 Buildings	Refer to NCC Vol. 1 – Part G5 (incorporating TAS G5P1 and TAS G5P2) and Specification 43.

5.5 Optional Protection Measures

The following recommendations are not specifically regulated under any planning or building standards at present hence do not form part of the Bushfire Hazard Management Plan. If implemented, however, they will improve bushfire protection for future occupants.

Electrical Infrastructure

Overhead power lines are a common source of unplanned fires, particularly during high wind conditions. Where practicable, electricity connections to properties should be provided underground to remove this potential fire source.

5.6 Emergency Management Strategy

The DDEG Report, Bushfire Emergency Management Strategy Report 15 Lukaarlia Drive, Bridgewater Rev 1 1/12/25 recommends pre-emptive full-site evacuation triggered by official TFS alerts or forecasts of 'Extreme' or 'Catastrophic' Fire Danger Ratings. On such days, the site will be closed and no personnel will attend. All site personnel, including warehouse staff and contractors, will evacuate or relocate to established off-site assembly points using private vehicles unless otherwise arranged, supported by clear communication protocols. If evacuation becomes temporarily unsafe due to rapidly changing conditions or blocked egress routes, occupants may relocated to the designated low-threat external assembly area (eastern carpark adjacent to Warehouse 1) as a short-term refuge until safe evacuation can be completed. Warehouse 2 is not suitable for sheltering. No building on the site is designated or relied upon as a bushfire refuge. Detailed recommendations are contained in the EMRS report in Appendix D.

The Bushfire Emergency Management Strategy (EMS) outlined in this report must be translated into a comprehensive Emergency Evacuation Plan that integrates both a Bushfire Emergency Plan (BEP), in accordance with the TFS Bushfire Emergency Planning Guideline (2021); and a Fire Evacuation Plan, in accordance with the General Fire Regulations 2021 and the TFS Fire Evacuation Plan Guideline (2021). The Bushfire Emergency Plan and Fire Evacuation Plan must be developed and approved by the TFS prior to occupancy.

5.7 Planning Compliance

The development is for a dedicated whisky storage building (Warehouse 2) that accommodates manifest quantities of flammable liquids (Class 3 Dangerous Goods), therefore, Clause C13.5.2 (hazardous uses) of the Code is applicable. Hazardous Use is defined as:

means a use where: *(a) hazardous chemicals of a manifest quantity are stored on a site; or* *(b) explosives are stored on a site where classified as an explosive location or large explosives location as specified in the Explosives Act 2012.*

Clause C13.5.2 states:

A1 *No Acceptable Solution.*	*P1* *A hazardous use must only be located in a bushfire prone area if a tolerable risk from bushfire can be achieved and maintained, having regard to:* *(a) the location, characteristics, nature and scale of the use;* *(b) whether there is an overriding benefit to the community;* *(c) whether there is no suitable alternative lower-risk site;* *(d) the emergency management strategy (vulernable use) and bushfire management plan; and* *(e) other advice, if any, from the TFS.*

As there is no acceptable solution (A1), P1 must be addressed.

Whilst a hazardous use in a bush fire prone area, the construction of the building including, steel roof, external /intertenancy walls that are 175mm concrete panels (240/240/240 FRL), steel fire doors (FRL -120/30), the compartmentalisation with 68.6kL bunding to each compartment, and the evacuation strategy will reduce the risk to a tolerable risk. DDEG concludes in their assessment *"It is our opinion that this EMS provides an appropriate framework for achieving a tolerable level of risk by addressing vegetation, occupant response, and protective measures to support emergency services. The strategy satisfies the objectives and performance criteria of Clause C13.5 of the TPS, subject to the operational and bushfire safety measures, detailed in Table 1"* (Appendix D).

The proposed use is Storage which is Permitted use within the General Industrial zone. The buildings are largely surrounded by low threat vegetation (industrial lots), but there is woodland vegetation adjacent to the south on rural residential lots that appears to be managed. The scale is significant thus triggering the manifest quantity assessment under the Code (a).

There is little overriding benefit to the community, but the site is part of a broader industrial area, and the construction type (concrete tilt-up slabs and metal roof) will reduce the risk ignition of the materials stored in Warehouse 2 (b).

Whilst it is possible to move Warehouse 2 to the position of Warehouse 3 (which is further from the woodland area) the construction type (concrete tilt-up slabs and metal roof) which will already considerably resist ignition does not make this change warranted. The whole of the industrial area is subject to the Bushfire Prone Areas overlay (c).

This Bushfire Hazard Management Plan and the evacuation protocol is approved by the TFS (d)(e).

A2 *An emergency management strategy (vulnerable use) endorsed by the TFS or accredited person.*	*P2* *No Performance Criterion.*
A3 *A bushfire hazard management plan that contains appropriate bushfire protection measures that is certified by the TFS or an accredited person.*	*P3* *No Performance Criterion.*

This Bushfire Hazard Management Plan and the evacuation protocol is approved by the TFS (A2)(A3).

6. Building Compliance

The Building Act 2016 requires that the proposed development is designed and constructed in accordance with the National Construction Code ('NCC'). This can be achieved by demonstrating compliance with the Building Code of Australia's ('BCA') Deemed-to-Satisfy provisions that satisfies the relevant Performance Requirements.

Clause 11G of the Building Regulations 2016 requires that the design of any building and associated work in a bushfire-prone area:

- Take into account the BAL assessment determined in a bushfire hazard management plan; and
- Comply with the Director's Determination - Bushfire Hazard Areas V1.2 (the 'Director's Determination') and the relevant BCA Performance Requirements.

Clause 11D of the Building Regulations 2016 specifies that design and construction in accordance with the Director's Determination can be taken as satisfying the BCA Performance Requirements. Compliance with the Director's Determination is addressed under Table 4 and a Certificate of Compliance is attached as Appendix E.

Table 5 – Director's Determination Compliance Schedule

REQUIREMENT	**COMPLIANCE**
2.3.1 Design and Construction (Table 4 Element B)	Under Clause 2.3.1(1) of the Director's Determination, Class 7b and Class 8 buildings are exempt from the construction requirements of AS 3959 – Construction of Buildings in Bushfire-Prone Areas. Notwithstanding this, separation distances from bushfire fuel sources enable BAL29 construction which enables compliance with the Directors Determination Table 4 Element B have been applied and is likely compliant. Over and above the exemption, Warehouse 2 must be built to achieve BAL-29 construction in accordance with AS 3959.

2.3.2 Property Access (Table 2 Elements B & E)	Directors Determination Table 2 Requirements for Property Accesses has been considered and all warehouses (including Warehouse 3) are likely compliant in terms of access width and turning area. Vehicular access is not provided to the rear of Warehouse 3 (bond store), but pedestrian access is available along the rear of the building, but garden steps up the embankment at each end of the building would improve access to the likely fuel source.
2.3.3 Water Supply for Fire Fighting (Table 3A Elements A-C)	Directors Determination Table 3A Requirements for Reticulated Water Supply for Firefighting has been considered. The required 120m hose lays appear to be achieved from the location of existing and proposed hydrants. Signage and fitting requirements also need to be compliant with Table 3A.
4.4 Hazard Management Areas (Table 4 Element B)	Clause 2.3.4 requires that hazard management areas be provided in accordance with Table 2.6 as appropriate to the assessed BAL. The BHMP prescribes requirements for the hazard management area. The HMA and surrounding low threat vegetation will provide adequate separation between the building area and bushfire-prone vegetation for BAL-29 construction. The hazard management areas prescribed for the existing and proposed buildings have been incorporated into the BHMP provided under Appendix B.
4.5 Emergency Plan (Table 5)	DDEG Report, Bushfire Emergency Management Strategy Report 15 Lukaarlia Drive Bridgewater states: *"The EMS adopts early evacuation as the primary protective measure, reflecting the elevated fire load associated with whisky storage. Shelter-in-place is not relied upon as a planned response and is acknowledged only as a last-resort contingency if evacuation cannot be achieved."*. Refer to Appendix D. A Bushfire Emergency Plan and a Fire Evacuation Plan must be developed and approved by the TFS prior to occupancy.

7. Conclusion

The proposed use is classified as a ‘hazardous use’ due to the manifest quantities of alcohol stored.

The likely source of bushfire hazard will be from grassland to the north and north-west and woodland to the south and south-west at 50 Cobbs Hill Road, which will likely result in ember attack and localised spot fires on, or in close proximity to the site.

The proposed development is located within a ‘bushfire prone area’ as defined under the Tasmanian Planning Scheme (Brighton) and the Building Regulations 2016. To achieve a tolerable level of residual risk the following documents have been prepared:

- A Bushfire Hazard Management Plan, which sets out hazard management area and minimum construction standards for the proposed new development, vehicular access and water supply; and
- An Emergency Management Strategy Report (DDEG), which provides specifications of required bushfire protection measures.

The proposed the bushfire emergency response for the 15 Lukaarlia Drive site proposes Evacuate all persons from site before fire impact; triggers include Catastrophic/Extreme FDR or notification from TFS. Given low occupancy, evacuation is rapid, typically 1–3 vehicles. Assembly point in Low Threat zone away from hazardous goods storage. ECO (if present) oversees hazardous goods shutdown and ensures all persons accounted for. Temporary Shelter-in-Place last resort only; due to hazardous goods risk. If required, occupants remain at assembly point (eastern side of Warehouse 1) under ECO supervision until safe evacuation possible.

Key matters to be considered from this report are:

- Warehouse 2 should be constructed to a BAL 29 standard under AS3959:2008 or as otherwise approved by the Tasmanian Fire Service;
- Ensure access around Warehouse 2 is compliant with Table 2 of the Directors Determination, and ideally include garden stairways up the embankment at each end of the building;
- Ensure the water supply meets Table 3A of the Directors Determination, in particular check the 120m hose lays around the warehouses and the hydrant flow for the site is capable of 30L/s;
- Ensure the Hazard Management Area is established and maintained in accordance with Table 3 of this report;
- Adherence to the DDEG Bushfire Emergency Management Strategy Report 15 Lukaarlia Drive Rev 1 1/12/25.
- A Bushfire Emergency Plan and a Fire Evacuation Plan must be developed and approved by the TFS prior to occupancy;
- An updated bushfire report and Form 55 are required prior to the issue of a certificate of likely compliance.

Compliance with the Directors Determination on the above matters must be confirmed by the Building Surveyor prior to occupancy or as otherwise approved by the Tasmanian Fire Service.

8. References

Bushfire-prone Hazard Areas Code – Tasmanian Planning Scheme

Department of Primary Industries and Water, The LIST, www.thelist.tas.gov.au

Director of Building Control, 2024, Director's Determination - Bushfire Hazard Areas, Version No.2.1 Department of Justice (Tasmania).

Standards Australia, 2018, AS 3959-2018 – Construction of buildings in bushfire-prone areas, Standards Australia, Sydney.

APPENDIX A

Proposal Plans

STAGE 1
2,402.67 m²

CONCRETE HARDSTAND
4,568.11 m²

STAGE 2
1,802.50 m²

STAGE 3
1,590.18 m²

PROPOSED WAREHOUSE 01
795.07 m²

PROPOSED WAREHOUSE 02
795.10 m²

LOADING AREA FOR STAGE 02

Pipeline Easement 10.06 Wide

RAINBOW ROAD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

5,400 2,400

Legend

- Proposed Landscaping Area
- Paved Concrete (Refer to Civil Documentation)
- Easement

Symbol	Name	Qty	Pot Size	Height	Spread
	Anigozanthos Flavidus - Kangaroo Paw	11	tube stock	450	1000
	Eucalypt Forrestiana - Fuchsia Gum	6	35L	5,000	3000
	Festuca Glauca - Blue Fescue	27	tube stock	300	150

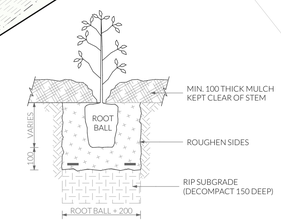
CLUMPINGS OF *Anigozanthos Flavidus* - KANGAROO PAW WITH EUCALYPT BARK MULCH TO ROADSIDE AREA

Note

Plants have been selected to be drought tolerant and low maintenance once established, it is recommended that a dripper system or similar be put into place until established. Plant locations are indicative and may be altered where suitable growing conditions cannot be met. Garden areas to be mulched with 75mm cover of selected mulch and plants are to fertilised 6 monthly or where required until established. Garden edges are to be timber, steel, or brick. Plantings that are unsuccessful will be replaced where required.

Eucalypt forrestiana - FUCHSIA GUM TO 5m HIGH x 3m SPREAD AS SHOWN TO ROADSIDE GARDEN AREA

CLUMPINGS OF *Festuca Glauca* - BLUE FESCUE WITH EUCALYPT BARK MULCH TO ROADSIDE AREA



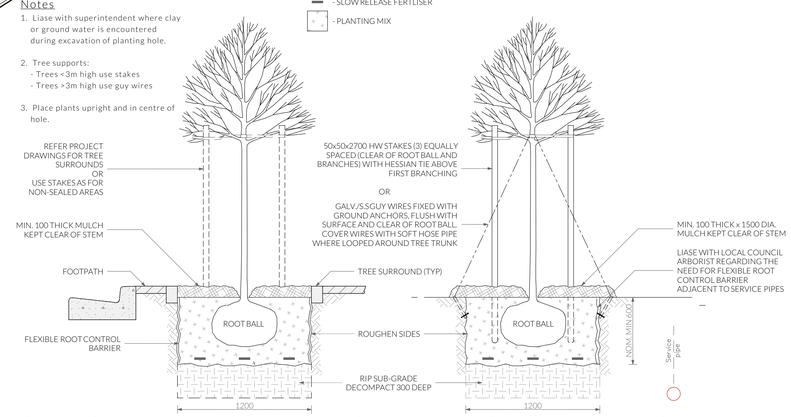
SMALL PLANTS AND SHRUBS
(100-450mm POTS)

KEY

- SLOW RELEASE FERTLISER
- PLANTING MIX

Notes

1. Liase with superintendent where clay or ground water is encountered during excavation of planting hole.
2. Tree supports:
   - Trees <3m high use stakes
   - Trees >3m high use guy wires
3. Place plants upright and in centre of hole.



Tree and Shrub Planting

PINNACLE

PINNACLE DRAFTING & DESIGN
7/3 Abernant Way,Cambridge 7170
03 6248 4218
admin@pinnacledrafting.com.au
www.pinnacledrafting.com.au
Licence: C C6073Y

Landscaping Plan

Revision: DA - 01
Approved by: JRD

Scale: 1:250 @ A1
Pg. No: A.02

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

Legend

- STAGE 01 (UNDER CONSTRUCTION)
- STAGE 02
- STAGE 03

Total Building Area

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STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

PINNACLE

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Proposed Staging Plan

Revision: DA - 01
Approved by: JRD

Scale: 1:250 @ A1
Pg. No: A.03

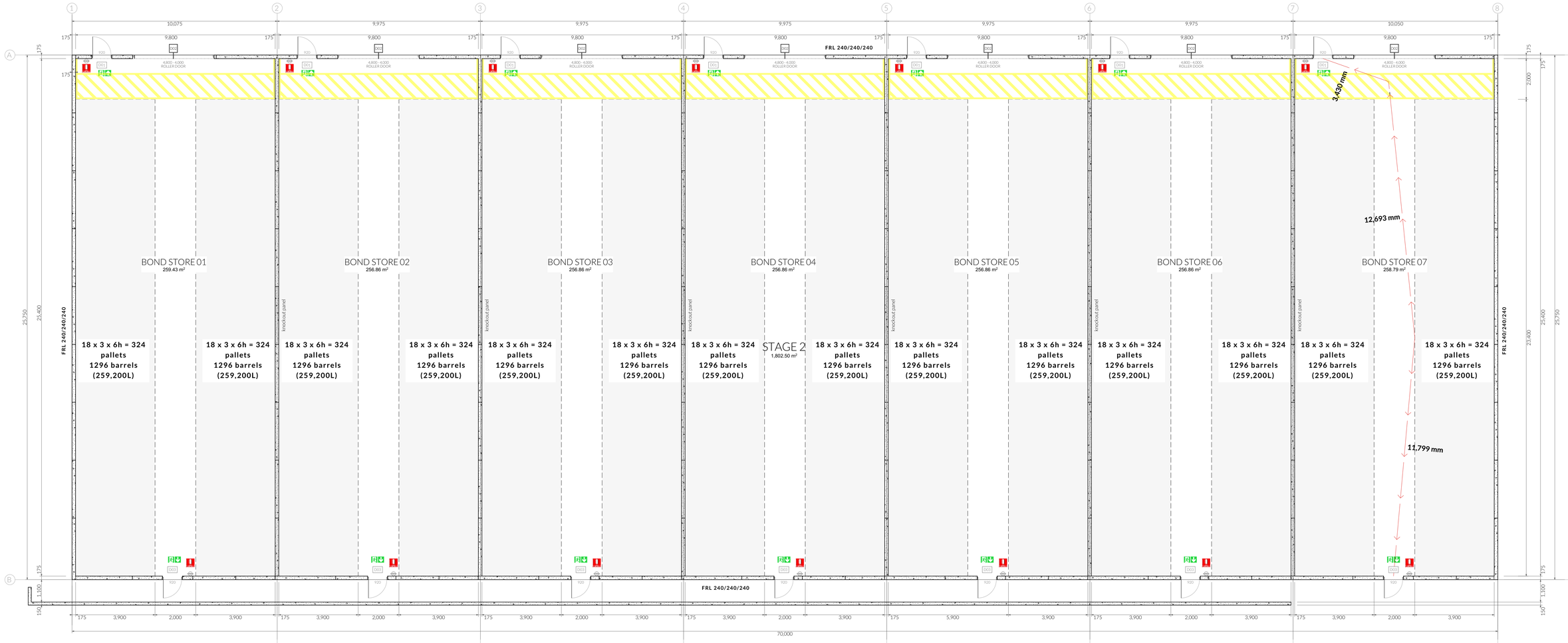
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



VOLUME OF LIQUID

BOND STORE 01	518,400L
BOND STORE 02	518,400L
BOND STORE 03	518,400L
BOND STORE 04	518,400L
BOND STORE 05	518,400L
BOND STORE 06	518,400L
BOND STORE 07	518,400L
TOTAL	3,628,800L

Area

BOND STORE 01	259.43
BOND STORE 02	256.86
BOND STORE 03	256.86
BOND STORE 04	256.86
BOND STORE 05	256.86
BOND STORE 06	256.86
BOND STORE 07	258.79

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
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Floor Plan - Stage 02

Revision: DA - 01
Approved by: JRD

Scale: 1:100 @A1
Pg. No: A.04

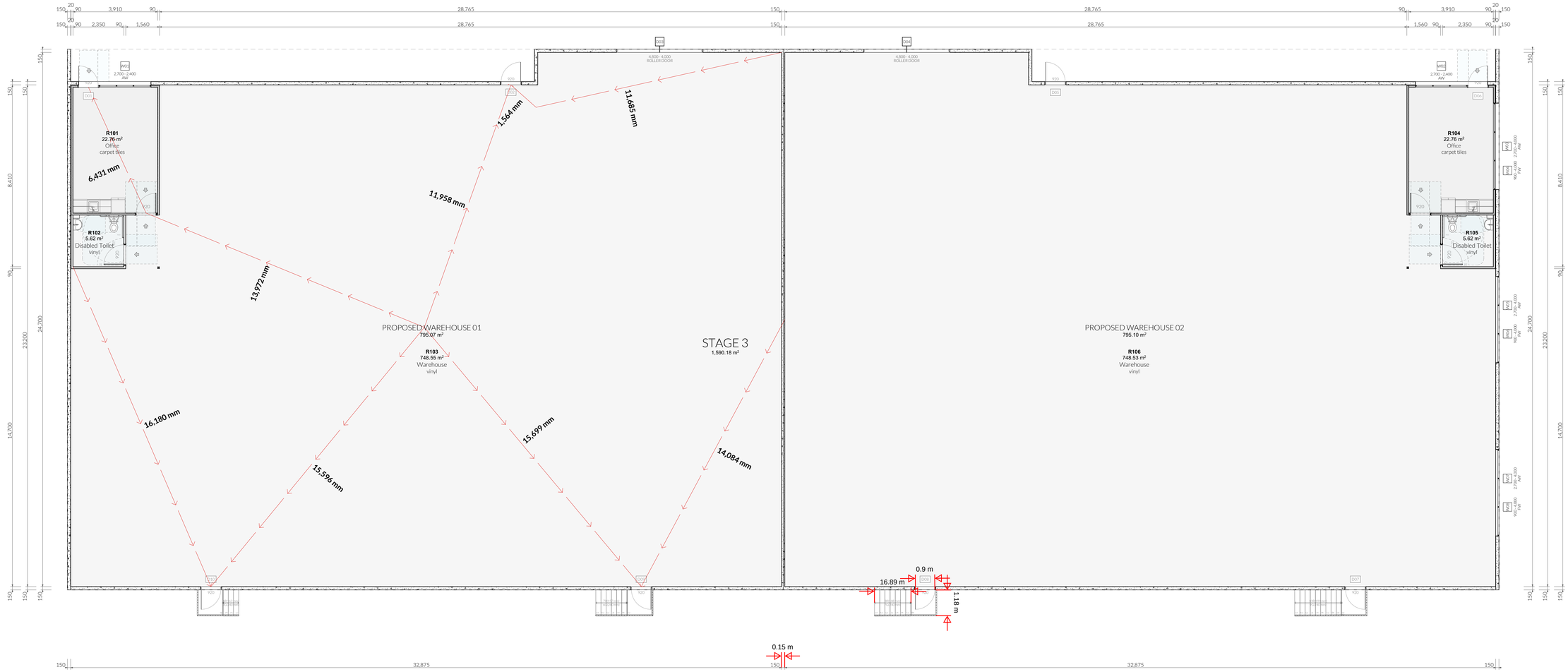
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Disabled Toilet	5.62
Disabled Toilet	5.62
Office	22.76
Office	22.76
Warehouse	748.55
Warehouse	748.53

Total Building Area

---	---
STAGE 1	2,402.67
STAGE 2	1,802.50
STAGE 3	1,590.18
	5,795.35 m²

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
7/3 Abernant Way,Cambridge 7170
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www.pinnacledrafting.com.au
Licence: C.C6073Y

Floor Plan - Stage 03

Revision: **DA - 01**
Approved by: **JRD**

Scale: 1:100 @ A1
Pg. No: A.05

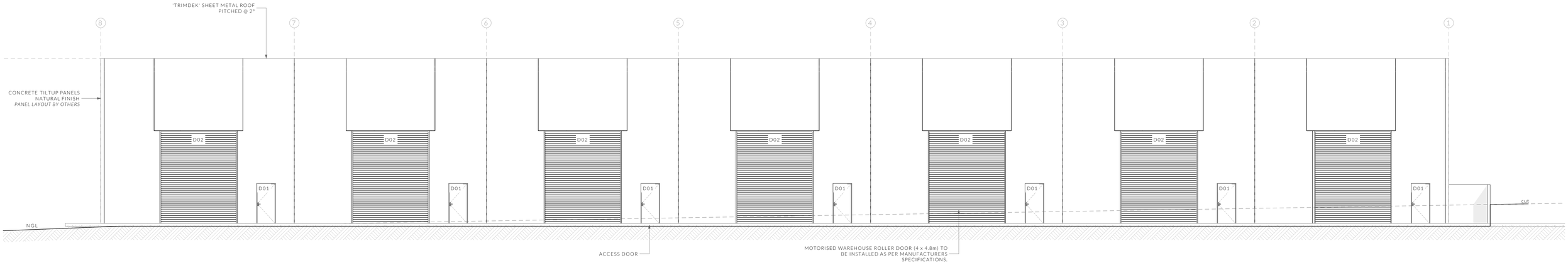
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 02 - North Elevation

