APPENDIX 18

Civil & Stormwater Management Report : MLEI Consulting

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CONSULTING ENGINEERS

SOUTHERN BAROSSA WINERY & TOURIST ACCOMODATION PROJECT

CIVIL & STORMWATER MANAGEMENT REPORT

Prepared for Turner & Townsend

JULY 2025

BUILDINGS

LAND DIVISION

INFRASTRUCTURE

INDUSTRIAL

DEFENCE

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Contents

1 Introduction

MLEI Consulting Engineers (MLEI) have been engaged to prepare a Civil Siteworks and Stormwater Management Plan (SMP) for the Southern Barossa Winery and Tourist Accommodation Project development (the Development).

The civil and stormwater management methodology for the site seeks to address the stormwater drainage requirements of The Barossa Council (Council), in addition to the requirements outlined by the State Planning Commission (SPC) for Planning Approval. The key criterion is the appropriate management of stormwater and minimisation of adverse changes to site discharge to Council's receiving drainage infrastructure, with regards to volume and stormwater quality. This report gives recommendations for the control and management of stormwater runoff from the proposed development to achieve the above, and provides a preliminary SMP for Planning Approval purposes.

The report encompasses conceptual ideas on the management of stormwater for the development. The design of individual elements on site such as the detailed stormwater collection conveyance systems are not within the scope of this management plan and will be covered within the detailed design stage of the project. The final stormwater drainage layout for the proposed development will be subject to final design and the site/architectural layout. Hence this report provides an overall strategy and demonstrates that the fundamental stormwater management requirements can be met.

This service has been provided on an independent and professional basis. You can be assured that it seeks to present a factual, unbiased and balanced assessment.

2 Site Description

2.1 Existing Site

The subject site is located in the southern part of the Barossa Valley, encompassing an area of approximately 21.5 hectares. It is bounded by Hoffnungsthal Road to the north, Menzel Road (unsealed) to the west, and is flanked by predominantly rural pastoral land or vacant grassland properties to the south and east.

The site lies within a hilly landscape, with the natural topography generally falling from south to north with approximately 37m of elevation difference between the highest and lowest points. Two distinct valleys traverse the site from the upper (southern) areas, converging into a single central valley in the lower northern portion of the site. These valley lines define the site's primary overland flow paths and influence the micro drainage patterns.

Although no information relating to a history of flooding has been provided to MLEI, given the hilly terrain, the site is not considered to be at risk to widespread flooding in major rainfall events.

The main vehicular access to the site is currently provided via Hoffnungsthal Road, which runs along the northern boundary. The surrounding area remains largely undeveloped, contributing to a predominantly rural character.

A topographic map including an aerial image of the site is shown in Figure 1.

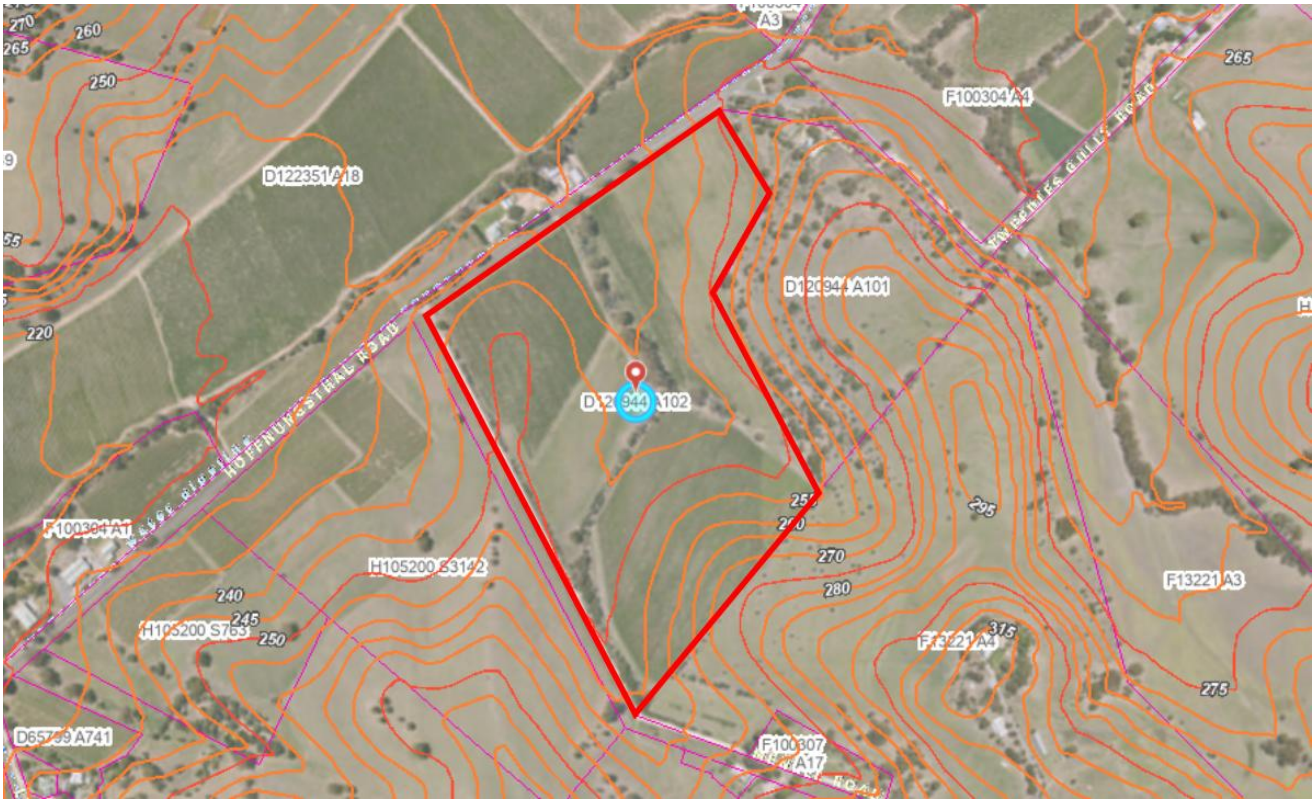


Figure 1 – Existing site

2.2 Existing Stormwater Infrastructure and Site Drainage

The existing drainage management across and adjacent to the site is typical of a rural area, comprising a combination of formal and informal overland flow, natural channels, open roadside drains and culverts.

The catchments natural drainage follows the prevailing topography, with surface flows generally occurring as overland sheet flow from the elevated south toward the lower northern areas. External flows are anticipated to enter the site given the topography of the area and the positioning of the allotment on the hill face. Within the site boundary, these flows are naturally concentrated into two main valleys running through the site, which converge into a central valley toward the northern portion. These valleys function as informal and formalised flow paths, directing stormwater through the property. The natural intermittent channels formed within the valleys of the site are shown in Figure 7 below.

Figure 2 - Natural channels formed through the site

A relatively formal creek is formed within the western valley adjacent to Menzel Road. This channel varies in depth from approximately 0.5m to 3.0m, and also varies in density of vegetation – dense in some stretches and more open in others.

Menzel Road itself is an unsealed crowned road with relatively small and informal open roadside drains, impeding upslope surface flows. Three Reinforced Concrete Pipe (RCP) culverts installed along Menzel Road transfer flows from the western/southern side of the road to the eastern/northern side and ultimately into the creek along the western side of the subject allotment. These culverts range in diameter from 300mm to 450mm and some have been constructed with cement bag-formed inlet and outlet headwalls. Culvert locations and examples of the headwalls/endwalls are illustrated in Figure 3.

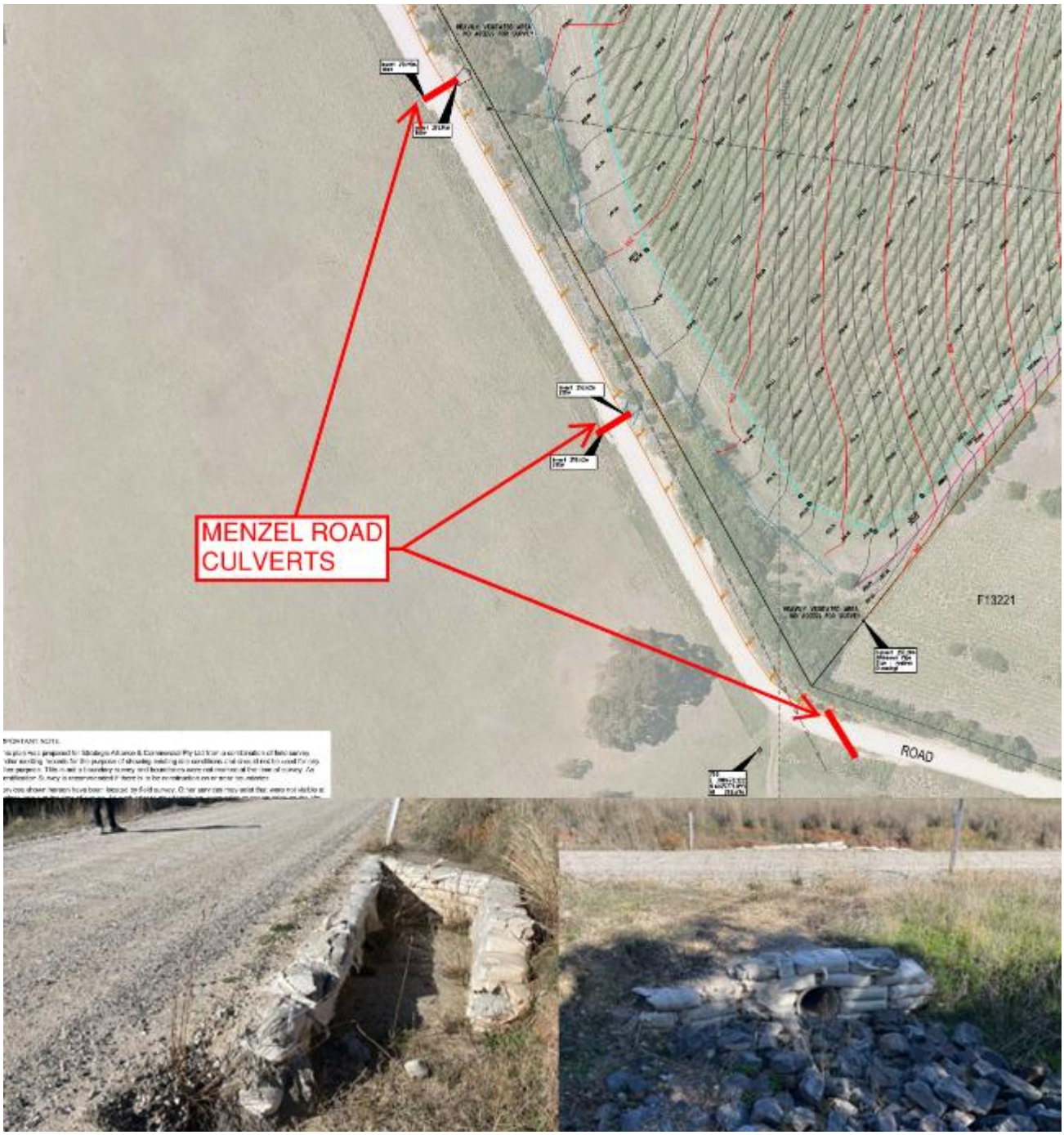


Figure 3 - Menzel Road culverts

The eastern valley of the site exhibits more informal drainage characteristics, lacking a defined channel. Stormwater in this area likely flows through low-lying depressions and vegetated areas before entering downstream channels.

The central valley, located in the lower portion of the site, is a relatively shallow but defined channel, with varying degrees vegetation, including low shrubs and mature trees. This channel serves as the primary conveyance path for the site's internal catchment, directing stormwater towards the north. The central channel is shown in Figure 4.

Figure 4 - Central channel

At the northern boundary of the site, the central channel discharges into a 600mm diameter RCP culvert that crosses under Hoffnungsthal Road. The culvert inlet has been constructed with a cement bag-formed headwall approximately 1.90m in height. This culvert ultimately discharges into a natural stream located within the adjacent allotment approximately 30m to the north, which in turn conveys flows downstream into a larger regional watercourse. The Hoffnungsthal Road culvert is shown in Figure 5. It is noted that the outlet of the 600mm RCP culvert is heavily silted, as shown in Figure 6.

Figure 5 - Hoffnungsthal Road culvert inlet

Figure 6 - Hoffnungsthal Road culvert outlet

A field inlet pit is located on the eastern side of the Menzel Road and Hoffnungsthal Road intersection, capturing flows from both the lower portion of the eastern side of Menzel Road, and a short section of the southern side of Hoffnungsthal Road. This pit connects to a roadside drain running along the northern verge of Hoffnungsthal Road, discharging just west of the intersection.

2.3 Proposed Development

The proposed development comprises a mixed-use tourism and hospitality precinct across the 21.5 ha site, featuring two distinct facilities located at opposite ends of the property.

A Hotel complex (Hotel) is proposed at the elevated southern portion of the site, accessed via. Menzel Road. The hotel will include guest accommodation, function and event spaces, car parking, back-of-house service areas, a bus drop-off/pick-up zone, and associated internal driveways. This facility is strategically located to take advantage of the site's elevated topography and surrounding views.

Towards the northern boundary adjacent Hoffnungsthal Road, a Winery facility (Winery) is proposed, with its own dedicated access from Hoffnungsthal Road. The winery will include a cellar door/restaurant, processing areas for wine production, function and event spaces, car parking and back-of-house infrastructure.

Connectivity between the two developments will be provided with an informal internal track, suitable for pedestrian and golf cart use, enabling convenient guest movement across the site.

The proposed development site plan is illustrated in Figure 7.

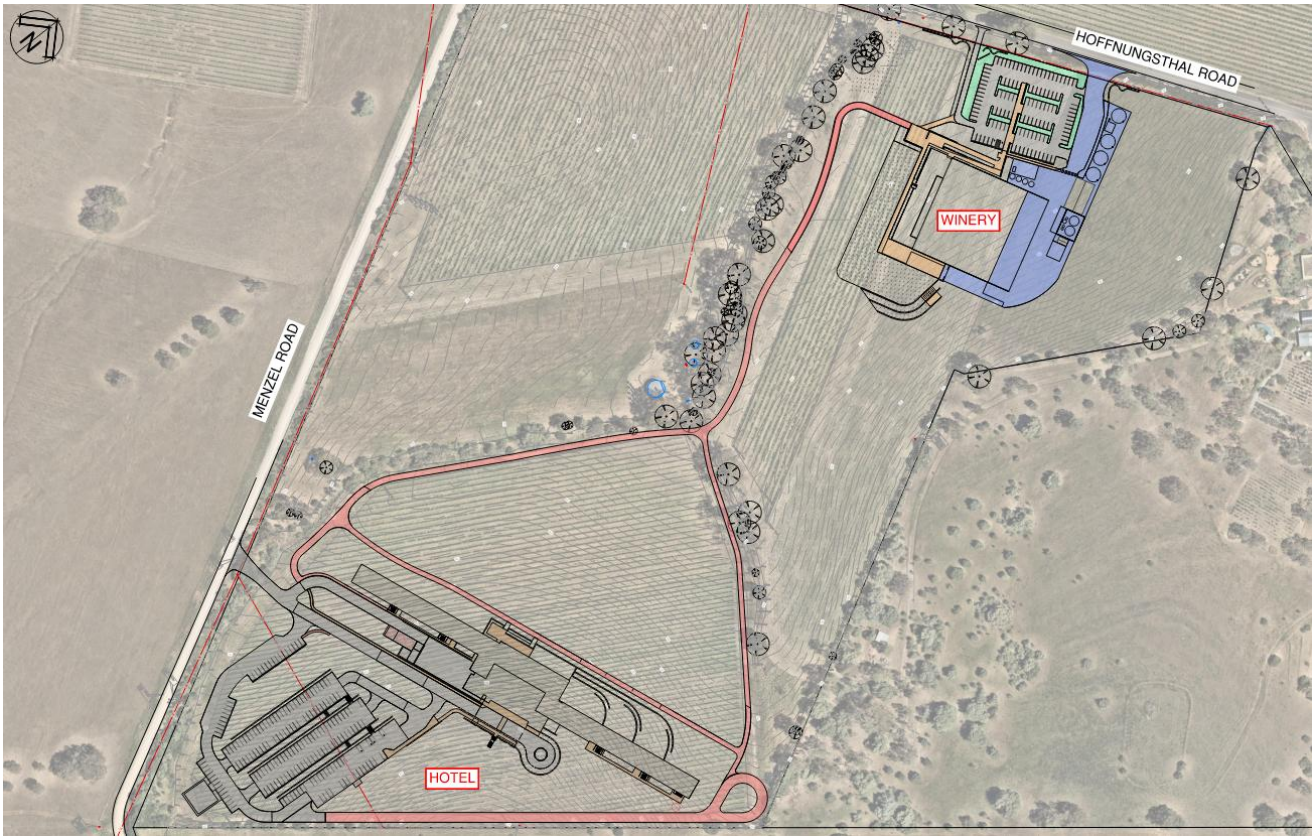


Figure 7 – Proposed development site plan

3 Stormwater Management Strategy

3.1 Stormwater Management Requirements

The objective of the stormwater management plan is to outline the methodology of stormwater capture and disposal of flows generated from the site in its developed state and demonstrate that the proposed stormwater system achieves the stormwater management practices to the satisfaction of The Barossa Council and State Planning Commission.

Early advice has been sought from The Barossa Council to outline their stormwater management requirements for the proposed development, which are generally in accordance with Council's Infrastructure Assets Guidelines.

The stormwater management plan will seek to achieve the below key requirements:

- Stormwater runoff from the proposed development is to be discharged into the existing watercourse running within the site;
- Peak post-development flows at the existing Hoffnungsthal Road culvert (existing drainage discharge location) are to be no greater than peak pre-development conditions for both the 5% Average Exceedance Probability (AEP) (minor) and the 1% AEP (major) rainfall events. On-site stormwater detention is to be provided (as necessary) to sufficiently restrict flows to achieve these requirements;
- A retention/re-use/soakage system for very frequent rainfall events (a 1 or 2 year rainfall event) is to be incorporated to withhold frequent flows to avoid unnaturally frequently wet conditions in the natural channel;
- Stormwater runoff shall be treated to achieve desired water quality levels consistent with current best practice and the Environmental Protection Authority's 'Stormwater Pollution Prevention code of practice for local, state and federal government'. As defined by SA MUSIC Guidelines these are;
    - 90% reduction in gross pollutants
    - 45% reduction in Total Nitrogen
    - 60% reduction of Total Phosphorus
    - 80% reduction of Total Suspended Solids
- Direct stormwater drainage system connections to the existing watercourse shall incorporate adequate scour protection measures and shall not obstruct existing flows in the water course;
- The storm frequency adopted as the Minor Event for internal development pipe-sizing purposes should be based on sound engineering judgment and/or best practice, with overflow paths provided to prevent inundation of properties and/or infrastructure from a 1% AEP (major) event;
- The SMP will demonstrate the above and ensure proposed development discharge will not have any increased adverse impact on adjoining properties, Council infrastructure or the existing environment.

3.2 Stormwater Management Plan

MLEI has prepared a planning-level Siteworks and Stormwater Management Plan (SMP) for the proposed Hotel and Winery developments to demonstrate compliance with Council's stormwater management requirements. Preliminary DRAINS and MUSIC modelling has been undertaken to inform the development of the SMP.

The concept SMP proposes the following;

- A combination of surface grading, kerb & gutter, open drains, inlet pits, and underground pipe to safely and effectively manage stormwater around, through and beyond the proposed development;
- Upstream cut-off/diversion drains to capture and divert upper catchment surface flows around the proposed developments;
- Stormwater retention basins at both the Hotel and Winery sites to mimic pre-development flow behaviour in the watercourse, by encouraging stormwater dissipation through soakage and evaporation for very frequent rainfall events;
- Each stormwater basin includes a 300mm freeboard to maximum water levels;
- Each basin outlet to the watercourse includes adequate rock scour protection;
- Each stormwater basin is proposed to be suitably vegetated to contribute to the stormwater pollutant reduction treatment train;
- Bioretention swales proposed in car parking areas as Water Sensitive Urban Design (WSUD) initiatives; and
- Open drains are proposed to be vegetated also contribute to stormwater quality treatment reduction.

The above strategy is demonstrated in Appendix A – Conceptual Stormwater Management Plans, and further discussed below.

4 Stormwater Computations

4.1 Existing Catchment Analysis

To determine existing flows within the watercourse and at the Hoffnungsthal Road culvert and ultimately to quantify pre-development flow criteria, which includes flows entering the site from the upper external catchment, an existing catchment investigation was undertaken. This investigation was undertaken utilising a combination of engineering feature survey data taken across the site, as well as publicly available online topographical mapping sourced from NatureMaps SA (Department for Environment and Water).

The catchment contributing to flows at the Hoffnungstal Road culvert is defined in Appendix B – Existing Catchment Plan, and a summary of the catchment data is presented in Table 1.

Table 1: Existing and proposed development catchment properties

Catchment Name	Area (hectare)	Percentage Grassed
C1-1	14.209	99%
C2-1	6.400	100%
C2-2	14.476	100%
C3-1	35.400	99%

Note: The impervious fraction of the existing buildings/sheds on the adjacent properties is considered negligible with regards to the overall catchment area and has been neglected from the analysis.

The existing Hoffnungsthal Road culvert catchment totals approximately 77.5ha however has been broken up into the above sub-catchments to permit a more detailed analysis, and facilitate the ability to quantify flows flowing within different sections of the existing watercourse.

A full summary of the existing catchment data can be found in Appendix C – Stormwater Drainage Computations.

4.2 Post Development Catchments

For the purposes of the planning assessment, the proposed development catchments were developed by quantifying the different land use surfaces, with a focus on identifying the increase in surface imperviousness to quantify stormwater detention requirements. As such, grassed areas proposed in the site plans were generally excluded from this analysis on the basis of their properties replicating the pre-development land use, and not greatly impacting stormwater detention or water quality reduction requirements. These land use maps are illustrated in Appendix C – Stormwater Drainage Computations and summarised in Table 2 below.

It should be noted that each different land use was been assigned an impervious fraction and the weighted average percentage impervious was used for analysis, as is summarised below.

Table 2: Proposed development catchment properties

Catchment Name	Area (hectare)	Equivalent Percentage Impervious
Hotel	1.718	92%
Winery	1.741	85%

A full summary of the proposed catchment data can be found in Appendix C – Stormwater Drainage Computations.

4.3 Hydrological and Hydraulic Modelling

Hydrological and hydraulic modelling of both the pre-and-post-development sites was undertaken using DRAINS. DRAINS is a recognised hydrological computer modelling software widely used for urban stormwater system design and analysis in Australia. A Horton/ILSAX model within DRAINS was adopted for hydrological assessment of all catchments, the modelling analysis was undertaken using the Full Unsteady Model (Premium).

4.4 DRAINS Input Parameters

4.4.1 Horton/ILSAX Model

Design parameters used in the Horton/ILSAX model are shown in Table 3.

Table 3: DRAINS model input parameters

Parameter	Value Adopted
Paved area storage depression	1mm
Supplementary area storage depression	1mm
Grassed area storage depression	5mm
Soil type	3 (slow infiltration rates)
Overland flow use	Kinematic wave equation
Antecedent moisture condition	3 (rather wet)
Pipe friction (k)	Manning's formula
Basin hydraulic conductivity	1E-7 (heavy clay)

4.4.2 Rainfall Data

The rainfall data of the site is determined using the Intensity Frequency Duration (IFD) program from Bureau of Meteorology (BOM) and ARR Data Hub Temporal Patterns for the area of the site. The rainfall data is shown in Appendix D – DRAINS Modelling and Results.

4.4.3 Time of Concentration

Pre-development catchment time of concentrations (t_c) were derived from flow path measurements taken from the topographical catchment maps. Flow paths were analysed as both sheet flow, calculated using

Friend's Equation, and concentrated flow, calculated using Figure 4.5 of the Queensland Urban Drainage Manual Fourth Edition 2016 (QUDM), for when the flow path was seen to enter a valley, channel, roadside drain or similar, with the corresponding appropriate multiplication factor applied.

Typical assumed t_c were taken for the post development catchments, with guidance from Table 4.06.2 of QUDM.

Generally, paved t_c are assumed to be 2 minutes less than grassed t_c. A full summary of t_c calculations is illustrated in Appendix C – Stormwater Drainage Computations.

4.4.4 Overflow Routes

The feature survey provided to MLEI formed the basis of the overflow routes input into the DRAINS model. Sections were taken through the site at key locations within the existing watercourse/s, near to the downstream end of the reach, or at the Hoffnungsthal Road sag. These sections were then formulated in DRAINS as overflow paths to analyse flows within each reach of the existing watercourse/s or as flow over the road.

It should be noted that survey information has not been provided for several sections of the existing watercourse due to the presence of heavy vegetation, restricting survey access. In lieu of this information, MLEI have made reasonable assumptions to define the watercourse cross section within DRAINS. From inspection, these assumptions are considered conservative as the watercourse was observed to be up to approximately 3.0m in depth in some areas.

4.4.5 Downstream Tailwater Levels

The survey provided to MLEI does not extend to the outlet of the Hoffnungsthal Road culvert, with the culvert length and gradient being assumed for modeling purposes. From an inspection of the site, the culvert outlet is not expected to be influenced by any notable tailwater conditions given the nature of the recieving stream and the large elevation difference to the major carrier watercourse. For modelling purposes, the culvert was therefore assumed to discharge freely to the atmosphere.

4.5 DRAINS Modelling Results

A full summary of the DRAINS model configuration, 5% and 1% AEP results are shown in Appendix D – DRAINS Modelling and Results for both the pre-and-post-development scenarios.

4.5.1 Pre-development DRAINS Results

DRAINS modelling undertaken for the pre-development scenario indicates that the Hoffnungsthal Road culvert conveys 0.896m^3/s in the minor 5% AEP rainfall event, with 0.643m^3/s overtopping Hoffnungsthal Road at a depth of approximately 30mm. A maximum flow depth of 1.13m is observed in the central channel, which is likely to occur immediately upstream to the culvert inlet.

Results in the major 1% AEP rainfall event indicate that the Hoffnungsthal Road culvert conveys 0.929m^3/s, with 4.100m^3/s overtopping Hoffnungsthal Road at a depth of approximately 75mm. A maximum flow depth of 1.24m is observed in the central channel, which is likely to occur immediately upstream to the culvert inlet.

It should be noted that the DRAINS modelling assumes that the Hoffnungsthal Road culvert is able to function at its full capacity, despite being observed to be silted at its downstream end. It has been assumed that this culvert will be cleaned as part of the proposed development. It has also been assumed that the existing culverts

identified along Menzel Road are capable of transferring flows from the western side of Menzel Road to the eastern side, and ultimately the western channel of the existing watercourse.

A summary of the existing peak flow results, and hence post-development peak flow limitations are presented in Table 4.

Table 4: Pre-development peak flow results

Drainage Link	5% AEP Peak Flow (m^3/s)	1% AEP Peak Flow (m^3/s)
Hoffnungsthal Road Culvert	0.896	0.929
Hoffnungsthal Road Overflow	0.643	4.100

4.5.2 Post-development DRAINS Results

MLEI have undertaken preliminary DRAINS modelling of the post-developed site to determine stormwater detention and outlet criteria. DRAINS results for each development are summarised in the respective sections below.

4.5.2.1 Hotel DRAINS Results

Although there is an increase in impervious catchment area as a result of the proposed development, the impervious surfaces combined with the formalisation of drainage capture across the site area result in a much smaller time of concentration for the catchment. This reduction in time of concentration results in a faster hydrological response, with runoff from the developed site reaching peak flow rates earlier than under existing conditions. Consequently, the critical peak flow hydrographs from the site no longer coincide with the peak flow hydrographs at the downstream Hoffnungsthal Road culvert, which are heavily influenced by the larger rural upper catchments. This temporal separation between upstream and downstream peak flows leads to a net decrease in combined peak discharge rates at the critical downstream control point. As a result of the attenuated combined peak flows and the beneficial shift in hydrograph timing, provision of on-site stormwater detention is not required to achieve compliance with Council's peak flow limitation objectives.

In the absence of the requirement for on-site stormwater detention, the Hotel development proposes a basin with retention volume only. This basin has been conceptually modelled within the DRAINS model.

A summary of the key DRAINS modelling results is provided in Table 5, with comprehensive modelling outputs included in Appendix D – DRAINS Modelling and Results.

Table 5: Hotel DRAINS modelling results

Design Parameter	5% AEP Result	1% AEP Result
Hotel Catchment Peak Flow (m^3/s)	0.387	0.572
Hotel Catchment Discharge to Watercourse (m^3/s)	0.264	0.431
Hotel Basin Storage (m^3)	187.5	195.9

Note: Hotel catchment peak flows shown above are a summation of Hotel sub-catchments

It should be noted that the weir discharge to the basin has only been modelled conceptually, with the aim to convey all entering flows to the downstream water course following filling of the basins retention capacity. It should also be noted that the basin volume is seen to increase in the major rainfall event, however this is considered to be attributed to the increase in flow depth over the weir and not actual storage volume.

Although the results would suggest that a peak flow rate reduction is achieved by the basin, which may be perceived to contribute to peak flow reductions at the Hoffnungsthal Road culvert, it should be noted that the peak hydrographs of the Hotel catchment and the basin weir links don't align, likely due to the flow attenuation in the basin. It should also be noted that elimination of the basin from the model still sees a peak flow reduction at the Hoffnungsthal Road culvert when compared to pre-development results.

4.5.2.2 Hotel Stormwater Management Discussion

The Hotel proposes to manage stormwater throughout the site with a system of kerb and gutters, inlet pits, underground pipes/culverts and swale drains. The roof catchment is proposed to be captured and conveyed to two rainwater tanks through a suitable roof drainage system of gutters and downpipes. These rainwater tanks are proposed to comprise a capacity of between 20-50kL and are to be used for rainwater capture and re-use on-site for irrigation purposes. Although not considered in the DRAINS modelling, the on-site capture and re-use of roof catchment rainwater is considered to contribute to reducing the impact of frequent wetting of the watercourse in smaller rainfall events, contributing to satisfying the criteria set-out by Council.

