CAP MEETING – 09 July 2025
ITEM 8.2

DEVELOPMENT NO.:	25007199
APPLICANT:	Cobbs Hill Estate
ADDRESS:	362 OAKWOOD RD OAKBANK SA 5243 362 OAKWOOD RD OAKBANK SA 5243
NATURE OF DEVELOPMENT:	Variation of DA 21017786 – Change to location and design of the approved function venue and water storage tanks (30KL and 22KL) and removal of retaining walls and the 100KL underground tank (Retrospective)
ZONING INFORMATION:	**Zones:** • Productive Rural Landscape **Overlays:** • Environment and Food Production Area • Hazards (Bushfire - High Risk) • Hazards (Flooding - Evidence Required) • Limited Land Division • Mount Lofty Ranges Water Supply Catchment (Area 2) • Native Vegetation • Prescribed Water Resources Area • Water Resources
LODGEMENT DATE:	16 Apr 2025
RELEVANT AUTHORITY:	Adelaide Hills Council Assessment Panel
PLANNING & DESIGN CODE VERSION:	P&D Code (in effect) Version 2025.7 10/04/2025
CATEGORY OF DEVELOPMENT:	Code Assessed - Performance Assessed
NOTIFICATION:	No
RECOMMENDING OFFICER:	Doug Samardzija Senior Statutory Planner
REFERRALS STATUTORY:	None
REFERRALS NON-STATUTORY:	None

CONTENTS:

DETAILED DESCRIPTION OF PROPOSAL:

The proposal seeks to vary the original Development Authorisation of 21017786 which was for the construction of a function centre and restaurant building with associated car parking and landscaping, 100,000 litre underground water storage tank and the proposal also included variations to Development Authorisation 16/973/473 to increase the overall capacity, the number of functions and operating hours and Development Authorisation 16/882/473 to increase the capacity of the existing cellar door and to undertake the development in two stages:
Stage 1: Vary cellar door capacity and number of functions, with deletion of special events, upgrade of car parking, vehicle access and waste control system, and
Stage 2: Construction of the function centre and restaurant building and remainder of works

Stage 1 of DA 21017786 as outlined above has already been completed and the applicant is now seeking to vary Stage 2 of the application by proposing to alter the design and the location of the function centre building. A breakdown of the changes is provided below:

- The architecturally designed building is being replaced by a permanent light weight function venue building referred to as the 'Pavilion'.
- Retaining walls, 100KL underground water storage tank, earthworks and associated landscaping surrounding the original proposal is also being removed. Additionally, the kitchen and the toilet areas are being removed from the floor plan.
- The new function venue is proposed on the lawn area currently used for functions, east of the existing cellar door/restaurant building. The amended building location is 31m north of where the original function venue building was approved.
- The new building will measure 25m x 15m for a total floor area of 375m². It will have 3m wall heights for an overall height of 4.88m to the apex of the roof.
- No changes are proposed to the site's existing overall capacity of 330 persons or the function capacity of 130 persons. With the exception to the amended acoustic conditions, no other conditions from DA 21017786 are changing.
- 22KL above-ground water tank is proposed for fire-fighting water supply in addition to a 30KL water tank for stormwater management.

A copy of the varied proposal plans and details is contained in ***Attachment 1.***

A copy of the Previous approval documents is contained in ***Attachment 6.***

BACKGROUND:

APPROVAL DATE	APPLICATION NUMBER	DESCRIPTION OF PROPOSAL
18/08/2008	473/90/2006	Land Division - Boundary Realignment - DAC relevant authority
11/10/2016	473/466/16	Vineyard addition (11.33 hectares in total) to be undertaken in two (2) stages - Stage 1- 5.25 hectares - Stage 2- 6.08 hectares
13/11/2017	473/882/16	Change of use from dwelling to cellar door (maximum capacity 75) & motel (maximum of 6 guests), including two (2) freestanding advertising signs & associated car park & earthworks

01/06/2021	473/973/16	Change of use to a function centre (Special Events with maximum capacity 208 persons on 7 occasions a year & Functions with maximum capacity of 130 persons on 18 occasions a year) in association with existing cellar door & increase the car parking area (non-complying)
14/12/2021	20128842	Store building (bottled wine storage)
15/03/2021	21041517	Alterations and additions to existing cellar door (shop), verandah & deck
09/05/2022	22000517	Horticulture (vineyard)
28/12/2023	23036588	Variation of DA 21041517 - Internal stairs deleted, construct a deck and alteration to toilet lay out.
08/03/2024	21017786	Construction of a function centre and restaurant building with associated car parking and landscaping, 100,000 litre underground water storage tank and variations to Development Authorisation 16/973/473 to increase the overall capacity, the number of functions and operating hours and Development Authorisation 16/882/473 to increase the capacity of the existing cellar door and to undertake the development in two stages: Stage 1: Vary cellar door capacity and number of functions, with deletion of special events, upgrade of car parking, vehicle access and waste control system; and Stage 2: Construction of the function centre and restaurant building and remainder of works
07/03/2024	23009545	Agricultural building, alterations and enclosure of existing verandah and construction of a masonry wall
25/07/2024	23037800	Change of use of existing cellar door building to include a restaurant, variation to DA 21017786 to remove the restaurant from the approved function centre building and to vary Condition 13 to increase the days of restaurant operation from 2 days per week to 3 days per week plus public holidays, and to vary Condition 11 to increase the capacity of the cellar door to 200 persons on public holidays

SUBJECT LAND & LOCALITY:

Location reference: 382B Swamp Rd, Oakbank SA 5243
Title ref: CT6035/473 **Plan Parcel:** D7987 QP 1 and QP 2 **Council:** Adelaide Hills Council

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Site Description:

The subject land is a large irregular shape primary production allotment consisting of two pieces with a combined area of 88 hectares. The allotment has two frontages with the primary frontage and access to the site from Swamp Road with an internal gravel access track, whilst the secondary frontage and access is from Oakwood Road. Swamp Road is a sealed road.

The subject land is one of undulating topography containing a large water course running north-east through the land as well as a number of other smaller water courses scattered throughout the site. The primary use of the site is primary production related activities in the form of viticulture with secondary uses being a cellar door/restaurant and function venue, with associated bed and breakfast. All activities are contained within and surrounding the existing building on the site which was previously used as a homestead. Other site features include outbuildings and agriculture buildings predominantly clustered together with a small portion of buildings located in the other areas of the allotment. Whilst not part of the development site, the immediate adjoining allotment to the south of the Swamp Road access known as 382 Swamp Rd, Oakbank is under the same ownership as the subject land and this allotment contains a dwelling that is occupied by the caretaker of the Cobbs Hill Estate.

Locality:

The locality is characterised by a mixture of allotment sizes and uses ranging from smaller rural living allotments of approximately 1 hectare to large primary production allotments of up to 88 hectares. The majority of the allotments in the locality are used for rural living purposes however there are a number of allotments smaller than the subject land which too are also used for a range of different primary production purposes. The locality is also characterised by dense vegetation on surrounding allotments along with water courses. East of the locality are the two closest townships of Balhannah and Oakbank.

CONSENT TYPE REQUIRED:

Planning Consent

CATEGORY OF DEVELOPMENT:

- **PER ELEMENT:**
  Function centre: Code Assessed - Performance Assessed

- **OVERALL APPLICATION CATEGORY:**
  Code Assessed - Performance Assessed

PUBLIC NOTIFICATION

- **REASON**
  The proposal being only a variation application to the original DA did not require public notification. The elements that are being changed relating to the function venue location do not trigger public notification as specified in Table 5 of the Zone. The proposal was deemed to be a variation because it is only in reference to the location and the design of the function venue building. All other aspects of the original DA relating to the capacity, parking, stormwater management, vehicle movements and the waste system remain unchanged with these elements already established on site.

AGENCY REFERRALS

None.

EPA have confirmed that because the variation only relates to the change in the function venue location and design and does not seek to change the capacity or the waste system, that no referral is required. EPA email confirmation is contained in ***Attachment 4 – Referral Responses***.

INTERNAL REFERRALS

None

PLANNING ASSESSMENT

Desired outcomes
Desired outcomes are policies designed to aid the interpretation of performance outcomes by setting a general policy agenda for a zone, subzone, overlay or general development policies module. Where a relevant authority is uncertain as to whether or how a performance outcome applies to a development, the desired outcome(s) may inform its consideration of the relevance and application of a performance outcome, or assist in assessing the merits of the development against the applicable performance outcomes collectively.

Performance outcomes
Performance outcomes are policies designed to facilitate assessment according to specified factors, including land use, site dimensions and land division, built form, character and hazard risk minimisation.

Designated performance features
In order to assist a relevant authority to interpret the performance outcomes, in some cases the policy includes a standard outcome which will generally meet the corresponding performance outcome (a designated performance feature or DPF). A DPF provides a guide to a relevant authority as to what is generally considered to satisfy the corresponding performance outcome but does not need to necessarily be satisfied to meet the performance outcome, and does not derogate from the discretion to determine that the outcome is met in another way, or from the need to assess development on its merits against all relevant policies.

A detailed assessment of the application has taken place against the relevant provisions of the Planning and Design Code (P & D Code) and this is provided below under a series of headings. A Policy Enquiry extract containing the relevant provisions of the P & D Code is contained in *Attachment 5 – Relevant P & D Code Policies*.

Productive Rural Landscape Zone:

Desired Outcomes	
DO1	A diverse range of land uses at an appropriate scale and intensity that capitalise on the region's proximity to the metropolitan area and the tourist and lifestyle opportunities this presents while also conserving the natural and rural character, identity, biodiversity and sensitive environmental areas and scenic qualities of the landscape.
DO2	A zone that promotes agriculture, horticulture, value adding opportunities, farm gate businesses, the sale and consumption of agricultural based products, tourist development and accommodation that expands the economic base and promotes its regional identity.
DO3	Create local conditions that support new and continuing investment while seeking to promote co-existence with adjoining activities and mitigate land use conflicts.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1, 2.1, 2.2, 6.1, 6.2, 6.5, 6.6 and 11.1 DPFs: 1.1, 2.1, 2.2, 6.1, 6.2, 6.5 and 6.6	

The overall bulk and scale of the varied building design is less than that of the original building. The floor area is reducing from 410m² to 378m². The overall height is also reducing from 8m to 4.88m. The building is still of a large scale, but that scale has significantly been reduced, especially the height.

The location of the building is still adjacent to the cellar door/restaurant building and largely in the same vicinity as the original building. The building is significantly setback from boundaries with a 341m setback from the front boundary and 200m from the closest neighbouring boundary, meaning that it is either not going to be visible or that all views of the structure would be distant. The location is also part of the existing lawn area that has approval rights for functions. Whilst externally the roof of the building is of a lighter tone then that of the original, it is still considered acceptable. Given its location as outlined above plus the fact that it will be nestled amongst the vegetation, there will be no visual impacts. The proposal is therefore consistent with PO 11.1.

The extent of the earthworks is also reducing. The original proposal included approximately 1.3m of cut along the rear portion of the building and 2m of fill along the front portion of the building. The variation will eliminate the need for any earthworks with the building proposed on the existing flat portion of land. The proposal will not create any visual impacts and as such it still satisfies PO 2.2.

Overlays

Environment and Food Production Areas:

Desired Outcomes	
DO1	Protection of valuable rural, landscape, environmental and food production areas from urban encroachment
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 DPFs: -	

Considering that the proposed development is not related to land division the above overlay is not considered to be relevant in assessment of this application.

Hazards (Bushfire-High Risk):

Desired Outcomes	
DO1	Development, including land division is sited and designed to minimise the threat and impact of bushfires on life and property with regard to the following risks: a) potential for uncontrolled bushfire events taking into account the increased frequency and intensity of bushfires as a result of climate change b) high levels and exposure to ember attack c) impact from burning debris d) radiant heat e) likelihood and direct exposure to flames from a fire front.
DO2	Activities that increase the number of people living and working in the area or where evacuation would be difficult is sited away from areas of unacceptable bushfire risk.
DO3	To facilitate access for emergency service vehicles to aid the protection of lives and assets from bushfire danger.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1, 2.1, 3.1 and 6.1 DPFs: 6.1	

The proposed external colours and materials are of non-reflective nature and consist of a single layer of clear PVC for the walls and a white thermo system for the roof. The roof is of a brighter tone but is not the type that is reflective. Additionally, the proposal is considered to be in a location that will not result in magnification or reflection of light and therefore become a bushfire risk. The proposal is consistent with PO 1.1. The building is also proposed in an area that is not covered in dense hazardous vegetation or steep terrain to ensure consistency with PO 2.1.

The proposed building is not elevated above ground and as such there is no potential for trapping of debris against or underneath the building which ensures consistency with PO 3.1.