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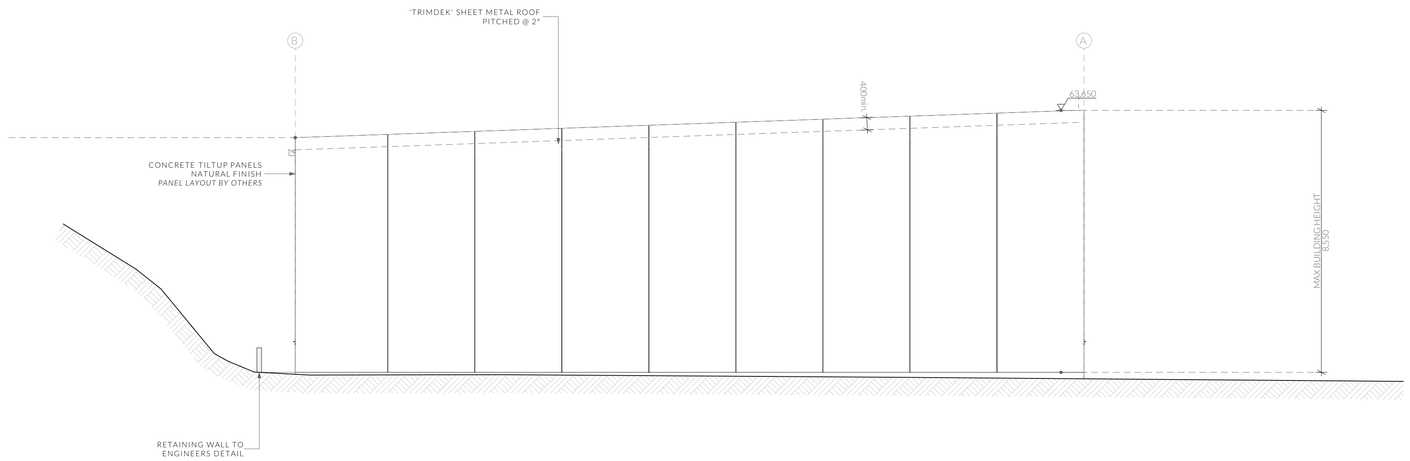


Stage 02 - East Elevation

1:100

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
7/3 Abernant Way, Cambridge 7170
03 6248 4218
admin@pinnacledrafting.com.au
www.pinnacledrafting.com.au
Licence: CC6073Y

Stage 02 Elevations

Revision: DA - 01
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.06

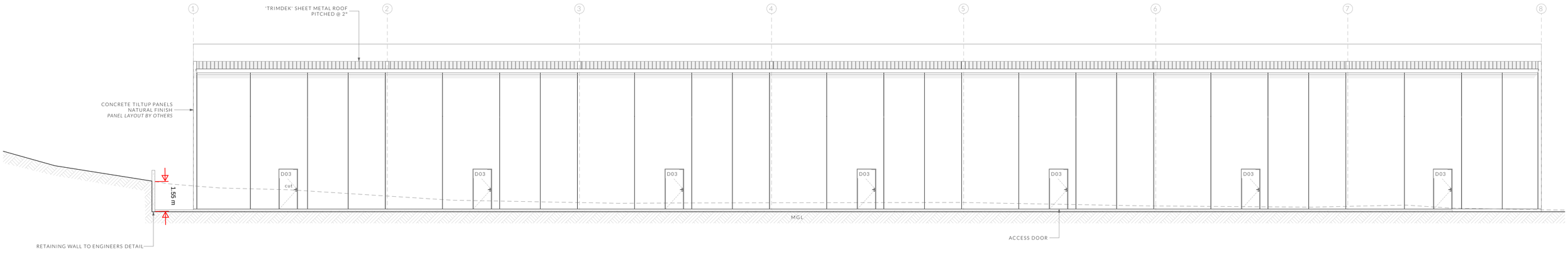
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 02 - South Elevation

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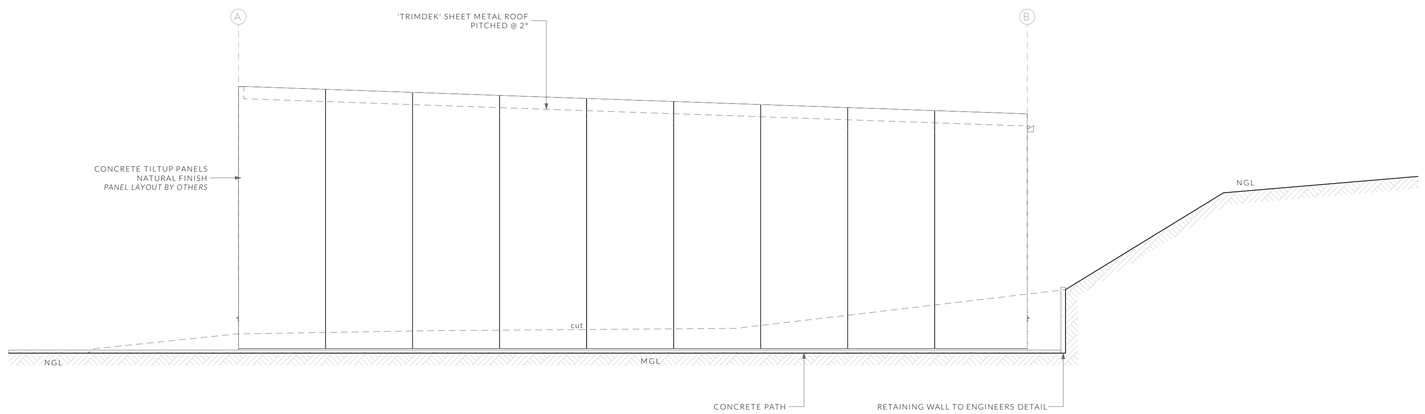

Stage 02 - West Elevation

1:100

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
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03 6248 4218
admin@pinnacledrafting.com.au
www.pinnacledrafting.com.au
Licence: CC6073Y

Stage 02 Elevations

Revision: DA - 01
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.07

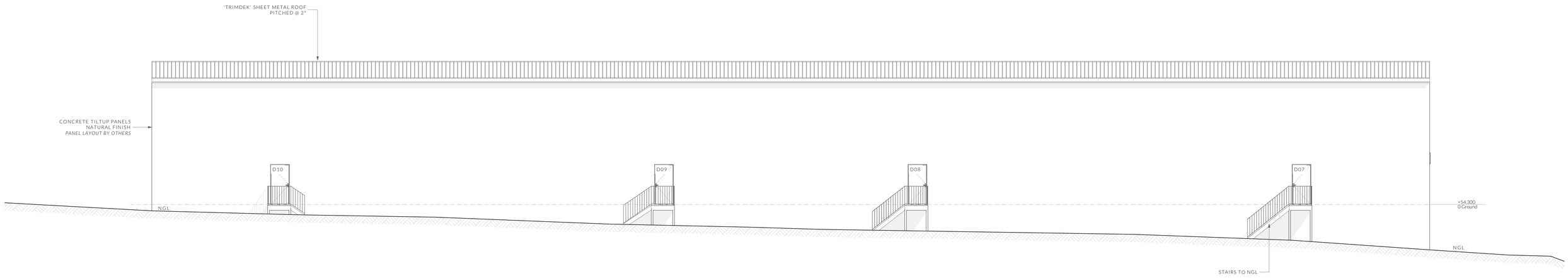
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 03 - South Elevation

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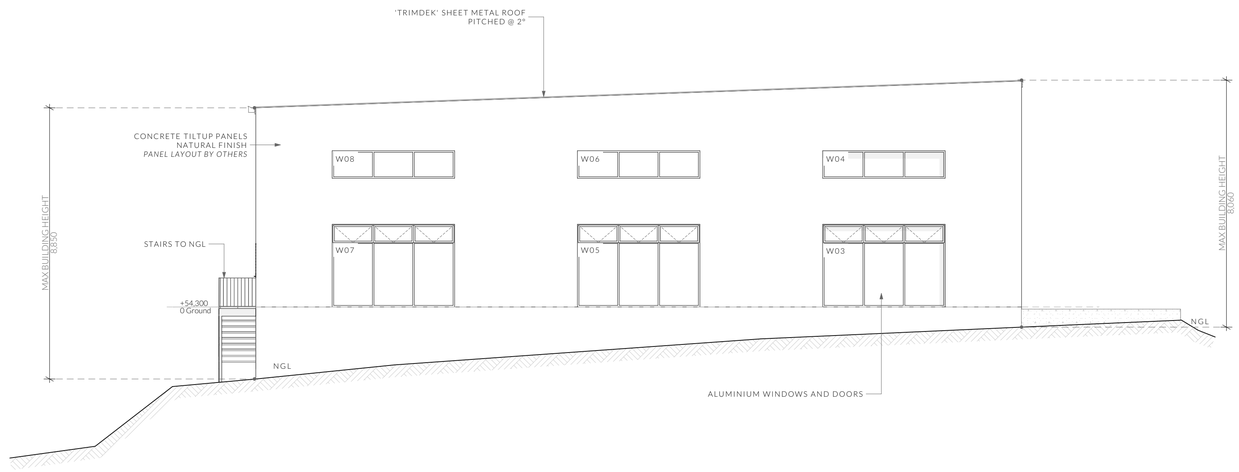


Stage 03 - East Elevation

1:100

NOT FOR CONSTRUCTION

PINNACLE

PINNACLE DRAFTING & DESIGN
7/3 Abernant Way, Cambridge 7170
03 6248 4218
admin@pinnacledrafting.com.au
www.pinnacledrafting.com.au
Licence: CC6073Y

Stage 03 Elevations

Revision: DA - 01
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.08

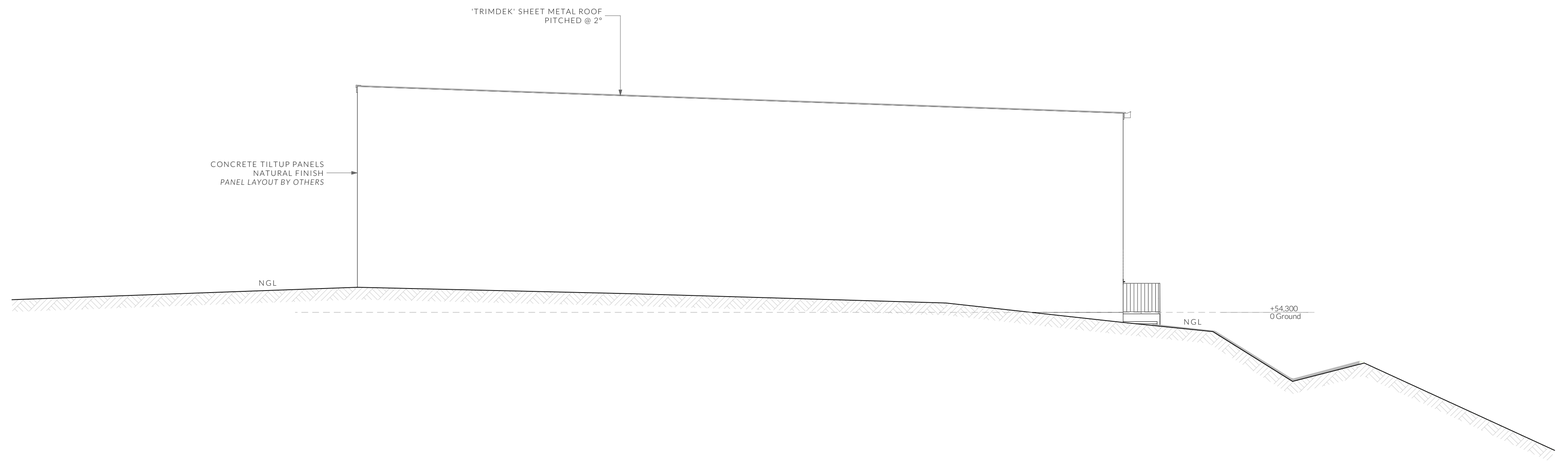
Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA



Stage 03 - West Elevation

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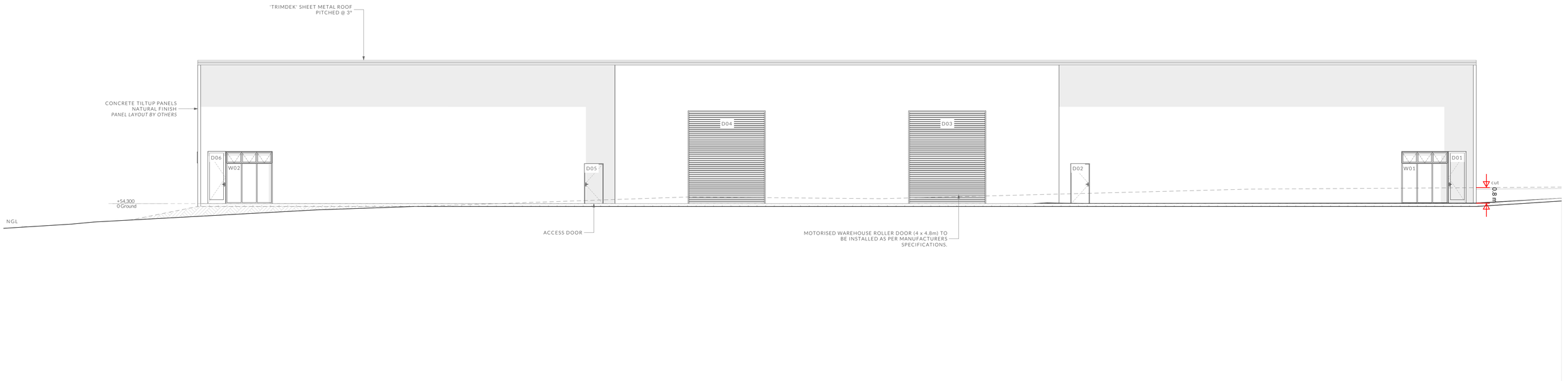

Stage 03 - North Elevation

1:100

NOT FOR CONSTRUCTION

PINNACLE

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7/3 Abernant Way,Cambridge 7170
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admin@pinnacledrafting.com.au
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Licence: CC6073Y

Stage 03 Elevations

Revision: DA - 01
Approved by: JRD

Scale: 1:100 @ A1
Pg. No: A.09

Proposal: Bond Store & Warehouse
Client: Southern Steel Properties Pty Ltd
Address: 15 Lukaarlia Dr, Bridgewater 7030

Date: 23/07/2025
Drawn by: JRN
Job No: 53-2025
Engineer: Gandy & Roberts
Building Surveyor: LTBS

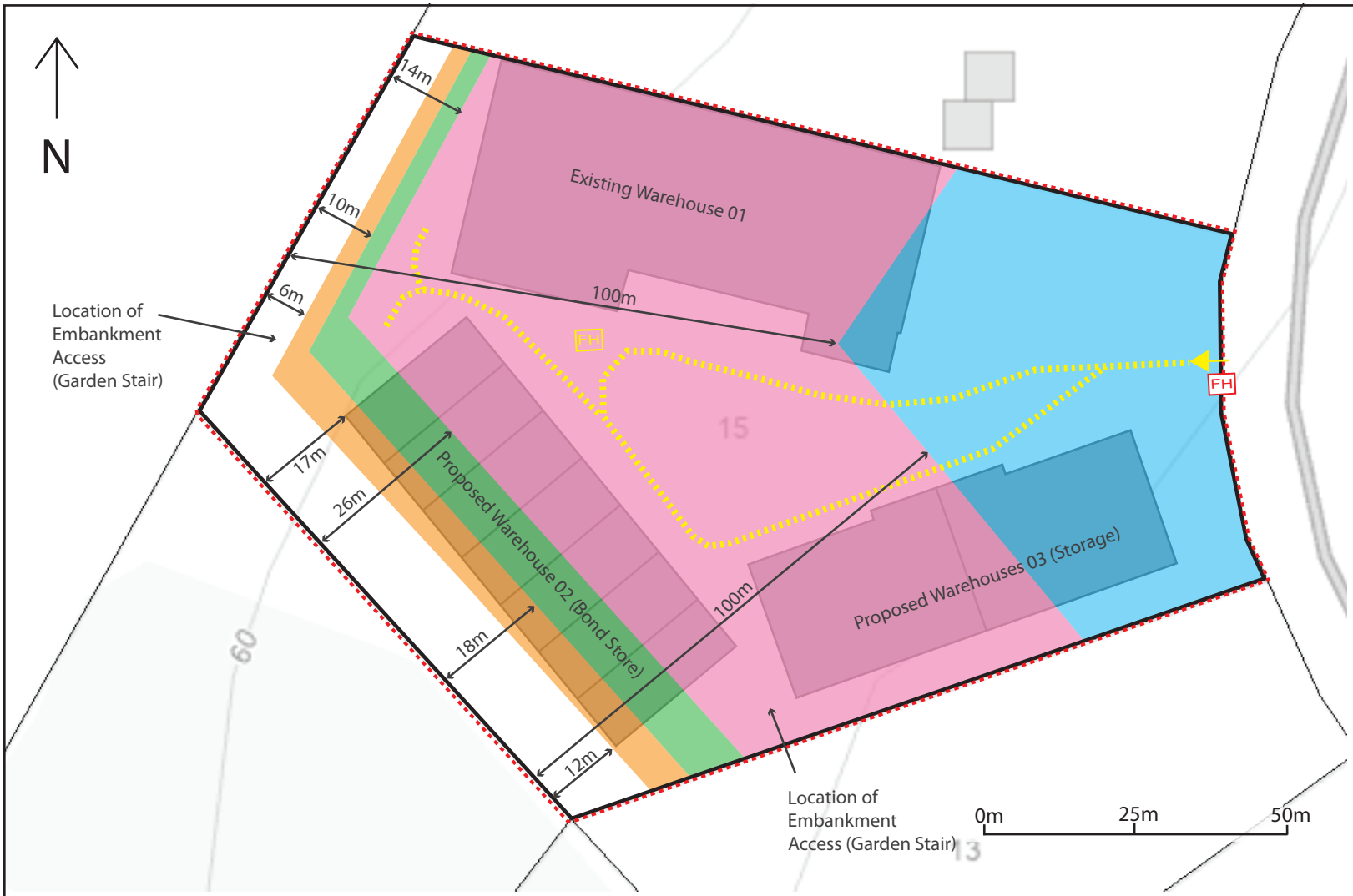
Issue	Date	Designer

NOTE: Refer to cover page for further details on changes.

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

APPENDIX B

Bushfire Hazard Management Plan



LEGEND

- BAL Low
- BAL 12.5
- BAL 19
- BAL 29
- Existing Fire Hydrant
- Proposed Fire Hydrant
- Hazard Management Area
- Internal Loop Road
- Site Access/Egress Point

BHMP NOTES:

1. THIS PLAN MUST BE READ IN CONJUNCTION WITH THE BUSHFIRE HAZARD REPORT (BHR) PREPARED BY MAT CLARK (BFP-180), BUSHFIRE HAZARD PRACTITIONER (ACCRED 1 & 3A PROV 2, 3B & 3C), DATED DECEMBER 2025.
2. THE SUBJECT 15 LUKAARLIA DRIVE, BRIDGEWATER (CT 186550/1).
3. THE HAZARD MANAGEMENT AREAS (HMA) INDICATED ON THIS PLAN MUST BE ESTABLISHED AND MAINTAINED BY THE DEVELOPER AND VERIFIED BY THE BUILDING SURVEYOR PRIOR TO OCCUPATION OF THE NEW BUILDINGS IN ACCORDANCE WITH SECTION 5.1 OF BHR.
4. PROPERTY ACCESS ARRANGEMENTS MUST COMPLY WITH SECTION 5.3 OF THE BHR.
5. FIRE FIGHTING WATER SUPPLY ARRANGEMENTS MUST COMPLY WITH SECTION 5.4 OF THE BHR.
6. THIS PLAN DEMONSTRATES COMPLIANCE WITH THE BUSHFIRE-PRONE AREAS CODE.

MC PLANNERS
ACN 667 411 234 ABN 52 667 411 234
0362 887 248 planning@mcplanners.com.au
www.mcplanners.com.au
2/129 Bathurst St Hobart Tasmania

PROJECT
15 LUKAARLIA DRIVE, BRIDGEWATER

TITLE
BUSHFIRE HAZARD MANAGEMENT PLAN

SCALES @ DO NOT SCALE
PLOT DATE 02/12/2025
PROJECT NO 25087
DRAWING NO 25087-B01

BUILDING DESIGN & CONSTRUCTION

- SPECIFIED SEPARATION DISTANCES SHOWN ON THIS PLAN PROVIDE FOR BAL 29 AND BAL 12.5 SOLUTIONS. WAREHOUSE 2 IS TO BE CONSTRUCTED TO BAL29 STANDARDS AND WAREHOUSE 3 TO BAL 12.5 STANDARDS IN ACCORDANCE WITH AS 3959:2018.
-HIGHER LEVELS OF CONSTRUCTION ARE ACCEPTABLE.
-THERE IS A MANDATORY 12M SETBACK FROM THE SOUTH WEST BOUNDARY AND 6M FROM THE NORTH WEST BOUNDARY FOR BAL-29 SEPARATION.
- THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF OBTAINING PLANNING APPROVAL FROM THE LOCAL AUTHORITY AND IS SUBJECT TO THAT APPROVAL.
ALL MEASUREMENTS AND AREAS ARE SUBJECT TO THE FINAL SURVEY.
-COMPLIANCE WITH THE THIS BHMR IS TO BE VERIFIED BY THE BUILDING SURVEYOR PRIOR TO OCCUPANCY OF THE NEW BUILDINGS.

PROPERTY ACCESS

- ACCESS FROM LUKAARLIA DRIVE NEEDS TO BE CONSTRUCTED TO THE STANDARD IN TABLE 2 OF THE DETERMINATION AND NCC DTS PROVISIONS AND VERIFIED BY THE BUILDING SURVEYOR PRIOR TO OCCUPANCY OF THE BUILDINGS OF THE NEW BUILDINGS.
-IT IS RECCOMENDED A 1M WIDE PEDESTRIAN ACCESS (GARDEN STAIR) IS TO BE CONSTRUCTED TO THE TOP OF THE EMBANKMENT FROM THE VEHICULAR PAVEMENT.

WATER SUPPLY FOR FIREFIGHTING

- WATER SUPPLY FOR FIRE FIGHTING IS TO BE PROVIDED IN ACCORDANCE WITH TABLE 3A OF THE DIRECTORS DETERMINATION AND THE NCC DTS PROVISIONS. 120M HOSE LAYS NEED TO BE CHECKED FROM THE EXISTING AND NEW HYDRANT LOCATIONS AND THEY ACHIEVE 30L/S. THE BUILDING SURVEYOR IS TO VERIFY COMPLIANCE PRIOR TO OCCUPANCY OF THE NEW BUILDINGS.