All proposed sealed surfaces are intended to be directed to the stormwater retention basin through the site drainage system, with no anticipated issues given the large elevation difference between the hotel site and the proposed basin location. The preliminary DRAINS model assumes a conceptual piped run from the Hotel catchment to the basin, however given the distance between the basin location and the Hotel site, options for flows to be conveyed via. open drains will be investigated at detailed design stage.

The basin proposes to discharge directly into the existing watercourse near the centre of the allotment, through a pipe/culvert, with a high-level overflow weir for outlet failure events. All proposed points of discharge to the watercourse will be designed with a suitable headwall and rock scour protection in accordance with Council stormwater management criteria.

The basin has been designed with a raised field gully inlet pit outlet, with a nominal 300mm depth of storage beneath the proposed field gully inlet level. This has been incorporated into the stormwater system design to reduce the impact of frequent wetting of the watercourse in smaller rainfall events in accordance with the criteria set-out by Council. A summary of DRAINS modelling results for very frequent rainfall events is shown in Table 6 below.

Table 6: Hotel basin DRAINS modelling results for frequent rainfall events

Design Parameter	2EY 1hour Rainfall Event	1EY 45minute Event
Hotel Basin Outlet (m^3/s)	0	0
Hotel Basin Storage (m^3)	143.1	163.6

It is proposed that the retained volume will dissipate via. a combination of both infiltration and evaporation. It is noted that preliminary geotechnical investigations suggest the soils across the site contain a high clay content and hence, the hydraulic conductivity of the basin has been assumed to reflect this, however, to promote infiltration of the basin, it is proposed that the top layer of natural soil is sufficiently ripped and replaced and/or combined with organic topsoil stripped from the site. It is also proposed that the basin will be entirely planted with low height vegetation. The planting is also expected to contribute to emptying of the basin through root uptake of moisture.

Given the preliminary nature of the DRAINS modelling, the exact basin dimensions are not yet resolved and hence the total volume of retention to be provided within the basin is still subject to detailed design. It is

proposed that the finer details of this retention system are further discussed and agreed to with Council during the design development, however Council should be assured that a provision to reduce frequent wetting of the watercourse will be considered in the ultimate stormwater management design.

A small catchment at the rear of the building (south-eastern portion) is proposed to be directed towards the western channel and bypass the stormwater basin given the natural topography of the land. This flow is relatively small in magnitude given the mostly impervious composition of the catchment, it is considered to have minimal effect on the downstream peak flow.

The site drainage system will include a suitably sized upstream cut-off drain which will divert surface flows from the adjacent allotment to the north and upper catchment beyond, around the proposed Hotel site and into the adjacent watercourses. As such, upper catchment flows are not considered in the Hotel DRAINS catchment.

To facilitate vehicle access from Menzel Road, a culvert is proposed in the existing watercourse to maintain existing channel flows up to and including the major 1% AEP rainfall event. From inspection of the site at the proposed driveway access location, the elevation difference between Menzel Road levels and the watercourse invert is approximated to be between 3-5m. Several options may be considered for this crossing, including a single piped culvert, relatively tall series of box culverts, or even a small bridge structure, however additional survey within the water course is required at the detailed design stage to determine the preferred option. The culvert or bridge will be suitably sized to not impede on existing flows within the creek at the detailed design stage. Further details about this structure are to be investigated and developed at the detailed design stage.

4.5.2.3 Winery DRAINS Results

Although there is an increase in impervious catchment area as a result of the proposed development, the impervious surfaces combined with the formalisation of drainage capture across the site area result in a much smaller time of concentration for the catchment. This reduction in time of concentration results in a faster hydrological response, with runoff from the developed site reaching peak flow rates earlier than under existing conditions. Consequently, the critical peak flow hydrographs from the site no longer coincide with the peak flow hydrographs at the downstream Hoffnungsthal Road culvert, which are heavily influenced by the larger rural upper catchments. This temporal separation between upstream and downstream peak flows leads to a net decrease in combined peak discharge rates at the critical downstream control point. As a result of the attenuated combined peak flows and the beneficial shift in hydrograph timing, provision of on-site stormwater detention is not required to achieve compliance with Council's peak flow limitation objectives.

In the absence of the requirement for on-site stormwater detention, the Winery development proposes a basin with retention volume only. This basin has been conceptually modelled within the DRAINS model.

A summary of the key DRAINS modelling results and proposed stormwater basin system is shown in Table 7, however the comprehensive results can be found in Appendix D – DRAINS Modelling and Results.

Table 7: Winery DRAINS modelling results

Design Parameter	5% AEP Result	1% AEP Result
Winery Catchment Peak Flow (m^3/s)	0.389	0.591
Winery Catchment Discharge to Watercourse (m^3/s)	0.216	0.316
Winery Basin Storage (m^3)	249.6	272.8

Note: Winery catchment peak flows shown above are a summation of Winery sub-catchment peak flows

It should be noted that the weir discharge to the basin has only been modelled conceptually, with the aim to convey all entering flows to the downstream water course following filling of the basins retention capacity. It should also be noted that the basin volume is seen to increase in the major rainfall event, however this is considered to be attributed to the increase in flow depth over the weir and not actual storage volume.

Although the results would suggest that a peak flow rate reduction is achieved by the basin, which may be perceived to contribute to peak flow reductions at the Hoffnungsthal Road culvert, it should be noted that the peak hydrographs of the Hotel catchment and the basin weir links don't align, likely due to the flow attenuation in the basin. It should also be noted that elimination of the basin from the model still sees a peak flow reduction at the Hoffnungsthal Road culvert when compared to pre-development results.

4.5.2.4 Winery Stormwater Management Discussion

The Winery proposes to manage stormwater throughout the site with a system of kerb and gutters, inlet pits, underground pipes/culverts and swale drains. The roof catchment is proposed to be captured and conveyed to the site drainage system through a suitable roof drainage system of gutters and downpipes. All proposed sealed ground surfaces are intended to be directed to the stormwater retention basin through the site drainage system.

The invert level of the basin is proposed to be sited above the calculated water level at the Hoffnungsthal Road culvert in the major rainfall event to ensure the basin remains free of any water from the external catchment. To achieve this, the walls of the basin are proposed to be mostly built up against the natural surface levels at the designated location.

The basin has been designed with a weir outlet to the watercourse, with a nominal 300mm depth of storage beneath the proposed weir invert level. This retention storage has been incorporated into the stormwater system design to reduce the impact of frequent wetting of the watercourse in smaller rainfall events, in accordance with the criteria set-out by Council. A summary of DRAINS modelling results for very frequent rainfall events is shown in Table 10 below.

Table 8: Winery basin DRAINS modelling results for frequent rainfall events

Design Parameter	2EY 1hour Rainfall Event	1EY 45minute Event
Winery Basin Outlet (m^3/s)	0	0
Winery Basin Storage (m^3)	125.8	143.9

The basin weir outlet proposes to discharge to a swale connecting and conveying the flows to the watercourse. The swale will incorporate suitably designed rock scour protection to the watercourse invert in accordance with Council stormwater management criteria.

It is proposed that the retained volume will dissipate via. a combination of both infiltration and evaporation. It is noted that preliminary geotechnical investigations suggest the soils across the site contain a high clay content and hence, the hydraulic conductivity of the basin has been assumed to reflect this, however, to promote infiltration of the basin, it is proposed that the top layer of natural soil is sufficiently ripped and replaced and/or combined with organic topsoil stripped from the site. It is also proposed that the basin will be entirely planted with low height vegetation. The planting is also expected to contribute to emptying of the basin through root uptake of moisture.

Given the preliminary nature of the DRAINS modelling, the exact basin dimensions are not yet resolved and hence the total volume of retention to be provided within the basin is still subject to detailed design. It is proposed that the finer details of this retention system are further discussed and agreed to with Council during the design development, however Council should be assured that a provision to reduce frequent wetting of the watercourse will be considered in the ultimate stormwater management design.

A large cut-face is anticipated on the southern side of the Winery, and this is expected to expose a significant amount of rock. This will ultimately increase the imperviousness of the catchment surrounding the Winery, and hence an allowance for this has been made in the DRAINS modelling and site drainage system. An open drain is proposed at the base of this cut face to capture and convey these flows through the Winery site for controlled discharge. A suitably sized upstream cut-off drain is also proposed at the top of the batter extent to divert surface flows from the adjacent allotment and upper catchment around the proposed Winery site and towards the central channel and Hoffnungsthal Road roadside drain. As such, upper catchment flows are not considered in the Winery DRAINS catchment.

To facilitate vehicle access from Hoffnungsthal Road, either culverts or floodway driveway crossovers are proposed in the existing roadside drains to maintain existing road reserve flows. From inspection of the site at the proposed driveway access locations, the roadside drains appear to be relatively flat and informal, and if culverts are to be adopted, some upgrade to the roadside drains would be required to provide sufficient depth for culvert construction. It is noted however that the alignment of three existing trees are expected to clash with any potential roadside drain upgrades. Floodway type driveway crossovers are recommended, however it is suggested that further detail about the driveway crossovers and Hoffnungsthal Road roadside drainage is to be developed at the detailed design stage with additional consultation from Council.

4.6 Climate Change Adaption

A climate change risk review has been undertaken by D Squared Consulting Pty Ltd for the proposed development, with a series of recommendations made to mitigate risks to the development associated with climate change. With reference to the D Squared Consulting Pty Ltd Sustainability Strategy Report, it has been recommended that proposed stormwater drainage systems include a minimum 10% design contingency above historic rainfall data to account for future increased rainfall intensity.

It is proposed that the internal drainage system for each Development makes a provision for a 10% increase in peak catchment flows. This is to be considered at detailed design stage.

The proposed basins have been analysed with a 10% increase in rainfall intensity. The results indicate that their capacities are capable of retaining all flows from the proposed development for up to and including the 2EY 1hour duration, and 1EY 30minute duration rainfall events. The results are summarised in Table 9.

Table 9: Climate change adaption basin DRAINS modelling results

Basin	Designed Max. Rainfall Event	Climate Change Adapted Max. Rainfall Event
Hotel Basin	1EY 45minute	1EY 30minute
Winery Basin	1EY 45 Minute	1EY 30minute

As can be seen above, flows from the rainfall event that the basins are able to contain is decreased by 15minutes in duration under inflated rainfall intensity conditions. Despite this, the proposed basin retention volumes are still considered appropriate for their purpose in reducing frequent wetting of the downstream system, which is likely to experience more frequent wetting from external catchments as a natural response to an increase in rainfall intensities as a result of climate change.

5 Stormwater Quality Improvement

5.1 Stormwater Quality Requirements and Computations

As outlined in the Stormwater Management Requirements, the stormwater management plan will adopt stormwater quality treatment strategies to achieve the desired water quality levels consistent with current best practice and the Environmental Protection Authority's 'Stormwater Pollution Prevention code of practice for local, state and federal government'. These are defined by SA MUSIC Guidelines as the following;

- 90% reduction in gross pollutants;
- 45% reduction in TN;
- 60% reduction of TP; and
- 80% reduction of TSS.

It is industry practice that the 4 Exceedances per Year (4EY) storm event be used for stormwater quality modelling, this is widely accepted as the catchment is considered sufficiently clean after a rain event of this nature.

The industry recognised software package 'MUSIC' by eWater has been used to assess the reduction in pollutants for this development. Unless noted below as an input, the default data from eWater has been used in the assessment.

The MUSIC model was established using MUSICs pre-set 6-minute rainfall data for the Adelaide Airport for the period 01/01/1970 to 31/12/1970. MUSIC model input data and assumptions include:

- Existing soil exfiltration rates of 0.36mm/hr, consistant with a heavy clay;
- Bioretention filter media has a saturated hydraulic conductivity of 100mm/hr, consistant with a medium sandy loam;
- Pond water depths equal to depth of designed retention volume;
- Permanent pool volumes equal to the volumes described in the Sections above; and
- Pre-set MUSIC modelling parameters unless noted otherewise.

5.1.1 Hotel Stormwater Quality Improvement Design and Discussion

The Hotel stormwater quality improvement treatment train proposes the following pollutant reducing design elements:

- Surface flows from the sealed carparking areas are proposed to be directed and captured within 2.0m wide vegetated biretention swales with sub-surface drainage. The swales will be designed to have a minimal longitudinal fall to promote ponding of up to 150mm and infiltration and nutrient uptake from the low height vegetation;
- Flows from the roof catchment are proposed to be conveyed into two 25kL rainwater tanks for on-site re-use for irrigation of landscaped areas. An initial volume of 5kL has been assumed for each tank; and
- All flows captured within the site drainage system will enter the stormwater basin for retention and flow attenutation. The stormwater basin is propsed to be fully vegetated promoting nutrient uptake from the low height vegetation.

A summary of the MUSIC model catchment areas is shown in Table 10.

Table 10: Hotel MUSIC model catchment data

Catchment	Area (ha)	Percentage Impervious
Roof	0.497	100%
Carparking (1, 2, 3)	0.140	100%
Driveways	0.718	100%
Unsealed Driveway	0.135	100%

A summary of the MUSIC model layout and results are illustrated in Figure 8, with results summarised in Table 11 against the stormwater quality improvement criteria.

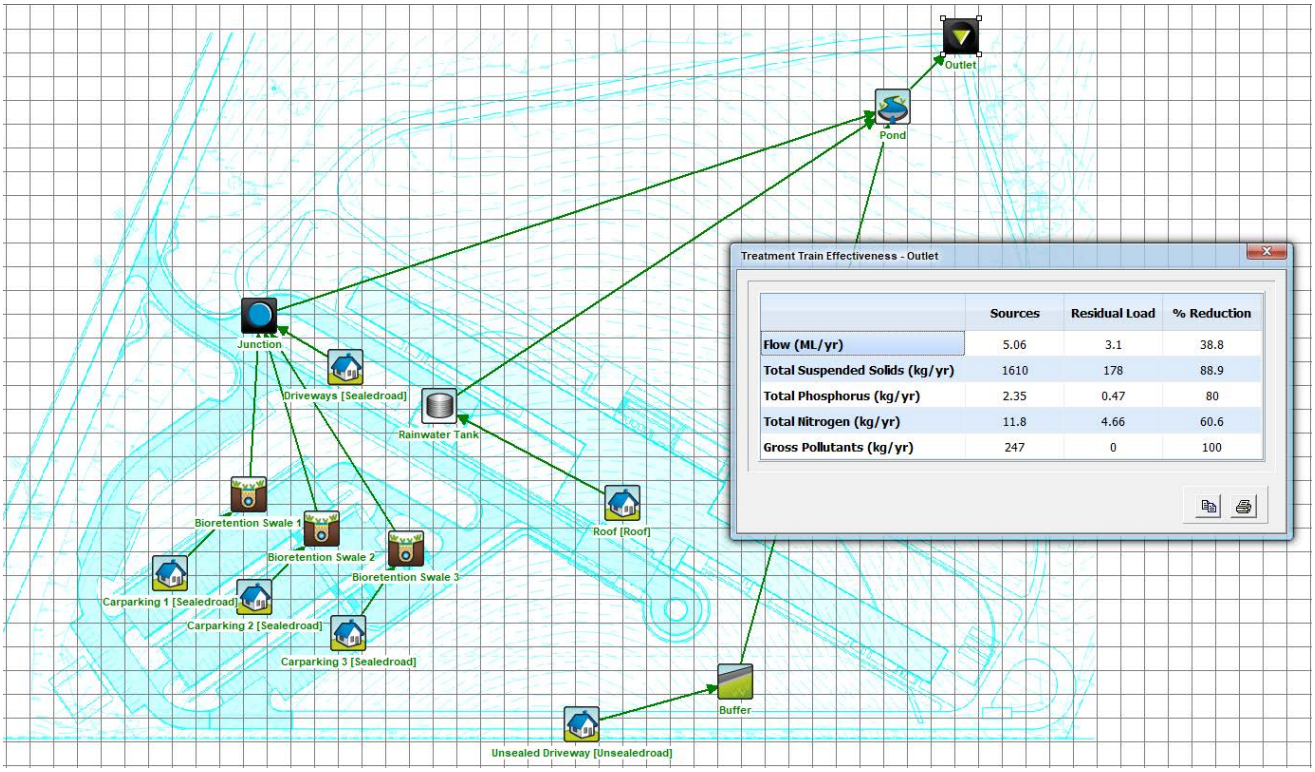


Figure 8 - Hotel MUSIC model layout and results

Table 11: Hotel MUSIC model results

Pollutant Type	% Reduction Requirements	% Reduction Achieved
Gross Pollutants	90%	100%
Total Nitrogen	45%	60.6%
Total Phosphorus	60%	80%
Total Suspended Solids	80%	88.9%

The above results indicate that the pollutant reductions achieve the required reduction targets, as determined by the conceptual modelling. It should be noted that the modelling of the individual treatment train elements remain as conceptual and are subject to some dimensional change due to the preliminary nature of the design for this submission, however, it is expected that the general strategy of this treatment train is to remain

through detailed design. Based on these results, there are no challenges anticipated with achieving the stormwater pollutant reduction criteria at detailed design stage.

5.1.2 Winery Stormwater Quality Improvement Design and Discussion

The Winery stormwater quality improvement treatment train proposes the following pollutant reducing design elements:

- Surface flows from the sealed carparking areas are proposed to be directed and captured within vegetated bioretention swaless with sub-surface drainage. The swales will be designed to have a minimal longitudinal fall to promote ponding of up to 200mm, infiltration and nutrient uptake from the low height vegetation; and
- All flows captured within the site drainage system will enter the stormwater basin for retention and flow attenutation. The stormwater basin is propsed to be fully vegetated promoting nutrient uptake from the low height vegetation.

The above results indicate that the pollutant reductions achieve the required reduction targets, as determined by the conceptual modelling. It should be noted that the modelling of the individual treatment train elements remain as conceptual and are subject to some dimensional change due to the preliminary nature of the design for this submission, however, it is expected that the general strategy of this treatment train is to remain through detailed design. Based on these results, there are no challenges anticipated with achieving the stormwater pollutant reduction criteria at detailed design stage.

A summary of the MUSIC model catchment areas is shown in Table 12.

Table 12: Winery MUSIC model catchment data

Catchment	Area (ha)	Percentage Impervious
Roof	0.555	100%
Carpark	0.478	100%
Hardstand	0.265	100%

A summary of the MUSIC model layout is illustrated in Figure 9, and results summarised in Table 13 against the stormwater quality improvement criteria.

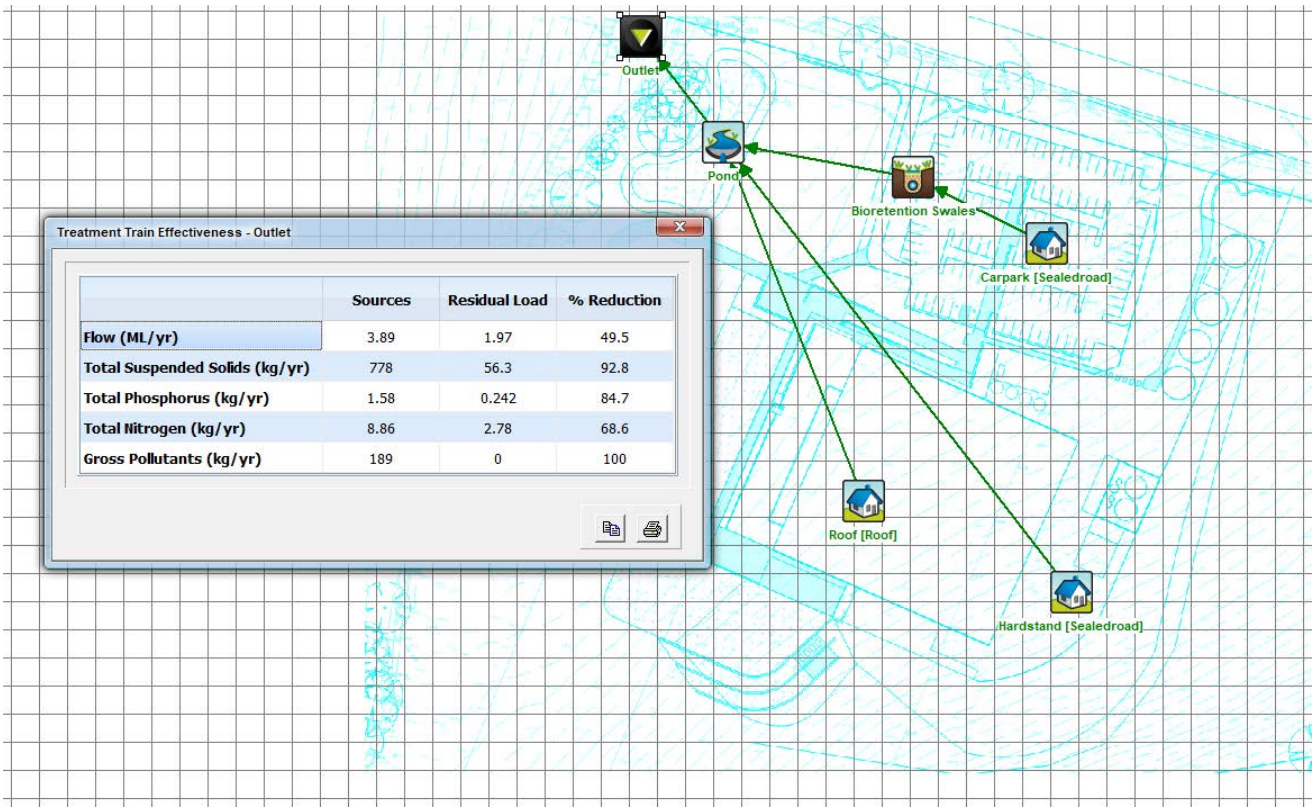


Figure 9 - Winery MUSIC model layout and results

Table 13: Winery MUSIC model results

Pollutant Type	% Reduction Requirements	% Reduction Achieved
Gross Pollutants	90%	100%
Total Nitrogen	45%	68.6%
Total Phosphorus	60%	84.7%
Total Suspended Solids	80%	92.8%

6 Flood Protection

As mentioned above, the terrain across the allotment and in the surrounding area suggests the site is not expected to be at risk of widespread flooding.

DRAINS modelling has been undertaken using realistic cross sections of each channel located within the site to permit an analysis of expected flow characteristics within each reach, including volume, velocity and depth. These results suggest that the proposed developments are not expected to be at risk of inundation from flows within each channel.

The location of each basin presents little risk to the proposed developments should a blockage or failure occur at the basin outlet, with flows naturally being directed towards the watercourse given the existing topography. In addition to this, Finished Floor Levels (FFLs) are proposed to be above the associated basin top levels for each development. Furthermore, each basin will include a 300mm freeboard from maximum expected water level to top of basin embankment to provide some reserve storage in the event of an outlet failure, providing additional contingency to the downstream drainage system.

It should be noted that the pre-development drainage analysis indicates that the Hoffnungsthal Road culvert inlet is expected to be submerged in both the minor and major rainfall events, with corresponding headwater depths of up to 1.26m. Whilst this headwater depth corresponds to water flowing over Hoffnungsthal Road and outside of the defined channel, the Winery FFL and associated useable spaces are considered to be adequately safe from this expected headwater level.

7 Stormwater Management in Construction

Construction activities associated with the proposed development pose several risks to the downstream stormwater environment, including sedimentation, erosion, contamination, and altered flow regimes. To manage these risks, a vigilant construction methodology aligned with best practice Soil Erosion and Drainage Management Plan (SEDMP) practices will be required to be implemented throughout the construction phase.

Typically, construction works have the potential to cause environmental harm through:

- Sediment-laden runoff from disturbed soils leading to sediment plumes in nearby watercourses and drainage channels;
- Accidental spills of fuels, oils, chemicals, or wastewater from construction plant and activities contaminating soil and potentially entering waterways;
- Uncontrolled stormwater discharge from the construction site carrying pollutants, debris, and sediments into natural channels; and
- Dewatering activities that may release turbid or contaminated water to the environment if not managed appropriately.

These risks are particularly heightened given the proximity of construction areas to natural watercourses and the sloping nature of the site which can accelerate overland flow and erosion.

To protect the receiving stormwater drainage environment from adverse effects related to the construction of the proposed development, it is expected that the contractor will adopt construction methodologies and pollution mitigation measures in line with SEDMP best practices, some of which may include:

- Progressive surface stabilisation (vegetation or other surface stabilisation) applied as soon as practicable to disturbed areas to minimise soil erosion;
- Silt fencing and sediment barriers including basins, and straw wattles downslope of works to capture sediments and prevent offsite transport;
- Construction of temporary earth bunds or diversion drains upslope of disturbance areas to direct undisturbed stormwater away from exposed soils limiting overland flow disturbance;
- Implementation of spill kits on-site and dedicated refuelling and chemical storage areas at least 50m away from existing watercourses;
- Dewatering management to include sediment control measures such as settlement tanks or filtration before discharge; and
- The use of water carts or dust suppressants to limit airborne soil particles that may settle into drainage lines.

Several elements of the development involve works in or adjacent to natural watercourses, including driveway and pedestrian crossings, stormwater outlets, vegetation removal and some likely channel shaping. To minimise impacts on the watercourse and receiving environment, it is suggested that construction within or near watercourses will be avoided during periods of rainfall or high flow. In addition to this, erosion protection (e.g., rock scour mattresses, geotextile matting etc.) is recommended to be installed where necessary to prevent scour and sediment transport. It is also proposed that temporary crossings for construction vehicles will use appropriate culvert sizing and sediment controls, to be decommissioned once permanent infrastructure is complete.

To provide protection against increased flow volumes as a result of the development, it is proposed that stormwater basins will be constructed at the earliest possible stage of construction. This will allow for basins to function both as sediment traps and as flow attenuation devices throughout the construction phase, capturing runoff from disturbed areas before it enters natural waterways and the receiving environment. The early function of basins significantly reduces the potential for downstream impacts during rainfall events.

It is proposed that temporary stormwater infrastructure such as culverts, open drains, or swales are constructed where required to safely convey stormwater basins throughout the duration of construction. This infrastructure should be installed to manage flows from both the construction works and any upstream catchment areas diverted around work zones. It is also recommended that temporary sediment basins are integrated into the temporary drainage network to filter runoff before it reaches permanent basins or watercourses. All temporary works should be constructed for easy removal or adaptation into permanent systems, with an emphasis on minimising disturbance and reinstating natural flow patterns post-construction.

It is expected that a detailed SEDMP will be prepared by the construction contractor for engineering review and approval prior to construction, for implementation throughout the construction phase of the development to ensure the receiving environment is not at risk of pollution from the construction of the development.

8 Earthworks Considerations

The proposed Development will require significant bulk earthworks to enable construction across the site's naturally sloping terrain. The site comprises undulating hills and valleys, with varying ground levels that necessitate both cut and fill activities to achieve suitable building platforms, access roads, and drainage infrastructure.

8.1 Site Topography and Ground Conditions

The Hotel site is located on steeper terrain, with an average and relatively consistent surface gradient of approximately 14.5%. The Winery site is located on more moderate ground with an average slope of approximately 9%, although some localised areas reach surface gradients of up to 15%.

Preliminary geotechnical investigations indicate that the site is underlain by shallow rock, which is present across the entire development area. This rock is typically overlain by clayey soil layers. Preliminary geotechnical advice provided at the time of preparation of this report, suggests that the rock is generally of medium hardness near its surface, with increasing hardness at greater depths. It is anticipated that the majority of the rock can be excavated using conventional earthmoving plant and equipment, with only isolated areas potentially requiring specialised methods depending on final geotechnical assessments.

8.2 Extent of Cut and Fill

To create level building platforms and access roads, both cutting and filling of existing ground levels will be required across the development. Based on the concept design:

- Excavation depths of up to approximately 7 metres are expected in some areas, particularly at both the Hotel and Winery sites where significant level changes are necessary to facilitate the proposed building and site plan;
- Filling of up to approximately 7 metres is anticipated at the Hotel site to establish functional development platforms; and
- Filling of up to approximately 3 metres is anticipated at the Winery site.

An order-of-magnitude estimate of cut and fill volumes was undertaken and has been derived from preliminary 3-dimensional cut & fill assessments for the purposes of satisfying the Planning Approval criteria outlined for the Development. A preliminary bulk earthworks plan can be found in Appendix E - Preliminary Bulk Earthworks Plans, and a summary of the calculated values of cut and fill are presented in Table 14.

Table 14: Order of magnitude cut and fill estimates

Development Site	Cut (m^3)	Fill (m^3)	Balance (m^3)
Hotel	22,000	36,800	14,800 (FILL)
Winery	27,800	17,400	10,400 (CUT)

The order of magnitude cut and fill estimate suggests that the Hotel site will require material to be imported for filling activities, whilst the Winery site will generate and excess of material to be removed from excavation activities. Pending geotechnical engineering review and recommendation on the suitability of material for re-use, it is proposed that excess material excavated from the Winery site will be used for filling activities at the Hotel site. Where feasible, the project will seek to retain and re-use as much excavated material as possible across the two building sites to minimise the amount of material needing to be disposed of, or imported to site.

Note; this assessment is intended as a planning-level guide only and does not consider any construction material volumes or bulking factors. It is expected that these volumes will be refined significantly during the detailed design stage as building levels, road alignments, and drainage designs are confirmed, in addition to detailed civil design undertaken in 3-dimensional modelling software.

8.3 Material Reuse and Disposal

It is expected that excavated soil and rock material on-site will be re-used on-site where feasible. Excavated soils from the upper layers (primarily clayey material) is proposed to be reused for landscaping purposes, including for site reshaping and vegetated batters. In accordance with preliminary geotechnical recommendations, excavated soils will not be used beneath building structures, road pavements, or other load-bearing elements to ensure long-term performance.

It is suggested that excavated rock will be assessed for its suitability to be processed on-site for reuse, such as for rock beaching, scour protection, or even fill applications. This will be further investigated by the project team during construction planning.

It is expected that any excess cut material or unsuitable soils that cannot be reused on-site will be disposed of off-site at a suitably licensed facility in accordance with environmental regulations.