Adequate access has been designed from the road to the proposed structure along with a turning area for emergency vehicles to ensure consistency with PO 6.1 and DPF 6.1. The access and the turning area will remain unchanged from that originally approved because the new location is only 31m away from the original approved location. Whilst the proposed use will increase the number of people working in the area it has been designed in a way that ensures that those people are not exposed to unnecessary bushfire risk. This has been done by placing the building away from hazardous vegetation and through the previous upgrade of the access point and the internal track in a way that ensures vehicles, including the emergency vehicles, are able to easily enter and exit the site. A 22KL above ground water tank is proposed for fire-fighting water supply in addition to the 30KL water tank for stormwater management. The proposal is therefore consistent with the intent of DO 2.

Hazards (Flooding-Evidence Required):

Desired Outcomes	
DO1	Development adopts a precautionary approach to mitigate potential impacts on people, property, infrastructure and the environment from potential flood risk through the appropriate siting and design of development.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 DPFs: -	

The subject land is not flood prone nor is there any evidence to suggest that the site of development is flood prone. As such it is considered that the above overlay is not applicable to the assessment of this application.

Limited Land Division:

Desired Outcomes	
DO1	The long term use of land for primary production is maintained by minimising fragmentation through division of land.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 and 1.2 DPFs: -	

Considering that the proposed development is not related to land division the above overlay is not considered to be relevant in assessment of this application.

Mount Lofty Ranges Water Supply Catchment (Area 1):

Desired Outcomes	
DO	None
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 2.4 DPFs: -	

The main concerns in this overlay relate to the on-site effluent disposal area to ensure that the proposal does not impact on the water quality of the Watershed Area 1. As mentioned earlier in the report, the proposed variation is not making any changes to the already approved and installed on-site waste system. The overall capacity of the site is also remaining the same despite the reduction in the size of the function venue. Toilet facilities and the kitchen have also been removed from the floor plan in the varied proposal. Instead, the kitchen and the toilet facilities in the existing restaurant building will be used. The proposal is also not seeking to increase the capacity of the site beyond that already approved. As such, there are no additional watershed implications.

Mount Lofty Ranges Water Supply Catchment (Area 2):

Desired Outcomes	
DO1	Safeguard Greater Adelaide's public water supply by ensuring development has a neutral or beneficial effect on the quality of water harvested from secondary reservoirs or diversion weir catchments from the Mount Lofty Ranges.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 and 1.2, 2.1, 2.4, 2.5, 3.1, 3.2, 3.6, 3.9 and 4.1 DPFs: 1.2, 2.1, 2.4, 2.5, 3.1, 3.6 and 3.9	

The amended stormwater management plan includes a 30,000-litre tank with the stormwater from the building proposed to be directed into the tank and with the overflow to effectively be managed on site. Given the location of the building and the allotment size this will be easily managed. There are no changes proposed to the stormwater management from the car parking area. The proposal is therefore considered to be consistent with the relevant POs 1.2, 3.1, 3.2, 3.3, 3.9 and DPFs 1.2 and 3.9.

Native Vegetation:

Desired Outcomes	
DO1	Areas of native vegetation are protected, retained and restored in order to sustain biodiversity, threatened species and vegetation communities, fauna habitat, ecosystem services, carbon storage and amenity values.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 and 1.2 DPFs: 1.1	

The proposal does not include removal of any native vegetation. Additionally, a native vegetation declaration form has been signed and provided confirming that the proposal does not include removal of native vegetation. The proposal is therefore consistent with PO and DPF 1.1.

Prescribed Water Resources Area:

Desired Outcomes	
DO1	Sustainable water use in prescribed surface water resources areas maintains the health and natural flow paths of water courses
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 DPFs: 1.1	

The variation is not changing anything in relation to the water supply. Whilst the building is being relocated it will still have adequate on-site water supply to cater for the needs and as such be consistent with PO 1.1.

General Development Policies

Clearance from Overhead Powerlines:

Desired Outcomes	
DO1	Protection of human health and safety when undertaking development in the vicinity of overhead transmission powerlines.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 DPFs: 1.1	

This proposal will not impact on any powerlines and a declaration to this effect has also been provided by the applicant confirming that construction of the building is going to be in accordance with the section 86 of the Electricity Act 1996.

Design:

Desired Outcomes	
DO1	Development is: a) contextual - by considering, recognising and carefully responding to its natural surroundings or built environment and positively contributes to the character of the immediate area. b) durable - fit for purpose, adaptable and long lasting. c) inclusive - by integrating landscape design to optimise pedestrian and cyclist usability, privacy and equitable access, and promoting the provision of quality spaces integrated with the public realm that can be used for access and recreation and help optimise security and safety both internally and within the public realm, for occupants and visitors. d) sustainable - by integrating sustainable techniques into the design and siting of development and landscaping to improve community health, urban heat, water management, environmental performance, biodiversity and local amenity and to minimise energy consumption.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.4, 1.5, 2.1, 2.3, 3.1, 3.2, 5.1, 6.1, 7.2, 7.3, 7.6, 7.7, 8.1, 15.1, 19.3, 19.4, 19.5, 20.1, 31.1 and 31.2 DPFs: 1.4, 6.1, 8.1, 19.2, 19.3, 19.4 and 19.5	

DO 1 seeks development that is durable, fit for purpose, adaptable and long lasting. The proposed building is considered to adequately address this desired outcome considering that it has been designed for the intended use.

The footprint of the building is being reduced to that of the original approval, the overall footprint is still one of a larger scale but appropriate given that the building is proposed in the middle of the site with the setbacks from all boundaries in excess of 300m, additionally any views of the building if present from the road or neighbouring properties are going to be distant in nature. Whilst the external design of the amended building is of a far lower standard to the original, when considering its location and the fact that it will be behind the existing cellar door/restaurant building and considering it is proposed to be nestled amongst the vegetation, the overall size, height and appearance of the building is considered to be acceptable. All waste management, loading and unloading areas will continue be out of view and internal to the site. The proposal is therefore considered to be consistent with POs 1.4, 1.5 and 15.1,

The site plan provided shows that existing vegetation around the building is going to be maintained. A detailed landscaping plan in this instance has not been requested given that the area is not going to be visible from public realm. Additionally, the area surrounding the building is already relatively well landscaped and this landscaping will remain in place. The proposal is consistent with POs 3.1 and 3.2.

The extent of the earthworks is being reduced. The original proposal included approximately 1.3m of cut along the rear portion of the building and 2m of fill along the front portion of the building. The works also included retaining walls and steps. The variation will eliminate the need for any earthworks with the building proposed on the existing flat portion of land.

Earthworks relating to access upgrades and car parking have already been undertaken as part of the stage 1 of works relating to the original DA.

Infrastructure and Renewable Energy Facilities:

Desired Outcomes	
DO1	Efficient provision of infrastructure networks and services, renewable energy facilities and ancillary development in a manner that minimises hazard, is environmentally and culturally sensitive and manages adverse visual impacts on natural and rural landscapes and residential amenity.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1, 11.1, 12.1 and 12.2 DPFs: 11.1, 12.1 and 12.2	

Upgrades and amendments to the existing on-site waste system has been reviewed and approved by the Department for Health and Wellbeing (DHW) as part of the previous DA. The propped variation as mentioned previously is not increasing the capacity or making changes to the waste system and as such the policies listed above do not need to be considered. The only difference between the two is that the new function venue will not have a kitchen and toilets as illustrated on the floor plan. Instead, the kitchen and toilet facilities in the existing restaurant will be used. This will essentially remove the need for additional underfloor plumbing that would have been required with ethe original proposal.

Interface between land Uses:

Desired Outcomes	
DO1	Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.2, 2.1, 4.1, 4.2, 4.5, 4.6, 6.1 and 6.2 DPFs: 2.1, 4.1 and 4.6	

This proposal as mentioned earlier is not seeking to change the approved capacity or the hours of operations. That being said, given that the location of the function building as well as its overall design and construction are changing, applicant has prepared an amended acoustic report. Whilst the acoustic report considered all the noise impacts including the delivery vehicles and the car parking noise, the only relevant ones in relation to this application were the patron and music noise.

On comparison of the original acoustic report to the amended, the measurements and the findings are almost identical, demonstrating that the noise impacts associated with music and patrons is within the allowable parameters provided that the use is undertaken in accordance with the original conditions attached. Those conditions did require some minor changes to reflect the new building and the new acoustic report.

In summary, the noise assessment investigation was undertaken factoring in 3 different scenarios and has determined that the music noise at the nearest sensitive receiver will be within the day and night time criterion with the following recommendations:

- No speakers are to be installed external to the proposed function centre;
- The sound pressure levels from the sound system be limited to not more than 90dBA with the levels measured approximately in the middle of the function centre;
- external performers should only use the sound system provided by the function centre;
- the sound system should be tuned and commissioned by an acoustic engineer once the speakers are in place and the sound limiter is installed.

The only difference to the original report was that it no longer required the doors and any operable glazing to be fitted with compressible acoustic seal. Condition has however still been attached requiring the doors and windows to be closed during when the music is played as per the original approval.

As previously mentioned, the new building will be located in the existing lawn area, which already has approval to host functions. To date, these functions have been held in the existing restaurant building and the associated lawn area.

Based on the noise assessment undertaken for the proposed development and based on the proposed numbers it was determined that all noise generating activities will meet the required criterion with existing conditions in place. As such it is considered that the proposal satisfies all of the relevant requirements in PO 2.1 and also the POs 4.1, 4.2, 4.4, 4.6 and DPF 4.6.

Out of Activity Centre Development:

Desired Outcomes	
DO1	The role of Activity Centres in contributing to the form and pattern of development and enabling equitable and convenient access to a range of shopping, administrative, cultural, entertainment and other facilities in a single trip is maintained and reinforced.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 and 1.2 DPFs: -	

The proposed variation has no implications on the above policies and as such they do not need to be considered.

Tourism Development:

Desired Outcomes	
DO1	Tourism development is built in locations that cater to the needs of visitors and positively contributes to South Australia's visitor economy.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1 DPFs: -	

The proposed variation has no implications on the above policies and as such they do not need to be considered.

Transport, Access and Parking:

Desired Outcomes	
DO1	A comprehensive, integrated and connected transport system that is safe, sustainable, efficient, convenient and accessible to all users.
Performance Outcomes (PO) & Deemed to Satisfy (DTS)/Designated Performance Feature (DPF) criteria	
POs: 1.1, 1.2, 1.3, 1.4, 3.1, 3.3, 3.4, 4.1, 5.1, 6.2, 6.4, 6.5, 6.6 and 6.7 DPFs: 1.4, 3.1, 5.1 and 6.6	

There are no changes proposed to access and car parking arrangements. The proposal is also not increasing the capacity and as such the above policies do not need to be considered.

CONSIDERATION OF SERIOUSLY AT VARIANCE

The proposal is not considered to be seriously at variance with the provisions of the P & D Code. The Productive Rural Landscape Zone policies stipulate shops as an envisaged form of land use provided it maintains a pleasant rural character and amenity. The change to the design of the building and its location will not result in any interface or visual impacts. The new location is still in the predominantly same location on site and is proposed to be nestled amongst existing vegetation and any views of the building from neighbouring properties or the public realm would be distant in nature. As far as interface issues, the applicant has demonstrated that they can be effectively managed.

CONCLUSION

The proposal is for variation of DA 21017786 – Change to the location and design of the approved function venue and water storage tanks.

Fundamentally, the main concerns with the variation were the visual and interface issues with adjoining properties and public realm. The new location of the building is the lawn area where functions are already held, 31m north of the as previously approved building location. As such the location is still central to the site and adjacent to the existing cellar door and restaurant building. Whilst the building is in the form of a permanent marquee design of lighter roof colours, given its location and separation form the road and neighbouring properties, its impacts would be minimal if any.

From an interface perspective, the new acoustic report prepared is almost identical to the previous report, demonstrating that the interface issues can effectively be managed subject to a number of conditions which were imposed on the original application, and which only require minor adjustment to line up with the new design.

The variation includes replacement of the approved 100KL water storage tank with two smaller water storage tanks for stormwater management and fire-fighting water supply.

Council staff are satisfied the proposed development is not seriously at variance and is sufficiently in accordance with the Planning and Design Code to warrant Planning Consent.

