



Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2025/007

LOCATION OF AFFECTED AREA

3 WOODRIEVE ROAD, BRIDGEWATER

DESCRIPTION OF DEVELOPMENT PROPOSAL

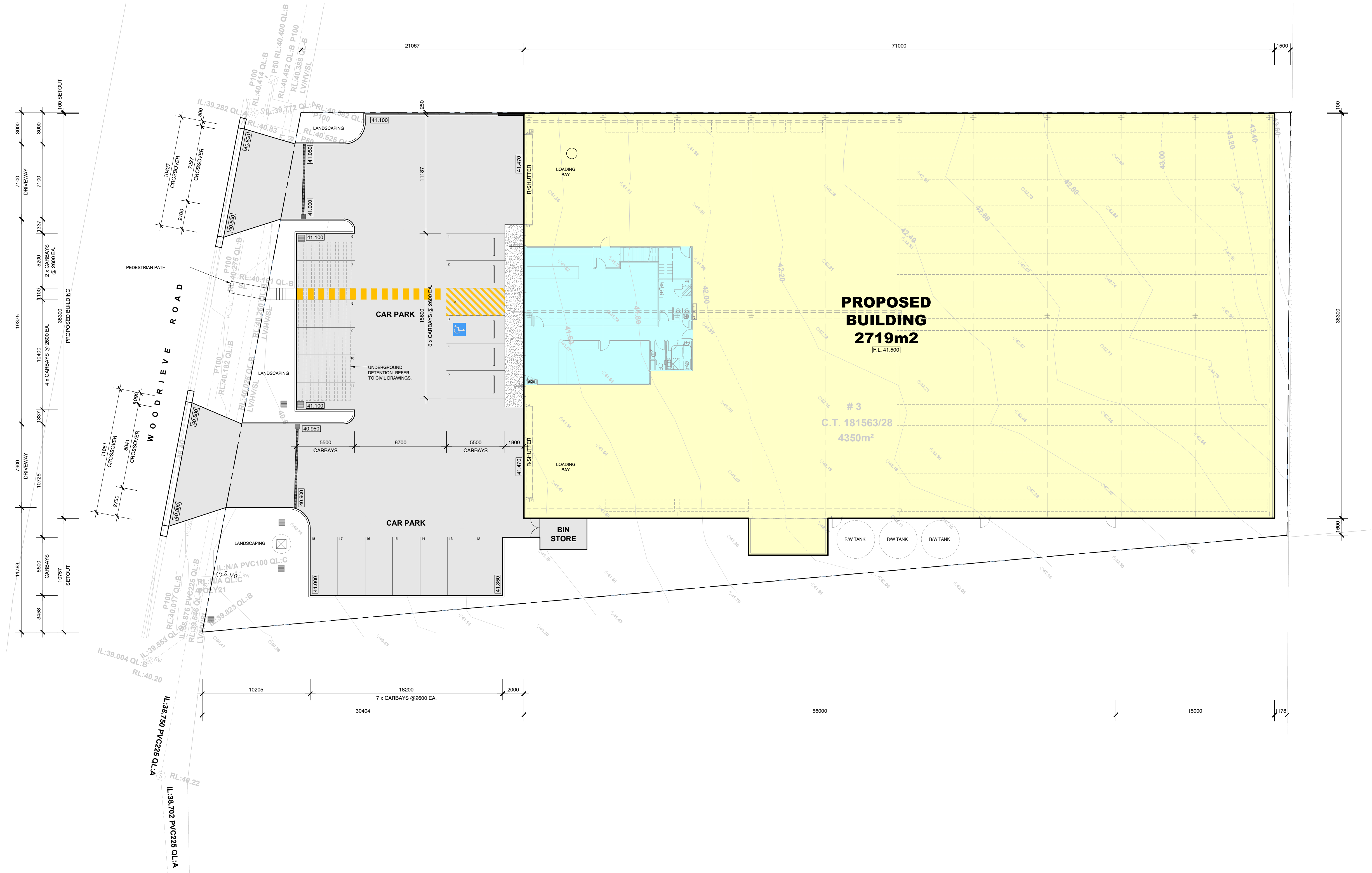
WAREHOUSE FACILITY (STORAGE)

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 **19/05/2025**. 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



Brighton
going places

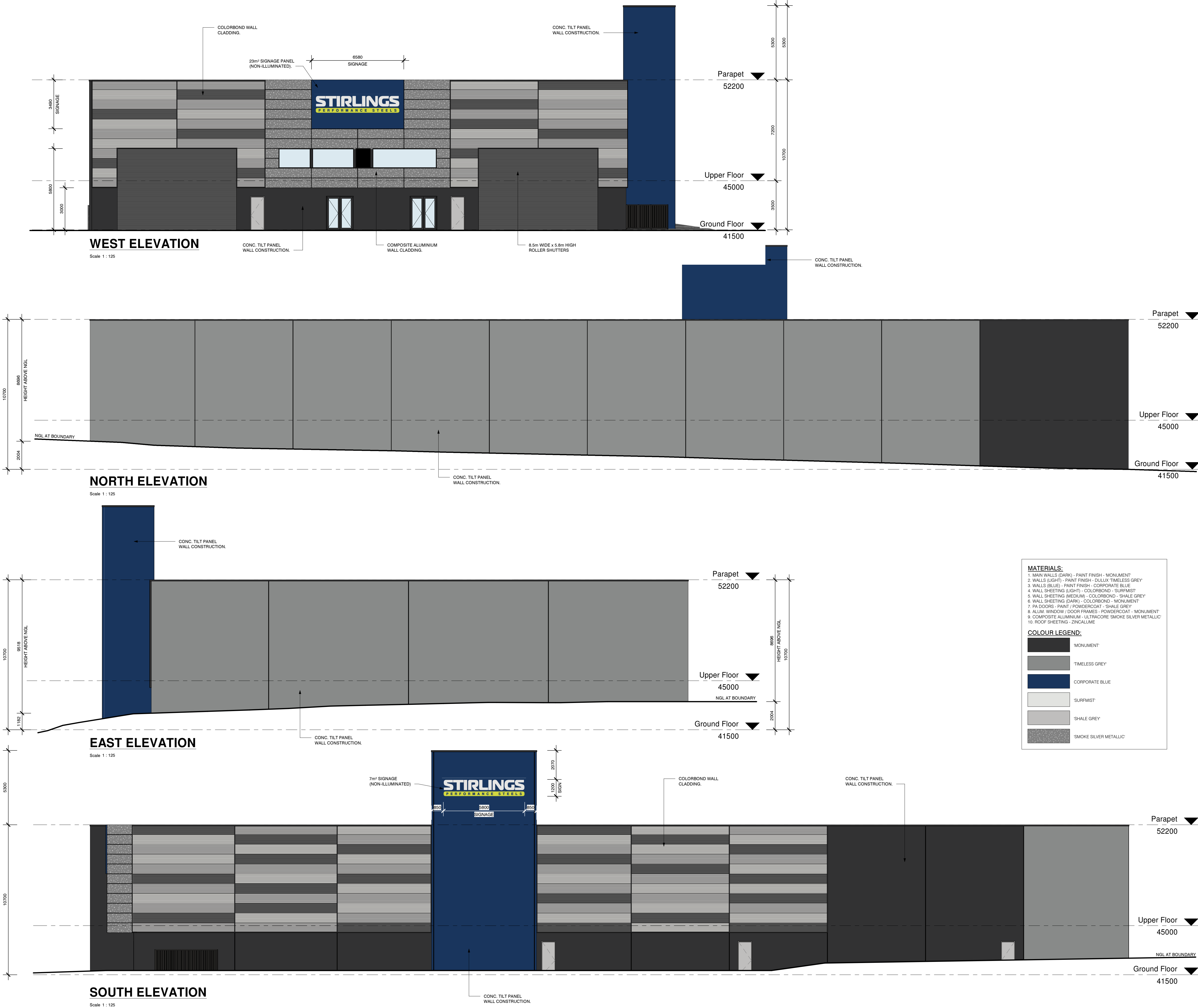


SITE PLAN
SCALE 1:200

NOTES:
1. THE PROPOSED DEVELOPMENT WILL MEET COMPLIANCE WITH THE RELEVANT AUSTRALIAN STANDARDS FOR PARKING AND ACCESS (INCLUDING AS 2900.1 AND 2900.6)
2. ALL PARKING AND ACCESS WILL BE CONSTRUCTED WITH A DURABLE ALL-WEATHER PAVEMENT (CONCRETE)

| DEVELOPMENT SUMMARY | |
|---|------------|
| SITE AREA: | 4,350m² |
| BUILDING AREA: | |
| - GROUND FLOOR: | 2,719.3m² |
| - FIRST FLOOR: | 197.8m² |
| | 2,917.1m² |
| PLOT RATIO: | 67.06% |
| BUILDING AREA - LAND USE: | |
| - OFFICE - GROUND FLOOR: | 34.9m² |
| - OFFICE - FIRST FLOOR: | 127.1m² |
| - OFFICE TOTAL: | 162.0m² |
| - WAREHOUSE - GROUND FLOOR: | 2684.4m² |
| - WAREHOUSE - FIRST FLOOR (OTHER): | 70.7m² |
| - WAREHOUSE TOTAL: | 2755.1m² |
| PARKING: | |
| REQUIRED: | |
| - WAREHOUSE @ 1/200m² (LAND AREA) x 4350m²: | 21.75 (22) |
| PROPOSED: | |
| - INCLUDES SHORTFALL OF 4x SPACES AS JUSTIFIED IN TRAFFIC REPORT: | 18 |





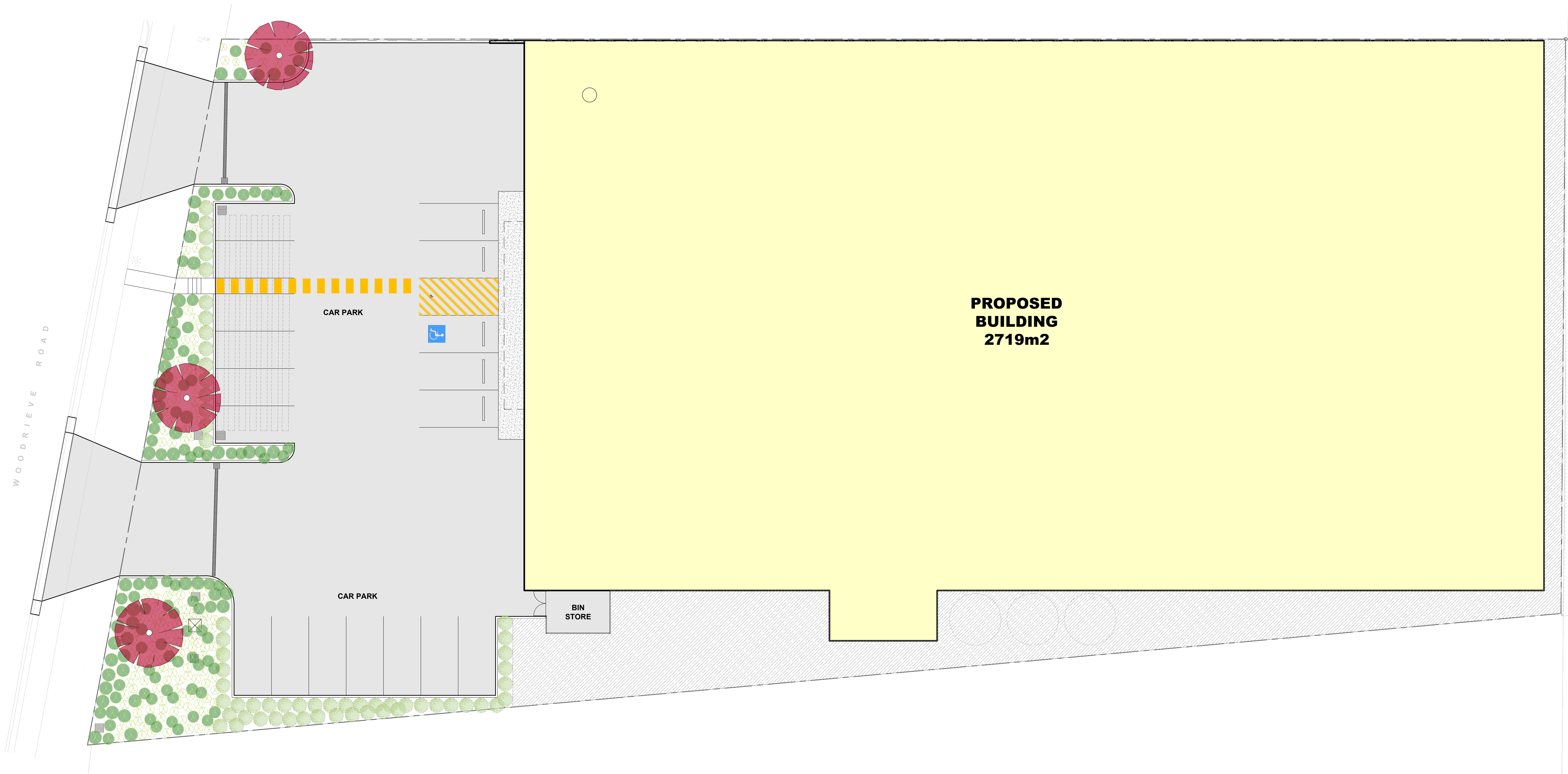
PROPOSED OFFICE & WAREHOUSE

STIRLINGS PERFORMANCE STEELS
3 Woodrieve Road, BRIDGEWATER TAS

| DRAWN | DATE | SCALE | PROJECT No | DRAWING No. | REV. |
|---------|----------|--------------|------------|-------------|------|
| M.Sibum | Dec 2024 | 1 : 125 @ A1 | 0866 | Sheet 3 | SK09 |



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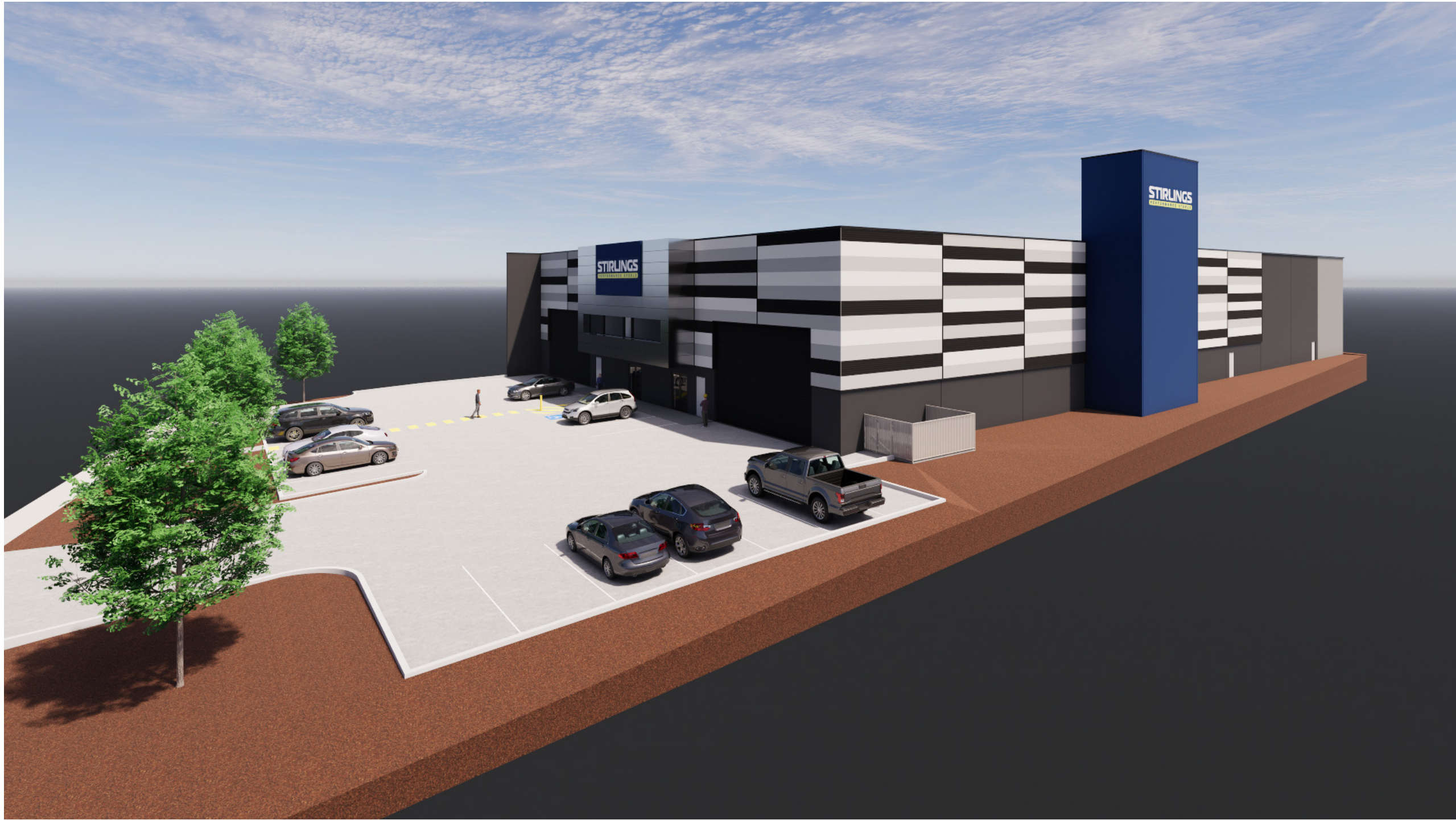
LANDSCAPE PLAN
SCALE 1:150

| LANDSCAPING LEGEND | | | |
|--------------------|--|--------------|---------------|
| | NAME | TYPE | DENSITY |
| | DIANELLA TASMANICA (FLAX LILLY) | SHRUB | 4 PLANTS / m2 |
| | LOMANDRA LONGIFOLIA (VERDAY) | SHRUB | 4 PLANTS / m2 |
| | CORREA ALBA (WHITE CORREA) | MEDIUM SHRUB | 2 PLANTS / m2 |
| | PYRUS CALLERYANA (CHANTICLEER PEAR) | TREE | - |
| | 20MM CLEAN BLUEMETAL 50MM THICK ROLLED OVER EXISTING PROFILE | - | - |

| LANDSCAPING NOTES |
|---|
| LANDSCAPING INSTALLATION REQUIREMENTS: |
| <ul style="list-style-type: none">- ALL GARDEN BEDS TO BE MULCHED TO A MINIMUM DEPTH OF 100mm WITH 50mm BREATHING SPACE AROUND STEMS AND TRUNKS OF PLANTS- ALL TREES TO BE STAKED AND TIED- WHERE FERTILISER IS REQUIRED - SLOW RELEASE FERTILISER SHOULD BE APPLIED- ALL SHRUBS & TREES TO HAVE AN AUTOMATIC TRICKLE SYSTEM |

| PLANT LEGEND | |
|-------------------------------------|--|
| DIANELLA TASMANICA (FLAX LILLY) | |
| LOMANDRA LONGIFOLIA (VERDAY) | |
| CORREA ALBA (WHITE CORREA) | |
| PYRUS CALLERYANA (CHANTICLEER PEAR) | |





3 WOODRIEVE ROAD, BRIDGEWATER



ireneinc & smithstreetstudio
PLANNING & URBAN DESIGN

3 Woodrieve Road, Bridgewater

Development application for warehouse (storage use)

Last Updated - January 2025

Author - Michela Fortini

Reviewed - Irene Duckett

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1 INTRODUCTION

Ireneinc Planning & Urban Design has been commissioned to prepare the following assessment for the use and development of land at 3 Woodrieve Road, Bridgewater. The following is a desktop assessment of the applicable statutory controls under the *Tasmanian Planning Scheme -Brighton* (the planning scheme).

1.1 SITE

The site is located at 3 Woodrieve Drive, and comprises of the following title:

- CT 181563/28

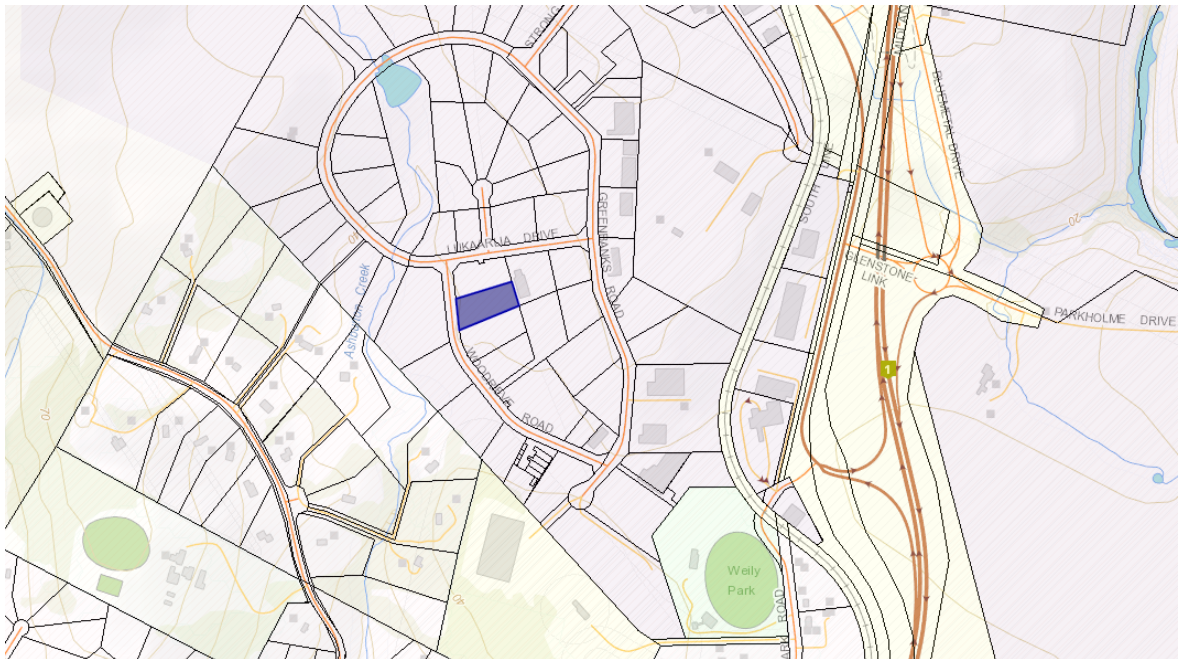


Figure 1: Site location with cadastre and topographic plan (Source: the LISTmap, 2024)

The land is approximately 4343m² and is currently a vacant block with no vegetation or development. The site has primary frontage to Woodrieve Road, but does not currently have a formalised vehicular access. The following aerial imagery describes the existing conditions:

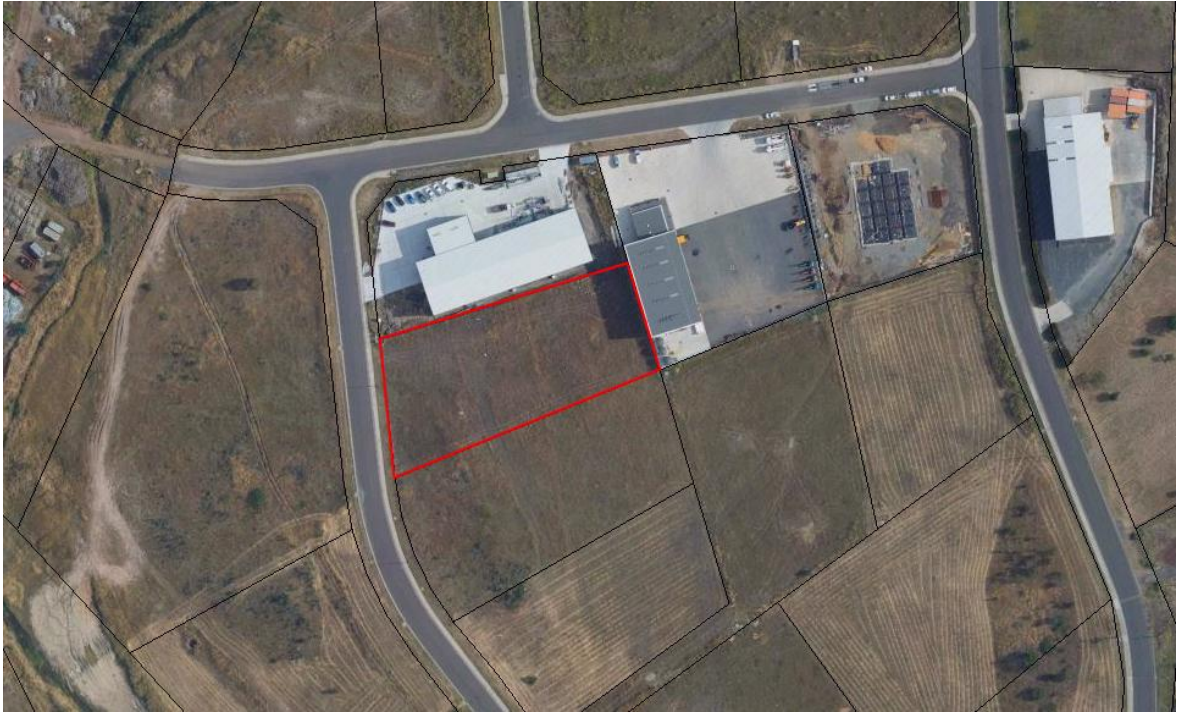


Figure 2: Aerial Image of the site (source: the LISTmap, 2024)

1.2 SITE SURROUNDS

The site is adjoined by industrial development such as bulky goods sales and other warehouse uses immediately to the north and east. The remainder of the surrounding area is primarily vacant land.

1.3 INFRASTRUCTURE & SERVICES

The site is serviced by water, with a water main running through Woodrieve Road. The site is also identified as sewer serviced land with a sewer main also running along Woodrieve Road.

2 PROPOSAL

The proposal is for the use and development of a warehouse facility (storage use).

The site will feature 18 car parking spaces, including one accessible (DDA) space, along with office areas necessary for the building's operations. The total floor area will be approximately 2,700 m², of which 411 m² is designated for office use, including sales, meeting rooms, reception, and other facilities.

The ground floor will accommodate a large warehouse with loading bays for dispatch and receiving, as well as a foyer leading to the office areas.

The first floor, totalling 208 m², will contain additional office space.

In addition, the proposal includes a parts-picking tower for the efficient storage and retrieval of components.

The proposal includes the construction of two vehicular crossovers, which will require works within Councils Road reserve (CT 166546/100). General Managers Consent for these works accompany this application.

3 PLANNING SCHEME REQUIREMENTS - ZONE

3.1 GENERAL INDUSTRIAL ZONE

The site falls within the General Industrial Zone and is surrounded by similarly zoned land.



Figure 3: General industrial land (purple) (source: the LISTmap, 2024)

3.1.1 ZONE PURPOSE

The purpose of the General Industrial Zone is:

19.1.1 To provide for manufacturing, processing, repair, storage and distribution of goods and materials where there may be impacts on adjacent uses.

19.1.2 To provide for use or development that supports and does not adversely impact on industrial activity.

The proposal is considered to be consistent with the intent of this zone. The warehouse is intended to be utilised for stockholding and processing distributions of stainless and performance steel products.

3.1.2 USE CLASS

The proposal is for a warehouse which falls under the use category of 'storage', defined as:

use of land for storage or wholesale of goods, and may incorporate distribution. Examples include boat and caravan storage, self storage, contractors yard, freezing and cool storage, liquid fuel depot, solid fuel depot, vehicle storage, warehouse and woodyard.

Storage is permitted within the General Industrial Zone. Any office spaces within the building will be subservient to the storage use class.

3.1.3 USE STANDARDS

There are no specific use standards that apply to storage uses in this zone.

3.1.4 DEVELOPMENT STANDARDS

19.4.1 Building height

Objective: To provide for a building height that:

(a) is necessary for the operation of the use; and

(b) minimises adverse impacts on adjoining properties.

PLANNING SCHEME REQUIREMENTS

A1

Building height must be not more than 20m.

COMMENTS

A1

The building will reach a maximum height of approximately 10.7m from NGL. There is an additional component of the building that will provide for a parts picking tower that will reach approximately 16m. Nonetheless, the proposal is still able to comply.

19.4.2 Setback

Objective: That the building setback is appropriate for the site.

PLANNING SCHEME REQUIREMENTS

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.

COMMENTS

A1

The building will be setback from the frontage approximately 21m at its nearest point. The proposal therefore complies.

19.4.3 Landscaping

Objective: That landscaping enhances the amenity and appearance of the streetscape where buildings are setback from the frontage

PLANNING SCHEME REQUIREMENTS

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

If a building is setback from a road, landscaping treatment must be provided along the frontage of the site, having regard to:

(a) the width of the setback;

(b) the width of the frontage;

(c) the topography of the site;

(d) existing vegetation on the site;

(e) the location, type and growth of the proposed vegetation; and

(f) any relevant local area objectives contained within the relevant Local Provisions Schedule.

COMMENTS

A1

Landscaping is proposed along the frontage of the site, however, not to the required depth. Assessment against the performance criteria will be required.

P1

The proposed landscaping incorporates a depth variation ranging from 1.5m to 10m, designed to accommodate crossovers, parking spaces, and adequate vehicular manoeuvrability.

a) Although the setback is relatively substantial, the primary function of this area is to support vehicular parking and movement. Landscaping has been strategically incorporated around the parking spaces wherever feasible.

b) The frontage spans over 50 meters, providing ample space for planting, which helps to break up the visual mass and enhance the streetscape when viewed from the road.

c) The land is predominantly flat, with less than 2.5m topographic variance, making it well-suited for planting.

d) The site is currently vacant, devoid of any existing vegetation.

e) For details on the proposed vegetation and its placement please refer to the accompanying landscaping plan.

f) There are no local area objectives that apply to this site.

3.2 BRIGHTON INDUSTRIAL HUB SPECIFIC AREA PLAN

The purpose of the Brighton Industrial Hub Specific Area Plan is to protect the Brighton Industrial Hub from sensitive use establishing in the area.

3.2.1 USE STANDARDS

This clause is in substitution for Attenuation Code - clause C9.5.2 Sensitive use within an attenuation area.

Objective: That new sensitive use is not established within the Brighton Industrial Hub.

PLANNING SCHEME REQUIREMENTS

A1

Use or development is not for sensitive use.

COMMENTS

A1

The proposal is cognisant with the purpose of the SAP as no sensitive use is proposed.

4 PLANNING SCHEME REQUIREMENTS - CODES

4.1 BUSHFIRE PRONE AREA CODE

This code applies to the subdivision of land or a hazardous or vulnerable use within the mapped extent of the bushfire prone area.

A hazardous use is defined as:

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

No hazardous chemicals of manifest quantities are provided onsite, as such, this code is not applicable to the proposal.

4.2 ROAD AND RAILWAY ASSETS CODE

4.2.1 USE STANDARDS

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

Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction

PLANNING SCHEME REQUIREMENTS

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:

- (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.

COMMENTS

A1.1

Not applicable.

A1.2

For the additional crossover, General managers consent forms part of this application.

A1.3

Not applicable.

A1.4

As per table C3.1, the acceptable increase in traffic to and from the site is:

20% or 40 vehicle movements per day, whichever is the greater.

As per the accompanying Traffic Impact Assessment, this provision is not applicable as the crossovers are not existing.

A1.5

All passenger and light commercial vehicles and exit the site in a forward direction. However, as Woodrieve Road is not classified as a major road, the A1.5 provision does not apply.

4.2.2 DEVELOPMENT STANDARDS

The following development standards will not be applicable to the proposal:

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

4.3 SIGNS CODE

The proposed signs will fall under the 'wall sign' typology.



Figure 4: signage proposed at site (source: architectural set by mulder kampman design, 2024)

As shown in the accompanying architectural set, there are a total of 2 signs proposed. One will be located along the building front, and the other will be attached to the parapet. No illuminated or third party signs are proposed. The site is not listed as a heritage place or precinct.

4.3.1 USE STANDARDS

There are no use standards in this code.

4.3.2 DEVELOPMENT STANDARDS

C1.6.1 Design and siting of signs

Objective: That:

- (a) *signage is well designed and sited; and*
- (b) *signs do not contribute to visual clutter or cause an unreasonable loss of visual amenity to the surrounding area.*

PLANNING SCHEME REQUIREMENTS

A1

A sign must:

- (a) *be located within the applicable zone for the relevant sign type set out in Table C1.6; and*
- (b) *meet the sign standards for the relevant sign type set out in Table C1.6, excluding for the following sign types, for which there is no Acceptable Solution:*
 - (i) *roof sign;*
 - (ii) *sky sign; and*
 - (iii) *billboard.*

P1.1

A sign must:

- (a) *be located within an applicable zone for the relevant sign type as set out in Table C1.6; and*
- (b) *be compatible with the streetscape or landscape, having regard to:*
 - (i) *the size and dimensions of the sign;*
 - (ii) *the size and scale of the building upon which the sign is proposed;*
 - (iii) *the amenity of surrounding properties;*
 - (iv) *the repetition of messages or information;*
 - (v) *the number and density of signs on the site and on adjacent properties; and*
 - (vi) *the impact on the safe and efficient movement of vehicles and pedestrians.*

P1.2

If a roof sign, sky sign or billboard, the sign must:

- (a) *be located within the applicable zone for the relevant sign type set out in Table C1.6;*
- (b) *meet the sign standards for the relevant sign type in Table C1.6; and*
- (c) *not contribute to visual clutter or cause unreasonable loss of amenity to the surrounding area, having regard to:*
 - (i) *the size and dimensions of the sign;*

- (ii) *the size and scale of the building upon which the sign is proposed;*
- (iii) *the amenity of surrounding properties;*
- (iv) *the repetition of messages or information;*
- (v) *the number and density of signs on the site and on adjacent properties; and*
- (vi) *the impact on the safe and efficient movement of vehicles and pedestrians.*

COMMENTS

A1

a) & b) The requirements under table C1.6 are as follows:

| | | |
|-----------|---|--|
| wall sign | <ul style="list-style-type: none"> • Village • Urban Mixed Use • Local Business • General Business • Central Business • Commercial • Light Industrial • General Industrial • Rural • Environmental Management • Major Tourism • Port and Marine • Utilities • Community Purpose • particular purpose | <p><i>Must:</i></p> <p><i>(a) must not extend beyond the wall or above the top of the wall to which it is attached;</i></p> <p><i>(b) have a maximum area of 4.5m²; and</i></p> <p><i>(c) must not occupy more than 25% of the wall area.</i></p> |
|-----------|---|--|

The signs are within the General Industrial zone.