During construction, temporary stockpile areas will be required for both excavated soil and rock material. Although final locations for stockpiles will be determined by the construction contractor in consultation with the project team and environmental specialists, it is anticipated that stockpiles will be located in appropriate flat areas, away from environmentally sensitive locations such as watercourses, drainage paths, and steep slopes. It is expected that stockpile locations will be selected to minimise environmental impact and will be coordinated with the construction staging methodology to maintain site accessibility and functionality throughout the works.

Should it be required, a preliminary indicative earthwork staging plan can be prepared during the detailed design and early contractor engagement phases to guide sequencing, stockpiling, material re-use, and haulage routes.

9 Summary

The civil and stormwater management strategy outlined within this document has demonstrated that the civil and stormwater drainage requirements set by The Barossa Council and the State Planning Commission are able to be met following development of the site.

The proposed conceptual stormwater management, including capture, diversion, retention, re-use and quality improvement strategies, assures that the receiving drainage system will not be adversely affected by the proposed development, with pre-development conditions able to be adequately replicated.

It is expected that the strategies outlined within this report will form the basis of the civil and stormwater management across the site for the proposed development, and are further developed and confirmed at the detailed design stage.

Appendix A
Conceptual Stormwater Management Plans

GENERAL NOTES

1. THESE DRAWINGS ARE NOT CADASTRAL PLANS AND MUST NOT BE USED IN DETERMINING PRECISE DETAILS WITH RESPECT TO BOUNDARIES.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
4. ALL LEVELS ARE EXPRESSED IN METRES.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS.
6. REFER TO DETAIL DRAWINGS FOR ALL UNDERGROUND PIPEWORK AND DETAILS.
7. SPOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT AND EXCESS NOT USED IS TO BE REMOVED FROM SITE BY CONTRACTOR.
8. THESE DRAWINGS ARE A SCHEMATIC REPRESENTATION OF SERVICES INFORMATION CONTAINED IN DRAWINGS ISSUED BY THE RELEVANT AUTHORITIES.

   THE INFORMATION CONTAINED IN THESE DRAWINGS IS INDICATIVE ONLY, AND REFERENCE SHOULD BE MADE TO THE RELEVANT AUTHORITIES DOCUMENTATION TO CONFIRM ACCURACY AND COMPLETENESS.

   WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY CONTRACTORS OTHER THAN THE AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
9. THE FINISHED SURFACE SHALL BE EVENLY GRADED BETWEEN DESIGN SURFACE LEVELS.
10. DEMOLISH AND REMOVE ALL EXISTING INSTALLATIONS WHICH ARE TO BE AFFECTED BY NEW WORKS. EXTENT OF DEMOLITION TO BE CONFIRMED ON SITE WITH THE SUPERINTENDENT PRIOR TO WORKS.
11. CONTRACTOR TO ADJUST LIDS OF EXISTING SERVICE PITS TO MATCH FINISHED SURFACE LEVEL. PROVIDE HEAVY DUTY COVER IF IN PAVED AREA TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY, IF APPLICABLE. RELOCATE SERVICE AS REQUIRED.
12. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT S.A.A. CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

COMPACTION NOTES:

1. PRIOR TO THE COMMENCEMENT OF ANY FILLING OPERATION, THE ENTIRE SITE AREA IS TO BE COMPACTED AND TESTED IN ACCORDANCE WITH AS1289 TO PRODUCE 98.0% STANDARD COMPACTION AT THE FINAL EXCAVATED NATURAL SURFACE LEVEL AND AT 250mm BELOW THE EXCAVATED NATURAL SURFACE LEVEL.
2. TESTING SHALL BE EVENLY SPACED OVER THE ENTIRE SITE, AND AT RANDOM LOCATIONS. TEST RESULTS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

PAVEMENT NOTES

1. ALL SET OUT DIMENSIONS AND LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF THE WORKS.
2. REFER TO RELEVANT CIVIL DRAWINGS FOR GRADING AND SERVICES.

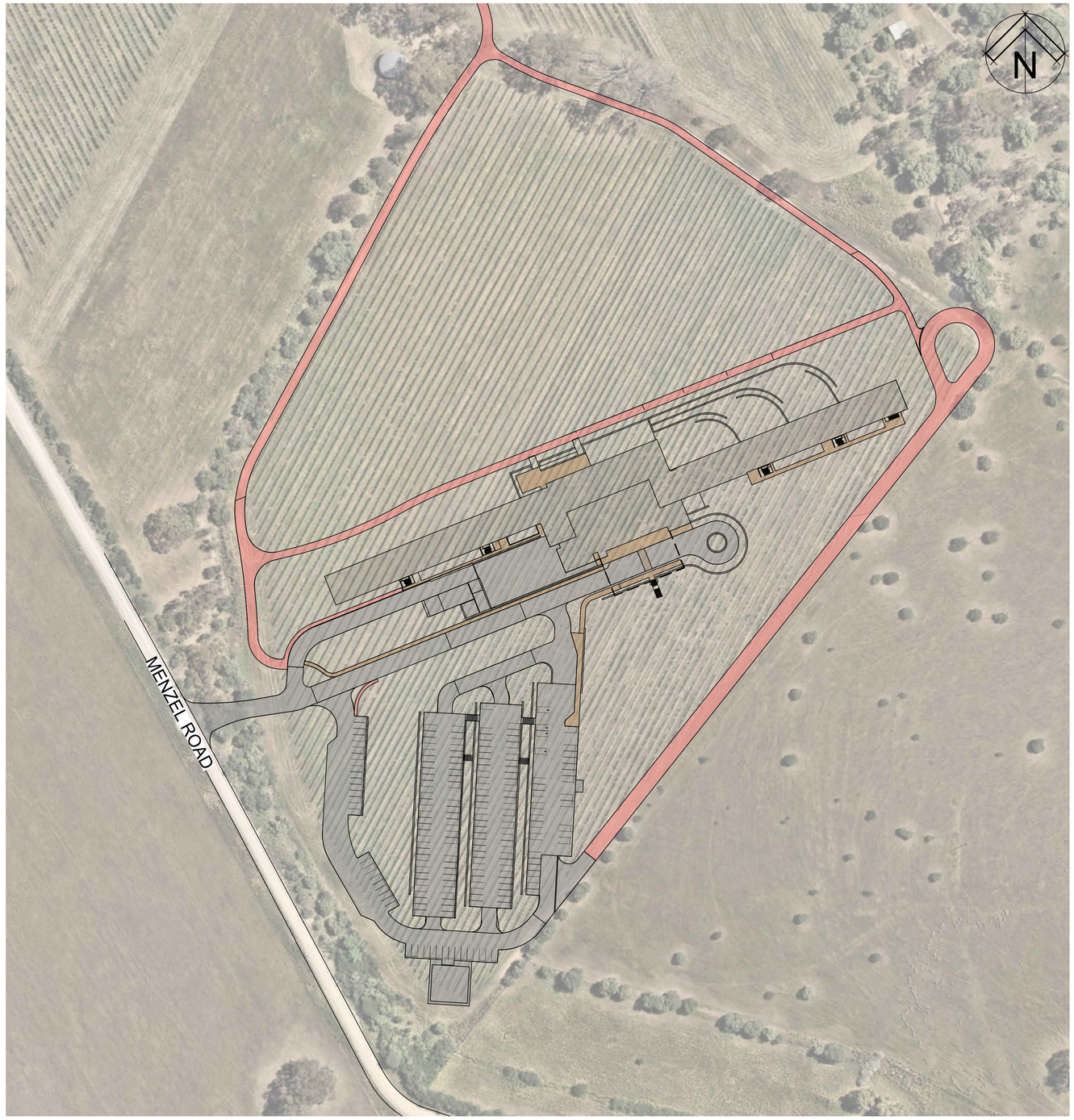
EXISTING SERVICES NOTES:

1. ALL DRAWINGS AND DOCUMENTS CONTAINED WITHIN THIS PROJECT HAVE LIMITED EXISTING SERVICES SHOWN. OTHER SERVICES MAY EXIST, WHICH WERE NOT KNOWN OR IDENTIFIED AT THE TIME OF DETAIL DOCUMENTATION. THESE UNKNOWN SERVICES MAY POSSIBLY INTERFERE WITH THE PROPOSED WORKS AS SET OUT WITHIN THESE DESIGN DOCUMENTS.
2. ALL IDENTIFIED EXISTING SERVICES ARE A SCHEMATIC REPRESENTATION OF THE INFORMATION PROVIDED BY THE VARIOUS SERVICE AUTHORITIES.
3. AS SUCH, THE LIMITS OF LIABILITY, ACCURACY OF THE LOCATION OF THE SERVICES, DEPTHS, LEVELS, SIZES, TYPES AS STIPULATED BY THE SERVICE AUTHORITIES IS PASSED ON FROM MLEI TO THE RESPECTIVE CONTRACTOR.
4. THE LIMITS REFER TO THE ACCURACY OF THE INFORMATION, AND NO LIABILITY WILL BE ACCEPTED BY THE SERVICE AUTHORITIES, INCLUDING MLEI.
5. THE CONTRACTOR MUST FULLY INFORM HIMSELF AS THE NATURE AND EXTENT OF ALL UNDERGROUND SERVICES THAT MAY IMPACT ON THE PROPOSED WORKS.
6. ALL SERVICES MUST BE FULLY VERIFIED, AND COMPARED AGAINST THE PROPOSED DESIGN WORKS.
7. UNDER NO CIRCUMSTANCES SHALL ANY FIXTURE OR FITTING BE ORDERED AND INSTALLED THAT HAS THE POTENTIAL TO REQUIRE ANY REWORK AS A DIRECT OR INDIRECT RESULT OF FAILURE TO VERIFY EXISTING SERVICES. SHOULD REWORK BE REQUIRED OF ANY NEW FIXTURE OR FITTING AS A RESULT OF THE ABOVE, NO CLAIM AGAINST MLEI OR ITS AGENTS WILL BE CONSIDERED.
8. UPON VERIFICATION OF ALL EXISTING UNDERGROUND SERVICES, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT OR THEIR NOMINATED REPRESENTATIVE AS SOON AS POSSIBLE, IN THE EVENT OF ANY POTENTIAL CLASH OR INTERFERENCE WITH THE PROPOSED WORKS.
9. ALL WORKS DIRECTLY OR INDIRECTLY RELATED TO THE POTENTIAL CLASH / INTERFERENCE SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL SUCH TIME AS INSTRUCTED TO DO SO BY MLEI OR ITS NOMINATED AGENT.
10. NO FINANCIAL CLAIMS ARISING FROM THE SUBCONTRACTOR FOR DELAYS WILL BE CONSIDERED BY MLEI OR ITS AGENTS.
11. IN THE EVENT THAT ANY CLASH / INTERFERENCE IS BY A SERVICE THAT CAN ONLY BE POTENTIALLY MODIFIED BY THE SERVICE PROVIDER, E.G. SA WATER SERVICES, SAPN TELSTRA OR GAS SUPPLY, THIS WORK SHALL BE COORDINATED BY MLEI OR ITS NOMINATED AGENT. IN THIS CIRCUMSTANCE, CHARGES LEVIED BY THE SERVICE PROVIDER FOR THE MODIFICATION / ALTERATION WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS RELATES ONLY TO THE MODIFICATION WORKS UNDERTAKEN BY THE SERVICE PROVIDER.

STORMWATER NOTES

1. SET OUT CHAINAGES AT SIDE ENTRY PITS AND JUNCTION BOXES ADJACENT TO KERBS, REFER TO CENTRE OF PIT AT KERB TOP LINE.
2. SET OUT POINTS AT PITS NOT ADJACENT TO KERBS, REFER TO CENTRE OF PIT.
3. PIT INVERT LEVELS REFER TO CENTRE OF PITS WITH PIPE GRADES CALCULATED BETWEEN THESE POINTS.
4. PIT DESIGN SURFACE LEVELS REFER TO
   a. SEP - TOP OF CENTRE OF PIT COVER
   b. JB - TOP OF CENTRE OF PIT COVER
   c. GIP - TOP OF CENTRE OF GRATE
5. THE CONTRACTOR SHALL ENSURE ALL SEP AND JB COVERS AND FRAMES MATCH FINISHED SURFACE GRADE/SLOPE AND LEVEL.
6. ALL PIT COVERS ARE TO BE CLASS D TO AS3996 UNLESS OTHERWISE NOTED.
7. CONCRETE PIPES TO BE CLASS 2 UNLESS OTHERWISE SHOWN.
8. ALL STORMWATER PIPES ARE TO BE RUBBER RING JOINTED IF USING RCP UNLESS NOTED OTHERWISE.
9. BANDAGE JOINTS TO BE PROVIDED ON PIPES WHICH CHANGE HORIZONTAL DIRECTION IF USING RCP.

DRAWING INDEX



OVERALL LAYOUT PLAN & DRAWING INDEX

SCALE 1:1000

SOUTHERN BAROSSA TOURIST ACCOMMODATION

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:1000 @ A1 (0, 10, 20, 40, 60m)

CLIENT: STRATEGIC ALLIANCE

mlei CONSULTING ENGINEERS
29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
OVERALL LAYOUT PLAN & DRAWING INDEX

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
J.CARDENAS	F.BEVERIDGE

DWG No. **A2024-14356 - HTL** SHEET **C001** REV **B**

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C001.dwg Aug 22, 2025 - 3:33PM

GENERAL LEGEND

PROPOSED

- X.X% — SURFACE GRADE AND DRAINAGE DIRECTION
- RETAINING WALL (LEVELS SHOWN INDICATIVELY)
- RETAINING CONCRETE FENCE PLINTH (≤0.3m HIGH)
- EARTHWORKS BATTER, 1:3 U.N.O
- PL:19.600 — DESIGN LEVEL PL=TOP OF PAVEMENT, LL=TOP OF COVER, GL=TOP OF GRATE, IL=INVERT, TW=TOP WALL, BW= BOT. WALL
  LOT LEVELS - FS=FINISHED SURFACE, BL=BENCH LEVEL
- H= 1.00 / TW 99.00 / BW 98.00 — RETAINING WALL LEVELS: H=RETAINING WALL HEIGHT, TW=TOP OF RETAINING WALL, BW = BOTTOM OF RETAINING WALL
- ROOF OVER OUTLINE

EXISTING

- x — POWER OVERHEAD CABLES

STORMWATER LEGEND

PROPOSED

- STORMWATER PIPE - RCP
- GRASSED CUT-OFF SWALE
- STORMWATER JUNCTION BOX
- STORMWATER GRATED INLET OR FIELD GULLY PIT
- STORMWATER SIDE ENTRY PIT
- STORMWATER HEADWALL
- DP — STORMWATER DOWNPIPE SHOWN INDICATIVELY TO REPRESENT THE ENTIRE ROOF DRAINAGE SYSTEM
- BIOFILTRATION SWALE MIN. 2.0m WIDE, 0.15m POND DEPTH SUBSOIL DRAINS TO CONNECT TO SITE DRAINAGE SYSTEM.
- STORMWATER BASIN
- 25kL RAINWATER TANK

PAVEMENTS LEGEND

PROPOSED

- PAVEMENT TYPE 1 - ASPHALT
- PAVEMENT TYPE 2 - UNSEALED PAVEMENT
- PAVEMENT TYPE 3 - CONCRETE FOOTPATH
- LANDSCAPING (BY OTHERS)

ABBREVIATIONS

AHD	AUSTRALIAN HEIGHT DATUM
BW	BOTTOM OF WALL
CH	CHAINAGE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CRS	CENTRES
CST	COMMON SERVICE TRENCH
CT	CURVE / TANGENT POINT
CTP	COMMON TANGENT POINT
DRG	DRAWING
EL	ELEVATION LEVEL
EX	EXISTING
FFL	FINISHED FLOOR LEVEL
FG	FIELD GULLY
GIP	GRATED INLET PIT
HW	HEADWALL
IL	INVERT LEVEL
JB	JUNCTION BOX
K&G	KERB & GUTTER
MAX	MAXIMUM
MIN	MINIMUM
NOM	NOMINAL
NTS	NOT TO SCALE
PSM	PERMANENT SURVEY MARK
RL	REDUCED LEVEL
R	RADIUS
RW	RETAINING WALL
SEP	SIDE ENTRY PIT
SEP-G	SIDE ENTRY PIT - GRATED INLET
SIO	STORMWATER INSPECTION OPENING
SIOG	STORMWATER GRATED INSPECTION OPENING
SNS	STREET NAME SIGN
STD	STANDARD
TBM	TEMPORARY BENCH MARK
TC	TANGENT / CURVE POINT
THK	THICK
TK	TOP OF KERB
TP	TANGENT POINT
TW	TOP WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:500 @ A1 (0 5 10 20 30m)

CLIENT: STRATEGIC ALLIANCE

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08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS

LEGEND

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NOT FOR CONSTRUCTION

DRAWN: J.CARDENAS | DESIGNED: F.BEVERIDGE

DWG No: A2024-14356 - HTL | SHEET: C002 | REV: A

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C002.dwg Aug 22, 2025 - 3:33PM

FOR CONTINUATION REFER TO DRG C004

MENZEL ROAD

REMOVE EXISTING CULVERT AND RELOCATE OUTSIDE OF DRIVEWAY LOCATION PROVIDE REGRADING ON WESTERN SIDE OF MENZEL ROAD TO SHIFT ROAD SAG LOCATION

PROPOSED CULVERT BENEATH DRIVEWAY ENTRANCE. CULVERT TO BE SIZED TO CONVEY 1% AEP FLOWS FROM UPPER CATCHMENT. NO SURVEY DATA WITHIN WATERCOURSE. HEIGHT OF WATER COURSE APPROX. 4m TO BOUNDARY LEVELS. FILL OVER CULVERT TO ACHIEVE DRIVEWAY DESIGN LEVELS. SOME LOCALISED RE-SHAPING OF WATER COURSE AND VEGETATION REMOVAL IS EXPECTED.

SURFACE RUNOFF FROM CARPARK AREA TO DRAIN INTO BIORETENTION SWALES.

SWALE TO DISCHARGE TO EXISTING WATER COURSE WITH ADEQUATE ROCK SCOUR PROTECTION AT OUTLET.

MAX. 2.5% CROSSFALL OVER WALKING TRAIL (TYP.)

PROVIDE LOCALISED BATTER TO MATCH LEVELS TO NATURAL SURFACE

3% CROSSFALL TO TRACK (TYP.)

3% CROSSFALL TO TRACK (TYP.)

LOBBY FFL AT 262.90 (OVER)

RL: 269.30 (L05 - FUNCITON)

CULVERT TO MAINTAIN FLOW OF EXISTING NATURAL WATERCOURSE

MAX. 2.5% CROSSFALL OVER WALKING TRAIL (TYP.)

RAISED FIELD GULLY INLET 0.3m ABOVE BASIN INVERT

242.30
241.20 IL

242.30 IL

242.30 IL

STORMWATER RETENTION BASIN
APPROX. RETENTION CAPACITY = 196kL
SIDE BATTER= 1:3
MAX. POND DEPTH= 0.3m
BASE LEVEL= 242
TOP LEVEL= 242.60
BASE AREA = 500m2
TOP AREA = 900m2
RETENTION VOLUME PROVIDED TO MINIMIZE IMPACT OF FREQUENT STORM EVENTS ON DOWNSTREAM WATER COURSES.

BASIN TO BE RIPPED TO 0.3m DEPTH AND REPLACED WITH ORGANIC TOPSOIL TO PROMOTE VEGETATION GROWTH AND INFILTRATION. BASIN SURFACES TO BE FULLY PLANTED.

FFL:256.50 (L01-POOL))

FFL:256.50 (L01-POOL))

FFL:256.50 (L01-POOL))

FFL:259.70 (L02-WELLNESS)

FFL:256.50 (L01 - POOL)

FFL:256.50 (L01 - POOL)

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE
1:500 @ A1 (0 5 10 20 30m)

CLIENT
STRATEGIC ALLIANCE

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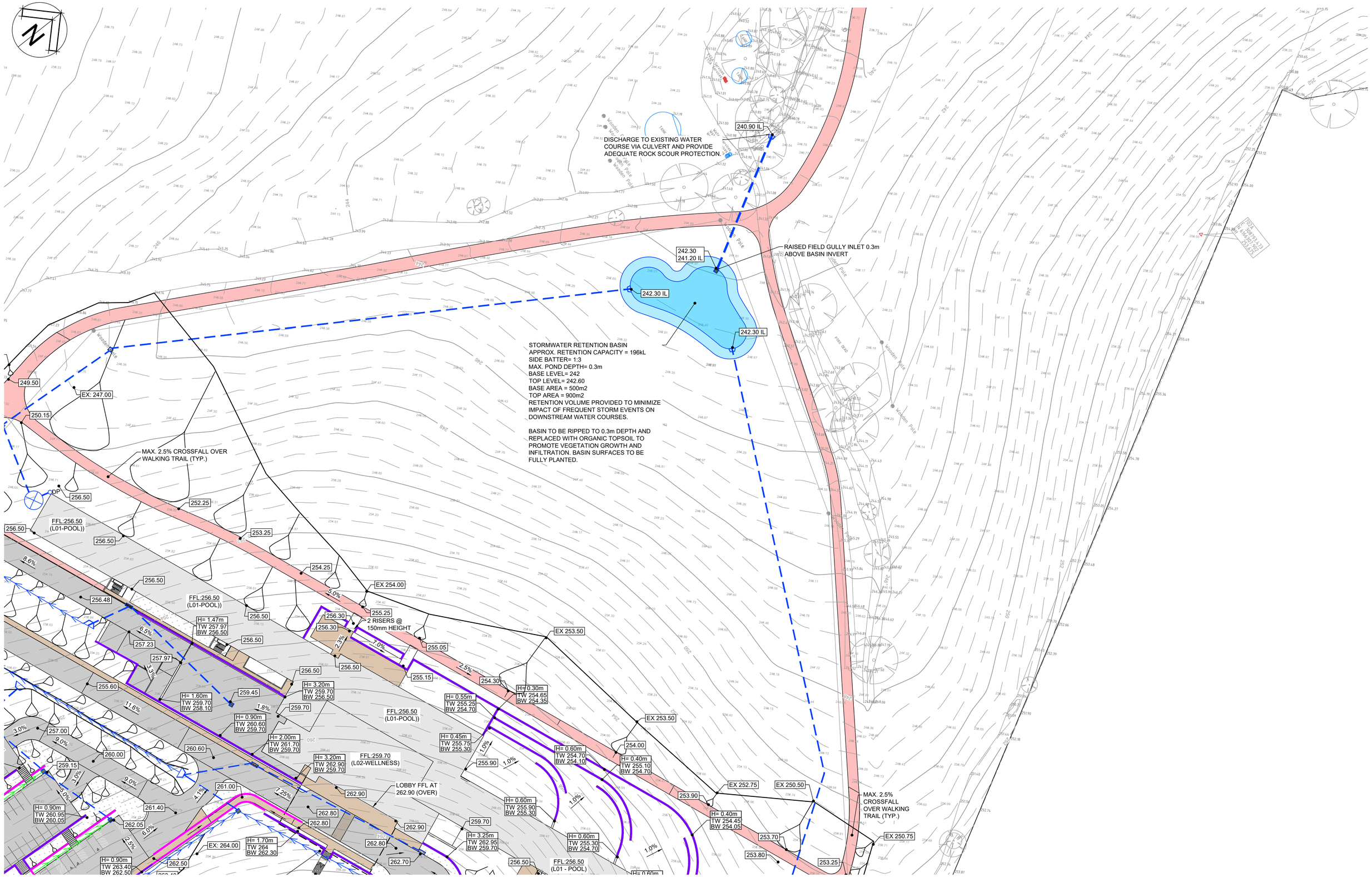
SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
STORMWATER MANAGEMENT PLAN (LAYOUT 1 OF 2)

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN J.CARDENAS | DESIGNED F.BEVERIDGE
DWG No. A2024-14356 - HTL | SHEET C003 | REV B

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C003.dwg Aug 29, 2025 - 10:48AM



ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE
1:500 @ A1
0 5 10 20 30m

CLIENT
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SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
STORMWATER MANAGEMENT PLAN (LAYOUT 2 OF 2)

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
J.CARDENAS	F.BEVERIDGE

DWG No.	SHEET	REV
A2024-14356 - HTL	C004	B

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C004.dwg Aug 29, 2025 - 10:49AM

GENERAL NOTES

1. THESE DRAWINGS ARE NOT CADASTRAL PLANS AND MUST NOT BE USED IN DETERMINING PRECISE DETAILS WITH RESPECT TO BOUNDARIES.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
4. ALL LEVELS ARE EXPRESSED IN METRES.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS.
6. REFER TO DETAIL DRAWINGS FOR ALL UNDERGROUND PIPEWORK AND DETAILS.
7. SPOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT AND EXCESS NOT USED IS TO BE REMOVED FROM SITE BY CONTRACTOR.
8. THESE DRAWINGS ARE A SCHEMATIC REPRESENTATION OF SERVICES INFORMATION CONTAINED IN DRAWINGS ISSUED BY THE RELEVANT AUTHORITIES.

   THE INFORMATION CONTAINED IN THESE DRAWINGS IS INDICATIVE ONLY, AND REFERENCE SHOULD BE MADE TO THE RELEVANT AUTHORITIES DOCUMENTATION TO CONFIRM ACCURACY AND COMPLETENESS.

   WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY CONTRACTORS OTHER THAN THE AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
9. THE FINISHED SURFACE SHALL BE EVENLY GRADED BETWEEN DESIGN SURFACE LEVELS.
10. DEMOLISH AND REMOVE ALL EXISTING INSTALLATIONS WHICH ARE TO BE AFFECTED BY NEW WORKS. EXTENT OF DEMOLITION TO BE CONFIRMED ON SITE WITH THE SUPERINTENDENT PRIOR TO WORKS.
11. CONTRACTOR TO ADJUST LIDS OF EXISTING SERVICE PITS TO MATCH FINISHED SURFACE LEVEL. PROVIDE HEAVY DUTY COVER IF IN PAVED AREA TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY, IF APPLICABLE. RELOCATE SERVICE AS REQUIRED.
12. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT S.A.A. CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

COMPACTION NOTES:

1. PRIOR TO THE COMMENCEMENT OF ANY FILLING OPERATION, THE ENTIRE SITE AREA IS TO BE COMPACTED AND TESTED IN ACCORDANCE WITH AS1289 TO PRODUCE 98.0% STANDARD COMPACTION AT THE FINAL EXCAVATED NATURAL SURFACE LEVEL AND AT 250mm BELOW THE EXCAVATED NATURAL SURFACE LEVEL.
2. TESTING SHALL BE EVENLY SPACED OVER THE ENTIRE SITE, AND AT RANDOM LOCATIONS. TEST RESULTS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

PAVEMENT NOTES

1. ALL SET OUT DIMENSIONS AND LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF THE WORKS.
2. REFER TO RELEVANT CIVIL DRAWINGS FOR GRADING AND SERVICES.