RECOMMENDATION

It is recommended that the Council Assessment Panel resolve that:

The proposed development is not considered seriously at variance with the relevant Desired Outcomes and Performance Outcomes of the Planning and Design Code pursuant to section 107(2)(c) of the *Planning, Development and Infrastructure Act 2016*; and

Development Application Number 21019844 by Cobbs Hill Estate for Variation of DA 21017786 – Change to location and design of the approved function venue and water storage tanks (30KL and 22KL) and removal of retaining walls and the 100KL underground tank at 362 Oakwood Road, Oakbank is granted Planning Consent subject to the following conditions: Development Application Number 25007199 by Cobbs Hill Estate for Variation of DA 21017786 – Change to location and design of the approved function venue and water storage tanks (30KL and 22KL) and removal of retaining walls and the 100KL underground tank at 362 Oakwood Road, Oakbank is granted Planning Consent subject to the following conditions:

CONDITIONS

1) **The development granted shall be undertaken and completed in accordance with the stamped plans and documentation, except where varied by conditions below.**

2) **Entertainment in the form of a range of music shall be contained within the function building during the operating hours. Windows and doors of the building shall be kept closed during times when music is played.**

3) **Prior to occupation, the sound system shall be tuned and commissioned by an acoustic engineer in accordance with the recommendations from the Bestec Acoustic Services 100% Design Report dated 10 November 2024. When the nominated noise levels are achieved, the sound limiter and main amplifier should be locked by the acoustic engineer to prevent the settings being adjusted by staff or performers.**

4) **All performers shall only use the sound system and amplifier provided by the function centre. No other sound systems and amplifiers are permitted to be used unless tuned and commissioned by an acoustic engineer prior to use in order to comply with the recommendations by supplementary report from Bestec Acoustic Services 100% Design Report dated 10 November 2024.**

5) **Before each function the operator shall measure the reverberant sound pressure level (approximately in the middle of the function venue building) from each speaker to ensure it does not exceed 85dBA. The fixed automatic sound limiter shall be used to monitor sound pressure levels during the function to ensure music does not exceed 85dBA.**

6) **Except where varied by this authorisation, all other conditions, plans and details relating to Development Authorisation 21017786 continue to apply to this amended authorisation.**

ADVISORY NOTES

General Notes

1) **No work can commence on this development unless a Development Approval has been obtained. If one or more consents have been granted on this Decision Notification Form, you must not start any site works or building work or change of use of the land until you have received notification that Development Approval has been granted.**

2) **Appeal rights – General rights of review and appeal exist in relation to any assessment, request, direction or act of a relevant authority in relation to the determination of this application, including conditions.**

3) **This Planning Consent is valid for a period of twenty-four (24) months commencing from the date of the decision, subject to the below or subject to an extension having been granted by the relevant authority. If applicable, Building Consent must be obtained prior to expiration of the Planning Consent.**

4) **Where an approved development has been substantially commenced within 2 years from the operative date of approval, the approval will then lapse 3 years from the operative date of the approval (unless the development has been substantially or fully completed within those 3 years, in which case the approval will not lapse).**

OFFICER MAKING RECOMMENDATION

Name: Doug Samardzija
Title: Senior Statutory Planner

HEYNEN
PLANNING CONSULTANTS

SITE PLAN LEGEND

FFL	FINISHED FLOOR LEVEL. BUILDER TO CONFIRM ALL LEVELS / DISCREPANCIES PRIOR TO COMMENCEMNT OF WORKS

NOTE : THE LEVELS OF THE PLANS WERE AS PER EXISTING, THE APPLICANT HAS SIMPLY PAVED THE EXISTING LEVELS AND PUT DRAINAGE AROUND THE PERIMETER OF THE PROPOSAL.

FLOOR PLAN LEGEND

EX/EXTG	DENOTES EXISTING
CD-01	POLYESTER WITH A PVC COATING: COLOUR: WHITE.
CD-02	"ROLL CLEAR" CALENDERED PVC CLEAR
FFL	FINISHED FLOOR LEVEL. BUILDER TO CONFIRM ALL LEVELS / DISCREPANCIES PRIOR TO COMMENCEMNT OF WORKS
FF:01	SELECTED PAVING TO ENGINEERS SPECIFICATION
GFL	GROUND FLOOR LEVEL

NOTE : BUILDER CONFIRM ALL LEVELS PRIOR TO COMMENCEMENT OF WORKS. ALL DIMENSIONS AND SET OUT TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF SITE WORKS .

SITE PLAN
1:5000 @ A3

Project North

DEVELOPMENT

1:5000

50M 250M

LOCATION
362 SWAMP ROAD
OAKBANK SA 5243
PROJECT
COBBS HILL ESTATE

CLIENT
JED HICKS

REVISION AMENDMENTS

issue	checked	date	rev.
DEVELOPMENT	IM	20.05.25	D3
DEVELOPMENT	IM	12.02.25	D2
DEVELOPMENT	IM	15.08.24	D1

SCALE	1:5000
ORIGINAL SIZE	A3
DATE	20/05/2025
DRAWN	IM
JOB NUMBER	23-035
DRAWING NUMBER	23-035.D2.10.01

HEYNEN
PLANNING CONSULTANTS

PERIMETER PAVING TO THE PAVILION

30KL RAINWATER TANK: COLOUR: WOODLAND GREY:
CONNECT TO PAVILION STORMWATER SYSTEM

ABOVE GROUND METAL FIRE FIGHTING TANK: 22.0KL:
ALL EXPOSED COMPONENTS TO BE STEEL

RETAIN APPROVED ACCESS TRACK: COMPACTED
GRAVEL SEAL: MINIMUM 3 METRES WIDTH AND UTILISE
PROVISION OF CIRCULAR TURN AROUND AREA FOR FIRE
FIGHTING TRUCK TURN AROUND

DEVELOPMENT
PROPOSED
PAVILION
FFL371.46

RESTAURANT
FFL377.37

EXTG CELLAR DOOR
FFL377.37

DEVELOPMENT REMOVED

EXTG CARPARK
NO CHANGES

1
34
25
19
4
47

EXTG ACCESS ROAD (NO CHANGE)

60
70
80

EXTG
EXTG

LOCALISED PLAN
1:500 @ A3

Project North

DEVELOPMENT

1:500

5M 25M

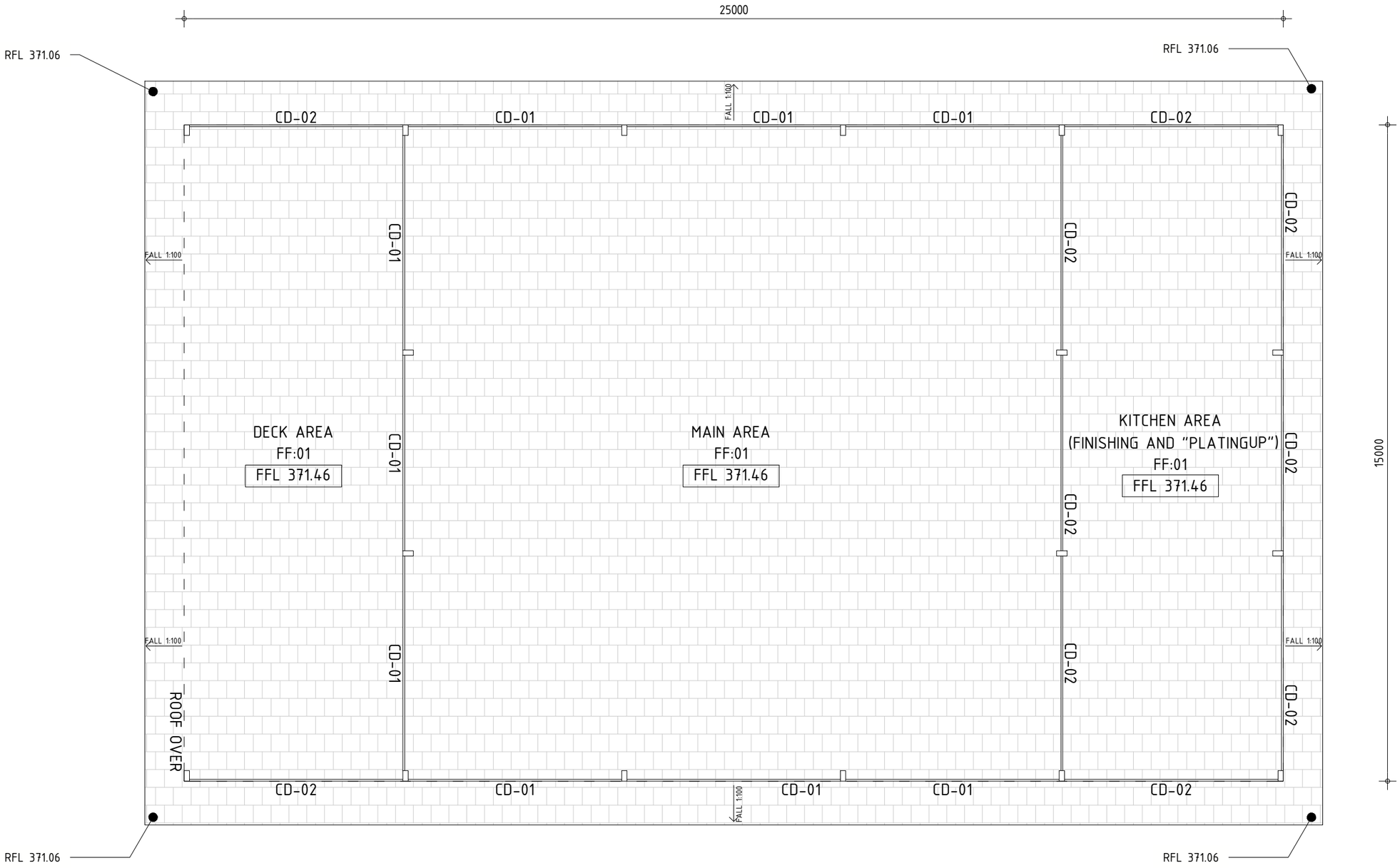
LOCATION
362 OAKLAND ROAD
OAKBANK SA 5243
PROJECT
COBBS HILL ESTATE
CLIENT
JED HICKS

REVISION AMENDMENTS

issue	checked	date	rev.
DEVELOPMENT	IM	20.05.25	D3
DEVELOPMENT	IM	12.02.25	D2
DEVELOPMENT	IM	15.08.24	D1

SCALE	1:500
ORIGINAL SIZE	A3
DATE	20/05/2025
DRAWN	IM
JOB NUMBER	23-035
DRAWING NUMBER	23-035.D2.10.02

HEYNEN
PLANNING CONSULTANTS



FLOOR PLAN
1:100 @ A3

True North

DEVELOPMENT

1:100

1M 5M

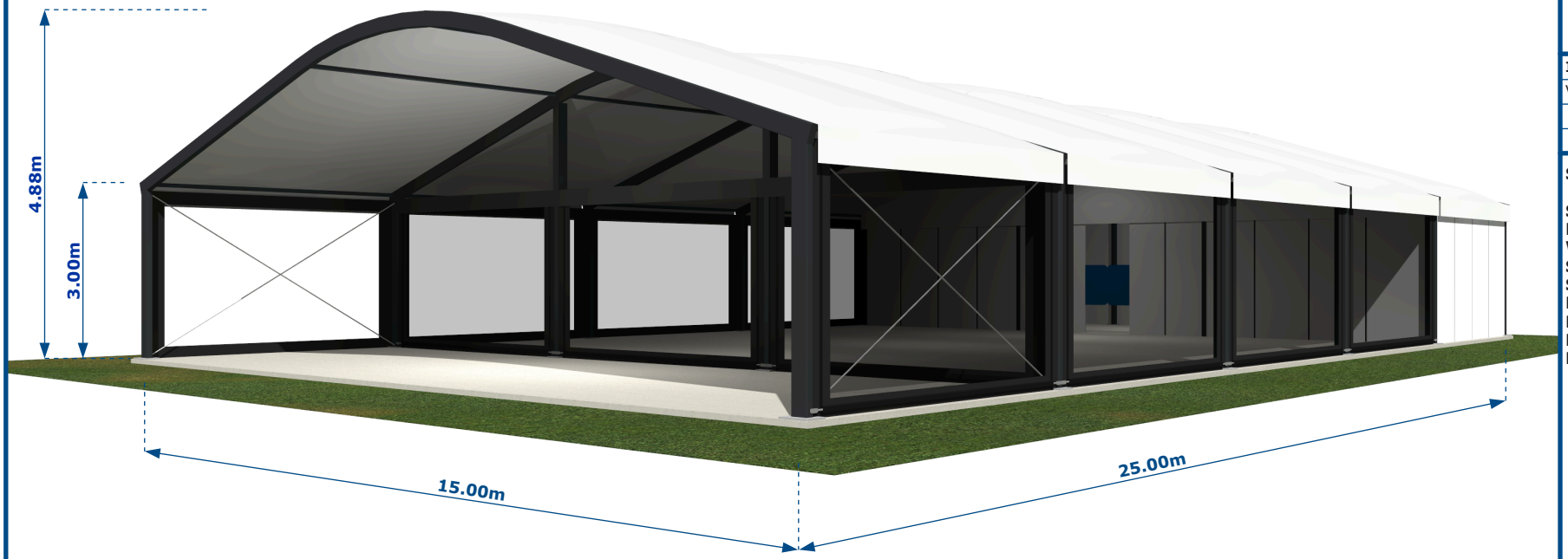
LOCATION
362 OAKLAND ROAD
OAKBANK SA 5243
PROJECT
COBBS HILL ESTATE

CLIENT
JED HICKS

REVISION AMENDMENTS

issue	checked	date	rev.
DEVELOPMENT	IM	20.05.25	D3
DEVELOPMENT	IM	12.02.25	D2
DEVELOPMENT	IM	15.08.24	D1