HAZARD MANAGEMENT AREAS - HMA

-THE HAZARD MANAGEMENT AREA APPLIES TO ALL OF THE SITE. VEGETATION IN THE HMA IS TO BE MANAGED AND MAINTAINED BY THE LOT OWNERS AND BE IN A MINIMUM FUEL CONDITION AND VERIFIED BY THE BUILDING SURVEYOR PRIOR TO OCCUPANCY OF THE NEW BUILDINGS.
- MAINTAIN IN A MINIMAL FUEL CONDITION IN PERPETUITY, ENSURING FUELS ARE REDUCED SUFFICIENTLY AND OTHER HAZARDS ARE REMOVED SUCH THAT THE FUELS & OTHER HAZARDS DO NOT SIGNIFICANTLY CONTRIBUTE TO THE BUSHFIRE ATTACK.
- LIMITED AMOUNTS OF LOW FLAMMABILITY PLANTS ARE ACCEPTABLE WITHIN THE HMA; INCLUDING MAINTAINED LAWN, LOW GROWING PLANTS & GROUND COVERS, LOW FLAMMABILITY ORNAMENTAL GARDENS, VEGETABLE GARDENS AND THE LIKE.
- DO NOT PLANT WITHIN 1.5M OF WALLS OR DIRECTLY UNDER GLAZED ELEMENTS.
- REGULARLY REMOVE GROUND FUELS SUCH AS FALLEN BRANCHES, STICKS, LEAVES, BARK, LAWN CLIPPINGS ETC.
- MAINTAIN LAWN TO A HEIGHT LESS THAN 100mm.
- DO NOT USE PINE BARK AND OTHER FLAMMABLE MULCH.
- THIN-OUT UNDERSTORY VEGETATION AND PRUNE TREE BRANCHES WITHIN 2M OF THE GROUND.
- PRUNE TREES TO MAINTAIN 2M HORIZONTAL SEPARATION BETWEEN CANOPIES.
- TREES TO BE SET BACK A SUITABLE DISTANCE TO AVOID BUILDING STRIKE DURING OR AFTER A BUSHFIRE EVENT.
- CLEAR ACCUMULATED LEAVES AND OTHER DEBRIS FROM ROOF GUTTERS.

APPENDIX C

Site Photos

Photo 1: View south-west on the boundary between 15 Lukaarlia Drive and 50 Cobbs Hill Road.

Photo 2: View east towards Lukaarlia Drive.

Photo 3: View west towards the rear boundary of 50 Cobbs Hill Road.

Photo 4: View north-west towards Cobbs Hill Road.

Photo 5: View north towards Glenstone Road.

Photo 6: View west towards Cobbs Hill Road.

Photo 7: View north towards the site from Lukaarlia Drive.

Photo 8: View south-east towards Woodrieve Road.

Photo 9: View of the Council owned nature strip east of the site.

Photo 10: View south-west toward the site from Lukaarlia Drive.

Photo 11: View of vegetation to the south-east of the site.

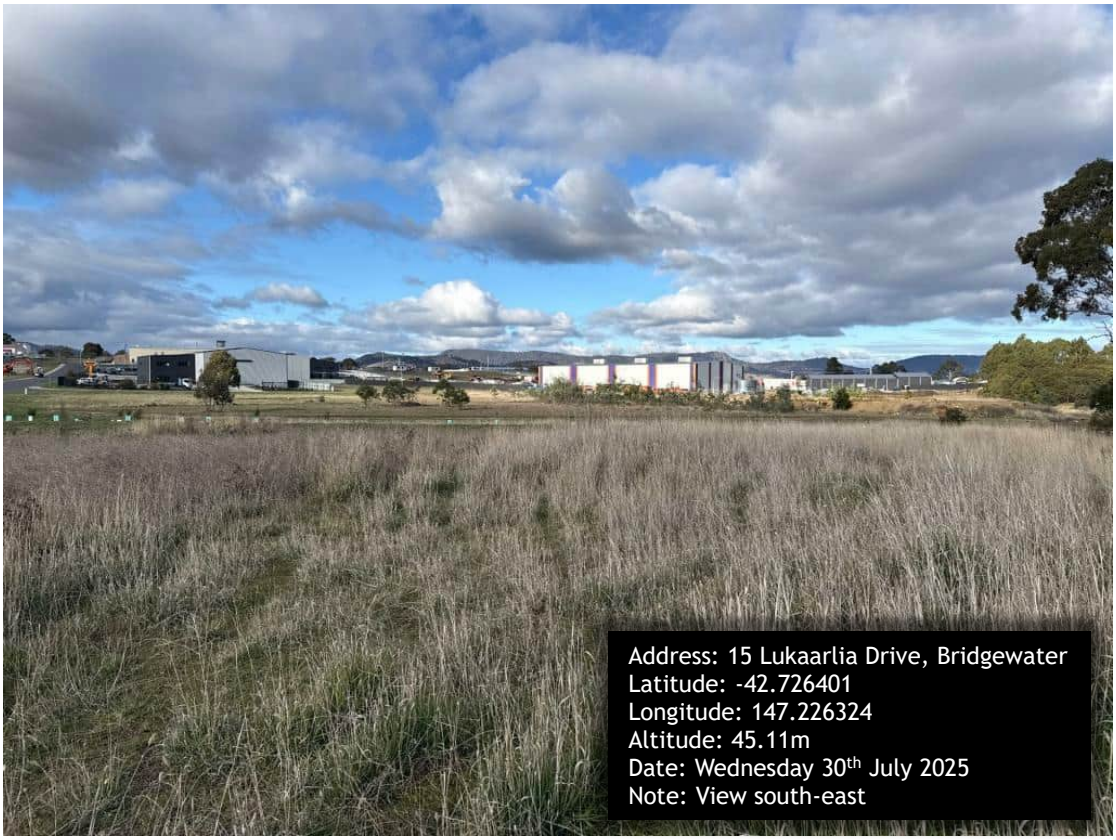


Photo 12: View south-east towards Woodrieve Road.

Photo 13: View of vegetation to the east of the site.

Photo 14: View east from the frontage of the site.

Photo 15: View north from the frontage of the site.

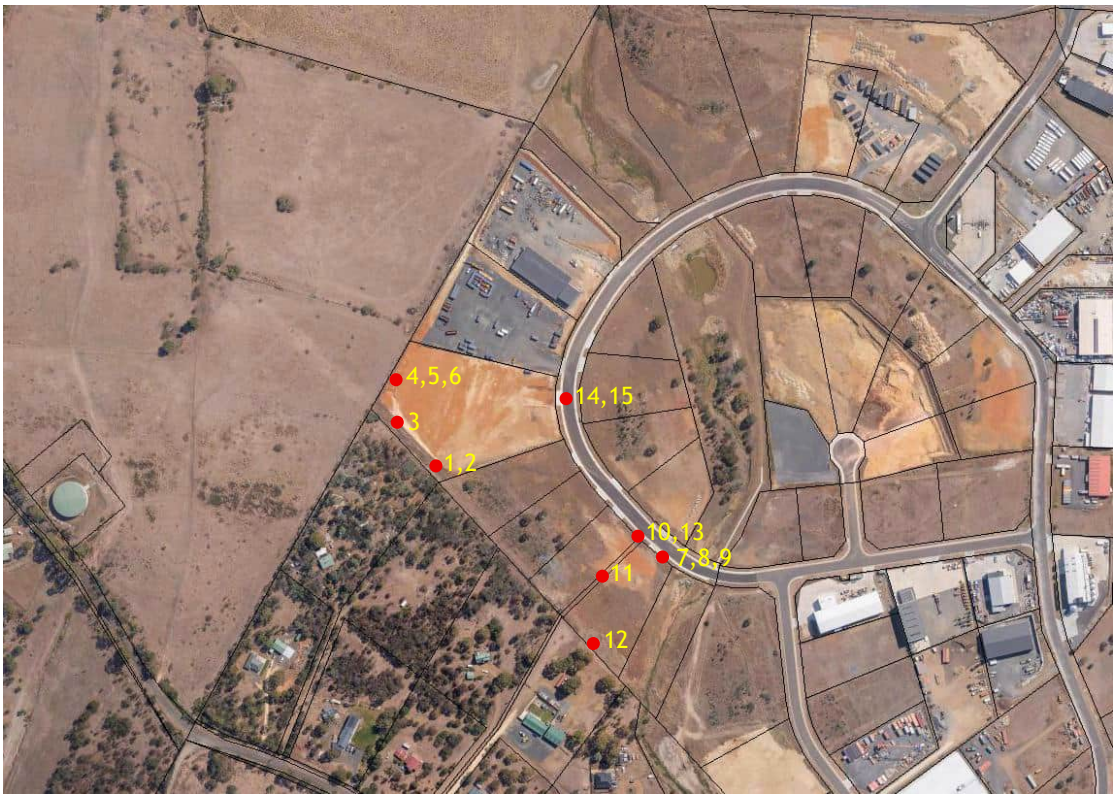


Photo 16: Aerial photo with photo locations marked.

APPENDIX D

Emergency Management Strategy

FIRE SAFETY
ENGINEERING

EMERGENCY MANAGEMENT STRATEGY REPORT

Address	15 Lukaarlia Drive, Bridgewater, TAS
Project no.	214645-B
Date	02/12/2025
Revision	1

Tasmania Fire Service
Endorsed
08 / 12 / 2025

DOCUMENT TITLE	BUSHFIRE – EMERGENCY MANAGEMENT STRATEGY REPORT
PROJECT ADDRESS	15 LUKAARLIA DRIVE, BRIDGEWATER, TAS
PROJECT NO	214645-F
PREPARED FOR	PINNACLE DRAFTING
PREPARED BY	DDEG (Fire) ABN: 49 161 043 732 Level 2, 162 Macquarie Street Hobart, TAS 7050 03 8814 3218
AUTHORISED BY:	Michael Dobbs FIEAust CPEng EngExec NER APEC Engineer IntPE(Aus) RPE (Vic) PE0003177 (Fire Safety & Mechanical) PE (NSW) PRE0000871 (Fire Safety) ABP (Tas) CC4904J RPEQ (Qld) 21858 MAICD michael.d@ddeg.com.au

Signature

REVISION HISTORY

Doc.	Rev.	Date	Purpose	Prepared by:	Reviewed by:
EMSR	0	02/09/2025	Stakeholder Review	Edward Moreno	Suzzane Gifford (TFS)
EMSR	1	02/12/2025	Stakeholder Review	Edward Moreno	Suzzane Gifford (TFS)

Executive Summary

This Emergency Management Strategy (EMS) has been prepared to support the planning application for the proposed development at 15 Lukaalria Drive, Bridgewater, TAS, and should be read in conjunction with the Bushfire Hazard Report prepared by Matthew Clark Planners, which addresses site hazard classification and planning code requirements.

Pinnacle Drafting has appointed DDEG to prepare this EMS as a strategic framework for managing bushfire risks arising from the development. The project comprises three (3) new warehouses, with Warehouse 2 containing seven (7) bond storage units for whisky barrels, together with associated vehicle parking, loading areas, and landscaping. The works are to be delivered in three stages, with Stage 1 currently under construction under a separate approval.

The bond store in Warehouse 2 is classified as a Hazardous Use due to the storage of manifest quantities of Class 3 flammable liquids (whisky). This classification triggers the application of Clause C13.5.2 (Hazardous Uses) of the Tasmanian Planning Scheme (TPS).

This EMS applies specifically to the operations within Warehouse 2. Warehouses 1 and 3 are to be separately tenanted, and each tenant is responsible for maintaining their own emergency procedures under Work Health and Safety obligations. During a bushfire event, however, all persons present on the site will be subject to the same external exposure and egress constraints, and the designated assembly area and evacuation route are suitable for all occupants.

The EMS adopts early evacuation as the primary protective measure, reflecting the elevated fire load associated with whisky storage. Shelter-in-place is not relied upon as a planned response and is acknowledged only as a last-resort contingency if evacuation cannot be achieved. The emergency response framework is structured as follows:

- Primary Strategy (Preventions & Early Evacuation)

  Pre-emptive full-site evacuation triggered by official TFS alerts or forecasts of 'Extreme' or 'Catastrophic' Fire Danger Ratings. On such days, the site will be closed and no personnel will attend. All site personnel, including warehouse staff and contractors, will evacuate or relocate to established off-site assembly points using private vehicles unless otherwise arranged, supported by clear communication protocols.
- Secondary Strategy (Temporary External Assembly Area).

  If evacuation becomes temporarily unsafe due to rapidly changing conditions or blocked egress routes, occupants may relocated to the designated low-threat external assembly area (eastern carpark adjacent to Warehouse 1) as a short-term refuge until safe evacuation can be completed (refer FIGURE 9).
- No Onsite Shelter.

  Warehouse 2 is not suitable for sheltering. No building on the site is designated or relied upon as a bushfire refuge.

A detailed Emergency Evacuation Plan will be developed in consultation with the project team, the Emergency Planning Committee (EPC), and the Tasmania Fire Service (TFS). This may be prepared either as a single consolidated plan, incorporating both the Bushfire Emergency Plan (BEP) and the Fire Evacuation Plan (FEP), or as two separate but coordinated documents that align on shared elements such as assembly areas, communication systems, and ECO responsibilities. In either case, the plan(s) must be endorsed prior to occupancy and submitted as part of the building permit process.

It is our opinion that this EMS provides an appropriate framework for achieving a tolerable level of risk by addressing vegetation, occupant response, and protective measures to support emergency services. The strategy satisfies the objectives and performance criteria of Clause C13.5 of the TPS, subject to the operational and bushfire safety measures, detailed in TABLE 1.

TABLE 1 **Details of Recommended Preventative and Mitigation Measures**

System	Preventative and Mitigation Measures
Construction Requirements	**Building Envelope** The proposed Class 7b and Class 8 buildings are not required to be constructed in accordance with AS3959, as this is not mandated under the Director's Determination DTS Provisions, Clause 2.3.1(1). Notwithstanding, the following provisions will apply: • The storage of whisky in Warehouse 2 involves manifest quantities of Class 3 flammable liquids. The building will be designed to comply with the NCC Deemed-to-Satisfy fire resistance provisions and the relevant requirements of AS 1940 – Storage and Handling of Flammable and Combustible Liquids. ***Where conflicts arise between the NCC and the Standard, the stricter requirement will take precedence.*** • Emergency planning, placarding, and manifest requirements will be addressed in accordance with WHS Regulations. Final detailing and implementation of these measures will be confirmed during detailed design by others, in consultation with TFS and WorkSafe Tasmania. **Evacuation and Assembly Areas** All evacuation movements will be directed to the designated assembly area at the east side of Warehouse 1 (refer FIGURE 9). This location is within a Low Threat vegetation zone, situated on flat terrain, and positioned at a safe distance from hazardous infrastructure. The assembly area provides safe egress via the internal road network connecting directly to Glenstone Road and the Midlands Highway.
Hazard Management Areas	Hazard Management Areas (HMA) within the subject site must be maintained in perpetuity as outlined in the referenced Bushfire Hazard Management Plan (BHMP).
Specialist Reports	**Emergency Evacuation Plan (Bushfire and General Fire)** The Bushfire Emergency Management Strategy (EMS) outlined in this report must be translated into a comprehensive Emergency Evacuation Plan that integrates both: • A Bushfire Emergency Plan (BEP), in accordance with the TFS Bushfire Emergency Planning Guideline (2021); and • A Fire Evacuation Plan, in accordance with the General Fire Regulations 2021 and the TFS Fire Evacuation Plan Guideline (2021).
Management in Use	**Emergency Evacuation Plan** An Emergency Planning Committee (EPC) will be established in accordance with AS 3745:2010 to oversee emergency arrangements and appoint an Emergency Control Organisation (ECO). Emergency planning for the site will include both bushfire and general fire requirements. This may be addressed through either: • A consolidated Emergency Evacuation Plan, combining bushfire and general fire procedures; or • Two separate plans: a Bushfire Emergency Plan (BEP) and a Fire Evacuation Plan. Whichever approach is adopted, the plans must: • Translate bushfire management measures into clear site-specific procedures.

System	Preventative and Mitigation Measures
	• Address general fire evacuation in accordance with relevant regulations and guidelines. • Define triggers and actions for evacuation or temporary assembly in safe areas. • Be developed in consultation with the Tasmania Fire Service and endorsed by the relevant authority prior to occupancy. The ECO will be trained to implement both plans, supported by communication systems, signage, and regular drills. Staff and contractors will receive induction and refresher training, with evacuation exercises conducted at appropriate intervals. All plans must be finalised prior to occupancy and will form part of the site's compliance obligations under the Work Health and Safety Regulations 2012 (Tas).

Contents

2 Introduction

2.1 Purpose

The purpose of this Emergency Management Strategy Report is to:

- Identify key bushfire risks relevant to the site.
- Outline emergency management principles appropriate at the planning stage.
- Confirm intent to develop a detailed Bushfire Emergency Plan (BEP) at the design stage.

2.2 Relevant Legislation

Relevant Legislation
Building Act 2016
Building Regulations 2016
Tasmanian Planning Scheme (TPS) (Tasmanian Planning Scheme - State Planning Provisions, 2022).
CBOS Director's Determination Bushfire Hazard Areas (v1.2) (Consumer, Building and Occupational Services (CBOS), 2024).
National Construction Code 2022 – Volume 1 (ABCB, 2022).
Work Health and Safety Act 2012

2.3 Reference Documentation

The report is based on information contained in the following documents and drawings:

TABLE 2 **Reference Documentation**

Document	Prepared by	Issue
Email To: Mat Clark CC: Edward Moreno, James Davies Subject: RE: CM: 15 Lukaarlia Drive Bridgewater Hazardous Use (Bond Store) Building Construction details	Pinnacle Drafting & Design	28/11/2025
Bushfire Hazard Report 15 Lukaarlia Drive, Bridgewater, TAS	Matthew Clark Planners	02/12/2025
Dangerous Goods Report 15 Lukaarlia Drive, Bridgewater – Bond Store	Riskon Engineering	15/08/2025
Traffic Impact Assessment	Hubble Traffic	08/2025

Document	Prepared by	Issue
15 Lukaarlia Drive, Bridgewater, TAS		
Architectural Drawings 15 Lukaarlia Drive, Bridgewater, TAS) Project No: 53-2025 Drawing No: A.01 to A.09 [DA-01] Site Plan, Floor Plans, Elevations	Pinnacle Drafting & Design	23/07/2025

2.4 Relevant Fire Engineering Guidelines

The process is generally based on the principles described in Australian Fire Engineering Guidelines (AFEG) (ABCB, 2021), and AS/NZS IEC 31010:2020 Risk Management — Risk Assessment Techniques.

However, this assessment is a stand-alone assessment that sits independently of any documented Performance Solutions. This assessment does not assess against the NCC Performance Requirements

2.5 TFS Bushfire Emergency Planning Guideline

The process follows the principles in the TFS Bushfire *Emergency Planning Guideline* (Tasmania Fire Services, 2021) ensuring compliance with the Tasmanian Planning Scheme and Building Act. It involves developing an Emergency Management Strategy that evaluates factors like occupancy, site vulnerability, bushfire protection, and firefighter access, with a risk analysis to achieve a tolerable risk level.

2.6 Project Stakeholders

The project stakeholders are listed below:

TABLE 3 **Design Team Stakeholders**

Contact	Organisation	Role
Jason Nickerson	Pinnacle Drafting & Design	Client
		Building Designer
Matthew Clark	Matthew Clark Planners	Planner / Bushfire Assessor
Michael Dobbs	DDEG	Fire Safety Engineer

TABLE 4 **Regulatory Authority and Referral Agency Stakeholders**

Contact	Organisation	Role
Lee Tyers	Lee Tyers Building Surveyors	Relevant Building Surveyor
Suzie Gifford	Tasmania Fire Service (TFS)	Fire Brigade

2.7 Report Limitations

The following limitations are applicable with respect to the Bushfire Management Plan undertaken in this report:

- The report is limited to the evaluation of the Bushfire Emergency Management Strategy (Hazardous Use) of the development under the C13.0 Bushfire-Prone Areas Code and associated Acceptable Solution and/or Performance Criteria. With the exception of these proposed Acceptable Solution and/or Performance Criteria, all other aspects of the development are to comply with other regulatory requirements and NCC.
- Any change in building, occupant or fuel/vegetation conditions from those considered in this report, or any deviations outlined in this report, may result in outcomes not anticipated by the proposed strategy and should be reviewed.
- Evaluation of the expected level of fire induced property damage with respect to the contents and building structure is specifically excluded.
- The recommendations, data and methodology documented in this evaluation are based on the listed documentation and specifically apply to the development and must not be utilised for any other purpose. Any modifications or changes to the development, bushfire safety management system, or building usage from that described may invalidate the findings of this evaluation necessitating a re-evaluation.
- It should be noted than compliance with this document, or with AS3959 (Australian Standards, 2018) is not a guarantee survival of the building from bushfire attack under all circumstances. It is strongly recommended occupants evacuate the property to a safe location prior to a bushfire attack. For further advice, refer to TFS Bushfire Prepare to Survive Booklet (Tasmania Fire Service, 2024).
- Arson has been shown statistically to contribute to fire. This report has addressed the incidence of minor forms of arson as a single ignition source. However major arson involving accelerants and/or multiple ignition sources are beyond the scope of this evaluation and have been excluded.
- Reports marked 'Not for Construction' may be subject to change and are not released as final reports. DDEG accepts no liability pending release of the final version of the report.
- The design concepts outlined in this report are for a complete and operational building and do not address protection of the building during construction, renovation or demolition.
- Any change in building, occupant or fuel conditions from those considered in this report, or any deviation from the implementation of the fire safety strategy outlined in this report, may result in outcomes not anticipated by the proposed strategy and should be reviewed.
- Evaluation of the expected level of fire induced property damage with respect to the contents and building structure is specifically excluded.
- The recommendations in this evaluation are based on information provided by others. DDEG has not verified the accuracy and/or completeness of this information and accepts no responsibility or liability for any errors or omissions which may be incorporated into this evaluation as a result.
- The recommendations, data and methodology documented in this evaluation are based on the listed documentation and specifically apply to the subject building and must not be utilised for any other purpose. Any modifications or changes to the building, fire safety management system, or building usage from that described may invalidate the findings of this evaluation necessitating a re-evaluation.
- All equipment, services and measures specified in the Trial Design or Required Fire Safety Measures described in this report or as required by the NCC DTS Provisions and not described in this report must be commissioned and maintained to their required standard of operation at the time of commissioning in accordance with the applicable maintenance standard or procedure.
- DDEG incorporates all practical efforts in producing a fire safety strategy in accordance with NCC requirements and client's brief. It must be recognised that fire is a complex and variable phenomenon and that a fire may occur during the life of the building which may result in injury, death or property loss.

3 Principal Site and Building Characteristics

3.1 General

The building and occupant characteristics described below are informative only. The information is based on referenced documentation and is current at the time of writing this report. It is not intended to restrict or limit the design and is subject to clarification or change as the design develops.

3.2 Building Characteristics

The proposed development comprises three (3) new warehouses, with Warehouse 2 containing seven (7) bond storage units, along with associated vehicle parking, loading areas, and landscaping. The works will be delivered over three stages, with Stage 1 currently under construction under a separate approval.