SIGN 1

The sign facing the frontage does not extend beyond the wall to which it is attached. The sign totals 6% of the wall area. The sign has a maximum area of 23m², therefore requiring assessment against the performance criteria.

SIGN 2

The sign on the picking parts tower does not extend beyond the tower structure, it totals less than 1% of the building wall. The sign has a maximum area of 7m², thereby requiring assessment against the performance criteria.

P1.1

a) The signs are located within be located within the General Industrial Zone.

b) The proposed signs are in keeping with the industrial character of the area. While much of the surrounding land remains undeveloped, there are several large industrial buildings nearby, each featuring equally substantial signage.



The signs account for less than 6% and 1% of the building area, respectively, well within acceptable solution parameters. The site is expansive and will feature only two signs—one facing the frontage and the other along the southern boundary. Given the surrounding industrial use, the signage will not impact the amenity of neighbouring properties. Additionally, there is no repetition of messages or information due to the signs. The only developed property adjacent to the site is 1 Woodrieve Road, which includes a single temporary sign along the fence. The proposed signs will not interfere with vehicle or pedestrian movement.



P1.2

Not applicable.

| |
|--|
| <p>A2</p> <p><i>A sign must be not less than 2m from the boundary of any lot in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone or Landscape Conservation Zone.</i></p> |
| <p>COMMENTS</p> <p>A2</p> <p>The signs are not within 2m of any residential or landscape conservation zone.</p> |

A3

The number of signs for each business or tenancy on a road frontage of a building must be no more than:

- (a) 1 of each sign type, unless otherwise stated in Table C1.6;*
- (b) 1 window sign for each window;*
- (c) 3 if the street frontage is less than 20m in length; and*
- (d) 6 if the street frontage is 20m or more, excluding the following sign types, for which there is no limit:*
 - (i) name plate; and*
 - (ii) temporary sign.*

COMMENTS

A3

- a) Only one sign is proposed to face the road frontage.
- b) No window signs are proposed.
- c) Only one sign is proposed to face the road frontage.
- d) Only one sign is proposed to face the road frontage.

The following provisions are not applicable:

- C1.6.4 Signs on local heritage places and in local heritage precincts and local historic landscape precincts
- C1.6.3 Third party sign
- C1.6.2 Illuminated signs

4.4 PARKING AND SUSTAINABLE TRANSPORT CODE

4.4.1 USE STANDARDS

C2.5.1 Car parking numbers

Objective: *That an appropriate level of car parking spaces are provided to meet the needs of the use.*

PLANNING SCHEME REQUIREMENTS

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 ...

COMMENTS

A1

For storage uses in the General Industrial zone, the following provision of parking is required:

- 1 space per 200m² of the site area or
- 1 space per 2 employees, whichever is greater.

The total site area is approximately 4343m², which would result in a parking generation of 22 spaces being required. As there are 18 bays proposed on the plans, assessment against the performance criteria will be required.

P1.1

a) Whilst there are no formalised off-street parking spaces within proximity to the site, there is ample space is available along the length of Woodrieve Road to accommodate on-street parking, should it be necessary.

b) The warehouse will operate with a maximum of 10 staff and no more than 5 customers at any given time. As a result, the proposal is anticipated to have a peak parking demand of 15 spaces, all of which can be accommodated on-site.

c) Although there is no public transport directly accessible from the site, it is unlikely that public transit would be a primary mode of transport for this particular use, which involves stockholding and processing of stainless & performance steel products. The nature of the business is more suited to vehicular transport, whereby public transport does not cater to the typical logistics and delivery requirements of this industry.

d) Given the nature of the use, alternative transport modes such as motorcycles, bicycles, or buses are not deemed appropriate. It is highly unlikely that individuals visiting the facility would rely on these modes of transport, as the nature of the business necessitates large goods and vehicle access.

e) The site has been designed to maximise parking availability while still providing for vehicle circulation, landscaping, and the building size required for the intended use.

f) Significant parking is available along the entirety of Woodrieve Road. Please refer to the accompanying Traffic Impact Assessment (TIA) for further details.

g) The minor shortfall of four parking spaces has allowed for additional landscaping along the frontage, reducing the contiguous mass of concrete when perceived from the street. Landscaping and site treatments are incorporated to break up large paved areas, enhancing the visual appeal while addressing the site's parking needs.

h) For further analysis, please refer to the accompanying Traffic Impact Assessment (TIA).

P1.2

Not applicable to the proposal.

C2.5.2 Bicycle parking numbers

Objective: That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.

PLANNING SCHEME REQUIREMENTS

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.

COMMENTS

A1

There are no bicycle parking requirements associated with storage use.

C2.5.3 Motorcycle parking numbers

Objective: *That the appropriate level of motorcycle parking is provided to meet the needs of the use.*

PLANNING SCHEME REQUIREMENTS**A1**

The number of on-site motorcycle parking spaces for all uses must:

- (a) be no less than the number specified in Table C2.4; and*
- (b) if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.*

P1

Motorcycle parking spaces for all uses must be provided to meet the reasonable needs of the use, having regard to:

- (a) the nature of the proposed use and development;*
 - (b) the topography of the site;*
 - (c) the location of existing buildings on the site;*
 - (d) any constraints imposed by existing development; and*
 - (e) the availability and accessibility of motorcycle parking spaces on the street or in the surrounding area.*
-

COMMENTS**A1**

The proposal generates a requirement of 1 parking space. As this is not provided, assessment against the performance criteria is required.

P1

It is considered that any motorcyclist to the site could utilise one of the car parking bays should it be required.

C2.5.4 Loading Bays

Objective: *That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.*

PLANNING SCHEME REQUIREMENTS**A1**

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

P1

Adequate space for loading and unloading of vehicles must be provided, having regard to:

- (a) the type of vehicles associated with the use;*
- (b) the nature of the use;*
- (c) the frequency of loading and unloading;*
- (d) the location of the site;*
- (e) the nature of traffic in the surrounding area;*
- (f) the area and dimensions of the site; and*
- (g) the topography of the site;*
- (h) the location of existing buildings on the site; and*
- (i) any constraints imposed by existing development.*

COMMENTS

A1

A loading bay has been provided, as demonstrated within the accompanying architectural set.

The following use standards are not applicable:

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

4.4.2 DEVELOPMENT STANDARDS

C2.6.1 Construction of parking areas

Objective: *That parking areas are constructed to an appropriate standard.*

PLANNING SCHEME REQUIREMENTS

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.*

COMMENTS

A1

All parking and access ways will be constructed with a durable all weather pavement, and be drained to the public stormwater system as notated on the accompanying architectural set.

C2.6.2 Design and layout of parking areas

Objective: *That parking areas are designed and laid out to provide convenient, safe and efficient parking.*

PLANNING SCHEME REQUIREMENTS

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.³⁵*

COMMENTS

A1.1

b) All parking, access ways, manoeuvring and circulation spaces are designed to satisfy the relevant Australian standards.

A1.2

One DDA compliant space has been provided that is close as practicable to the main entry point of the building and is designed in accordance with the relevant Australian Standards.

C2.6.3 Number of accesses for vehicles

Objective: *That:*

- (a) access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses;*
- (b) accesses do not cause an unreasonable loss of amenity of adjoining uses; and*
- (c) the number of accesses minimise impacts on the streetscape.*

PLANNING SCHEME REQUIREMENTS

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

The number of accesses for each frontage must be minimised, having regard to:

- (a) any loss of on-street parking; and*
- (b) pedestrian safety and amenity;*
- (c) traffic safety;*
- (d) residential amenity on adjoining land; and*
- (e) the impact on the streetscape.*

COMMENTS**A1**

As two accesses are proposed, assessment against the performance criteria is required.

P1

- a) There is no on street parking that will be impacted by the proposal. Furthermore, there is sufficient space along the entire length of the road for vehicles to park where required.
- b) Pedestrian activity along the site frontage is anticipated to be low considering the nature of the industrial precinct and layout of the road network.
- c) The two crossovers are considered the safest options as it allows for large vehicles to enter and circulate the site in a forward direction.
- d) There are no adjoining residential uses.
- e) The two crossovers will not affect the streetscape. As the land is designated for general industrial use, the proposed development aligns with the typology of development expected for the area. Additionally, there are no existing street trees that would be impacted.

A2

Within the Central Business Zone or in a pedestrian priority street xxx

COMMENTS**A2**

Not applicable to the proposal.

C2.6.5 Pedestrian access

Objective: *That pedestrian access within parking areas is provided in a safe and convenient manner.*

PLANNING SCHEME REQUIREMENTS

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.

COMMENTS

A1.1

The proposal provides pedestrian footpaths that satisfies the above requirements.

A1.2

DDA parking spaces can be designed to comply with the above requirements.

C2.6.6 Loading bays

Objective: *That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.*

PLANNING SCHEME REQUIREMENTS

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.

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.

COMMENTS

A1 & A2

The loading bays have been designed to meet Australian Standards.

The following provisions are not applicable to the proposal:

- C2.6.4 Lighting of parking areas within the General Business Zone and Central Business Zone
- C2.6.7 Bicycle parking and storage facilities within the General Business Zone and Central Business Zone
- C2.6.8 Siting of parking and turning areas
- C2.7.1 Parking precinct plan

5 CONCLUSION

The proposal is for a warehouse facility (storage use) and includes associated office spaces and 18 carparking spaces.

The site is located within the General industrial zone of the *Tasmanian Planning Scheme - Brighton*, where the proposed storage use is permitted. The site is subject to several overlays, including the Bushfire Prone Area Code, the Road and Railway Assets Code, the Signs Code, and the Parking and Sustainable Transport code. It is considered that the proposal is able to satisfy the relevant scheme provisions where required.

3 WOODRIVE ROAD, BRIDGEWATER

CIVIL DESIGN



AREA OF WORKS

SCALE: NTS



| DRAWING LIST | | |
|--------------|-------------------------|----------|
| DRG No. | TITLE | DRG Rev. |
| G-000 | COVER SHEET | P1 |
| G-001 | GENERAL NOTES | P1 |
| C-100 | SITE PLAN | P1 |
| C-105 | CUT & FILL | P1 |
| C-110 | TURNING | P1 |
| C-111 | TURNING | P1 |
| C-112 | TURNING | P1 |
| C-120 | CAR PARK SECTIONS | P1 |
| C-150 | TYPICAL DETAILS | P1 |
| H-100 | STORMWATER PLAN | P1 |
| H-101 | STORMWATER DETAIL PLAN | P1 |
| H-110 | STORMWATER LONG SECTION | P1 |
| H-111 | STORMWATER LONG SECTION | P1 |
| H-112 | STORMWATER LONG SECTION | P1 |
| H-200 | SEWER PLAN | P1 |
| H-210 | SEWER LONG SECTION | P1 |
| H-300 | WATER PLAN | P1 |

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| STATUS: | P L A N N I N G | | |

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CLIENT:
MULDER KAMPMAN DESIGN

PROJECT:
CIVIL DESIGN

SITE:
3 WOODRIVE RD, BRIDGEWATER
TAS 7030

COVER SHEET

| | | | |
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| SCALE AT A3: N/A | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: G-000 | | REVISION: P1 |

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UNLESS NOTED ON THE DESIGN DRAWINGS ALL CONSTRUCTION WORK SHALL COMPLY WITH THE RMS STANDARD DRAWINGS AND SPECIFICATIONS.

- ### SUBGRADE PREPARATION AND EARTHWORKS:

- ## TESTING

PROOF ROLLING REQUIRED AT THE FOLLOWING STAGES:

- SUBGRADE
- FILL AT MAX EVERY 1M DEPTH OF FILL
- SUB-BASE & BASE

PROOF ROLL TO BE WITH A TRUCK LOADED WITH MIN 10T NET. A PROOF ROLL IS A HOLD POINT. ACCEPTANCE OF A PROOF ROLL AND APPROVAL TO PROCEED IS TO BE DETERMINED BY THE COUNCIL AND THE SUPERINTENDENT.

1. ALL SITE SAFETY & MANAGEMENT PROCEDURES SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF STATE GROWTH SPECIFICATIONS: SECTION 168 OCCUPATIONAL HEALTH AND SAFETY & SECTION 176 ENVIRONMENTAL MANAGEMENT.
2. ALL PIPES UNDER TRAFFIC ABLE AREAS ARE TO BE BACK FILLED FULL DEPTH WITH 20 F.C.R. AND FULLY COMPACTED.
3. ALL STORM WATER PIPES LESS THAN DN225 TO BE PVC-U-SWJW CLASS "SN8" TO AS 1254 UNO.
4. ALL STORMWATER PIPES DN225 & LARGER TO BE POLYPROPYLENE TO AS5065 RRJ 'STORMPRO' CLASS SN8 UNO.
5. PROVIDE ANCHOR BLOCKS IN ACCORDANCE WITH TSD-SW01 WHERE PIPE GRADES EXCEED 10%.
6. CONNECTIONS TO LIVE COUNCIL MAINS TO BE CARRIED OUT BY COUNCIL OR APPROVED CONTRACTOR AT DEVELOPERS COST.
7. SW LOT CONNECTIONS DIRECTLY TO MAINS SHALL BE FORMED JUNCTIONS.
8. ALL DRAIN AND TRENCH CONSTRUCTION SHALL COMPLY WITH THE LGAT STANDARD DRG TSD-G01-v2
9. ALL MANHOLE LIDS IN TRAFFICABLE AREAS SHALL COMPLY WITH CLASS "B" LOAD RATING TO AUSTRALIAN STANDARD AS 3996 AND TSD-SW02.
10. ANY EXCAVATED TRENCHES IN EXCESS OF 1.5M IN DEPTH ARE TO BE ADEQUATELY SHORED TO PREVENT COLLAPSE DURING WORKS.
11. SUBSOIL DRAINS UNDER INFILTRATION SWALES SHALL BE SLOTTED UPVC CLASS "SN4" TO AS 1254 & INSTALLED IN ACCORDANCE WITH AS3500.
12. SUBSOIL DRAINS ARE TO BE CONNECTED TO STORMWATER PITS.

1. ALL LINEMARKING TO BE THERMOPLASTIC
2. FOR LINE TYPES AND SPECIFICATION REFER DEPARTMENT OF STATE GROWTH STANDARD DRAWING SD-81.001-REV 00
3. ANGULAR AGGREGATE TO BE APPLIED TO ALL THERMOPLASTIC LINE MARKING AS PER NOTES BELOW.
4. APPLY GLASS BEADS AS WELL AS ANGULAR AGGREGATE TO PEDESTRIAN CROSSING MARKINGS AS PER NOTES BELOW. IN ADDITION ENSURE SLIP RESISTANCE COMPLIES WITH AS 2890.1-2004 SECTION 4.4.2 PEDESTRIAN CROSSINGS
5. ACCESSIBLE PARKING PAVEMENT MARKING TO BE A WHITE SYMBOL ON A BLUE SQUARE IN ACCORDANCE WITH AS 2890.6-2009. CENTRE THE SYMBOL Laterally IN THE PARKING SPACE. SHARED SPACE MARKINGS TO BE AS PER AS 2890.6-2009. REFER ARCHITECTURAL DRAWINGS FOR BOLLARD SPECIFICATION
6. FOR ALL OTHER ROAD PAVEMENT MARKINGS REFER AS1742.2-2009

1. GLASS BEADS SHALL COMPLY WITH THE REQUIREMENTS OF AS 2009. AS WELL AS THE MIXED-IN GLASS BEADS ADDITIONAL CLASS D BEADS SHALL BE UNIFORMLY APPLIED TO THE SURFACE OF THERMOPLASTIC AT THE RATE OF 0.40kg/m² AS PART OF THE APPLICATION PROCESS AND BEFORE THE MATERIAL HAS COMMENCED TO SET.
2. ALL MARKINGS SHALL HAVE ANGULAR AGGREGATE APPLIED AT A RATE OF 0.2kg/m² BEFORE THE MARKING MATERIAL SKINS TO ENHANCE SKID RESISTANCE. THE AGGREGATE SHALL BE PLACED IMMEDIATELY PRIOR TO THE GLASS BEADS.

THE QUANTITY OF AGGREGATE SHALL BE AT THE RATE OF ONE (1) PART AGGREGATE TO TWO (2) PARTS GLASS BEADS (BY MASS).

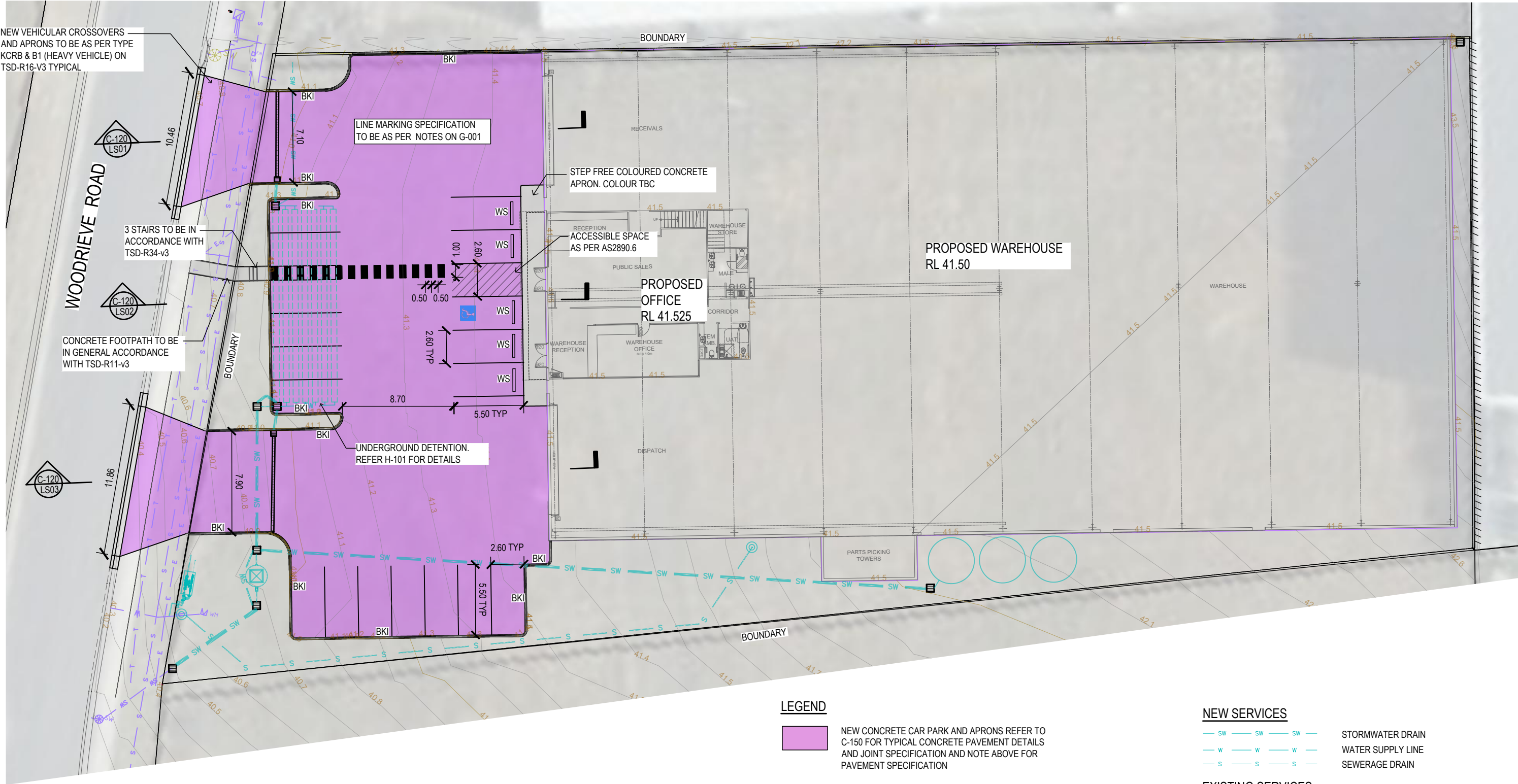
THE AGGREGATE SHALL BE WHITE QUARTZ OR OTHER APPROVED PRODUCT. THE QUARTZ MATERIAL SHALL BE WHITE; CLEAN; SOUND GRAINED ANGULAR TO SEMI ANGULAR; AND FREE FROM DELETERIOUS MATTER WITH 100% PASSING A 1mm SIEVE AND LESS THAN 1% PASSING 0.15mm SIEVE.

1. ALL SITE SAFETY & MANAGEMENT PROCEDURES SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF STATE GROWTH SPECIFICATIONS
SECTION 168 OCCUPATIONAL HEALTH AND SAFETY
AND SECTION 176 ENVIRONMENTAL MANAGEMENT.
2. ALL WATER WORKS ARE TO BE IN ACCORDANCE WITH WATER SUPPLY CODE WSA 03-2011-3.1 MRWA ED 2 AND TASWATER'S SUPPLEMENT.
3. ALL PIPES UNDER TRAFFICABLE AREAS ARE TO BE BACK FILLED FULL DEPTH WITH 20MM F.C.R AND FULLY COMPACTED.
4. WATER MAIN MATERIAL SHALL BE PVC-O CLASS 16 TO AS 1477 SERIES 2 WITH EPOXY COATED C.I. FITTINGS TO AS 2280 U.N.O.
5. THRUST BLOCKS TO BE PROVIDED AT STOP VALVES, HYDRANTS AND BENDS.
6. ALL DN100 AND GREATER DIAMETER WATER PIPES UNDER ROADS DEFINED BY "THE LIST TRANSPORT SEGMENTS DATASET"
AS : COLLECTOR, ARTERIAL/ MAJOR ARTERIAL OR HIGHWAYWAY
TO BE DCL WITH CORROSION PROTECTION SLEEVING AS PER CITY WEST WATER APPROVED PRODUCTS CATALOGUE AND AS3680
7. ALL MODIFICATIONS AND ADDITIONS TO WATER SERVICES WHICH CONNECT DIRECTLY ONTO TASWATER MAINS MUST BE CARRIED BY TASWATER AT THE DEVELOPER'S COST.
8. DETECTOR TAPE IS TO BE INSTALLED OVER ALL NON-METALLIC WATER MAINS.
9. PIPE COVER SHALL COMPLY WITH THE WATER SUPPLY CODE WSA 03-2011-3.1 MRWA ED. 2 AND TASWATER SUPPLEMENT SECTION 7.4.2.
DRG No Mrwa-W-202.
10. HYDRANT ROAD MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH TASWATER STANDARDS TW-W-311 TO 313.
11. ALL WATER SUPPLY PIPES ARE TO BE LOCATED WITH MINIMUM CLEARANCES TO OTHER SERVICES IN ACCORDANCE WITH THAT SPECIFIED IN THE WATER SUPPLY CODE WSA 03-2011-3.1 MRWA EDITION E - TABLE 5.5.
12. NOTE REMOVED.
13. POLY PIPE PROPERTY CONNECTIONS CROSSING ROADS SHALL BE CONDUIT SLEEVED IN ACCORDANCE WITH TASWATER SUPPLEMENTARY SPECIFICATION WSA-03.
14. CONDUITS FOR POLY WATER ROAD CROSSINGS ARE TO BE UPVC DN100 SN4 UNO. DUAL OR UP TOP 5 LOTS SERVICE ROAD CROSSINGS ARE TO BE 63 OD PE100 PN16 PIPE.
15. PIPE LAYING IN FILL MUST COMPLY WITH THE PARTICULAR REQUIREMENTS OF CLAUSE 7.5.2 OF WSA 03-2011.
16. ALL WATER MAINS WITH A SLOPE GREATER THAN 10% SHALL HAVE AN EMBEDMENT IN 20MM CEMENT TREATED CLASS 3 GRADED FCR TO WSA PS352 OR APPROVED EQUIVALENT (REFER ITEM L TABLE 203-B OF DRAWING MRWA-W-203) AND BAGGED TRENCH STOPS WITH SPACING AS PER MRWA-W-208 TABLE 208-A AND CONSTRUCTED AS PER FIGURES 209-E AND 209-F OF MRWA-W-209.

1. ALL SEWER WORKS ARE TO BE IN ACCORDANCE WITH WSA 02-014-3.1 MRWA Version 2.0 & TASWATER'S SUPPLEMENT
2. ALL SITE SAFETY MANAGEMENT PROCEDURES SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF STATE GROWTH SPECIFICATIONS: SECTION 168 OCCUPATIONAL HEALTH AND SAFETY AND SECTION 176 ENVIRONMENTAL MANAGEMENT
3. ALL MAINTENANCE STRUCTURES ARE TO BE IN ACCORDANCE WITH WSA STANDARD DRAWINGS.
4. MH COVERS SHALL BE TYPE "D" IN ROADS & TYPE "B" OTHERWISE.
5. ALL PIPES UNDER TRAFFICABLE AREAS ARE TO BE BACKFILLED FULL DEPTH WITH 20mm F.C.R AND FULLY COMPACTED.
6. NEW SEWER MAIN SHALL BE DN100 PVC-U-SWJ CLASS 'SN8' TO AS1260-U.N.O.
7. ALL PROPERTY CONNECTION BRANCH LINES TO BE DN100 PVC-U-SWJ "SN8" TO AS1260 UNO
8. ALL SEWER MAINS WITH A SLOPE GREATER THAN 10% SHALL HAVE CEMENT STABILIZED EMBEDMENT SYSTEM TYPE B, TABLE 202-A OF DRAWING MRWA-S-202 AND A BAGGED TRENCH STOP AT THE BOTTOM OF EACH SLOPE AS PER FIGURE 206-E AND 206-F OF MRWA-S-206
9. NEW SEWER DRAINS THAT CROSS EXISTING SERVICES ARE TO BE LAID WITH ALL REQUIRED MINIMUM CLEARANCES FROM OTHER SERVICE PROVIDERS' INFRASTRUCTURE

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| | | | | | | | TITLE: GENERAL NOTES | | | | |
| | | | | | | | PROJECT: CIVIL DESIGN | SCALE AT A3: N/A | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| | | | | | | | | PROJECT NO: FE-24076 | DRAWING NO: G-001 | REVISION: P1 | |
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NEW VEHICULAR CROSSOVERS
AND APRONS TO BE AS PER TYPE
KCRB & B1 (HEAVY VEHICLE) ON
TSD-R16-V3 TYPICAL



SITE PLAN
SCALE 1:300



LEGEND

-  NEW CONCRETE CAR PARK AND APRONS REFER TO C-150 FOR TYPICAL CONCRETE PAVEMENT DETAILS AND JOINT SPECIFICATION AND NOTE ABOVE FOR PAVEMENT SPECIFICATION
- BKI BARRIER KERB INTERGRATED TO BE AS PER DETAIL ON C-150
- WS WHEEL STOPS TO CAR SPACES INDICATED ON PLAN. WHEEL STOPS TO BE 'REPLAS' COLOUR YELLOW FIXED AS PER MANUFACTURER'S RECOMMENDATIONS. LOCATE 1100mm FROM END OF SPACES

NEW SERVICES

- SW — SW — SW — STORMWATER DRAIN
— W — W — W — WATER SUPPLY LINE
— S — S — S — SEWERAGE DRAIN

EXISTING SERVICES

- SW — SW — SW — STORM WATER DRAIN
— W — W — W — WATER SUPPLY LINE
— S — S — S — SEWERAGE DRAIN
— E — E — E — SEWERAGE DRAIN
— E-OH — E-OH — ELECTRICAL OVERHEAD
x x x x x x x x SERVICE TO BE ABANDONED

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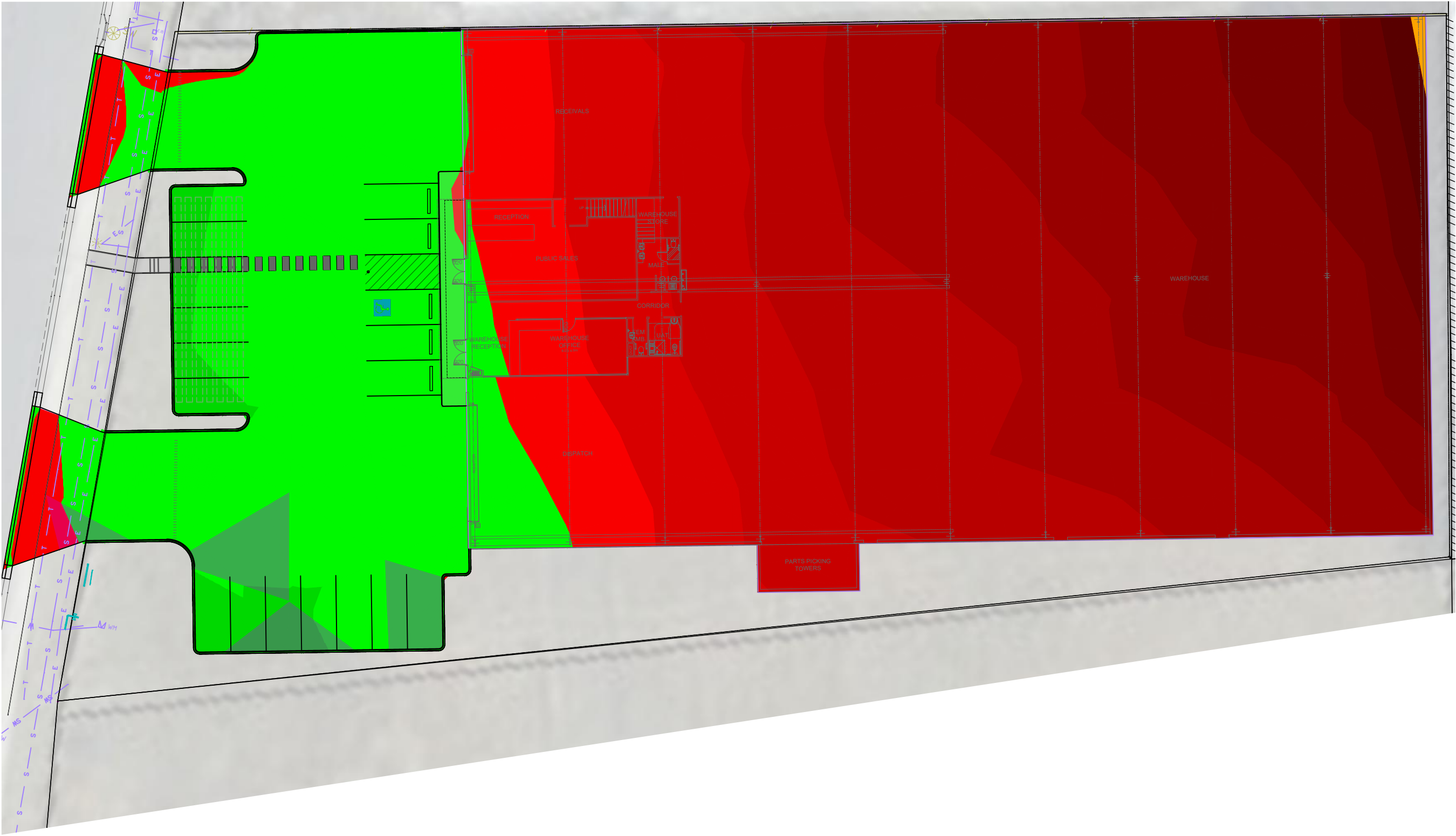
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| PROJECT: | CIVIL DESIGN |

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| TITLE: | SITE PLAN | | |
| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
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| PROJECT NO: | DRAWING NO: | REVISION: | |
| FE-24076 | C-100 | P1 | |

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| CUT AND FILL | | | | |
|--------------|-------------|--------|---|--|
| Lower_value | Upper_value | Colour | | |
| -4.0 | to | -3.8 | m | |
| -3.8 | to | -3.6 | m | |
| -3.6 | to | -3.4 | m | |
| -3.4 | to | -3.2 | m | |
| -3.2 | to | -3.0 | m | |
| -3.0 | to | -2.8 | m | |
| -2.8 | to | -2.6 | m | |
| -2.6 | to | -2.4 | m | |
| -2.4 | to | -2.2 | m | |
| -2.2 | to | -2.0 | m | |
| -2.0 | to | -1.8 | m | |
| -1.8 | to | -1.6 | m | |
| -1.6 | to | -1.4 | m | |
| -1.4 | to | -1.2 | m | |
| -1.2 | to | -1.0 | m | |
| -1.0 | to | -0.8 | m | |
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| -0.4 | to | -0.2 | m | |
| -0.2 | to | 0.0 | m | |
| 0.0 | to | 0.2 | m | |
| 0.2 | to | 0.4 | m | |
| 0.4 | to | 0.6 | m | |
| 0.6 | to | 0.8 | m | |
| 0.8 | to | 1.0 | m | |
| 1.0 | to | 1.2 | m | |
| 1.2 | to | 1.4 | m | |
| 1.4 | to | 1.6 | m | |
| 1.6 | to | 1.8 | m | |
| 1.8 | to | 2.0 | m | |