SCALE	1:100
ORIGINAL SIZE	A3
DATE	20/05/2025
DRAWN	IM
JOB NUMBER	23-035
DRAWING NUMBER	23-035.D2.20.01



Issue:	Revision:	Date:
V-2	various revisions	28/06/23

Specification:

Structure: GZP Curve - Series
Roof: thermo system (white)
Walls: single layer PVC / ISO
Structure width: 15.00m
Structure length: 25.00m
Bay width: 5.00m
Eave ht: 3.00m
Ridge ht: 4.88m
Roof pitch: 18°

Option 2 - black walls

Prepared for:

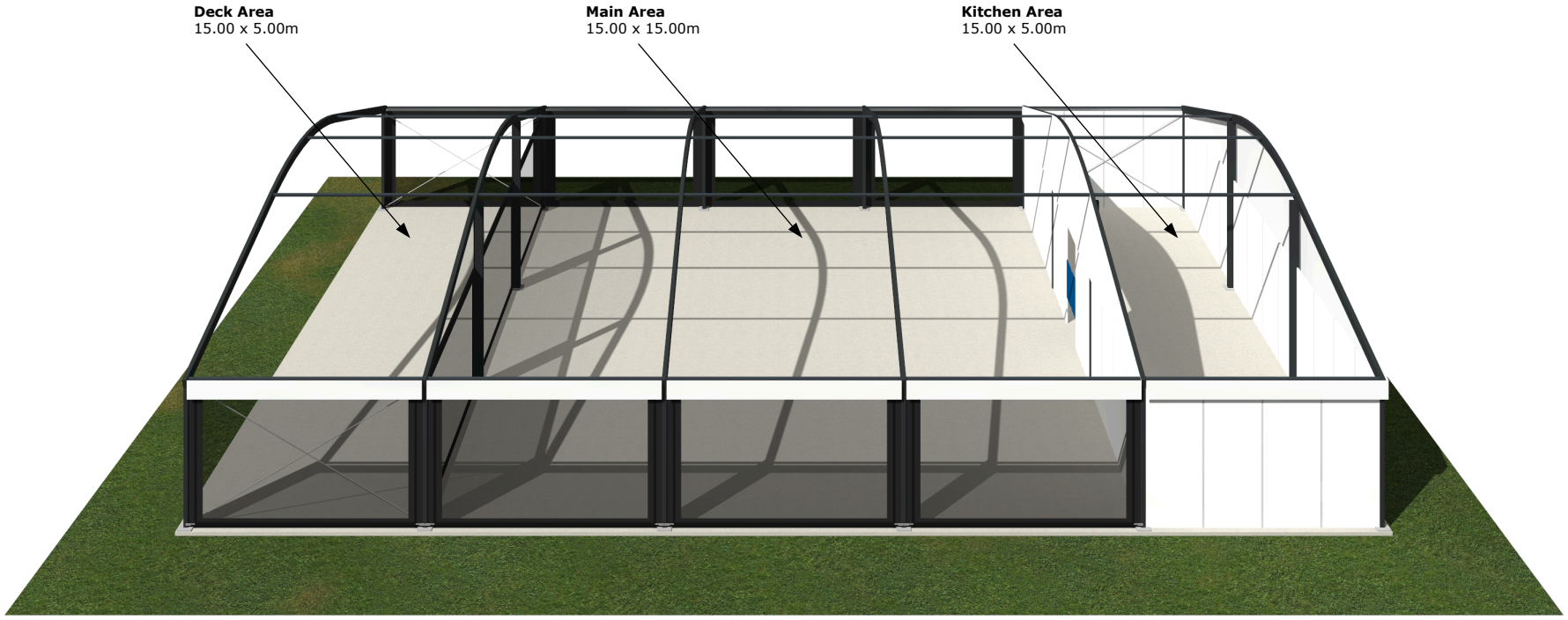
Cobbs Hill Estate

GZP Curve15.00 x 25.00 x 3.00m

HTS TENTIQ

HTS TENTIQ GmbH
15 Ketch Close
Fountaindale
NSW 2258, Australia
Website: hts-tentiq.com.au

HEAD OFFICE AND PRODUCTION
HTS TENTIQ GmbH
Hinter der Schlagmühle 1
Kefenrod, D-63699
Germany



This rendered drawing is for illustration purposes only and does not detail all structural frame components present within the construction. Please request separate technical drawings from your sales representative should you need to identify specific elements of the framework design.

DO NOT USE THIS DRAWING FOR CONSTRUCTION PURPOSES. PLEASE ASK FOR TECHNICAL DRAWINGS

Issue:	Revision:	Date:
V-2	various revisions	28/06/23

Specification:

Structure: GZP Curve - Series
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Option 2 - black walls

Prepared for:

Cobbs Hill Estate

GZP Curve15.00 x 25.00 x 3.00m

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Germany

HEYNEN
PLANNING CONSULTANTS

T 08 8271 7944
Suite 15, 198 Greenhill Road
EASTWOOD SA 5063

ABN 54 159 265 022
ACN 159 265 022

12 March 2025

Adelaide Hills Council
ATT: Planning Department

By Upload

Dear Doug

RE: VARIATION OF DA 21017786 (FUNCTION CENTRE RELOCATION AND APPEARANCE)

Background

You may recall originating development application DA 21017786 for construction of a function centre and restaurant building with associated car parking and landscaping, 100,000 litre underground water storage tank and variations to Development Authorisation 16/973/473 at 382B Swamp Road, Oakbank.

More recently Council granted planning consent to DA 23037800, which was described as follows:

> "Change of use of existing cellar door building to include a restaurant, variation to DA 21017786 to remove the restaurant from the approved function centre building and to vary Condition 13 to increase the days of restaurant operation from 2 days per week to 3 days per week plus public holidays, and to vary Condition 11 to increase the capacity of the cellar door to 200 persons on public holidays"

I confirm that variation application DA 23037800 and Stage 1 of DA 21017786 have been completed by the applicant. By virtue of DA 23037800 (i.e. relocation of the restaurant) this aspect of Stage 2 of DA 21017786 is redundant. The applicant now seeks to vary the final component of Stage 2 of DA 21017786 so as to relocate the function centre and alter the appearance and form of the approved building.

Consistent with the above undertaking the following documents are herein uploaded:

- Site Plan, prepared by Heynen Planning Consultants, sheet 23-035.D2.10.01, dated 12.02.25;
- Localised Plan, prepared by Heynen Planning Consultants, sheet 23-035.D2.10.02, dated 12.02.25;
- Floor Plan, prepared by HTS TENTIQ, sheet undated;
- Exterior views, prepared by HTS TENTIQ, sheet undated;
- Framing plans, prepared by HTS TENTIQ, dated 21.07.23;
- Acoustic Report, prepared by Bestec, dated 10.11.24;
- Civil documentation, prepared by Maxwell Engineering, dated 12.9.23.

With respect to the updated site plan and localised plan, the effective change is the removal of the approved function centre within DA 21017786 and a new function centre located within the garden area north east of the approved restaurant.

On review of the application documents, put simply, this variation application only relates to altered appearance and position of the approved function centre. No alteration of existing conditions of consent are proposed approved.

Accordingly, I request that the Council assess the difference borne from this application, consistent with an acceptance of the approved land use, hours of operation, vehicle movements and the patron numbers and other planning impacts already having been calculated and found to exhibit planning merit by the grant of planning consent(s).

Assessment Approach

In my opinion the proposed variation application is relatively simple in nature and displays planning merit. In forming this view I am conscious of the decision of *Holds & Ors v The City of Port Adelaide Enfield & Ors* [2011] SASC 226 which states:

> 38. If the application is treated as an application to vary the approved development, the next step must be to identify the elements of the proposed development which are not comprehended by the original approval… The extent of the proposed variation must then be assessed against the applicable Development Plan. Plainly enough, the extent of the proposed variation cannot be assessed in the abstract. It must be assessed in the context of the development which has been approved and, perhaps, even substantially completed. An application to vary a development approval, which proposes to increase the height or mass of a building, cannot be sensibly addressed in the abstract. It must be considered against the dimensions of the building which has been approved. It is meaningless to assess an increase in the height of a building by say, one metre, without reference to the already approved or existing height…

The Supreme Court decision was consistent with the judgement in the matter of *Vlassis v City of Unley (No 2)* [2002] SAERDC 8 which stated:

> "15… It is a proper course for me to take into account that which is entitled to be constructed when assessing the proposed variation."

Accordingly, the subject of the assessment is only to pertain to the new built form parameters and new position of the new function centre building.

Subject land and Locality

The subject land is commonly identified as 362 Oakwood Road, Oakbank SA 5243 (in CT 6035/473). The land is irregular in shape and comprises an area of 17.55 hectares. The subject land has a primary frontage to Oakwood Road. Oakwood Road is a formed road that is not demarcated as a State Managed Road by the Planning and Design Code (the Code). The site interfaces with a variety of rural, and value producing activities within the locality.

Rather than just being exclusively "viticulture", the locality includes an apple orchard to the north, the Lenswood Cider Co, and other value producing activities, such as cellar doors and tourist accommodation.

Development within the locality, rather than single dwellings, comprise established homesteads. Many buildings surround detached dwellings, including ancillary accommodation, outbuildings, agricultural buildings, and are accompanied by on-site infrastructure – dams, septic systems, rain water tanks, and bush firefighting tanks.

The Development

The development is to be a 15.0 x 25.0 metre marquee with a total height of 4.88 metres.

Food preparation is to occur within the existing kitchen within the restaurant and then moved into the marquee for plating and service within the annotated "kitchen area" of the marquee.

As previously expressed, patron numbers, hours of operation and site management will remain consistent with the prior grant of planning consent. Likewise, car parking remains consistent with the prior grant of planning consent.

No advertising is proposed in this development application.

For completeness, the variation application seeks to remove the function venue approved within DA 21017786, shown below in Figure 1.

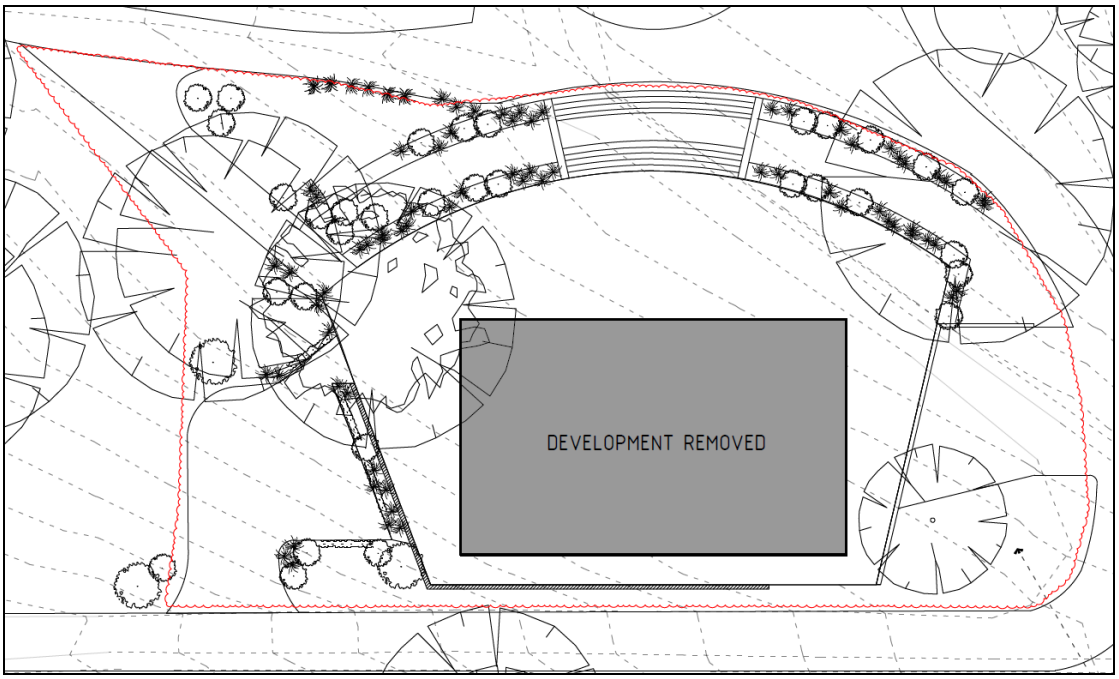


Figure 1: Development Removed from DA 21017786

Categorisation

The proposed development is not "captured" by Table 4 "Restricted Development Classification". The Code identifies "Function Venue" as a "Code Assessed – Performance Assessed" form of development within the Productive Rural Landscape Zone (PRLZ). Function venue is defined by the Code as follows:

> Means premises used primarily for the hosting of events, conferences, conventions, receptions or functions.

Criteria for notification exemption for a function venue is:

> **Productive Rural Landscape Zone**
> DTS/DPF 6.6 Function venues:
> (a) are located on an allotment having an area of at least 5ha
> (b) are setback from all property boundaries by at least 40m
> (c) are not sited within 100m of a sensitive receiver in other ownership
> (d) have a building height that does not exceed 9m above natural ground level.