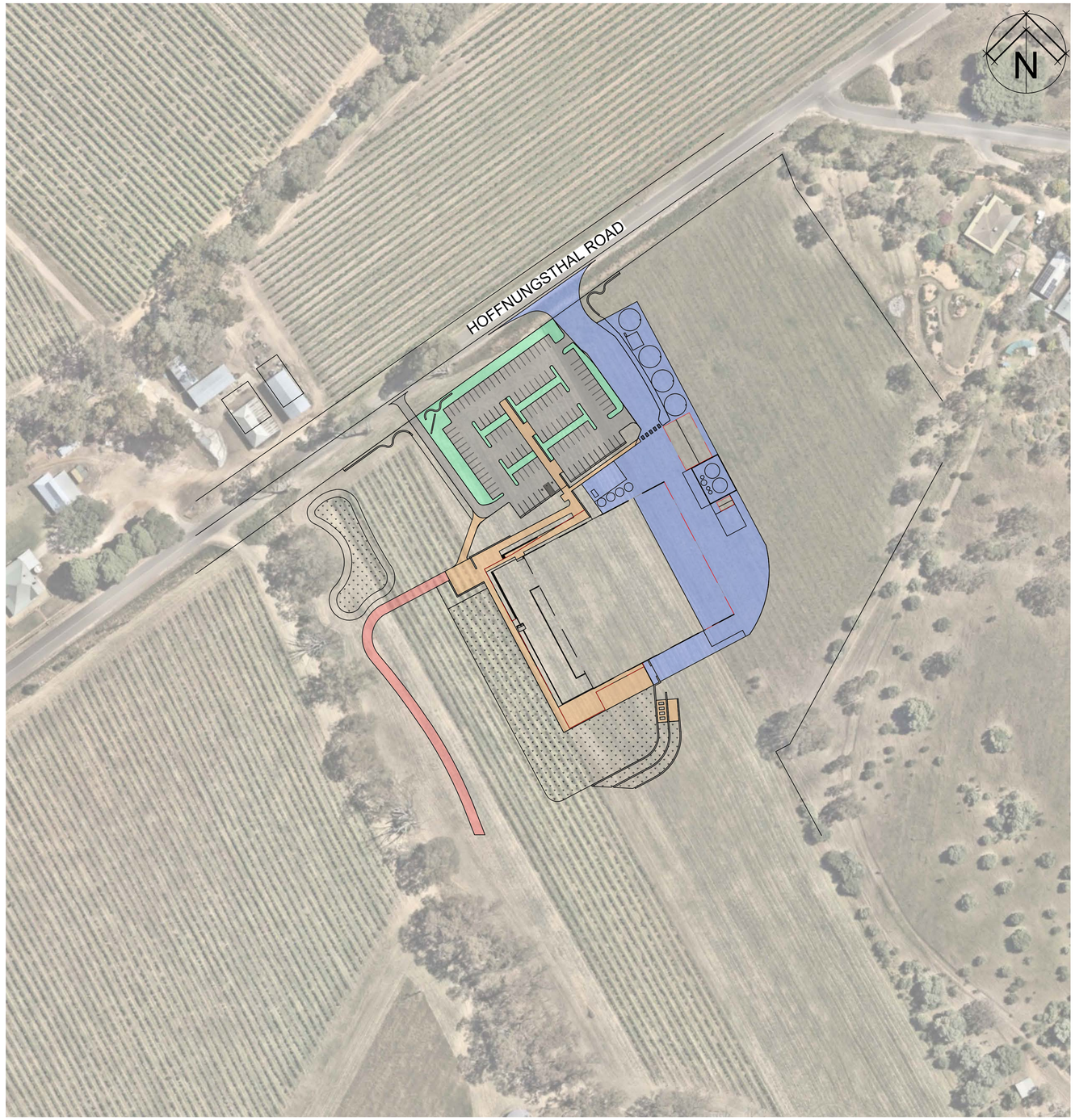
EXISTING SERVICES NOTES:

1. ALL DRAWINGS AND DOCUMENTS CONTAINED WITHIN THIS PROJECT HAVE LIMITED EXISTING SERVICES SHOWN. OTHER SERVICES MAY EXIST, WHICH WERE NOT KNOWN OR IDENTIFIED AT THE TIME OF DETAIL DOCUMENTATION. THESE UNKNOWN SERVICES MAY POSSIBLY INTERFERE WITH THE PROPOSED WORKS AS SET OUT WITHIN THESE DESIGN DOCUMENTS.
2. ALL IDENTIFIED EXISTING SERVICES ARE A SCHEMATIC REPRESENTATION OF THE INFORMATION PROVIDED BY THE VARIOUS SERVICE AUTHORITIES.
3. AS SUCH, THE LIMITS OF LIABILITY, ACCURACY OF THE LOCATION OF THE SERVICES, DEPTHS, LEVELS, SIZES, TYPES AS STIPULATED BY THE SERVICE AUTHORITIES IS PASSED ON FROM MLEI TO THE RESPECTIVE CONTRACTOR.
4. THE LIMITS REFER TO THE ACCURACY OF THE INFORMATION, AND NO LIABILITY WILL BE ACCEPTED BY THE SERVICE AUTHORITIES, INCLUDING MLEI.
5. THE CONTRACTOR MUST FULLY INFORM HIMSELF AS THE NATURE AND EXTENT OF ALL UNDERGROUND SERVICES THAT MAY IMPACT ON THE PROPOSED WORKS.
6. ALL SERVICES MUST BE FULLY VERIFIED, AND COMPARED AGAINST THE PROPOSED DESIGN WORKS.
7. UNDER NO CIRCUMSTANCES SHALL ANY FIXTURE OR FITTING BE ORDERED AND INSTALLED THAT HAS THE POTENTIAL TO REQUIRE ANY REWORK AS A DIRECT OR INDIRECT RESULT OF FAILURE TO VERIFY EXISTING SERVICES. SHOULD REWORK BE REQUIRED OF ANY NEW FIXTURE OR FITTING AS A RESULT OF THE ABOVE, NO CLAIM AGAINST MLEI OR ITS AGENTS WILL BE CONSIDERED.
8. UPON VERIFICATION OF ALL EXISTING UNDERGROUND SERVICES, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT OR THEIR NOMINATED REPRESENTATIVE AS SOON AS POSSIBLE, IN THE EVENT OF ANY POTENTIAL CLASH OR INTERFERENCE WITH THE PROPOSED WORKS.
9. ALL WORKS DIRECTLY OR INDIRECTLY RELATED TO THE POTENTIAL CLASH / INTERFERENCE SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL SUCH TIME AS INSTRUCTED TO DO SO BY MLEI OR ITS NOMINATED AGENT.
10. NO FINANCIAL CLAIMS ARISING FROM THE SUBCONTRACTOR FOR DELAYS WILL BE CONSIDERED BY MLEI OR ITS AGENTS.
11. IN THE EVENT THAT ANY CLASH / INTERFERENCE IS BY A SERVICE THAT CAN ONLY BE POTENTIALLY MODIFIED BY THE SERVICE PROVIDER, E.G. SA WATER SERVICES, SAPN TELSTRA OR GAS SUPPLY, THIS WORK SHALL BE COORDINATED BY MLEI OR ITS NOMINATED AGENT. IN THIS CIRCUMSTANCE, CHARGES LEVIED BY THE SERVICE PROVIDER FOR THE MODIFICATION / ALTERATION WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS RELATES ONLY TO THE MODIFICATION WORKS UNDERTAKEN BY THE SERVICE PROVIDER.

STORMWATER NOTES

1. SET OUT CHAINAGES AT SIDE ENTRY PITS AND JUNCTION BOXES ADJACENT TO KERBS, REFER TO CENTRE OF PIT AT KERB TOP LINE.
2. SET OUT POINTS AT PITS NOT ADJACENT TO KERBS, REFER TO CENTRE OF PIT.
3. PIT INVERT LEVELS REFER TO CENTRE OF PITS WITH PIPE GRADES CALCULATED BETWEEN THESE POINTS.
4. PIT DESIGN SURFACE LEVELS REFER TO
   a. SEP - TOP OF CENTRE OF PIT COVER
   b. JB - TOP OF CENTRE OF PIT COVER
   c. GIP - TOP OF CENTRE OF GRATE
5. THE CONTRACTOR SHALL ENSURE ALL SEP AND JB COVERS AND FRAMES MATCH FINISHED SURFACE GRADE/SLOPE AND LEVEL.
6. ALL PIT COVERS ARE TO BE CLASS D TO AS3996 UNLESS OTHERWISE NOTED.
7. CONCRETE PIPES TO BE CLASS 2 UNLESS OTHERWISE SHOWN.
8. ALL STORMWATER PIPES ARE TO BE RUBBER RING JOINTED IF USING RCP UNLESS NOTED OTHERWISE.
9. BANDAGE JOINTS TO BE PROVIDED ON PIPES WHICH CHANGE HORIZONTAL DIRECTION IF USING RCP.

DRAWING INDEX



OVERALL LAYOUT PLAN & DRAWING INDEX

SCALE 1:1000

SOUTHERN BAROSSA WINERY

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE 1:1000 @ A1 (0 10 20 40 60m)

CLIENT: STRATEGIC ALLIANCE

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SOUTHERN BAROSSA WINERY
PROPOSED SITE CIVIL WORKS
OVERALL LAYOUT PLAN & DRAWING INDEX

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN J.CARDENAS | DESIGNED F.BEVERIDGE

DWG No. **A2024-14356 - WNY** | SHEET **C001** | REV **A**

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\3. Winery Drawings\A2024-14356 - WNY-C001.dwg Jul 14, 2025 - 4:52PM

EXISTING Ø600 RCP CULVERT UNDER HOFFNUNGSTHAL ROAD CULVERT TO BE SUFFICIENTLY CLEANED OF SILT AND DEBRIS.

DRIVEWAY CROSSOVER TO MATCH THE PROFILE OF THE EXISTING ROADSIDE DRAIN TO MAINTAIN LONGITUDINAL FLOWS

HOFFNUNGSTHAL ROAD

WSUD SWALES AND PIPES TO BE COORDINATED WITH LANDSCAPE ARCHITECT DURING DETAILED DESIGN.

DRIVEWAY CROSSOVER TO MATCH THE PROFILE OF THE EXISTING ROADSIDE DRAIN TO MAINTAIN LONGITUDINAL FLOWS

OVERFLOW SPILLWAY WEIR TO DISCHARGE TO EXISTING WATER COURSE. ADEQUATE ROCK SCOUR PROTECTION TO BE INSTALLED TO WATER COURSE INVERT.

STORMWATER RETENTION BASIN
RETENTION CAPACITY = 144kL
SIDE BATTER 1:3
MAX. POND DEPTH = 0.3m.
BASE LEVEL = 236.5
TOP LEVEL = 238
BASE AREA = 450m2
TOP AREA = 850m2
RETENTION VOLUME PROVIDED TO MINIMIZE IMPACT OF FREQUENT STORM EVENTS ON DOWNSTREAM WATER COURSES.

BASIN TO BE RIPPED TO 0.3m DEPTH AND REPLACED WITH ORGANIC TOPSOIL TO PROMOTE VEGETATION GROWTH AND INFILTRATION. BASIN SURFACES TO BE FULLY PLANTED.

CUT-OFF GRASSED SWALE TO OUTLET TO EXISTING ROADSIDE SWALE WITH ADEQUATE ROCK SCOUR PROTECTION.

FIELD GULLY PIT TO CAPTURE STORMWATER TRAPPED LOW SPOT

TRAIL TO BE GRADED AT MAX 2.5% CROSSFALL TOWARDS WEST WATER COURSE.

PROVIDE 5 STEP RISERS @180mm HEIGHT

SURFACE RUNOFF FROM CARPARK AREA TO DRAIN INTO BIORETENTION SWALES.

FFL: 241.50

DOWNPIPES NOT SHOWN. ROOF DRAINAGE SYSTEM TO CONNECT INTO DRAINAGE SYSTEM.

1:2 BATTER SLOPE IN ROCK

TRAIL CONTINUES ON AND CONNECTS TO THE HOTEL SITE SOUTH OF THE PROPOSED WINERY.

1:2 BATTER SLOPE IN ROCK

CUT-OFF GRASSED SWALE TO OUTLET TO NATURAL SURFACE WITH ADEQUATE ROCK SCOUR PROTECTION.

GENERAL LEGEND

PROPOSED

- X.X% — SURFACE GRADE AND DRAINAGE DIRECTION
- RETAINING WALL 0.5m HEIGHT U.N.O
- EARTHWORKS - 1:3 BATTER SLOPE U.N.O. SHOWN INDICATIVELY
- 19.600 — DESIGN LEVEL IL=INVERT, TW=TOP WALL, BW= BOT. WALL, FFL=FINISHED FLOOR LEVEL
- ROOF OVER OUTLINE
- STORMWATER PIPE
- GRASSED CUT-OFF SWALE
- CONCRETE SWALE
- BASIN WEIR SWALE
- STORMWATER GRATED OR FIELD GULLY PIT
- STORMWATER SIDE ENTRY PIT
- STORMWATER HEADWALL
- BIOFILTRATION SWALE MIN. 3.0m WIDE, 0.2m POND DEPTH SUBSOIL DRAINS TO CONNECT TO SITE DRAINAGE SYSTEM.
- STORMWATER BASIN
- ASPHALT PAVEMENT - LIGHT DUTY
- PAVEMENT - HEAVY DUTY CONCRETE
- PAVEMENT - LIGHT DUTY CONCRETE
- UNSEALED PAVEMENT CART/WALKING TRACK
- LANDSCAPING (BY OTHERS)

EXISTING

- x — POWER OVERHEAD CABLES

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:500 @ A1 (0, 5, 10, 20, 30m)

CLIENT: STRATEGIC ALLIANCE

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29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA WINERY

PROPOSED SITE CIVIL WORKS

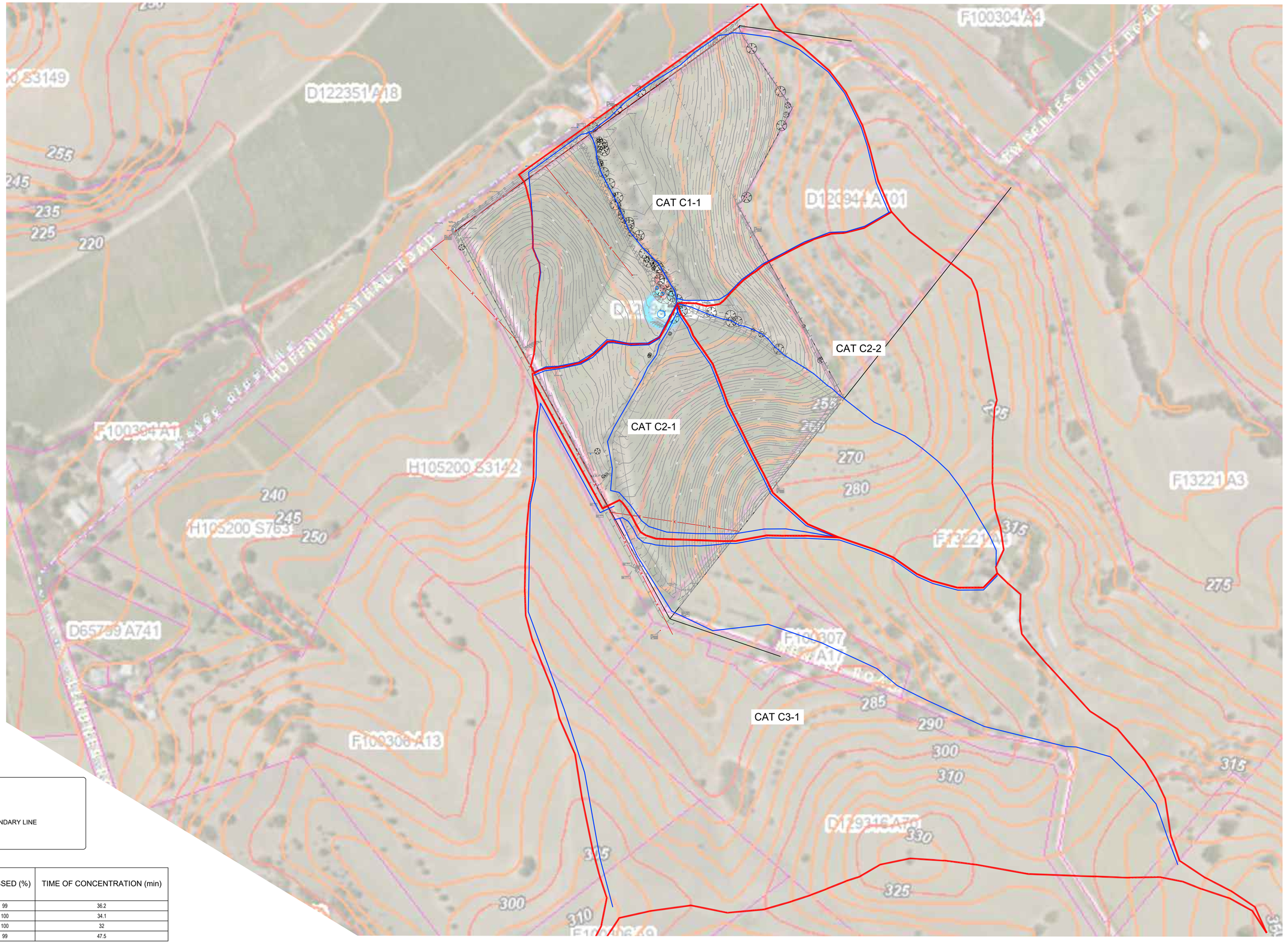
STORMWATER MANAGEMENT PLAN (LAYOUT 1 OF 1)

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN: J.CARDENAS | DESIGNED: F.BEVERIDGE

DWG No. A2024-14356 - WNY C002 | SHEET | REV. A

Appendix B:
Existing Catchment Plan



GENERAL LEGEND

- FLOW PATH LINE
- CATCHMENT BOUNDARY LINE

CATCHMENT ID	AREA (ha)	PAVED (%)	GRASSED (%)	TIME OF CONCENTRATION (min)
C1-1	14.209	1	99	36.2
C2-1	6.400	0	100	34.1
C2-2	14.476	0	100	32
C3-1	35.400	1	99	47.5

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE

SCALE
1:2500 @ A1
0 25 50 100 150m

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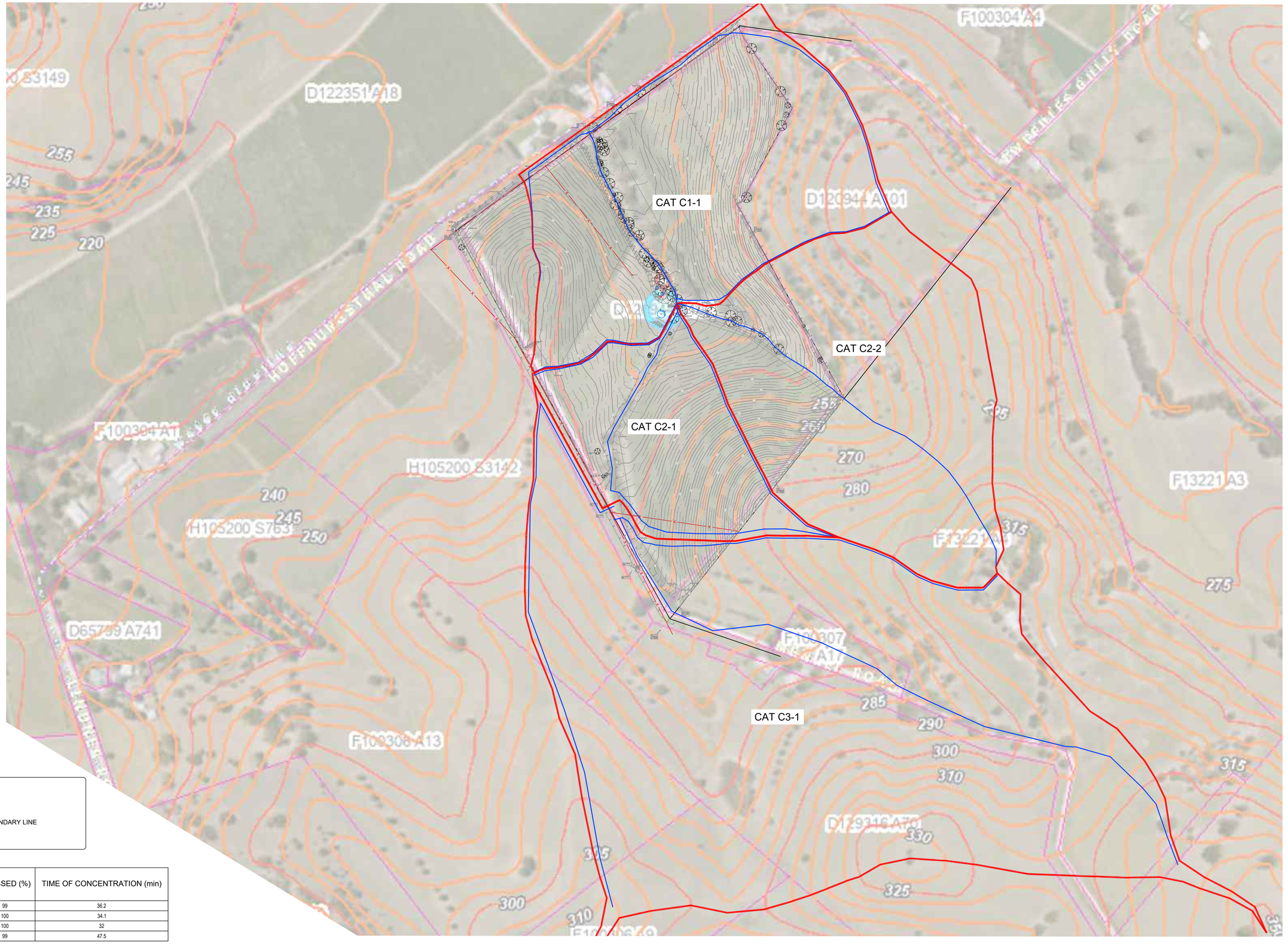
SOUTHERN BAROSSA
WINERY & HOTEL
PROPOSED SITE CIVIL WORKS
PRE-DEVELOPMENT CATCHMENT PLAN

SKETCH

DRAWN	DESIGNED
M.CASTIBLANCO	A.GIANNINI

DWG No.	SHEET	REV.
A2024-14356	SK001	

Appendix C:
Stormwater Drainage Computations



GENERAL LEGEND

- FLOW PATH LINE
- CATCHMENT BOUNDARY LINE

CATCHMENT ID	AREA (ha)	PAVED (%)	GRASSED (%)	TIME OF CONCENTRATION (min)
C1-1	14.209	1	99	36.2
C2-1	6.400	0	100	34.1
C2-2	14.476	0	100	32
C3-1	35.400	1	99	47.5

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE

SCALE
1:2500 @ A1
0 25 50 100 150m

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SOUTHERN BAROSSA
WINERY & HOTEL
PROPOSED SITE CIVIL WORKS
PRE-DEVELOPMENT CATCHMENT PLAN

SKETCH

DRAWN	DESIGNED
M.CASTIBLANCO	A.GIANNINI

DWG No.	SHEET	REV.
A2024-14356	SK001	

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Project: Barossa Valley Hotel & Winery
Designer: AG
Date: 27/05/2025

Reference: A2023-13607
Checked by: MR
Index: 1

CATCHMENT ANALYSIS - PRE-DEVELOPMENT | **REF./COMMENT**

Refer 'Pre-Development Catchment plan'

ASSUMPTIONS:
- The impervious fraction of the existing buildings/sheds is considered negligible with regards to the overall catchment and has been neglected from the analysis
- An impervious fraction of 0.9 and 0.6 have been assumed for Hoffnungsthal Road (sealed) and Menzel Road (unsealed), respectively

Catchment name	Total area (ha)	Land use type (ha)			Impervious fraction, f			Overall % Paved
		Roof	Paved	Landscaped	Roof	Paved	Undeveloped	
C1-1	14.2091	0.0000	0.1418	14.067	1.00	0.90	0.00	0.01
C2-1	6.3992	0.0000	0.0000	6.399	1.00	0.60	0.00	0.00
C2-2	14.4755	0.0000	0.0000	14.476	1.00	0.60	0.00	0.00
C3-1	35.4000	0.0000	0.6750	34.725	1.00	0.60	0.00	0.01
Total	**70.4838**	**0.0000**	**0.8168**	**69.6671**	**-**	**-**	**-**	**-**

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Project: Barossa Valley Hotel & Winery
Designer: AG
Date: 27/05/2025

Reference: A2023-13607
Checked by: MR
Index: 2

CATCHMENT ANALYSIS | **REF./COMMENT**

- Refer Friend's equation Eq 4.06 QUDM for sheet flow
- Assume densely grassed surface (n=0.060)
- Paved tc is taken as travel time along length of road within catchment for catchments containing roads, otherwise assumed to be 2min less than the calculated

- Refer Figure 4.5 QUDM for concentrated flow with multiplier of 3 for natural channels and 2 for table drains

Catchment name	Unpaved											Total time of concentration		REF./COMMENT
	Sheet flow						Concentrated flow							
	Upstream Elevation	Downstream Elevation	Fall (m)	Flow length (m)	Slope (%)	Travel time (min)	Flow length (m)	Upstream Elevation	Downstream Elevation	Fall (m)	Travel time (min)	Paved tc (mins)	Grassed tc (mins)	
C1-1	252.78	240.90	11.88	236.0	5.0	28.7	267.0	240.90	234.45	6.45	7.5	4.5	36.2	t_c USED FOR ANALYSIS
	252.77	241.14	11.63	150.0	7.8	22.6	99.0	241.14	234.45	6.69	3.0	4.5	25.6	
	287.00	246.05	40.95	374.0	10.9	28.6	223.0	246.05	234.45	11.60	4.5	4.5	33.1	
	287.00	240.90	46.10	325.0	14.2	25.9	267.0	240.90	234.45	6.45	7.5	4.5	33.4	
C2-1	290.00	249.14	40.86	325.0	12.6	26.6	280.0	249.14	240.9	8.24	7.5	32.1	34.1	t_c USED FOR ANALYSIS
	290.00	240.90	49.10	401.0	12.2	28.6	-	-	-	-	0.0	26.6	28.6	
C2-2	317.00	247.81	69.19	422.0	16.4	27.5	167.0	247.81	240.9	6.91	4.5	30.0	32.0	t_c USED FOR ANALYSIS
C3-1	337.00	310.00	27.00	226.0	11.9	23.8	740.0	310.00	240.9	69.10	13.5	13.5	37.3	
	310.00	252.75	57.25	706.0	8.1	37.5	190.0	252.75	252.0	0.74	10.0	13.5	47.5	t_c USED FOR ANALYSIS

GENERAL LEGEND

- ROOF AREA
- PAVED AREA
- LANDSCAPED AREA

LAND USE	AREA (ha)	IMPERVIOUS FRACTION
ROOF	0.4970	1.0
PAVEMENT (SEALED)	1.1615	0.9
PAVEMENT (UNSEALED)	0.1347	0.6
LANDSCAPED	1.3258	N/A

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE

SCALE
1:500 @ A1
0 5 10 20 30m

CLIENT
STRATEGIC ALLIANCE

mlei
CONSULTING ENGINEERS
29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
HOTEL & WINERY

POST-DEVELOPMENT LAND USE PLAN - HOTEL

DRAWN	DESIGNED
M.CASTIBLANCO	A.GIANNINI

DWG No.	SHEET	REV.
A2024-14356	SK002	

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\1. Sketches Drawings\A2024-14356-SK002.dwg Aug 27, 2025 - 5:01PM

mlei
CONSULTING ENGINEERS

Project: Barossa Valley Winery & Accommodation
Designer: AG
Date: 20/08/2025

Reference: A2023-13607
Checked by:
Index: 1

CATCHMENT ANALYSIS - POST-DEVELOPMENT - HOTEL

REF./COMMENT

Refer 'Post-Development Catchment plan'

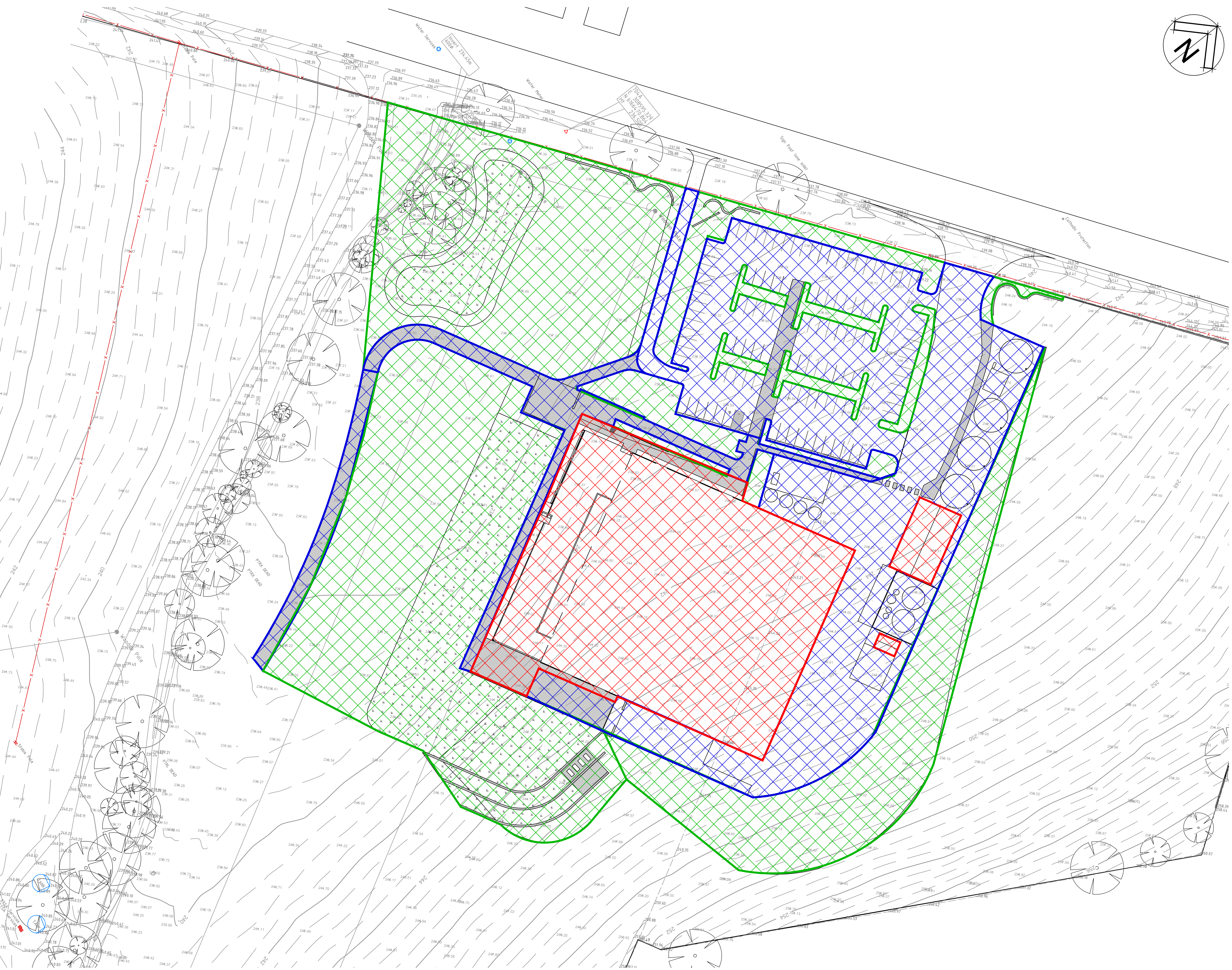
ASSUMPTIONS:
- An impervious fraction of 0.6 has been assumed for the unsealed service road
- Landscaped areas not considered for detention modelling due to no change in imperviousness of catchment

Catchment name	Total area (ha)	Land use type (ha)			Impervious fraction, f			Overall impervious fraction, f	
		Roof	Paved	Landscaped	Roof	Paved	Undeveloped		
Roof	0.4970	0.4970	0.0000	0.000	1.00	0.90	0.10	1.00	
Sealed Pavement	1.1615	0.0000	1.1615	0.000	1.00	0.90	0.10	0.90	
Unsealed Pavement	0.1347	0.0000	0.1347	0.000	1.00	0.60	0.10	0.60	
HOTEL ROOF	0.4970	0.4970	0.0000	0.000	1.00	0.90	0.10	1.00	
HOTEL PAVEMENT	1.1615	0.0000	1.1615	0.000	1.00	0.90	0.10	0.90	
HOTEL SUPP. PAVE.	0.0595	0.0000	0.0595	0.000	1.00	0.60	0.10	0.60	
HOTEL UNRES.	0.0752	0.0000	0.0752	0.000	1.00	0.60	0.10	0.60	
HOTEL COMBINED	1.7180							0.92	Weighted average
Total	**5.3044**	**0.9940**	**2.5924**	**0.0000**	**-**	**-**	-	-	

GENERAL LEGEND

- ROOF AREA
- PAVED AREA
- LANDSCAPED AREA

LAND USE	AREA (ha)	IMPERVIOUS FRACTION
ROOF	0.5286	1.0
PAVEMENT	0.8555	0.9
ROCK BATTER	0.2315	0.75
LANDSCAPED	1.1989	N/A



SCALE 1:500 @ A1 (0, 5, 10, 20, 30m)

CLIENT: STRATEGIC ALLIANCE

mlei CONSULTING ENGINEERS
29 Young Street Adelaide SA 5000
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SOUTHERN BAROSSA WINERY