CUT AND FILL
SCALE 1:300



CUT AND FILL VOLUME
CUT: -2194m³
FILL: 123m³
BALANCE: -2071m³

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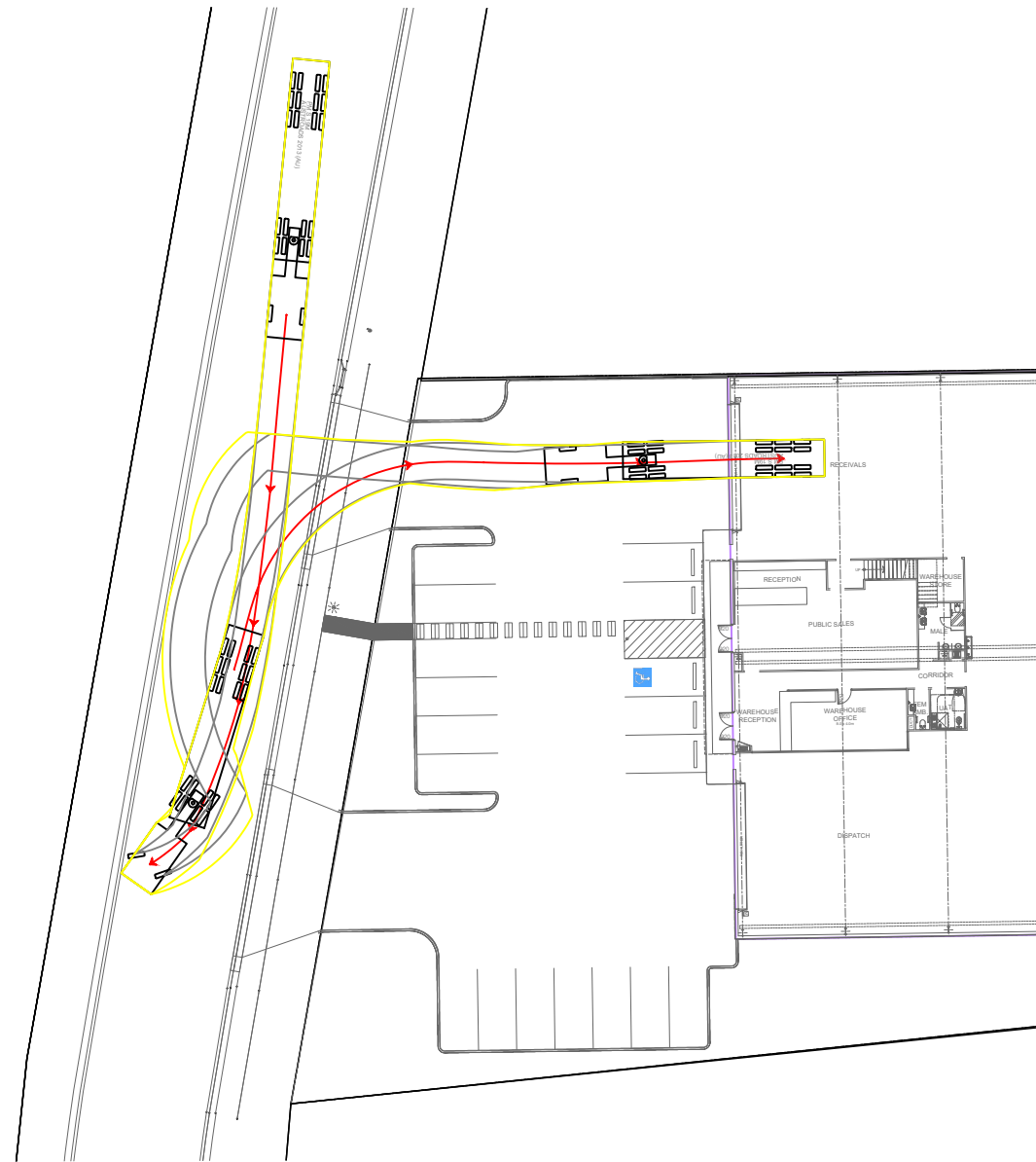
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PROJECT:
CIVIL DESIGN

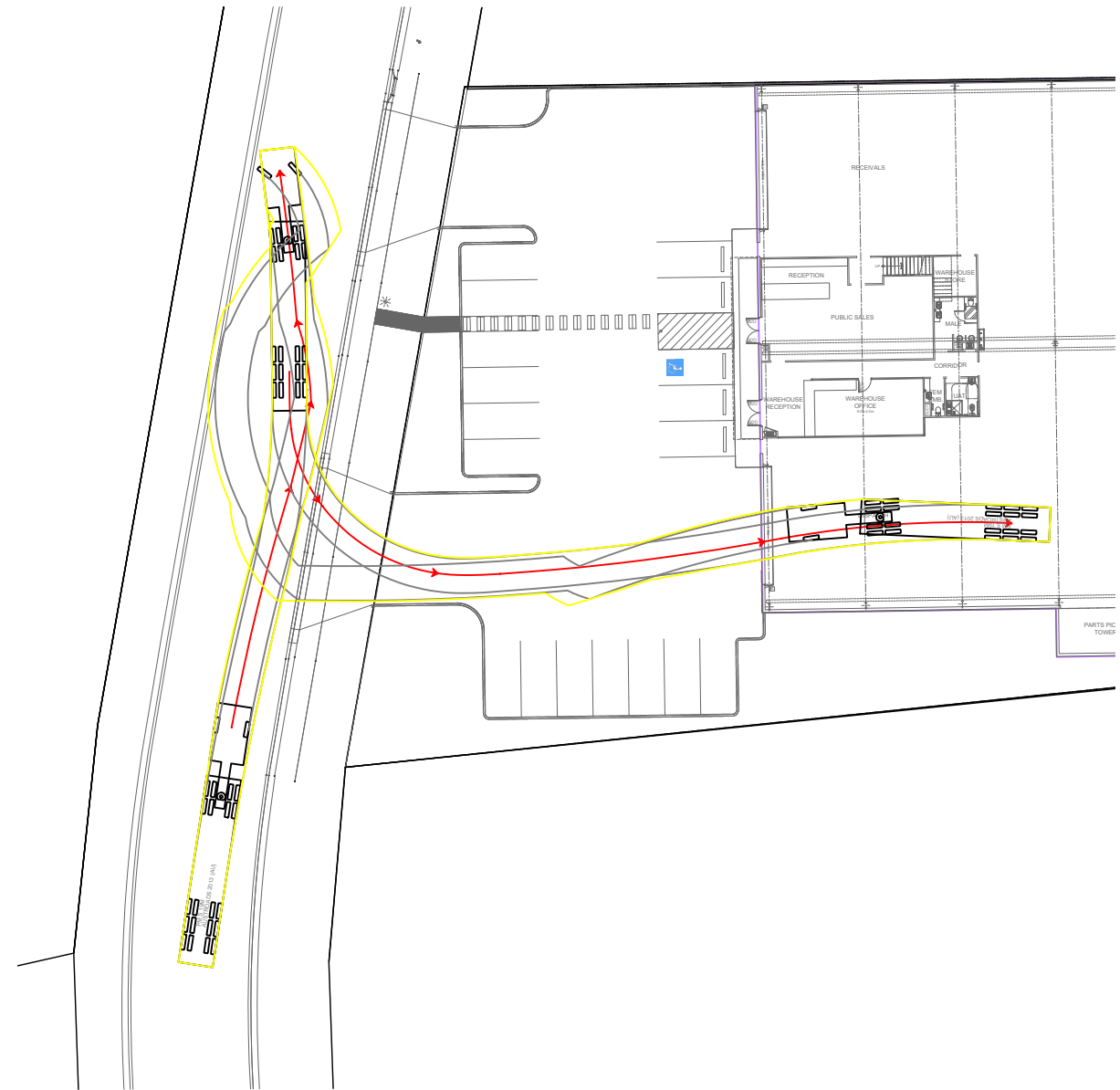
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TAS 7030

TITLE:
CUT AND FILL

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19m SEMI REVERSE IN ENTRANCE 1
SCALE 1:500



19m SEMI REVERSE IN ENTRANCE 2
SCALE 1:500



NOTE:
SEMI-TRAILERS ACCESS THE SITE INFREQUENTLY,
TYPICALLY ONCE PER FORTNIGHT

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| REV: | DESCRIPTION: | BY: | DATE: |
| STATUS: | P L A N N I N G | | |

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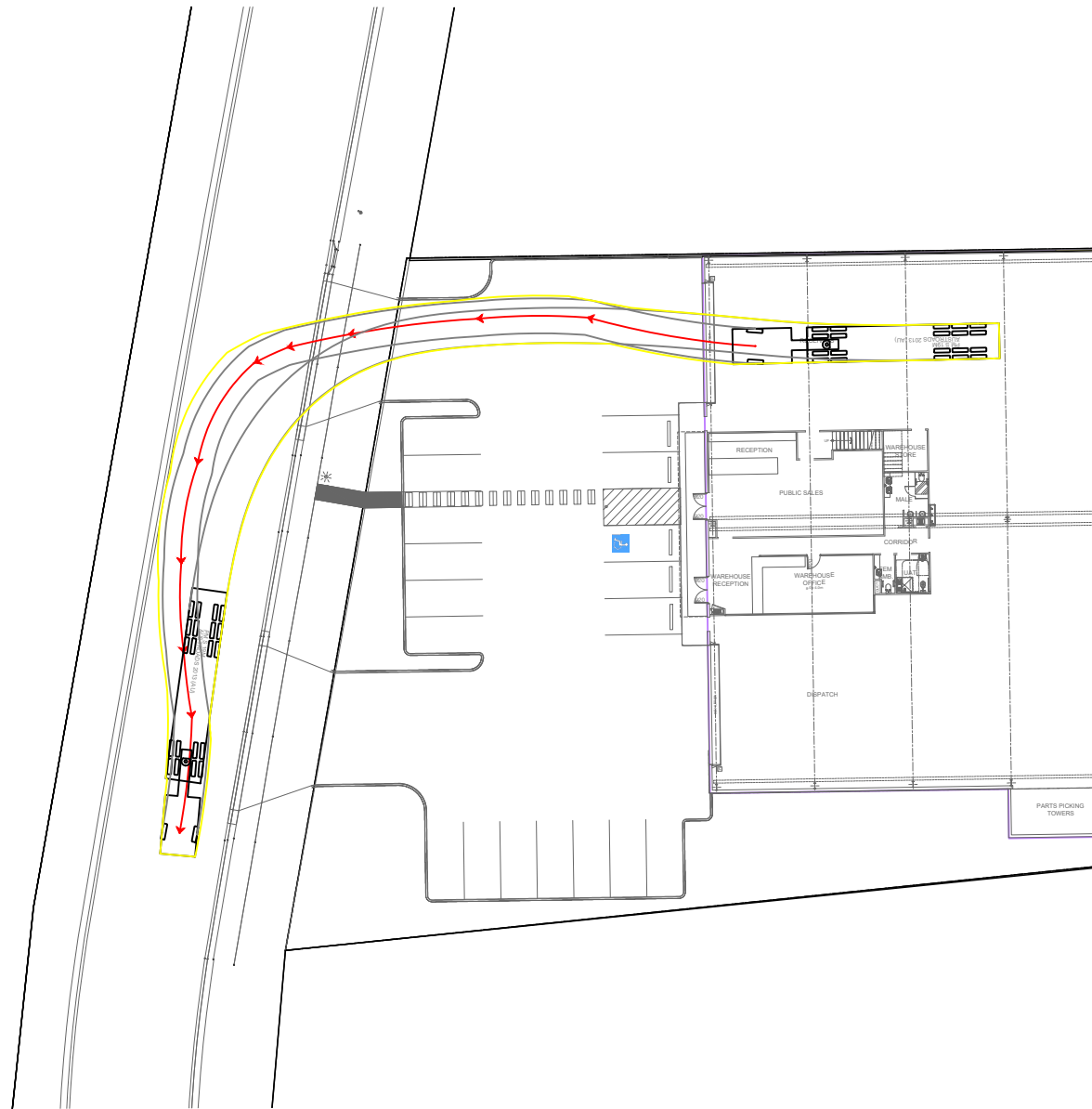
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w: www.flussig.com.au
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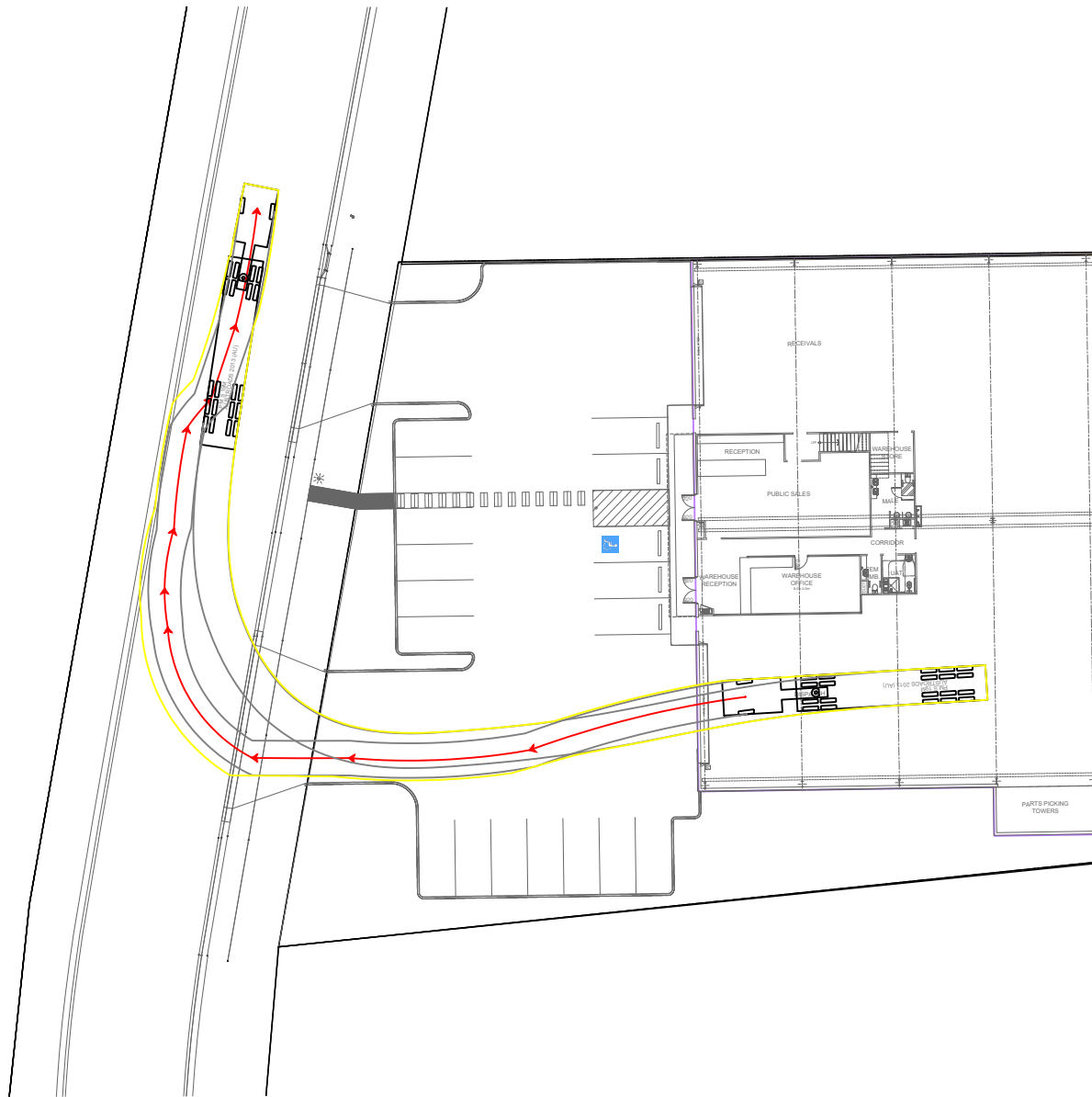
PROJECT:
CIVIL DESIGN

| | | | |
|--|----------------------|-----------------|----------------|
| SITE: 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 | | | |
| TITLE: TURNING | | | |
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: C-110 | REVISION: P1 | |

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19m SEMI FORWARD OUT ENTRANCE 1
SCALE 1:500



19m SEMI FORWARD OUT ENTRANCE 2
SCALE 1:500

NOTE:
SEMI-TRAILERS ACCESS THE SITE INFREQUENTLY,
TYPICALLY ONCE PER FORTNIGHT

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| REV: | DESCRIPTION: | BY: | DATE: |
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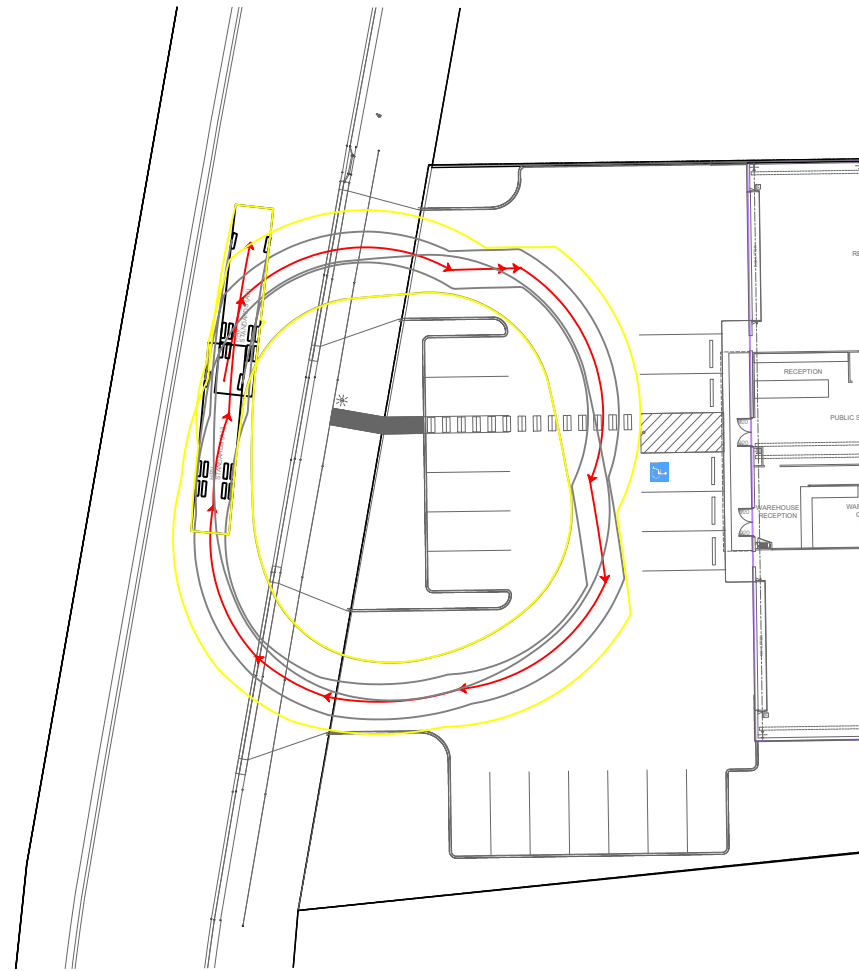
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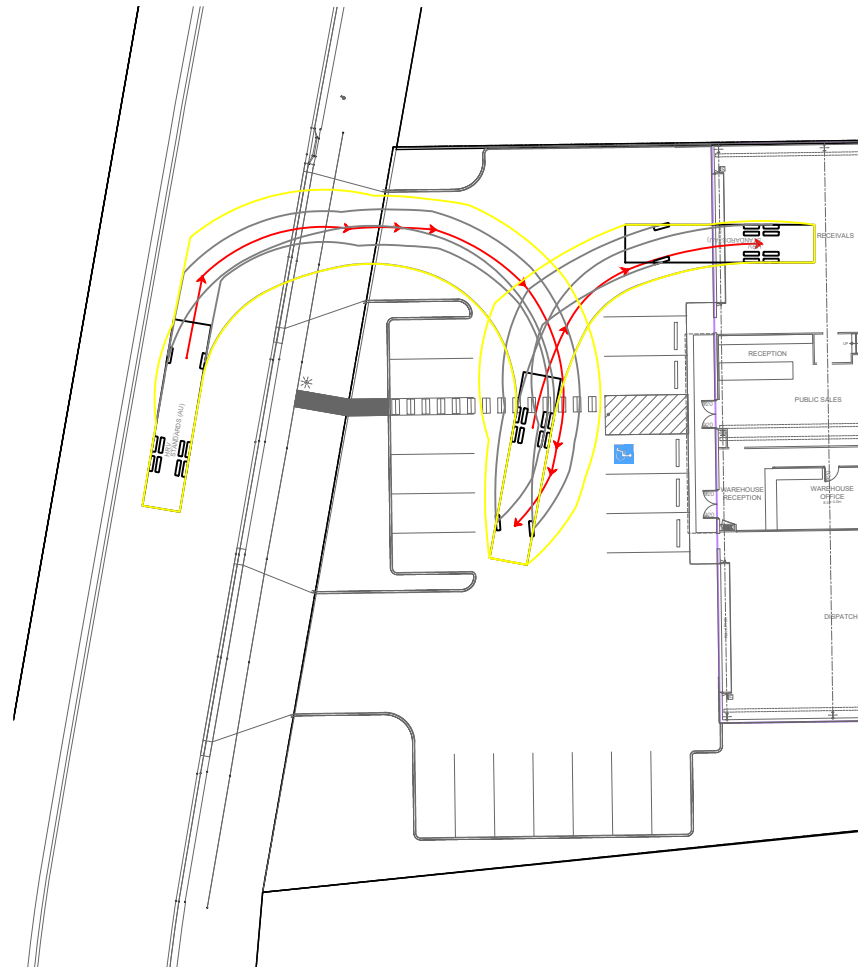
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PROJECT:
CIVIL DESIGN

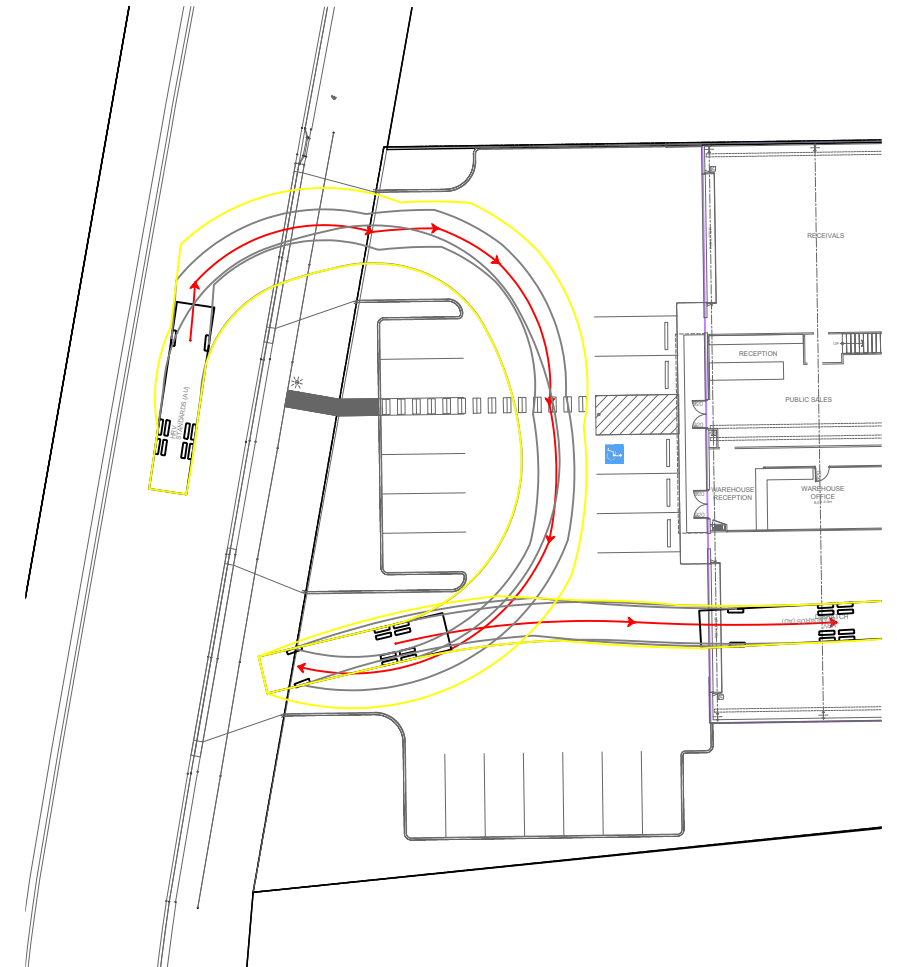
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| SITE: 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 | | | |
| TITLE: TURNING | | | |
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: C-111 | REVISION: P1 | |



HRV SITE CIRCULATION
SCALE 1:500



HRV FORWARD ACCESS FROM STREET
TO REVERSE INTO RECEIVING AREA
SCALE 1:500



HRV FORWARD ACCESS FROM STREET
TO REVERSE INTO DISPATCH AREA
SCALE 1:500



NOTE:
HRVs WILL BE THE LARGEST REGULAR VEHICLE
ACCESSING THE SITE

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| REV: | DESCRIPTION: | BY: | DATE: |
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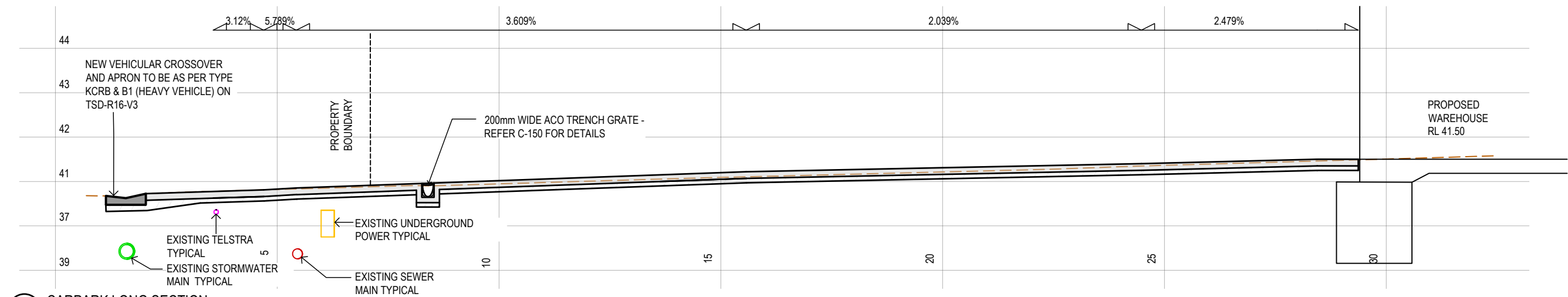
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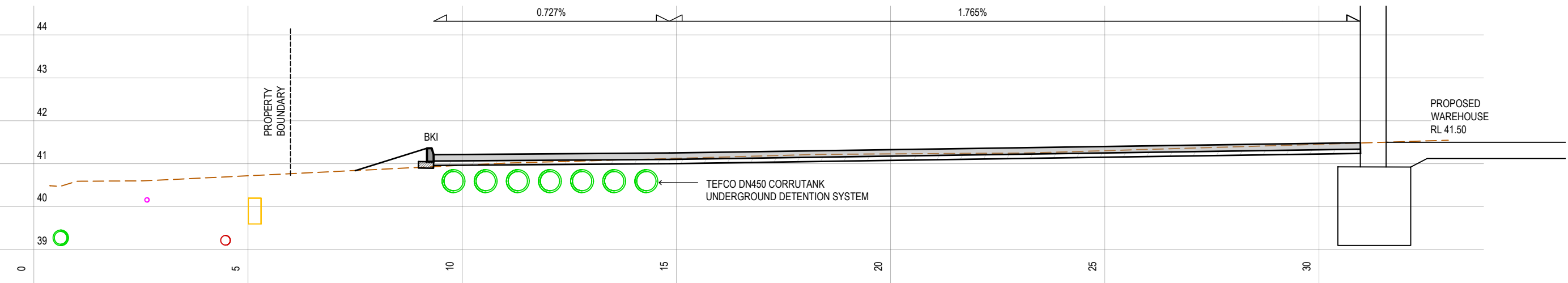
PROJECT:
CIVIL DESIGN

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|---|----------------------|-----------------|----------------|
| SITE: 3 WOODRIVE RD, BRIDGEWATER TAS 7030 | | | |
| TITLE: TURNING | | | |
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: C-112 | REVISION: P1 | |

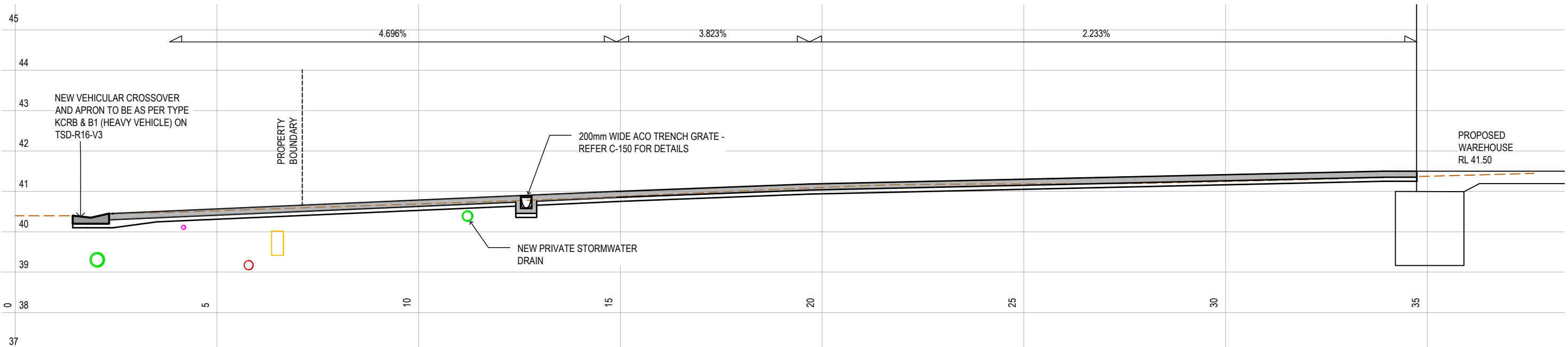
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C-100
LS01 SCALE 1:100
CARPARK LONG SECTION



C-100
LS02 SCALE 1:100
CARPARK LONG SECTION



C-100
LS03 SCALE 1:100
CARPARK LONG SECTION

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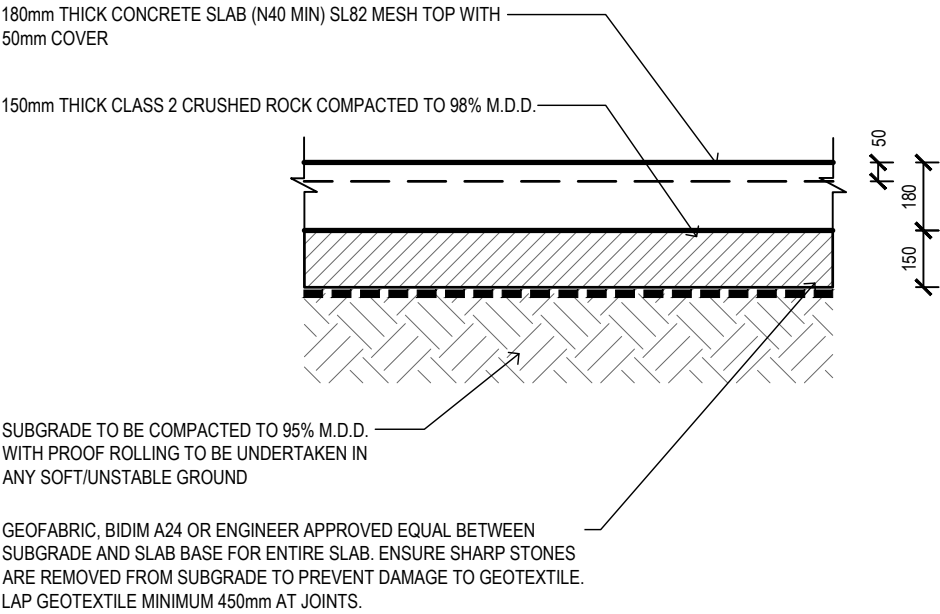
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CIVIL DESIGN

SITE:
3 WOODRIEVE RD, BRIDGEWATER TAS 7030

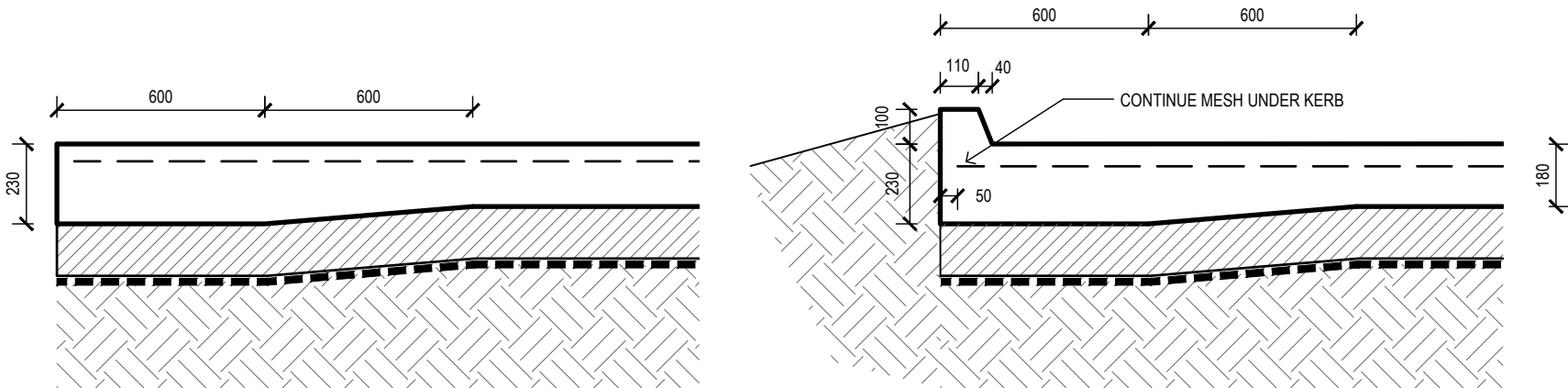
TITLE:
CAR PARK SECTIONS

| | | | |
|-------------------------|----------------------|-----------------|----------------|
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: C-120 | REVISION: P1 | |