The proposed variation of the function centre is consistent with the above list of exemptions, and thereby, does not require notification.

Brief Planning Opinion

In assessing the merits of the proposal, I have reviewed the most relevant PRLZ, Overlay and General Development policies as contained within the Code. I have not sought to specifically address all these policies herein the planning assessment notes. The proposal largely satisfies the general provisions of the Code, however the General Development policies pertaining to 'interface between land uses and 'traffic' require to be reiterated as generally consistent with the prior grant of planning consent.

Per the Code practice directions, overlay policies take precedence over zone, subzone, and general policies of the Code. In reviewing the features of the land and the particulars of the proposal, I have addressed the Hazards (Bushfire – High Risk) Overlay and Mount Lofty Ranges Water Supply Catchment (Area 2) Overlay.

Overlays

Notwithstanding the designation of the land within the Hazards (Bushfire – High Risk) Overlay, there is little native vegetation that remains upon the subject land. The paddocks and viticulture, as the predominant feature of the land and the surrounding area illustrates that the risk of bushfire is low. On days of high bushfire risk, the applicant has discretion to determine if it is safe for the subject land to be attended by patrons, and act with necessary regard. It remains nevertheless, that the bushfire access to the land for the existing cellar door and restaurant, remains sufficient and satisfies DPF 1.1 of the Overlay.

The Mount Lofty Ranges Water Supply Catchment (Area 2) Overlay provides guidance to ensure that any new development has a neutral or beneficial effect on the quality of water harvested from secondary reservoirs or the diversion of weir catchments. Policy is geared by language that seeks to ensure that development would "safeguard Greater Adelaide's public water supply" (DO 1). The proposal involves the replacement of an approved structure with analogous structure. Consistency between the proposed variation and the approved development remains with respect to:

- use of the site and building space for functions as previously approved and the overall effects of water draining in a manner consistent with PO 1.1 and PO 1.2; and
- utilisation of the toilets underneath the restaurant and the reduction in the wastewater requirements on the land consistent with PO 2.1 and 2.3.

I have not specifically addressed the Environment and Food Production Area, Hazards (Flooding – Evidence Required), Limited Land Division, Native Vegetation, and Prescribed Wells Area Overlays due to their limited applicability (again noting that the proposed variation does not involve any new wastewater systems, any native vegetation removal, and contains no new habitable buildings or change to patron capacity).

Productive Rural Landscape Zone

A review of the PRLZ policies identifies that the policy seeks for a *'range of land uses at an appropriate scale and intensity that capitalise on the region's proximity to the metropolitan area and the tourist and lifestyle opportunities this presents'* (DO 1) and *'a zone that promotes agriculture, horticulture, value adding opportunities, farm gate businesses, the sale and consumption of agricultural based products, tourist development and accommodation'* (DO 2).

The proposed development is entirely consistent with this outcome, noting the clear desire for the "value adding opportunities" within the Desired Outcome. Again, having regard to the *Holds* matter and *Vlassis* matter it follows that the relocation of the approved use remains consistent with the PRLZ.

General Development Policies

The applicable policies of Part 4 of the Code remain addressed (i.e. items such as car parking, hours of operation) given the limited extent of the proposed variation. In relation to the matter of noise and interface between land uses (extracts provided below) an acoustic report accompanies this development application.

> **Part 4: Interface between Land Use**
> PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).
>
> DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Commercial and Industrial Noise) Policy criteria.

For brevity, the advice of Bestec is as follows:

> "The noise levels at the nearest noise sensitive receivers resulting from the combined operational noise emissions from the proposed development have been calculated and assessed against the selected environmental noise criteria derived in accordance with the Environment Protection (Noise) Policy 2007. The assessment revealed that the selected criteria will be achieved at all locations and therefore, performance outcomes PO 1.2, PO 2.1, PO 4.1, PO 4.2, PO 4.5 and PO 4.6 of the SA Planning and Design Code will be achieved."

And:

> "Based on the above, we conclude that the desired outcome stipulated in the SA Planning and Design Code Assessment Provisions (Section Interface between Land Uses of the [Code]), *DO 1: The development to be located and designed to mitigate adverse effects on or from neighbouring and proximate uses will be achieved."*

Summary

The proposed variation of the function venue (i.e. appearance and built form and location) maintains the previously established merit associated with car parking, stormwater management, safe vehicle movements, and wastewater management). Likewise the proposed development maintains the appropriateness of the use in a land use sense.

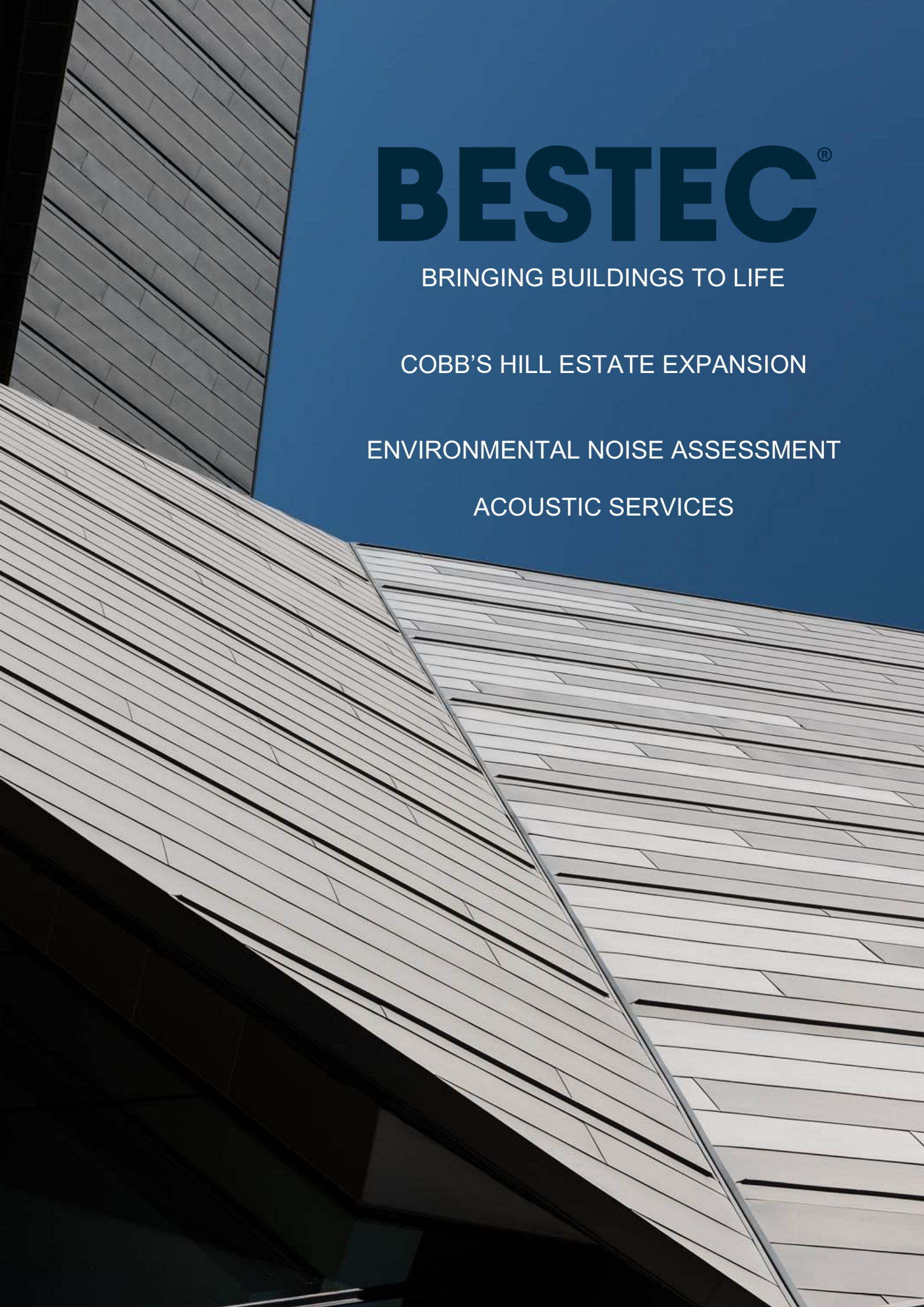
No new visual impacts are created by the proposed variation, while noise relates impacts remain "like for like" and the planning merit remains unchanged in this regard. In my opinion, no negative planning impacts arise from the proposed variation of DA 21017786, and the integrity of the original planning consent remains "intact".

Should you have any questions regarding the above then please do not hesitate to contact me, otherwise the applicant looks forward to Council favourable consideration of the proposed development.

Regards,

Iain M°Quin
T 8272 1433
E iain@heynenplanning.com.au

cc. Cobbs Hill Estate, by email



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COBB'S HILL ESTATE EXPANSION

ENVIRONMENTAL NOISE ASSESSMENT

ACOUSTIC SERVICES

BESTEC

ABN 43 909 272 047

Building Engineering
Services Technologies
Consulting Engineers

A. 144 Gawler Place
Adelaide SA 5000

GPO Box 818
Adelaide SA 5000

T. (08) 8232 4442
F. (08) 8232 4244

E. consulting@bestec.com.au
W. bestec.com.au

IVD:OZH
56706/6/1
10 November 2024

Cobbs Hill Estate
382 Swamp Road
OAKBANK SA 5063

Attention: Mr J Hicks

Dear Sir

COBB'S HILL ESTATE EXPANSION
ENVIRONMENTAL NOISE ASSESSMENT
ACOUSTIC SERVICES

As requested, we enclose a copy of our updated environmental noise assessment report for the above project.

We trust that the report provides sufficient information for your immediate purpose and we would be most pleased to further discuss any aspect upon your request.

Yours faithfully
BESTEC PTY LTD

IVAILO DIMITROV
ASSOCIATE / PRINCIPAL ACOUSTIC CONSULTANT

DOCUMENT CONTROL

REVISION	DATE	REVISION DESCRIPTION
00	28.06.2024	Initial Issue
01	10.11.2024	Revised Issue

CONTENTS

Introduction

BESTEC Pty Ltd has been engaged to reassess the environmental noise impact to the nearest noise sensitive receivers resulting from the proposed pavilion of Cobb's Hill Estate located at 382 Swamp Road, Oakbank.

I have been advised that the proposed pavilion building is to replace the approved function centre building as per DA 21017786. I note that the replacement involves a different structure and a different location

This document presents a review of the proposed acoustic design criteria, results of the continuous environmental survey conducted at Cobb's Hill Estate, predicted noise levels associated with operation of the proposed pavilion and the results of our assessment.

Executive Summary

In summary:

- The SA Planning and Design Code has been reviewed to determine the relevant planning conditions and requirements applicable to the proposed development.
- A continuous noise survey was conducted over 7-day period at the boundary with the nearest noise sensitive property. The survey results are presented in Appendix A.
- Appropriate environmental noise criteria have been derived in accordance with the SA Environment Protection (Commercial and Industrial Noise) Policy 2023.
- The drawings and the location of the proposed pavilion have been reviewed and a 3D acoustic model representing Cobbs Hill estate and the nearest noise sensitive receivers was developed (refer Appendix B).
- The noise levels at the nearest noise sensitive receivers were predicted (refer Appendices C, D, E, F and G) and the following acoustic design recommendations were provided to ensure the selected criteria are achieved:
  - The day time music noise criterion will be achieved at the nearest noise sensitive receivers when functions take place in the proposed pavilion under the above conditions.
  - The day time and night time music noise criteria will be achieved at the nearest noise sensitive receivers when functions take place at the existing cellar door lawn under the above conditions.
  - In order to ensure the criterion is achieved at all times, we recommend:
    - No speakers are to be installed externally to the pavilion.
    - Before each function at the existing cellar door the Operator or Duty Manager measures the sound pressure level from each speaker at 1m and ensures it does not exceed 85dBA during the function in accordance with the requirements set in the Noise Management.
    - Before each function in the proposed pavilion, the Operator or Duty Manager measures the reverberant sound pressure level (approximately in the middle of the pavilion) and ensures it does not exceed 85dBA[1] (L_{Aeq}). during the function. We recommend an automatic sound limiter be used to monitor the sound pressure levels during performance. The sound limiter should be connected to the main amplifier power and set to cut the power if the maximum sound pressure level is exceeded. To facilitate this, the following is required:
      - Any external performers should use only the sound system and amplifier provided by the venue;
      - The sound system should be tuned and commissioned by an acoustic engineer once the speakers are in place and the sound limiter is installed.
  - Patron noise – our assessment revealed that the selected continuous noise criterion will be achieved and therefore, no further acoustic treatment is required.
  - The noise associated with rubbish collection and car park – our assessment reveled that the selected continuous noise criterion will be achieved and therefore, no further acoustic treatment is required.
- The noise levels at the nearest noise sensitive receivers resulting from the combined operational noise emissions from the proposed development have been calculated and assessed against the selected

[1] A reverberation time of 1.2 seconds was assumed within the function space, based on its volume. Please note that additional acoustic treatment will be required to reduce the reverberation in the space and achieve this reverberation time.

environmental noise criteria derived in accordance with the Environment Protection (Noise) Policy 2007. The assessment revealed that the selected criteria will be achieved at all locations and therefore, performance outcomes PO 1.2, PO 2.1, PO 4.1, PO 4.2, PO 4.5 and PO 4.6 of the SA Planning and Design Code will be achieved.