POST-DEVELOPMENT LAND USE PLAN - WINERY

DRAWN	DESIGNED
M.CASTIBLANCO	A.GIANNINI

DWG No.	SHEET	REV
A2024-14356	SK003	

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\1. Sketches Drawings\A2024-14356-SK003.dwg Jul 4, 2025 - 4:39PM

mlei
CONSULTING ENGINEERS

Project: Barossa Valley Winery & Accommodation
Designer: AG
Date: 4/07/2025

Reference: A2023-13607
Checked by:
Index: 1

CATCHMENT ANALYSIS - POST-DEVELOPMENT - WINERY

REF./COMMENT

Refer 'Post-Development Catchment plan'

ASSUMPTIONS:
- An impervious fraction of 0.75 has been assumed for 90% of the southern batter slope area to account for the likely rock that will be exposed
- An impervious fraction of 0.6 has been assumed for the unselaed walking/cart track
- Landscaped areas not considered for detention modelling due to no change in imperviousness of catchment

Catchment name	Total area (ha)	Land use type (ha)			Impervious fraction, f			Overall impervious fraction, f	REF./COMMENT
		Roof	Paved	Landscaped	Roof	Paved	Undeveloped		
Main Roof	0.5286	0.5286	0.0000	0.000	1.00	0.90	0.10	1.00	
Shed Roofs	0.0264	0.0264	0.0000	0.000	1.00	0.90	0.10	1.00	
Carpark Landscape/WSUD	0.0987	0.0000	0.0000	0.099	1.00	0.90	0.10	0.10	
Carpark/Hardstand	0.7347	0.0000	0.7347	0.000	1.00	0.90	0.10	0.90	
Batter Face	0.2315	0.0000	0.0000	0.231	1.00	0.90	0.75	0.75	Allowance for rock ba
Northern Pathways	0.0886	0.0000	0.0886	0.000	1.00	0.90	0.10	0.90	
Cart/Walking Track	0.0322	0.0000	0.0322	0.000	1.00	0.60	0.10	0.60	
Landscape Misc.	1.1002	0.0000	0.0000	1.100	1.00	0.90	0.10	0.10	
WINERY ROOF	0.5550							1.00	
WINERY PAVEMENT	1.0649							0.78	
WINERY UNRES.	0.1208							0.82	
WINERY COMBINED	1.7407							0.85	
Total	**6.3222**	**0.5550**	**0.8555**	**1.4304**	**-**	**-**	-	-	

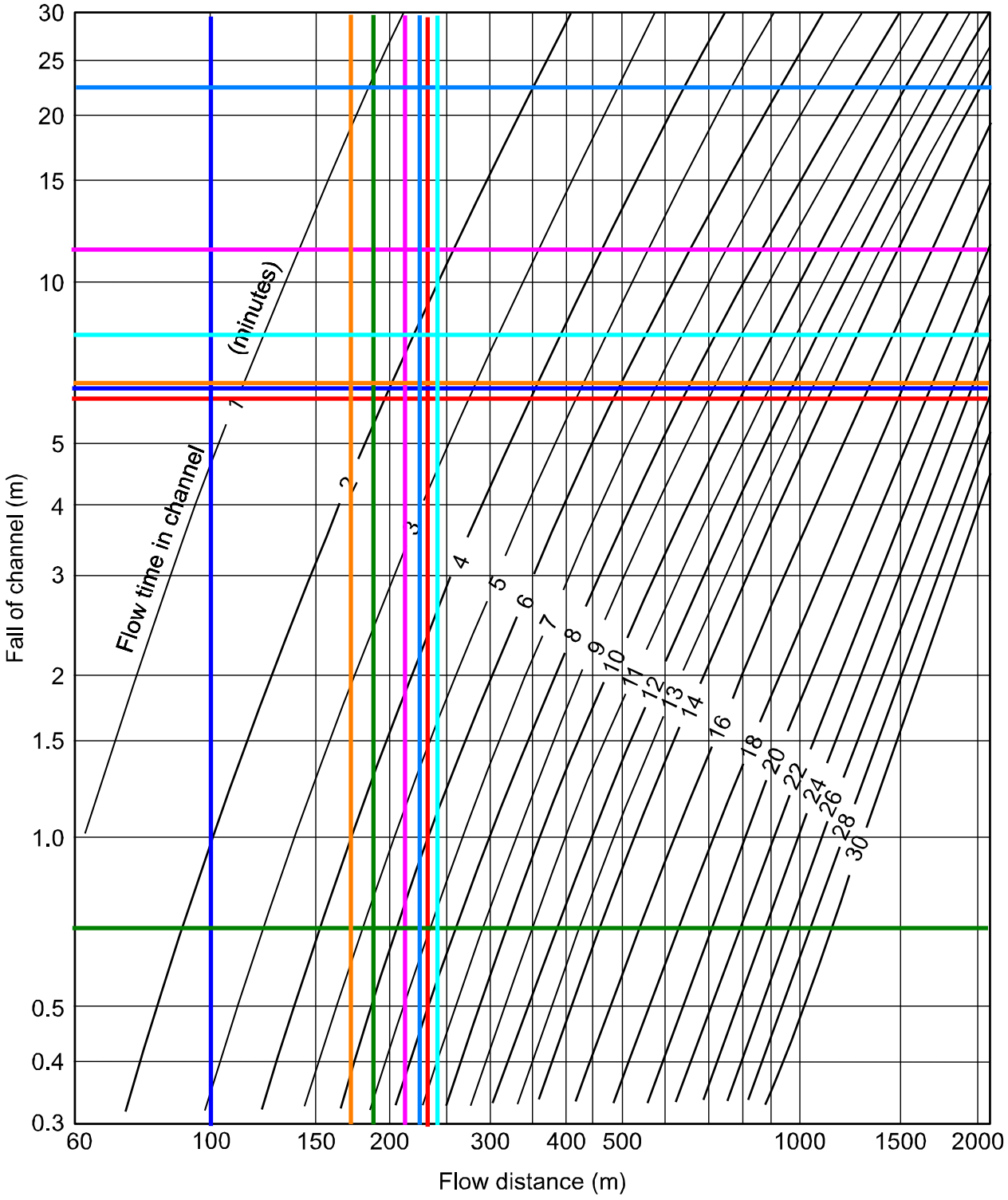


Figure 4.5 – Flow travel time in pipes and channels (Source: Argue, 1986)

C1-1 (1) = 2.5*3 = 7.5min
C1-1 (2) = 1*3 = 3min
C1-1 (3) = 1.5*3 = 4.5min
C1-1 (4) = 2.5*3 = 7.5min
C2-1 (1) = 2.5*3 = 7.5min
C2-2 = 1.5*3 = 4.5min
C3-1 (1) = 1.5*3 = 4.5min (x3) = 13.5min (note, segment analysed as 3 segments for figure and multiplied by 3 to consider whole segment)
C3-1 (1) = 5*2 = 10min

4.6.7 Initial estimate of kerb, pipe and channel flow time

An initial (trial) estimate of flow travel times along kerbs, pipes and channels can be determined from Figure 4.5 (Argue, 1986).

The chart may be used directly to determine approximate travel times along a range of rigid channel types and, with the application of multiplier Δ for a range of loose-boundary channel forms.

Technical notes for Figure 4.5

Flow travel time (approximate) may be obtained directly from this chart for:

- kerb-and-gutter channels
- stormwater pipes
- allotment channels of all types (surface and underground)
- drainage easement channels (surface and underground)

Multiplier Δ, should be applied to values obtained from the chart as per:

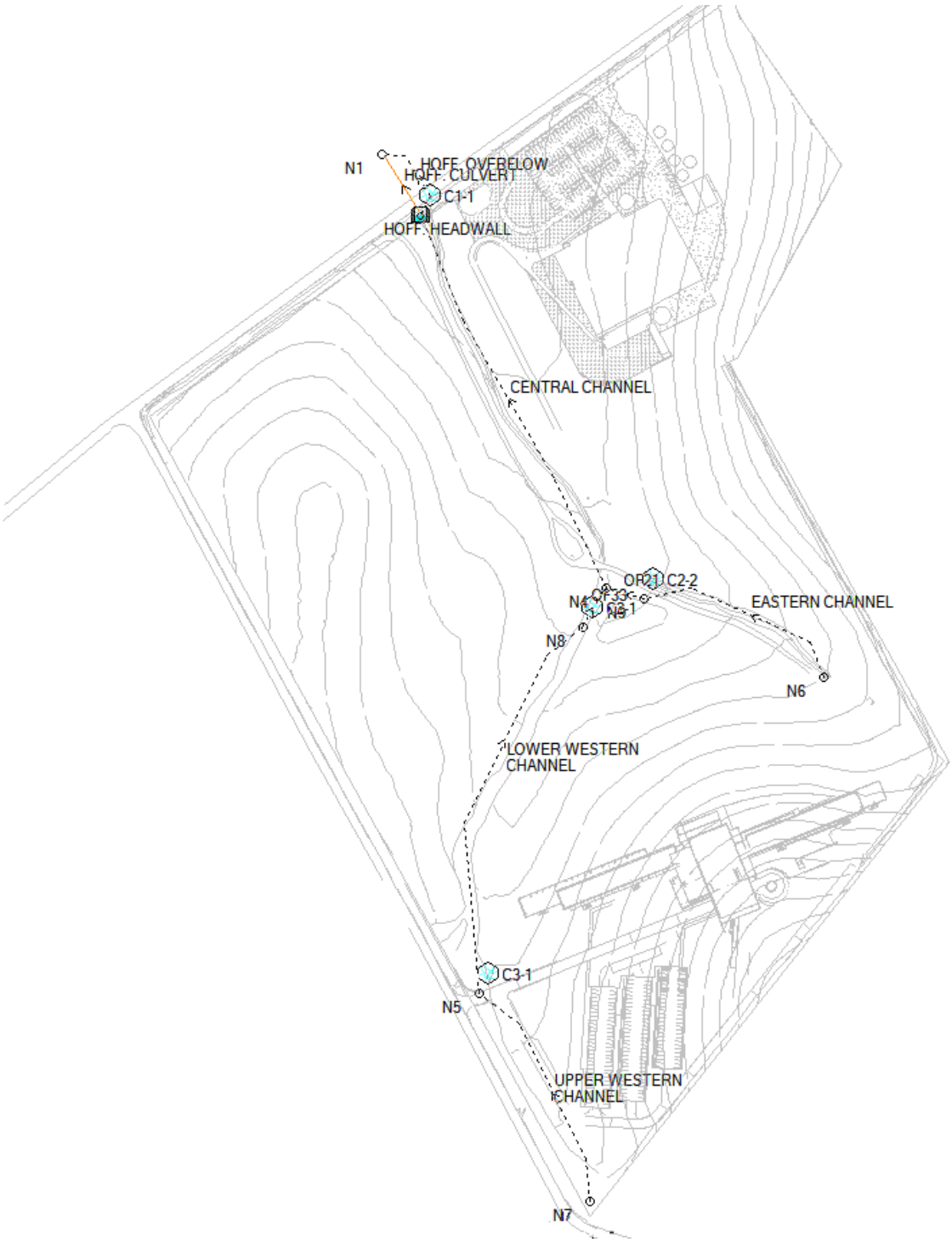
- grassed swales, well maintained and without driveway crossings, Δ = 4
- blade-cut earth table drains, well maintained and no driveway crossings, Δ = 2
- natural channels, Δ = 3

Once a trial flow rate has been determined, the travel time determined from Figure 4.5 will need to be checked using either figures 4.6 or 4.7.

Appendix D:
DRAINS Modelling and Results

PRE-DEVELOPMENT DRAINS RESULTS

MODEL LAYOUT



PRE-DEVELOPMENT DRAINS MODEL DATA

PIT / NODE DETAILS

Version 15

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond Depth (m)	Major Safe Pond Depth (m)
HOFF. HEADWALL	Headwall				0.5	236.43		0		308571.737	6166450.033		6							
N1	Node					234.05		0		308545.938	6166490.881		5		No					
N4	Node							0		308694.281	6166202.794		9		No					
N5	Node							0		308610.435	6165934.055		11		No					
N6	Node							0		308838.325	6166143.671		13		No					
N7	Node							0		308683.472	6165796.521		26		No					
N8	Node							0		308678.993	6166177.234		31		No					
N9	Node							0		308719.304	6166195.896		32		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length(m)	id

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%)	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
C1-1	HOFF. HEADWALL	14.209	1	99	0	4.5		36.2	0										0			1
C3-1	N5	35.4	1	99	0	13.5		47.5	0										0			1
C2-1	N8	6.3992	0	100	0	0		34.1	0										0			1
C2-2	N9	14.476	0	100	0	0		32	0										0			1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	RL (m)	etc (m)
HOFF. CULVERT	HOFF. HEADWALL	N1	20	234.45	234.05	2	Concrete, under roads, 1% minimum slope	600	600	0.013	Existing	1	HOFF. HEADWALL		0				

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of Service (m)	Chg (m)	Bottom Elev (m)	Height of Service (m)	Chg (m)	Bottom Elev (m)	Height of Service (m)	etc etc

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Storms (m)	SafeDepth Minor Storms (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id	U/S IL	D/S IL	Length (m)
HOFF. OVERFLOW	HOFF. HEADWALL	N1	0.2	236.43	30	2	BAROSSA HOFF. OVERFLOW	0.1	0	0.6	2	100	84	236.43	234.05	20
CENTRAL CHANNEL	N4	HOFF. HEADWALL	2.4				BAROSSA CENTRAL CHANNEL	2.5	1	0.6	2.42	100	8	240.9	234.45	267
LOWER WESTERN CHANNEL	N5	N8	2.6				BAROSSA WESTERN CHANNEL	1	0.5	0.6	2.94	100	10	249.14	240.92	280
EASTERN CHANNEL	N6	N9	1.3				BAROSSA EASTERN CHANNEL	1	0.5	0.6	4.13	100	12	247.81	240.92	167
UPPER WESTERN CHANNEL	N7	N5	4.9				BAROSSA UPPER WESTERN CHANNEL	1	0.5	0.6	8.22	100	25	310	249.14	740
OF33	N8	N4	0.1				BAROSSA WESTERN CHANNEL	1	0.5	0.6	2	100	65	240.92	240.9	1
OF21	N9	N4	0.1				BAROSSA EASTERN CHANNEL	1	0.5	0.6	2	100	34	240.92	240.9	1

PIPE COVER DETAILS

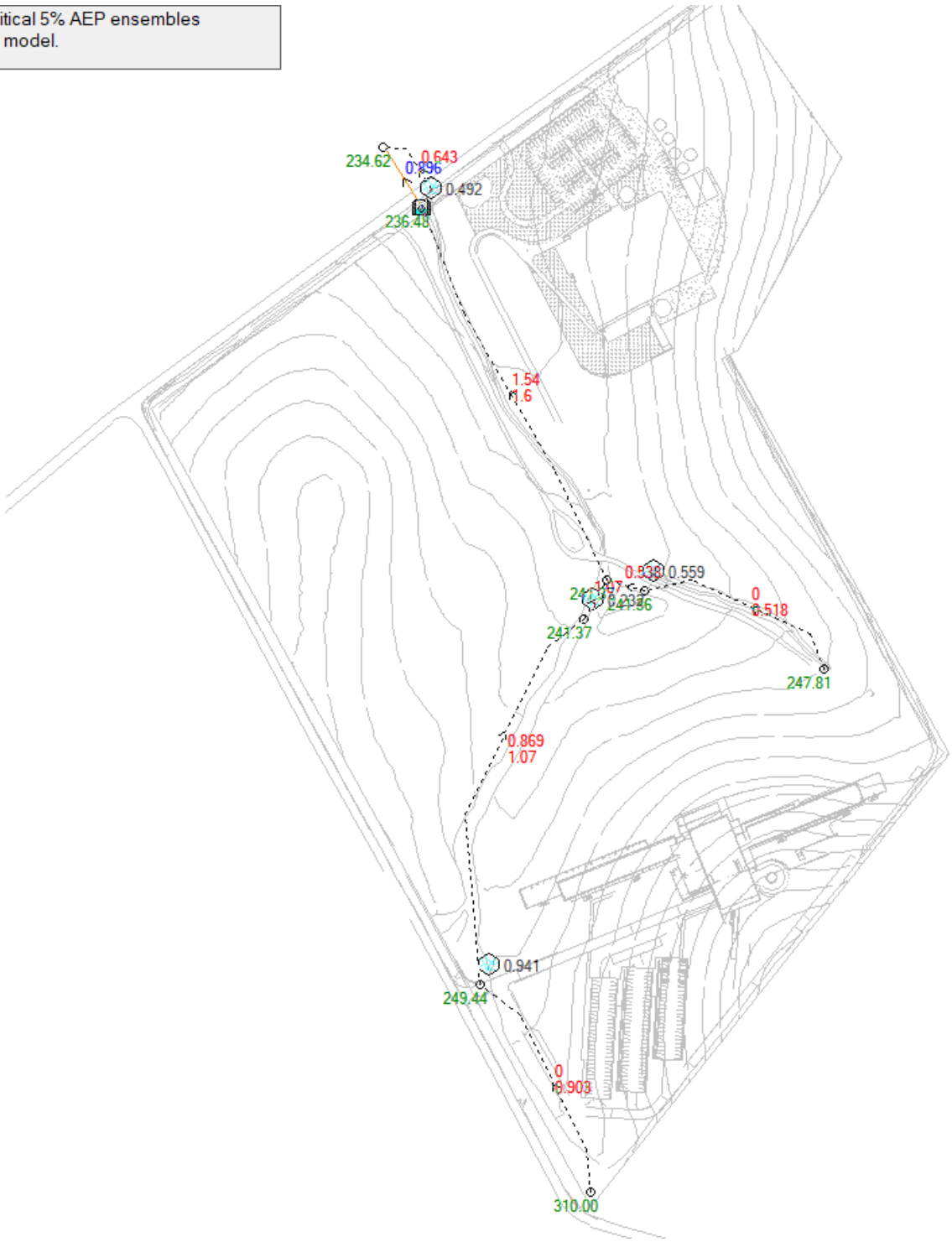
Name	Type	Dia (mm)	Safe Cover (m)	Cover (m)	
HOFF. CULVERT	Concrete, under roads, 1% minimum slope	600	0.6	-0.65	Unsafe

This model has no pipes with non-return valves

PRE-DEVELOPMENT DRAINS RESULTS

5% AEP RESULTS (MINOR RAINFALL EVENT)

Results for median storm in critical 5% AEP ensembles using Full Unsteady hydraulic model.



PRE-DEVELOPMENT DRAINS RESULTS - 5% AEP (MINOR)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	236.48		3.998		-0.05	0.643	Headwall height/system capacity
N1	234.62		3.56				
N4	241.37		4.093				
N5	249.44		0.992				
N6	247.81		0				
N7	310		0				
N8	241.37		2.172				
N9	241.36		0.585				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C1-1	0.492	0.012	0.48	4.5	36.2	0	5% AEP, 1.5 hour burst, Storm 4
C3-1	0.941	0.029	0.911	13.5	47.5	0	5% AEP, 1.5 hour burst, Storm 4
C2-1	0.232	0	0.232	0	34.1	0	5% AEP, 1.5 hour burst, Storm 4
C2-2	0.559	0	0.559	0	32	0	5% AEP, 1.5 hour burst, Storm 4

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.896	3.23	235.783	234.618	5% AEP, 2 hour burst, Storm 8

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
HOFF. OVERFLOW	0.643	0.643	0	0.027	0.05	13.91	2.07	5% AEP, 2 hour burst, Storm 8
CENTRAL CHANNEL	1.544	1.598	0.712	1.113	1.09	9.36	2.32	5% AEP, 1.5 hour burst, Storm 4
LOWER WESTERN CHANNEL	0.869	1.071	1.131	0.323	0.58	3.7	1.79	5% AEP, 1.5 hour burst, Storm 4
EASTERN CHANNEL	0	0.518	8.865	0.098	0.1	10.86	0.97	5% AEP, 1.5 hour burst, Storm 4
UPPER WESTERN CHANNEL	0	0.903	1.704	0.19	0.4	4.48	2.13	5% AEP, 2 hour burst, Storm 8
OF33	1.068	1.078	1.276	0.461	0.54	5.29	1.56	5% AEP, 1.5 hour burst, Storm 4
OF21	0.538	0.596	10.742	0.468	0.09	42.27	0.77	5% AEP, 1.5 hour burst, Storm 2

DETENTION BASIN DETAILS

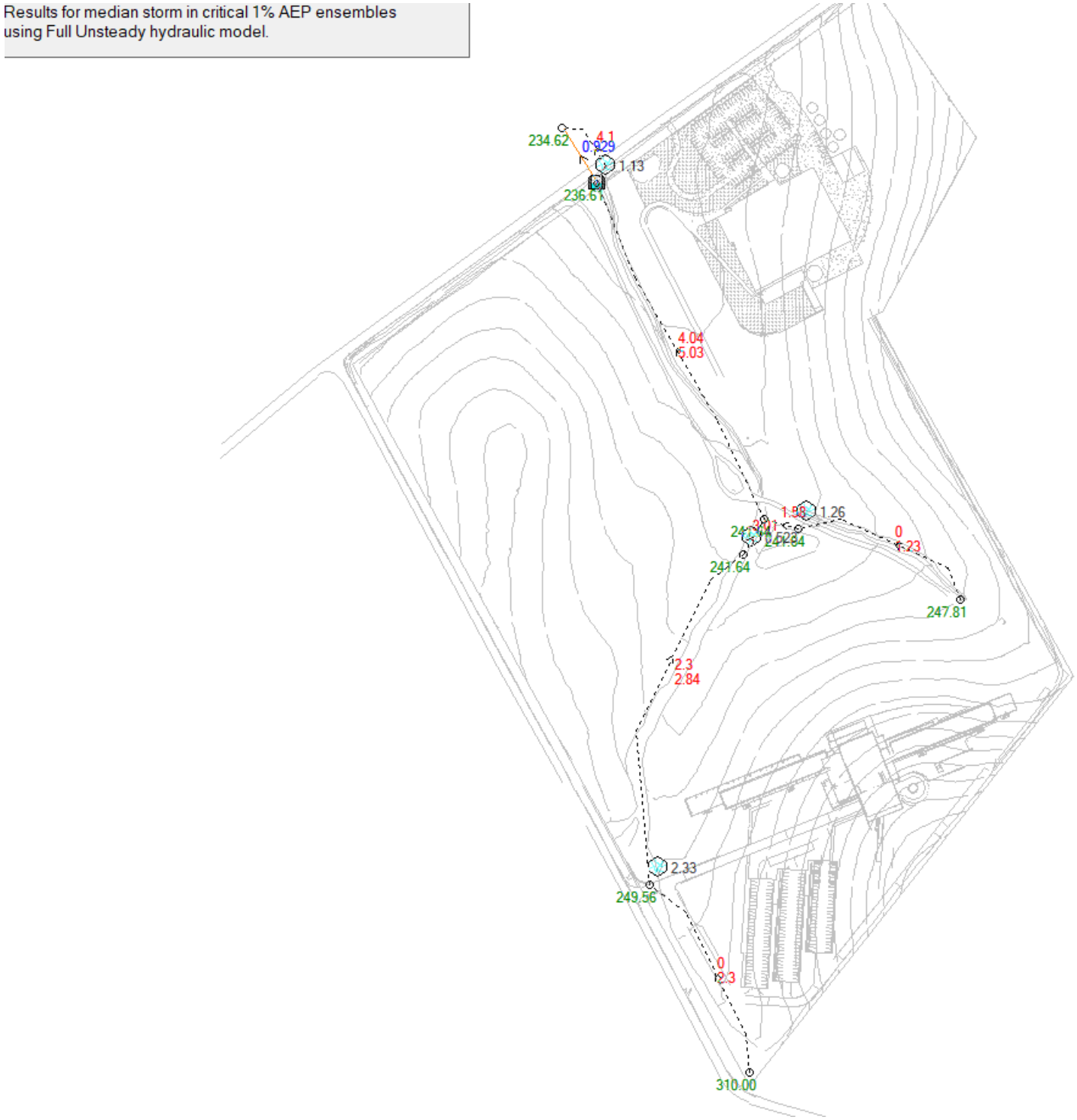
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level

Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Pre Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Pre Dev..drn run at 14:35:06 on 10/7/2025.

The maximum flow in these overflow routes is unsafe: HOFF. OVERFLOW, CENTRAL CHANNEL

PRE-DEVELOPMENT DRAINS RESULTS

1% AEP RESULTS (MAJOR RAINFALL EVENT)



PRE-DEVELOPMENT DRAINS RESULTS - 1% AEP (MAJOR)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	236.61		5.152		-0.18	4.099	Headwall height/system capacity
N1	234.62		4.804				
N4	241.64		5.16				
N5	249.56		1.369				
N6	247.81		0				
N7	310		0				
N8	241.64		2.899				
N9	241.64		0.708				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C1-1	1.127	0.057	1.119	4.5	36.2	0	1% AEP, 1.5 hour burst, Storm 6
C3-1	2.331	0.069	2.263	13.5	47.5	0	1% AEP, 1.5 hour burst, Storm 8
C2-1	0.523	0	0.523	0	34.1	0	1% AEP, 45 min burst, Storm 7
C2-2	1.262	0	1.262	0	32	0	1% AEP, 45 min burst, Storm 7

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.929	3.34	235.864	234.623	1% AEP, 1.5 hour burst, Storm 2

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
HOFF. OVERFLOW	4.099	4.099	3.222	0.073	0.27	20	3.8	1% AEP, 1.5 hour burst, Storm 2
CENTRAL CHANNEL	4.042	5.034	0.71	1.242	2.2	19.07	2.67	1% AEP, 1.5 hour burst, Storm 2
LOWER WESTERN CHANNEL	2.298	2.842	1.131	0.465	1.06	5.34	2.29	1% AEP, 1.5 hour burst, Storm 8
EASTERN CHANNEL	0	1.232	8.865	0.136	0.16	15.07	1.2	1% AEP, 45 min burst, Storm 5
UPPER WESTERN CHANNEL	0	2.3	1.704	0.27	0.72	6.36	2.68	1% AEP, 1.5 hour burst, Storm 8
OF33	3.015	3.004	1.276	0.741	0.53	44.46	0.95	1% AEP, 1.5 hour burst, Storm 8
OF21	1.579	1.518	10.742	0.71	0.17	54.9	1	1% AEP, 45 min burst, Storm 9

DETENTION BASIN DETAILS

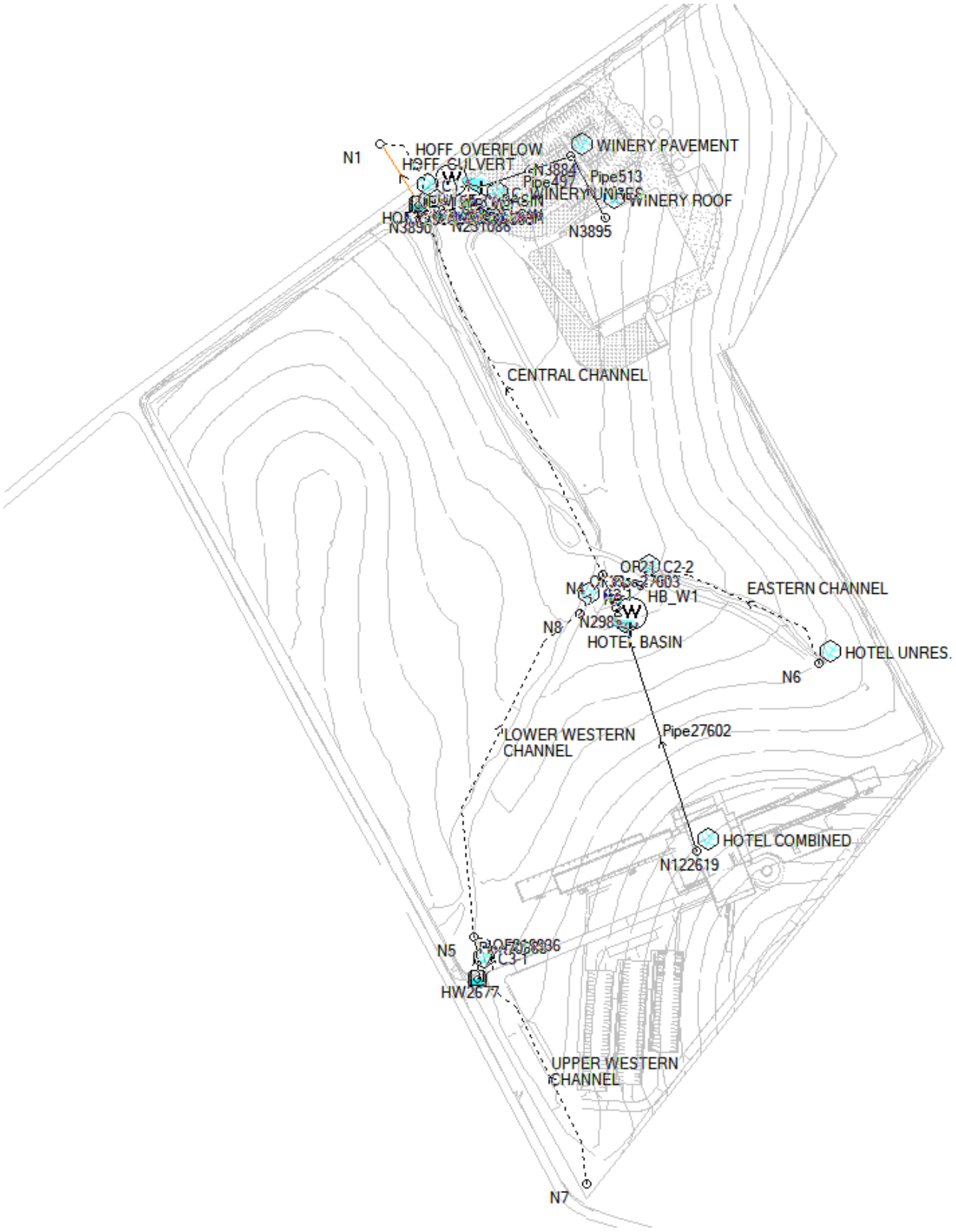
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level

Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Pre Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Pre Dev..drn run at 14:38:39 on 10/7/2025.