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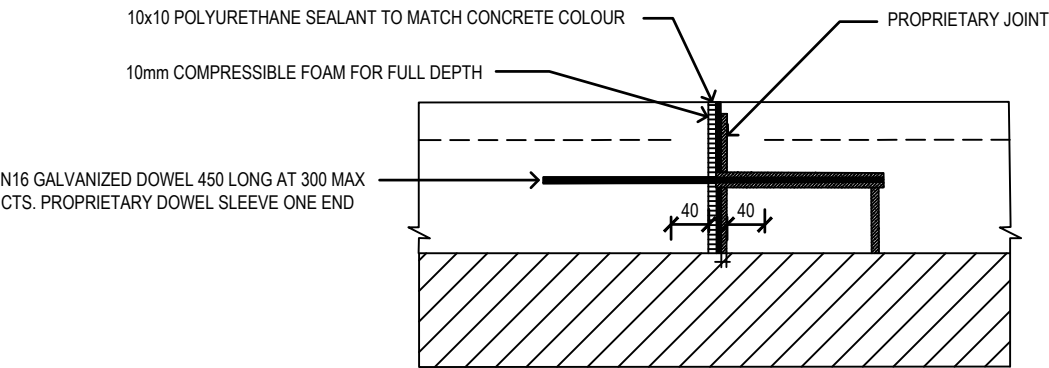


TYPICAL TRAFFICABLE HARDSTAND PROFILE
SCALE 1:20

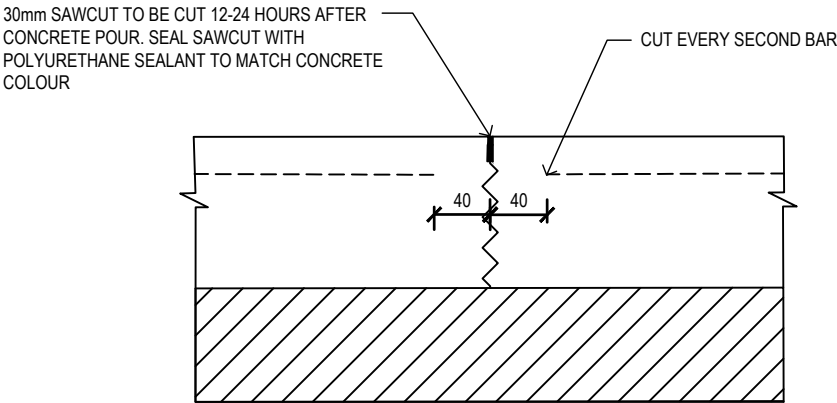


FREE END SLAB THICKENING DIMENSIONS
SCALE 1:20

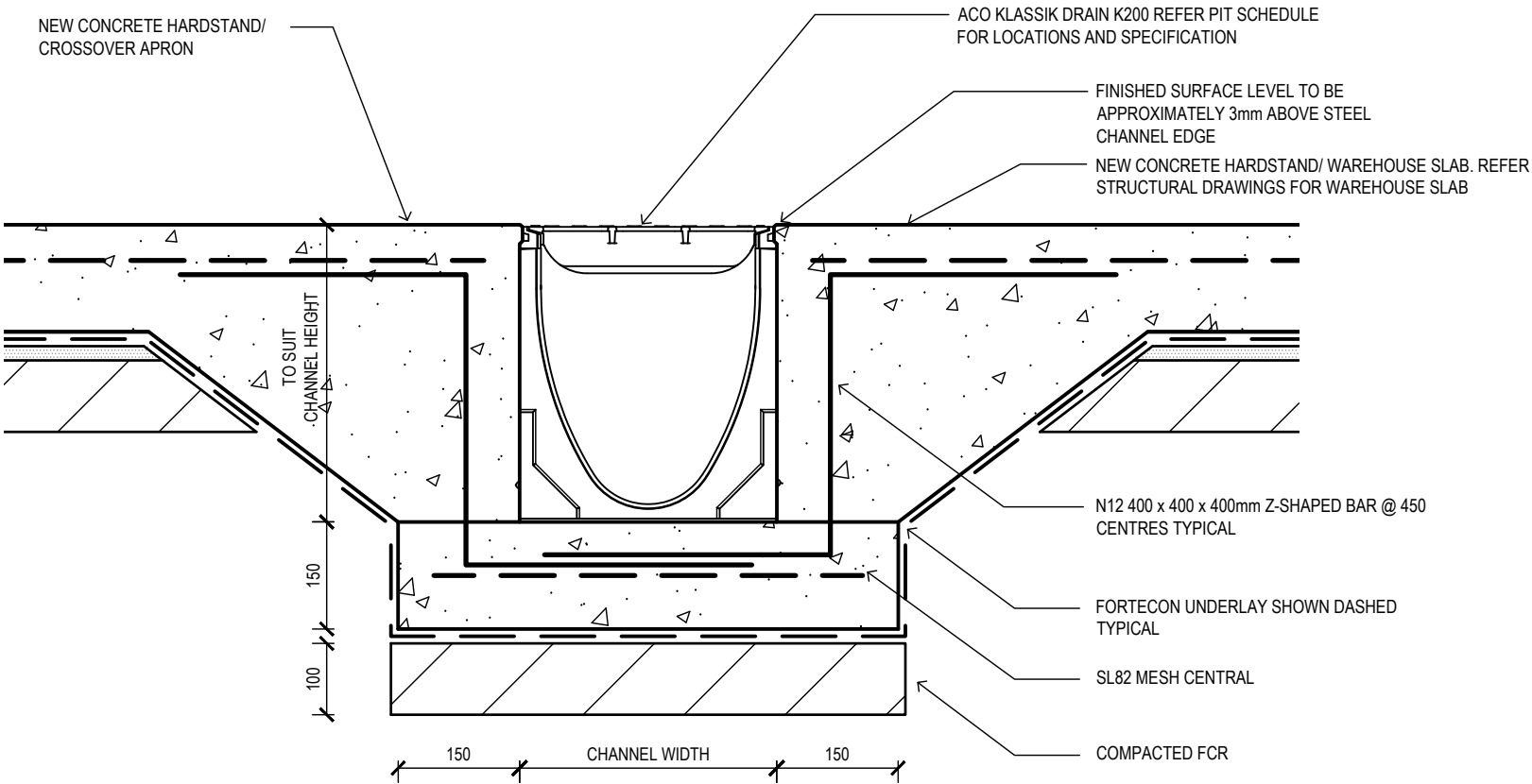
BKI - INTEGRATED BARRIER KERB
SCALE 1:20



TYPICAL EXPANSION JOINT
SCALE 1:10



TYPICAL SAWCUT JOINT
SCALE 1:10



TRAFFICABLE GRATED TRENCH DETAIL
SCALE 1:10

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| STATUS: | P L A N N I N G | | |

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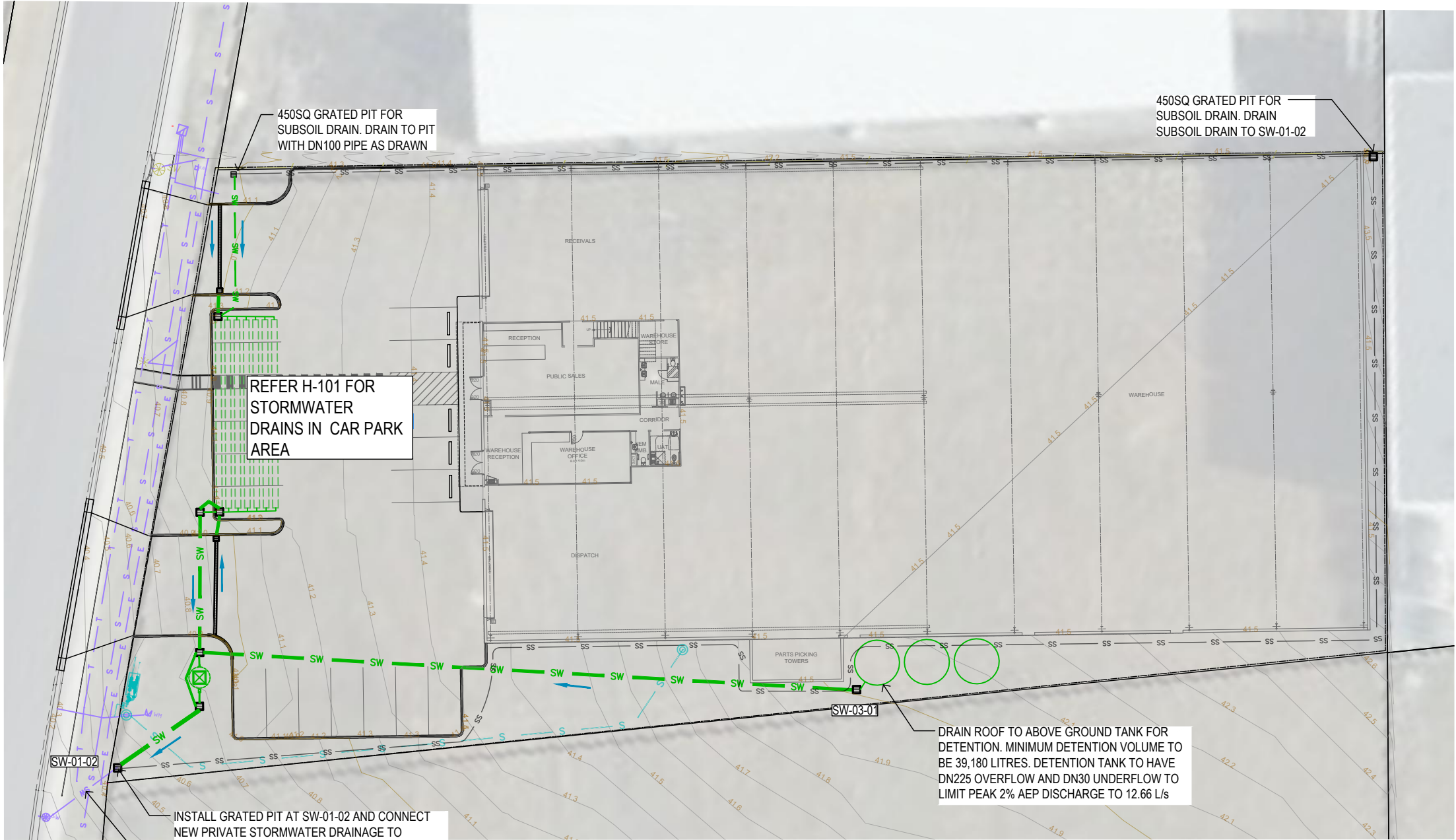
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|--|----------------------|-----------------|----------------|
| SITE: 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 | | | |
| TITLE: TYPICAL DETAILS | | | |
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: C-150 | REVISION: P1 | |

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NEW STORMWATER SERVICES

- STORMWATER FLOW DIRECTION
- 600SQ GRATED STORMWATER PIT WITH CLASS D LID IN TRAFFICABLE AREAS AND CLASS B IN NON TRAFFICABLE AREAS UNLESS NOTED OTHERWISE
- NEW STORMWATER PIPE. REFER LONG SECTIONS FOR SIZES
- ATLAN FLOW FILTER HS 1200/4
- SUBSOIL DRAIN TO BUILDING PERIMETER. DRAINAGE LINE TO BE 100mm SOCKED AG DRAIN MIN 500mm DEEP AND 0.5% FALL

NEW SERVICES

- WATER SUPPLY LINE
- SEWERAGE DRAIN

EXISTING SERVICES

- STORM WATER DRAIN
- WATER SUPPLY LINE
- SEWERAGE DRAIN
- SEWERAGE DRAIN
- ELECTRICAL OVERHEAD
- SERVICE TO BE ABANDONED

STORMWATER SITE PLAN
SCALE 1:400



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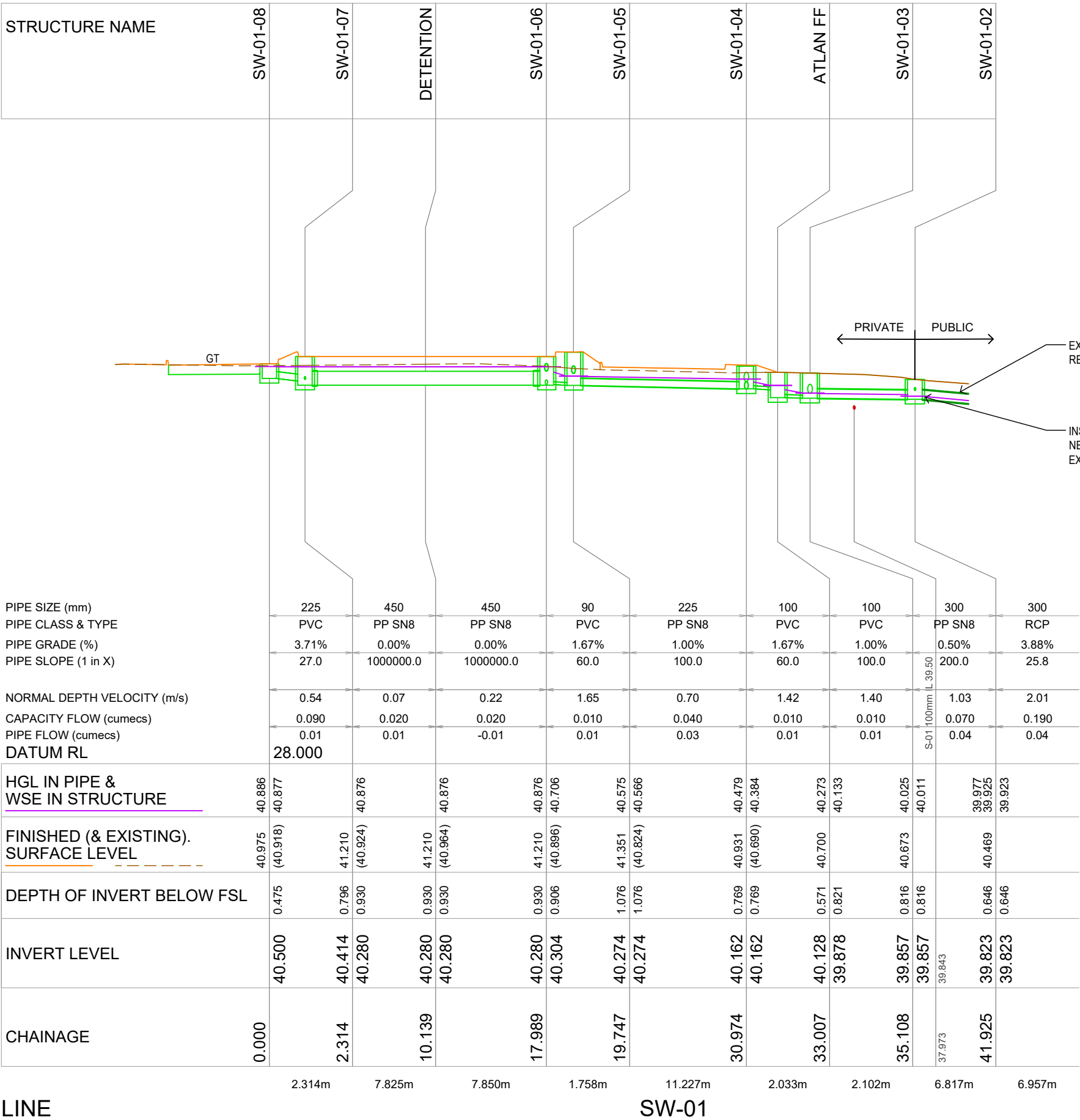
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PROJECT:

CIVIL DESIGN

SITE:

3 WOODRIEVE RD, BRIDGEWATER TAS 7030

TITLE:

STORMWATER LONG SECTION

| | | | |
|---------------|-------------|-----------|----------|
| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
| V1:150 H1:300 | 08/11/24 | DH | MM |
| PROJECT NO: | DRAWING NO: | REVISION: | |
| FE-24076 | H-110 | P1 | |

| | | |
|--------------------------------------|--------------------|--------------------|
| STRUCTURE NAME | SW-01-06 | SW-02-01 |
| PIPE SIZE (mm) | 150 | |
| PIPE CLASS & TYPE | PVC | |
| PIPE GRADE (%) | 8.71% | |
| PIPE SLOPE (1 in X) | 11.5 | |
| NORMAL DEPTH VELOCITY (m/s) | 0.62 | |
| CAPACITY FLOW (cumecs) | 0.050 | |
| PIPE FLOW (cumecs) | 0.01 | |
| DATUM RL | 29.000 | |
| HGL IN PIPE & WSE IN STRUCTURE | 40.876 40.706 | 40.889 40.958 |
| FINISHED (& EXISTING). SURFACE LEVEL | 41.210 (40.896) | 40.964 (40.855) |
| DEPTH OF INVERT BELOW FSL | 0.906 0.906 | 0.434 |
| INVERT LEVEL | 40.304 40.304 | 40.530 |
| CHAINAGE | 0.000 | 2.601 |

LINE

2.601m

SW-02

| | | |
|--------------------------------------|------------------|--------------------|
| STRUCTURE NAME | SW-03-01 | SW-01-04 |
| PIPE SIZE (mm) | 225 | |
| PIPE CLASS & TYPE | PP SN8 | |
| PIPE GRADE (%) | 2.24% | |
| PIPE SLOPE (1 in X) | 44.7 | |
| NORMAL DEPTH VELOCITY (m/s) | 0.44 | |
| CAPACITY FLOW (cumecs) | 0.070 | |
| PIPE FLOW (cumecs) | 0.01 | |
| DATUM RL | 29.000 | |
| HGL IN PIPE & WSE IN STRUCTURE | 41.432 42.007 | 40.479 40.384 |
| FINISHED (& EXISTING). SURFACE LEVEL | | 40.931 (40.690) |
| DEPTH OF INVERT BELOW FSL | 0.640 | 0.769 0.769 |
| INVERT LEVEL | 41.367 | 40.162 40.162 |
| CHAINAGE | 0.000 | 53.924 |

LINE

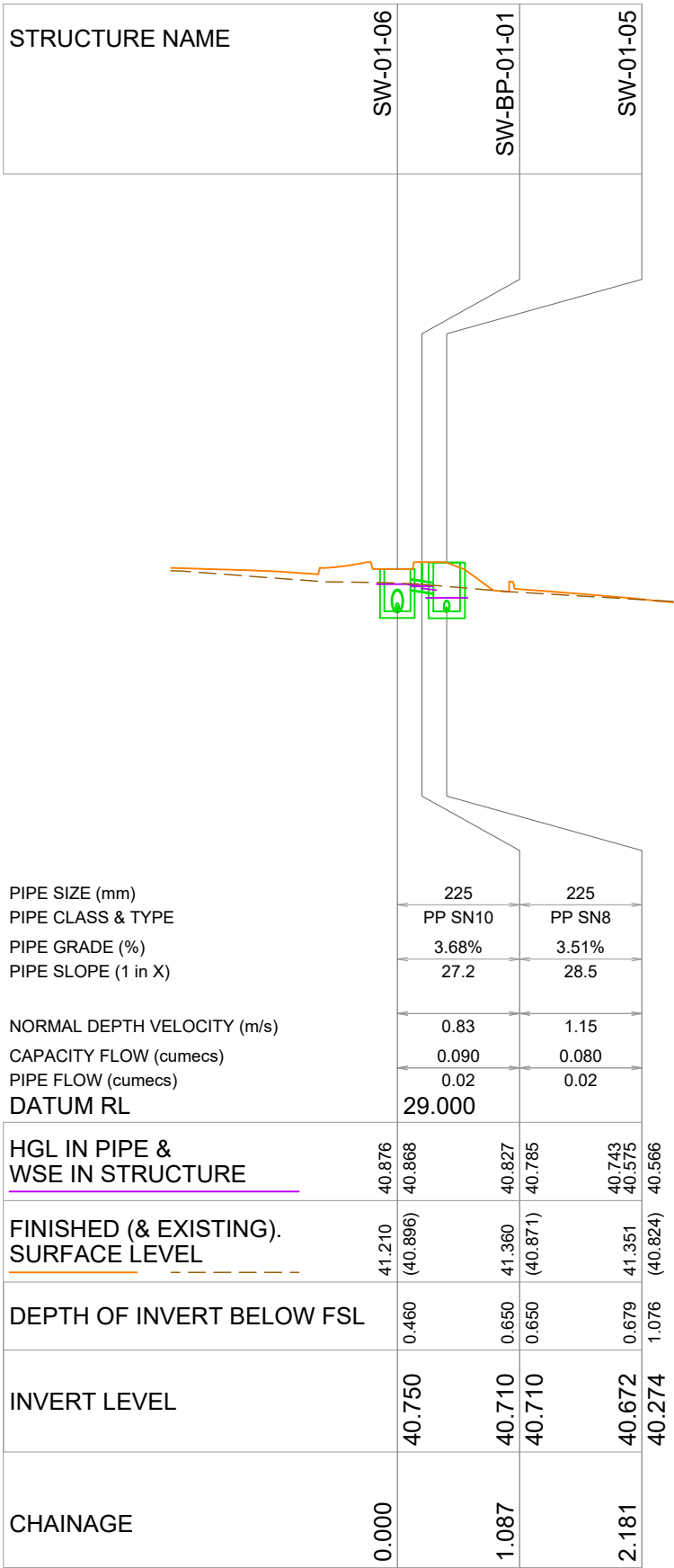
53.924m

SW-03

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| | | | | | | | | TITLE: STORMWATER LONG SECTION | | | | |
| | P1 | PLANNING | | | DH | | | 08/11/24 | SCALE AT A3: V1:150 H1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| | REV: | DESCRIPTION: | | | BY: | | | DATE: | PROJECT NO: FE-24076 | DRAWING NO: H-111 | | REVISION: P1 |
| | STATUS: | | | | | | | | | | | |
| | P L A N N I N G | | | | | | | | | | | |

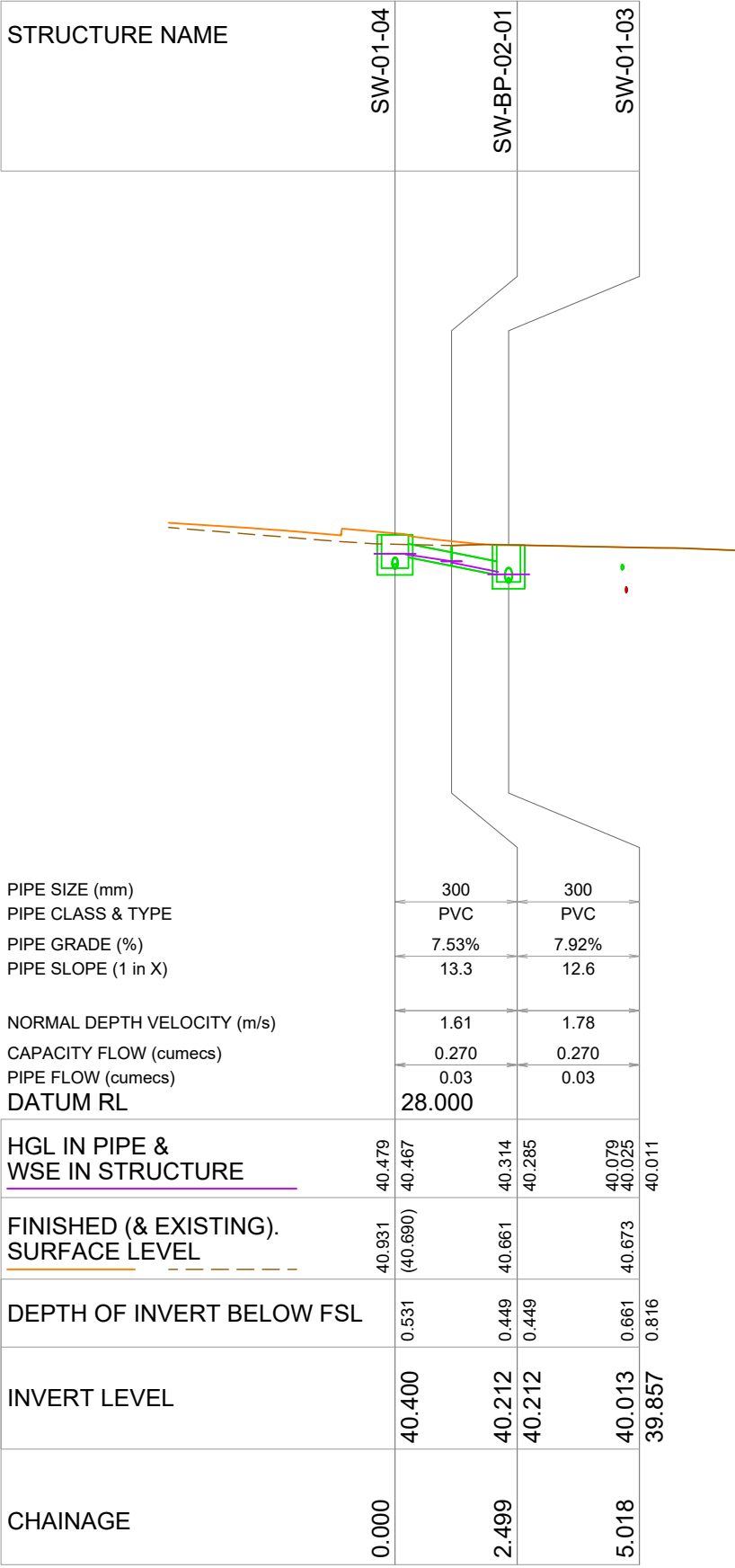


LINE

SW-BP-01

1.087m

1.093m



LINE

SW-BP-02

2.499m

2.519m

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| P1 | PLANNING | DH | 08/11/24 |
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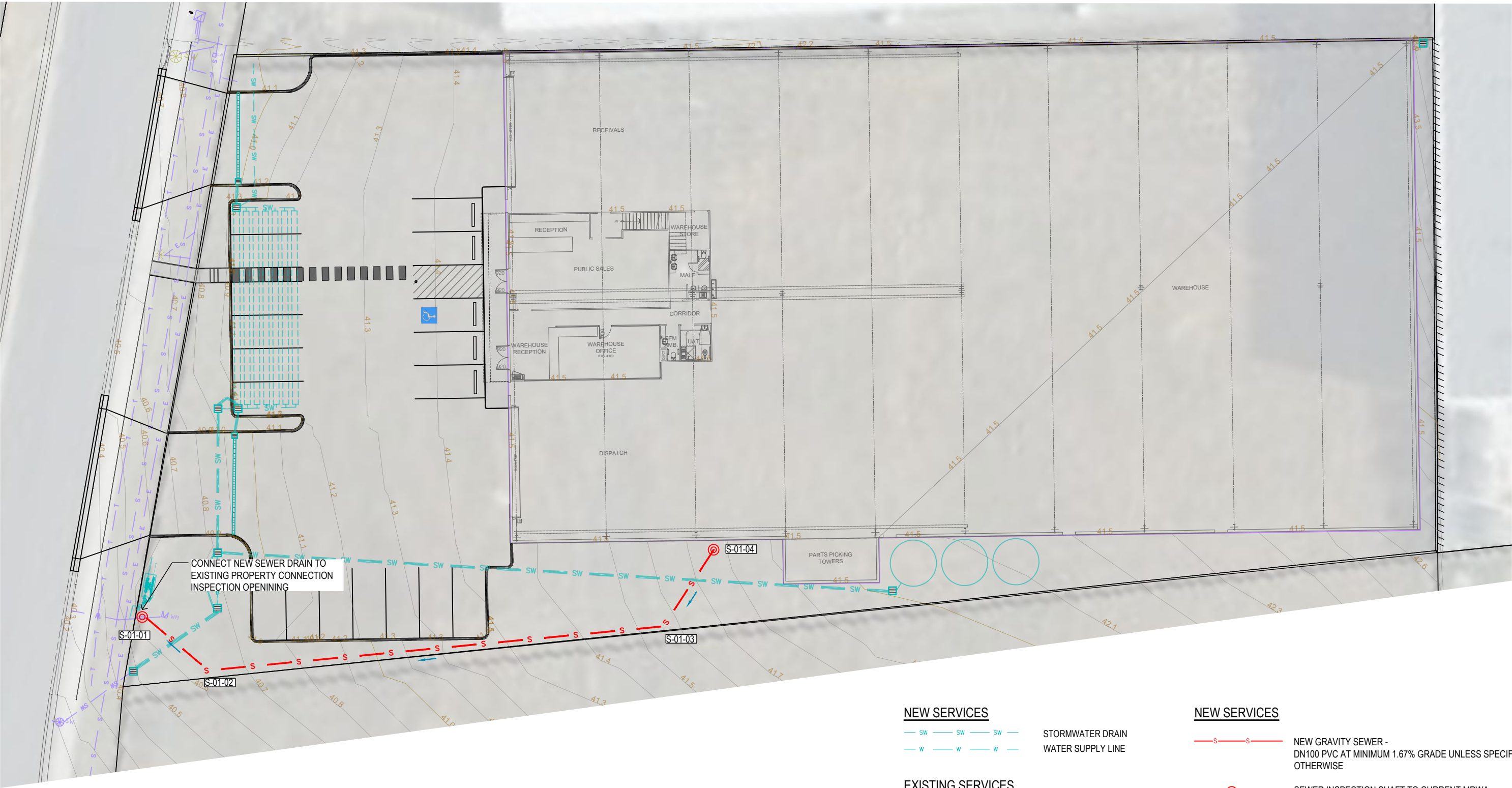
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| PROJECT: | CIVIL DESIGN |

| | |
|--------------|--------------------------------------|
| SITE: | 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 |
| TITLE: | STORMWATER LONG SECTION |
| SCALE AT A3: | V1:150 H1:300 |
| DATE: | 08/11/24 |
| DRAWN: | DH |
| CHECKED: | MM |
| PROJECT NO: | FE-24076 |
| DRAWING NO: | H-112 |
| REVISION: | P1 |



SEWER PLAN

SCALE 1:200



NEW SERVICES

- SW SW SW SW
 - W W W W
- STORMWATER DRAIN
WATER SUPPLY LINE

EXISTING SERVICES

- SW SW SW SW
 - W W W W
 - S S S S
 - E E E E
 - E-OH E-OH E-OH E-OH
 - x x x x x x x x
- STORM WATER DRAIN
WATER SUPPLY LINE
SEWERAGE DRAIN
SEWERAGE DRAIN
ELECTRICAL OVERHEAD
SERVICE TO BE ABANDONED

NEW SERVICES

- S S
 - ⊙
- NEW GRAVITY SEWER -
DN100 PVC AT MINIMUM 1.67% GRADE UNLESS SPECIFIED
OTHERWISE
SEWER INSPECTION SHAFT TO CURRENT MRWA
STANDARDS

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| PROJECT: | CIVIL DESIGN |

SITE:

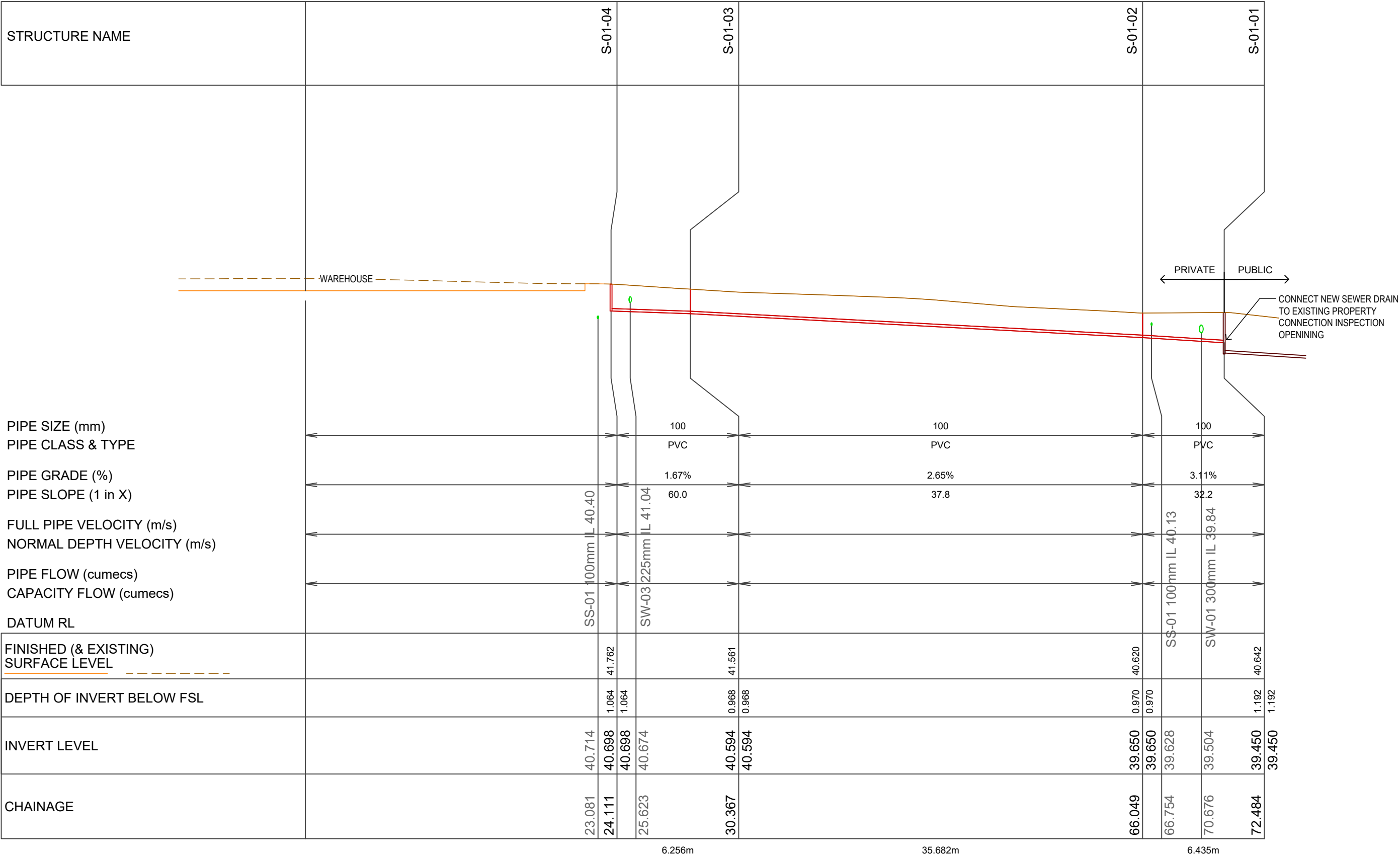
3 WOODRIEVE RD, BRIDGEWATER
TAS 7030

TITLE:

SEWER PLAN

| | | | |
|-------------------------|----------------------|----------------|---------------|
| SCALE AT A3: 1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED MM |
| PROJECT NO: FE-24076 | DRAWING NO: H-200 | REVISION P1 | |

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LINE

S-01

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PROJECT:
CIVIL DESIGN

SITE:
3 WOODRIEVE RD, BRIDGEWATER
TAS 7030


TITLE:
SEWER LONG SECTION

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| SCALE AT A3: V1:150 H1:300 | DATE: 08/11/24 | DRAWN: DH | CHECKED: MM |
| PROJECT NO: FE-24076 | DRAWING NO: H-210 | REVISION: P1 | |

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CIVIL DRAWINGS
STIRLINGS PERFORMANCE STEEL
3 WOODRIEVE ROAD
BRIDGEWATER

| | | | |
|------|--------------------------------|---|------------|
| C001 | COVER | A | 20/03/2025 |
| C002 | ENGINEERING NOTES | A | 20/03/2025 |
| C101 | SITE PLAN | A | 20/03/2025 |
| C103 | SEWER AND WATER PLAN - SHEET 1 | A | 20/03/2025 |
| C104 | WATER LOT CONNECTION DETAIL | A | 20/03/2025 |

| | | | | | | | | | | | | |
|-----|-------------------------|------------|-----------|-----|---|----------|-----------------------------|-------------|---------------------------------|--------------|--------------|-----------------|
| | | | DRAWN: | DHJ | <div><div>Lower Ground 199 Macquarie Street Hobart TAS 7000 03 6234 8666 mail@aldanmark.com.au www.aldanmark.com.au</div></div> | PROJECT: | STIRLINGS PERFORMANCE STEEL | ADDRESS: | 3 WOODRIEVE ROAD BRIDGEWATER | SHEET: COVER | | |
| | | | CHECKED: | GR | | | | | | | | |
| | | | DESIGN: | DHJ | | | | | | | | |
| | | | CHECKED: | GR | | | | | | | | |
| A | DEVELOPMENT APPLICATION | 20/03/2025 | VERIFIED: | MG | | | | CLIENT: | LESTER MULDER | SCALE: | AS INDICATED | TOTAL SHEETS: 5 |
| REV | ISSUE | DATE | APPROVAL | | | | | PROJECT No: | 25E99-22 | SHEET: | C001 | REV: A |

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-v3 & TSD-E02-v3.
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 UDM GROUP SURVEYORS.
10. ARCHITECTURAL UNIT AND SITE LAYOUT UNDERTAKEN AND PROVIDED BY MULDER KAMPMAN DESIGN.
11. FLOOR LEVELS SET BY ARCHITECT. DRIVEWAY GRADING BASED ON THESE.
12. COUNCIL APPROVED PLANNING PERMIT REFERENCE DA 2025/00007
13. TASWATER APPROVED PLANNING AUTHORITY NOTICE TWDA 2025/00094-BTN

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-v3 & TSD-R14-v3 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 DEVELOPER 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 2022 - VOLUME 2 AND PART FP2 OF THE NCC 2022 - 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 AS PROSCRIBED IN AS3500.2 FOR SEWER AND AS3500.3 FOR STORMWATER 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 CONSTRUCTED IN ACCORDANCE WITH WSAA DRAWING MRWA-W-111 PROVIDED WITH METERAGE AND BACKFLOW PREVENTION AS PER TASWATER STANDARD DRAWINGS TWS-W-0002 SERIES.
17. ALL PIPEWORK TO BE INSPECTED BY THE RELEVANT AUTHORITY 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 | DIAMETER |
| ≤450 | 350 | 350 | - |
| ≤600 | 450 | 450 | 600 |
| >600 ≤900 | 600 | 600 | 900 |
| >900 ≤1200 | 600 | 900 | 1000 |
| >1200 | 900 | 900 | 1000 |

| | | | | | | | | | | |
|-----|-------------------------|------------|-----------|-----|---|--------------------------------------|---|--------------------------|-----------------|----------|
| | | | DRAWN: | DHJ | <div><div>Lower Ground 199 Macquarie Street Hobart TAS 7000 03 6234 8666 mail@aldanmark.com.au www.aldanmark.com.au</div></div> | PROJECT: STIRLINGS PERFORMANCE STEEL | ADDRESS: 3 WOODRIVE ROAD BRIDGEWATER | SHEET: ENGINEERING NOTES | | |
| | | | CHECKED: | GR | | | | | | |
| | | | DESIGN: | DHJ | | | | | | |
| | | | CHECKED: | GR | | | | | | |
| A | DEVELOPMENT APPLICATION | 20/03/2025 | VERIFIED: | MG | | | CLIENT: LESTER MULDER | SCALE: AS INDICATED | TOTAL SHEETS: 5 | SIZE: A1 |
| REV | ISSUE | DATE | APPROVAL | | | | | PROJECT No: 25E99-22 | SHEET: C002 | REV: A |

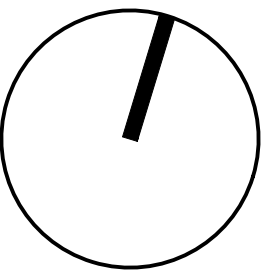


| SITE & EXISTING SERVICES LEGEND | |
|---|------------------------------------|
| | EXISTING SURFACE CONTOUR (MAJ/MIN) |
| | BOUNDARY |
| | EXISTING UNDERGROUND POWER |
| | EXISTING TELSTRA |
| NOTES | |
| THESE DRAWINGS SHALL BE APPROVED BY RELEVANT AUTHORITIES (INCL. COUNCIL & TASWATER) PRIOR TO CONSTRUCTION. | |
| 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. | |

WARNING
Beware of underground services. Locate all existing services prior to construction. The location shown on plans are indicative only and precise location should be proven on site. No guarantee is given that all services are shown on plan.

SITE PLAN
AS INDICATED

| | | | DRAWN: | DHJ |
|-----|-------------------------|------------|-----------|-----|
| | | | CHECKED: | GR |
| | | | DESIGN: | DHJ |
| | | | CHECKED: | GR |
| A | DEVELOPMENT APPLICATION | 20/03/2025 | VERIFIED: | MG |
| REV | ISSUE | DATE | APPROVAL | |



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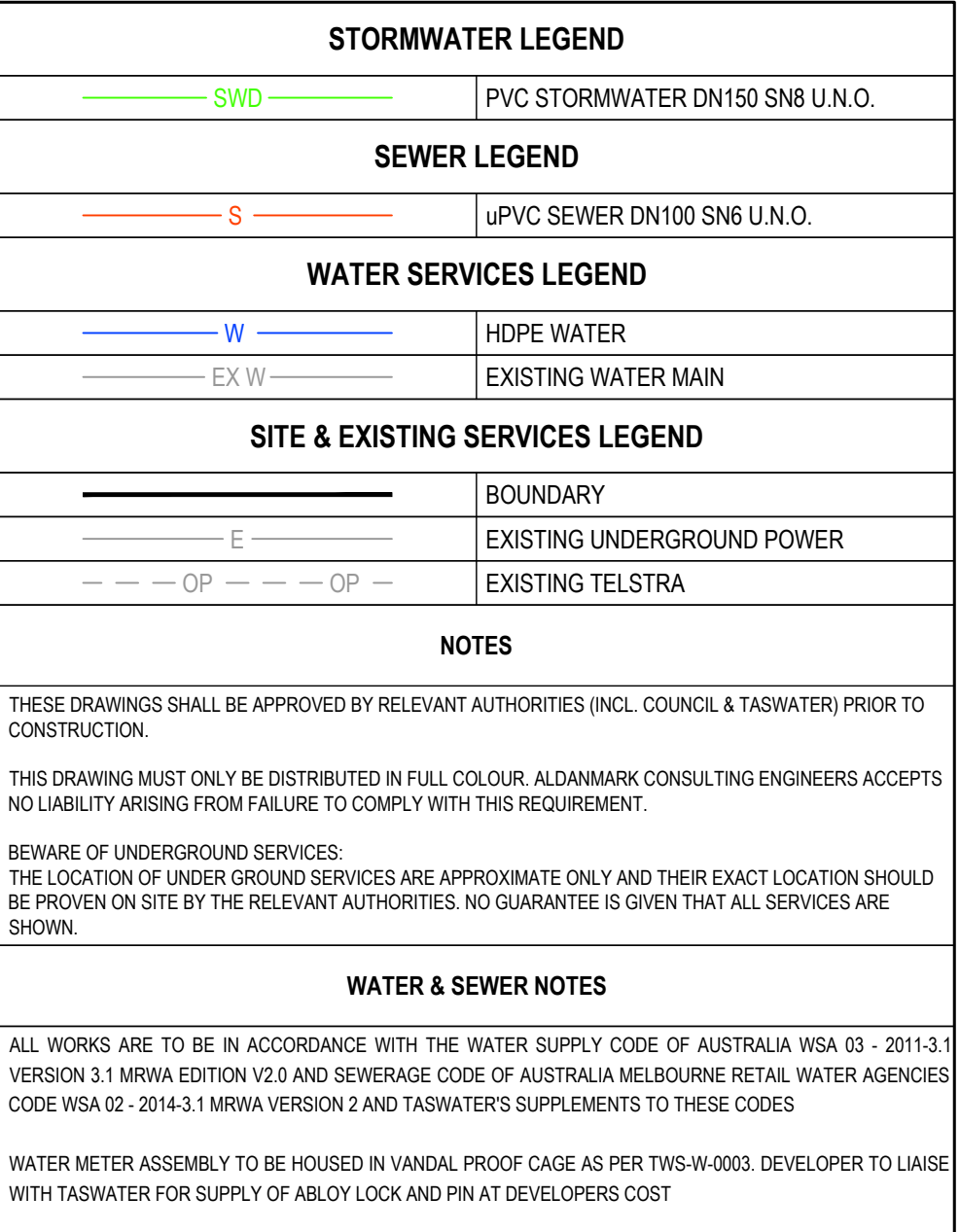
PROJECT: STIRLINGS PERFORMANCE STEEL

ADDRESS: 3 WOODRIEVE ROAD
BRIDGEWATER

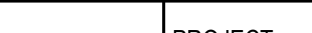
CLIENT: LESTER MULDER

| | | | |
|----------------------|-----------------|----------|--|
| SHEET: SITE PLAN | | | |
| SCALE: AS INDICATED | TOTAL SHEETS: 5 | SIZE: A1 | |
| PROJECT No: 25E99-22 | SHEET: C101 | REV: A | |





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|-----|-------------------------|--|------------|-----------|---|---|--|----------|---|-------------|--------------------------------|------------------------------------|------|-------|----|--|
| | | | DRAWN: | DHJ |  |  | Lower Ground 199 Macquarie Street Hobart TAS 7000 03 6234 8666 mail@aldanmark.com.au www.aldanmark.com.au | PROJECT: | STIRLINGS PERFORMANCE STEEL | ADDRESS: | 3 WOODRIVE ROAD BRIDGEWATER | SHEET: WATER LOT CONNECTION DETAIL | | | | |
| | | | CHECKED: | GR | | | | | | | | | | | | |
| | | | DESIGN: | DHJ | | | | | | | | | | | | |
| | | | CHECKED: | GR | | | | | | | | | | | | |
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| REV | ISSUE | | DATE | APPROVAL | | | | |  | PROJECT No: | 25E99-22 | SHEET: | C104 | REV: | A | |



PROPOSED WAREHOUSE

3 WOODRIVE ROAD, BRIDGEWATER

TRAFFIC IMPACT ASSESSMENT REPORT

PROPOSED WAREHOUSE 3 WOODRIEVE ROAD, BRIDGEWATER

Client: Mulder Kampman Design

Report Reference: 24725TREP01F02

File Path: Y:\2024\24725 - 3 Woodrieve Road, Bridgewater\08 Reports\24725TREP01F02.docx

Thursday, February 27, 2025

Document Control

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| F01 | Claudia Goodliffe | Project Traffic Engineer | 20 December 2024 | Tony Togany | Senior Associate | 20 December 2024 | Tony Togany | Senior Associate | 20 December 2024 |
| F02 | Claudia Goodliffe | Project Traffic Engineer | 27 February 2025 | Tony Togany | Senior Associate | 27 February 2025 | Tony Togany | Senior Associate | 27 February 2025 |

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1 INTRODUCTION

SALT has been engaged by Mulder Kampman Design to undertake a traffic engineering assessment of the proposed warehouse development to be located at 3 Woodrieve Road in Bridgewater.

This report includes an update in response to the RFI received from Brighton Council (dated 14 February 2025).

In the course of preparing this report, the following has been undertaken:

- Development plans and background information have been reviewed;
- A desktop inspection of the site and its environs has been completed;
- Design advice has been provided to the project team;
- Swept path analysis has been conducted; and
- The traffic and parking implications of the proposal have been assessed.

The following sets out SALT's findings with respect to the traffic engineering matters of the proposal.

2 EXISTING CONDITIONS

2.1 LOCATION AND LAND USE

The subject site is located at 3 Woodrieve Road in Bridgewater. It is generally rectangular in shape and is currently undeveloped.

It is situated within a developing industrial precinct to the west of Midland Highway. It is zoned as General Industrial.

Figure 1 depicts the location of the site with respect to the surrounding road network and land uses. An aerial view of the site is provided in Figure 2 Figure 3 depicts the local planning zones.



Figure 1 Subject site locality (source: The LIST)



Figure 2 Aerial view of site (source: Nearmap)

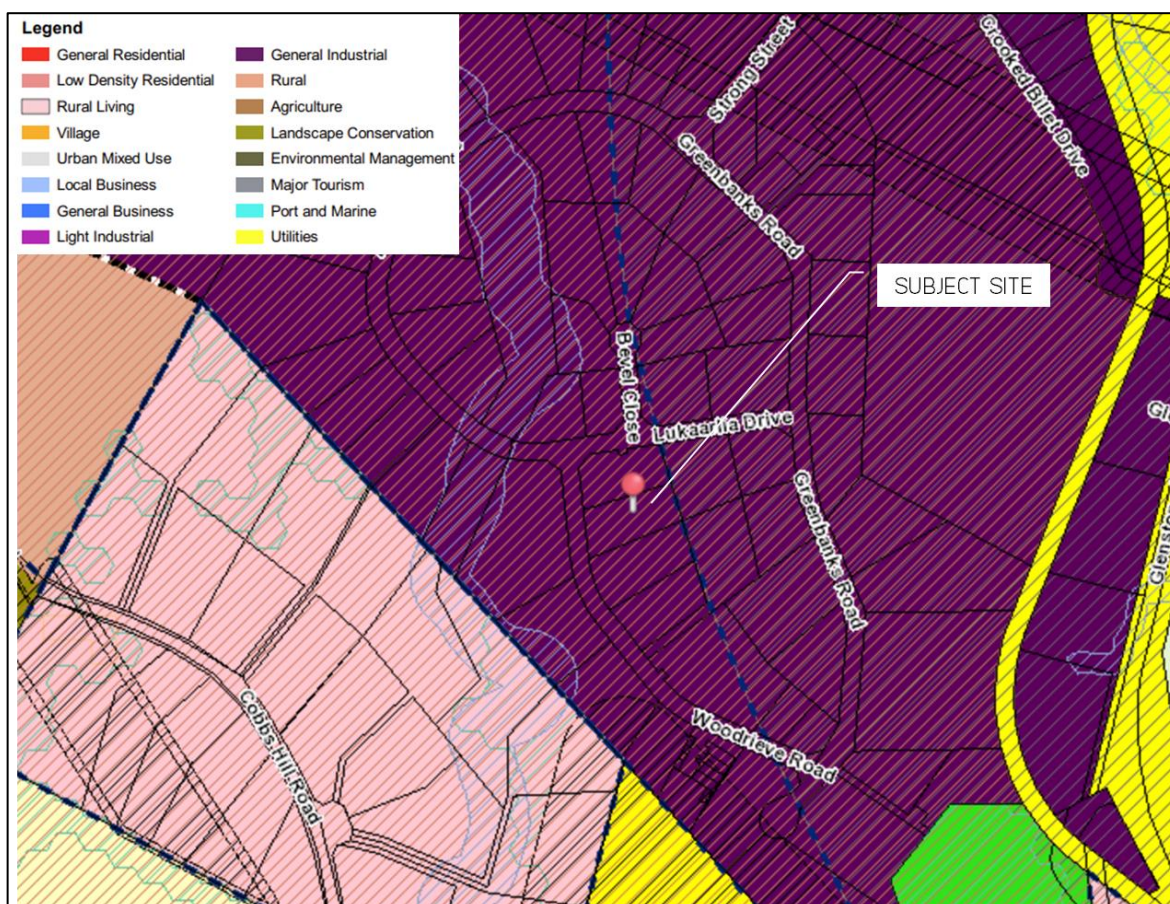


Figure 3 Local planning map

2.2 ROAD NETWORK

Woodrieve Road is a local road under the care and management of Brighton Council. It extends in a largely northwest-southeast alignment between Lukaarlia Drive and Greenbanks Road.

It has a carriageway width of approximately 9.1m, allowing two-way vehicular access.

There are no signs to restrict on-street parking along Woodrieve Road.

The default speed limit of 50km/hr applies.

2.3 SUSTAINABLE TRANSPORT

The subject site has limited sustainable transport opportunities. There are no bus services operating in the direct vicinity of the site. The nearest bus stops are located to the south-east in the main Bridgewater residential and activity centre, outside of a convenient walking distance.

There is a pedestrian footpath along the eastern side of Woodrieve Road.

3 PROPOSAL

It is proposed to develop the site to provide a warehouse with ancillary office. Specifically, the building is to include:

- Warehouse area of 2,755m²; and
- Office area of approx. 405m² at ground floor and first floor.

The warehouse is proposed to operate with up to 10 staff members at any one time. A maximum of five (5) visitors / customers are expected at any one time during the busy periods.

An on-site car park is proposed to provide 18 parking spaces including one (1) accessible space.

Vehicular access is proposed via two (2) crossovers to Woodrieve Road of approximately 7.2m wide and 8.0m wide.

The warehouse includes two (2) separate loading areas, one for receivals and one for dispatch. On a day-to-day basis, loading activity will be undertaken by up to a 12.5m Heavy Rigid Vehicle (HRV). Occasional access is expected to be required for a 19m semi-trailer, around once per fortnight.

The development plans assessed in this report are provided in APPENDIX 1.

4 CAR PARKING

4.1 STATUTORY REQUIREMENTS

Statutory car parking requirements are outline within Table C2.1 of Clause C2.5.1 under C2.0 Parking and Sustainable Transport Code of the Tasmanian Planning Scheme.

Table 1 Statutory car parking requirements

| Land Use | Area | Statutory Car Parking Rate | Parking Required | Proposed Provision |
|--|---------------------------------|---|------------------|--------------------|
| Warehouse (including ancillary office) | 4,350m ² (site area) | 1 space per 200m ² of the site area or 1 space per 2 employees, whichever is greater | 22 spaces | 18 spaces |

Therefore, the proposal has a requirement for 22 car parking spaces. With 18 spaces proposed on-site, the application is seeking a car parking reduction of four (4) spaces.

4.2 ADEQUACY OF CAR PARKING PROVISIONS

The warehouse tenant has specified that the facility is to operate with a total of 10 staff and is expected to generate a maximum of five (5) visitors at any time during the busy periods. It is understood that staff numbers are unlikely to increase in the future due to the implementation of Automated Warehouse Systems.

Therefore, the parking demands of the proposed warehouse are not anticipated to exceed 15 spaces at any time (comprising 10 staff and 5 visitors), conservatively assuming that all staff drive separately to/from the site. Majority of the time, parking demands would be lower as fewer visitors are expected.

Therefore, the peak parking demands can be wholly accommodated within the on-site car park of 18 spaces.

4.3 ACCESSIBLE PARKING

The Building Code of Australia specifies the number of accessible parking spaces required for various land uses. The proposal has a requirement for one (1) accessible parking space for every 100 car parking spaces or part thereof. With 18 spaces proposed on-site, the proposal requires one (1) accessible (DDA) parking space. This is met by the proposal.

5 BICYCLE PARKING

Table C2.1 to Clause C2.5.1 under C2.0 Parking and Sustainable Transport Code outlines bicycle parking requirements for developments. There is no requirement for bicycle parking for a warehouse (storage) land use.

6 MOTORCYCLE PARKING

Motorcycle parking requirements for developments are outlined in Table C2.4 to Clause C2.5.3 under C2.0 Parking and Sustainable Transport Code, with the applicable requirement for the proposal being 1 motorcycle parking space if the car parking requirement is 21-40 car spaces. The proposal therefore has a statutory requirement of one (1) motorcycle space on-site.

The proposal does not include the provision of formal motorcycle parking. There is more than sufficient scope for a single motorcycle space to be provided on the site as required and this can be addressed as a condition of any permit that is issued.

7 TRAFFIC CONSIDERATIONS

7.1 TRAFFIC GENERATION AND DISTRIBUTION

The peak traffic generated by the proposal can be estimated based on a first-principles assessment of the proposed operations.

The warehouse is proposed to operate with up to 10 staff members on any given day. It is conservatively assumed that all staff would arrive to the site during the AM peak hour and all staff would depart the site during the PM peak hour.

Customer numbers are expected to be low, and it is anticipated that any customers would likely visit the site outside of these peak hours, thus they are not included in the traffic generation estimation.

Therefore, the proposal is expected to generate traffic in the order of:

- 10 arrivals during the AM peak hour; and
- 10 departures during the PM peak hour.

The distribution of traffic can be estimated based on the layout of the surrounding road network and locations of nearby employment and residential precincts. In this case, it is estimated that all traffic would be distributed to / from the north on Woodrieve Road.

7.2 TRAFFIC IMPACTS

The level of traffic anticipated to be generated by the proposal is low in traffic engineering terms. The addition of up to 10 vehicle trips during the peak hours equates to one vehicle arriving or departing the site every 6.0 minutes on average during the commuter peak hours.

It is anticipated that this level of traffic will be adsorbed by Woodrieve Road and the surrounding road network without any unreasonable detrimental impacts.

8 PLANNING SCHEME ASSESSMENT

Assessments against the relevant Codes and Clauses of the Tasmanian Planning Scheme are provided as follows.

8.1 C2.0 PARKING AND SUSTAINABLE TRANSPORT CODE

The application triggers Clause C2.5 (Use Standards) and Clause C2.6 (Development Standards for Buildings and Works) of the Tasmanian Planning Scheme and an assessment against the relevant subclauses is provided in Table 2 and 0 respectively.

Table 2 Clause C2.5 (Use Standards)

| Clause C2.5.1 – Car parking numbers | |
|--|--|
| Objective: That an appropriate level of car parking spaces are provided to meet the needs of the use. | |
| Acceptable Solution | Performance Criteria |
| <p>A1</p> <p><i>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, excluding if:</i></p> <ul style="list-style-type: none"> ▪ <i>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;</i> ▪ <i>the site is contained within a parking precinct plan and subject to Clause C2.7;</i> ▪ <i>the site is subject to Clause C2.5.5; or</i> ▪ <i>it relates to an intensification of an existing use or development or a change of use where:</i> <ul style="list-style-type: none"> ○ <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;</i> ○ <i>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:</i> | <p>P1.1</p> <p><i>The number of on-site car parking spaces for uses, excluding dwellings, must meet the reasonable needs of the use, having regard to:</i></p> <ul style="list-style-type: none"> ▪ <i>the availability of off-street public car parking spaces within reasonable walking distance of the site;</i> ▪ <i>the ability of multiple users to share spaces because of:</i> <ul style="list-style-type: none"> ○ <i>variations in car parking demand over time; or</i> ○ <i>efficiencies gained by consolidation of car parking spaces;</i> ▪ <i>the availability and frequency of public transport within reasonable walking distance of the site;</i> ▪ <i>the availability and frequency of other transport alternatives;</i> ▪ <i>any site constraints such as existing buildings, slope, drainage, vegetation and landscaping;</i> ▪ <i>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;</i> ▪ <i>the effect on streetscape; and</i> ▪ <i>any assessment by a suitably qualified person of the actual car parking demand determined</i> |

| | |
|--|--|
| $N = A + (C - B)$ <p><i>N = Number of on-site car parking spaces required</i></p> <p><i>A = Number of existing on site car parking spaces</i></p> <p><i>B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1</i></p> <p><i>C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.</i></p> | <p><i>having regard to the scale and nature of the use and development.</i></p> <p>P1.2</p> <p><i>The number of car parking spaces for dwellings must meet the reasonable needs of the use, having regard to:</i></p> <ul style="list-style-type: none"> <i>the nature and intensity of the use and car parking required;</i> <i>the size of the dwelling and the number of bedrooms; and</i> <i>the pattern of parking in the surrounding area.</i> |
|--|--|

Response

A1

As detailed in Section 4, the proposal has a statutory requirement to provide 22 on-site car parking spaces according to the car parking requirements outlined in Table C2.1. The proposal includes 18 on-site parking spaces, thus a shortfall of four (4) spaces is proposed. Assessment against the Performance Criteria is therefore required.

P1.1

- There are no public off-street car parks within a convenient walking distance of the site.
- The warehouse is to operate with a maximum of 10 staff, with no more than 5 visitors / customers expected at any one time. The proposal is therefore expected to experience a peak parking demand of 15 spaces which can be accommodated on-site.
- There are no public transport opportunities available within a convenient walk of the site.
- Other transport opportunities include car pooling and ride share services (eg Uber / taxi).
- No site constraints apply to limit on-site parking. The on-site car park has been designed to accommodate the anticipated peak parking demands of the proposal.
- On-street parking is available along the site frontage on Woodrieve Road and the surrounding road network.

P1.2

Not applicable to the proposal.

Clause C2.5.2 – Bicycle parking numbers

Objective:

That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.

| Acceptable Solution | Performance Criterion |
|---|---|
| <p>A1</p> <p><i>Bicycle parking spaces must:</i></p> <ul style="list-style-type: none"> <i>be provided on the site or within 50m of the site; and</i> <i>be no less than the number specified in Table C2.1.</i> | <p>P1</p> <p><i>Bicycle parking spaces must be provided to meet the reasonable needs of the use, having regard to:</i></p> <ul style="list-style-type: none"> <i>the likely number of users of the site and their opportunities and likely need to travel by bicycle; and</i> <i>the availability and accessibility of existing and any planned parking facilities for bicycles in the surrounding area.</i> |

Response

A1

As detailed in Section 5, the proposal has no statutory bicycle parking requirement. The proposal does not include any formal bicycle parking facilities, as complies.

Clause C2.5.3 – Motorcycle parking numbers

Objective:

That the appropriate level of motorcycle parking is provided to meet the needs of the use.

Acceptable Solution

A1

The number of on-site motorcycle parking spaces for all uses must:

- *be no less than the number specified in Table C2.4; and*
- *if an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.*

Performance Criterion

P1

Motorcycle parking spaces for all uses must be provided to meet the reasonable needs of the use, having regard to:

- *the nature of the proposed use and development;*
- *the topography of the site;*
- *the location of existing buildings on the site;*
- *any constraints imposed by existing development; and*
- *the availability and accessibility of motorcycle parking spaces on the street or in the surrounding area.*

Response

A1

As detailed in Section 6, the proposal has a statutory requirement to provide one (1) on-site motorcycle parking space according to the motorcycle parking requirements outlined in Table C2.4. The proposal does not include the provision of any motorcycle parking spaces. Assessment against the Performance Criteria is therefore required.

P1

The nature of the proposed warehouse would allow parking / storage of a motorcycle within the expansive ground floor warehouse space should any staff choose to ride to the site.

Should a formal motorcycle space be required, there is more than sufficient scope for this to be provided on the site and this can be addressed as a condition of any permit that is issued.

Clause 2.5.4 – Loading Bays

Objective:

That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.

| Acceptable Solution | Performance Criterion |
|--|--|
| <p>A1</p> <p><i>A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.</i></p> | <p>P1</p> <p><i>Adequate space for loading and unloading of vehicles must be provided, having regard to:</i></p> <ul style="list-style-type: none"> <i>the type of vehicles associated with the use;</i> <i>the nature of the use;</i> <i>the frequency of loading and unloading;</i> <i>the location of the site;</i> <i>the nature of traffic in the surrounding area;</i> <i>the area and dimensions of the site; and</i> <i>the topography of the site;</i> <i>the location of existing buildings on the site; and</i> <i>any constraints imposed by existing development.</i> |
| <p>Response</p> <p><u>A1</u></p> <ul style="list-style-type: none"> The proposal includes two (2) loading areas to accommodate receivals and dispatching separately. These have been designed to accommodate the largest expected vehicles including a 12.5m Heavy Rigid Vehicle (HRV) as the regular loading vehicle, and occasional access for a 19m semi-trailer. Access and manoeuvring of loading vehicles have been demonstrated by swept path analysis, with diagrams provided in APPENDIX 2. | |

Table 3 Clause C2.6 (Development Standards for Buildings and Works)

C2.6.1 – Construction of parking areas

Objective:

That parking areas are constructed to an appropriate standard.

| Acceptable Solution | Performance Criterion |
|--|---|
| <p>A1</p> <p><i>All parking, access ways, manoeuvring and circulation spaces must:</i></p> <ul style="list-style-type: none"> <i>be constructed with a durable all weather pavement;</i> <i>be drained to the public stormwater system, or contain stormwater on the site; and;</i> <i>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.</i> | <p>P1</p> <p><i>All parking, access ways, manoeuvring and circulation spaces must be readily identifiable and constructed so that they are useable in all weather conditions, having regard to:</i></p> <ul style="list-style-type: none"> <i>the nature of the use;</i> <i>the topography of the land;</i> <i>the drainage system available;</i> <i>the likelihood of transporting sediment or debris from the site onto a road or public place;</i> <i>the likelihood of generating dust; and</i> <i>the nature of the proposed surfacing.</i> |

Response

A1

It is envisaged that the on-site car park will be constructed with a durable all-weather pavement and provided with suitably drainage. This is to be determined through detailed design stages.

C2.6.2 – Design and layout of parking areas

Objective:

That parking areas are designed and laid out to provide convenient, safe and efficient parking.

| Acceptable Solutions | Performance Criterion |
|---|---|
| <p>A1.1</p> <p><i>Parking, access ways, manoeuvring and circulation spaces must either:</i></p> <ul style="list-style-type: none"> comply with the following: <ul style="list-style-type: none"> have a gradient in accordance with Australian Standard AS 2890 – Parking facilities, Parts 1–6; provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces; have an access width not less than the requirements in Table C2.2; have car parking space dimensions which satisfy the requirements in Table C2.3; 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; have a vertical clearance of not less than 2.1m above the parking surface level; and excluding a single dwelling, be delineated by line marking or other clear physical means; or comply with Australian Standard AS 2890–Parking facilities, Parts 1–6. <p>A1.2</p> <p><i>Parking spaces provided for use by persons with a disability must satisfy the following:</i></p> <ul style="list-style-type: none"> be located as close as practicable to the main entry point to the building; be incorporated into the overall car park design; and be designed and constructed in accordance with Australian/New Zealand Standards AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities. | <p>P1</p> <p><i>All parking, access ways, manoeuvring and circulation spaces must be designed and readily identifiable to provide convenient, safe and efficient parking, having regard to:</i></p> <ul style="list-style-type: none"> the characteristics of the site; the proposed slope, dimensions and layout; useability in all weather conditions; vehicle and pedestrian traffic safety; the nature and use of the development; the expected number and type of vehicles; the likely use of the parking areas by persons with a disability; the nature of traffic in the surrounding area; the proposed means of parking delineation; and the provisions of Australian Standards AS 2890.1:2004 – Parking facilities, Part 1: Off-street car parking and AS 2890.2:2002 – Parking facilities, Part 2: Off-street commercial vehicle facilities. |

Response

A1.1

- The site is relatively flat and the gradients will be in accordance with AS/NZS 2890.1:2004

- All cars and regular loading vehicles can enter and exit the site in a forward direction. One exception is access for the 19m semi-trailer which will require reversing in from Woodrieve Road. This would occur very infrequently (once per fortnight) such that it would have negligible impact on the road network.
- Table C2.2 specifies the following access width requirements:

Table C2.2 Internal Access Way Widths for Vehicles

| Number of parking spaces served | Internal access way widths | Passing bay dimensions for two-way traffic in addition to the access way width |
|---------------------------------|--|---|
| 1 to 5 | A width not less than 3m. | 2m wide by 5m long, plus entry and exit tapers, every 30m, unless on land within the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone or Open Space Zone. |
| 6 to 20 | (a) A width not less than 4.5m for the first 7m from the road carriageway and 3m thereafter, and (b) At changes of direction or intersections have: (i) an internal radius of not less than 4m, or (ii) a width more than 4.2m. | 2m wide by 5m long, plus entry and exit tapers, every 30m. |
| 21 and over | A width not less than 5.5m. | Not applicable |

- The site is to accommodate 18 parking spaces, with vehicle crossovers exceeding the minimum required widths.
- Table C2.3 specifies the following car parking space dimensions:

Table C2.3 Dimensions of Car Parking Spaces and Combined Access and Manoeuvring Space Adjacent to Parking Spaces

| Angle of car spaces to manoeuvring space | Combined access and manoeuvring width | Car park widths | Car park length |
|--|---------------------------------------|-----------------|-----------------|
| Parallel | 3.6m | 2.3m | 6.7m |
| 45 degrees | 3.5m | 2.6m | 5.4m |
| 60 degrees | 4.9m | 2.6m | 5.4m |
| 90 degrees | 6.4m | 2.6m | 5.4m |
| 90 degrees | 5.8m | 2.8m | 5.4m |
| 90 degrees | 5.2m | 3m | 5.4m |
| 90 degrees | 4.8m | 3.2m | 5.4m |

Notes to Table C2.3:

- (1) If entry to the car space is from a road, the combined access and manoeuvring width may include the road.