Based on the above, we conclude that the desired outcome stipulated in the SA Planning and Design Code Assessment Provisions (Section Interface between Land Uses of the), *DO 1: The development to be located and designed to mitigate adverse effects on or from neighbouring and proximate uses* will be achieved.

References

The following documents have been referenced within the preparation of this acoustic report:

[1] Höcker Structures Thermoroof Systems

[2] SA Planning and Design Code, 2022.

[3] SA Environment Protection (Commercial and Industrial Noise) Policy 2023.

[4] World Health Organisation (1999) "Guidelines for Community Noise".

[5] Music Noise from Indoor Venues and the South Australian Planning System, EPA Guideline, July 2015.

[6] Jens Holger Rindel, The Acoustics of places of social gatherings, Euronoise,2015, Maastricht.

[7] Pearsons, Bennett and Fidel "Speech levels in various noise environments" Report EPA-600/1-77-025, Washington, D.C.: U.S. Environmental Protection Agency, May 1977.

[8] Anatoly Patric Architects architectural drawings dated July 2021 provided by Cobb's Hill estate.

Existing Development

Cobb's Hill Estate is located on land zoned Productive Rural Landscape (PRuL) in the SA Planning and Design Code [1] and currently includes a cellar door with maximum capacity of 75 persons Monday to Friday and 200 persons Saturday, Sunday and Public Holidays, restaurant with a maximum capacity of 130 persons at any one time Friday, Saturday, Sunday and Public Holidays from 11:00am to 10:00pm, motel with maximum capacity of 6 guests and the associated carpark. In addition to these activities, the allotment is used as gardens, grazing land and vines.

The existing development has a hardstand parking area for 100 vehicles and mini bus drop off area.

The currently approved operation times enable a maximum of 330 persons on site prior to 6.00pm and a maximum of 130 persons after 6.00pm. This includes any associated outdoor areas for liquor licensing purposes allowing the restaurant and a function to operate concurrently, or the cellar door and a function to operate concurrently.

I have been advised that Stage 1 of the originating DA 21017786 has received Development Approval and that the restaurant and cellar door are operating in accordance with the above criteria, while functions are taking place at the lawn north of the cellar door building also in accordance with DA 21017786.

The nearest noise sensitive receivers are the residential properties on the following addresses:

- 432B Swamp Rd, Lenswood, located at approximately 770m north-west from the cellar door building;
- 426 Oakwood Rd, Oakbank, located at approximately 350m south-west from the cellar door building;
- 357 Oakwood Rd, Oakbank, located at approximately 1,000m south from the cellar door building;
- 61B Peacock Rd South, located at approximately 1,000m south-east from the cellar door building.

Proposed Development and Conditions

The proposed expansion includes:

- Stage 2 – originating of DA 21017786, that is 32 times per year from 3.00pm to 12.00am (Midnight) Friday, Saturday or Sunday and with a maximum of 130 persons.

Functions taking place at the new pavilion building (indicated with L2 in Figure 1) will comply with the following conditions:

- After 6.00pm the proposed pavilion, restaurant and cellar door can operate concurrently but the maximum number of persons on site overall cannot exceed 130;
- Before 6.00pm the proposed pavilion, restaurant and cellar door can operate concurrently but the maximum number of persons on site overall cannot exceed 330;
- Two functions cannot occur concurrently on site.

The location of the new pavilion is shown on Figure 1. The new pavilion is a framed construction with thermo PVC roof and walls (refer Appendix B) with Sound Reduction Index of R_W 18 (based on manufacturer data).

Figure 1: Location of the proposed pavilion

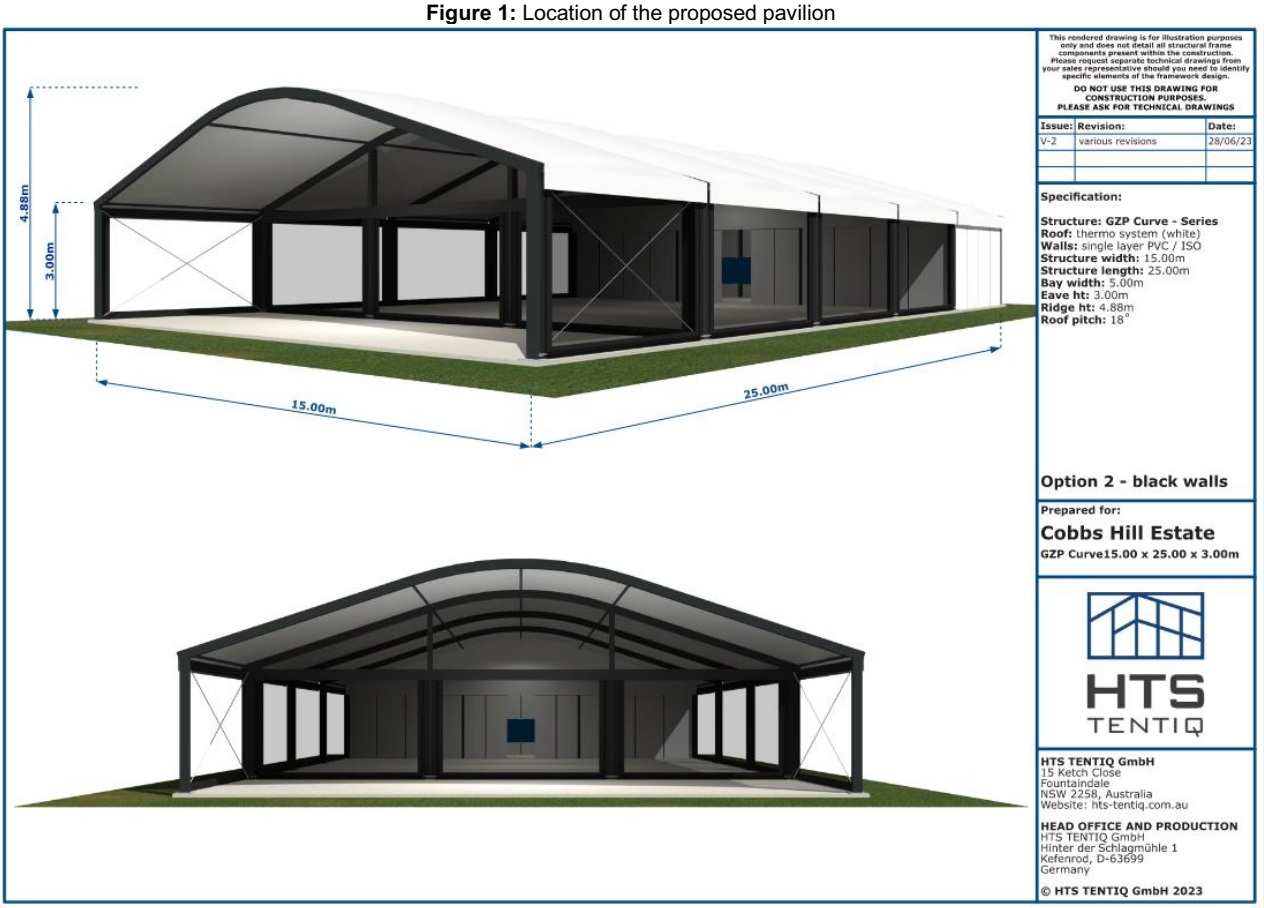


Figure 2: Construction of the proposed pavilion

The Noise Management Plan also outlines the Duty Manager responsibilities to noise management as follows:

- Assess, prior to a function or an event, the suitability (i.e. type, style, amplification) of the proposed entertainment or amusement;
- Notify in writing the organiser of a function or an event if the entertainment or amusement is deemed inappropriate.
- Monitor noise levels from entertainment or amusement and if deemed to be too high will warn the performers and/or DJ no more three times and thereafter (if not complied with) will switch off power to the amplifier.
- Call "last drinks" 30 minutes before the close of the function or event.
- Operate amplified music in accordance with any conditions of consent as may be required by a Development Approval issued by the relevant Council planning authority.

Existing Acoustic Environment

An unattended noise survey was conducted in the south-western boundary of the estate (adjoining the nearest noise sensitive receiver) between 14 and 21 August 2020 in order to establish the existing ambient and background noise levels. The survey was conducted using an automatic noise logger SVAN 953, SN8951 (due for calibration on 16 April 2021).

Figure 3: Location of the environmental logger during the survey

The logger was set to continuously measure and average A-weighted equivalent continuous noise levels ($L_{Aeq,15min}$), A-weighted maximum noise levels (L_{Amax}) and statistical noise descriptors (L_{A01}, L_{A10}, L_{A90}) using 1/3-octave bands (31.5Hz – 10,000Hz) over 15-minute intervals using Fast time weighting and audio

recording set to record the ambient sound continuously. The calibration of the unit was checked before and after the survey and no drift was detected. Copy of the calibration certificate is available on request.

The detailed survey data are presented in Appendix A. The highlighted portions of the graphs represent the proposed hours of operation of the extension.

The analysis of the collected data revealed:

- The measured background noise levels (L_{A90}) hours during the proposed of operation were:
  - Night time - the measured minimum background noise level was 30dBA.
  - Day time – the measured minimum background noise levels was 32dBA.
- The ambient noise levels (L_{Aeq}) measured during the proposed of operation were:
  - Night time - the measured minimum ambient noise level was 34dBA.
  - Day time - the measured minimum ambient noise level was 39dBA.

Conditions

The SA Planning and Design Code [1] sets the Desired Outcome (DO) for developments, which might affect sensitive receivers in adjacent areas as follows:

DO 1 Development is located and designed to mitigate adverse effects on or from neighbouring and proximate uses.

As the estate is a non-residential development, the SA Planning and Design Code [1] requirements (performance outcomes) relevant to Section Interface Between Land Uses) apply:

PO 1.2 Development adjacent to a site containing a sensitive receiver (or lawfully approved sensitive receiver) or primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts

PO 2.1 Non-residential development does not unreasonably impact on the amenity of sensitive receivers (or lawfully approved sensitive receivers), or an adjacent zone primarily for sensitive receivers through its hours of operation having regard to:

(a) The nature of the development;

(b) Measures to mitigate off-site impacts;

(c) The extent to which the development is desired in the zone;

(d) Measures that might be taken in an adjacent zone primarily for sensitive receivers that mitigate adverse impacts without unreasonably compromising the intended use of land.

A non-residential development is deemed to satisfy the above requirement if the noise emissions that affect the noise sensitive receivers achieves the relevant Environment Protection (Noise) Policy criteria (DTS/DPF 4.1).

PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved) sensitive receivers.

PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including:

(a) Locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers.

(b) When sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers.

(c) Housing plant and equipment within an enclosed structure or acoustic enclosure.

(d) Providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone.

PO 4.5 Outdoor areas associated with licensed premises (such as beer gardens or dining areas) are designed and/or sited to not cause unreasonable noise impact on existing adjacent sensitive receivers (or lawfully approved sensitive receivers).

PO 4.6 Development incorporating music achieves suitable acoustic amenity when measured at the boundary of an adjacent sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers.

A development incorporating music should include noise attenuation measures that will achieve less than 8dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum ($L_{OCT10,15min} < L_{OCT90,\ 15min}$ + 8dB) externally at the nearest existing or envisaged noise sensitive location (DTS/DPF 4.6).

Design Criteria

Environmental Noise

As the Deemed-to-Satisfy/Designed Performance Feature (DTS/DPF 4.1) refers to compliance with relevant Environment Protection (Noise) Policy criteria, the environmental noise assessment has been conducted against the criteria set by the Environment Protection (Noise) Policy 2007 [3].

The EPP 2007 [3], sets out the maximum allowable continuous noise in terms of A-weighted Equivalent Continuous Noise Level (L_{Aeq}) based on the time of day and zoning / use of land in which the noise source and receiver are located. With reference to the SA Planning and Design Code [1] , we note that both Cobbs Hill estate and the nearest noise sensitive receiver are located on land zoned Productive Rural Landscape (PRuL), which is essentially a rural living zone. Table 1 details the indicative noise factors based on time of day and land-use as stipulated in Table 2 of the EPP 2007 [1]. As the EPP 2007 does not stipulate indicative noise levels for land zoned Deferred Urban, the indicative noise levels for Residential zone have been used.

Land Use Category	Day Time (07:00 to 22:00)	Night Time (22:00 to 07:00)
Rural Living	47	40

Table 1: Indicative noise factors based on time of day and land use

In accordance with the Policy, the predicted continuous noise level due to the proposed development (for application for development authorisation) should not exceed the indicative noise level, minus 5dBA.