The maximum flow in these overflow routes is unsafe: OF33, UPPER WESTERN CHANNEL, LOWER WESTERN CHANNEL, CENTRAL CHANNEL

POST-DEVELOPMENT DRAINS RESULTS

MODEL LAYOUT



POST-DEVELOPMENT DRAINS MODEL DATA

PIT / NODE DETAILS

Version 15

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond Depth (m)	Major Safe Pond Depth (m)
HOFF. HEADWALL	Headwall				0.5	236.43		0		308571.737	6166450.033		6							
N1	Node					234.05		0		308545.938	6166490.881		5		No					
N6	Node							0		308838.325	6166143.671		13		No					
N7	Node							0		308683.472	6165796.521		26		No					
N8	Node							0		308678.993	6166177.234		31		No					
N9	Node							0		308719.304	6166195.896		32		No					
N3890	Node					234.69		0		308576.558	6166443.585		9791		No					
N3895	Node					241.5		0		308696.096	6166441.009		9879		No					
N3884	Node					241		0		308672.885	6166482.926		9780		No					
N122619	Node					257		0		308756.815	6166018.956		312996		No					
N231086	Node					238		0		308617.963	6166444.696		596187		No					
HW2677	Headwall				0.5	251		0		308611.145	6165933.506		716404							
N5	Node					247.18		0		308608.553	6165961.154		11		No					
N298573	Node					242.3		0		308703.166	6166180.908		767028		No					
N4	Node					240.9		0		308694.281	6166202.794		9		No					
N139662	Node					236.8		0		308586.692	6166449.698		358493		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length(m)	id
WINERY BASIN	236.5	450		None						308609.335	6166461.676	No		9782	
	238	850													
HOTEL BASIN	242	500		None						308709.002	6166167.259	No		312994	
	243	900													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%) %	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
C1-1	HOFF. HEADWALL	12.468	1	99	0	4.5		36.2	0									0				1
HOTEL UNRES.	N6	0.0752	60	40	0	20		22	0									0				1
C2-1	N8	4.6812	0	100	0	0		34.1	0									0				1
C2-2	N9	14.476	0	100	0	0		32	0									0				1
WINERY ROOF	N3895	0.555	100	0	0	5		0	0									0				1
WINERY PAVEMENT	N3884	1.0649	78	22	0	7		9	0									0				1
HOTEL COMBINED	N122619	1.718	92	8	0	8		10	0									0				1
C_WINERY UNRES.	N231086	0.1208	0	82	18	0		15	1									0				1
C3-1	HW2677	35.4	1	99	0	13.5		47.5	0									0				1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	RL (m)	etc (m)
HOFF. CULVERT	HOFF. HEADWALL	N1	20	234.45	234.05	2	Concrete, under roads, 1% minimum slope	600	600	0.013	Existing	1	HOFF. HEADWALL	0					
Pipe513	N3895	N3884	30	237.25	236.95	1	Concrete, under roads, 1% minimum slope	450	450	0.013	New	1	N3895	0					
Pipe497	N3884	WINERY BASIN	30	236.95	236.8	0.5	Concrete, under roads, 1% minimum slope	450	450	0.013	New	1	N3884	0					
Pipe27602	N122619	HOTEL BASIN	250	255.8	242.3	5.4	Concrete, under roads, 0.5% minimum slope	600	600	0.013	New	1	N122619	0					
Pipe70908	HW2677	N5	44	248.5	247.18	3	Concrete, under roads, 0.5% minimum slope	1350	1370	0.013	New	1	HW2677	0					
Pipe27603	N298573	N4	30	241.2	240.9	1	Concrete, under roads, 0.5% minimum slope	600	600	0.013	New	1	N298573	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of Service (m)	Chg (m)	Bottom Elev (m)	Height of Service (m)	Chg (m)	Bottom Elev (m)	Height of Service (m)	etc etc

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Storms (m)	SafeDepth Minor Storms (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id	U/S IL	D/S IL	Length (m)
HOFF. OVERFLOW	HOFF. HEADWALL	N1	0.2	236.43	30	2	BAROSSA HOFF. OVERFLOW	0.1	0	0.6	2	100	84	236.43	234.05	20
EASTERN CHANNEL	N6	N9	1.3				BAROSSA EASTERN CHANNEL	1	0.5	0.6	4.13	100	12	247.81	240.92	167
UPPER WESTERN CHANNEL	N7	HW2677	4.9				BAROSSA UPPER WESTERN CHANNEL	1	0.5	0.6	8.22	100	25	310	248.5	740
OF33	N8	N4	0.1				BAROSSA LOWER WESTERN CHANNEL	1	0.5	0.6	2	100	65	240.92	240.9	1
OF21	N9	N4	0.1				BAROSSA EASTERN CHANNEL	1	0.5	0.6	2	100	34	240.92	240.9	1
CENTRAL CHANNEL LOWER	N3890	HOFF. HEADWALL	0.1				BAROSSA CENTRAL CHANNEL	1	0.5	0.6	2.42	100	9794	234.69	234.45	10
OF183393	N231086	N3890	0.2				BAROSSA CENTRAL CHANNEL	1	0.5	0.6	1	0	596215	241	234.69	20
OF216836	HW2677	N5	0.3	251	4	2	Dummy Overflow 2	0.3	0	0.6	1	0	716829	251	247.18	44
LOWER WESTERN CHANNEL	N5	N8	2.1				BAROSSA LOWER WESTERN CHANNEL	1	0.5	0.6	2.94	100	10	247.18	240.92	234
CENTRAL CHANNEL	N4	N3890	2.3				BAROSSA CENTRAL CHANNEL	1	0.5	0.6	2.42	100	8	240.9	234.69	257
WB OVERFLOW	N139662	N3890	0.3				Swale with 1:4 sideslopes	0.45	0.3	1	0.5	0	211049	236.8	236.63	15

PIPE COVER DETAILS

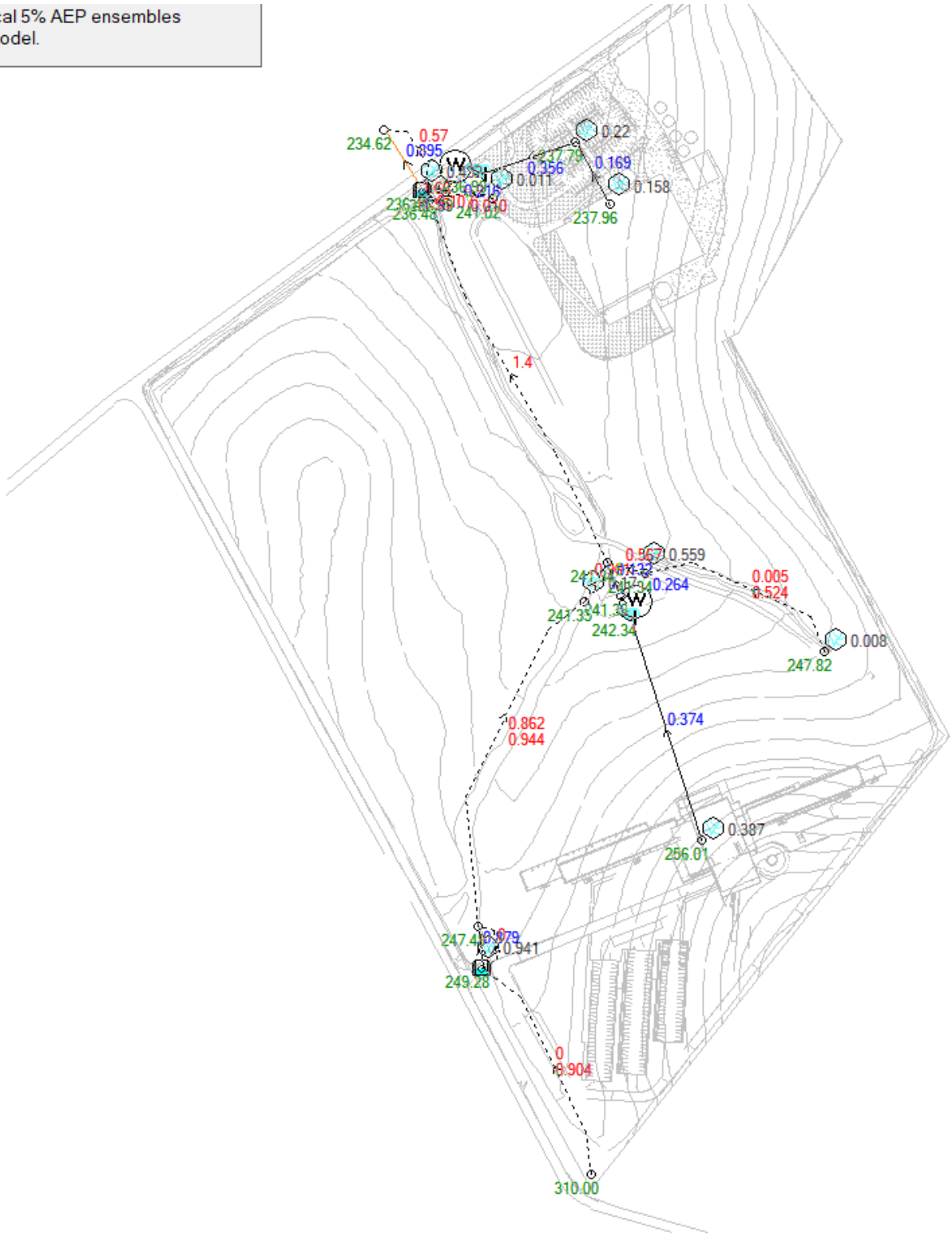
Name	Type	Dia (mm)	Safe Cover (m)	Cover (m)	
HOFF. CULVERT	Concrete, under roads, 1% minimum slope	600	0.6	-0.65	Unsafe
Pipe513	Concrete, under roads, 1% minimum slope	450	0.6	3.56	
Pipe497	Concrete, under roads, 1% minimum slope	450	0.6	-0.79	Unsafe
Pipe27602	Concrete, under roads, 0.5% minimum slope	600	0.6	-0.95	Unsafe
Pipe70908	Concrete, under roads, 0.5% minimum slope	1370	0.6	-1.46	Unsafe
Pipe27603	Concrete, under roads, 0.5% minimum slope	600	0.6	-0.65	Unsafe

This model has no pipes with non-return valves

POST-DEVELOPMENT DRAINS RESULTS

5% AEP RESULTS (MINOR RAINFALL EVENT)

Results for median storm in critical 5% AEP ensembles using Full Unsteady hydraulic model.



POST-DEVELOPMENT DRAINS RESULTS - 5% AEP (MINOR)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	236.48		3.636		-0.05	0.57	Headwall height/system capacity
N1	234.62		3.1				
N6	247.82		0.009				
N7	310		0				
N8	241.35		2.016				
N9	241.34		0.593				
N3890	236.48		3.226				
N3895	237.96		0.161				
N3884	237.79		0.246				
N122619	256.01		0.409				
N231086	241.02		0.018				
HW2677	249.28		0.992		1.72	0	None
N5	247.48		0				
N298573	241.39		0				
N4	241.34		3.646				
N139662	236.99		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C1-1	0.432	0.011	0.421	4.5		36.2	0 5% AEP, 1.5 hour burst, Storm 4
HOTEL UNRES.	0.008	0.007	0.001	20		22	0 5% AEP, 25 min burst, Storm 8
C2-1	0.17	0	0.17	0		34.1	0 5% AEP, 1.5 hour burst, Storm 4
C2-2	0.559	0	0.559	0		32	0 5% AEP, 1.5 hour burst, Storm 4
WINERY ROOF	0.158	0.158	0	5		0	0 5% AEP, 5 min burst, Storm 1
WINERY PAVEMENT	0.22	0.208	0.018	7		9	0 5% AEP, 10 min burst, Storm 1
HOTEL COMBINED	0.387	0.38	0.009	8		10	0 5% AEP, 10 min burst, Storm 1
C_WINERY UNRES.	0.011	0	0.011	0		15	1 5% AEP, 25 min burst, Storm 2
C3-1	0.941	0.029	0.911	13.5		47.5	0 5% AEP, 1.5 hour burst, Storm 4

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.895	3.23	235.781	234.618	5% AEP, 3 hour burst, Storm 1
Pipe513	0.169	1.06	237.956	237.788	5% AEP, 5 min burst, Storm 1
Pipe497	0.356	2.39	237.788	237.197	5% AEP, 10 min burst, Storm 5
Pipe27602	0.374	4.25	256.01	242.51	5% AEP, 10 min burst, Storm 5
Pipe70908	0.879	3.6	249.099	247.485	5% AEP, 3 hour burst, Storm 1
Pipe27603	0.132	1.68	241.394	241.344	5% AEP, 45 min burst, Storm 6

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
HOFF. OVERFLOW	0.57	0.568	0	0.025	0.05	13.67	2	5% AEP, 3 hour burst, Storm 1
EASTERN CHANNEL	0.005	0.524	8.865	0.098	0.1	10.86	0.98	5% AEP, 1.5 hour burst, Storm 4
UPPER WESTERN CHANNEL	0	0.904	1.704	0.19	0.4	4.47	2.13	5% AEP, 2 hour burst, Storm 8
OF33	0.961	0.965	1.276	0.423	0.5	4.86	1.52	5% AEP, 2 hour burst, Storm 8
OF21	0.567	0.611	10.742	0.438	0.09	39.84	0.77	5% AEP, 1.5 hour burst, Storm 4
CENTRAL CHANNEL LOWER	1.661	1.95	0.712	1.97	1.27	74.88	2.44	5% AEP, 2 hour burst, Storm 1
WB_W1	0.216	0	0	0.5	0.01	30	0.02	5% AEP, 1.5 hour burst, Storm 7
HB_W1	0.264	0	0	0.5	0.01	30	0.02	5% AEP, 25 min burst, Storm 4
OF183393	0.01	0.01	0.827	0.037	0.05	0.41	1.38	5% AEP, 25 min burst, Storm 8
OF216836	0	0	0	0	0	0	0	
LOWER WESTERN CHANNEL	0.862	0.944	1.131	0.313	0.53	3.59	1.68	5% AEP, 2 hour burst, Storm 8
CENTRAL CHANNEL	1.401	1.286	0.712	0.876	0.99	5.85	2.23	5% AEP, 1.5 hour burst, Storm 4
WB OVERFLOW	0.107	0.107	0.235	0.171	0.16	1.37	0.92	5% AEP, 1.5 hour burst, Storm 2

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
WINERY BASIN	236.99	249.6	0.216	0	0.216
HOTEL BASIN	242.34	187.5	0.264	0	0.264

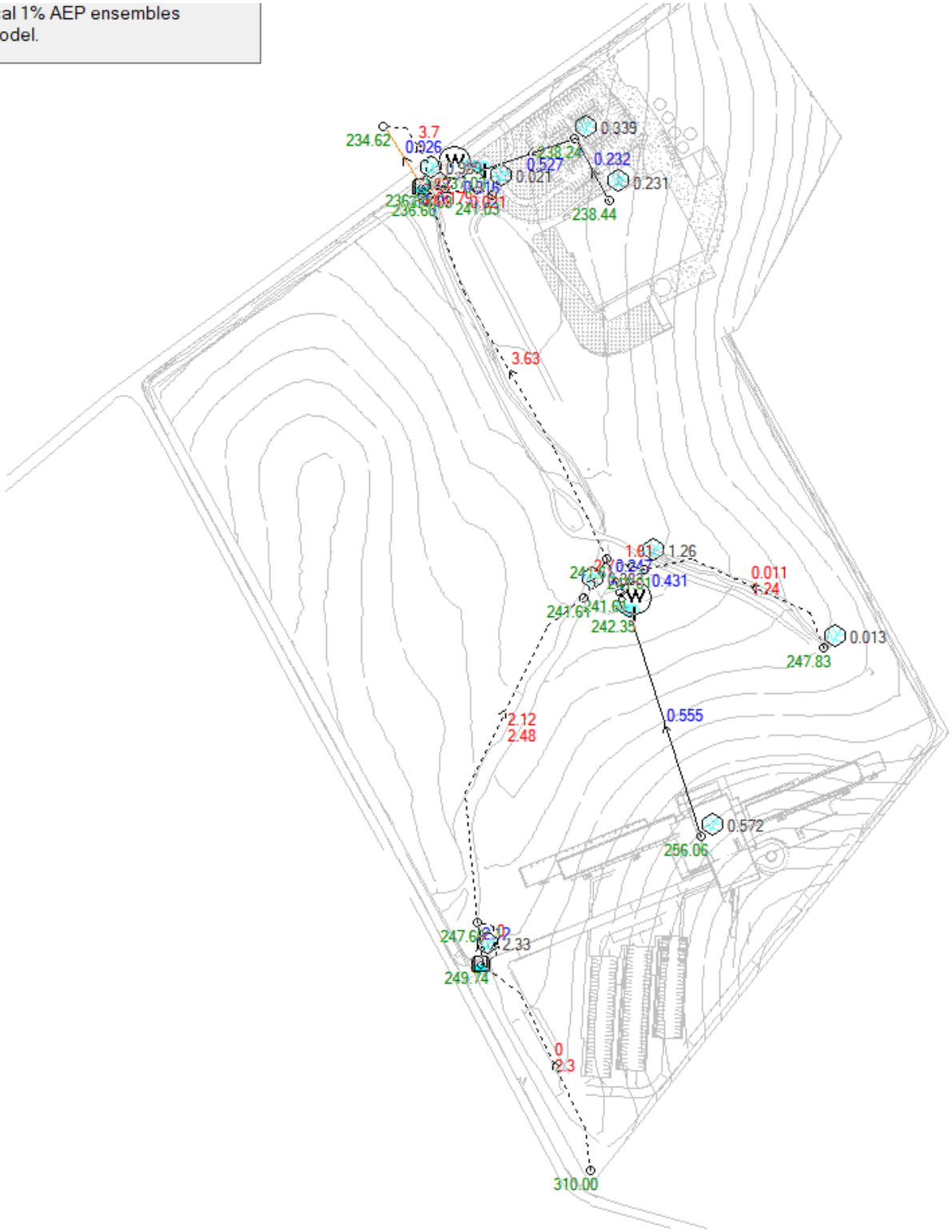
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev..drn run at 08:58:30 on 29/8/2025.

The maximum flow in these overflow routes is unsafe: CENTRAL CHANNEL LOWER, HOFF. OVERFLOW, CENTRAL CHANNEL

POST-DEVELOPMENT DRAINS RESULTS

1% AEP RESULTS (MAJOR RAINFALL EVENT)

Results for median storm in critical 1% AEP ensembles using Full Unsteady hydraulic model.



POST-DEVELOPMENT DRAINS RESULTS - 1% AEP (MAJOR)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	236.6		4.862		-0.17	3.698	Headwall height/system capacity
N1	234.62		4.411				
N6	247.83		0.013				
N7	310		0				
N8	241.61		2.674				
N9	241.61		0.715				
N3890	236.6		4.33				
N3895	238.44		0.258				
N3884	238.24		0.367				
N122619	256.06		0.602				
N231086	241.03		0.023				
HW2677	249.74		1.369		1.26	0	None
N5	247.6		0				
N298573	241.61		0				
N4	241.61		4.831				
N139662	237.03		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)		Due to Storm
C1-1	0.989	0.05	0.982	4.5		36.2	0	1% AEP, 1.5 hour burst, Storm 6
HOTEL UNRES.	0.013	0.01	0.003	20		22	0	1% AEP, 20 min burst, Storm 10
C2-1	0.383	0	0.383	0		34.1	0	1% AEP, 45 min burst, Storm 7
C2-2	1.262	0	1.262	0		32	0	1% AEP, 45 min burst, Storm 7
WINERY ROOF	0.231	0.231	0	5		0	0	1% AEP, 5 min burst, Storm 1
WINERY PAVEMENT	0.339	0.305	0.044	7		9	0	1% AEP, 10 min burst, Storm 3
HOTEL COMBINED	0.572	0.553	0.023	8		10	0	1% AEP, 10 min burst, Storm 3
C_WINERY UNRES.	0.021	0	0.021	0		15	1	1% AEP, 20 min burst, Storm 7
C3-1	2.331	0.069	2.263	13.5		47.5	0	1% AEP, 1.5 hour burst, Storm 8

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.926	3.33	235.856	234.622	1% AEP, 1.5 hour burst, Storm 2
Pipe513	0.232	1.46	238.437	238.244	1% AEP, 5 min burst, Storm 1
Pipe497	0.527	3.32	238.244	237.245	1% AEP, 10 min burst, Storm 3
Pipe27602	0.555	4.73	256.06	242.56	1% AEP, 10 min burst, Storm 3
Pipe70908	2.122	5.3	249.268	247.614	1% AEP, 1.5 hour burst, Storm 1
Pipe27603	0.247	1.19	241.614	241.611	1% AEP, 30 min burst, Storm 4

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV		Max Width	Max V	Due to Storm
HOFF. OVERFLOW	3.698	3.699	3.222	0.07		0.25	19.59	3.68	1% AEP, 1.5 hour burst, Storm 2
EASTERN CHANNEL	0.011	1.243	8.865	0.136		0.17	15.07	1.21	1% AEP, 45 min burst, Storm 5
UPPER WESTERN CHANNEL	0	2.3	1.704	0.27		0.73	6.35	2.7	1% AEP, 1.5 hour burst, Storm 1
OF33	2.697	2.645	1.276	0.71		0.96	42.3	1.96	1% AEP, 1.5 hour burst, Storm 1
OF21	1.612	1.508	10.742	0.703		0.17	54.57	1	1% AEP, 1.5 hour burst, Storm 2
CENTRAL CHANNEL LOWER	3.831	4.645	0.712	2.068		2.1	82.63	2.63	1% AEP, 1.5 hour burst, Storm 2
WB_W1	0.316	0	0	0.5		0.01	30	0.03	1% AEP, 1 hour burst, Storm 5
HB_W1	0.431	0	0	0.5		0.02	30	0.04	1% AEP, 15 min burst, Storm 4
OF183393	0.021	0.021	0.827	0.047		0.08	0.53	1.67	1% AEP, 20 min burst, Storm 2
OF216836	0	0	11.081	0		0	0	0	
LOWER WESTERN CHANNEL	2.12	2.483	1.131	0.45		0.96	5.16	2.14	1% AEP, 1.5 hour burst, Storm 1
CENTRAL CHANNEL	3.626	3.637	0.712	1.027		1.9	7.58	2.69	1% AEP, 1.5 hour burst, Storm 5
WB OVERFLOW	0.179	0.179	0.692	0.21		0.21	1.68	1.01	1% AEP, 1 hour burst, Storm 10

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level	
WINERY BASIN	237.03	272.8	0.316	0		0.316
HOTEL BASIN	242.35	195.9	0.431	0		0.431

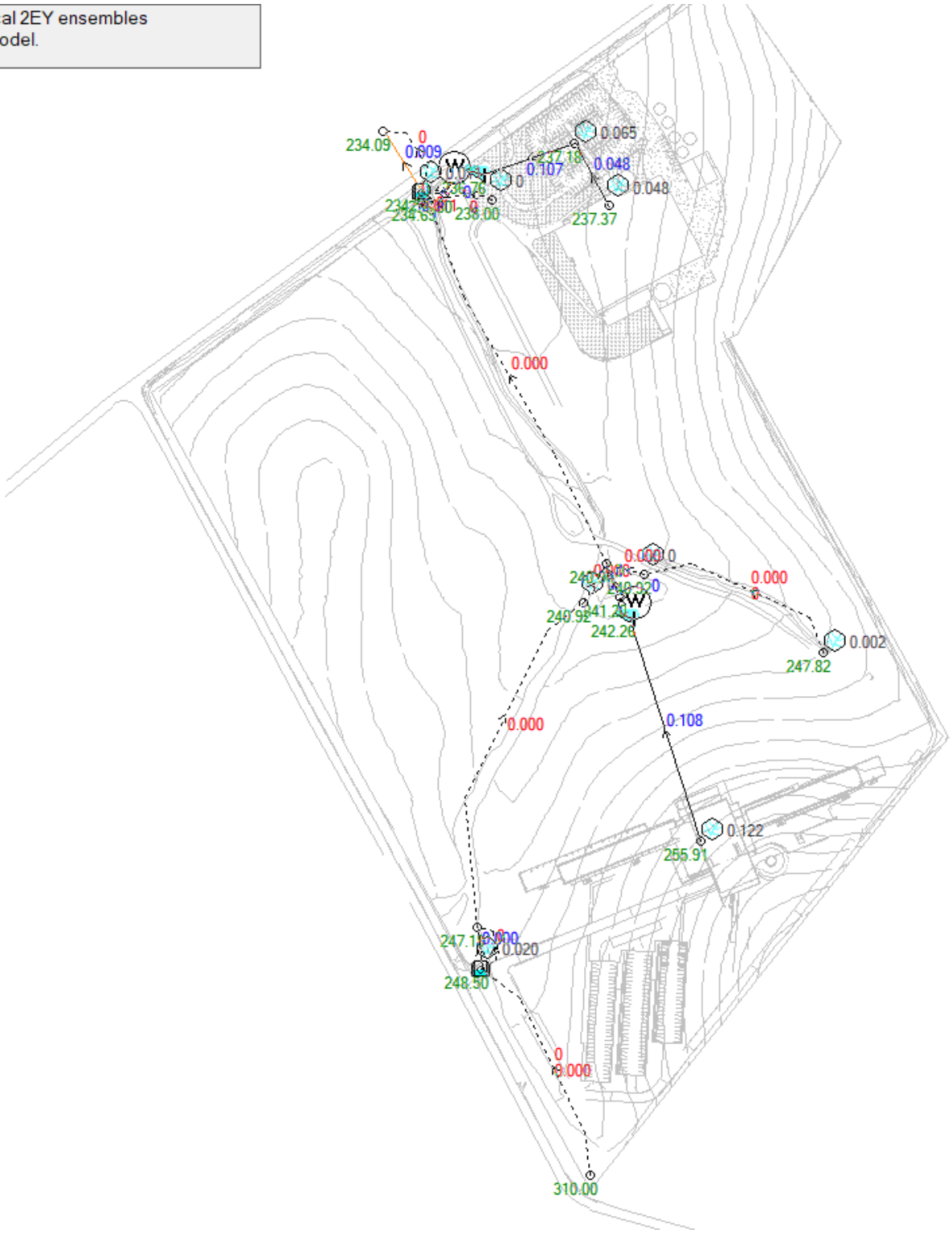
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev..drn run at 09:01:03 on 29/8/2025.

The maximum flow in these overflow routes is unsafe: CENTRAL CHANNEL LOWER, OF33, UPPER WESTERN CHANNEL, LOWER WESTERN CHANNEL, CENTRAL CHANNEL

POST-DEVELOPMENT DRAINS RESULTS

2EY RESULTS UP TO 1hour RAINFALL EVENT
(DEMONSTRATION OF BASIN RETENTION CAPACITY)

Results for median storm in critical 2EY ensembles
using Full Unsteady hydraulic model.