- Parking spaces are proposed to be 2.6m wide and 5.5m long, accessed from an 8.7m wide aisle, exceeding the minimum requirements.
- The car park is to be uncovered such that no overhead obstructions are proposed.
- Line marking is proposed to delineate parking spaces.

A1.2

- The accessible parking space is proposed to be located directly outside the building entrance.
- The accessible parking space is proposed to be incorporated into the overall car park design, aligning with adjacent regular parking spaces.
- The accessible parking space and associated shared space are proposed to be 2.6m wide and 5.5m long, exceeding the requirements of AS2890.6. They are to be provided with line marking and a bollard in accordance with AS2890.6.

C2.6.3 – Number of accesses for vehicles

Objective:

That:

- access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses;
- accesses do not cause an unreasonable loss of amenity of adjoining uses; and
- the number of accesses minimise impacts on the streetscape.

| Acceptable Solutions | Performance Criterion |
|---|--|
| <p>A1</p> <p><i>The number of accesses provided for each frontage must:</i></p> <ul style="list-style-type: none"> ▪ <i>be no more than 1; or</i> ▪ <i>no more than the existing number of accesses, whichever is the greater.</i> | <p>P1</p> <p><i>The number of accesses for each frontage must be minimised, having regard to:</i></p> <ul style="list-style-type: none"> ▪ <i>any loss of on-street parking;</i> ▪ <i>pedestrian safety and amenity;</i> ▪ <i>traffic safety;</i> ▪ <i>residential amenity on adjoining land; and</i> ▪ <i>the impact on the streetscape</i> |

Response

A1.1

The proposal includes two (2) vehicle crossovers on the one frontage, thus an assessment against the Performance Criterion is required.

P1

- Whilst on-street parking is permitted along the site frontage, it does not currently occur given the lack of development and parking demands surrounding the site. Therefore, the two crossovers are not considered to greatly impact the overall availability of on-street parking.
- It is envisaged that pedestrian activity along the site frontage and surrounding streets will be low considering the nature of the industrial precinct and layout of the road network.
- The proposed two (2) crossovers are considered a safer option as it allows vehicles (including trucks) to circulate the site an exit in a forward direction, minimising the occurrence of reversing movements.
- There are no adjoining residences to consider.
- The two (2) crossovers will have no significant impact on the streetscape. There are no existing street trees that would be impacted.

C2.6.5 – Pedestrian access

Objective:

That pedestrian access within parking areas is provided in a safe and convenient manner.

| Acceptable Solutions | Performance Criterion |
|---|--|
| <p>A1.1</p> <p><i>Uses that require 10 or more car parking spaces must:</i></p> <ul style="list-style-type: none"> ▪ <i>have a 1m wide footpath that is separated from the access ways or parking aisles,</i> | <p>P1</p> <p><i>Safe and convenient pedestrian access must be provided within parking areas, having regard to:</i></p> <ul style="list-style-type: none"> ▪ <i>the characteristics of the site;</i> ▪ <i>the nature of the use;</i> ▪ <i>the number of parking spaces;</i> |

| | |
|---|--|
| <p>excluding where crossing access ways or parking aisles, by:</p> <ul style="list-style-type: none"> a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and be signed and line marked at points where pedestrians cross access ways or parking aisles. <p>A1.2</p> <p>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.</p> | <ul style="list-style-type: none"> the frequency of vehicle movements; the needs of persons with a disability; the location and number of footpath crossings; vehicle and pedestrian traffic safety; the location of any access ways or parking aisles; and any protective devices proposed for pedestrian safety. |
|---|--|

Response

A1.1

- The proposal includes a 1.0m wide pedestrian path from the Woodrieve Road frontage and between parking spaces. A line marking zebra crossing is proposed over the accessway, connecting the path through the DDA shared space and to the building entrance. A path is proposed between the eastern parking aisle and the building edge.
- The path is setback a minimum distance of approximately 6.5m from the vehicle crossovers.
- A protective bollard is provided in the DDA shared space in approach to the zebra crossing. Other protective devices are not considered necessary considering the low pedestrian and traffic volumes expected.
- A line marked pedestrian crossing is proposed where the path crosses the vehicle accessway.

A1.2

- The proposal includes one accessible parking space situated adjacent the building entrance. A footpath with a width of 1.8m with no grade is proposed between the accessible parking space and the main entry point to the building.

C2.6.6 – Loading Bays

Objective:

That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.

| Acceptable Solutions | Performance Criterion |
|--|---|
| <p>A1</p> <p>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.</p> | <p>P1</p> <p>Loading bays must have an area and dimensions suitable for the use, having regard to:</p> <ul style="list-style-type: none"> the types of vehicles likely to use the site; the nature of the use; the frequency of loading and unloading; the area and dimensions of the site; the topography of the site; the location of existing buildings on the site; and |

| | |
|---|--|
| | <ul style="list-style-type: none"> any constraints imposed by existing development. |
| <p>A2</p> <p><i>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.</i></p> | <p>P2</p> <p><i>Access for commercial vehicles to and from the site must be safe, having regard to:</i></p> <ul style="list-style-type: none"> <i>the types of vehicles associated with the use;</i> <i>the nature of the use</i> <i>the frequency of loading and unloading;</i> <i>the area and dimensions of the site;</i> <i>the location of the site and nature of traffic in the area of the site;</i> <i>the effectiveness or efficiency of the surrounding road network; and</i> <i>site constraints such as existing buildings, slope, drainage, vegetation, parking and landscaping.</i> |
| <p>Response</p> <p><u>A1</u></p> <ul style="list-style-type: none"> The loading areas are proposed to be minimum 8.5m wide and 21m long, exceeding the requirements of AS2890.2. They have been designed to accommodate access for up to a 19m semi-trailer, as demonstrated by swept path analysis, with diagrams provided in APPENDIX 2. <p><u>A2</u></p> <ul style="list-style-type: none"> The regular loading vehicles (i.e. 12.5m long HRV) can enter and exit the site in a forward direction as demonstrated in the swept path diagrams provided in APPENDIX 2. <p>Access for a 19m semi-trailer requires the vehicle to reverse into the site from Woodrieve Road. An assessment against the Performance Criterion is required.</p> <p><u>P2</u></p> <ul style="list-style-type: none"> A 19m semi-trailer accessing the site would occur very infrequently (once per fortnight) such that it would have negligible impact on Woodrieve Road and the surrounding road network. It is not an uncommon arrangement for industrial precincts to experience scenarios where large commercial vehicles would need to reverse into a site. It is often an expectation in such areas that commercial vehicles will be reversing into sites from the surrounding roads. | |

8.2 C3.0 ROAD AND RAILWAY ASSETS CODE

As per Clause C3.2.1 of the Tasmanian Planning Scheme, this Code applies to a use or development that:

- will increase the amount of vehicular traffic or the number of movements of vehicles longer than 5.5m using an existing vehicle crossing or private level crossing;*
- will require a new vehicle crossing, junction or level crossing; or*
- involves a subdivision or habitable building within a road or railway attenuation area if for a sensitive use.*

The proposal includes new vehicle crossovers, as such Code C3.0 (Road and Railway Assets Code) applies.

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

Objective:

To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.

| Acceptable Solution | Performance Criterion |
|--|--|
| <p>A1.1</p> <p><i>For a category 1 road or a limited access road, vehicular traffic to and from the site will not require:</i></p> <ul style="list-style-type: none"> ▪ a new junction; ▪ a new vehicle crossing; or ▪ a new level crossing. <p>A1.2</p> <p><i>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.</i></p> <p>A1.3</p> <p><i>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.</i></p> <p>A1.4</p> <p><i>Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:</i></p> <ul style="list-style-type: none"> ▪ the amounts in Table C3.1; or ▪ allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road. A1.5 <p><i>Vehicular traffic must be able to enter and leave a major road in a forward direction.</i></p> | <p>P1</p> <p><i>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:</i></p> <ul style="list-style-type: none"> ▪ any increase in traffic caused by the use; ▪ the nature of the traffic generated by the use; ▪ the nature of the road; ▪ the speed limit and traffic flow of the road; ▪ any alternative access to a road; ▪ the need for the use; ▪ any traffic impact assessment; and ▪ any advice received from the rail or road authority. |

Response

A1.1

- Not applicable – Woodrieve Road is not a category 1 road

A1.2

- Application for the vehicle crossovers is addressed in this report for consideration by authorities.

A1.3

- Not applicable.

A1.4

- Not applicable – the crossovers are not existing.

A1.5

- Woodrieve Road is not considered a major road. Nonetheless, on a day-to-day basis, all vehicles requiring access to the site can enter and exit in a forward direction. Occasionally, access will be required for a 19m semi-trailer which will need to reverse into the site from Woodrieve Road however this would be infrequent (once per fortnight).

9 RFI RESPONSE

An RFI was received from Brighton Council (dated 14 February 2025) which requested the following relevant from a traffic engineering perspective:

Parking and Access:

In accordance with Clause C2.0 Parking and Sustainable Transport Code, please provide the following Information:

1. *Provide specific details on the proposed use/business to enable assessment of the performance criteria for parking numbers.*

Advice: The planning report states there is ample on street parking however the turning path diagrams show large vehicles needing to use the full road width for turning.

2. *Provide amended turning path diagrams clearly demonstrating that the maximum size regular use vehicle (HRV) can enter and exit the site accordance with AS2890.2 without crossing the centreline of the public road to the extent that there is any interaction with the opposing direction of travel.*

Advice: The diagrams should include left in/left out turning paths.

3. *Provide an amended TIA addressing heavy vehicle movements to and from the site and within the site.*

Advice: No information is provided on the type or frequency of heavy vehicles expected to use the site. HRVs are shown reversing through the car park and across the pedestrian crossing. The planning report incorrectly states that all vehicles can enter and exit the site in a forward direction however the Flussig plans show a 19m semi reversing into the site.

SALT's response to each of these items is summarised in Table 4 below.

Table 4 RFI response

| RFI Item | SALT Response |
|---|---|
| <p>1. <i>Provide specific details on the proposed use/business to enable assessment of the performance criteria for parking numbers.</i></p> <p><i>Advice: The planning report states there is ample on street parking however the turning path diagrams show large vehicles needing to use the full road width for turning.</i></p> | <p>SALT has provided relevant business operation details to enable assessment of the proposed car parking numbers. This includes details on staff and visitor numbers as follows:</p> <ul style="list-style-type: none"> ▪ The warehouse is to operate with a maximum of 10 staff, with no more than 5 visitors / customers expected at any one time. The proposal is therefore expected to experience a peak parking demand of 15 spaces which can be accommodated on-site. <p>Refer to Table 2 in which SALT responds to C2.5.1.</p> <p>Therefore, on-street parking has not been relied upon in the parking assessment.</p> <p>Semi-trailers require the majority of the road width to access the site. SALT recommends a 'No Stopping' (or similar) restriction zone on the western side of the road to assist heavy vehicle manoeuvring into and out of the site. Refer to Appendix 2 which shows indicative locations of the restriction zone.</p> |
| <p>2. <i>Provide amended turning path diagrams clearly demonstrating that the maximum size regular use vehicle (HRV) can enter and exit the site accordance with AS2890.2 without crossing the centreline of the public road to the extent that there is any interaction with the opposing direction of travel.</i></p> <p><i>Advice: The diagrams should include left in/left out turning paths.</i></p> | <p>The swept path diagrams were prepared with vehicles turning to and from the north in most cases as this is likely to represent actual vehicle movements considering the lack of direct access provided to the south.</p> |

| RFI Item | SALT Response |
|--|---|
| | <p>There is no centre line on Bridgewater Road, and it is common for heavy vehicles to utilise the majority of the road carriageway in industrial precincts such as this.</p> <p>It is also noted that Clause 3.2.3.2 of Australian Standards AS2890.2 specifies that the swept path of design vehicles using the facility may be allowed to occupy the entire width when entering or leaving a minor road.</p> |
| <p>3. Provide an amended TIA addressing heavy vehicle movements to and from the site and within the site.</p> <p><i>Advice: No information is provided on the type or frequency of heavy vehicles expected to use the site. HRVs are shown reversing through the car park and across the pedestrian crossing. The planning report incorrectly states that all vehicles can enter and exit the site in a forward direction however the Flussig plans show a 19m semi reversing into the site.</i></p> | <p>19m semi-trailers are required to reverse into the site from Bridgewater Road. Refer to Section 8.2 in which the frequency of semi-trailer access is mentioned to be infrequent (once per fortnight).</p> <p>On a day-to-day basis, all vehicles requiring access to the site can enter and exit in a forward direction including passenger vehicles.</p> <p>Commercial vehicles up to 12.5m long Heavy Rigid Vehicles will be able to enter the site in a forward direction, reverse into the loading bays, and exit in a forward direction.</p> <p>We do not believe there are any significant safety risks to pedestrians as a result of trucks driving over and reversing across the pedestrian path in the car park. Trucks entering will have good visibility of any pedestrians crossing and only after there are no pedestrians that a truck will drive across the path and reverse into the loading bay. It is also noted that pedestrian volumes within the car park are expected to be very low which is typical of this type of development.</p> <p>If required, a spotter could be used to assist reversing trucks and any pedestrians present.</p> |

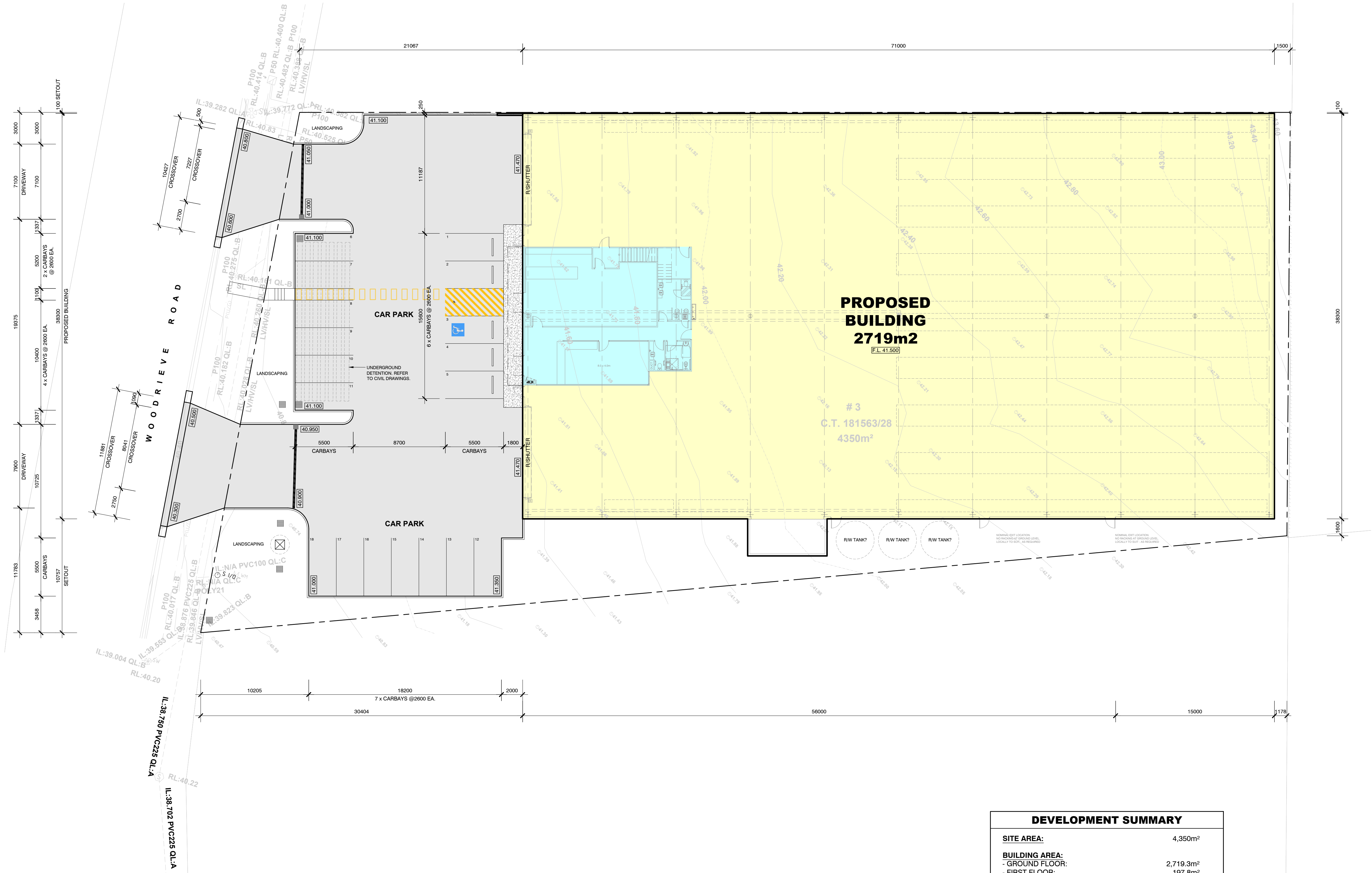
10 CONCLUSION

Based on the preceding assessment, the following can be concluded:

- It is proposed to develop the site to provide a warehouse with ancillary office.
- The proposal has a statutory requirement to provide 22 parking spaces. With 18 spaces proposed on-site, a shortfall of four (4) spaces is proposed.
- A dispensation of four (4) parking spaces is justified considering:
 - The proposal will operate with up to 10 staff members on any given day. This is unlikely to increase in the future.
 - Up to five (5) visitors are expected on-site during occasional peak times.
 - The proposal is therefore expected to experience a maximum parking demand of 15 spaces which can be accommodated on-site with a surplus of three (3) spaces.
- The development is not required to provide bicycle parking.
- A single motorcycle parking space can be accommodated within the site if required, and can be addressed as a condition on any permit that is issued.
- The access and parking layout is generally compliant with the requirements of the Planning Scheme and Australian Standards.
- Two (2) vehicular crossovers are proposed to Woodrieve Road, allowing access and circulation of heavy vehicles.
- Suitable loading arrangements can be readily achieved by the proposed development.
- The level of traffic anticipated to be generated by the development is low and is not expected to have any significant adverse impacts on the operation of Woodrieve Road and the surrounding road network.

Therefore, the proposal is supported from a traffic engineering perspective.

APPENDIX 1 DEVELOPMENT PLANS



SITE PLAN
SCALE 1:200

| DEVELOPMENT SUMMARY | |
|---|-----------------------|
| SITE AREA: | 4,350m ² |
| BUILDING AREA: | |
| - GROUND FLOOR: | 2,719.3m ² |
| - FIRST FLOOR: | 197.8m ² |
| - MEZZANINE: | 55.6m ² |
| | 2,917.8m ² |
| PLOT RATIO: | 67.06% |
| BUILDING AREA - LAND USE: | |
| - OFFICE - GROUND FLOOR: | 34.9m ² |
| - OFFICE - FIRST FLOOR: | 127.1m ² |
| - OFFICE TOTAL: | 162.0m ² |
| - WAREHOUSE - GROUND FLOOR: | 2684.4m ² |
| - WAREHOUSE - FIRST FLOOR (OTHER): | 70.7m ² |
| - WAREHOUSE TOTAL: | 2755.1m ² |
| PARKING: | |
| REQUIRED: | |
| - WAREHOUSE @1/200m ² (LAND AREA) x 4350m ² : | 21.75 |
| PROPOSED: | |
| NOTE: SHORTFALL (3x SPACES) TO BE JUSTIFIED | 18 |
| LANDSCAPING: | |
| REQUIREMENTS TBC | |



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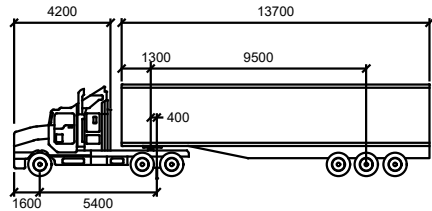
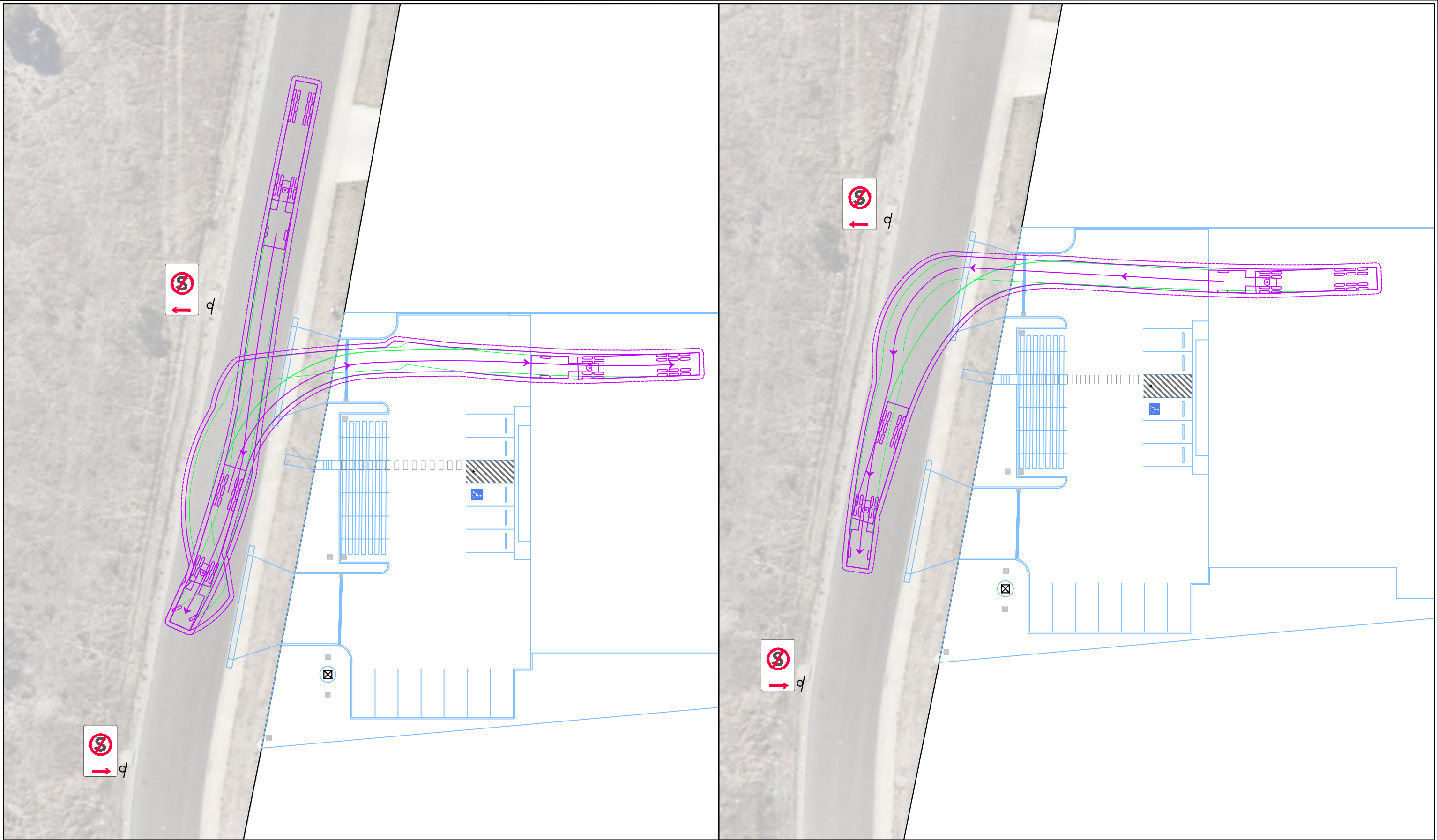
PROPOSED OFFICE & WAREHOUSE

STIRLINGS PERFORMANCE STEELS
3 Woodrieve Road, BRIDGewater TAS

| | | | | | |
|-------|-----------|--------------------------|-------------|-------------|------|
| DRAWN | DATE | SCALE | PROJECT No. | DRAWING No. | REV. |
| LM | July 2024 | 1:200 (A1) 1:400 (A3) | 0866 | Sheet 1 | SK08 |



APPENDIX 2 SWEPT PATH DIAGRAMS



AV

| | | | |
|---------------|--------|--------------------|--------|
| Tractor Width | : 2500 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2500 | Steering Angle | : 28.3 |
| Tractor Track | : 2500 | Articulating Angle | : 70.0 |
| Trailer Track | : 2500 | | |

MULDER KAMPMAN DESIGN

PROPOSED WAREHOUSE
3 WOODRIEVE ROAD
BRIDGEWATER
SWEEP PATH DIAGRAM



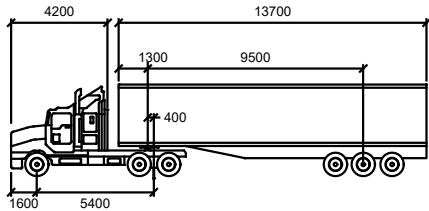
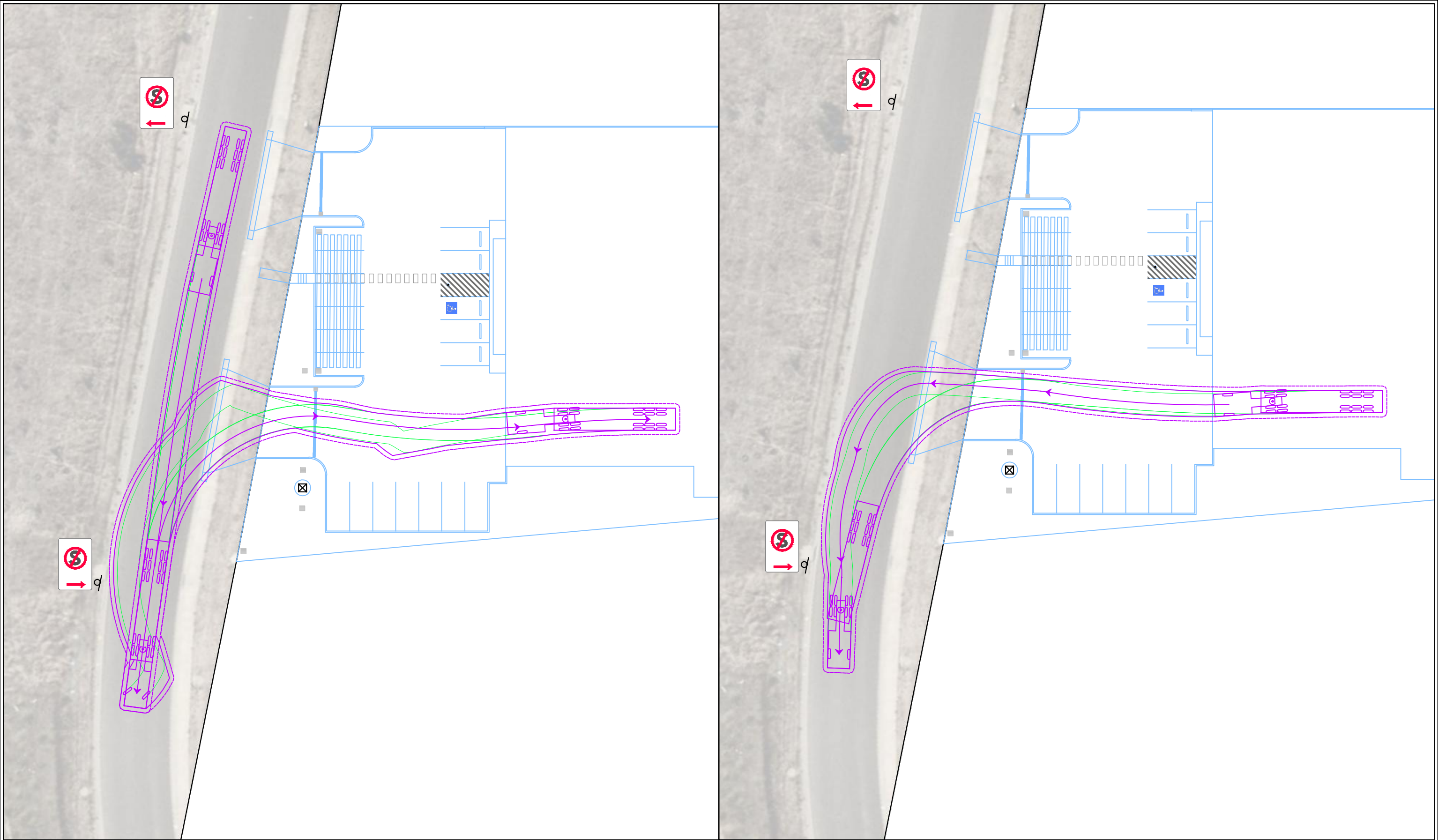
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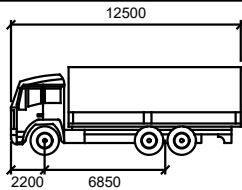
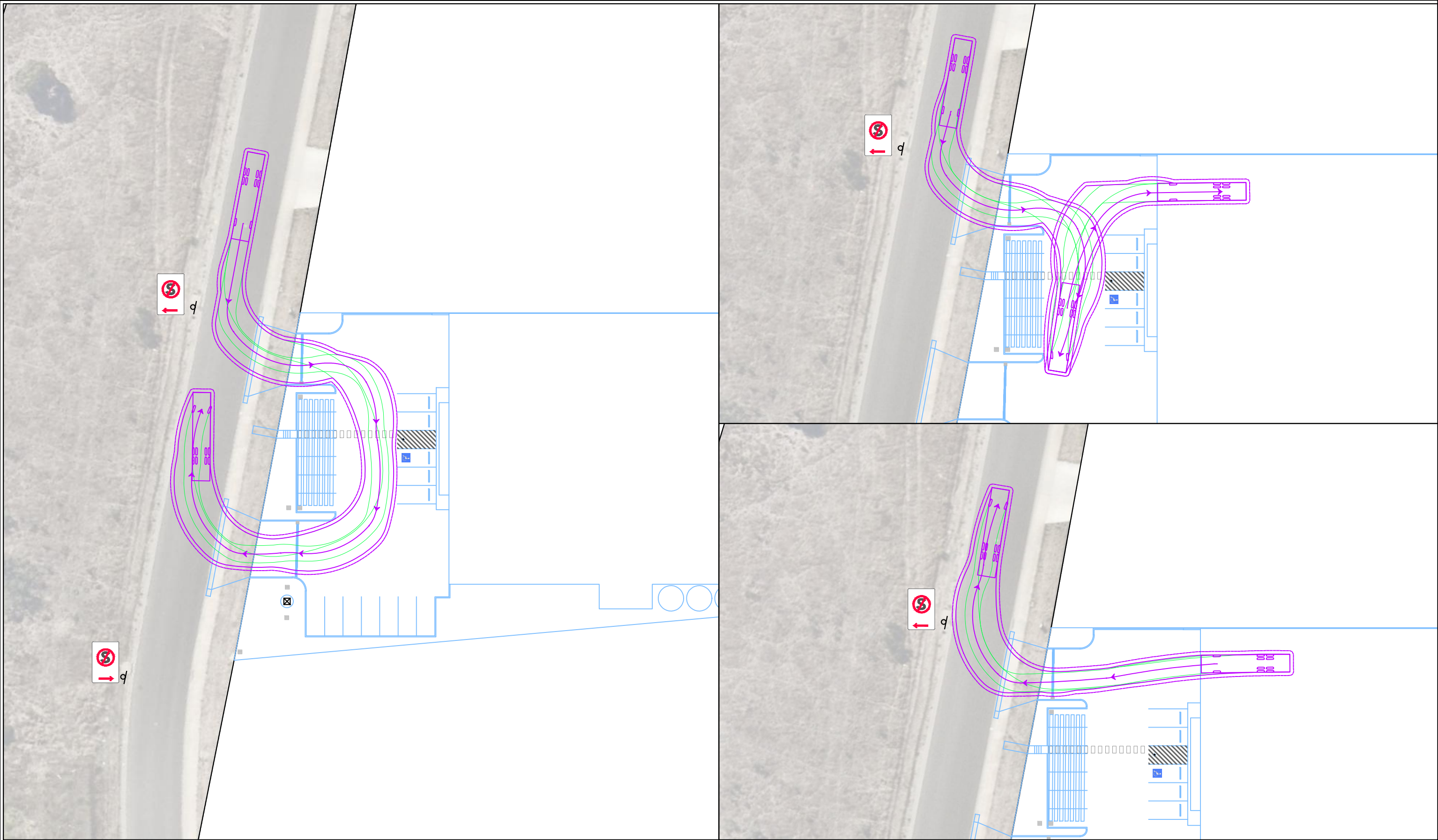
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| Trailer Width | : 2500 | Steering Angle | : 28.3 |
| Tractor Track | : 2500 | Articulating Angle | : 70.0 |
| Trailer Track | : 2500 | | |