The bond store, located in Warehouse 2, is classified as a hazardous use due to the manifest quantities of alcohol stored whisky barrels. This triggers the application of Clause C13.5.2 (Hazardous Uses) of the Tasmanian Planning Scheme.

TABLE 5 **Building Parameters**

NCC Parameter	Description
Occupancy	Warehouse, Processing Facility
NCC Classification	Class 7b, Class 8
Rise in Storeys	1
Number of Storeys Contained	1
Effective Height	0m
Type of Construction	Type C
Allotment Size	1.43ha
Local Government Area	Brighton Council
Zoning	General Industrial (east, south-east, north-west) Rural Living Zone A (south) Rural Zone (west)
Title Reference	186550/1
Special Occupancy Considerations	Hazardous Use

3.3 Hazardous Materials

The site includes a dedicated whisky storage building (Warehouse 2) that accommodates manifest quantities of flammable liquids (Class 3 Dangerous Goods). The storage of whisky in these volumes triggers the classification of the site as a Hazardous Use under the Bushfire-Prone Areas Code and a Manifest Quantity Workplace under the Work Health and Safety Regulations 2012 (Tas).

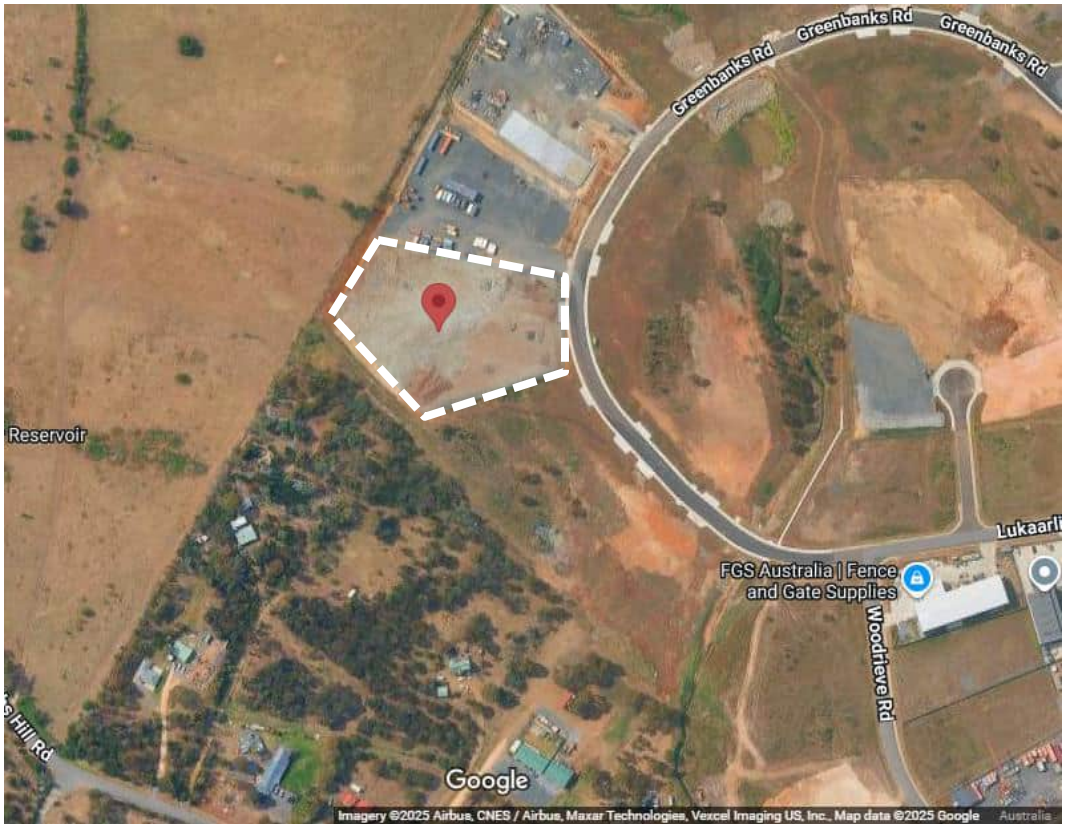
Whisky barrels are stored within the warehouse under conditions consistent with bulk flammable liquid storage. The quantities exceed the threshold levels specified in Schedule 11 of the WHS Regulations, requiring placarding, manifest preparation, and emergency information to be made available to the Tasmania Fire Service and WorkSafe Tasmania.

These hazardous materials present an elevated bushfire and general fire risk due to their flammability, stored volume, and potential contribution to fire intensity. Further details on hazardous materials, storage arrangements, and manifest obligations are provided in Appendix B.

3.4 Site & Building Location

The buildings will be located at 15 Lukaalria Drive, Bridgewater, TAS as shown in the figure below.

FIGURE 1 **Aerial Image of Site (Google Maps)**



The Fire Brigade entry will be from Lukaarlia Drive. The three (3) closest fire stations and their expected response times to the site are provided in Appendix A.

3.5 Site Plan

The site and building layout is shown in the following figures.

FIGURE 2 Site Plan

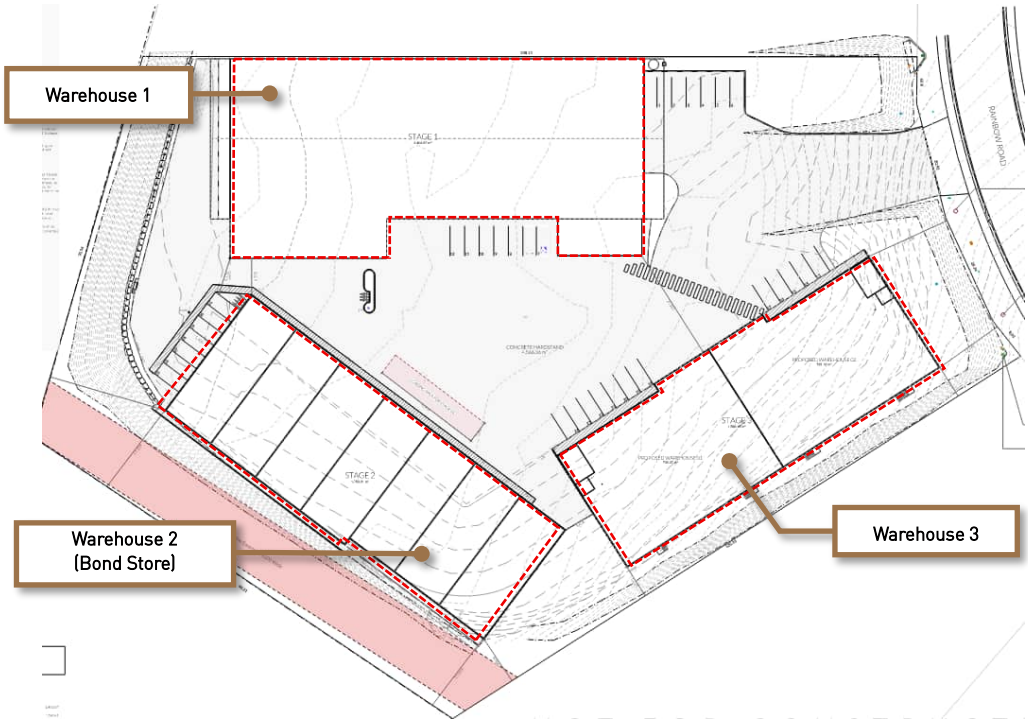


FIGURE 3 Stage 2 | Warehouse 2 (Bond Store)

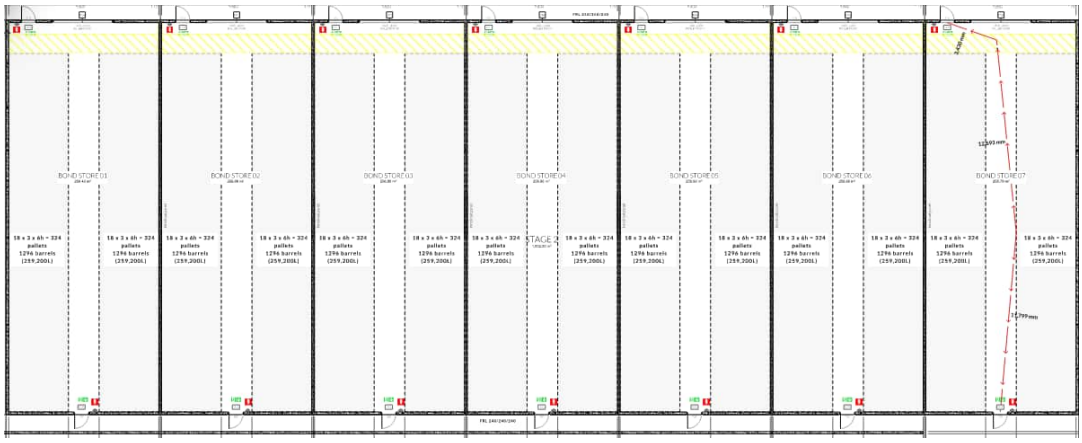


FIGURE 4 **Stage 3 | Warehouse 3**

4 Occupant Characteristics

The subject site accommodates a small and predictable population throughout the year due to its low-intensity operational model and classification as a hazardous use facility. Occupants include permanent staff involved in warehouse operations, maintenance contractors, and occasional visitors such as prospective purchasers.

Warehouse 2, which contains the bond store, holds manifest quantities of flammable liquids (alcohol) in whisky barrels. The presence of these hazardous materials influences the site's bushfire risk profile, as alcohol is a flammable liquid that may intensify fire behaviour if impacted by ember attack or direct flame contact. While Warehouses 1 and 3 are non-hazardous Class 7b buildings, their proximity to Warehouse 2 and the shared site access require their inclusion in bushfire emergency planning.

For bushfire emergency planning purposes, occupants are broadly categorised as:

- Permanent Staff (warehouse operators).
- Maintenance Contractors.
- Occasional Visitors (prospective purchasers, inspectors).
- Delivery Personnel.

Given the site's hazardous use classification and the potential for bushfire impacts, evacuation procedures must address:

- Varying levels of site familiarity among occupants.
- The presence of hazardous materials that may exacerbate fire behaviour or create secondary hazards.
- The need for rapid evacuation in response to ember attack, radiant heat, or direct flame contact.

These considerations are integrated into the bushfire emergency planning process to ensure life safety, minimise property damage, and reduce the potential for hazardous material involvement in a bushfire event.

4.1 Permanent Staff

Permanent staff have a limited on-site presence, attending the site approximately once per month to rotate whisky barrels and periodically to host prospective purchasers. When present, staff are typically of working age (15–65) and physically capable of rapid evacuation.

Due to the infrequent occupancy, staff are not expected to conduct extended emergency coordination duties during a bushfire event. Instead, their role focuses on:

- Self-evacuating promptly upon receipt of bushfire warnings or when visual cues indicate risk.
- Providing immediate direction to any contractors, delivery personnel, or visitors who may be on site at the same time.
- Where safe to do so, securing hazardous materials storage areas in Warehouse 2 before departure.

Given the site's minimal day-to-day population, the Bushfire Emergency Management Strategy prioritises early warning systems, remote notification, and pre-planned site shutdown measures over on-the-ground coordination.

4.2 Maintenance Staff and Contractors

Maintenance contractors attend the site infrequently for scheduled servicing of buildings and equipment. When present, they may be working inside or outside and are unfamiliar with bushfire evacuation routes or hazardous goods procedures.

Their role in a bushfire event is limited to:

- Following the instructions of permanent staff if present.
- Evacuating immediately upon receipt of bushfire warnings.
- Ceasing any high-risk activities (e.g., hot works) during declared elevated fire danger days.

Given their intermittent presence, bushfire safety relies on advance scheduling to avoid attendance on catastrophic or extreme fire danger days.

4.3 Occasional Visitors (Prospective Purchasers, Inspectors)

Occasional visitors, such as prospective purchasers or inspectors, attend the site infrequently (typically only a few times a year). They have no prior familiarity with the site layout, bushfire procedures, or the presence of hazardous materials in Warehouse 2. Visits are usually pre-arranged, short in duration, and conducted under staff supervision.

While their overall bushfire exposure is low, occasional visitors rely entirely on staff for situational awareness and guidance if conditions change during their visit. If unaccompanied, site visits should be avoided on declared catastrophic or extreme fire danger days to reduce the risk of exposure. Their safety depends on clear communication, timely decision-making, and the ability to vacate the site quickly if required.

4.4 Delivery Personnel

Delivery drivers attend the site only for short periods to load or unload goods. They are generally unfamiliar with the site layout, bushfire procedures, and the presence of hazardous materials in Warehouse 2. Visits are infrequent and typically involve remaining in designated loading areas, with minimal interaction beyond the delivery process.

Given their brief on-site duration and low visit frequency, delivery personnel have limited exposure to bushfire risk. However, their safety during the bushfire season is influenced by site conditions at the time of arrival, the presence of on-site staff, and the ability to leave promptly if conditions deteriorate.

4.6 Occupant Numbers & Transport

The site operates under a low-intensity workforce model with consistently low daily occupancy. The Stage 2 bond store (Warehouse 2) stores approximately 200 whisky barrels for long-term storage. Operations generate minimal vehicle movements, typically two employee vehicles per month for barrel rotation, with occasional visits from purchasers, inspectors, or delivery drivers.

The Traffic Impact Assessment (TIA) prepared by the Hubble Traffic identified that the planning scheme's 84-space parking requirement is excessive for this operational profile. Parking has instead been provided based on functional demand:

- Stage 1: 12 spaces (as per previous approval).
- Stage 2: 7 shared spaces adjacent to Warehouse 2.
- Stage 3: 12 spaces for two new warehouses (max. 12 staff, 1 space per 2 employees).
- This provides 31 shared spaces across the site, meeting demand and preventing parking overflow.

Vehicle activity includes light vehicles (staff, visitors, <5.5m) and occasional articulated vehicles (19m) for deliveries. All warehouses have 3.5 m clearance roller doors for internal loading/unloading, except Warehouse 2, which has an adjacent external loading area.

For bushfire emergency planning, priorities include:

- Evacuating a small number of vehicles (typically 1–3 for Warehouse 2) quickly.
- Keeping parking/loading areas clear of hazardous material zones.
- Ensuring safe egress for light and heavy vehicles during emergencies.

- Maintaining multiple exit routes to support early, unimpeded evacuation.

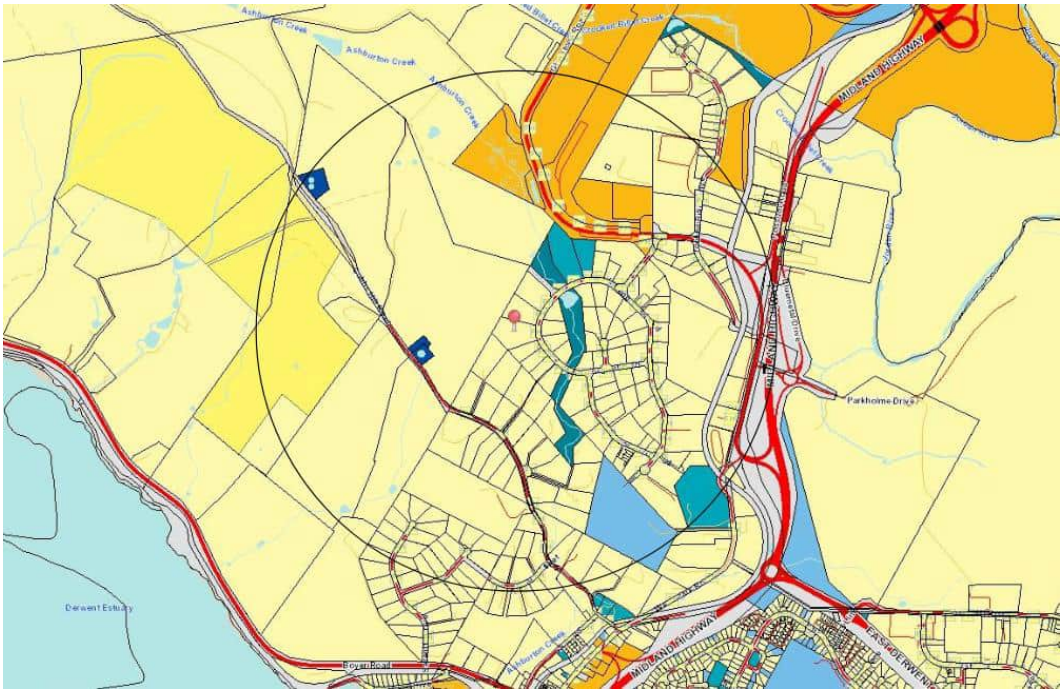
Given the low and predictable traffic profile, early evacuation is the preferred strategy to minimise risk to personnel and avoid hazardous material involvement.

5 Broader Landscape Assessment

5.1 Introduction

The surrounding area is designated as a bushfire-prone area. The Broader Landscape Assessment (BLA) has been conducted as a desktop survey, examining the area surrounding the planning proposal and extending approximately 2km beyond the site. It assesses broader bushfire hazards and emergency management considerations, including vegetation extent, topography, the road network, proximity to townsites and urban areas, and potential evacuation destinations. This evaluation informs strategies to mitigate bushfire risks and enhance emergency preparedness.

FIGURE 5 **BLA Bushfire Prone Areas (LISTmap)**

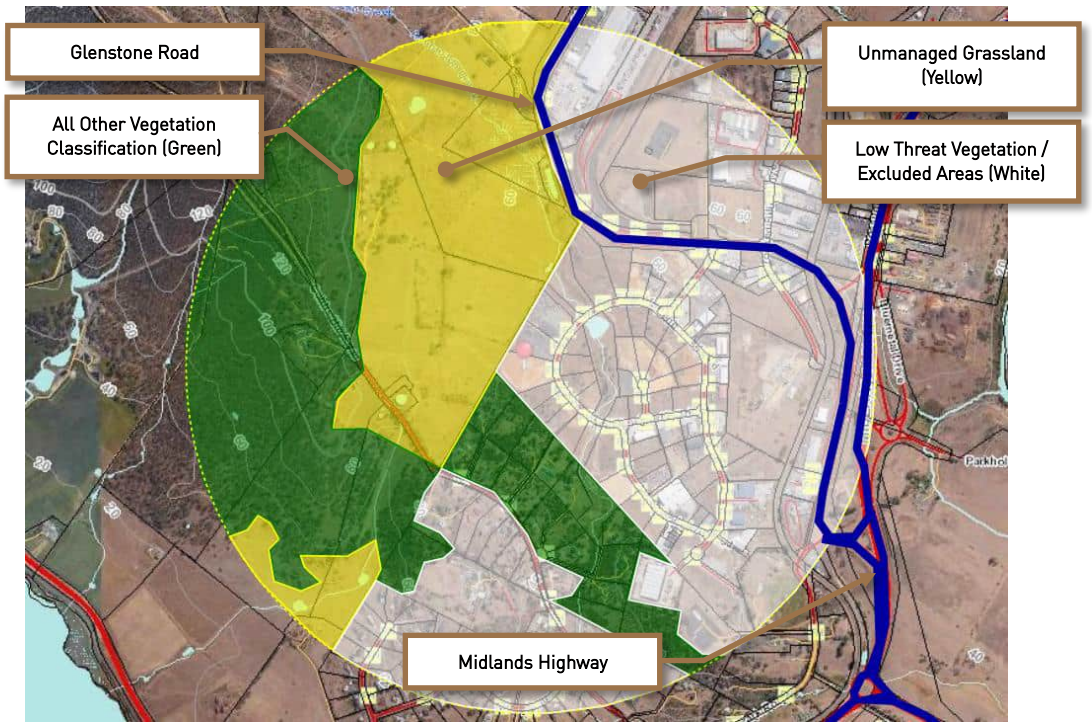


5.2 Site Context

5.2.1 Surrounding Environment

The site is surrounded by a mix of unmanaged grassland, industrial areas, and natural vegetation, including woodland and forest areas, as shown in FIGURE 6.

FIGURE 6 BLA - Classified Vegetation and Road Network



These land types contribute to bushfire risk, especially in the absence of active vegetation management. The unmanaged grassland presents a significant fire fuel load, while the woodland/forested areas pose additional bushfire hazards due to the potential for intense fire behaviour and ember production. The embers generated from these regions could be carried by wind, potentially igniting spot fires in surrounding areas, including the site.

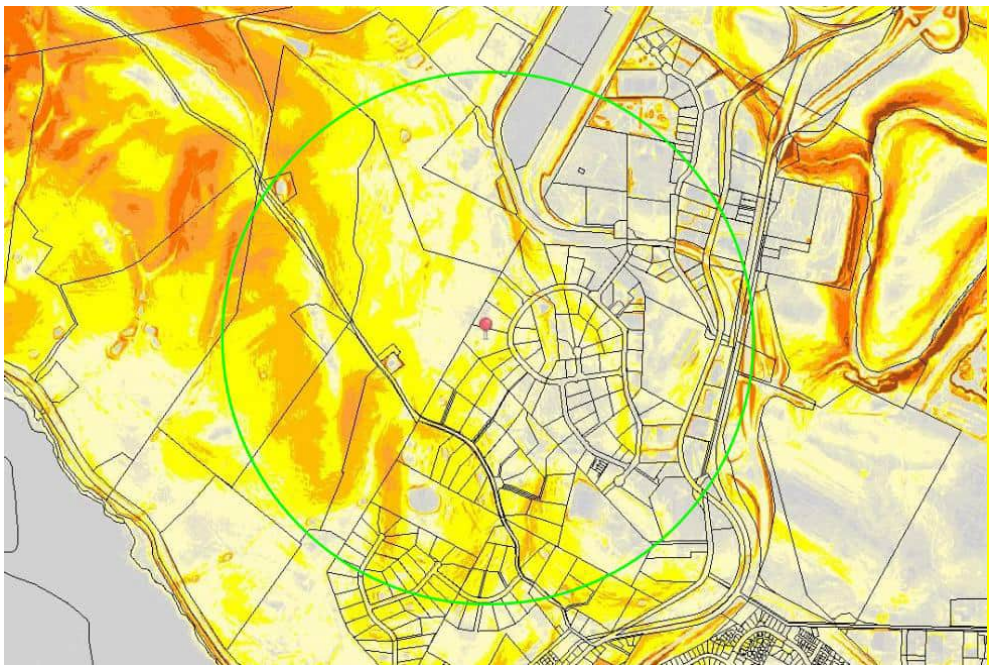
5.2.2 Topography

The immediate areas to the west, northeast, and south of the site are predominantly flat. To the west, the terrain remains mostly level before transitioning into an upslope (6 to 15°), followed by a downslope (6 to 15°), as illustrated in FIGURE 7.

The western sections of the site are particularly vulnerable, as the surrounding woodland/forested areas in this direction are capable of generating more intense fire behaviour and increased ember production.

The site's topography and road network also play an important role in determining the effectiveness of evacuation routes. The suitability of egress options in a fire event is a key factor in the overall risk assessment, as any constraints posed by steep gradients or limited road connectivity may impact evacuation efficiency and response times, influencing the overall fire risk to occupants.

