Our Ref: JT/L019.26
Job No: 25-10-131

12 February 2026

Furnissdale Management Pty Ltd
c/- IvyBridge Capital
PO Box Z5508
Perth St Georges Tce WA 6831

Attention: Jorrit Muller

Dear Jorrit,

578, 580 & 590 PINJARRA ROAD, FURNISSDALE
STORMWATER MANAGEMENT PLAN

The Site Stormwater Management Plan has been prepared in support of the proposed development at 578, 580 & 590 Pinjarra Road (Lots 401, 154 & 155), Furnissdale. The Site is situated in the Shire of Murray at the corner of Pinjarra Road and Ronlyn Road, as shown in *figure 1* below.

Figure 1 – Site location plan, Site bound in Red.

Th proposed development includes bulky goods showrooms, a petrol station and a gym. A copy of the proposed development layout is presented in Attachment A.

LANDFORM

A Geotechnical Investigation[1] was undertaken in May 2013 which described the existing soil profile as follows:

- TOPSOIL: SAND (SP): fine to medium grained, dark grey, sub-rounded to sub-angular with some tree and shrub roots, loose to medium dense, extending to a depth of between about 0.2 m to 0.3 m; overlying
- SAND (SP): fine to coarse grained, sub-rounded to sub-angular, pale grey to grey, white, yellow and brown, with interbedded dark brown weakly cemented sand (coffee rock) between depths of about 0.2 m and 2.0 m (not present at all test locations), loose to very dense zones, extending to the maximum depth investigated of 6.2 m.

Topography
A feature survey[2] prepared shows the natural topography is relatively flat across the site, with levels ranging from RL 2.70m to 3.50m.

Groundwater
There have been three investigations that have measured groundwater levels at the site. The geotechnical investigation undertaken in May 2013 did not encounter groundwater in any test pits (up to 3.0m depth). An ASS investigation undertaken in August 2008 reported groundwater levels to be at approximately RL 1.0m. The Site and Soil Evaluation[3] undertaken in September 2025 found groundwater levels at 1.7 – 1.9m below ground level (RL 1.45 – 1.5m). Based on these investigations, a maximum groundwater level of RL 1.5m has been used for design.

Acid Sulphate Soils
The 2013 geotechnical investigation included sampling of material from lot 401 to determine the presence of ASS, their assessment concluded that there was no indication of ASS on lot 401. The ASS investigation undertaken in 2008 on lots 154 & 155 found presence of ASS in black sand encountered on site at depths between 1.0 – 1.5m. Based on these findings and the expectation that the site works will result in disturbance of the black sand, the geotechnical engineer has recommended the preparation of an ASS management plan prior to commencement of works.

Infiltration Rates
The Site and Soil Evaluation investigation completed a field-saturated hydraulic conductivity test using a Constant Head Field Permeator which determine the infiltration rate to be 6.93m/day. An infiltration rate of 5m/day has been allowed to accommodate minor clogging over time.

STORMWATER DESIGN PRINCIPALS

The stormwater system will be designed to comply with the Shire of Murray requirements for drainage and water management[4]. The relevant sections from the guidelines are listed below:

1. Demonstrate in areas of commercial and industrial development, that downstream peak-flow rates and levels for the critical 1-in-10-year and 1-in-100-year annual exceedance

[1] Golder Associates - 137642049-001-R-Rev1
[2] MNG - Job No. 100991 (19 Sept 2017)
[3] West Soil & Water - Project Number: 20250918
[4] Murray Drainage and Water Management Plan – June 2011

probability events are not increased, except where additional downstream capacity exists and the downstream asset owner/manager has given approval.

2. Retain the volume of the one-hour-duration 1-in-1 year annual exceedance probability event from constructed impervious areas at source
3. Biofiltration systems to be sized at a minimum of 2% of the connected impervious area they receive runoff from.
4. Soil amendment to include a 300-mm-deep layer of material that will reduce nutrient export (with a PRI greater than 10) and should be undertaken across a minimum of 10% of the site including, but not limited to, all landscaped public open space and landscaped drainage features.
5. Swales and bioretention or infiltration systems to be designed with sufficient clearance from groundwater levels to ensure they do not remain permanently wet.
6. No flooding of building habitable floor levels as well as utility facility floor levels should be allowed to occur in a major rainfall event.