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SWEEP PATH DIAGRAM

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HRV

| | |
|-------------------|--------|
| Width | : 2500 |
| Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

MULDER KAMPMAN DESIGN
PROPOSED WAREHOUSE
3 WOODRIEVE ROAD
BRIDGEWATER
SWEEP PATH DIAGRAM

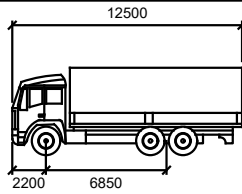
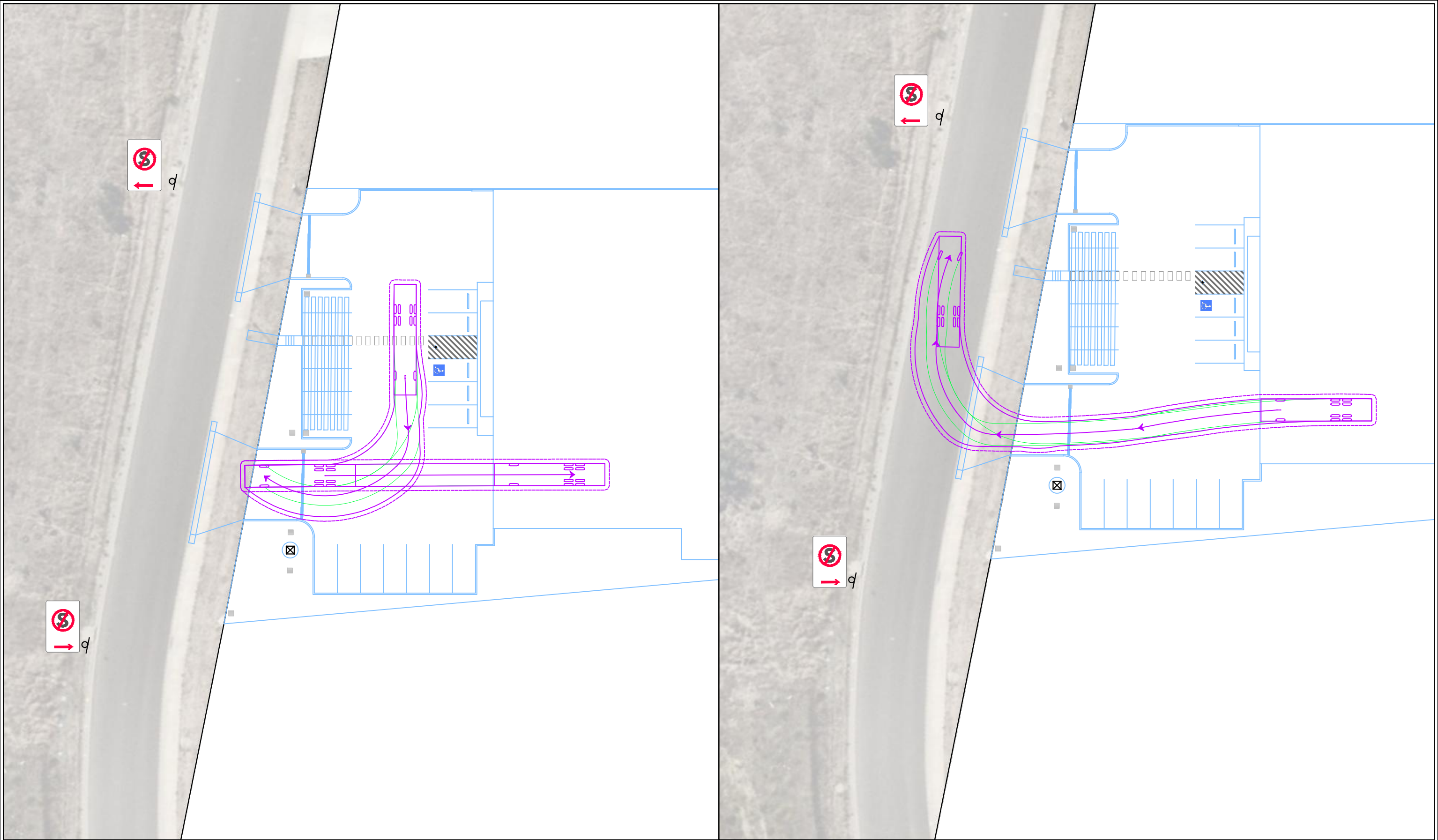


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HRV

| | |
|-------------------|--------|
| Width | : 2500 |
| Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

MULDER KAMPMAN DESIGN
PROPOSED WAREHOUSE
3 WOODRIEVE ROAD
BRIDGEWATER
SWEEP PATH DIAGRAM



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Prepared for
Mulder Kampman Design

3 Woodrieve Road Bridgewater TAS 7030

STORMWATER MANAGEMENT PLAN



FE_24076
7 November 2024

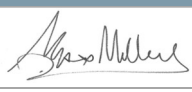

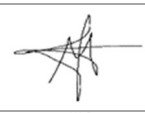


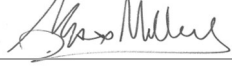
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Document Initial Revision

| REVISION 00 | Staff Name | Signature | Date |
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| Rev No. | Description | Reviewed by | Authorised by | Date |
|---------|-------------------|---------------|---------------|------------|
| 01 | Design Change | Max W. Moller | Max W. Moller | 05/02/2025 |
| 02 | SQID note removed | Max W. Moller | Max W. Moller | 25/03/2025 |

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1. Introduction

Flüssig Engineers have been engaged by Mulder Kampman Design to undertake a site-specific Stormwater Management Plan (SWMP) for 3 Woodrive Road located in Bridgewater, Tasmania including, but not limited to, lot drainage analysis including stormwater drainage and MUSIC Modelling to stated stormwater quality standards. The purpose of this report is to determine the hydraulic characteristics and stormwater infrastructure capacity of a 2% AEP storm event and treatment on the existing and post-development scenarios.

1.1 Scope

This engagement includes:

- Post-construction drainage capacity at 2% AEP of new design.
- Post-construction overland flow behaviour of new stormwater design.

2. Site Characteristics

2.1 Site Location

3 Woodrive Road, Bridgewater TAS 7030 (Title Reference 181563/28) is in the municipality of the **Brighton Council**. The lot is approximately 4,350 m² with a proposed office and warehouse to be constructed having a total impervious area of 3,800 m². The site is zoned General Industrial.



Figure 1. Approximate development location, 3 Woodrive Road, Bridgewater

2.2 Topography

The proposed development site is approximately 4,350 m² in area, draining from approximately 43.5 mAHD to 40.5 mAHD towards the southeasterly corner of the lot. As can be seen by the topography in Figure 2, pre-development terrain gently slopes towards the Woodrive Road.

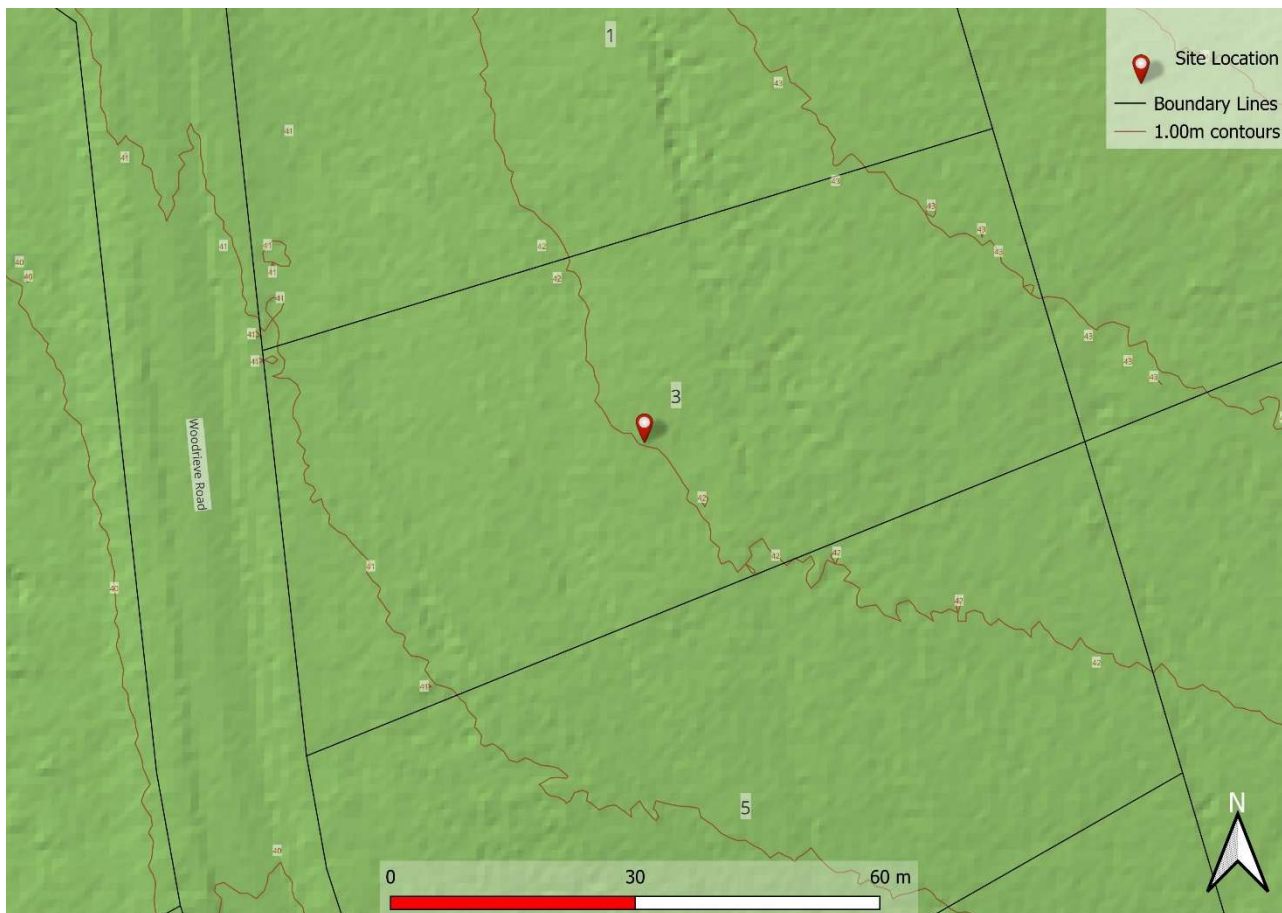


Figure 2. 1m DEM (Hill shade) of Lot Area, 3 Woodrive Road, Bridgewater

3. Proposal

3.1 Proposed Development

The proposed development consists of warehouse and parking to accompany it. The design of the development was undertaken by Mulder Kampman Design, as detailed in the “Proposed Office & Warehouse Stirlings Performance Steels” shown in

Figure 3.

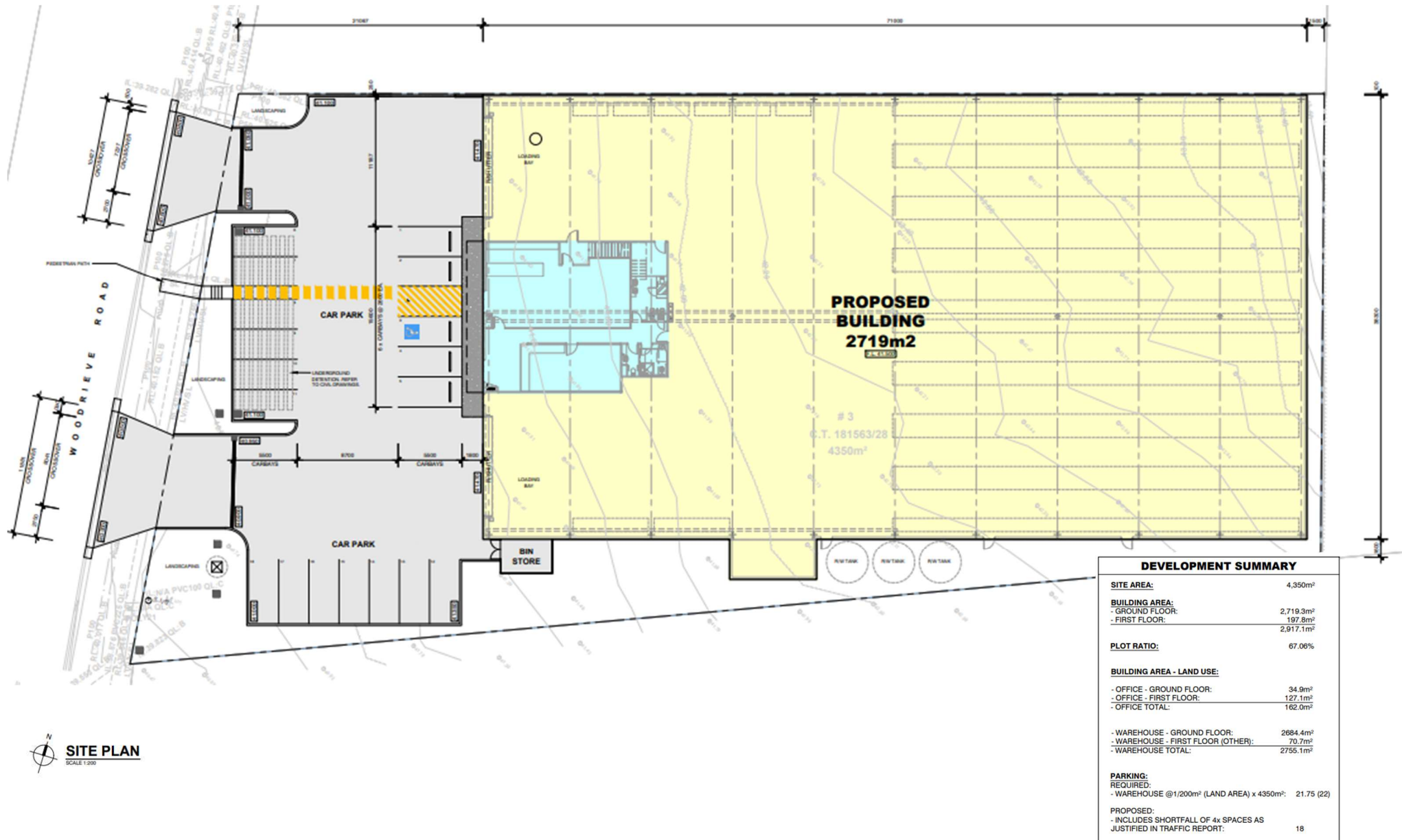


Figure 3. Planning design of development (Mulder Kampman Designs REV: SK07)

4. Survey Data

All survey data was supplied by the client as a processed AutoCAD file. The provided data has been incorporated into various software to undertake the analysis.

5. Stormwater Quantity

5.1 Catchment Conditions

The contributing catchment for 3 Woodrieve Road, Bridgewater is approximately 52 ha starting from the top of Greenbanks Road to the outlet at the Woodrieve Road with an approximate slope of 5.0%. The land use of the catchment contains zones of General Industrial and Rural Living, with the site itself zoned as General Industrial.



Figure 4. Contributing approximate catchment, 3 Woodrieve Road, Bridgewater

5.2 Land use

Land use for the site, both pre- and post-development, were derived from plans and aerial imagery. Land use values are as follows in Table 1.

Table 1. Land Use Area

| Land Use | Pre-Development | | Post-Development | |
|------------------|------------------------|--------------|------------------------|--------------|
| | Area (m ²) | % Total land | Area (m ²) | % Total land |
| Total Impervious | 0 | 0.00 | 3800 | 87.36 |
| Total Pervious | 4350 | 100.00 | 550 | 12.64 |

5.3 Stormwater runoff Coefficient (C)

See Table 2 for stormwater runoff coefficient (C) values were taken directly from best practices.

Table 2. Stormwater runoff Coefficients

| Land Use | C |
|---------------------|-----|
| Road/Driveway | 0.9 |
| Open Channel | 0.3 |
| Roof | 1.0 |
| Gravel/ timber deck | 0.5 |

5.4 Development Runoff

Stormwater runoff from the development site has been assessed under pre- and post-development models to determine the potential impact caused by the proposed development has on the immediate local flows. As per planning guidelines, it is a requirement that this does not deteriorate from pre to post development.

Table 3. Site Characteristics

| Catchment | Maximum Slope (%) | Total Land use pervious/ impervious (m ²) |
|------------------|-------------------|---|
| Pre-Development | 2.8 | 4350 / 0 |
| Post-Development | 2.8 | 550 / 3800 |

6. Model Results

As per best practices for the stormwater runoff, the post-development allowable site discharge must not exceed the pre-development site discharge. As can be seen from Table 4, the permissible site discharge of 12.66 L/s for roofs and 4.66 L/s for carpark concrete is exceeded in the 2% AEP storm event. Therefore, the site must detain the difference using an onsite stormwater detention (OSD) system.

Table 4. Discharge volume rates and required detention of pre-post scenarios in 2% storm.

| Area | Design Event (AEP) | Permissible Site Discharge (L/s) | Peak post-development discharge (L/s) | Required Development Detention (L) |
|---------|--------------------|----------------------------------|---------------------------------------|------------------------------------|
| Roof | 2% | 12.66 | 80.95 | 39,180 |
| Carpark | 2% | 4.66 | 27.96 | 15,730 |

6.1 On-Site Detention Sizing and Configuration

As shown in Table 4, the permissible site discharge from the proposed development is exceeded from the pre-development scenario and needs to be detained or otherwise agreed. The sections below outline the storage requirements for this exceedance.

6.2 Development Detention

As can be seen from Table 4, after allowance has been made to detain impervious areas, the total volume discharged in the storm event still exceeds pre-development flows. Therefore, the proposed development will require minimum total detention of 54,910 L. Refer to “APPENDIX B Calculations”.

Stormwater from the proposed impervious roof area is detained within a tank with a minimum capacity of 39,180 L. Runoff from the carpark areas is managed by a drainage network, with detention provided by an underground pipe system consisting of seven DN450 pipes, each 15 m long, located toward the

west side of the carpark. This underground pipe system has a detention capacity of 16,700 L. The outflows from both the underground detention pipe system and the roof detention tank are combined before discharging into the stormwater main at the lot's southwest corner. Detailed maintenance information can be found in Section 7.6.

6.3 1% AEP Overland Flow Path (OFP)

As per Brighton Council requirements, runoff for the 1% AEP is not required to be captured by infrastructure nor detained onsite in an OSD. However, the 1% AEP storm will be able to follow the contours and drain through the internal concrete carpark towards Woodrieve Road with no adverse effects and will not cause any additional impedance. APPENDIX A – On-site Detention Concept Design attached shows the post development overland flow path for the site in the event of a 1% AEP storm.

6.4 Quantity Summary

The SWMP quantity report has been designed from best practice design and guidelines. The following is a summary of the requirements for stormwater management for the proposed development at 3 Woodrieve Road, Bridgewater.

1. The proposed development requires a minimum total detention volume of 54,910 L. To meet the minimum requirement. The detention requirement for the proposed impervious areas will be managed by a combination of an above ground minimum 39,180L detention tank and 16,700L underground detention system which exceeds the required total minimum detention volume of 54,910 L.
2. The 1% AEP runoff overland flow paths can be directed from the development site via proposed internal carpark areas. Internal carparks are graded away directing overland flow paths away from habitable areas.

7. Water Quality

Water quality modelling for the site has been undertaken with the urban stormwater improvement conceptualisation software MUSIC. The modelling conducted in MUSIC has been done in accordance with MUSIC Modelling Guidelines and the Tasmanian State Stormwater Strategy. This document provides a guide to water quality modelling methodology and outlines the assumptions that should be made when selecting input parameters.

Recommendations for the improvement of the water quality on site would include the diversion of stormwater flows from the development to primary treatment system (treatment train). This would reduce the pollutants in the receiving waters further and be a safe design option if future usage of this sub catchment provides higher pollutant storm water runoff.

7.1 Stormwater Quality Treatment (construction phase)

During construction, many pollutants are generated from various sources. These pollutants can easily be captured in stormwater runoff and introduced into the downstream receiving environment polluting the waterways. Listed below are some of the main construction phase pollutants:

- Litter from construction – material packaging, paper, plastic, food packaging, off cuts etc.
- Sediment erosion and transports from excavated material and fresh surfaces.
- Hydrocarbons – equipment and machinery
- Toxic material – cement, solvents, paints, cleaning agents etc.
- pH altering substances – cement, cleaning agents etc.

Construction phase pollutants should be planned and mitigated for by a designed site-specific SWMP as part of the drawing set. This should detail controls including but not limited to:

- Diversion of upslope water (where applicable)

- Stabilised exit/ entry points
- Minimise site disturbance where possible
- Implement sediment control along downslope boundaries
- Appropriate location and protection for stockpiles
- Capture on-site runoff that may contain pollutants
- Maintain control measures
- Stabilise site after disturbance (revegetate etc.)

7.2 Stormwater Quality Modelling

Stormwater pollutant modelling for the 3 Woodrive Road development was undertaken using Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software, version 6.3.0, under the guidelines of the State Stormwater Strategy and Tasmanian Planning Scheme.

This model splits the catchment into the following typical areas:

- Residential Catchment (Roof)
- Carpark Catchment (Internal driveway and carpark)

The following fraction impervious land areas has been adopted in the modelling as per the concept design measurements. See Table 5 below for fraction imperviousness (fi).

Table 5. Adopted Fraction Impervious

| Catchment Area (m ²) | Concrete carpark | | Roof | |
|-------------------------------------|------------------------|-----|------------------------|-----|
| | Area (m ²) | fi | Area (m ²) | fi |
| 3800 | 1054 | 0.9 | 2746 | 1.0 |

7.3 Council Planning Quality Removal Standards

The Tasmanian Planning Scheme – Brighton has adopted the pollutant removal targets and best practice from the State Stormwater Strategy 2010. See Table 6 for target removal rates.

Table 6. State Stormwater Strategy Pollutant Removal Targets

| Parameter | Result Pollutant Retention on Developed Site |
|-------------------------------------|---|
| Total Suspended Solids (TSS) | 80% |
| Total Phosphorous (TP) | 45% |
| Total Nitrogen (TN) | 45% |
| Gross Pollutants (GP) | 90% |

7.4 Treatment Train

To achieve stormwater pollutant removal targets outlined above and considering site constraints, this model utilised an Atlan FlowFilter HS1200/4 (or similar). The treatment train consists of the concrete carpark draining through the grated pits via stormwater infrastructure to the underground detention system and then to Atlan FlowFilter HS1200/4 within the site boundary. Properties of each treatment product can be seen in Table 9. Should an alternative similar product be selected it needs to have equal or greater removal properties.

Table 7. Atlan FlowFilter HS.1200/4 Properties

| Properties | Atlan FlowFilter HS.1200/4 |
|---|----------------------------|
| Are the proposed pollutant reduction efficiencies independently verified using a method suited to local conditions? | Y |
| Does the data provided include performance results under dry weather flows (to account for potential pollutant leeching?) | Y |
| Is the assumed high-flow bypass rate consistent with manufacturer specifications? | Y |
| High Flow by-pass (m ³ /s) | 0.005 |
| Low Flow (m ³ /s) | 0.000 |
| Suspended Solids (TSS) Input (mg/L) | 1000.00 |
| Suspended Solids (TSS) Output (mg/L) | 160.00 |
| Phosphorous (TP) Input (mg/L) | 100.00 |
| Phosphorous (TP) Output (mg/L) | 19.00 |
| Nitrogen (TN) Input (mg/L) | 100.00 |
| Nitrogen (TN) Output (mg/L) | 53.00 |
| Gross Pollutants (GP) Input (mg/L) | 15.00 |
| Gross Pollutants (GP) Output (mg/L) | 0.00 |

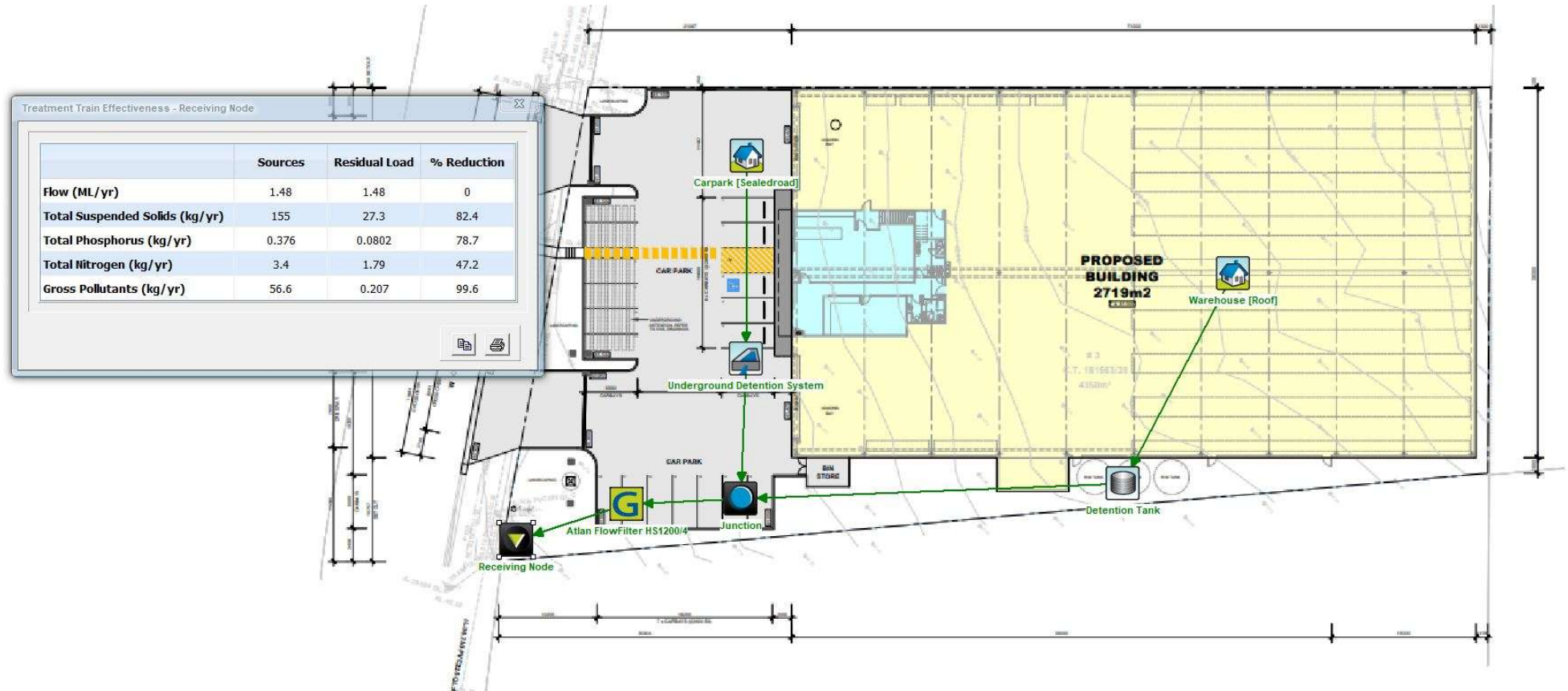


Figure 5. MUSIC Treatment Train Effectiveness Result

7.5 Quality Results

The MUSIC pollutant load reductions are detailed in Table 8 below. As can be seen when comparing the MUSIC results to the required state stormwater strategy target load reductions, the specified treatment train outlined above and as seen in Figure 5 show that all targets either meet or exceed state reduction targets.

Table 8. Pollutant Removal Achieved vs Targets.

| Parameter (kg/year) | Target Load Reduction (%) | MUSIC Results | SW Targets Achieved (Y/N) |
|-------------------------------------|---------------------------|---------------|---------------------------|
| Total Suspended Solids (TSS) | 80.0 | 82.4 | Y |
| Total Phosphorous (TP) | 45.0 | 78.7 | Y |
| Total Nitrogen (TN) | 45.0 | 47.2 | Y |
| Total Pollutants (GP) | 90.0 | 99.6 | Y |

Based on the water quality assessment using the MUSIC software, it is found that the pollutant reduction improvement can be achieved by adopting the Stormwater Quality Improvement Devices (SQIDs) specified in Table 9.

Table 9. Required SQIDS

| Stormwater Quality Improvement Device | |
|--|--------|
| Atlan FlowFilter HS 1200/4 or Similar | 1 Unit |

7.6 SQID Maintenance

To ensure ongoing operation of all treatment systems, the developer would be required to perform regular maintenance on all treatment devices to ensure they remain in good working order. This would include, but not be limited to, the information described in Table 10.

Table 10. Concept Maintenance Plan

| Task | Action | Frequency |
|--|--|----------------|
| General Cleaning | Clear all debris/pollutants from gutters and tank filters, ensure operational | Every 3 months |
| Specialised cleaning and inspection | Inspect all gutters, downpipes, inflow, and outflow – clean and flush if required. Visually inspect all filters and main device/tank for defects. Replace if required. | Yearly |
| Maintenance | Perform detailed inspection and maintenance of tanks, and associated infrastructure by a qualified person. | Every 5 years |

The above maintenance plan is generic and based on removal rates and best practice advice. Specific maintenance plans should be created for each specific device upon purchasing or confirmation of design.

7.7 Quality Summary

Flüssig Engineers recommends the following to be undertaken to ensure the ongoing stormwater quality from the developed site:

1. Construction quality control should be implemented to prevent pollution during construction.
2. Installation of treatment devices; Atlan FlowFilter HS1200/4 (or similar) in the order specified as per this document (Figure 5), not including individual lot devices.
3. Maintenance plans need to be created and adhered to ensure the ongoing operation of the systems.

Flüssig Engineers note that some of the specified treatment products are proprietary products and although suitable in this instance, does not limit the developer to this product. However, any product selected by the developer should meet removal properties of these products for the MUSIC model to be valid.

8. Conclusion

The post-development quantity and quality scenarios for the Stormwater Management Plan for 3 Woodrieve Road Bridgewater have been investigated. Post-development quantity and quality have been assessed against the stormwater management best practices, and the State Stormwater Strategy to ensure the post-development flows meet specified standards.

The following conclusions were derived in this report:

1. A comparison of the post-development peak flows for the 2% AEP storm event were undertaken against the pre-development flows, resulting in an increase in site discharge.
2. The proposed development requires a minimum total detention volume of 54,910 L. To meet this requirement, proposed impervious roof area will be detained in a minimum tank of 39,180 L across the development. Additionally, the detention requirement for the internal concrete carpark will be managed by an underground detention system providing 16,700 L. This exceeds the total required total minimum detention volume of 54,910 L.
3. The 1% AEP runoff overland flow paths can be directed from the development site via internal concrete driveway. Internal driveways are graded away from buildings directing overland flow paths away from habitable areas.
4. Installation of treatment devices; Atlan FlowFilter HS1200/4 (or similar) in the order specified as per this document (Figure 5) to achieve stormwater pollutant removal targets.
5. SQID's designed and sized using MUSIC can achieve required pollutant removal through the installation of treatment devices.

Under the Stormwater Management Plan, the development site will meet current specified standards for both quantity and quality control.

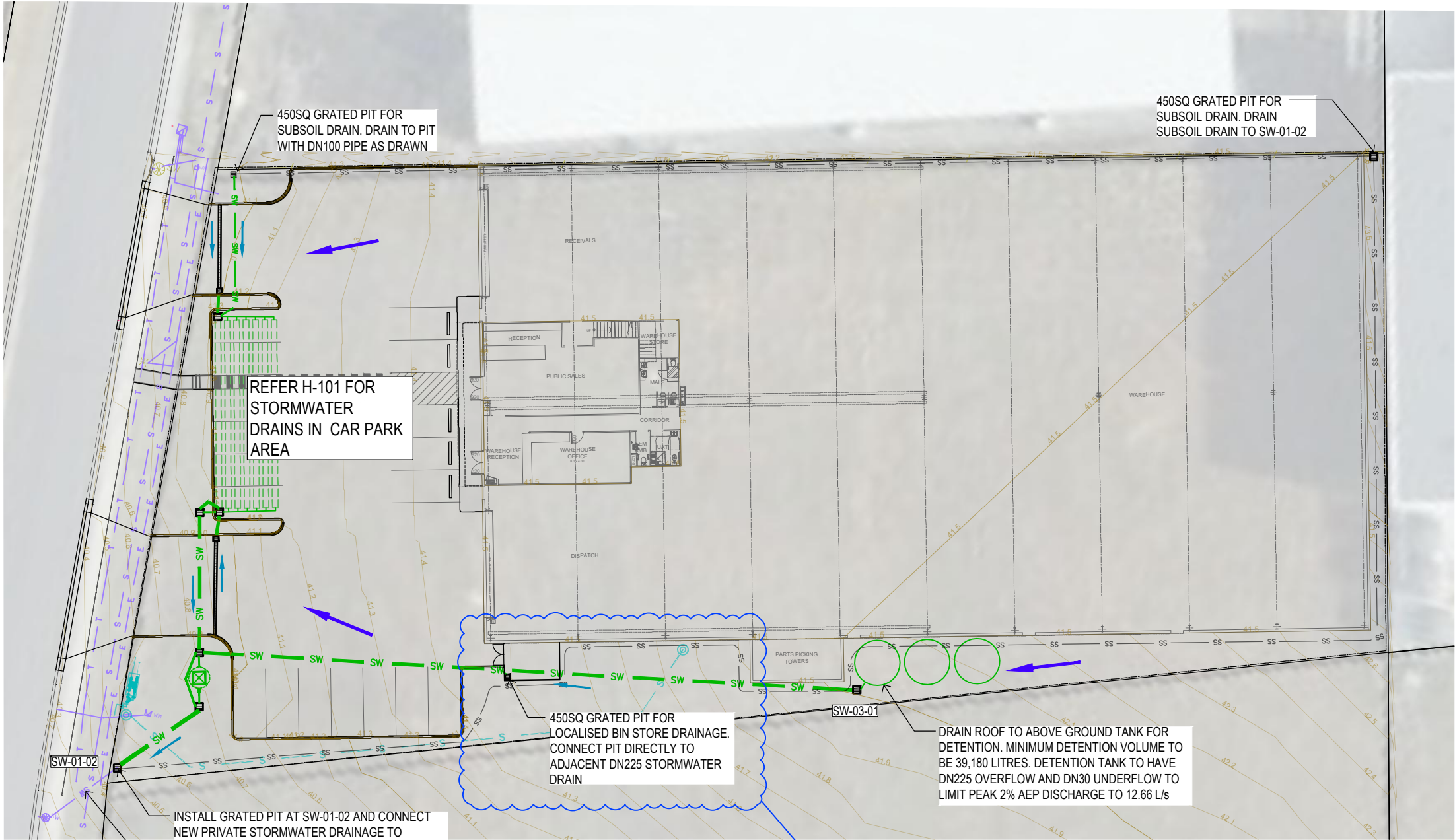
9. Limitations

Flüssig Engineers were engaged by **Mulder Kampman Design** in representation of the developer of 3 Woodrieve Road Bridgewater development for the purpose of a site-specific stormwater management plan as per stormwater management best practices. This study is deemed suitable for purpose at the time of undertaking the study. If conditions of the development change, the plan 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 stormwater management plan.