POST-DEVELOPMENT DRAINS RESULTS - 2EY (BASIN CAPACITY)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	234.55		0.007		1.88	0	None
N1	234.09		0				
N6	247.82		0.002				
N7	310		0				
N8	240.92		0				
N9	240.92		0				
N3890	234.69		0				
N3895	237.37		0.061				
N3884	237.18		0.076				
N122619	255.91		0.135				
N231086	238		0				
HW2677	248.5		0.012		2.5	0	None
N5	247.18		0				
N298573	241.2		0				
N4	240.9		0				
N139662	236.8		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C1-1	0.011	0.011	0	4.5	36.2	0	2EY AEP, 10 min burst, Storm 8
HOTEL UNRES.	0.002	0.002	0	20	22	0	2EY AEP, 25 min burst, Storm 3
C2-1	0	0	0	0	34.1	0	2EY AEP, 5 min burst, Storm 1
C2-2	0	0	0	0	32	0	2EY AEP, 5 min burst, Storm 1
WINERY ROOF	0.048	0.048	0	5	0	0	2EY AEP, 10 min burst, Storm 3
WINERY PAVEMENT	0.065	0.065	0	7	9	0	2EY AEP, 10 min burst, Storm 9
HOTEL COMBINED	0.122	0.122	0	8	10	0	2EY AEP, 10 min burst, Storm 9
C_WINERY UNRES.	0	0	0	0	15	1	2EY AEP, 5 min burst, Storm 1
C3-1	0.02	0.02	0	13.5	47.5	0	2EY AEP, 15 min burst, Storm 10

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.009	1	234.553	234.093	2EY AEP, 10 min burst, Storm 9
Pipe513	0.048	1.33	237.374	237.182	2EY AEP, 10 min burst, Storm 3
Pipe497	0.107	1.33	237.182	237.027	2EY AEP, 10 min burst, Storm 9
Pipe27602	0.108	3.36	255.912	242.403	2EY AEP, 15 min burst, Storm 3
Pipe70908	0	0	248.503	247.18	2EY AEP, 45 min burst, Storm 10
Pipe27603	0	0	241.2	240.9	2EY AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
HOFF. OVERFLOW	0	0	0	0	0	0	0	
EASTERN CHANNEL	0	0	8.865	0	0	0	0	
UPPER WESTERN CHANNEL	0	0	1.704	0.01	0	0.24	0	2EY AEP, 1 hour burst, Storm 3
OF33	0	0	1.276	0	0	0	0	
OF21	0	0	10.742	0	0	0	0	
CENTRAL CHANNEL LOWER	0	0.011	0.712	0.06	0.03	0.67	0.71	2EY AEP, 10 min burst, Storm 3
WB_W1	0	0	0	0	0	0	0	
HB_W1	0	0	0	0	0	0	0	
OF183393	0	0	0.827	0	0	0	0	
OF216836	0	0	0	0	0	0	0	
LOWER WESTERN CHANNEL	0	0	1.131	0	0	0	0	
CENTRAL CHANNEL	0	0	0.712	0	0	0	0	
WB OVERFLOW	0	0	0.235	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
WINERY BASIN	236.76	125.8	0	0	0
HOTEL BASIN	242.26	143.1	0	0	0

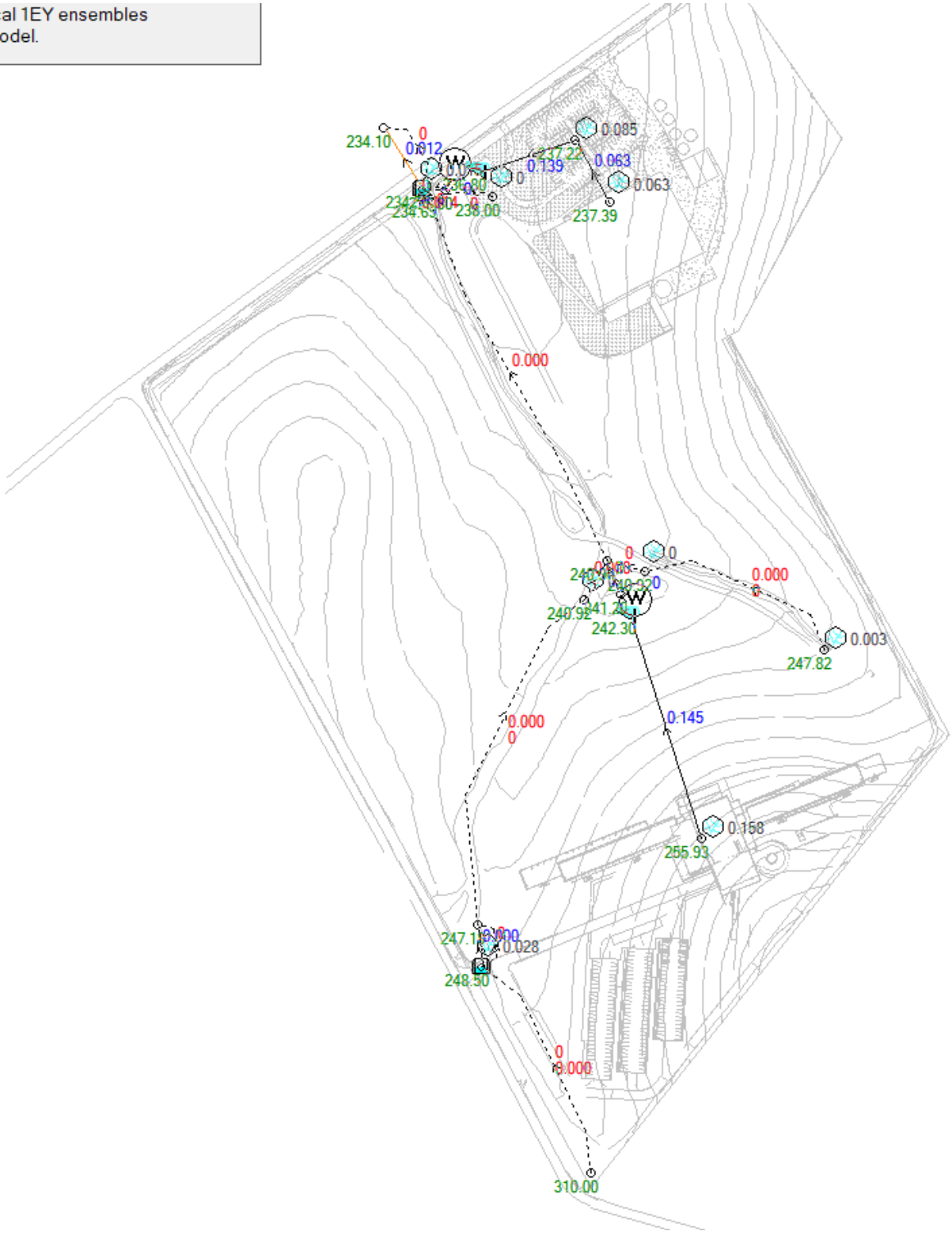
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev..drn run at 08:55:52 on 29/8/2025.

Flows were safe in all overflow routes.

POST-DEVELOPMENT DRAINS RESULTS

1EY RESULTS UP TO 45min RAINFALL EVENT
(DEMONSTRATION OF BASIN RETENTION CAPACITY)

Results for median storm in critical 1EY ensembles
using Full Unsteady hydraulic model.



POST-DEVELOPMENT DRAINS RESULTS - 1EY (BASIN CAPACITY)

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
HOFF. HEADWALL	234.57		0.009		1.86	0	None
N1	234.1		0				
N6	247.82		0.003				
N7	310		0				
N8	240.92		0				
N9	240.92		0				
N3890	234.69		0				
N3895	237.39		0.078				
N3884	237.22		0.098				
N122619	255.93		0.173				
N231086	238		0				
HW2677	248.5		0.015		2.5	0	None
N5	247.18		0				
N298573	241.2		0				
N4	240.9		0				
N139662	236.8		0				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C1-1	0.015	0.015	0	4.5	36.2	0	1EY AEP, 5 min burst, Storm 1
HOTEL UNRES.	0.003	0.003	0	20	22	0	1EY AEP, 25 min burst, Storm 3
C2-1	0	0	0	0	34.1	0	1EY AEP, 5 min burst, Storm 1
C2-2	0	0	0	0	32	0	1EY AEP, 5 min burst, Storm 1
WINERY ROOF	0.063	0.063	0	5	0	0	1EY AEP, 10 min burst, Storm 8
WINERY PAVEMENT	0.085	0.085	0	7	9	0	1EY AEP, 10 min burst, Storm 3
HOTEL COMBINED	0.158	0.158	0	8	10	0	1EY AEP, 10 min burst, Storm 9
C_WINERY UNRES.	0	0	0	0	15	1	1EY AEP, 5 min burst, Storm 1
C3-1	0.028	0.028	0	13.5	47.5	0	1EY AEP, 15 min burst, Storm 5

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
HOFF. CULVERT	0.012	0.98	234.569	234.104	1EY AEP, 10 min burst, Storm 3
Pipe513	0.063	1.44	237.393	237.221	1EY AEP, 10 min burst, Storm 8
Pipe497	0.139	1.46	237.221	237.059	1EY AEP, 10 min burst, Storm 9
Pipe27602	0.145	3.56	255.929	242.421	1EY AEP, 10 min burst, Storm 9
Pipe70908	0	0	248.503	247.18	1EY AEP, 15 min burst, Storm 10
Pipe27603	0	0	241.2	240.9	1EY AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
HOFF. OVERFLOW	0	0	0	0	0	0	0	
EASTERN CHANNEL	0	0	8.865	0	0	0	0	
UPPER WESTERN CHANNEL	0	0	1.704	0.011	0	0.27	0	1EY AEP, 45 min burst, Storm 2
OF33	0	0	1.276	0	0	0	0	
OF21	0	0	10.742	0	0	0	0	
CENTRAL CHANNEL LOWER	0	0.014	0.712	0.067	0.04	0.75	0.69	1EY AEP, 5 min burst, Storm 1
WB_W1	0	0	0	0	0	0	0	
HB_W1	0	0	0	0	0	0	0	
OF183393	0	0	0.827	0	0	0	0	
OF216836	0	0	0	0	0	0	0	
LOWER WESTERN CHANNEL	0	0	1.131	0	0	0	0	
CENTRAL CHANNEL	0	0	0.712	0	0	0	0	
WB OVERFLOW	0	0	0.235	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
WINERY BASIN	236.8	143.9	0	0	0
HOTEL BASIN	242.3	163.6	0	0	0

Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev.
Run Log for DRAINS v2025.01.9147.24925 - A2024-14356_Post Dev..drn run at 08:54:34 on 29/8/2025.

Flows were safe in all overflow routes.

Appendix E:
Preliminary Bulk Earthworks Plans

CUT / FILL DEPTH TABLE

MIN. DEPTH (m)		MAX DEPTH (m)	COLOUR
-5.00	to	-4.50	
-4.50	to	-4.00	
-4.00	to	-3.50	
-3.50	to	-3.00	
-3.00	to	-2.50	
-2.50	to	-2.00	
-2.00	to	-1.50	
-1.50	to	-1.00	
-1.00	to	-0.50	
-0.50	to	0.00	
0.00	to	0.50	
0.50	to	1.00	
1.00	to	1.50	
1.50	to	2.00	
2.00	to	2.50	
2.50	to	3.00	
3.00	to	3.50	
3.50	to	4.00	
4.00	to	4.50	
4.50	to	5.00	
5.00	to	5.50	
5.50	to	6.00	
6.00	to	6.50	
6.50	to	7.00	
7.00	to	7.50	
7.50	to	8.00	
8.00	to	8.50	

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE

CLIENT

STRATEGIC ALLIANCE

mlei
CONSULTING ENGINEERS
29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS

LEGEND

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - HTL	C002	A

HOFFNUNGSTHAL ROAD

RL: 236.50

WINERY
FFL: 241.50

EARTHWORKS VOLUME (m³)	
CUT	-27,782.575
FILL	17,432.791
BALANCE	-10,349.784

NOTE: EARTHWORKS VOLUMES DO NOT CONSIDER TAKEOFFS FROM PAVEMENTS,TRENCHING OR STRIPPING.

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE
1:500 @ A1
0 5 10 20 30m

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SOUTHERN BAROSSA
WINERY
PROPOSED SITE CIVIL WORKS
EARTHWORK LAYOUT PLAN

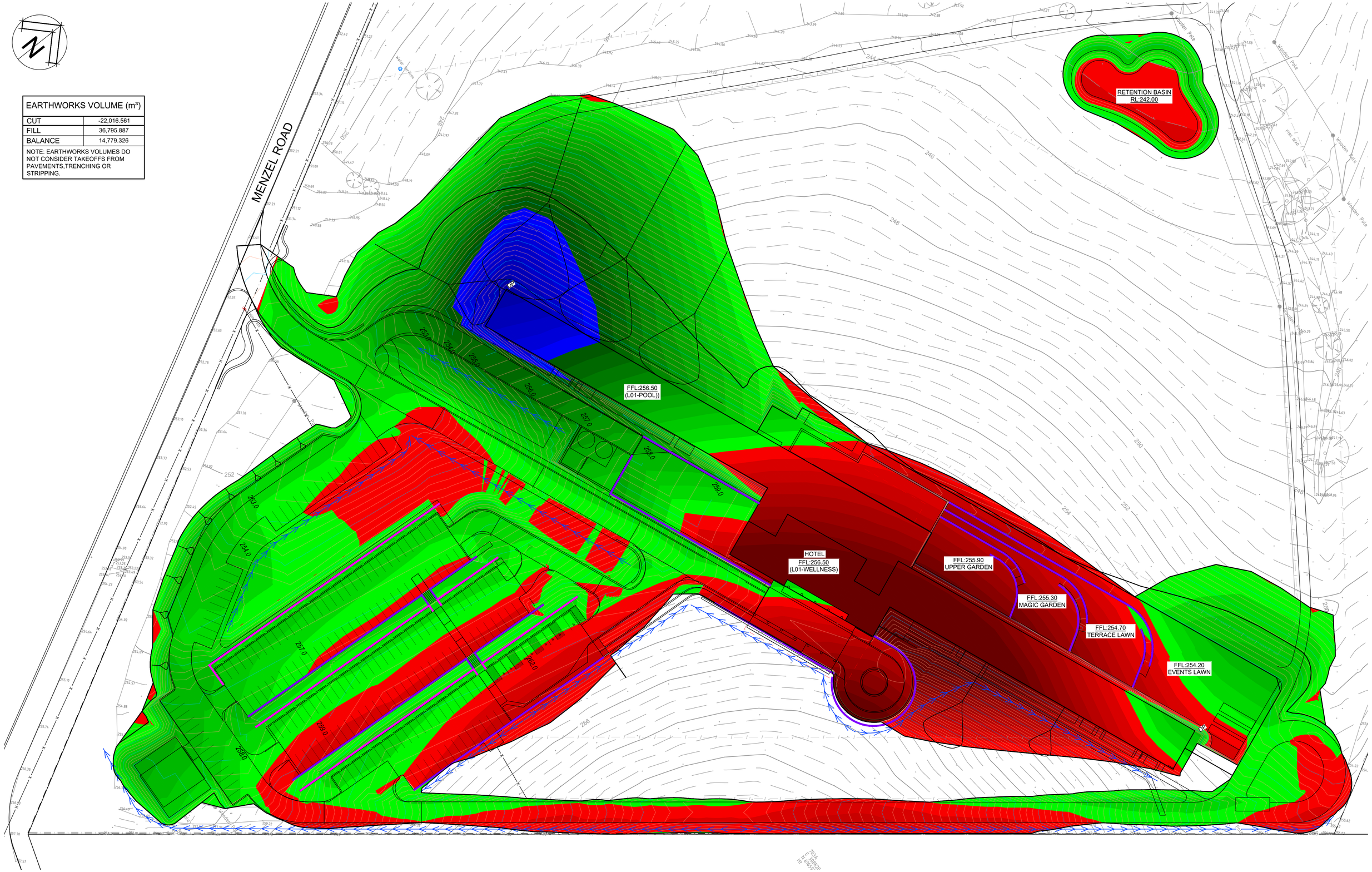
ISSUED FOR INFORMATION
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - WNY	C003	A

EARTHWORKS VOLUME (m³)	
CUT	-22,016.561
FILL	36,795.887
BALANCE	14,779.326

NOTE: EARTHWORKS VOLUMES DO NOT CONSIDER TAKEOFFS FROM PAVEMENTS,TRENCHING OR STRIPPING.



ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE: 1:500 @ A1 (0, 5, 10, 20, 30m)

CLIENT: **STRATEGIC ALLIANCE**

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SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
EARTHWORK LAYOUT PLAN

ISSUED FOR INFORMATION
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - HTL	C005	A

D:\Nhat Minh\QT Vietnam Ltd Co\OS3 - MLEI\ML25004 A2024-14356 Southern Barossa Hotel\03. Civil\01. DA\Rev A\02. Acad\Hotel\A2024-14356 - HTL-C006.dwg Aug 19, 2025 - 1:52PM

CUT / FILL DEPTH TABLE

MIN. DEPTH (m)		MAX DEPTH (m)	COLOUR
-5.00	to	-4.50	
-4.50	to	-4.00	
-4.00	to	-3.50	
-3.50	to	-3.00	
-3.00	to	-2.50	
-2.50	to	-2.00	
-2.00	to	-1.50	
-1.50	to	-1.00	
-1.00	to	-0.50	
-0.50	to	0.00	
0.00	to	0.50	
0.50	to	1.00	
1.00	to	1.50	
1.50	to	2.00	
2.00	to	2.50	
2.50	to	3.00	
3.00	to	3.50	
3.50	to	4.00	
4.00	to	4.50	
4.50	to	5.00	
5.00	to	5.50	
5.50	to	6.00	
6.00	to	6.50	
6.50	to	7.00	
7.00	to	7.50	
7.50	to	8.00	
8.00	to	8.50	

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE

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SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS

LEGEND

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NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - HTL	C002	A

HOFFNUNGSTHAL ROAD

RL: 236.50

WINERY
FFL: 241.50

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CUT	-27,782.575
FILL	17,432.791
BALANCE	-10,349.784

NOTE: EARTHWORKS VOLUMES DO NOT CONSIDER TAKEOFFS FROM PAVEMENTS,TRENCHING OR STRIPPING.

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE
1:500 @ A1
0 5 10 20 30m

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SOUTHERN BAROSSA
WINERY
PROPOSED SITE CIVIL WORKS
EARTHWORK LAYOUT PLAN

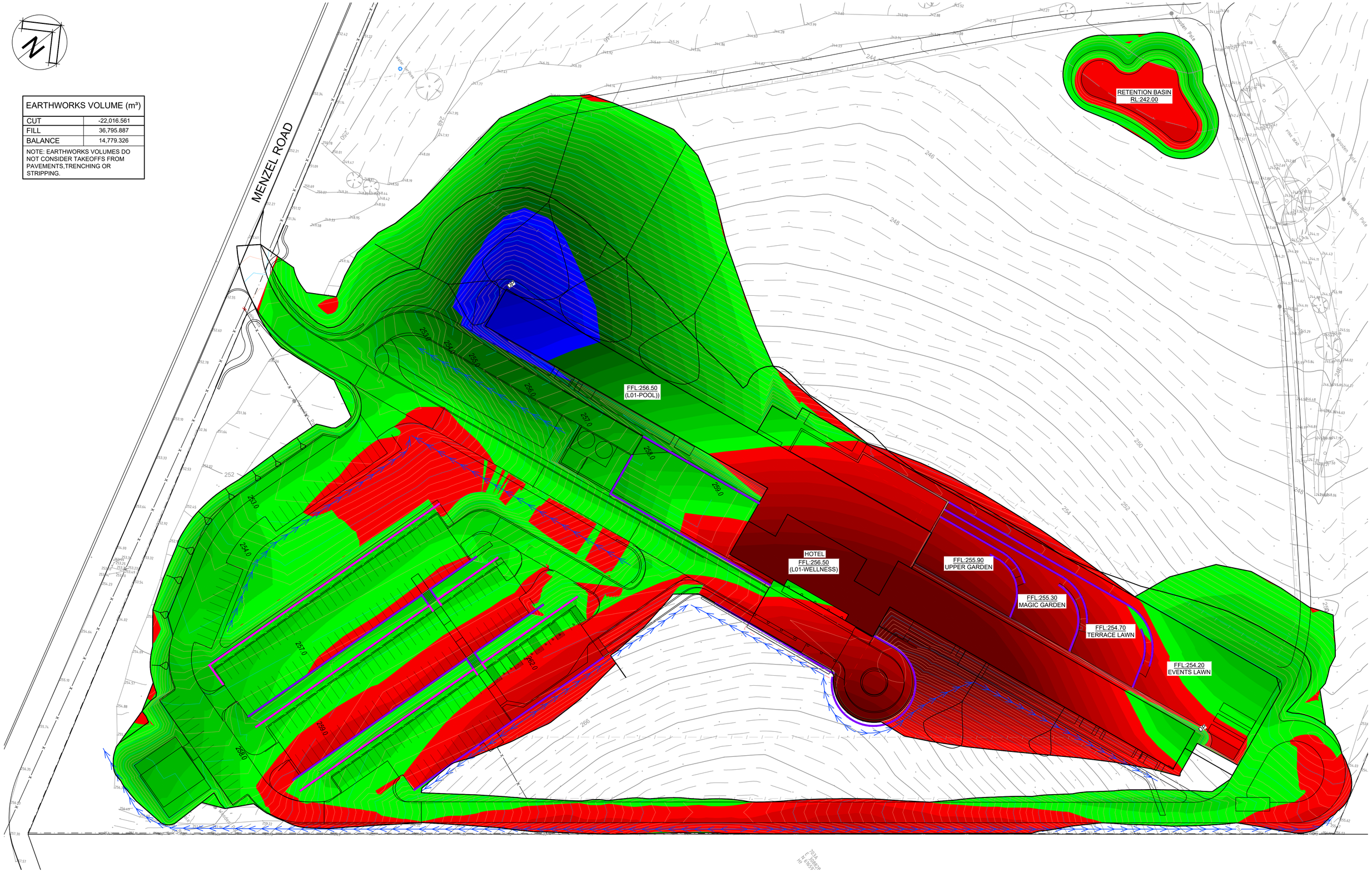
ISSUED FOR INFORMATION
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - WNY	C003	A

EARTHWORKS VOLUME (m³)	
CUT	-22,016.561
FILL	36,795.887
BALANCE	14,779.326

NOTE: EARTHWORKS VOLUMES DO NOT CONSIDER TAKEOFFS FROM PAVEMENTS,TRENCHING OR STRIPPING.



ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR INFORMATION	TH	TM	FB	FB	14.08.2025

SCALE: 1:500 @ A1 (0, 5, 10, 20, 30m)

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SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
EARTHWORK LAYOUT PLAN

ISSUED FOR INFORMATION
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
TH	TM

DWG No.	SHEET	REV
A2024-14356 - HTL	C005	A

D:\Nhat Minh\QT Vietnam Ltd Co\OS3 - MLEI\ML25004 A2024-14356 Southern Barossa Hotel\03. Civil\01. DA\Rev A\02. Acad\Hotel\A2024-14356 - HTL-C006.dwg Aug 19, 2025 - 1:52PM

GENERAL NOTES

1. THESE DRAWINGS ARE NOT CADASTRAL PLANS AND MUST NOT BE USED IN DETERMINING PRECISE DETAILS WITH RESPECT TO BOUNDARIES.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
4. ALL LEVELS ARE EXPRESSED IN METRES.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS.
6. REFER TO DETAIL DRAWINGS FOR ALL UNDERGROUND PIPEWORK AND DETAILS.
7. SPOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT AND EXCESS NOT USED IS TO BE REMOVED FROM SITE BY CONTRACTOR.
8. THESE DRAWINGS ARE A SCHEMATIC REPRESENTATION OF SERVICES INFORMATION CONTAINED IN DRAWINGS ISSUED BY THE RELEVANT AUTHORITIES.

   THE INFORMATION CONTAINED IN THESE DRAWINGS IS INDICATIVE ONLY, AND REFERENCE SHOULD BE MADE TO THE RELEVANT AUTHORITIES DOCUMENTATION TO CONFIRM ACCURACY AND COMPLETENESS.

   WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY CONTRACTORS OTHER THAN THE AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
9. THE FINISHED SURFACE SHALL BE EVENLY GRADED BETWEEN DESIGN SURFACE LEVELS.
10. DEMOLISH AND REMOVE ALL EXISTING INSTALLATIONS WHICH ARE TO BE AFFECTED BY NEW WORKS. EXTENT OF DEMOLITION TO BE CONFIRMED ON SITE WITH THE SUPERINTENDENT PRIOR TO WORKS.
11. CONTRACTOR TO ADJUST LIDS OF EXISTING SERVICE PITS TO MATCH FINISHED SURFACE LEVEL. PROVIDE HEAVY DUTY COVER IF IN PAVED AREA TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY, IF APPLICABLE. RELOCATE SERVICE AS REQUIRED.
12. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT S.A.A. CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

COMPACTION NOTES:

1. PRIOR TO THE COMMENCEMENT OF ANY FILLING OPERATION, THE ENTIRE SITE AREA IS TO BE COMPACTED AND TESTED IN ACCORDANCE WITH AS1289 TO PRODUCE 98.0% STANDARD COMPACTION AT THE FINAL EXCAVATED NATURAL SURFACE LEVEL AND AT 250mm BELOW THE EXCAVATED NATURAL SURFACE LEVEL.
2. TESTING SHALL BE EVENLY SPACED OVER THE ENTIRE SITE, AND AT RANDOM LOCATIONS. TEST RESULTS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

PAVEMENT NOTES

1. ALL SET OUT DIMENSIONS AND LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF THE WORKS.
2. REFER TO RELEVANT CIVIL DRAWINGS FOR GRADING AND SERVICES.

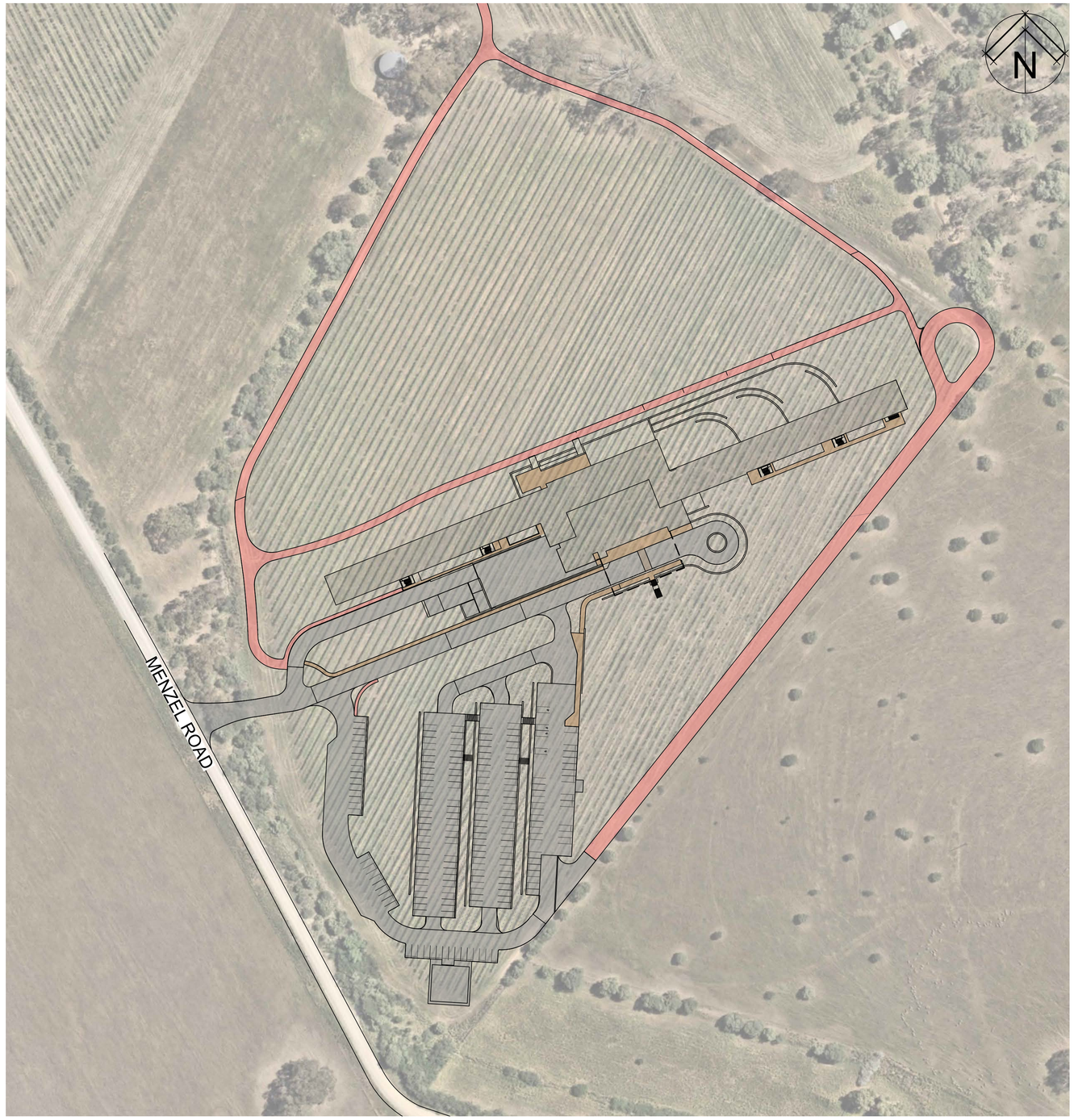
EXISTING SERVICES NOTES:

1. ALL DRAWINGS AND DOCUMENTS CONTAINED WITHIN THIS PROJECT HAVE LIMITED EXISTING SERVICES SHOWN. OTHER SERVICES MAY EXIST, WHICH WERE NOT KNOWN OR IDENTIFIED AT THE TIME OF DETAIL DOCUMENTATION. THESE UNKNOWN SERVICES MAY POSSIBLY INTERFERE WITH THE PROPOSED WORKS AS SET OUT WITHIN THESE DESIGN DOCUMENTS.
2. ALL IDENTIFIED EXISTING SERVICES ARE A SCHEMATIC REPRESENTATION OF THE INFORMATION PROVIDED BY THE VARIOUS SERVICE AUTHORITIES.
3. AS SUCH, THE LIMITS OF LIABILITY, ACCURACY OF THE LOCATION OF THE SERVICES, DEPTHS, LEVELS, SIZES, TYPES AS STIPULATED BY THE SERVICE AUTHORITIES IS PASSED ON FROM MLEI TO THE RESPECTIVE CONTRACTOR.
4. THE LIMITS REFER TO THE ACCURACY OF THE INFORMATION, AND NO LIABILITY WILL BE ACCEPTED BY THE SERVICE AUTHORITIES, INCLUDING MLEI.
5. THE CONTRACTOR MUST FULLY INFORM HIMSELF AS THE NATURE AND EXTENT OF ALL UNDERGROUND SERVICES THAT MAY IMPACT ON THE PROPOSED WORKS.
6. ALL SERVICES MUST BE FULLY VERIFIED, AND COMPARED AGAINST THE PROPOSED DESIGN WORKS.
7. UNDER NO CIRCUMSTANCES SHALL ANY FIXTURE OR FITTING BE ORDERED AND INSTALLED THAT HAS THE POTENTIAL TO REQUIRE ANY REWORK AS A DIRECT OR INDIRECT RESULT OF FAILURE TO VERIFY EXISTING SERVICES. SHOULD REWORK BE REQUIRED OF ANY NEW FIXTURE OR FITTING AS A RESULT OF THE ABOVE, NO CLAIM AGAINST MLEI OR ITS AGENTS WILL BE CONSIDERED.
8. UPON VERIFICATION OF ALL EXISTING UNDERGROUND SERVICES, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT OR THEIR NOMINATED REPRESENTATIVE AS SOON AS POSSIBLE, IN THE EVENT OF ANY POTENTIAL CLASH OR INTERFERENCE WITH THE PROPOSED WORKS.
9. ALL WORKS DIRECTLY OR INDIRECTLY RELATED TO THE POTENTIAL CLASH / INTERFERENCE SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL SUCH TIME AS INSTRUCTED TO DO SO BY MLEI OR ITS NOMINATED AGENT.
10. NO FINANCIAL CLAIMS ARISING FROM THE SUBCONTRACTOR FOR DELAYS WILL BE CONSIDERED BY MLEI OR ITS AGENTS.
11. IN THE EVENT THAT ANY CLASH / INTERFERENCE IS BY A SERVICE THAT CAN ONLY BE POTENTIALLY MODIFIED BY THE SERVICE PROVIDER, E.G. SA WATER SERVICES, SAPN TELSTRA OR GAS SUPPLY, THIS WORK SHALL BE COORDINATED BY MLEI OR ITS NOMINATED AGENT. IN THIS CIRCUMSTANCE, CHARGES LEVIED BY THE SERVICE PROVIDER FOR THE MODIFICATION / ALTERATION WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS RELATES ONLY TO THE MODIFICATION WORKS UNDERTAKEN BY THE SERVICE PROVIDER.