Based on the average of the relevant land use categories, minus 5dBA for planning purposes, the applicable day and night time continuous noise criteria become:

- Day-time (07:00 to 22:00): 42dBA
- Night time (22:00 to 07:00): 35dBA

Note that if noise emitted by the proposed development contains any tones, modulation, impulsive or low frequency characteristics, the continuous noise level of the noise source must be adjusted as follows:

- Noise containing 1 characteristic - 5dBA penalty added to source continuous noise level.
- Noise containing 2 characteristics - 8dBA penalty added to source continuous noise level.
- Noise containing 3 or 4 characteristics - 10dBA penalty added to source continuous noise level.

Intermittent Noise

The criteria provided in the above section relate to continuous noise sources, and do not cater for intermittent noise events. We recommend the use of the World Health Organisation (WHO) Guidelines [4], which recommends a maximum A-weighted noise level L_{Amax}, of 45dBA in a bedroom in order to avoid sleep disturbance, which is equivalent to approximately 55dBA to 60dBA at the façade of the residential building with windows partially open.

Music Noise

The assessment of music noise emissions is to be conducted against the criteria set by the EPA Guidelines for Development Proposal Assessment for venues where music may be played [4] and the principles of development control in the SA Planning and Design Code [1].

The EPA Guidelines [4] state that:

> "*The music noise ($L_{10,\ 15min}$) from an entertainment venue when assessed at the nearest noise sensitive locations should be:*
>
> - *Less than 8dB above the level of background noise ($L_{90,\ 15min}$) in any octave band of the sound spectrum, and*
> - *Less than 5dB(A) above the level of background noise ($L_{A90,\ 15min}$) for the overall (sum of octave bands) A-weighted level."*

Based on the above EPA SA Guideline and DTS/DPF 4.6, to control music noise emissions from the proposed function venue, we derived the music noise criteria based on the lowest background noise levels (L_{90}) measured during our continuous noise survey. Therefore, the calculated music noise criteria relevant to the neighbouring noise sensitive receivers will be as detailed in Table 2 and Table 3 below.

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
Lowest background noise level $L_{90, 15min}$ (day time)	32	32	30	31	26	22	22	20	32
Maximum allowable exceedance	8	8	8	8	8	8	8	8	5
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 2: Proposed music noise criteria – day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
Lowest background noise level $L_{90, 15min}$ (night time)	31	30	30	24	26	20	18	16	30
Maximum allowable exceedance	8	8	8	8	8	8	8	8	5
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 3: Proposed music noise criteria – night time

SoundPlan Models

We developed 3D acoustic model based on the site topography using SoundPlan 8.2 software package and predicted the noise levels at nearest noise sensitive receivers taking into account the following:

- Location and ground elevation of the existing door cellar and function area as well as the proposed restaurant/function centre relative to the noise sensitive receivers.
- The building envelope of the proposed pavilion.
- Distances to the noise sensitive receivers and ground elevations.
- The topography of the area where the noise source and noise sensitive receivers are located.
- Ground sound reflectivity – we assumed ground reflectivity of 40% (40% of the sound incident to the ground will be reflected and 60% will be absorbed).
- Meteorological conditions:
  - Daytime – CONCAWE Category 5;
  - Night time – CONCAWE Category 6.
- Distances as measured from the site plan and Google Earth.
- Reverberant noise level in the pavilion resulting from 16 patrons talking at raised voice level and 16 patrons talking at normal voice level (based on the results of the US EPA study [7]) of 83dBA, calculated in accordance with [6];
- Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level in front of the pavilion;
- Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level on the loan in front of the existing cellar door in function mode;
- Combined noise level of 86dBA at 1m resulting 100 patrons (50 male and 50 female) talking at raised voice level at the lawn north of the existing cellar door (cellar door mode);

We calculated the following scenarios:

- Scenario 1:
  - A function of 130 guests taking place at the lawn north from the existing cellar door building from 15:00 till midnight with recorded music played from 2 speakers at 85dBA (L_{A10}) at 1m from each speaker; and
  - Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level on the loan in front of the existing cellar door;

- The pavilion operating at full capacity (130 patrons) until 18:00 with half of them inside and half of them outside (16 male and 16 female patrons talking at raised voice level resulting in combined noise level of 79dBA at 1m) with background music only played inside.

Assessment of the music noise conducted against music noise criteria (Table 2 and Table 3) and assessment of patron noise – against the environmental noise criteria (refer Section Environmental Noise).

- Scenario 2:
  - The cellar door operates in restaurant/cellar door mode at full capacity of 200 patrons until 18:00 outside (25 male and 25 female patrons talking at normal voice level, 25 male and 25 female patrons talking at raised voice level) and no music played; and
  - A function with 130 guests taking place in the pavilion with recorded music played in from 4 speakers located inside resulting in reverberant sound pressure level of 90dBA (L_{A10}) with half of the guests inside and half of the guests outside (16 male and 16 female patrons talking at raised voice level resulting in combined noise level of 79dBA at 1m).

  Assessment of the music noise conducted against music noise criteria (Table 2 and Table 3) and assessment of patron noise – against the environmental day time noise criterion (refer Section Environmental Noise).
- Scenario 3:
  - The cellar door operates at full capacity of 200 patrons until 18:00 outside (25 male and 25 female patrons talking at normal voice level, 25 male and 25 female patrons talking at raised voice level) and no music played; and
  - The proposed pavilion operates at full capacity (130 guests) until 18:00 with only background music played inside (reverberant sound level of 70dBA) and with half of the guests inside and half of the guests outside (16 male and 16 female patrons talking at raised voice level resulting in combined noise level of 79dBA at 1m).

  Assessment of the patron noise – against the environmental day time noise criterion (refer Section Environmental Noise).
- Scenario 4:
  - The cellar door does not operate; and
  - A function with 130 guests taking place in the pavilion between 18:00 and 0:00 with recorded music played in from 4 speakers located inside resulting in reverberant sound pressure level of 90dBA (L_{A10}) with half of the guests inside and half of the guests outside (16 male and 16 female patrons talking at raised voice level resulting in combined noise level of 79dBA at 1m).

  Assessment of the music noise conducted against music noise criteria (Table 2 and Table 3) and assessment of patron noise – against the environmental day time noise criterion (refer Section Environmental Noise).

Graphic representation of the calculation results is provided in Appendices D, E, F and G.

Assessment and Recommendations

Music Noise

We calculated the music noise levels at the nearest noise sensitive receiver resulting from typical function taking place in the proposed function centre under the conditions described above and taking into account the distances from the function centre to the noise sensitive receiver, the construction of the building envelope elements and their area based on the architectural plans.

Based on above, our assessment revealed:

- The day time music noise criterion will be achieved at the nearest noise sensitive receivers when functions take place in the proposed restaurant/function centre under the above conditions.
- The day time and night time music noise criteria will be achieved at the nearest noise sensitive receivers when functions take place at the existing cellar door lawn under the above conditions.

The calculated music noise levels under the different scenarios are presented in Table 4, Table 5 and Table 6 along with the selected music noise criteria.

Calculated music noise level at receiver	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	40	37	38	36	29	22	9	-	36
432B Swamp Rd, Lenswood (Receiver 2)	37	36	37	33	30	24	9	-	35
357 Oakwood Rd, Oakbank (Receiver 3)	20	14	15	10	7	-	-	-	13
61B Peacock Rd South (Receiver 4)	30	30	30	28	22	20	-	-	30
Maximum allowable music noise level, $L_{10,15min}$ at the noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 4: Calculated music noise levels – Scenario 1, day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	37	37	35	32	26	20	7	-	33
432B Swamp Rd, Lenswood (Receiver 2)	27	33	31	30	24	13	-	-	30
357 Oakwood Rd, Oakbank (Receiver 3)	16	11	-	-	-	-	-	-	7
61B Peacock Rd South (Receiver 4)	28	27	25	24	18	8	-	-	24
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 5: Calculated music noise levels – Scenario 1, night time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	40	35	36	29	24	10	-	-	31
432B Swamp Rd, Lenswood (Receiver 2)	37	34	35	28	20	-	-	-	30
357 Oakwood Rd, Oakbank (Receiver 3)	25	18	15	8	-	-	-	-	11
61B Peacock Rd South (Receiver 4)	34	29	29	26	19	-	-	-	26
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 6: Calculated music noise levels – Scenario 2, day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	38	31	32	27	22	-	-	-	28
432B Swamp Rd, Lenswood (Receiver 2)	33	30	32	24	17	-	-	-	26
357 Oakwood Rd, Oakbank (Receiver 3)	21	13	-	-	-	-	-	-	8
61B Peacock Rd South (Receiver 4)	30	24	25	19	15	-	-	-	21
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 7: Calculated music noise levels – Scenario 2, night time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	40	36	34	30	28	22	9	-	32
432B Swamp Rd, Lenswood (Receiver 2)	36	35	34	31	26	19	-	-	32
357 Oakwood Rd, Oakbank (Receiver 3)	25	21	15	10	3	-	-	-	12
61B Peacock Rd South (Receiver 4)	36	30	28	27	25	16	-	-	28
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 8: Calculated music noise levels – Scenario 4, day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	39	36	34	30	28	22	10	-	28
432B Swamp Rd, Lenswood (Receiver 2)	33	30	32	24	17	-	-	-	26
357 Oakwood Rd, Oakbank (Receiver 3)	20	16	12	-	-	-	-	-	6
61B Peacock Rd South (Receiver 4)	28	30	22	17	11	-	-	-	19
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 9: Calculated music noise levels – Scenario 4, night time

To ensure the criterion is achieved at all times, we recommend:

- No speakers are to be installed externally to the proposed pavilion.
- Before each function, the Operator or Duty Manager measures the reverberant sound pressure level (approximately in the middle of the pavilion) and ensures it does not exceed 85dBA[2] (L_{Aeq}). during the function. We recommend an automatic sound limiter be used to monitor the sound pressure levels during performance. The sound limiter should be connected to the main amplifier power and set to cut the power if the maximum sound pressure level is exceeded. To facilitate this, the following is required:
  - Any external performers should use only the sound system and amplifier provided by the venue;
  - The sound system should be tuned and commissioned by an acoustic engineer once the speakers are in place and the sound limiter is installed.

Patron Noise

Our assessment reveled that the selected environmental noise criterion will be achieved and therefore, no further acoustic treatment is required.

Noise Associated with Delivery Vehicles

We note that there is no specified loading area currently indicated on the provided preliminary drawings. Therefore, for the purpose of this assessment we have assumed that the loading and unloading activities will occur in the existing carpark adjacent the southern façade of the existing shed.

We calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) assuming the following activity durations and measured noise levels from similar activities on a previous project:

- Delivery vehicle accessing the loading dock (including reverse alarm) – 90 seconds, 73dB(A) at 5m.
- Loading/unloading activities including noise from refrigeration unit on the delivery vehicle – 8 minutes, 76dB(A) at 5m.
- Delivery vehicle departing – 90 seconds, 70dB(A) at 5m.

[2] A reverberation time of 1.2 seconds was assumed within the function space, based on its volume. Please note that additional acoustic treatment will be required to reduce the reverberation in the space and achieve this reverberation time.

- The balance of a 15-minute interval – 4 minutes, 54dB(A) (ambient noise level).

The calculated A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,\ 15min}$) resulting from delivery vehicle activities, which we used in the assessment was 74dB(A) at 5m.

Based on the above and taking into account the distance to the nearest residences across Pipeline Rd (approximately 450m from the delivery zone), we predicted incident noise levels of 35dB(A) at the nearest residence, which achieves both daytime environmental noise criteria and night-time environmental noise criteria. However, we recommend deliveries be scheduled between 10:00am and 6:00pm in order to further reduce the noise impact associated with the proposed development.

Noise Associated with Rubbish Collection

We note that there is no specified rubbish collection area currently indicated on the provided preliminary drawings. Therefore, for the purpose of this assessment we have assumed that the rubbish collection will occur in the existing carpark to the west of the existing cellar door building. We assessed the noise impact on the nearest residential property resulting from noise emissions from typical rubbish collection vehicle including the following activities:

- Rubbish collection vehicle accessing the waste loading zone (including reverse alarm).
- Rubbish collection.
- Rubbish collection vehicle departing.

We calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) assuming the following activity durations and measured noise levels from similar activities on a previous project:

- Rubbish collection vehicle accessing the waste loading zone (including reverse alarm) – 90 seconds, 73dB(A) at 5m.
- Rubbish collection – 7 minutes, 65dB(A) at 5m.
- Rubbish collection vehicle departing – 90 seconds, 70dB(A) at 5m.
- The balance of a 15-minute interval – 5 minutes, 54dBA (ambient noise level).