APPENDIX A – On-site Detention Concept Design



NEW STORMWATER SERVICES

- STORMWATER FLOW DIRECTION
- 1% AEP OVERLAND FLOW PATH DIRECTION
- 600SQ GRATED STORMWATER PIT WITH CLASS D LID IN TRAFFICABLE AREAS AND CLASS B IN NON TRAFFICABLE AREAS UNLESS NOTED OTHERWISE
- NEW STORMWATER PIPE. REFER LONG SECTIONS FOR SIZES
- ATLAN FLOW FILTER HS 1200/4
- SUBSOIL DRAIN TO BUILDING PERIMETER. DRAINAGE LINE TO BE 100mm SOCKED AG DRAIN MIN 500mm DEEP AND 0.5% FALL

NEW SERVICES

- WATER SUPPLY LINE
- SEWERAGE DRAIN

EXISTING SERVICES

- STORM WATER DRAIN
- WATER SUPPLY LINE
- SEWERAGE DRAIN
- SEWERAGE DRAIN
- ELECTRICAL OVERHEAD
- SERVICE TO BE ABANDONED

STORMWATER SITE PLAN

SCALE 1:400



NOT FOR CONSTRUCTION
PRELIMINARY ONLY - SUBJECT TO REVIEW AND CERTIFICATION

NOTES :

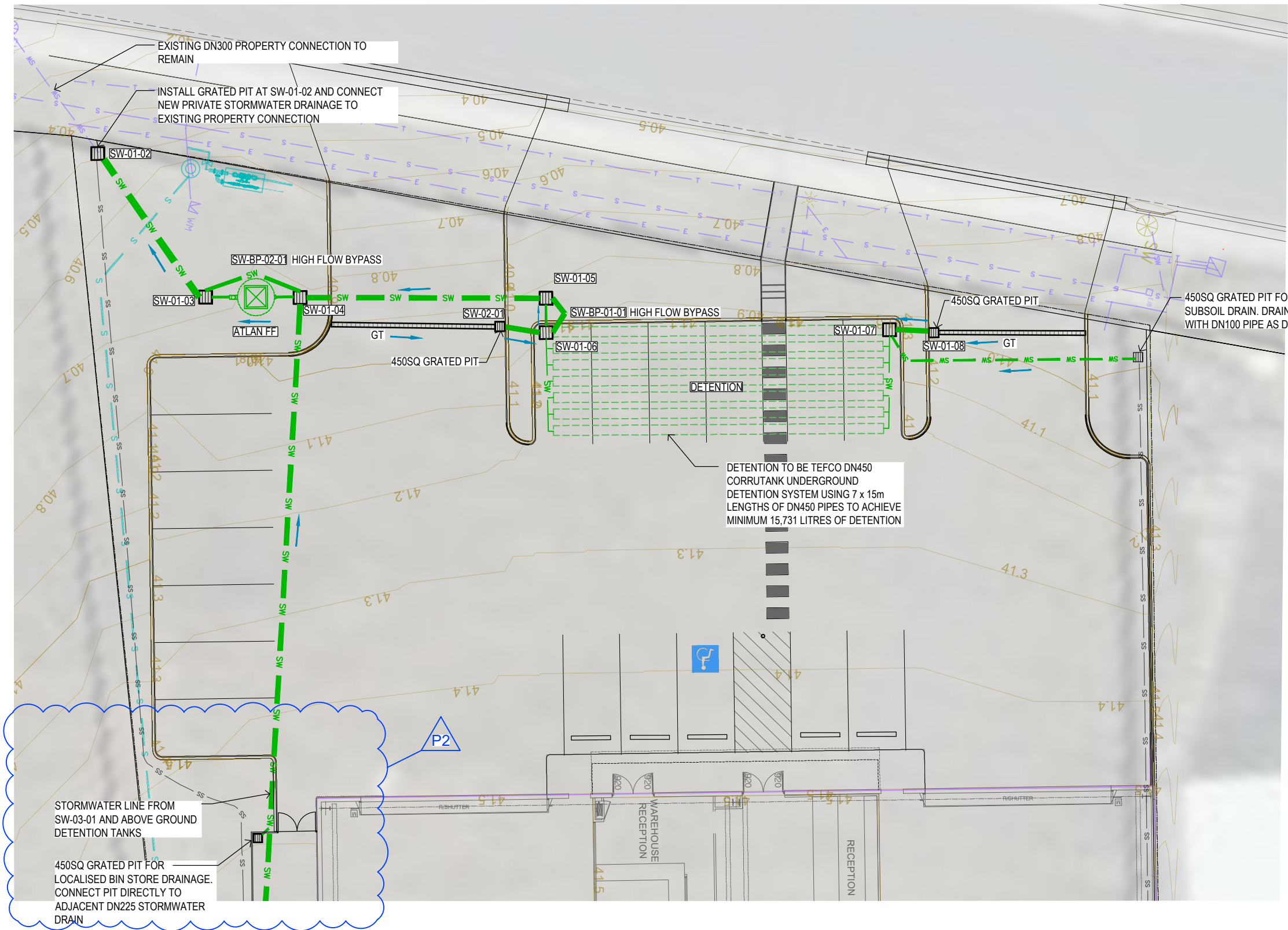
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| P1 | PLANNING | DH | 08/11/24 |
| REV: | DESCRIPTION: | BY: | DATE: |
| STATUS: | P L A N N I N G | | |

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| | |
|----------------------------------|--|
| CLIENT: MULDER KAMPMAN DESIGN | SITE: 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 TITLE: STORMWATER SITE PLAN |
| PROJECT: CIVIL DESIGN | SCALE AT A3: 1:300 DATE: 03/02/25 DRAWN: DH CHECKED: MM PROJECT NO: FE-24076 DRAWING NO: H-100 REVISION: P2 |



NEW STORMWATER SERVICES

- STORMWATER FLOW DIRECTION
- 600SQ GRATED STORMWATER PIT WITH CLASS D LID IN TRAFFICABLE AREAS AND CLASS B IN NON TRAFFICABLE AREAS UNLESS NOTED OTHERWISE
- NEW STORMWATER PIPE. REFER LONG SECTIONS FOR SIZES
- ATLAN FLOW FILTER HS 1200/4
- SUBSOIL DRAIN TO BUILDING PERIMETER. DRAINAGE LINE TO BE 100mm SOCKED AG DRAIN MIN 500mm DEEP AND 0.5% FALL
- GT - 200mm GRATED ACO KLASSIK DRAIN WITH CLASS D NON-SLIP HEELSAFE GRATE. REFER C-150 FOR DETAILS

NEW SERVICES

- WATER SUPPLY LINE
- SEWERAGE DRAIN

EXISTING SERVICES

- STORM WATER DRAIN
- WATER SUPPLY LINE
- SEWERAGE DRAIN
- SEWERAGE DRAIN
- ELECTRICAL OVERHEAD
- SERVICE TO BE ABANDONED

STORM WATER PLAN

SCALE 1:300

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|--------------|-----------------------|-------------|--------------------------------------|
| CLIENT: | MULDER KAMPMAN DESIGN | SITE: | 3 WOODRIEVE RD, BRIDGEWATER TAS 7030 |
| PROJECT: | CIVIL DESIGN | TITLE: | STORMWATER DETAIL PLAN |
| SCALE AT A3: | 1:300 | DATE: | 03/02/25 |
| PROJECT NO: | FE-24076 | DRAWING NO: | H-101 |
| | | CHECKED: | MM |
| | | REVISION: | P2 |

APPENDIX B – Detention Calculations

STORMWATER DETENTION V5.05

Flüssig Engineers

Location: Bridgewater TAS
Site: 2746m² with tc = 20 and tcs = 15 mins.
PSD: AEP of 2%, Above ground PSD = 12.66L/s
Storage: AEP of 2%, Above ground volume = 39.18m³

Design Criteria

(Custom AEP IFD data used)

Location = Bridgewater TAS
Method = E (A)RI 2001,A(E)P 2019

PSD annual exceedance probability (APE) = 2 %
Storage annual exceedance probability (APE) = 2 %

Storage method = A (A)bove,(P)ipe,(U)nderground,(C)ustom

Site Geometry

Site area (As) = 2746 m² = 0.2746 Ha
Pre-development coefficient (Cp) = 0.30
Post development coefficient (Cw) = 1.00

Total catchment (tc) = 20 minutes
Upstream catchment to site (tcs) = 15 minutes

Coefficient Calculations

| Pre-development | | | | Post development | | | |
|--|------------------------|----------------------|------------|--|------------------------|----------------------|-------------|
| Zone | Area (m ²) | C | Area * C | Zone | Area (m ²) | C | Area * C |
| Concrete | 0 | 0.90 | 0 | Concrete | 0 | 0.90 | 0 |
| Roof | 0 | 1.00 | 0 | Roof | 2746 | 1.00 | 2746 |
| Gravel | 0 | 0.50 | 0 | Gravel | 0 | 0.50 | 0 |
| Garden | 2746 | 0.30 | 824 | Garden | 0 | 0.30 | 0 |
| Total | 2746 | m² | 824 | Total | 2746 | m² | 2746 |
| Cp = $\Sigma \text{Area} * C / \text{Total} = 0.300$ | | | | Cw = $\Sigma \text{Area} * C / \text{Total} = 1.000$ | | | |

Permissible Site Discharge (PSD) (AEP of 2%)

PSD Intensity (I) = 53.1 mm/hr For catchment tc = 20 mins.
Pre-development (Qp = Cp*I*As/0.36) = 12.14 L/s
Peak post development (Qa = 2*Cw*I*As/0.36) = 80.95 L/s = (1.526 x I) Eq. 2.24

Storage method = A (A)bove,(P)ipe,(U)nderground,(C)ustom
Permissible site discharge (Qu = PSD) = 12.656 L/s

Above ground - Eq 3.8

$$Q_p = \text{PSD}^2 - 2 * Q_a / t_c * (0.667 * t_c * Q_p / Q_a + 0.75 * t_c + 0.25 * t_{cs}) * \text{PSD} + 2 * Q_a * Q_p$$

Taking x as = PSD and solving

$$a = 1.0 \quad b = -168.0 \quad c = 1965.6$$

$$\text{PSD} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\text{PSD} = 12.656 \text{ L/s}$$

Below ground pipe - Eq 3.3

$$Q_p = \text{PSD} * [1.6 * t_{cs} / \{t_c * (1 - 2 * \text{PSD} / (3 * Q_a))\} - 0.6 * t_{cs}^{2.67} / \{t_c * (1 - 2 * \text{PSD} / (3 * Q_a))\}^{2.67}]$$

$$= 12.14$$

$$\text{PSD} = 12.570 \text{ L/s}$$

Below ground rectangular tank - Eq 3.4

$$t = t_{cs} / \{t_c * (1 - 2 * \text{PSD} / (3 * Q_a))\} = 0.834$$

$$Q_p = \text{PSD} * [0.005 - 0.455 * t + 5.228 * t^2 - 1.045 * t^3 - 7.199 * t^4 + 4.519 * t^5]$$

$$= 12.14$$

$$\text{PSD} = 12.189 \text{ L/s}$$

Design Storage Capacity (AEP of 2%)

Above ground (Vs) = $[0.5 \cdot Q_a \cdot t_d - [(0.875 \cdot PSD \cdot t_d)(1 - 0.917 \cdot PSD / Q_a) + (0.427 \cdot t_d \cdot PSD^2 / Q_a)]] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.23
Below ground pipe (Vs) = $[(0.5 \cdot Q_a - 0.637 \cdot PSD + 0.089 \cdot PSD^2 / Q_a) \cdot t_d] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.8
Below ground rect. tank (Vs) = $[(0.5 \cdot Q_a - 0.572 \cdot PSD + 0.048 \cdot PSD^2 / Q_a) \cdot t_d] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.13

| td (mins) | I (mm/hr) | Qa (L/s) | Above Vs (m³) | Pipe Vs (m³) | B/G Vs (m³) |
|--------------|--------------|-------------|------------------|-----------------|----------------|
| 5 | 99.5 | 151.9 | 19.58 | | |
| 14 | 64.7 | 98.8 | 32.69 | | |
| 19 | 54.7 | 83.4 | 35.74 | | |
| 23 | 48.8 | 74.5 | 37.22 | | |
| 28 | 43.2 | 66.0 | 38.34 | | |
| 32 | 39.7 | 60.6 | 38.85 | | |
| 37 | 36.2 | 55.2 | 39.14 | | |
| 41 | 33.9 | 51.7 | 39.17 | | |
| 46 | 31.4 | 47.9 | 39.04 | | |
| 50 | 29.7 | 45.4 | 38.82 | | |

Table 1 - Storage as function of time for AEP of 2%

| Type | td (mins) | I (mm/hr) | Qa (L/s) | Vs (m³) |
|---------------------------|--------------|--------------|-------------|------------|
| Above Pipe B/ground | 40.0 | 34.4 | 52.5 | 39.18 |

Table 2 - Storage requirements for AEP of 2%

Frequency of operation of Above Ground storage

$Q_{op2} = 0.75 \text{ CI 2.4.5.1}$
 $Q_{p2} = Q_{op2} \cdot Q_{p1} \text{ (where } Q_{p1} = PSD) = 9.49 \text{ L/s at which time above ground storage occurs}$
 $I = 360 \cdot Q_{p2} / (2 \cdot C_w \cdot A_s \cdot 10^3) = 6.2 \text{ mm/h}$ Eq 4.24

Period of Storage

Time to Fill:
Above ground (tf) = $t_d \cdot (1 - 0.92 \cdot PSD / Q_a)$ Eq 4.27
Below ground pipe (tf) = $t_d \cdot (1 - 2 \cdot PSD / (3 \cdot Q_a))$ Eq 3.2
Below ground rect. tank (tf) = $t_d \cdot (1 - 2 \cdot PSD / (3 \cdot Q_a))$ Eq 3.2
Time to empty:
Above ground (te) = $(V_s + 0.33 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (1.14 / PSD) \cdot (10^3 / 60)$ Eq 4.28
Below ground pipe (te) = $1.464 / PSD \cdot (V_s + 0.333 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (10^3 / 60)$ Eq 4.32
Below ground rect. tank (te) = $2.653 / PSD \cdot (V_s + 0.333 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (10^3 / 60)$ Eq 4.36
Storage period (Ps = tf + te) Eq 4.26

| Type | td (mins) | Qa (L/s) | Vs (L/s) | tf (mins) | te (mins) | Ps (mins) |
|---------------------------|--------------|-------------|-------------|--------------|--------------|--------------|
| Above Pipe B/ground | 40.0 | 52.5 | 39.2 | 31.1 | 62.4 | 93.6 |

Table 3 - Period of Storage requirements for AEP of 2%

Orifice

Permissible site discharge ($Q_u = PSD$) = 12.66 L/s (Above ground storage)
Orifice coefficient (CD) = NA For sharp circular orifice
Gravitational acceration (g) = 9.81 m/s²
Maximum storage depth above orifice (H) = NA mm
Orifice flow (Q) = $CD \cdot A_o \cdot \sqrt{2 \cdot g \cdot H}$
Therefore:
Orifice area (Ao) = #VALUE! mm²
Orifice diameter (D = $\sqrt{4 \cdot A_o / \pi}$) = #VALUE! mm

STORMWATER DETENTION V5.05

Flussig Engineers

Location: Bridgewater TAS
Site: 1054m² with tc = 20 and tcs = 15 mins.
PSD: AEP of 2%, Underground rectangular tank PSD = 4.66L/s
Storage: AEP of 2%, Underground rectangular tank volume = 15.73m³

Design Criteria (Custom AEP IFD data used)

Location = Bridgewater TAS
Method = E (A)RI 2001,A(E)P 2019

PSD annual exceedance probability (APE) = 2 %
Storage annual exceedance probability (APE) = 2 %

Storage method = U (A)bove,(P)ipe,(U)nderground,(C)ustom

Site Geometry

Site area (As) = 1054 m² = 0.1054 Ha
Pre-development coefficient (Cp) = 0.30
Post development coefficient (Cw) = 0.90

Total catchment (tc) = 20 minutes
Upstream catchment to site (tcs) = 15 minutes

Coefficient Calculations

Pre-development

| Zone | Area (m ²) | C | Area * C |
|--------------|------------------------|----------------|----------|
| Concrete | 0 | 0.90 | 0 |
| Roof | 0 | 1.00 | 0 |
| Gravel | 0 | 0.50 | 0 |
| Garden | 1054 | 0.30 | 316 |
| Total | 1054 | m ² | 316 |

$$C_p = \frac{\sum \text{Area} * C}{\text{Total}} = 0.300$$

Post development

| Zone | Area (m ²) | C | Area * C |
|--------------|------------------------|----------------|----------|
| Concrete | 1054 | 0.90 | 949 |
| Roof | 0 | 1.00 | 0 |
| Gravel | 0 | 0.50 | 0 |
| Garden | 0 | 0.30 | 0 |
| Total | 1054 | m ² | 949 |

$$C_w = \frac{\sum \text{Area} * C}{\text{Total}} = 0.900$$

Permissible Site Discharge (PSD) (AEP of 2%)

PSD Intensity (I) = 53.1 mm/hr For catchment tc = 20 mins.
Pre-development (Qp = Cp*I*As/0.36) = 4.66 L/s
Peak post development (Qa = 2*Cw*I*As/0.36) = 27.96 L/s = (0.527 x I) Eq. 2.24

Storage method = U (A)bove,(P)ipe,(U)nderground,(C)ustom
Permissible site discharge (Qu = PSD) = 4.664 L/s

Above ground - Eq 3.8

$$0 = \text{PSD}^2 - 2 * Q_a / t_c * (0.667 * t_c * Q_p / Q_a + 0.75 * t_c + 0.25 * t_{cs}) * \text{PSD} + 2 * Q_a * Q_p$$

Taking x as = PSD and solving

a = 1.0 b = -58.6 c = 260.6

$$\text{PSD} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

PSD = 4.844 L/s

Below ground pipe - Eq 3.3

$$Q_p = \text{PSD} * [1.6 * t_{cs} / (t_c * (1 - 2 * \text{PSD} / (3 * Q_a))) - 0.6 * t_{cs}^{2.67} / (t_c * (1 - 2 * \text{PSD} / (3 * Q_a)))^{2.67}]$$

= 4.66

PSD = 4.804 L/s

Below ground rectangular tank - Eq 3.4

$$t = t_{cs} / (t_c * (1 - 2 * \text{PSD} / (3 * Q_a))) = 0.844$$

$$Q_p = \text{PSD} * [0.005 - 0.455 * t + 5.228 * t^2 - 1.045 * t^3 - 7.199 * t^4 + 4.519 * t^5]$$

= 4.66

PSD = 4.664 L/s

Design Storage Capacity (AEP of 2%)

Above ground (Vs) = $[0.5 \cdot Q_a \cdot t_d - [(0.875 \cdot PSD \cdot t_d)(1 - 0.917 \cdot PSD / Q_a) + (0.427 \cdot t_d \cdot PSD^2 / Q_a)]] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.23
Below ground pipe (Vs) = $[(0.5 \cdot Q_a - 0.637 \cdot PSD + 0.089 \cdot PSD^2 / Q_a) \cdot t_d] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.8
Below ground rect. tank (Vs) = $[(0.5 \cdot Q_a - 0.572 \cdot PSD + 0.048 \cdot PSD^2 / Q_a) \cdot t_d] \cdot 60 / 10^3 \text{ m}^3$ Eq 4.13

| td (mins) | I (mm/hr) | Qa (L/s) | Above Vs (m³) | Pipe Vs (m³) | B/G Vs (m³) |
|--------------|--------------|-------------|------------------|-----------------|----------------|
| 5 | 99.5 | 52.5 | | | 7.07 |
| 18 | 56.4 | 29.7 | | | 13.21 |
| 24 | 47.6 | 25.1 | | | 14.27 |
| 30 | 41.4 | 21.8 | | | 14.92 |
| 37 | 36.2 | 19.1 | | | 15.38 |
| 43 | 32.8 | 17.3 | | | 15.59 |
| 49 | 30.1 | 15.9 | | | 15.70 |
| 55 | 27.9 | 14.7 | | | 15.73 |
| 62 | 25.8 | 13.6 | | | 15.68 |
| 68 | 24.3 | 12.8 | | | 15.59 |

Table 1 - Storage as function of time for AEP of 2%

| Type | td (mins) | I (mm/hr) | Qa (L/s) | Vs (m³) |
|---------------|--------------|--------------|-------------|------------|
| Above Pipe | | | | |
| B/ground | 54.4 | 28.1 | 14.8 | 15.73 |

Table 2 - Storage requirements for AEP of 2%

Frequency of operation of Above Ground storage

$Q_{op2} = 0.75 \text{ CI } 2.4.5.1$
 $Q_{p2} = Q_{op2} \cdot Q_{p1} \text{ (where } Q_{p1} = PSD) = 3.63 \text{ L/s at which time above ground storage occurs}$
 $I = 360 \cdot Q_{p2} / (2 \cdot C_w \cdot A_s \cdot 10^3) = 6.9 \text{ mm/h}$ Eq 4.24

Period of Storage

Time to Fill:

Above ground (tf) = $t_d \cdot (1 - 0.92 \cdot PSD / Q_a)$ Eq 4.27
Below ground pipe (tf) = $t_d \cdot (1 - 2 \cdot PSD / (3 \cdot Q_a))$ Eq 3.2
Below ground rect. tank (tf) = $t_d \cdot (1 - 2 \cdot PSD / (3 \cdot Q_a))$ Eq 3.2

Time to empty:

Above ground (te) = $(V_s + 0.33 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (1.14 / PSD) \cdot (10^3 / 60)$ Eq 4.28
Below ground pipe (te) = $1.464 / PSD \cdot (V_s + 0.333 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (10^3 / 60)$ Eq 4.32
Below ground rect. tank (te) = $2.653 / PSD \cdot (V_s + 0.333 \cdot PSD^2 \cdot t_d / Q_a \cdot 60 / 10^3) \cdot (10^3 / 60)$ Eq 4.36

Storage period (Ps = tf + te) Eq 4.26

| Type | td (mins) | Qa (L/s) | Vs (L/s) | tf (mins) | te (mins) | Ps (mins) |
|---------------|--------------|-------------|-------------|--------------|--------------|--------------|
| Above Pipe | | | | | | |
| B/ground | 54.4 | 14.8 | 15.7 | 43.0 | 164.2 | 207.2 |

Table 3 - Period of Storage requirements for AEP of 2%

Orifice

Permissible site discharge ($Q_u = PSD$) = 4.66 L/s (Underground storage)
Orifice coefficient (CD) = NA For sharp circular orifice
Gravitational acceleration (g) = 9.81 m/s²
Maximum storage depth above orifice (H) = NA mm
Orifice flow (Q) = $CD \cdot A_o \cdot \sqrt{2 \cdot g \cdot H}$
Therefore:
Orifice area (Ao) = #VALUE! mm²
Orifice diameter (D = $\sqrt{4 \cdot A_o / \pi}$) = #VALUE! mm

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ENGINEERS ADVICE

250319 EA 25E99-22**To:** TasWater Development**Cc:** Robert Stapleton**INSPECTION** ☐**INSTRUCTION** ☐**MEMO** ☐**RFI RESPONSE** ☒**SHOP DRAWING APPROVAL** ☐**PROJECT:** Stirlings Performance Steel: 3 Woodrieve Road, Bridgewater**SUBJECT:** TasWater Sewer and Water Demands**RELEVANT DOCUMENTS:**

- Architectural/building design drawings by Mulder Kampman Design – sheets 1 to 5 - Rev SK09 – Dec 2024
- Engineering design documents by Aldanmark 25E99-22 – Dwg's C001, C002, C101, C103, C104 REVISION A – 19/03/2025
- Correspondence from TasWater RAI dated: 10/02/2025
- Council Planning Permit: DA2025/00007
- Survey Detail Plan provided by: UDM SURVEYORS - DWG No. 241142-1 – 23/10/2024
- TasWater supplement to the Sewerage Code of Australia WSA 02-2014-3.1
- TasWater supplement to the Water Code of Australia WSA 03-2014-3.1

Aldanmark Engineering have been engaged to provide preliminary assessment of the sewer and water demands for the proposed development at 3 Woodrieve Road, Bridgewater.

PROPERTY ID: 9613007**TITLE REFERENCE:** 181563/28

Office and warehouse development for Sterlings Performance Steel

TASWATER SEWERAGE DEMANDS

Sewerage loadings are in accordance with TasWater Sewerage Code Supplement to the Sewerage Code of Australia WSA 02-2014 Version 3.1.

TASWATER SUPPLEMENT

Gross development areas are based on survey documents provided to Aldanmark by UDM dated 23/10/24. The total equivalent (ET's) calculation is provided in tabular form below:

$$DESIGN\ FLOW = PDWF + GWI + RDI$$

Where:

$$\begin{aligned} \text{Peak Dry Weather Flow} &= d * \text{Average Dry Weather Flow} \\ \text{Groundwater Infiltration, GWI} &= 0.025 * A * \text{Portion}_{wet} \\ \text{Rainfall Dependent Inflow and Infiltration, RDI} &= 0.028 * A_{eff} * C * I \end{aligned}$$

TABLE 1: SEWERAGE EQUIVALENT TENEMENTS

| TYPE | COMMENTS | QUANTITY | UNIT RATING | TOTAL SEWERAGE ET'S |
|--|----------|----------|-------------|---------------------|
| BE04 | OFFICE | 410 | 0.006 | 2.46 |
| TOTAL APPROXIMATE EQUIVALENT TENEMENTS (ET'S) | | | | 2.346 |

Based on the above information and WSA 02-2014 and 450L/ET/day, the sewerage flows are:

$$\begin{aligned} Q_{ADWF} &= 0.013\text{L/s} \\ Q_{PDWF} &= 0.121\text{ L/s} \\ Q_{RDI} &= 0.65\text{L/s} \\ Q_{TOTAL} &= \mathbf{0.78\text{L/s}} \end{aligned}$$

SEWER CONNECTION POINT

The proposed development has an existing sewer connection point as shown on the TasWater Asset Portal from the existing DN225TasWater sewer main (ID GPZ3SEG34776)

TASWATER WATER DEMANDS

Water demands have been calculated in accordance with WSA 03-2015-2.0 and TasWater's Supplement to this code.

TASWATER SUPPLEMENT

TABLE 2: TASWATER WATER DESIGN FLOWS

| TYPE | ET CODE | COMMENTS | QUANTITY | UNIT RATING (WATER) | WATER ET'S |
|---------|---------|----------|----------|---------------------|------------|
| Offices | BE04 | Office | 410 | 0.004 | 1.64 |

$$AD = \frac{685 \frac{L}{ET}}{day} \times 1.64 \text{ ET's} \times \frac{1}{24 \times 60 \times 60} = 0.013 \frac{L}{s}$$

$$PD = 2.5 \times AD = 0.0325 \text{ L/s} = 2808 \text{ L/day}$$

$$PH = 2.0 \times PD = 0.065 \text{ L/s}$$

As per Section 3 of AS3500.1:2018 Table 3.2.4, the **PSFR = 0.58 L/s** for 44 Loading Units.

The site will require a min. DN100 (I.D.) medium hazard property service connection with DN40 high hazard offtake for domestic cold water as per TWS-W-0002 from the existing DN150 Water main (ID BRW5PS10243)

Note: A DN100 Water connection already exists to the property.

Total fire demands will not be known until detailed design has commenced. Based on previous projects, Aldanmark anticipate the internal fire supply must take in consideration:

- 2 x Attack hydrants - 20 L/s @ 350kPa (min 400kPa residual pressure at the boundary) and;

Fire flows from TasWater fire hydrants must comply with AS 2419.

To assist Aldanmark with the detailed design of the property connections for each site, can TasWater please provide the following information at each proposed connection point:

- Details on supply zone and supply head
- Connection point elevation in m/AHD & max static pressure
- Residual pressure at boundary without fire flow
- Fire flow residual pressures at the connection point elevation with the reservoir at its lowest operable level for the following fire flow demands: 10 l/s, 20 l/s and Full flow

WATER CONNECTION POINT

The proposed development has an existing water connection point as shown on the TasWater Asset Portal from the existing DN150 TasWater water main (ID A163042).

Regards,



Dan Jensen AdvDip CivEng
Civil Designer

Submission to Planning Authority Notice

Application details

| | |
|-----------------------------|---------------------|
| Council Planning Permit No. | DA2025/00007 |
| Council notice date | 4/02/2025 |
| TasWater Reference No. | TWDA 2025/00094-BTN |
| Date of response | 30/04/2025 |
| TasWater Contact | Robert Stapleton |
| Phone No. | 0417279866 |

Response issued to

| | |
|----------------------------|--|
| Council name | BRIGHTON COUNCIL |
| Contact details | development@brighton.tas.gov.au |
| Development details | |
| Address | 3 WOODRIEVE RD, BRIDGEWATER |
| Property ID (PID) | 9613007 |
| Description of development | Storage Use – Warehouse & Office Space |

Schedule of drawings/documents

| Prepared by | Drawing/document No. | Revision No. | Issue date |
|--------------------|--|--------------|------------|
| Flussing Engineers | "Site Plan" / Proj: FE-24076 – Dwg: C-100 | P2 | 3/02/2025 |
| Flussing Engineers | "Sewer Plan" / Proj: FE-24076 – Dwg: H-200 | P2 | 3/02/2025 |
| Flussing Engineers | "Water Plan" / Proj: FE-24076 – Dwg: H-300 | P1 | 08/11/2024 |

Conditions

SUBMISSION TO PLANNING AUTHORITY NOTICE OF PLANNING APPLICATION REFERRAL

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. A suitably sized water supply with metered connection and sewerage system and connection to the development must be designed and constructed 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 commencing construction/use of the development, any water connection utilised for construction/the development must have a backflow prevention device and water meter installed, to the satisfaction of TasWater.

ASSET CREATION & INFRASTRUCTURE WORKS

4. Prior to applying for a Certificate for Certifiable Works, the developer must physically locate all existing infrastructure to provide sufficient information for accurate design and physical works to be undertaken.
5. Plans submitted with the application for Certificate(s) for Certifiable Work (Building and/or Plumbing) must, to the satisfaction of TasWater show, all existing, redundant and/or proposed property services and mains.
6. Prior to undertaking any works related to water and sewerage, physical markers must be in place that clearly identify where water and/or sewer connections are to be made in accordance with any approved plan to TasWater's satisfaction.

DEVELOPER CHARGES

7. Prior to TasWater issuing a Certificate(s) for Certifiable Work (Building) and/or (Plumbing), the applicant or landowner as the case may be, must pay a developer charge totalling \$1,124.48 to TasWater for water infrastructure for 0.64 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.
8. Prior to TasWater issuing a Certificate(s) for Certifiable Work (Building) and/or (Plumbing), the applicant or landowner as the case may be, must pay a developer charge totalling \$2,565.22 to TasWater for sewerage infrastructure for 1.46 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.

DEVELOPMENT ASSESSMENT FEES

9. The applicant or landowner as the case may be, must pay a development assessment fee of \$403.51 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.

Advice

Water Modelling

Modelling indicates there is capacity in the existing network at 3 Woodrieve Rd, Bridgewater (pipe A203519) to supply this proposed development without impacting adversely on the existing infrastructure or customers. Total boundary heads (HGL), not pressures, at the proposed connection point(s) with the reservoir set to 1/3rd full are:

| Location | H.G.L. Peak hour | H.G.L Peak day + 20 l/s fire flow | Pressure kPa Peak Hour | Pressure kPa Peak Day + 20l/s fire flow |
|----------|------------------|-----------------------------------|------------------------|---|
| A203519 | 127 | 123 | 850 | 800 |

| Location | H.G.L. Peak hour | H.G.L Peak day + 40 l/s fire flow | Pressure kPa Peak Hour | Pressure kPa Peak Day + 40l/s fire flow |
|----------|------------------|-----------------------------------|------------------------|---|
| A203519 | 127 | 108 | 850 | 660 |

These are heads within the TasWater network, so they do not account for losses in customer piping and fittings. This result is based on a sound but imperfect knowledge of conditions on the field and those who use this information should allow an appropriate margin of error in their design.

The site is supplied by the Brighton (BRW5) zone, which has a pressure head level of 134 m.
The static pressure on site is approximately 870 kPa.

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>

Developer Charges

For information on Developer Charges please visit the following webpage –

<https://www.taswater.com.au/building-and-development/developer-charges>

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.