STORMWATER NOTES

1. SET OUT CHAINAGES AT SIDE ENTRY PITS AND JUNCTION BOXES ADJACENT TO KERBS, REFER TO CENTRE OF PIT AT KERB TOP LINE.
2. SET OUT POINTS AT PITS NOT ADJACENT TO KERBS, REFER TO CENTRE OF PIT.
3. PIT INVERT LEVELS REFER TO CENTRE OF PITS WITH PIPE GRADES CALCULATED BETWEEN THESE POINTS.
4. PIT DESIGN SURFACE LEVELS REFER TO
   a. SEP - TOP OF CENTRE OF PIT COVER
   b. JB - TOP OF CENTRE OF PIT COVER
   c. GIP - TOP OF CENTRE OF GRATE
5. THE CONTRACTOR SHALL ENSURE ALL SEP AND JB COVERS AND FRAMES MATCH FINISHED SURFACE GRADE/SLOPE AND LEVEL.
6. ALL PIT COVERS ARE TO BE CLASS D TO AS3996 UNLESS OTHERWISE NOTED.
7. CONCRETE PIPES TO BE CLASS 2 UNLESS OTHERWISE SHOWN.
8. ALL STORMWATER PIPES ARE TO BE RUBBER RING JOINTED IF USING RCP UNLESS NOTED OTHERWISE.
9. BANDAGE JOINTS TO BE PROVIDED ON PIPES WHICH CHANGE HORIZONTAL DIRECTION IF USING RCP.

DRAWING INDEX



OVERALL LAYOUT PLAN & DRAWING INDEX

SCALE 1:1000

SOUTHERN BAROSSA TOURIST ACCOMMODATION

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:1000 @ A1 (0, 10, 20, 40, 60m)

CLIENT: STRATEGIC ALLIANCE

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29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
OVERALL LAYOUT PLAN & DRAWING INDEX

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
J.CARDENAS	F.BEVERIDGE

DWG No. **A2024-14356 - HTL** SHEET **C001** REV **B**

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C001.dwg Aug 22, 2025 - 3:33PM

GENERAL LEGEND

PROPOSED

- X.X% — SURFACE GRADE AND DRAINAGE DIRECTION
- RETAINING WALL (LEVELS SHOWN INDICATIVELY)
- RETAINING CONCRETE FENCE PLINTH (≤0.3m HIGH)
- EARTHWORKS BATTER, 1:3 U.N.O
- PL:19.600 — DESIGN LEVEL PL=TOP OF PAVEMENT, LL=TOP OF COVER, GL=TOP OF GRATE, IL=INVERT, TW=TOP WALL, BW= BOT. WALL
  LOT LEVELS - FS=FINISHED SURFACE, BL=BENCH LEVEL
- H= 1.00 / TW 99.00 / BW 98.00 — RETAINING WALL LEVELS: H=RETAINING WALL HEIGHT, TW=TOP OF RETAINING WALL, BW = BOTTOM OF RETAINING WALL
- ROOF OVER OUTLINE

EXISTING

- x — POWER OVERHEAD CABLES

STORMWATER LEGEND

PROPOSED

- STORMWATER PIPE - RCP
- GRASSED CUT-OFF SWALE
- STORMWATER JUNCTION BOX
- STORMWATER GRATED INLET OR FIELD GULLY PIT
- STORMWATER SIDE ENTRY PIT
- STORMWATER HEADWALL
- DP — STORMWATER DOWNPIPE SHOWN INDICATIVELY TO REPRESENT THE ENTIRE ROOF DRAINAGE SYSTEM
- BIOFILTRATION SWALE MIN. 2.0m WIDE, 0.15m POND DEPTH SUBSOIL DRAINS TO CONNECT TO SITE DRAINAGE SYSTEM.
- STORMWATER BASIN
- 25kL RAINWATER TANK

PAVEMENTS LEGEND

PROPOSED

- PAVEMENT TYPE 1 - ASPHALT
- PAVEMENT TYPE 2 - UNSEALED PAVEMENT
- PAVEMENT TYPE 3 - CONCRETE FOOTPATH
- LANDSCAPING (BY OTHERS)

ABBREVIATIONS

AHD	AUSTRALIAN HEIGHT DATUM
BW	BOTTOM OF WALL
CH	CHAINAGE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CRS	CENTRES
CST	COMMON SERVICE TRENCH
CT	CURVE / TANGENT POINT
CTP	COMMON TANGENT POINT
DRG	DRAWING
EL	ELEVATION LEVEL
EX	EXISTING
FFL	FINISHED FLOOR LEVEL
FG	FIELD GULLY
GIP	GRATED INLET PIT
HW	HEADWALL
IL	INVERT LEVEL
JB	JUNCTION BOX
K&G	KERB & GUTTER
MAX	MAXIMUM
MIN	MINIMUM
NOM	NOMINAL
NTS	NOT TO SCALE
PSM	PERMANENT SURVEY MARK
RL	REDUCED LEVEL
R	RADIUS
RW	RETAINING WALL
SEP	SIDE ENTRY PIT
SEP-G	SIDE ENTRY PIT - GRATED INLET
SIO	STORMWATER INSPECTION OPENING
SIOG	STORMWATER GRATED INSPECTION OPENING
SNS	STREET NAME SIGN
STD	STANDARD
TBM	TEMPORARY BENCH MARK
TC	TANGENT / CURVE POINT
THK	THICK
TK	TOP OF KERB
TP	TANGENT POINT
TW	TOP WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:500 @ A1 (0 5 10 20 30m)

CLIENT: STRATEGIC ALLIANCE

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SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS

LEGEND

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN: J.CARDENAS | DESIGNED: F.BEVERIDGE

DWG No: A2024-14356 - HTL | SHEET: C002 | REV: A

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C002.dwg Aug 22, 2025 - 3:33PM

FOR CONTINUATION REFER TO DRG C004

MENZEL ROAD

REMOVE EXISTING CULVERT AND RELOCATE OUTSIDE OF DRIVEWAY LOCATION PROVIDE REGRADING ON WESTERN SIDE OF MENZEL ROAD TO SHIFT ROAD SAG LOCATION

PROPOSED CULVERT BENEATH DRIVEWAY ENTRANCE. CULVERT TO BE SIZED TO CONVEY 1% AEP FLOWS FROM UPPER CATCHMENT. NO SURVEY DATA WITHIN WATERCOURSE. HEIGHT OF WATER COURSE APPROX. 4m TO BOUNDARY LEVELS. FILL OVER CULVERT TO ACHIEVE DRIVEWAY DESIGN LEVELS. SOME LOCALISED RE-SHAPING OF WATER COURSE AND VEGETATION REMOVAL IS EXPECTED.

SURFACE RUNOFF FROM CARPARK AREA TO DRAIN INTO BIORETENTION SWALES.

SWALE TO DISCHARGE TO EXISTING WATER COURSE WITH ADEQUATE ROCK SCOUR PROTECTION AT OUTLET.

MAX. 2.5% CROSSFALL OVER WALKING TRAIL (TYP.)

PROVIDE LOCALISED BATTER TO MATCH LEVELS TO NATURAL SURFACE

3% CROSSFALL TO TRACK (TYP.)

3% CROSSFALL TO TRACK (TYP.)

LOBBY FFL AT 262.90 (OVER)

RL: 269.30 (L05 - FUNCITON)

CULVERT TO MAINTAIN FLOW OF EXISTING NATURAL WATERCOURSE

MAX. 2.5% CROSSFALL OVER WALKING TRAIL (TYP.)

RAISED FIELD GULLY INLET 0.3m ABOVE BASIN INVERT

242.30
241.20 IL

242.30 IL

242.30 IL

STORMWATER RETENTION BASIN
APPROX. RETENTION CAPACITY = 196kL
SIDE BATTER= 1:3
MAX. POND DEPTH= 0.3m
BASE LEVEL= 242
TOP LEVEL= 242.60
BASE AREA = 500m2
TOP AREA = 900m2
RETENTION VOLUME PROVIDED TO MINIMIZE IMPACT OF FREQUENT STORM EVENTS ON DOWNSTREAM WATER COURSES.

BASIN TO BE RIPPED TO 0.3m DEPTH AND REPLACED WITH ORGANIC TOPSOIL TO PROMOTE VEGETATION GROWTH AND INFILTRATION. BASIN SURFACES TO BE FULLY PLANTED.

FFL:256.50 (L01-POOL))

FFL:256.50 (L01-POOL))

FFL:256.50 (L01-POOL))

FFL:259.70 (L02-WELLNESS)

FFL:256.50 (L01 - POOL)

FFL:256.50 (L01 - POOL)

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE
1:500 @ A1 (0 5 10 20 30m)

CLIENT
STRATEGIC ALLIANCE

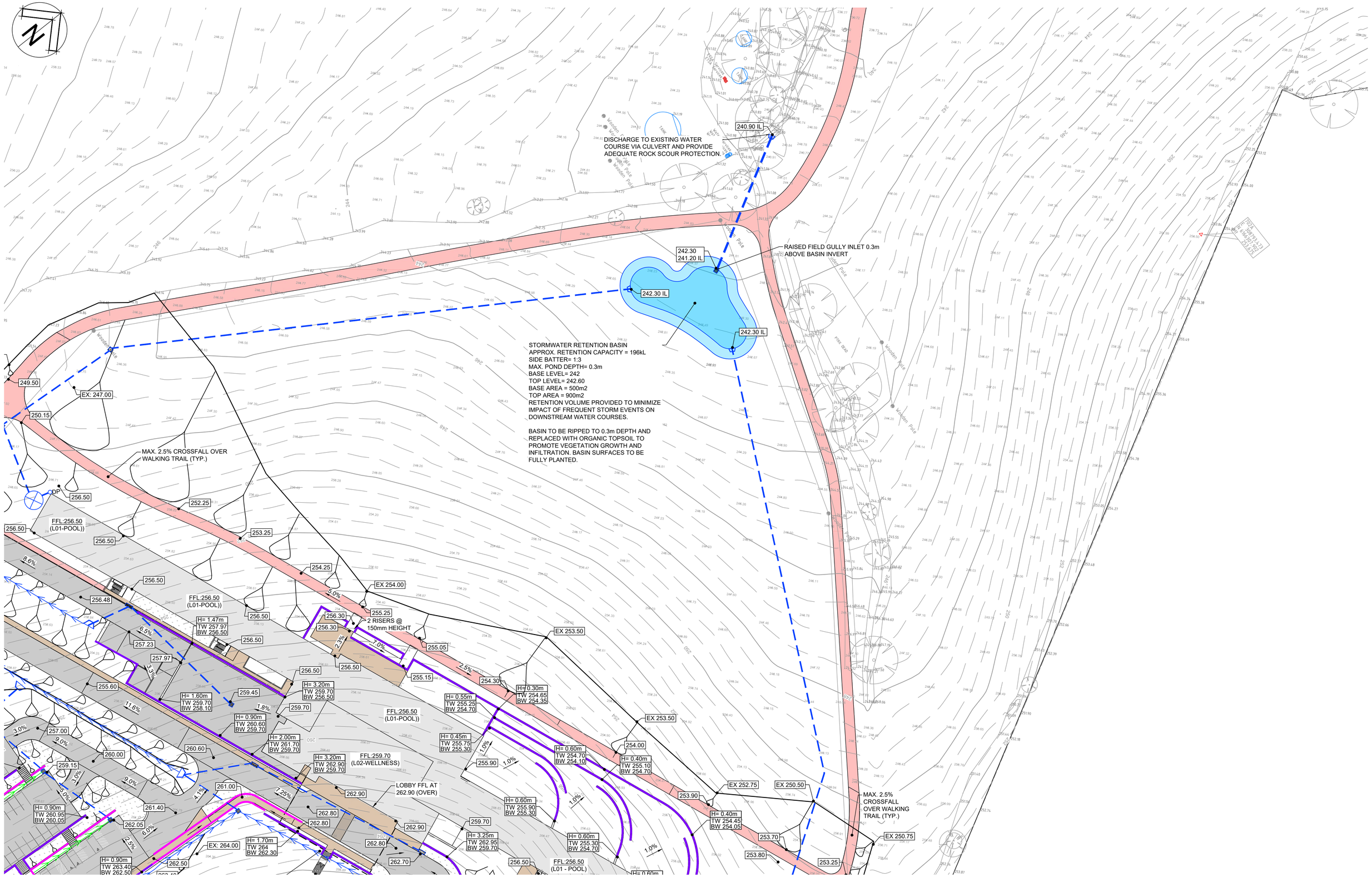
mlei
CONSULTING ENGINEERS
29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
STORMWATER MANAGEMENT PLAN (LAYOUT 1 OF 2)

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN J.CARDENAS | DESIGNED F.BEVERIDGE
DWG No. A2024-14356 - HTL | SHEET C003 | REV B

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C003.dwg Aug 29, 2025 - 10:48AM



ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
B	RE-ISSUED FOR APPROVAL	JC	FB	AG	AG	22.08.2025
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE
1:500 @ A1
0 5 10 20 30m

CLIENT
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29 Young Street Adelaide SA 5000
08 8231 2832 mlei.com.au

SOUTHERN BAROSSA
TOURIST ACCOMMODATION
PROPOSED SITE CIVIL WORKS
STORMWATER MANAGEMENT PLAN (LAYOUT 2 OF 2)

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN	DESIGNED
J.CARDENAS	F.BEVERIDGE

DWG No.	SHEET	REV
A2024-14356 - HTL	C004	B

S:\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\2. Hotel Drawings\A2024-14356 - HTL-C004.dwg Aug 29, 2025 - 10:49AM

GENERAL NOTES

1. THESE DRAWINGS ARE NOT CADASTRAL PLANS AND MUST NOT BE USED IN DETERMINING PRECISE DETAILS WITH RESPECT TO BOUNDARIES.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
4. ALL LEVELS ARE EXPRESSED IN METRES.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS.
6. REFER TO DETAIL DRAWINGS FOR ALL UNDERGROUND PIPEWORK AND DETAILS.
7. SPOIL TO BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT AND EXCESS NOT USED IS TO BE REMOVED FROM SITE BY CONTRACTOR.
8. THESE DRAWINGS ARE A SCHEMATIC REPRESENTATION OF SERVICES INFORMATION CONTAINED IN DRAWINGS ISSUED BY THE RELEVANT AUTHORITIES.

   THE INFORMATION CONTAINED IN THESE DRAWINGS IS INDICATIVE ONLY, AND REFERENCE SHOULD BE MADE TO THE RELEVANT AUTHORITIES DOCUMENTATION TO CONFIRM ACCURACY AND COMPLETENESS.

   WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY CONTRACTORS OTHER THAN THE AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
9. THE FINISHED SURFACE SHALL BE EVENLY GRADED BETWEEN DESIGN SURFACE LEVELS.
10. DEMOLISH AND REMOVE ALL EXISTING INSTALLATIONS WHICH ARE TO BE AFFECTED BY NEW WORKS. EXTENT OF DEMOLITION TO BE CONFIRMED ON SITE WITH THE SUPERINTENDENT PRIOR TO WORKS.
11. CONTRACTOR TO ADJUST LIDS OF EXISTING SERVICE PITS TO MATCH FINISHED SURFACE LEVEL. PROVIDE HEAVY DUTY COVER IF IN PAVED AREA TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY, IF APPLICABLE. RELOCATE SERVICE AS REQUIRED.
12. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT S.A.A. CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

COMPACTION NOTES:

1. PRIOR TO THE COMMENCEMENT OF ANY FILLING OPERATION, THE ENTIRE SITE AREA IS TO BE COMPACTED AND TESTED IN ACCORDANCE WITH AS1289 TO PRODUCE 98.0% STANDARD COMPACTION AT THE FINAL EXCAVATED NATURAL SURFACE LEVEL AND AT 250mm BELOW THE EXCAVATED NATURAL SURFACE LEVEL.
2. TESTING SHALL BE EVENLY SPACED OVER THE ENTIRE SITE, AND AT RANDOM LOCATIONS. TEST RESULTS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

PAVEMENT NOTES

1. ALL SET OUT DIMENSIONS AND LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF THE WORKS.
2. REFER TO RELEVANT CIVIL DRAWINGS FOR GRADING AND SERVICES.

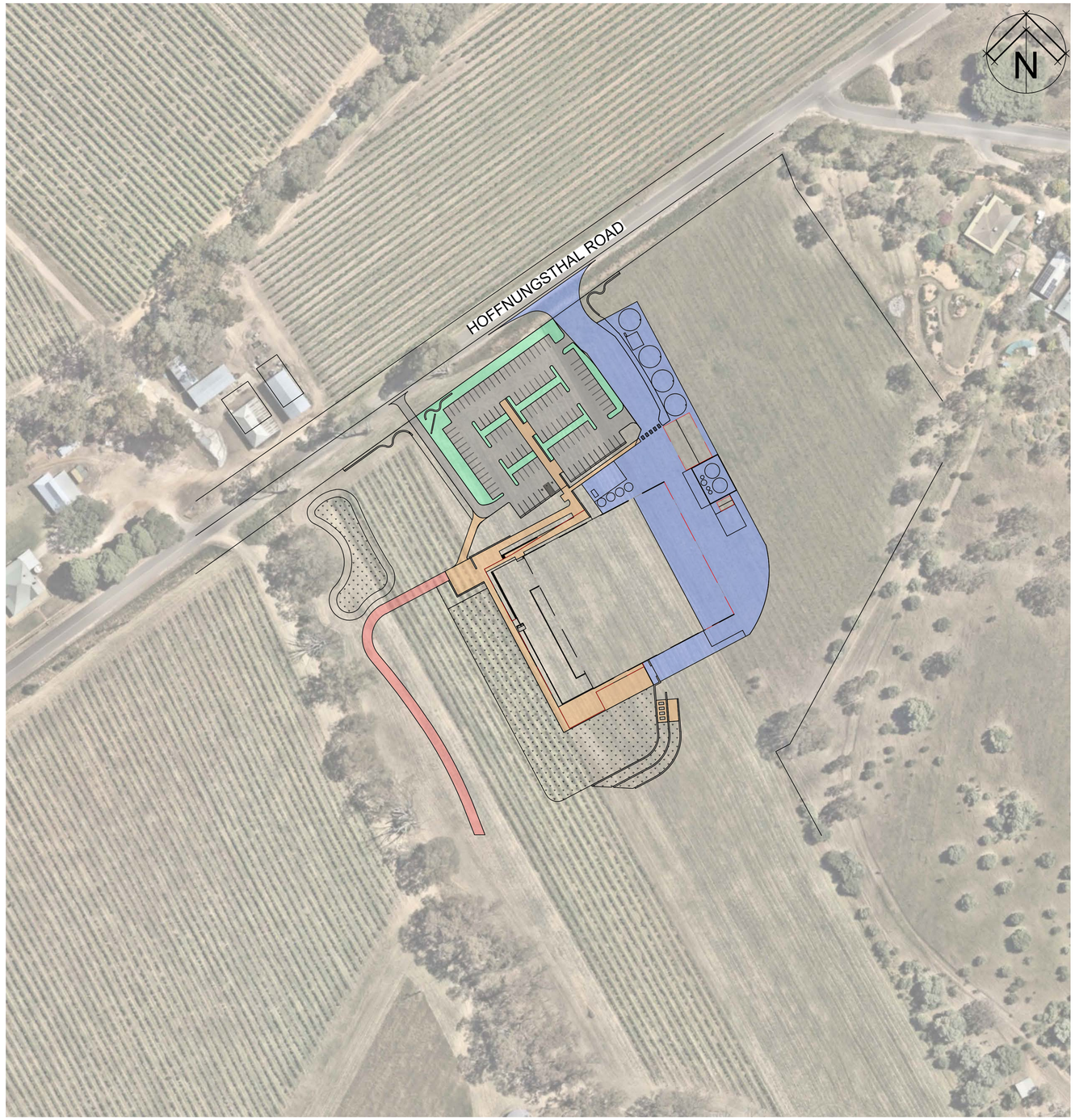
EXISTING SERVICES NOTES:

1. ALL DRAWINGS AND DOCUMENTS CONTAINED WITHIN THIS PROJECT HAVE LIMITED EXISTING SERVICES SHOWN. OTHER SERVICES MAY EXIST, WHICH WERE NOT KNOWN OR IDENTIFIED AT THE TIME OF DETAIL DOCUMENTATION. THESE UNKNOWN SERVICES MAY POSSIBLY INTERFERE WITH THE PROPOSED WORKS AS SET OUT WITHIN THESE DESIGN DOCUMENTS.
2. ALL IDENTIFIED EXISTING SERVICES ARE A SCHEMATIC REPRESENTATION OF THE INFORMATION PROVIDED BY THE VARIOUS SERVICE AUTHORITIES.
3. AS SUCH, THE LIMITS OF LIABILITY, ACCURACY OF THE LOCATION OF THE SERVICES, DEPTHS, LEVELS, SIZES, TYPES AS STIPULATED BY THE SERVICE AUTHORITIES IS PASSED ON FROM MLEI TO THE RESPECTIVE CONTRACTOR.
4. THE LIMITS REFER TO THE ACCURACY OF THE INFORMATION, AND NO LIABILITY WILL BE ACCEPTED BY THE SERVICE AUTHORITIES, INCLUDING MLEI.
5. THE CONTRACTOR MUST FULLY INFORM HIMSELF AS THE NATURE AND EXTENT OF ALL UNDERGROUND SERVICES THAT MAY IMPACT ON THE PROPOSED WORKS.
6. ALL SERVICES MUST BE FULLY VERIFIED, AND COMPARED AGAINST THE PROPOSED DESIGN WORKS.
7. UNDER NO CIRCUMSTANCES SHALL ANY FIXTURE OR FITTING BE ORDERED AND INSTALLED THAT HAS THE POTENTIAL TO REQUIRE ANY REWORK AS A DIRECT OR INDIRECT RESULT OF FAILURE TO VERIFY EXISTING SERVICES. SHOULD REWORK BE REQUIRED OF ANY NEW FIXTURE OR FITTING AS A RESULT OF THE ABOVE, NO CLAIM AGAINST MLEI OR ITS AGENTS WILL BE CONSIDERED.
8. UPON VERIFICATION OF ALL EXISTING UNDERGROUND SERVICES, THE CONTRACTOR SHALL ADVISE THE SUPERINTENDENT OR THEIR NOMINATED REPRESENTATIVE AS SOON AS POSSIBLE, IN THE EVENT OF ANY POTENTIAL CLASH OR INTERFERENCE WITH THE PROPOSED WORKS.
9. ALL WORKS DIRECTLY OR INDIRECTLY RELATED TO THE POTENTIAL CLASH / INTERFERENCE SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL SUCH TIME AS INSTRUCTED TO DO SO BY MLEI OR ITS NOMINATED AGENT.
10. NO FINANCIAL CLAIMS ARISING FROM THE SUBCONTRACTOR FOR DELAYS WILL BE CONSIDERED BY MLEI OR ITS AGENTS.
11. IN THE EVENT THAT ANY CLASH / INTERFERENCE IS BY A SERVICE THAT CAN ONLY BE POTENTIALLY MODIFIED BY THE SERVICE PROVIDER, E.G. SA WATER SERVICES, SAPN TELSTRA OR GAS SUPPLY, THIS WORK SHALL BE COORDINATED BY MLEI OR ITS NOMINATED AGENT. IN THIS CIRCUMSTANCE, CHARGES LEVIED BY THE SERVICE PROVIDER FOR THE MODIFICATION / ALTERATION WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS RELATES ONLY TO THE MODIFICATION WORKS UNDERTAKEN BY THE SERVICE PROVIDER.

STORMWATER NOTES

1. SET OUT CHAINAGES AT SIDE ENTRY PITS AND JUNCTION BOXES ADJACENT TO KERBS, REFER TO CENTRE OF PIT AT KERB TOP LINE.
2. SET OUT POINTS AT PITS NOT ADJACENT TO KERBS, REFER TO CENTRE OF PIT.
3. PIT INVERT LEVELS REFER TO CENTRE OF PITS WITH PIPE GRADES CALCULATED BETWEEN THESE POINTS.
4. PIT DESIGN SURFACE LEVELS REFER TO
   a. SEP - TOP OF CENTRE OF PIT COVER
   b. JB - TOP OF CENTRE OF PIT COVER
   c. GIP - TOP OF CENTRE OF GRATE
5. THE CONTRACTOR SHALL ENSURE ALL SEP AND JB COVERS AND FRAMES MATCH FINISHED SURFACE GRADE/SLOPE AND LEVEL.
6. ALL PIT COVERS ARE TO BE CLASS D TO AS3996 UNLESS OTHERWISE NOTED.
7. CONCRETE PIPES TO BE CLASS 2 UNLESS OTHERWISE SHOWN.
8. ALL STORMWATER PIPES ARE TO BE RUBBER RING JOINTED IF USING RCP UNLESS NOTED OTHERWISE.
9. BANDAGE JOINTS TO BE PROVIDED ON PIPES WHICH CHANGE HORIZONTAL DIRECTION IF USING RCP.

DRAWING INDEX



OVERALL LAYOUT PLAN & DRAWING INDEX

SCALE 1:1000

SOUTHERN BAROSSA WINERY

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE 1:1000 @ A1 (0 10 20 40 60m)

CLIENT: STRATEGIC ALLIANCE

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SOUTHERN BAROSSA WINERY
PROPOSED SITE CIVIL WORKS
OVERALL LAYOUT PLAN & DRAWING INDEX

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWN J.CARDENAS | DESIGNED F.BEVERIDGE

DWG No. **A2024-14356 - WNY** | SHEET **C001** | REV **A**

\\MLEI-SVR01\Records\01 - PROJECTS (FROM 14-7-2010)\A2024-14356 - Southern Barossa Winery & Hotel\03_Deliverables\1_CAD\1_Civil\1_Drafting\3. Winery Drawings\A2024-14356 - WNY-C001.dwg Jul 14, 2025 - 4:52PM

EXISTING Ø600 RCP CULVERT UNDER HOFFNUNGSTHAL ROAD CULVERT TO BE SUFFICIENTLY CLEANED OF SILT AND DEBRIS.

DRIVEWAY CROSSOVER TO MATCH THE PROFILE OF THE EXISTING ROADSIDE DRAIN TO MAINTAIN LONGITUDINAL FLOWS

HOFFNUNGSTHAL ROAD

WSUD SWALES AND PIPES TO BE COORDINATED WITH LANDSCAPE ARCHITECT DURING DETAILED DESIGN.

DRIVEWAY CROSSOVER TO MATCH THE PROFILE OF THE EXISTING ROADSIDE DRAIN TO MAINTAIN LONGITUDINAL FLOWS

OVERFLOW SPILLWAY WEIR TO DISCHARGE TO EXISTING WATER COURSE. ADEQUATE ROCK SCOUR PROTECTION TO BE INSTALLED TO WATER COURSE INVERT.

STORMWATER RETENTION BASIN
RETENTION CAPACITY = 144kL
SIDE BATTER 1:3
MAX. POND DEPTH = 0.3m.
BASE LEVEL = 236.5
TOP LEVEL = 238
BASE AREA = 450m2
TOP AREA = 850m2
RETENTION VOLUME PROVIDED TO MINIMIZE IMPACT OF FREQUENT STORM EVENTS ON DOWNSTREAM WATER COURSES.

BASIN TO BE RIPPED TO 0.3m DEPTH AND REPLACED WITH ORGANIC TOPSOIL TO PROMOTE VEGETATION GROWTH AND INFILTRATION. BASIN SURFACES TO BE FULLY PLANTED.

CUT-OFF GRASSED SWALE TO OUTLET TO EXISTING ROADSIDE SWALE WITH ADEQUATE ROCK SCOUR PROTECTION.

FIELD GULLY PIT TO CAPTURE STORMWATER TRAPPED LOW SPOT

TRAIL TO BE GRADED AT MAX 2.5% CROSSFALL TOWARDS WEST WATER COURSE.

PROVIDE 5 STEP RISERS @180mm HEIGHT

SURFACE RUNOFF FROM CARPARK AREA TO DRAIN INTO BIORETENTION SWALES.

FFL: 241.50

DOWNPIPES NOT SHOWN. ROOF DRAINAGE SYSTEM TO CONNECT INTO DRAINAGE SYSTEM.

1:2 BATTER SLOPE IN ROCK

TRAIL CONTINUES ON AND CONNECTS TO THE HOTEL SITE SOUTH OF THE PROPOSED WINERY.

1:2 BATTER SLOPE IN ROCK

CUT-OFF GRASSED SWALE TO OUTLET TO NATURAL SURFACE WITH ADEQUATE ROCK SCOUR PROTECTION.

GENERAL LEGEND

PROPOSED

- X.X% — SURFACE GRADE AND DRAINAGE DIRECTION
- RETAINING WALL 0.5m HEIGHT U.N.O
- EARTHWORKS - 1:3 BATTER SLOPE U.N.O. SHOWN INDICATIVELY
- 19.600 — DESIGN LEVEL IL=INVERT, TW=TOP WALL, BW= BOT. WALL, FFL=FINISHED FLOOR LEVEL
- ROOF OVER OUTLINE
- STORMWATER PIPE
- GRASSED CUT-OFF SWALE
- CONCRETE SWALE
- BASIN WEIR SWALE
- STORMWATER GRATED OR FIELD GULLY PIT
- STORMWATER SIDE ENTRY PIT
- STORMWATER HEADWALL
- BIOFILTRATION SWALE MIN. 3.0m WIDE, 0.2m POND DEPTH SUBSOIL DRAINS TO CONNECT TO SITE DRAINAGE SYSTEM.
- STORMWATER BASIN
- ASPHALT PAVEMENT - LIGHT DUTY
- PAVEMENT - HEAVY DUTY CONCRETE
- PAVEMENT - LIGHT DUTY CONCRETE
- UNSEALED PAVEMENT CART/WALKING TRACK
- LANDSCAPING (BY OTHERS)

EXISTING

- x — POWER OVERHEAD CABLES

ISSUE	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
A	ISSUED FOR APPROVAL	JC	FB	AG	AG	14.07.2025

SCALE: 1:500 @ A1 (0, 5, 10, 20, 30m)

CLIENT: STRATEGIC ALLIANCE

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SOUTHERN BAROSSA WINERY

PROPOSED SITE CIVIL WORKS

STORMWATER MANAGEMENT PLAN (LAYOUT 1 OF 1)

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DWG No. A2024-14356 - WNY C002 | SHEET | REV. A