FIGURE 7 BLA Slope (LISTmap)



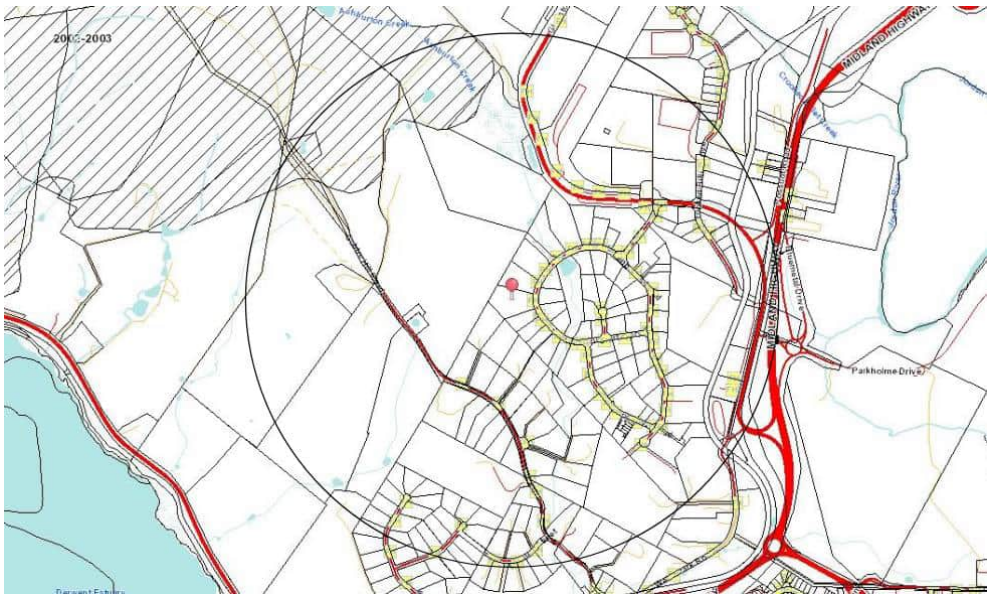
5.2.3 Road Network and Evacuation Routes

Key access routes to the site include Glenstone Road and the Midlands Highway, as shown in FIGURE 6. These are major roads located within low-threat vegetation and provide reliable connections for both emergency response and occupant evacuation. Given their capacity and setting, significant congestion during a bushfire event is considered unlikely. However, as with any evacuation, there remains a residual risk of temporary delays due to increased traffic volumes, reduced visibility, or obstructions on the road network.

5.2.4 Fire History

There is no recorded history of significant vegetation fires within the immediate area of the subject site, indicating that local fire risk has historically been low or effectively managed (refer to FIGURE 8). The most notable regional event was the 2002/03 bushfire season, during which Broadmarsh–Bluff Road fire (recorded by TFS) occurred to the west of the site. While these fires were located some distance from the subject site, they demonstrate the broader regional exposure to major bushfire events under extreme conditions.

FIGURE 8 BLA – Fire History (LISTmap)



6 Emergency Management Strategy

6.1 Introduction

The project involves the staged development of three warehouses, including the construction of a bond store (Warehouse 2) for the long-term storage of whisky barrels, on a site located within a bushfire-prone area. The site is classified as a 'Hazardous Use' under the Tasmanian Planning Scheme due to the presence of manifest quantities of flammable liquids (alcohol) stored in Warehouse 2.

Warehouse 2 contains seven separate bond storage sections accommodating approximately 200 whisky barrels. The volume of alcohol stored exceeds the threshold under Schedule 11 of the Work Health and Safety Regulations, triggering additional emergency management requirements. The presence of these hazardous materials increases the potential intensity and complexity of a bushfire event should the building be impacted.

The development also includes Warehouses 1 and 3, which are classified as Class 7b buildings without hazardous materials. While these present a lower inherent risk profile, their proximity to Warehouse 2 requires their inclusion in the overall bushfire emergency planning framework.

The site operates under a low-intensity, infrequent occupancy model. Permanent staff are on site only periodically for barrel rotation or inspections, with occasional attendance by contractors, delivery drivers, or visitors. This limited presence shapes the emergency management approach, which prioritises early evacuation, remote monitoring, and pre-planned hazard isolation measures over active on-site firefighting or coordination.

6.2 Purpose, Scope & Application

This Bushfire Emergency Management Strategy (Hazardous Use) has been developed in accordance with C13.5.1 A2 / C13.5.2 A2 of the Bushfire-Prone Areas Code under the Tasmanian Planning Scheme (TPS).

Emergency planning is a key risk mitigation for Hazardous Uses, and early consideration of emergency planning is required to ensure that a workable outcome is likely to be achievable.

This Emergency Management Strategy (EMS) has been prepared to demonstrate how risk to occupants will be managed to a 'tolerable' level through contextualised emergency planning responses. It has been prepared in accordance with the compliance framework from Section 4.2.2 of the *TFS Bushfire Emergency Planning Guideline*.

This EMS forms the foundation for a more detailed and site-specific Bushfire Emergency Plan (BEP), which will be developed to support the Occupancy Permit (OP) stage. The BEP will provide operational procedures tailored to the bushfire risk context of the site and will include protocols for site preparation, communication, evacuation, and temporary hold / shelter-in-place (where relevant).

In addition to the bushfire-specific BEP, a Fire Evacuation Plan must be prepared in accordance with the General Fire Regulations 2021 and the Tasmania Fire Service (TFS) Fire Evacuation Plan Guideline (2021). While this Evacuation plan addresses evacuation procedures in the event of general fire emergencies (e.g. internal building fires), it is important that both the BEP and Fire Evacuation Plan are developed in a coordinated manner to ensure:

- Consistent use of assembly areas, communication methods, and signage;
- Clear definition of occupant responsibilities and emergency roles;
- Avoidance of conflicting procedures between bushfire and other fire scenarios.

Together, these emergency planning documents will also support the duties of the Person Conducting a Business or Undertaking (PCBU) under the Work Health and Safety Regulations 2012 (Tas). In

particular, Regulation 43 requires the implementation of emergency plans for all reasonably foreseeable emergencies, including bushfire. These plans must be maintained, tested, and communicated to all relevant staff and occupants.

6.2.1 Bushfire Overview

The referenced Bushfire Hazard Management Report (BHMR) assessed the proposed development against AS 3959:2018 requirements for Bushfire Attack Level (BAL). Warehouse 2, which contains the bond store, is assessed as:

- BAL-29 on the southern aspect due to the proximity of Woodland (Class B) vegetation on downslope terrain.
- BAL-19 on the western aspect due to Woodland (Class B) vegetation on downslope terrain.
- BAL-12.5 on the northern aspect, where Grassland (Class G) on flat terrain.
- BAL-Low on the eastern aspect, where vegetation is classified as low threat.

Warehouses 1 and 3 are located further from classified vegetation, achieving BAL-12.5 or BAL-Low across all aspects.

These BAL ratings reflect the combined influence of vegetation type, topography, and setback from the development footprint. The BAL-29 rating on the southern aspect indicates a moderate to high bushfire exposure, with potential for ember attack and elevated radiant heat levels during a bushfire event. When combined with the hazardous use classification arising from the storage of manifest quantities of flammable liquids (alcohol), this necessitates a high level of bushfire protection measures, early evacuation triggers, and close coordination with emergency services.

6.2.2 Occupant Profile & Emergency Planning Considerations

Emergency planning is informed by the site's occupational profile, as outlined in Section 4 (Occupant Characteristics), which includes a low-intensity, infrequently present workforce comprised of permanent staff, maintenance contractors, occasional visitors, and delivery personnel. The site's classification as a Hazardous Use under the Tasmanian Planning Scheme arises from the storage of manifest quantities of flammable liquids (alcohol) within Warehouse 2.

The bushfire emergency strategy must therefore address both bushfire exposure and the risks associated with hazardous materials involvement, while accommodating the site's operational and occupancy characteristics.

Key considerations include:

- Aligning emergency procedures with the needs of defined workforce cohorts, considering their varying levels of site familiarity and bushfire awareness.
- Implementing early departure protocols during elevated bushfire risk days (e.g., Catastrophic or Extreme Fire Danger Rating), avoiding any attendance at the site where possible.
- Minimising non-essential personnel on site during high-risk periods to reduce exposure and simplify emergency response.
- Prioritising early evacuation over shelter-in-place, given the potential for hazardous material involvement in a fire event.
- Ensuring evacuation routes and assembly areas are located away from hazardous goods storage zones in Warehouse 2.
- Incorporating hazardous materials risk scenarios into emergency drills, signage, and staff training to support informed and rapid decision-making.
- Coordinating bushfire emergency planning with hazardous materials safety requirements under Schedule 11 of the Work Health and Safety Regulations, ensuring consistent communication and response protocols.

- Considering site access constraints, internal road layout, and the movement of both light and heavy vehicles in evacuation planning and coordination with emergency services.
- Establishing clear hazardous goods shutdown procedures, including isolation of storage areas and securing of the bond store where safe to do so.

6.3 Relevant Details (TFS Bushfire Emergency Planning Guideline – Response)

Section 4.2.2(2) of the *TFS Bushfire Emergency Planning Guideline* lists relevant details to be considered. Each item is addressed sequentially in TABLE 6 below.

TABLE 6 **TFS Guidelines – Emergency Management Strategy Requirements**

TFS Criteria	Response
Item 2(a): Occupant Characteristics: Occupancy characteristics (e.g. number of occupants, age profile, disability, mobility and health considerations, communication constraints).	Emergency planning is informed by the site's occupational profile as outlined in Section 4 (Occupant Characteristics) and reflects the defined occupational cohorts including permanent staff, maintenance contractors, occasional visitors, and delivery drivers. Planning accounts for mobility, communication ability, and varying levels of bushfire awareness. Key considerations include: • Small, predictable occupancy — typically 0–4 persons on site at any given time. • Permanent staff attend periodically (monthly barrel rotation, occasional inspections). • Occasional visitors (prospective purchasers, inspectors) generally escorted by staff; if unaccompanied, visits are avoided on Catastrophic/Extreme FDR days. • Maintenance contractors and delivery personnel are transient, often unfamiliar with the site. • Varying site familiarity; permanent staff lead emergency actions when present. • Site classified as Hazardous Use due to manifest quantities of flammable liquids (alcohol) in Warehouse 2. • Evacuation strategy reflects low occupancy and infrequent attendance, enabling simplified emergency response.
Item 2(b): Emergency Management structure: Emergency management structure and capability (e.g. characteristics and capacity of the Emergency Control Organisation (ECO), response and intervention teams).	An Emergency Planning Committee (EPC) will be established in line with AS3745:2010 to oversee emergency planning and appoint an Emergency Control Organisation (ECO). Key elements include: • ECO led by trained staff familiar with site hazards. • Contractors, visitors, and delivery personnel rely on ECO direction when on site. • Role-appropriate inductions for all persons attending site during the bushfire season. • ECO structure scalable to match occupancy (often minimal). • Emergency plan includes coordination with Tasmania Fire Service, informed by hazardous goods profile and site layout. • Drills scaled to occupancy, focusing on rapid evacuation and hazardous goods shutdown where safe to do so.

TFS Criteria	Response
Item 2(c): Building(s) and/or Site Vulnerability The building(s) and/or site vulnerability (e.g. construction, design, access, firefighting water supply, proximity to hazard, landscaping).	Bushfire Exposure The Bushfire Hazard Management Report (BHMR) identifies Warehouse 2 (bond store) as most exposed: BAL-29 (south), BAL-19 (west), BAL-12.5 (north), BAL-Low (east). Warehouses 1 and 3 achieve BAL-12.5 or BAL-Low. Site Characteristics Surrounding areas include paved hardstand, gravel surfaces, and landscaped low-threat vegetation that act as effective fuel buffers. Classified vegetation: Woodland (south/west), Grassland (north). Design & Construction The warehouses are Class 7b/8 buildings and are not required to comply with AS3959 bushfire construction provisions under Clause 2.3.1(1) of the Director's Determination DTS Provisions. Warehouse 2 will store manifest quantities of Class 3 flammable liquids (whisky). It will be designed in accordance with the NCC Deemed-to-Satisfy fire resistance provisions and AS 1940 – Storage and Handling of Flammable and Combustible Liquids. Where discrepancies occur between the NCC and AS 1940, the stricter requirement will apply. Although bushfire construction provisions are not mandated, the southern façade of Warehouse 2 is exposed to BAL-29 conditions. Fire-rated construction elements will therefore be incorporated to address radiant heat and ember attack risks. Final specifications will be confirmed at detailed design stage in consultation with the building surveyor. Access & Firefighting Water Supply Will be provided in accordance with NCC DTS provisions and the AS1940 Dangerous Goods Report or to fire brigade requirements Ongoing Risk Management Regular vegetation management and maintenance of separation distances.
Item 2(d): Bushfire Protection Strategies: Complementary bushfire protection strategies, proposed or existing (e.g. alert systems, suppression systems, training, hazard management);	Details of Recommended Preventative and Mitigation Measures are detailed in TABLE 1.
Item 2(e): Bushfire Scenarios: Possible bushfire scenarios (e.g. nature of the hazard, fire weather, landscape fire risk, fire path, on-site ignition potential).	**Primary Risk** BAL-29 exposure to southern façade of Warehouse 2, with elevated radiant heat and ember attack potential. Other exposures: BAL-19 (west), BAL-12.5 (north), BAL-Low (east). **Hazards** Woodland (south/west), Grassland (north), low-threat buffers (hardstand, landscaping).

TFS Criteria	Response
	Slope/topography
	Woodland (Class B) to the south and west is the primary hazard source. Grassland (Class G) to the north presents an ember and flame spread risk under severe fire weather conditions. Maintained low-threat areas (paved hardstand, gravel, landscaped vegetation) provide some buffering for other aspects of the site
	On-Site Ignition Potential
	The presence of manifest quantities of flammable liquids (alcohol) in Warehouse 2 represents a secondary hazard in bushfire conditions. If compromised, stored alcohol could increase fire intensity and radiant heat output. Mechanical or electrical faults in warehouse plant also present potential ignition sources, particularly during high Fire Danger Rating (FDR) days.
	Scenarios
	• South – BAL-29 elevated intensity fire. • West – BAL-19 ember/radiant heat exposure. • North/North-East – BAL-12.5 ember attack. • On-site ignition near hazardous goods. • Blocked egress (smoke, trees, fire on roadway).
Item 2(f): Primary and contingency bushfire safety options: Primary and contingency bushfire safety options, proposed or existing (e.g. evacuation and shelter options analysis).	**Primary Strategy — Early Evacuation**
	Evacuate all persons from site before fire impact; triggers include Catastrophic/Extreme FDR or notification from TFS. Given low occupancy, evacuation is rapid, typically 1–3 vehicles. Assembly point in Low Threat zone away from hazardous goods storage. ECO (if present) oversees hazardous goods shutdown and ensures all persons accounted for.
	Secondary Strategy — Temporary Shelter-in-Place
	Last resort only; not preferred due to hazardous goods risk. If required, occupants remain at assembly point (eastern side of Warehouse 1) under ECO supervision until safe evacuation possible.
Item 2(g): Fire Brigade Intervention: Firefighter access, firefighting services, and firefighter protection	Fire brigade intervention is anticipated during or after a bushfire event to assist with evacuation or to defend buildings where safe to do so. The site has a single vehicular access point from the public road network, suitable for light and heavy firefighting appliances. Defendable space is achievable for most site buildings; however, it is not possible to establish defendable space between Warehouse 2 and the adjoining Woodland (Class B)

TFS Criteria	Response
	vegetation to the south, in accordance with eh DD for BAL-12.5. This southern interface is assessed at BAL-29. Given this constraint, protection of Warehouse 2 will rely on: • Early evacuation as the primary safety strategy for occupants. • Maintenance of low-threat vegetation and clear zones on all other aspects to enable safe firefighter access and operations.
Item 2(h): Hazardous Materials or Explosives Materials: Likelihood and consequence if hazardous materials or explosives are impacted by fire.	The site includes a hazardous-goods bond store (Warehouse 2) containing manifest quantities of Class 3 flammable liquids (alcohol). While these materials do not increase the severity or behaviour of the external bushfire itself, they do however have the potential to intensify an internal building fire if the structure is compromised. The southern side of Warehouse 2 represents the worst-case bushfire scenario for the site. The Bushfire Hazard Report identifies this boundary as BAL-29 due to the presence of Woodland (Class B) vegetation on downslope terrain (0–5°). Under the Director's Determination – Bushfire Hazard Areas (v1.2), defendable space is defined as achieving a BAL-12.5 separation distance between a building and classified vegetation. At this location, only 12.9m of separation is available and therefore insufficient to meet the BAL-12.5 requirement. As a result, the defendable space is reduced where both high radiant heat and direct flame contact are credible in a bushfire approaching from this direction. A southern woodland fire is expected to produce a short-duration but high-intensity flame front, followed by sustained ember attack. The peak external impact duration is typically measured in minutes to tens of minutes. Importantly, this bushfire exposure period is significantly shorter than the 120-minute integrity rating (FRL –/120/30) of the pre-cast wall construction used in Warehouse 2. While FRL ratings are based on the AS1530.4 standard time–temperature curve rather than bushfire conditions, this level of protection provides improved resistance during the bushfire impact period. Should the building envelope be compromised, the event transitions from an external bushfire to an internal building fire involving a large alcohol fuel load. Potential consequences include rapid internal fire growth, increased radiant heat from the structure, and potential structural failure. Firefighting access on the southern side is expected to be constrained, both due to radiant heat from the external bushfire and the limited working area associated with the lack of defendable space. Existing Dangerous Goods controls, (such as FRL rated fire doors and shutters, bunded containment, AS 1940 compliant ventilation, foam-capable hose reels, and the hydrant system capable of 30l/s) reduce the risk of uncontrolled internal fire escalation but do not alter the external bushfire exposure.

6.4 Risk Analysis

Section 4.2.2(3) of the *TFS Bushfire Emergency Planning Guideline* requires a risk analysis in accordance with Section 5 of the Guideline.

TABLE 7 **Risk Analysis**

Item	Detail
Item (a): Potential Bushfire Scenarios	The potential bushfire scenarios are described in TABLE 6 of this document. Bushfire could approach the site from surrounding classified vegetation, with potential to impact buildings, hazardous goods storage (alcohol in Warehouse 2), or egress routes. Scenarios include: • Elevated-intensity fire (BAL-29) from the south impacting Warehouse 2. • Moderate-intensity fire from the west (BAL-19) with ember attack potential. • Ember attack from the north/north-east (BAL-12.5). • On-site ignition from plant or maintenance works during high Fire Danger Rating (FDR) days.
Item (b): The Likelihood of the identified bushfire scenarios	Bushfire occurrence is foreseeable during the operational life of the site, with greatest likelihood between September and April, though unseasonal fires may occur. Under prevailing bushfire weather, a fully developed fire is most likely to approach from the south-west through to the north-west. In such scenarios, Warehouse 2 may be exposed to radiant heat flux consistent with **BAL-29** (≤29 kW/m²) and ember attack. The hazardous goods store faces higher exposure due to limited separation on the southern interface. Overall likelihood is moderated by: • Low site occupancy, • Early evacuation protocols, and • Low-threat surroundings on other aspects.
Item (c): The possible consequences for occupants and assets	**Life safety** Potentially severe if evacuation is delayed or if the bond store is compromised, as stored alcohol could intensify fire behaviour. **Assets** Potential loss of Warehouse 2, damage to adjacent structures, and loss of stored product. Alcohol storage poses a high fire load, and direct bushfire impact could result in total asset loss.
Item (d): Any existing controls that modify the risk	Existing and planned controls include: • Early evacuation strategy based on FDR and TFS warnings. • Hazardous goods (alcohol) isolation procedures. • Exclusion zones around Warehouse 2 hazardous storage marked on site plans. • Assembly point (eastern side of Warehouse 1) in Low Threat vegetation zone, separated from hazardous goods. • Vegetation management to maintain low-threat conditions around non-southern aspects. • Staff training on bushfire risks, evacuation roles, and hazardous goods safety.

Item	Detail
Item (e): Scenario testing for both shelter and evacuation options across a range of bushfire scenarios	**Primary Strategy — Early Evacuation** The preferred and primary strategy for the site is early evacuation. This approach is considered both viable and reliable given the context of the site. The warehouses are directly connected to the main road network, and the very low site occupancy (typically 1 to 3 vehicles) means that all personnel can evacuate quickly and without logistical complications. Each occupant has access to their own transport, enabling a full site departure before fire impact, provided high-risk day protocols are enacted early. On days where the Australian Fire Danger Rating System (AFDRS) forecasts High, onsite work activities must be scheduled to occur early in the day, with all tasks completed and personnel departing the site prior to the onset of peak afternoon fire weather. This early-attendance protocol ensures that the site is vacated before elevated fire danger conditions develop, reducing the likelihood of occupants being onsite when an ignition occurs. On days rated Extreme or Catastrophic, the site will be pre-emptively closed, and no personnel will attend. Scenario testing demonstrates that early evacuation is an appropriate measure across a range of bushfire exposures. • To the south, the site is subject to BAL-29 conditions, with elevated radiant heat and ember attack. Under these circumstances, proactive evacuation ensures occupants leave before fire conditions develop. • To the west, the site faces BAL-19 exposure, with moderate ember and radiant heat activity. Again, timely departure removes the risk of occupants being present during fire impact. • To the north and north-east, ember attack at BAL-12.5 represents a relatively low intensity exposure, but the evacuation strategy still ensures that no one remains on site during hazardous conditions. In the event of on-site ignition near hazardous goods, immediate evacuation is mandatory due to the potential for rapid escalation associated with flammable liquid storage. Even the possibility of blocked egress, caused by smoke, or fire across the roadway, is best addressed by activating evacuation protocols early so that departure occurs before these obstructions arise. **Secondary Strategy — (Temporary External Refuge / Assembly Area) (Fallback Only).** If circumstances prevent safe evacuation (e.g. short-term road blockage or sudden ignition preventing immediate departure), a single fallback location is nominated. This is not a shelter for bushfire survival—only a temporary assembly area until evacuation can safely resume. If immediate evacuation cannot occur, the EMS identifies a single, consolidated temporary refuge point that is safe across all plausible directional bushfire exposures. This location is the open carpark area on the eastern side of Warehouse 1, where

Item	Detail
	the building provides effective shielding and clear visibility is available across the site. This location is the primary fallback assembly area because it: • Is leeward under the highest-risk southern (BAL-29) exposure. • Is low-threat under AS 3959 and the Director's Determination. • Provides substantial shielding from radiant heat due to the mass of Warehouse 1. • Maintains maximum separation from hazardous materials stored in Warehouse 2 (bond store). • Offers a large, flat, open hardstand with clear sightlines toward all approach directions. • Ensures unobstructed vehicle manoeuvring space for evacuation once conditions permit. Directional threat analysis confirms: • Southern Threat (BAL-29 Woodland, downslope). The eastern carpark behind Warehouse 1 is structurally and spatially shielded from the southern interface. Warehouse 1 forms a barrier to radiant heat and flame contact. This is the safest on-site location if evacuation is briefly delayed. • Western / South-Western Threat (BAL-19 Woodland). Warehouse 1 again provides solid western shielding. The eastern carpark avoids exposure from the west and maintains clear access to the egress route. • Northern / North-Eastern Threat (BAL-12.5 Grassland). Northern exposures present low-intensity ember attack. The eastern carpark is already situated in the lowest-threat part of the site and remains suitable for short-term refuge. • North-Western Wind-Driven Fire (predominant NW winds).Under a NW wind, fire and smoke may track towards the south-east. The eastern side of Warehouse 1 remains leeward, protected, and separated from hazard zones. • Hazardous Materials Scenario. If ignition occurs in Warehouse 2, occupants must move away from the bond store, and the eastern carpark behind Warehouse 1 provides the maximum separation from hazardous-goods risks.