STORMWATER MANAGEMENT PLAN

Stormwater Quantity Management

Stormwater storage volumes have been designed to satisfy Shire of Murray requirements to maintain pre-development discharge in the critical 1% Annual Exceedance Probability (AEP) event and zero discharge in the 1 year, one hour duration event.

Site Attribute	Design Consideration
Roof Area (runoff coef. = 1.0)	0.915Ha
Hardstand Area (runoff coef. = 0.9)	1.90Ha
Infiltration rate	5m/day
Groundwater Levels	1.5m AHD
Building FFL	3.75m
Clearance from Building FFL to Overflow	Min. 0.5m (varies)
Design Storm events & rainfall intensity	1% AEP, 1 hour – 41.1mm/hr
Storage Volumes	1% AEP, 1 hour Run-off: 1,080m^3 Soakage Volume: 334m^3 Outflow Volume: 212m^3 Storage Volume: 545m^3 Total Volume Provided: 1,091m^3
Stormwater Storage Solutions	Soakwells: 40 x ⌀1.2m x 1.2m depth Graf Ecobloc Drainage Cells: 746 (No.) x 800mm (w) x 800mm (l) x 350mm (h) Drainage Swales: 1,080m^2 infiltration area, 324m^3 volume

The concept stormwater calculation table is presented in *Attachment B* and the concept stormwater design is presented in *Attachment C*.

Catchments
In detailed design stage, the site shall be divided into 4 catchment areas in order to infiltrate stormwater as close to source as possible and to minimize pipe sizes. Catchment areas and associated storage volumes will be sized based on downpipe locations and associated roof catchments.

Overflow Design
The storage volume provided will fully contain the 24 hour 1% AEP event and 1 hour 10% AEP event. During a shorter duration 1% AEP event, the proposed levels have been designed to allow minor ponding within the carparking area prior to overflow to adjacent roads. Building FFL's have been set at minimum 0.5m above overflow levels.

Rainfall events in excess of the design rainfall events will result in overflows to Pinjarra Road and Ronlyn Road via overflow from swales as indicated on *Attachment C.*

Pavement Design
A rise and fall pavement will be designed throughout to achieve the required falls to prevent ponding and to convey stormwater to the vegetated swales for first flush treatment.

It is expected imported clean fill may be required to achieve the required pavement and building levels. Shallow retaining structures may be required along the boundary in some locations although this may be designed out at detailed design stage.

Storage Structures
In order to achieve the required storage volumes, below ground soakwells, drainage cells and swales will be constructed with interconnecting pipes. Final positioning of the storage structures will be confirmed at detailed design stage upon receipt of information on other services.

Preliminary levels as shown on the Stormwater Management Plan have been determined such that the base level of storage structures are a minimum of 0.5m above the maximum groundwater level of RL 1.5m.

Maintenance
A maintenance schedule shall be provided as part of the as constructed documentation from the contractor. This should include a schedule for clearing of soakwells and drainage cells.

Stormwater Quality Management

The majority of trafficable areas will be graded towards vegetated swales in order to capture and treat hydrocarbons prior to runoff reaching the groundwater table. Vegetation and filter media profile shall be determined by the landscaping consultant during the detailed design process.

Vegetated swale areas are in excess of 1,000m^2 which exceeds the minimum requirement of 2% impervious site area. Vegetated swales shall be set at a minimum RL of 3.0m which provides 1.5m clearance to maximum groundwater levels.

The fuel station canopy and tanker fill point shall be bunded to prevent fuel spills reaching the site stormwater infiltration structures. These areas shall be drained to waste grates which connect to a SPEL Spillceptor or approved equivalent.

CONCLUSION

There are no drainage constraints that prohibit this site from being developed as a commercial site.

The following works are recommended to progress to detailed design stage:

1. Detailed earthworks model to confirm pavement levels and retaining wall heights required along the site boundaries.
2. Assessment of roof catchments and downpipe locations to determine catchment areas and finalise drainage cell volumes and pipe sizing.
3. Coordination with landscape consultant to ensure suitable filter media material and thickness is provided in drainage swales.

Yours faithfully,

JARRYD TREACY
SENIOR CIVIL ENGINEER

Enc.