Item	Detail
	FIGURE 9 Assembly Point  The bond store (Warehouse 2) — are not suitable or designated for shelter-in-place during a bushfire. The EMS does not propose or rely on sheltering inside buildings under any circumstances. **Consideration of Other Tenancies (Warehouses 1 and 3)** This Emergency Management Strategy applies specifically to operations within Warehouse 2. Warehouses 1 and 3 are separately tenanted, and each tenant is responsible for maintaining emergency procedures consistent with Work Health and Safety legislation. However, during a bushfire event, all persons present within the site boundary are subject to the same external bushfire exposure and egress constraints. It is therefore assumed that occupants of Warehouses 1 and 3 will also evacuate when early evacuation triggers are activated. The carpark assembly area (east of Warehouse 1) and the primary egress route to the public road are suitable for use by all site occupants. Coordination between tenants is encouraged but remains outside the direct scope of this EMS.

6.5 Proposed Emergency Management Responses

Section 4.2.2(4) of the *TFS Bushfire Emergency Planning Guideline* requires that the proposed emergency management responses be determined.

In response to the risk analysis, the bushfire emergency plan will include actions relevant to all stages of future bushfire emergencies. The proposed strategies outlined in this section have been prepared in consultation with the Emergency Control Organisation (ECO).

The following emergency management responses have been developed to address the risks identified in the bushfire risk analysis and reflect the operational characteristics of the site.

6.5.1 Prevention

Prevention strategies focus on reducing ignition potential and ensuring that personnel are not present on-site during periods of unacceptable bushfire risk. The following procedures will be implemented:

- Establishing pre-defined evacuation triggers aligned with Extreme and Catastrophic Australian Fire Danger Ratings (AFDR), and proximity of uncontrolled bushfires.
- Implementing early site closure and hazardous goods isolation protocols for Warehouse 2, including securing the bond store and shutting down non-essential plant and equipment.
- Ensuring all staff are trained in site shutdown and evacuation roles, including direction of contractors, visitors, and delivery drivers.
- Utilising early warning systems such as TFS alerts, BOM updates, and local fire watch zones, supported by an ECO-managed escalation framework.
- Conducting bushfire evacuation drills during operational periods to test readiness under both minimal occupancy and peak-attendance scenarios.
- Restricting or prohibiting non-essential visitors and contractors on forecast Extreme or Catastrophic days.
- Maintaining direct communication channels with emergency responders to confirm road network status and coordinate response actions.

6.5.2 Preparedness

Preparedness strategies aim to ensure the site is physically and operationally ready for bushfire conditions and a rapid evacuation. The following actions will be implemented as part of seasonal bushfire readiness:

- Ensuring internal roads and gates remain accessible and clearly signposted, allowing all vehicles to manoeuvre efficiently from operational areas to the assembly point (eastern side of Warehouse 1) and onward to the road network.
- Delivering bushfire and hazardous goods safety training to all staff, tailored to the site's operational model and occupancy profile.
- Maintaining and monitoring Hazard Management Areas (HMAs) around all buildings.
- Relocating or isolating combustible materials (e.g., pallets, bins, crates) away from building perimeters and hazardous goods storage areas before the bushfire season.
- Ensuring all evacuation routes remain unobstructed, with periodic inspections to confirm access for both light and heavy vehicles.
- Supporting the ECO with daily monitoring of fire weather conditions, including on-site briefings when AFDR is High or above, and real-time updates when incidents occur nearby.
- Briefing all visitors and contractors upon arrival, outlining emergency procedures, assembly point locations, and self-evacuation responsibilities.
- Providing targeted staff briefings on forecast High, Extreme, or Catastrophic AFDR days, with updates on evacuation readiness, hazardous goods isolation status, and access/egress conditions.

Pre-emptive procedures will be developed to support the Emergency Control Organisation (ECO) and ensure all site occupants are adequately prepared during periods of elevated bushfire risk. These measures will include:

- Daily monitoring of fire weather conditions and official warnings, including updates from the Bureau of Meteorology (BOM), Tasmania Fire Service (TFS), and local incident reports.
- Early departure planning for any scheduled visitors, with rescheduling of non-essential works.
- ECO confirmation that hazardous goods isolation can be completed quickly if triggers are met.
- Relocation of portable equipment and any remaining combustible materials further from structures.
- Coordination with Tasmania Fire Service to confirm local conditions and advise of potential early site closure

6.6 Response

The proposed bushfire emergency response strategy prioritises early, proactive evacuation of all site personnel to eliminate exposure to bushfire and associated hazardous goods risk. Shelter-in-place is not part of the proposed strategy, and no internal or structural refuge is relied upon. Instead, a temporary holding approach at the designated assembly point may be adopted only if immediate evacuation becomes unsafe due to fire activity or blocked egress routes.

The site's workforce is categorised into four operational cohorts for emergency planning purposes, with tailored evacuation procedures and communication protocols for each.

- Permanent Staff – Site management, warehouse operations, maintenance.
- Maintenance Contractors – Trades or service providers working on site.
- Occasional Visitors – Prospective purchasers, inspectors, or other short-term attendees.
- Delivery Personnel – Drivers delivering or collecting goods.
- Evacuation actions for each cohort are supported by the Traffic Impact Assessment (TIA), which confirms the very low number of vehicles required for site evacuation and outlines manoeuvring capability toward the road network. All evacuation routes are directed toward the east side of Warehouse 1 point, which provides efficient onward connection to the public road network.

Evacuation is triggered by one or more of the following:

- Declaration of 'Extreme' or 'Catastrophic' Fire Danger Ratings under the Australian Fire Danger Rating System (AFDRS), which initiate early shutdown and coordinated evacuation;
- Official emergency warnings or bushfire alerts issued by Tasmania Fire Service (TFS) or relevant emergency services;
- Visible fire activity near the site, including smoke plumes or active bushfire in the surrounding landscape;
- Instruction from emergency services or the Emergency Control Organisation (ECO), based on live situational awareness and prevailing wind/fire behaviour.

In all scenarios, actions are coordinated by the ECO, with clear communication lines between site management, on-site personnel, transport operators, and first responders. Pre-emptive measures, timely transport mobilisation, and wind-aware routing ensure safe removal of all occupants before bushfire conditions escalate.

TABLE 8 to 0 outlines the fire danger rating triggers and corresponding high-level response strategies.

TABLE 8 **Triggers & Actions – Forecast (Preventative)**

Triggers			Actions
Fire Danger Rating	Alert or Rating	Description	High Level Strategy
Moderate	Rating (Forecast)	• No immediate threat, but conditions may change, during Tasmania's bushfire season (September to April). • Bushfire activity possible in wider region, but no local fire behaviour affecting site. • Industrial fringe location with nearby non–bushfire-prone areas suitable for relocation if risk escalates. • Site is on the industrial fringe with nearby low-threat areas and sealed road access. • Monitor TFS and emergency alerts.	**Daily Monitoring (September to April).** • Monitor Tasmania Fire Service (TFS) alerts and emergency warnings daily, increasing vigilance by actively checking the TFS website and TasALERT website/App if the Fire Danger Rating is Moderate or higher. • Check the current day and the following 3 days for forecast conditions. • Review fire danger ratings relevant to the site, with particular attention to the South East region: TFS Fire Danger Ratings • If forecast Fire Danger Rating is High or above (today or next 3 days), initiate readiness checks, pre-alert staff, escalate to management, increase monitoring, and review planned activities.
High	Rating (Forecast)	• Fire Danger Rating is High today or within the next 3 days. • Increased monitoring of TFS alerts and weather conditions is required. • Localised fire risk may emerge under favourable conditions (e.g. wind, dry fuel). • Region-specific concern for evacuation routes. • Site may be impacted by smoke or embers despite no immediate fire threat.	**Increase Monitoring (September to April).** ECO Site Management • Increase monitoring of TFS website, BOM updates, and local alerts every 1–2 hours during peak conditions. • Review current and forecasted conditions (up to 3 days) to inform readiness. • Convene ECO to review situation, confirm ammonia shutdown readiness, and assess potential triggers for early evacuation. • Check site access via Glenstone Road & Midlands Highway for traffic or hazard obstructions. All Cohorts • Increase monitoring of TFS website, BOM updates, and local alerts every 1–2 hours during peak conditions. • Review current and forecasted conditions (up to 3 days) to inform readiness. Permanent Staff

Triggers			Actions
			• Brief the Emergency Control Organisation (ECO). • Confirm hazardous goods building (warehouse 2) isolation and close all doors. • Inspect site perimeter and clear movable combustibles if safe to do so. • Assess evacuation pathways and assembly point access. <u>Visitors/Contractors</u> • Advise of current fire conditions at check-in. • Postpone non-essential works; avoid unnecessary site movement. <u>All Site Management</u> • Escalate to management; consider early decision-making on relocation if fire is tracking toward the site. • Review forecast progression and make timely decisions; prepare for partial or full relocation if required.
Extreme	Rating (Forecast)	• Increased fire activity in the region. • Monitor TFS alerts closely. • Follow recommended actions issued by relevant government agencies and TFS. • The site will be pre-emptively closed and no personnel will attend except for authorised ECO presence implementing evacuation.	**Primary Strategy – Evacuation** <u>ECO Site Management</u> • Emergency Control Organisation (ECO) initiates site-wide readiness checks eve if occupancy is minimal. • Confirm evacuation timing based on local fire behaviour and forecast progression. <u>All Cohorts</u> • All occupants depart site using own vehicles via main road network. • If evacuation is briefly delayed (e.g. temporary obstruction), relocate to the designated temporary external refuge located east of Warehouse 1. • This location is used only as a short-term holding point until safe departure is possible. • **Do not shelter inside buildings or near hazardous storage.** **Secondary Strategy – Temporary External Assembly Area (if evacuation is not viable):** <u>All Cohorts</u> • If evacuation routes are unsafe, relocate to assembly point (east of Warehouse 1) Low Threat zone, away from hazardous goods.

Triggers			Actions
			▪ Remain only until safe departure is possible. Key Actions • Maintain communication with TFS and emergency services. • Confirm personnel headcounts and readiness to evacuate at short notice. • Do not attempt to shelter inside buildings or near hazardous storage.
Catastrophic	Rating (Forecast)	• Shelter-in-Place may become unviable. • Immediate TFS directives expected. • Full pre-emptive site closure applies. No personnel are to attend the site.	**Primary Strategy – Evacuation** ECO Site Management • All 'Extreme' procedures apply with escalation in urgency and sequencing. All Cohorts • All 'Extreme' procedures apply with escalation in urgency and sequencing. • All persons to evacuate site without delay via main road network. **Secondary Strategy – Temporary External Assembly Area (if evacuation is not viable):** All Cohorts As per 'Extreme' rating procedures. Relocate to east of Warehouse 1 only if evacuation is briefly blocked and only until safe departure is achievable.

TABLE 9 **Triggers & Actions – WATCH & ACT – WATCH PHASE (Pre-Impact)**

Triggers			Actions
	TFS Warning	Description	High Level Strategy
Watch & Act' alert issued nearby – fire detected but not yet	Watch & Act (Alert)	Watch & Act (Alert). A fire is active within the district and conditions are changing. The site transitions to	A fire is active within the district and conditions are changing. The site moves to heightened readiness and partial activation of emergency procedures. ECO / Site Management • Monitor TFS and BOM updates every 30–60 minutes.

Triggers			Actions
impacting access routes		heightened readiness and partial activation of emergency procedures.	• Convene ECO; review bond store readiness and possible triggers for early evacuation. • Check Glenstone Road & Midlands Highway for safe egress. • Verify communications and transport availability. • Remove movable combustibles if safe.

TABLE 10 **Triggers & Actions – WATCH & ACT – WATCH PHASE (Impact Imminent)**

Triggers			Actions
	TFS Warning	Description	High Level Strategy
'Watch & Act' alert escalates – fire approaching the site or impacting access routes.	Watch & Act (Alert – Impact Imminent)	Fire is likely to impact the site within 2–6 hours. Immediate evacuation or assembly at the Temporary External Assembly Area may be required	A fire is active within the district and conditions are changing. The site moves to heightened readiness and partial activation of emergency procedures. <u>ECO / Site Management</u> • Initiate evacuation toward the Glenstone Road & Midlands Highway if safe. • Account for all personnel. • If evacuation is unsafe, enact temporary holding at the assembly point (east of Warehouse 1) Low Threat zone, away from hazardous goods. <u>All Occupants</u> • Follow official TFS 'Watch & Act' instructions via the TFS website. • Prepare to evacuate immediately if directed by the ECO or emergency services.

TABLE 11 **Triggers & Actions – WATCH & ACT – WATCH PHASE (Direct Impact)**

Triggers			Actions
	TFS Warning	Description	High Level Strategy
TFS Emergency Warning – fire impacting the site or within 1 km radius	Emergency Warning	Fire is impacting or about to impact the site. Conditions are life-threatening.	<u>All Occupants / ECO</u> • Do not attempt to evacuate unless directed by emergency services. • Maintain contact with TFS via phone or radio. • Remain sheltered until advised safe to exit.

6.7 Recovery

The bushfire emergency plan will specify what needs to occur prior to reopening the site to residents and staff. This will include verification of damage to buildings and identification of any hazards that require mitigation for safety purposes.

The bushfire emergency plan will specify actions to be taken after an emergency to support occupant wellbeing. This will include provision of support for occupants and staff who have been injured or traumatised by the incident.

6.8 Implementation

The strategies outlined in this Bushfire Emergency Management Strategy (EMS) will inform the preparation of emergency planning documentation required to support safe operation of the site under bushfire and general fire conditions.

Given the site's classification as a Hazardous Use under the Bushfire-Prone Areas Code, due to the storage of manifest quantities of flammable liquids (whisky), the emergency framework adopts early evacuation as protective measure in a bushfire. Shelter-in-place will not be relied upon under any scenario.

Emergency procedures will be documented in accordance with the TFS Bushfire Emergency Planning Guideline (2021), the TFS Fire Evacuation Plan Guideline (2021), and relevant legislation, including the General Fire Regulations 2021 and the Work Health and Safety Regulations 2012 (TAS).

Two pathways are available to document these procedures:

Option 1: Consolidated Emergency Evacuation Plan (Bushfire + Internal Fire)

A single Emergency Evacuation Plan may be prepared to integrate both the Bushfire Emergency Plan (BEP) and the Fire Evacuation Plan (FEP). This unified plan must:

- Define evacuation triggers based on fire danger ratings and emergency alerts.
- Outline pre-arranged transport protocols and workforce cohort coordination.
- Detail response measures for both bushfire and internal building fires.
- Ensure consistency in assembly areas, communication systems, and ECO roles.
- Reference WHS requirements for manifest quantity dangerous goods storage.
- Be developed in consultation with the Emergency Planning Committee (EPC) and Tasmania Fire Service (TFS).

Option 2: Separate Bushfire and Fire Evacuation Plans

Alternatively, the operator may prepare:

- A standalone Bushfire Emergency Plan (BEP); and
- A separate Fire Evacuation Plan (FEP) addressing internal fire events.
- Where separate plans are adopted, care must be taken to ensure they are coordinated, with shared elements, such as signage, assembly areas, communication protocols, and ECO responsibilities, clearly aligned to avoid conflicting procedures.

Ongoing Implementation Requirements

- Plans must be developed in consultation with the EPC and TFS.
- Staff and relevant contractors must be trained in line with these procedures.
- Evacuation drills will be conducted periodically to confirm preparedness.

- The finalised documentation must be endorsed by TFS or an accredited person and implemented prior to occupancy.
- Plans must support compliance with Regulation 43 of the Work Health and Safety Regulations 2012 (Tas), which requires emergency procedures for all reasonably foreseeable emergencies.

6.9 Conclusion

This Bushfire Emergency Management Strategy (EMS) has been developed to address the risks associated with the site's classification as a Hazardous Use under the Bushfire-Prone Areas Code, due to the presence of manifest quantities of flammable liquids (whisky).

The strategy adopts early evacuation as the primary protective measure, with no reliance on shelter-in-place as a planned response. Shelter-in-place is recognised only as a last-resort contingency in the unlikely event that evacuation cannot be achieved. Evacuation triggers, workforce coordination protocols, and communication procedures are defined to support safe and timely evacuation before conditions deteriorate, reducing reliance on reactive responses.

This strategy will be carried forward into emergency planning documentation that addresses both bushfire and general fire scenarios. This may be prepared either as:

- A consolidated Emergency Evacuation Plan combining the Bushfire Emergency Plan (BEP) and Fire Evacuation Plan (FEP); or
- Two separate but coordinated plans that align on shared components such as assembly areas, communication systems, and Emergency Control Organisation roles.

In either format, the Emergency Evacuation Plan(s) must be developed in accordance with:

- The TFS Bushfire Emergency Planning Guideline (2021).
- The General Fire Regulations 2021 and the TFS Fire Evacuation Plan Guideline (2021).
- The Work Health and Safety Act 2012 (Tas) and Regulation 43 under the WHS Regulations; and
- The Director's Determination – Bushfire Hazard Areas.

Upon endorsement by the Tasmania Fire Service (TFS) or an accredited practitioner, and once implemented prior to occupancy, the plan(s) will fulfil the requirements of the Bushfire-Prone Areas Code and relevant building permit conditions under the Building Act 2016.

On this basis, it is considered that the strategy provides an acceptable level of performance and meets the relevant acceptance criteria.

7 References

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Tasmania Fire Service. (2024). *Bushfire Safety Guide.* TFS.

Tasmania Fire Services. (2021). *Bushfire Emergency Planning Guideline. A Guide to Planning for Bushfire Emergency.* Hobart: TFS.

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Appendix A Fire Brigade Intervention Response Time

This section will evaluate the fire brigade's ability to respond in the event of a fire occurring in the subject site.

The subject site is located within the jurisdictional area of the Tasmania Fire Service (TFS). The three (3) closest fire stations and their corresponding response time statistics are provided in Table A.1. The Fire Brigade's entry into the building will be from Lukaarlia Drive at Ground Level.

TABLE A.1 Responding Stations & Statistics

Fire Station	Fire Station Address	Distance from Site (km)	Fulltime Staffing
Primary Bridgewater	72 Cowle Rd, Bridgewater TAS 7030	4.1	Career
Supporting Claremont	Main Rd, Berriedale TAS 7011	11.8	Career
Supporting Brighton	Midland Hwy, Brighton TAS 7030	5.5	Volunteer

Based on the most recent statistics published by the TFS for 2017 to 2018, the TFS response time to 50% of cases is about 8 minutes and 90% of cases is about 20 minutes (Tasmania Fire Service, 2018). However, in the context of bushfire-prone areas, response times may be significantly impacted due to competing demand across multiple locations, limited access, and challenging terrain

Further, a Fire Brigade Intervention Model (FBIM) typically indicates that fire fighters will respond from the closest manned fire station in approximately 18-22 minutes for buildings in similar geographic and infrastructure contexts. While these models are calibrated for general response conditions, they may not fully capture the resource constraints experienced during peak bushfire events, where TFS personnel, vehicles, and aerial resources may be deployed elsewhere, and road access may be compromised.

Given these uncertainties, a conservative assumption of a 20 minute response time from ignition remains appropriate. This period accounts for initial detection, mobilisation, and on-site water application to prevent fire spread. However, in bushfire scenarios, actual intervention may be delayed or prioritised based on asset protection levels, life safety, and firefighting capacity during major fire weather days.

Appendix B Hazardous Materials Assessment

B.1 Overview

The whisky storage building (Bond Store) consists of seven (7) bays, each accommodating whisky barrels in bulk storage, as shown in Figure B.1 shows. The total volume stored on-site exceeds 3.6 million litres, well above the *Schedule 11* manifest threshold for Class 3 flammable liquids, classifying the facility as a Manifest Quantity Workplace and a Hazardous Use under the Bushfire-Prone Areas Code.

The hazardous material stored is whisky, an ethanol solution typically ranging from 40–70% ABV, which is classified as a Class 3 Flammable Liquid. It is held in wooden barrels, which themselves are combustible and increase the overall fuel load. The primary risks associated with this storage are its high flammability, the potential for ethanol vapour release and ignition, and the significant contribution to fire intensity and duration in both bushfire and internal fire scenarios.

Table B.1summarises the volume of liquid stored on site.

FIGURE B.1 **Warehouse 2 (Bond Store)**

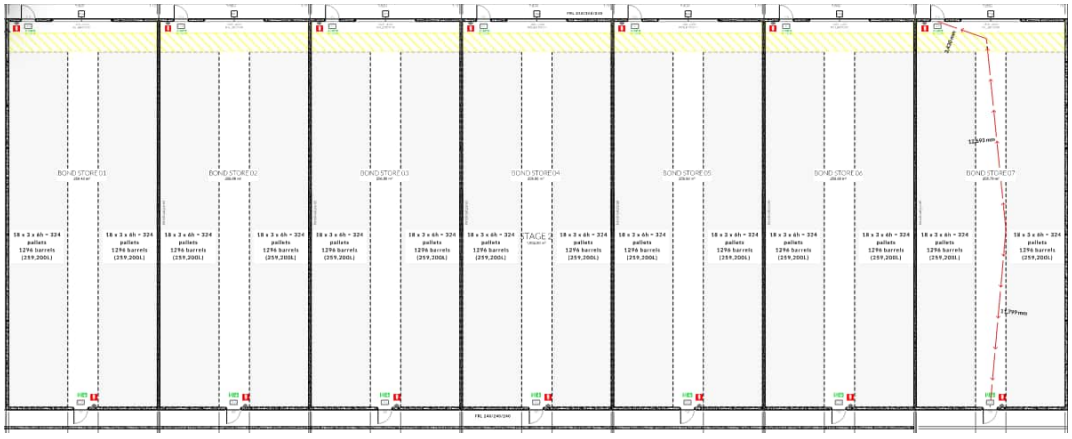

TABLE B.1 **Volume of Liquid (Source: DA Plans)**

Bond Store	Floor Area (m²)	Approx. Storage Volume (L)
01	259.43	518,400L
02	256.86	518,400L
03	256.86	518,400L
04	256.86	518,400L
05	256.86	518,400L
06	256.86	518,400L
07	258.79	518,400L

B.1.2 Emergency Planning and Bushfire Context

Given the manifest quantities of whisky stored on site, the facility is classified as a Hazardous Use. In a bushfire scenario, the whisky bond stores represent a critical vulnerability due to:

- Significant on-site fuel load increasing fire intensity.
- Potential for rapid flame spread and sustained burning from ethanol.
- Vapour release from barrels, increase in ignition risk.

Emergency planning includes:

- Early evacuation as the primary protective measure, with no reliance on shelter-in-place except as a last-resort contingency.
- Placement of outer warning placards at site entry and Class 3 location placards at each bond store.
- Preparation and maintenance of a hazardous chemicals manifest, including inventories and emergency information cabinet accessible to TFS.
- Coordination with the Tasmania Fire Service (TFS) to confirm site access, hydrant provision, and pre-incident response protocols.

APPENDIX E

Dangerous Goods Report

Riskcon engineering

Dangerous Goods Report

15 Lukaarlia Dr, Bridgewater – Bond Store

Pinnacle Drafting and Design Pty Ltd
Document No. RCE-25397_15LukaarliaDr_DG_Draft_15Aug25_Rev(A)
Date 15/08/2025

Dangerous Goods Report

15 Lukaarlia Dr, Bridgewater – Bond Store

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Quality Management

Rev	Date	Remarks	Prepared By	Reviewed By
A	15th August 2025	Draft issue for comment	Chris Butson	Renton Parker

Executive Summary

Background

Pinnacle Drafting and Design Pty Ltd (Pinnacle) is assisting a client develop a warehouse which will used as several bond stores at 15 Lukaarlia Dr in Bridgewater, Tasmania. The bond stores will store ethanol which is classified as a flammable liquid; hence, the storage is subject to the Work Health and Safety Regulation 2012 (Ref. [1]) which requires the risks to be associated with the storage and handling of dangerous goods (DGs) to be minimized So Far As Is Reasonably Practicable (SFAIRP). Demonstrating SFAIRP design may be achieved by complying with an applicable design standard which for flammable liquids is AS 1940:2017 (Ref. [2]).

Pinnacle has engaged Riskcon Engineering Pty Ltd (Riskcon) to prepare a DG assessment of the new facility to ensure compliance with the applicable DG standards and thus the Regulations. This document represents the assessment of the warehouse and bond stores located at the 15 Lukaarlia Dr in Bridgewater, TAS.

Conclusions

A review of the quantities of whisky (60% ABV) to be stored at 15 Lukaarlia Dr in Bridgewater, TAS was conducted to provide design guidance and ensure the storage areas comply with the applicable standard. The Bond Stores were assessed using applicable parts of AS 1940:2017 (Ref. [2]) and the requirements for separation distances, firewalls, ventilation, fire protection and general design were provided.

A report was developed to assist the project team to design the DG storages with the aim of minimising the risk of the storages as required by the WHS Regulations 2022 (Ref. [1]). It is concluded that if the advice documented in this report is followed the Bond Stores and threfore proposed devleopment will comply with the standard anb WHS Regulations.

Recommendations

The following recommendations have been made for the facility:

- Ensure fire doors and RSDs have an FRL of at least -/120/30.
- Separating walls between Bond Stores to be taken through main roof by at least 0.5 m.
- Spillage containment of at least 68.6 kL to be provided per Bond Store.
- Mechanical ventilation should be provided in accordance with the requirements of AS 1940:2017.
- Provide hose reels with foam capabilities to reach all parts of the store.
- Hydrant flow for the site to be capable of 30 L/s in addition to the requirements of AS 2419.1.

Based on the quantity of DGs stored at the warehouse, the site will be a manifest site, therefore the following is required to comply with the WHS Regulations:

- A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical.
- A DG Risk Assessment of the storage and handling area.
- A Placard Schedule.

- A Manifest of Hazardous Chemicals.
- A notification to the Regulator.
- An Emergency Plan.
- A Hazardous Area Classification (HAC).
- Hazardous Area Verification Dossier (HAVD).

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Abbreviations

Abbreviation	Description
ABN	Australian Business Number
ABV	Alcohol By Volume
ADG	Australian Dangerous Goods (Code)
AS	Australian Standard
CBD	Central Business District
DG	Dangerous Good
FRL	Fire Resistance Level
HAC	Hazardous Area Classification
HAVD	Hazardous Area Verification Dossier
MHF	Major Hazard Facility
NZS	New Zealand Standard
PCBU	Person Conducting A Business of Undertaking
PG	Packing Group
SDS	Safety Data Sheet
SFAIRP	So Far As Is Reasonably Practicable
WHS	Work Health and Safety

1.0 Introduction

1.1 Background

Pinnacle Drafting and Design Pty Ltd (Pinnacle) is assisting a client develop a warehouse which will used as several bond stores at 15 Lukaarlia Dr in Bridgewater, Tasmania. The bond stores will store ethanol which is classified as a flammable liquid; hence, the storage is subject to the Work Health and Safety Regulation 2012 (Ref. [1]) which requires the risks to be associated with the storage and handling of dangerous goods (DGs) to be minimized So Far As Is Reasonably Practicable (SFAIRP). Demonstrating SFAIRP design may be achieved by complying with an applicable design standard which for flammable liquids is AS 1940:2017 (Ref. [2]).

Pinnacle has engaged Riskcon Engineering Pty Ltd (Riskcon) to prepare a DG assessment of the new facility to ensure compliance with the applicable DG standards and thus the Regulations. This document represents the assessment of the warehouse and bond stores located at the 15 Lukaarlia Dr in Bridgewater, TAS.

1.2 Objectives

The objectives of the study are to provide a design document for the bond store to assist the project team to design a compliant DG storage.

1.3 Scope of Services

The scope of work is to prepare a DG design assessment of the bond stores at the site located at 15 Lukaarlia Dr in Bridgewater. The assessment does not include any other sites nor additional work which may be identified in the course of the assessment.

2.0 Methodology

The following methodology was used:

- The preliminary layouts were reviewed to identify the classes and quantities that will be stored within the distillery and bond stores.
- The applicable design standards were identified based upon the class review.
- The design requirements for the storages were detailed to assist the project team.
- A draft report was submitted to the project team for review and comment with comments incorporated into the final document.

3.0 Site Description

3.1 Site Location

The site is located at 15 Lukaarlia Dr in Bridgewater, TAS which is approximately 24 km north of the Hobart Central Business District (CBD). **Figure 3-1** shows the regional location of the site in relation to the Hobart CBD.

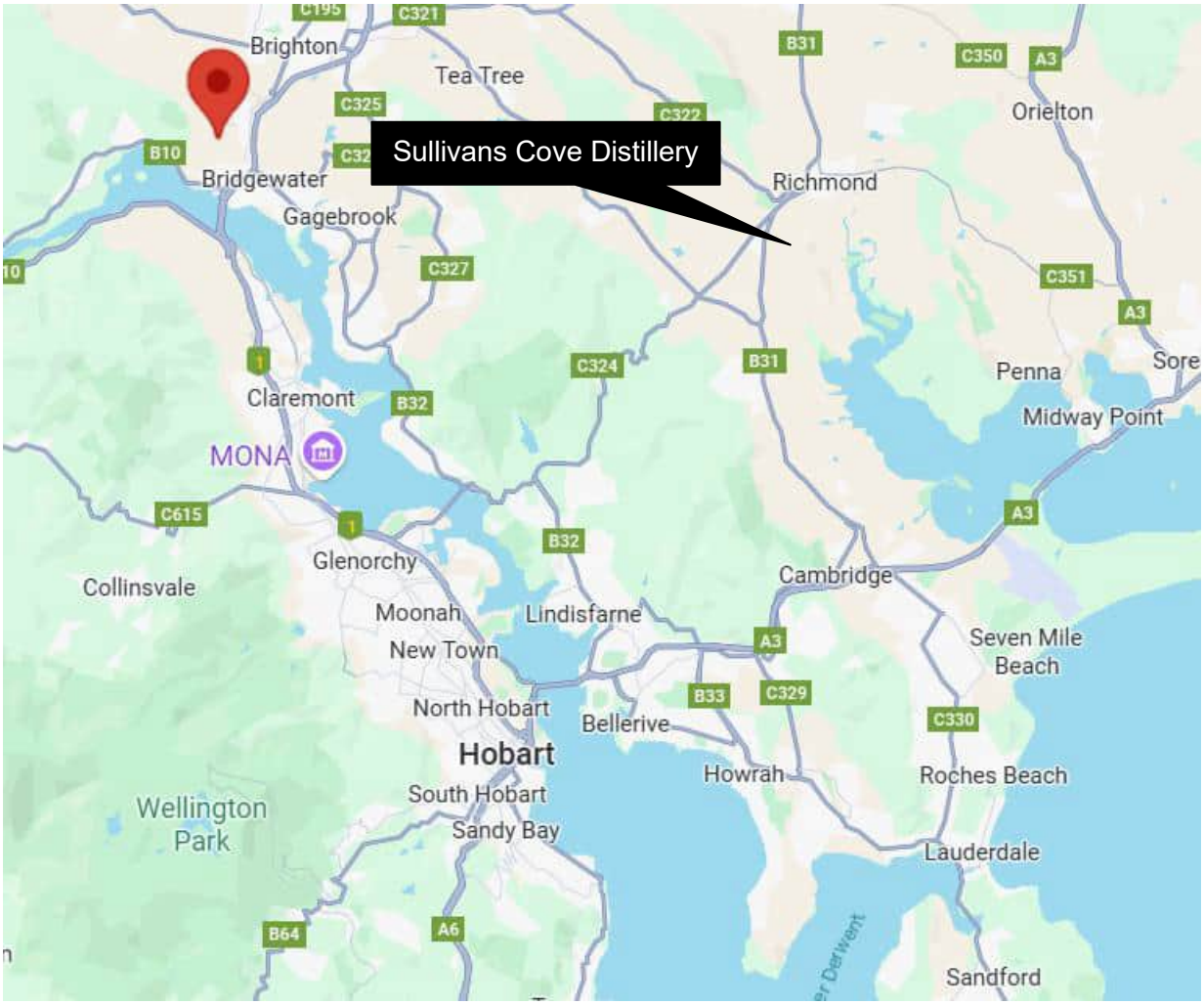


Figure 3-1: Site Location

3.2 Site Description

The entire development includes the construction of three (3) warehouses over three stages which are shown in **Figure 3-2**:

- Stage 1 – Steel manufacturing plant
- Stage 2 – Bond store(s)
- Stage 3 – General warehousing (storage)

This document provided design information for the Bond Stores. The Stage 2 warehouse will be designed to house seven (7) identical Bond Stores which will be fire separated compartments with fire rated wall having FRL 240/240/240. The layout of the Bond Stores is provided in **Figure 3-3**.

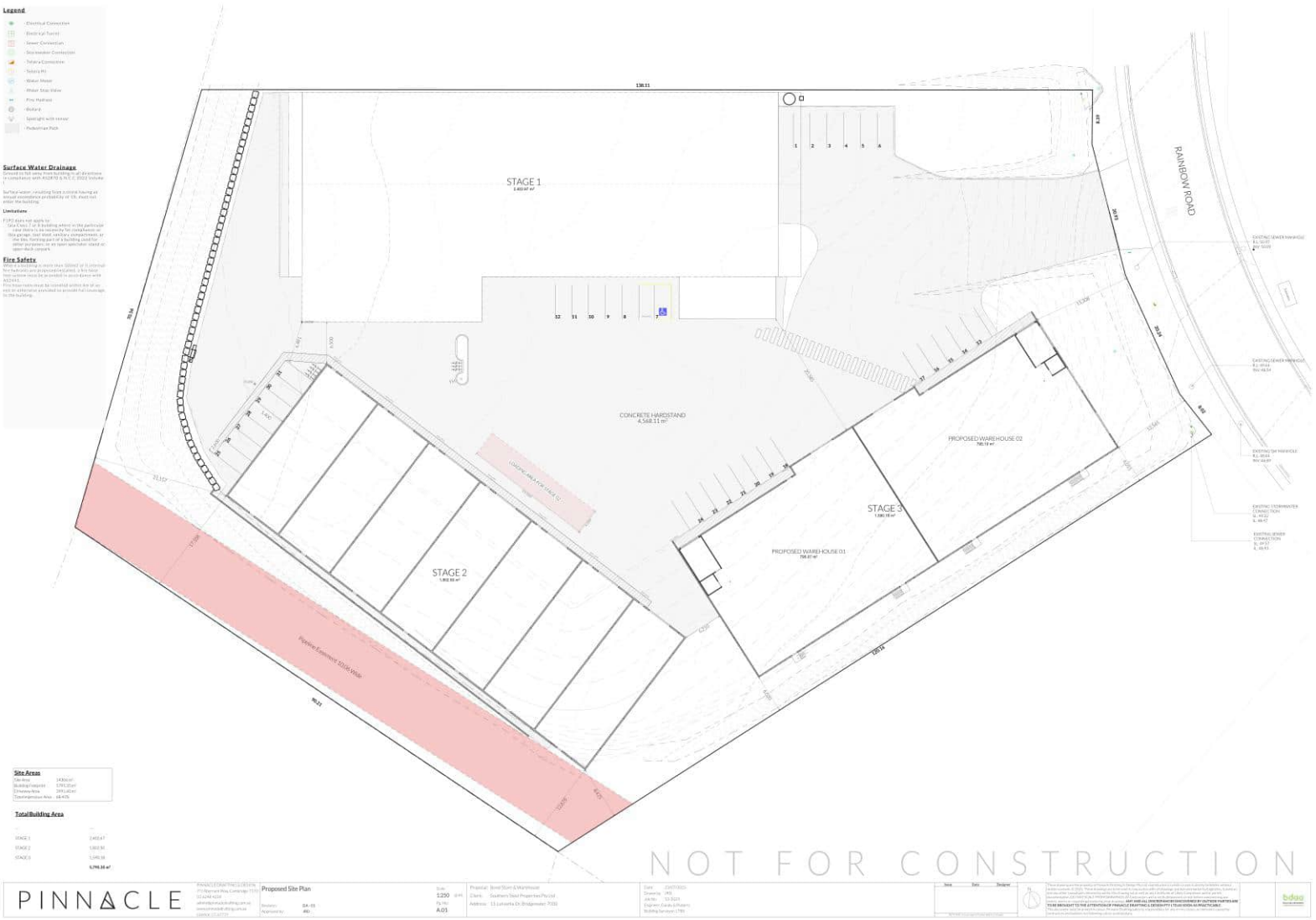


Figure 3-2: 15 Lukaarlia Dr Site Layout

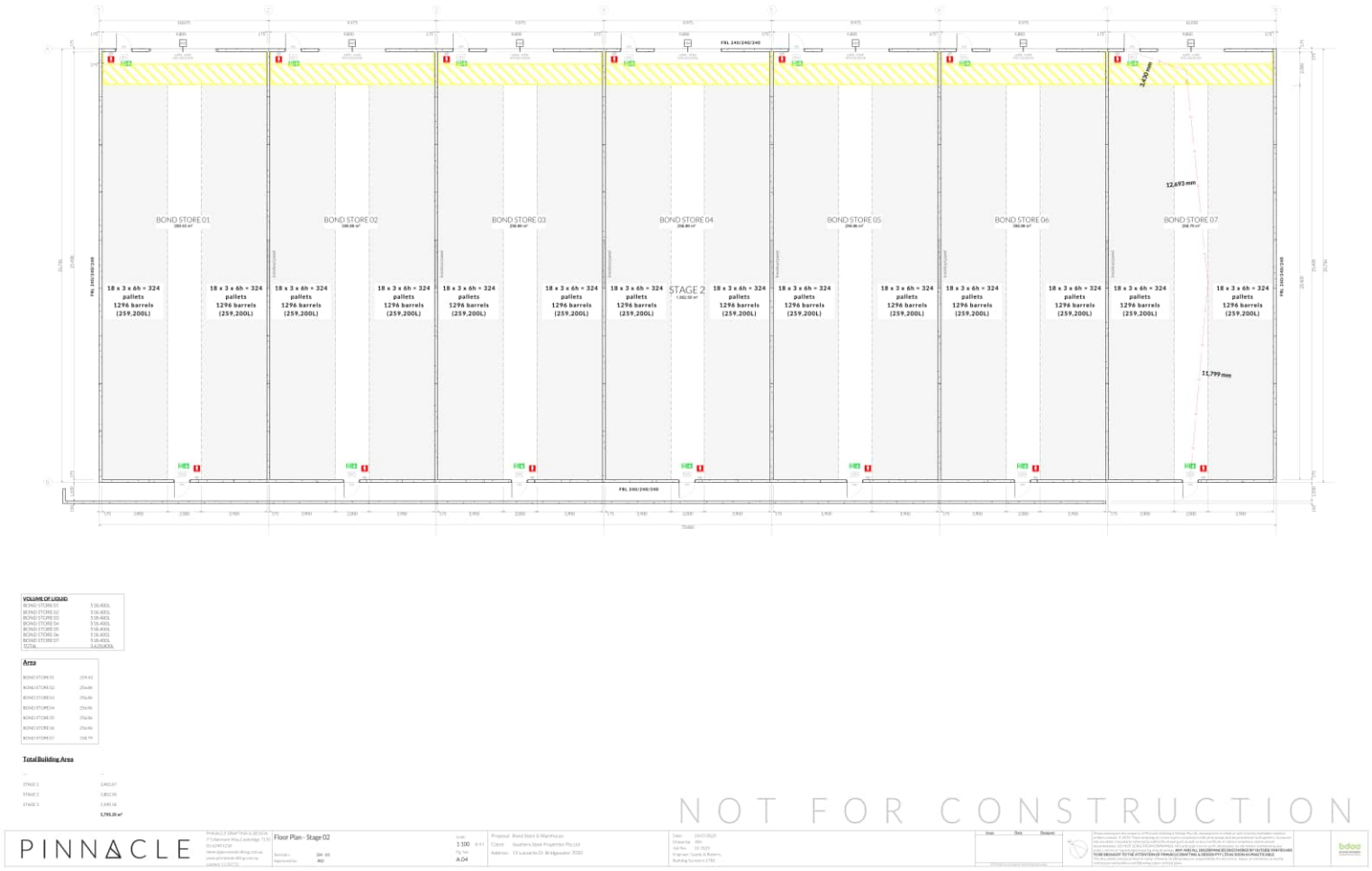


Figure 3-3: Stage 2 Warehouse (Bond Stores) Layout

3.3 Quantities of Dangerous Goods Stored and Handled

The quantities of flammable liquid DGs stored at the site has been provided in **Table 3-1**. Each Bond Store can hold up to 2,592 barrels. At 200 L per barrel, the maximum storage capacity of each bond store is 518.4 kL, and with seven (7) Bond Stores planned for the site the potential maximum storage capacity will be 3628.8 kL.

Under the Australian Dangerous Goods (ADG) Code, alcoholic beverages greater than 70% alcohol by volume (ABV) are a Class 3 packing group (PG) II dangerous good (DG) and alcoholic beverages with an ABV between 24% and 70% are a Class 3 PG III DG. As the casks stored at this site will be filled at 57% - 60% ABV, the site shall be assessed as all DGs being Class 3 PG III.

Table 3-1: Maximum Classes and Quantities of Dangerous Goods Stored

Location	Class	PG	Quantity	Concentration (%)	Total Quantity (L)
Bond store 01	3	III	1,380 barrels	57 - 60	518,400
Bond store 02	3	III	1,380 barrels	57 - 60	518,400
Bond store 03	3	III	1,380 barrels	57 - 60	518,400
Bond store 04	3	III	1,380 barrels	57 - 60	518,400
Bond store 05	3	III	1,380 barrels	57 - 60	518,400
Bond store 06	3	III	1,380 barrels	57 - 60	518,400
Bond store 07	3	III	1,380 barrels	57 - 60	518,400
				Total	**3,628,800**

3.4 Major Hazard Facility Assessment

To determine whether a site would be classified as a Major Hazard Facility (MHF), the WHS Regulations 2022 (Ref. [1]) outlines thresholds for the storage of different classes of DGs. The threshold value for Class 3 PG III flammable liquids is outlined in **Table 3-2**, taken from Schedule 15 of the Regulations.

Table 3-2: Major Hazard Facility Thresholds

Class	Packing Group	Description	Stored (tonnes)	
			Stored	Threshold
3	III	Flammable liquid (whisky)	2,867	50,000

*Based on a density of 790 kg/m^3

Based on **Table 3-2**, the quantity of flammable liquid stored is below the MHF threshold and the facility would not be classified as an MHF.

4.0 Dangerous Goods Design Requirements

4.1 Introduction

The following sections outline the design requirements for the DG storage. The relevant design standards were identified, and the design requirements were outlined for the following stores:

- Bond stores

The assessment has been completed in the following section.

4.2 Bond Store

The Bond Stores will be used for storing of whisky in barrels. The quantity of whisky stored in the bond store is summarised in **Table 4-1**.The concentration of ethanol in the barrelled whisky is approximately 60%.

The requriements have been assessed using AS 1940:2017 (Ref. [2]) which caters for the storage of flammable liquids. Based on the quantity of whisky stored and the size of the containers, the storage will be considered a package store and the design requriements determined in accordance with Section 4 of the standard.

Table 4-1: Bond Store Quantity

Location	Class	PG	Quantity	Concentration (%)	Total Quantity (L)
Bond store 01	3	III	1,380 barrels	57 - 60	518,400
Bond store 02	3	III	1,380 barrels	57 - 60	518,400
Bond store 03	3	III	1,380 barrels	57 - 60	518,400
Bond store 04	3	III	1,380 barrels	57 - 60	518,400
Bond store 05	3	III	1,380 barrels	57 - 60	518,400
Bond store 06	3	III	1,380 barrels	57 - 60	518,400
Bond store 07	3	III	1,380 barrels	57 - 60	518,400
				Total	**3,628,800**

As each Bond Store is identical in size, storage capacity and layout, the design requirements for each Bond Store will apply generally. It is noted that as each bond store is fire separated, they are treated individually for assessment rather than aggregating the total volume. The applicable design requirements from AS 1940:2017 (Ref. [2]) are outlined in **Table 4-2.** Based on the assessment the following recommendations are made:

- Ensure fire doors and RSDs have an FRL of at least -/120/30.
- Separating walls between Bond Stores to be taken through main roof by at least 0.5 m.
- Spillage containment of at least 68.6 kL to be provided per Bond Store.
- Mechanical ventilation should be provided in accordance with the requirements of AS 1940:2017.
- Provide hose reels with foam capabilities to reach all parts of the store.
- Hydrant flow for the site to be capable of 30 L/s in addition to the requirements of AS 2419.1.

Table 4-2: Bond Store Design Requirements per AS 1940:2017 (Ref. [2])

<table>
<tr><th>Item</th><th>Requirement</th><th>Assessment / Recommendations</th></tr>
<tr>
<td>Separation distance and construction</td>
<td>
Separation distances shall be as follows based on 518.400 L per store:
<table>
<tr><th>Receptor</th><th>Distance (m)</th></tr>
<tr><td>Protected places (Table 4.1)</td><td>17.8</td></tr>
<tr><td>On-site protected place (Table 4.1)</td><td>15</td></tr>
<tr><td>Public places and site boundary (Table 4.2)</td><td>8</td></tr>
</table>
Separation distances may be measured in a horizontal plane around the end of any intervening vapour barrier, provided that the vapour barrier complies with the following:

For separation from protected places and on-site protected places, such a vapour barrier is also a fire wall.
Firewalls shall have a fire resistance level (FRL) of at least 240/240/240.
The firewall shall be impervious to vapour apart from around fire doors or other protected openings.
Any freestanding firewall shall be self-supporting and shall have adequate foundations.
The floor of the store shall be of reinforced concrete having an FRL of at least 180/180/180.
The roof of the store shall be of a material having an FRL of at least 180/180/180, unless the walls are taken through the main roof by at least 0.5 m, to provide fire insulation.
Any doorway through a fire door through a firewall separating a store from an on-site protected place shall be provided with a door, such a door shall –

Be a sliding or outward-opening, automatic-closing fire door complying with AS/NZS 1905.1, and fitted with a thermal-release device; and
Have an FRL of at least -/120/30

</td>
<td>

Entire warehouser is constructed from FRL 240/240/240 walls.
Unknown fire rating of roller shutter doors (RSDs) and doors.
Roof does not appear to be FRL 180/180/180 and walls separating Bond Stores do not appear to penetrate the roof by 0.5 m.

Recommendations:

Ensure fire doors and RSDs have an FRL of at least -/120/30.
Separating walls between Bond Stores to be taken through main roof by at least 0.5 m.

</td>
</tr>
</table>

<table>
<tr><th>Item</th><th>Requirement</th><th>Assessment / Recommendations</th></tr>
<tr><td>Spill containment</td><td>A spillage containment compound shall be sufficiently impervious to retain spillage and to enable recovery of any such spillage.
Each bond store shall have containment capacity in-line with the following based on a maximum storage of 518.400 L per store:
<table>
<tr><th>Requirement</th><th>Volume (L)</th></tr>
<tr><td>Largest container</td><td>200</td></tr>
<tr><td>25% of volume up to 10,000 L</td><td>2,500</td></tr>
<tr><td>10% of volume between 10,000 L and 100,000 L</td><td>9,000</td></tr>
<tr><td>5% of volume above 100,000 L</td><td>20,920</td></tr>
<tr><td>20 min of automatic of manual fire suppression (based on 3 x hydrants at 10 L/s each)</td><td>36,000</td></tr>
<tr><td>Total</td><td>68,620</td></tr>
</table>
The drainage of any rainwater or firewater to outside the spillage compound shall either be –
(i) Via a suitable interceptor or separator.
(ii) After sampling and testing of the water.</td><td>• Spillage containment of at least 68.6 kL to be provided per Bond Store.</td></tr>
<tr><td>Ventilation</td><td>Each Bond Store shall be provided with adequate natural or mechanical ventilation, depending on the goods being stored. The ventilation system shall be sufficient to ensure that any vapours and fumes generated within the store are diluted with, and removed by, air passing through the store.
Not that due to the design of the stores and reliance on firewalls to achieve separation distance, a natural ventilation solution would not be suitable.
Stores ventilated in accordance with the following requirements are deemed to comply:
(a) The termination points within the room for both the fresh air supply and the draw-off ducts shall be –</td><td>• Mechanical ventilation does not appear to be provided for the Bond Stores.
• Based on the requirements of AS 1940:2017 and the size of the Bond Stores the required ventilation rate is 1.3 m^3/s and must be available either continuously or whenever work is being carried out in the store.
Recommendations:
• Mechanical ventilation should be provided in accordance with the requirements of AS 1940:2017.</td></tr>
</table>

Item	Requirement	Assessment / Recommendations
	i. Immediately above the upper limit of the spillage compound; and ii. On opposite walls The distance between any two inlets of outlets shall not exceed 5 m. It is recommended that the outlets be located along the longest side of the building for optimum effect. If a single fan system is adopted, the fan should be in the exhaust duct. The air supply may be in the form of natural ventilation in an external wall at low level. (b) If the ventilation system incorporates fans on both the supply and exhaust ducts, the capacities of the fans shall be so adjusted that the room is under negative pressure., (c) The system shall be capacity of exhausting 0.3 m^3 per square metre of floor area per minute or 5 m^3/min, whichever is the greater, and the air velocity at the air supply outlet shall exceed 300 m/min. (d) The system shall be provided with an airflow failure-warning device. (e) Any intake or exhaust duct shall terminate in open air at least 2 m from any opening into a building, or 4 m from the outlet of any chimney or flue and 3 m above the ground. The external termination of any inlet duct shall be at least 5 m from the external termination of any exhaust duct. (f) Any duct that passes through a building other than the storage area shall be constructed of or protected by material having an FRL of at least –/180/180. (g) The system shall be designed so that it operates – i. Continuously; or ii. Whenever work is being carried out in the store; or iii. Whenever a person is in the store. (h) Fans shall be suitable for hazardous areas.	

Item	Requirement	Assessment / Recommendations
Security, Signs and Notices	At the entrance to any storage area greater than minor storage, the following signs shall be displayed: (a) A DANGER – NO SMOKING, NO NAKED FLAMES sign. (b) A class label (diamond). The following signs shall be placed at the entrances(s) to the premise: (a) A WARNING – RESTRICTED ACCESS, AUTHORISED PERSONNEL ONLY sign. (b) A sign listing the emergency contact names, titles and phone numbers relevant to the installation. (c) The name, address and phone number of the occupier. (d) A layout diagram showing the location of fixed fire protection facilities (where installed), the drainage system and the 'Emergency Stop' switched.	• Signage to be included as per standard requirements.
Safety shower	A safety shower shall be provided within 2 m and no further than 10 or by risk assessment.	• A safety shower is not necessary for the goods being kept. The site should have a source of fresh water available for rinsing the eyes and skin if needed.
Fire protection	A layout plan showing the locations of all tanks, shut-off valves, pipelines, hydrants, and firefighting systems shall be provided and kept available for ready reference.	• Fire services location layout to be developed and readily available on-site.
	The fire protection shall be provided as follows based on 518.400 L per store: • One powder-type extinguisher located at each doorway to the storage area • Powder-type extinguishers internally positioned to achieve a 15 m maximum travel distance. • Hose reel(s) with foam capabilities able to reach all parts of the storage. • 30 L/s water supply for the hydrant system in addition to the requirements of AS 2419.1. The number and locations of hydrants are to be in accordance with AS 2419.1.	• Extinguishers are provided at each doorway to the warehouse achieving the required travel distance. Recommendations: • Provide hose reels with foam capabilities to reach all parts of the store. • Confirm hydrant flow for site.

Item	Requirement	Assessment / Recommendations
Ignition sources	Ignition sources shall be controlled in accordance with AS/NZS 60079 series of standards.	• A hazardous area classification shall be carried out in accordance with the AS/NZS 60079 series of standards.
Electrical installations and equipment	In hazardous areas classified as Zone 2, electric forklift trucks and similar vehicles (e.g. stackers) not suitable for use in the Zone shall not be used.	• Any forklift trucks or similar vehicles required to operate in hazardous zones should be suitable for use in those zones or suitable operational measures should be implemented to ensure explosive atmospheres are not present during forklift operation.

5.0 Work Health and Safety Requirements

5.1 Introduction

In addition to the requirements of the relevant standards, an operator must also satisfy several obligations outlined the Work Health and Safety Regulations (Ref. [1]). The relevant requirements are dependent on the quantities of DGs stored on site. The DG quantities and the placard and manifest thresholds have been outlined in **Table 5-1**. As the DG stores exceed the manifest threshold, the site is classified as a Manifest site.

Table 5-1: Manifest and Placard DG quantities

Class	Description	PG	Quantity (kg or L)			Classification
			Stored	Placard	Manifest	
3	Flammable Liquids	III	3,628,800	1,000	10,000	Manifest

5.2 Applicable WHS Clauses

The applicable clauses for a manifest site from the Regulations (Ref. [1]). have been outlined in **Table 5-2**.

Table 5-2: Relevant Clause and Requirements

Clause	WHS Requirement
346	A Hazardous Chemicals [*Dangerous Goods*] register shall be prepared which must include; • A list of hazardous chemicals stored, used or handled • The current Safety Data Sheet (SDS) for DGs stored, used or handled, unless the hazardous chemical is a consumer product (e.g. hand sanitiser). The register must be readily accessible to workers involved in handling or storing the chemicals, and anyone who is likely to be affected by the chemicals.
347	A manifest of Schedule 11 Hazardous Chemicals [*Dangerous Goods*] shall be prepared in accordance with Schedule 12 of the WHS Regulations. A scale plan of the workplace shall be prepared in accordance with Schedule 12 of the WHS Regulations. The manifest must be kept; (a) In a place determined in agreement with the primary emergency services organisation; and (b) Available for inspection under the Act; and (c) Readily accessible to the emergency services organisation.
348	PCBU shall give the regular written notification of intent to exceed manifest quantities of Schedule 11 hazardous chemicals. Notice must be given; (a) Immediately after the person knows when the Schedule 11 hazardous chemicals are first to be used or at least 14 days before that first use, handling or storage (whichever is earlier); and (b) Immediately after the person knows that there will be a significant change in the risk of using, handling or storing the Schedule 11 hazardous chemicals. The notification must include; (a) The name and ABN of the PCBU;

Clause	WHS Requirement
	(b) The type of business or undertaking conducted; (c) If the workplace was previously occupied by someone else, the name of the most recent previous occupier; (d) The activities of the business or undertaking that involve using, handling or storing the Schedule 11 hazardous chemicals; (e) The manifest prepared by the PCBU under Regulation 347; (f) If notice is required by a change in the risk of using, handling or storing the Schedule 11 hazardous chemicals, details of the changes to the manifest.
349 & 350	PCBU shall ensure placards are displayed for all chemicals which exceed placard quantity of Schedule 11, and that placards comply with Schedule 13, as shown in **Figure 5-1** and **Figure 5-2.** A Placard Schedule shall be prepared to indicate the placard requirements. A PCBU shall ensure an outer warning placard shall is prominently displayed at the site. The placard is to show the words “HAZCHEM” in red lettering on white or silver background and shall have minimum dimensions 120 mm x 600 mm, in compliance with Schedule 13, as shown in **Figure 5-2.**
351 & 354	A PCBU must manage the risk to health and safety associated with using and storing a hazardous chemical [*Dangerous Good*] and have regard of the following: • Hazardous properties of the chemical • Reactions between chemicals (physical) or between the chemical and other substances/materials; • The nature of the work to be carried out with the hazardous chemical; • Any structure, plant or system of work used in the handling, generation or storage of the hazardous chemical [Dangerous Good] or that could react with the hazardous chemical [Dangerous Good] at the workplace. In order to comply with this requirement, it is necessary to conduct a risk assessment and to identify those hazards and risks associated with the storage and handling of the hazardous chemicals [*Dangerous Goods*]. The following recommendation has been made: • A risk assessment of the hazardous chemical [*Dangerous Good*] storage areas be conducted, including the use of the chemicals in the manufacturing areas;
353	A PCBU must display safety signs required to control an identified risk in relation to using, handling or storing hazardous chemicals. The safety signs must warn of a particular hazard associated with the hazardous chemical, and be located next to hazard, clearly visible to a person approaching the hazard.
355	A PCBU must ensure ignition sources are not introduced to areas which where there is a possibility of fire or explosion in a hazardous area. In the flammable liquids containers, there is potential for vapours to accumulate and ignite. Therefore, the following recommendation has been made: • A Hazardous Area Classification (HAC) report and associated drawings should be prepared for flammable liquid in accordance with AS/NZS 60079.10.1:2022 (Ref. [3]). • A Hazardous Area Dossier shall be prepared prior to occupation in accordance with AS/NZS 3000:2018 (Ref. [4]).
357	A PCBU must ensure, SFAIRP, that where there is a risk from a spill or leak of a hazardous chemical, a spill containment system contains the resulting effluent within the workplace.

Clause	WHS Requirement
	• The containment system must not create a hazard by bringing together incompatible chemicals. The containment system must provide for the clean-up and disposal of hazardous chemicals.
358	A PCBU must ensure containers of hazardous chemicals are protected against impact damage and damage from excessive load.
359	A PCBU shall ensure that a workplace is provided with fire protection and firefighting equipment that is designed and built for the types of hazardous chemicals at the workplace. • The PCBU shall have regard to the fire load of the hazardous chemicals and from other sources, and the compatibility of the hazardous chemicals with other substances on site. • The equipment shall be compatible with firefighting equipment used by Local Fire Brigades Fire protection and firefighting equipment shall be properly installed, tested and maintained, and a dated record shall be kept of the latest testing results.
361	Where the quantity of Schedule 11 hazardous chemical exceeds manifest quantities, the PCBU must give a copy of the emergency plan prepared under Division 4 of Part 3.2 for the workplace to the primary emergency service organisation. If the primary emergency service organisation gives the person a written recommendation about the content or effectiveness of eh emergency plan, the person must revise the plan in accordance with the recommendation. The emergency plan must provide for the following; (a) Emergency procedures including – i. An effective response to an emergency; ii. Evacuation procedures; iii. Notifying emergency services organisations at the earliest opportunity; iv. Medical treatment and assistance; v. Effective communication between a person authorised by the PCBU to coordinate the response and all persons at the workplace; (b) Testing of emergency procedures, including frequency of testing; (c) Information, training and instruction to relevant workers in relation to implementing the emergency procedures • An emergency plan shall developed and provided to emergency services.

Figure 5-1: DG Placards

Figure 5-2: HAZCHEM Placard

5.3 Summary of Requirements

In summary, the site will require the following:

- A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical.
- A DG Risk Assessment of the storage and handling area.
- A Placard Schedule.
- A Manifest of Hazardous Chemicals.
- A notification to the Regulator.
- An Emergency Plan.
- A Hazardous Area Classification (HAC).
- Hazardous Area Verification Dossier (HAVD).

6.0 Conclusion and Recommendations

6.1 Conclusions

A review of the quantities of whisky (60% ABV) to be stored at 15 Lukaarlia Dr in Bridgewater, TAS was conducted to provide design guidance and ensure the storage areas comply with the applicable standard. The Bond Stores were assessed using applicable parts of AS 1940:2017 (Ref. [2]) and the requirements for separation distances, firewalls, ventilation, fire protection and general design were provided.

A report was developed to assist the project team to design the DG storages with the aim of minimising the risk of the storages as required by the WHS Regulations 2022 (Ref. [1]). It is concluded that if the advice documented in this report is followed the Bond Stores and threfore proposed devleopment will comply with the standard anb WHS Regulations.

6.2 Recommendations

The following recommendations have been made for the facility:

- Ensure fire doors and RSDs have an FRL of at least -/120/30.
- Separating walls between Bond Stores to be taken through main roof by at least 0.5 m.
- Spillage containment of at least 68.6 kL to be provided per Bond Store.
- Mechanical ventilation should be provided in accordance with the requirements of AS 1940:2017.
- Provide hose reels with foam capabilities to reach all parts of the store.
- Hydrant flow for the site to be capable of 30 L/s in addition to the requirements of AS 2419.1.

Based on the quantity of DGs stored at the warehouse, the site will be a manifest site, therefore the following is required to comply with the WHS Regulations:

- A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical.
- A DG Risk Assessment of the storage and handling area.
- A Placard Schedule.
- A Manifest of Hazardous Chemicals.
- A notification to the Regulator.
- An Emergency Plan.
- A Hazardous Area Classification (HAC).
- Hazardous Area Verification Dossier (HAVD).

7.0 References

[1] Government of Tasmania, “Work Health and Safety Regulations 2022,” Government of Tasmania, Hobart, 2022.

[2] Standards Australia, “AS 1940:2017 - The Storage and Handling of Flammable and Combustible Liquids,” Standards Australia, Sydney, 2017.

[3] Standards Australia, AS/NZS 60079.10.1:2022 - Explosive Atmospheres Part 10.1: Classification of Areas, Explosive Gas Atmospheres, Sydney: Standards Association of Australia, 2022.

[4] Standards Australia, “AS/NZS 3000:2018 - Wiring Rules,” Standards Australia, Sydney, 2018.

APPENDIX F

Certificate of Compliance

BUSHFIRE-PRONE AREAS CODE

CERTIFICATE[1] 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 Lukaarlia Drive, Bridgewater
Certificate of Title / PID:	PID 9638588 and CT 186550/1

2. Proposed Use or Development

Description of proposed Use and Development:	Bond Store and Storage
Applicable Planning Scheme:	Tasmanian Planning Scheme – Brighton

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
Bushfire Hazard Assessment	Mat Clark	2 / 12 / 2025	2.0

[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:

☐	**E1.4 / C13.4 – Use or development exempt from this Code**	
	Compliance test	**Compliance Requirement**
☐	E1.4(a) / C13.4.1(a)	Insufficient increase in risk

☐	**E1.5.1 / C13.5.1 – Vulnerable Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.1 P1 / C13.5.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
☐	E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

☒	**E1.5.2 / C13.5.2 – Hazardous Uses**	
	Acceptable Solution	**Compliance Requirement**
☒	E1.5.2 P1 / C13.5.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☒	E1.5.2 A2 / C13.5.2 A2	Emergency Management Strategy
☒	E1.5.2 A3 / C13.5.2 A3	Bushfire Hazard Management Plan

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

☐	**E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.2 P1 / C13.6.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
☐	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

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

5. Bushfire Hazard Practitioner

Name:	Mat Clark	**Phone No:**	0404803772
Postal Address:	2/129 Bathurst Street Hobart	**Email Address:**	mat@mcplanners.com.au
Accreditation No:	BFP-180	**Scope:**	1, 3A Provisional (2, 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

Name: Suzanne Gifford obo
Chief Officer, Tasmania Fire Service

Date: 05/12/2025

Tasmania Fire Service
Endorsed
08 / 12 / 2025

Certificate Number: TFS-V1-AD6634

(for Practitioner Use only)

MC Planners Ref: 25087

8 December 2025

Chief Executive Officer

Brighton Council

Via email – development@brighton.tas.gov.au

Attention: Dang Van

Dear Dang,

FURTHER INFORMATION REQUEST – DA 2025/00140 – BOND STORE BUILDING (7 UNITS) & CONJOINED WAREHOUSE (2) – 15 LUKAARLIA DRIVE, BRIDGEWATER

Thank you for your Request for Further Information under Section 54 of the *Land Use Planning and Approvals Act 1993* (LUPAA) dated 8 December 2025.

In response to the request to:

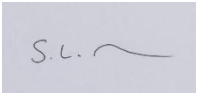
> 1. *Provide details on how the spill containment for the bond stores, as required by the Riscom Report, is achieved and any integration to the stormwater system.*

We can confirm that the building will be bunded by a dropped floor and any spills will be contained within each unit. There will be no integration of spillage into the stormwater system.

We trust this meets the requirements of the request. If Council requires any further information or clarification with respect to this application, please contact us on planning@mcplanners.com.au or phone 6288 7248.

Yours faithfully

MC PLANNERS PTY LTD



Sandra Roberts

PLANNER

Submission to Planning Authority Notice

Application details

Council Planning Permit No.	DA 2025/140
Council notice date	01/09/2025
TasWater Reference No.	TWDA 2025/01031-BTN
Date of response	12/09/2025
TasWater Contact	Phil Papps
Phone No.	0474 931 272

Response issued to

Council name	BRIGHTON COUNCIL
Contact details	development@brighton.tas.gov.au
Development details	
Address	15 LUKAARLIA DR, BRIDGEWATER
Property ID (PID)	9638588
Description of development	Stage 2 & 3 Storage buildings x 2 and associated works

Schedule of drawings/documents

Prepared by	Drawing/document No.	Revision No.	Issue date
Pinnacle Drafting	Site / Staging Plan / A.01 7 & A.03	DA-01	23/07/2025
Pinnacle Drafting	Floor Plans (Stage 2 & 3) / A.04 & A.05	DA-01	23/07/2025
Aldanmark	Sewer & Water Plan / C110	A	14/08/2025

Conditions

Pursuant to the *Water and Sewerage Industry Act* 2008 (TAS) Section 56P(1) TasWater imposes the following conditions on the permit for this application:

CONNECTIONS, METERING & BACKFLOW

1. The proposed development must be serviced by a suitably sized water supply with a metered connection and sewerage system and connection to TasWater's satisfaction and be in accordance with any other conditions in this permit.
2. Any removal/supply and installation of water meters and/or the removal of redundant and/or installation of new and modified property service connections must be carried out by TasWater at the developer's cost.
3. Prior to use of the development, any water connection utilised for the development must have a backflow prevention device and water meter installed, to the satisfaction of TasWater.

DEVELOPER CHARGES (STAGE 3 ONLY)

4. Prior to TasWater issuing a Certificate(s) for Certifiable Work (Building) and/or (Plumbing) for Stage 3 works, the applicant or landowner as the case may be, must pay a developer charge totalling $1,405.60 to TasWater for water infrastructure for 0.8 additional Equivalent Tenements, indexed by the Consumer Price Index All groups (Hobart) from the date of this Submission to Planning Authority Notice until the date it is paid to TasWater.

5. Prior to TasWater issuing a Certificate(s) for Certifiable Work (Building) and/or (Plumbing) for Stage 3 works, the applicant or landowner as the case may be, must pay a developer charge totalling $2,108.40 to TasWater for sewerage infrastructure for 1.2 additional Equivalent Tenements, indexed by the Consumer Price Index All groups (Hobart) from the date of this Submission to Planning Authority Notice until the date it is paid to TasWater.

6. In the event Council approves a staging plan, prior to TasWater issuing Certificate(s) for Certifiable Work (Building) and/or (Plumbing) for each stage, the developer must pay the developer charges commensurate with the number of Equivalent Tenements in each stage, as approved by Council.

DEVELOPMENT ASSESSMENT FEES

7. The applicant or landowner as the case may be, must pay a development assessment fee of $417.63 to TasWater, as approved by the Economic Regulator and the fee will be indexed, until the date paid to TasWater.

   The payment is required within 30 days of the issue of an invoice by TasWater.

In the event Council approves a staging plan, a Consent to Register a Legal Document fee for each stage, must be paid commensurate with the number of Equivalent Tenements in each stage, as approved by Council.

Advice

General

For information on TasWater development standards, please visit
https://www.taswater.com.au/building-and-development/technical-standards
For application forms please visit
https://www.taswater.com.au/building-and-development/development-application-form

Important Notice Regarding Plumbing Plans and Associated Costs

The SPAN includes references to documents submitted as part of the application. These plans are acceptable for planning purposes only and are subject to further detailed assessment and review during the next stage of the development proposal.
TasWater's assessment staff will ensure that the design contains sufficient detail to assess compliance with relevant codes and regulations. Additionally, the plans must be clear enough for a TasWater contractor to carry out any water or sewerage-related work.
Depending on the nature of the project, your application may require Building and/or Plumbing permits or could be exempt from these requirements. Regardless, TasWater's assessment process and associated time are recoverable through an assessment fee.
Please be aware that your consultant may need to make revisions to their documentation to ensure the details are fit for construction. Any costs associated with updating these plans should be discussed directly with your consultant.

Developer Charges

For information on Developer Charges please visit the following webpage -
https://www.taswater.com.au/building-and-development/developer-charges

Water Submetering
As of July 1 2022, TasWater's Sub-Metering Policy no longer permits TasWater sub-meters to be installed for new developments. Please ensure plans submitted with the application for Certificate(s) for Certifiable Work (Building and/or Plumbing) reflect this. For clarity, TasWater does not object to private sub-metering arrangements. Further information is available on our website (www.taswater.com.au) within our Sub-Metering Policy and Water Metering Guidelines.

Service Locations
Please note that the developer is responsible for arranging to locate the existing TasWater infrastructure and clearly showing it on the drawings. Existing TasWater infrastructure may be located by a surveyor and/or a private contractor engaged at the developers cost to locate the infrastructure.

a. A permit is required to work within TasWater's easements or in the vicinity of its infrastructure. Further information can be obtained from TasWater.
b. TasWater has listed a number of service providers who can provide asset detection and location services should you require it. Visit https://www.taswater.com.au/building-and-development/service-locations for a list of companies.

Declaration

The drawings/documents and conditions stated above constitute TasWater's Submission to Planning Authority Notice.