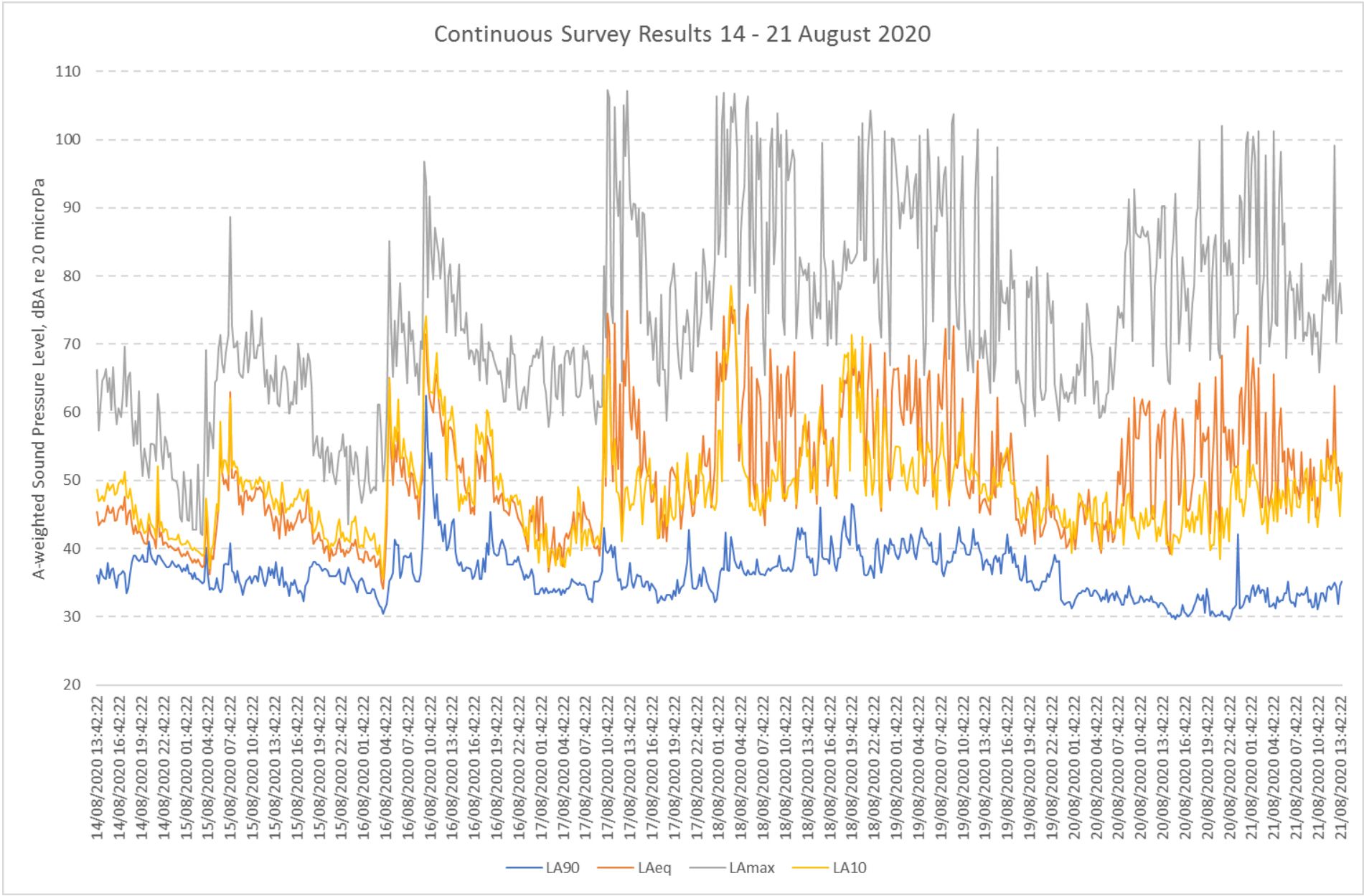
The calculated A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) resulting from rubbish collection activities, which we used in the assessment was 66dBA at 5m. Taking into account the distance to the nearest residence to the south-west (approximately 350m from the waste collection zone), we calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) at the façade of the nearest residence as 34dBA, which achieves both day time environmental noise criterion (we note that the rubbish collection will occur during day time only – between 7:00 and 17:00, Monday to Friday).

Noise Associated with Car Park

We assessed noise from the car park entrance lane (off Swamp Rd) using a time weighted average approach to generate an average noise level of 55dB(A) ($L_{Aeq,\ 15min}$), based on 8 car exits/entries and egress per 15 min period down the laneway. Therefore, the predicted noise level at the nearest noise sensitive residence (approximately 350m away) would be 24dB(A), which complies with the selected criteria for environmental noise.

APPENDIX A

Continuous Noise Survey Results


Continuous Survey Results 14 - 21 August 2020
A-weighted Sound Pressure Level, dBA re 20 microPa
110
100
90
80
70
60
50
40
30
20
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14/08/2020 16:42:22
14/08/2020 19:42:22
14/08/2020 22:42:22
15/08/2020 01:42:22
15/08/2020 04:42:22
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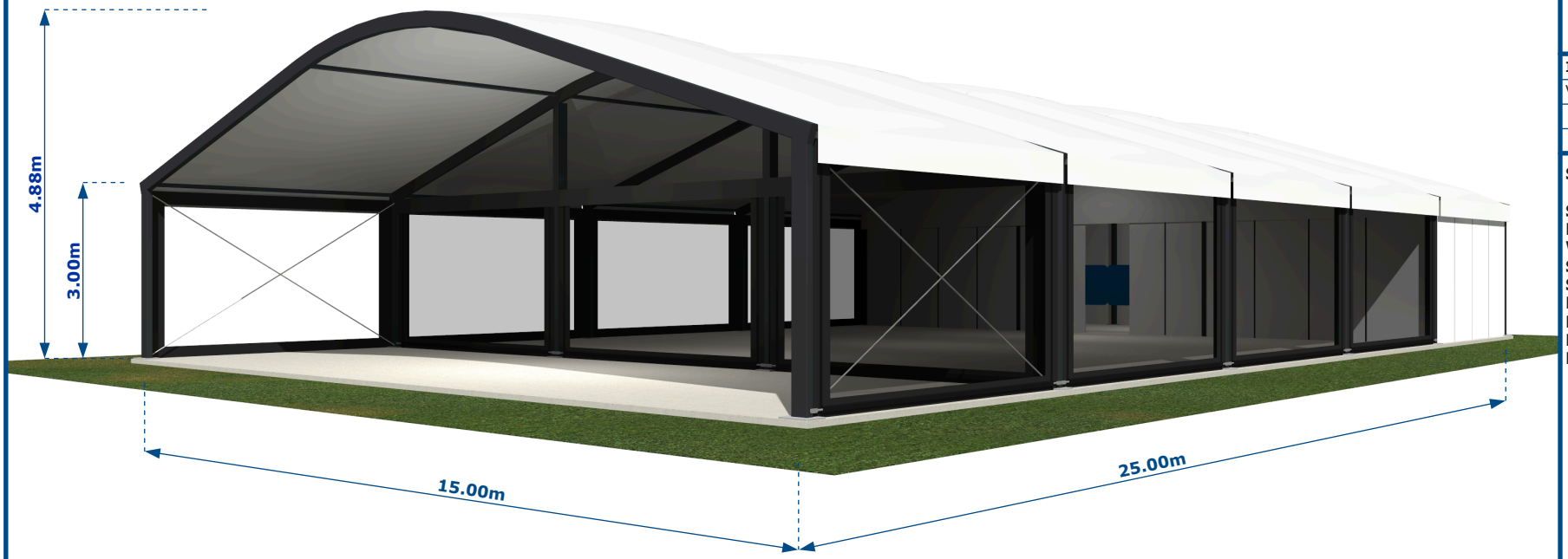
LA90
LAeq
LAmax
LA10

APPENDIX B

Höcker Thermoroof Systems



Issue:	Revision:	Date:
V-2	various revisions	28/06/23

Specification:

Structure: GZP Curve - Series
Roof: thermo system (white)
Walls: single layer PVC / ISO
Structure width: 15.00m
Structure length: 25.00m
Bay width: 5.00m
Eave ht: 3.00m
Ridge ht: 4.88m
Roof pitch: 18°

Option 2 - black walls

Prepared for:

Cobbs Hill Estate

GZP Curve15.00 x 25.00 x 3.00m

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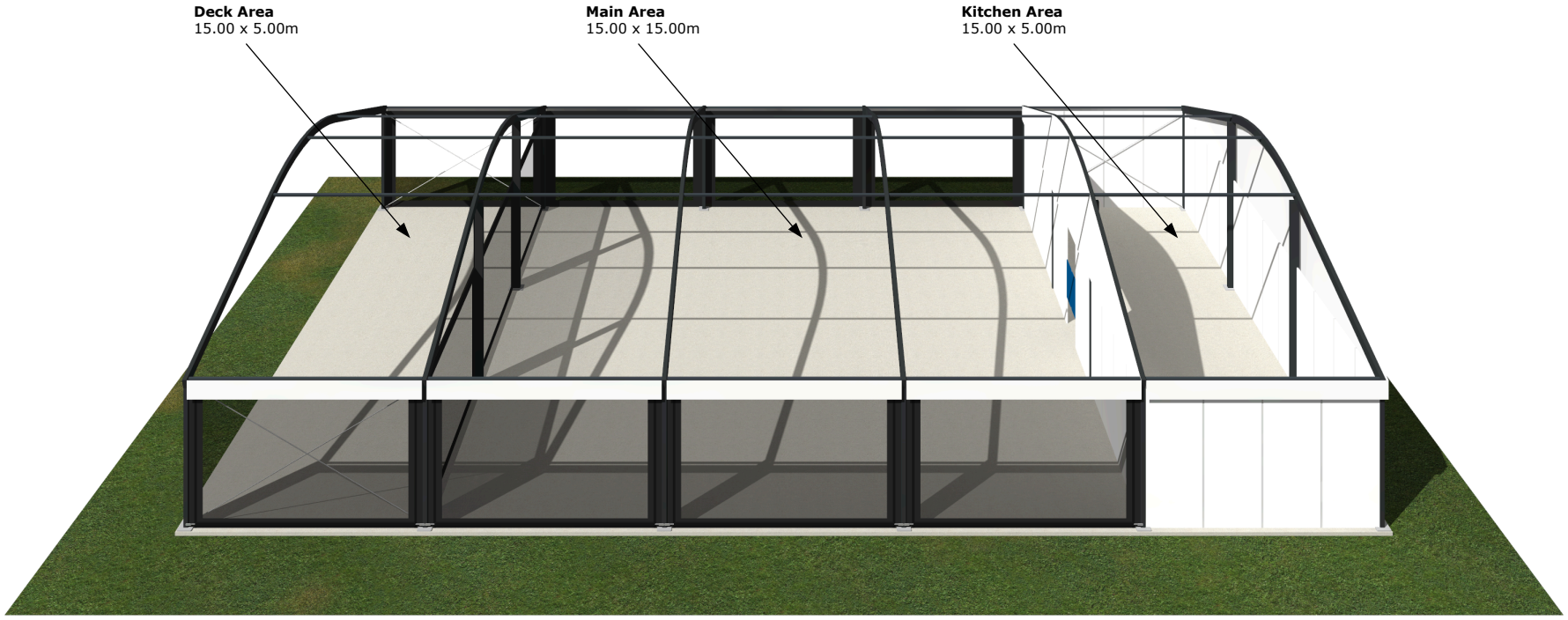

This rendered drawing is for illustration purposes only and does not detail all structural frame components present within the construction. Please request separate technical drawings from your sales representative should you need to identify specific elements of the framework design.

DO NOT USE THIS DRAWING FOR CONSTRUCTION PURPOSES. PLEASE ASK FOR TECHNICAL DRAWINGS

Issue:	Revision:	Date:
V-2	various revisions	28/06/23

Specification:

Structure: GZP Curve - Series
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Option 2 - black walls

Prepared for:

Cobbs Hill Estate

GZP Curve15.00 x 25.00 x 3.00m

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EVERYTHING COVERED

HÖCKER STRUCTURES

thermo roof system

The Thermoroof consists of two plastic coated membranes, which are placed under atmospheric pressure, forming “air-cushions”. After the twin layer sheets are pulled in the Keder-grooves of the structure, they are blown-up with a specially designed air pressure unit. To blow up the membranes requires a minimum of energy (max. 0,2 mb = 2 hp/A (hectopascal).

The air-supply system – using flexible pipes – supplies the air to the individual roof sheets. The air pressure unit maintains a constant level of air pressure in the cushions.

The system provides excellent insulation and a very pleasant climate inside the building. Using translucent panels ensures an optimum lighting during daylight.

Compared with conventional single layer covers, the Thermoroof does not flap at all, avoids condensation, minimises the noise of raindrops, creates a very quiet atmosphere inside and provides a longer lifetime.

The K-value of the Thermoroof is 1,6 W/(m²/K). Sound-reduction is approx. 18dB.






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APPENDIX C

SoundPlan Models

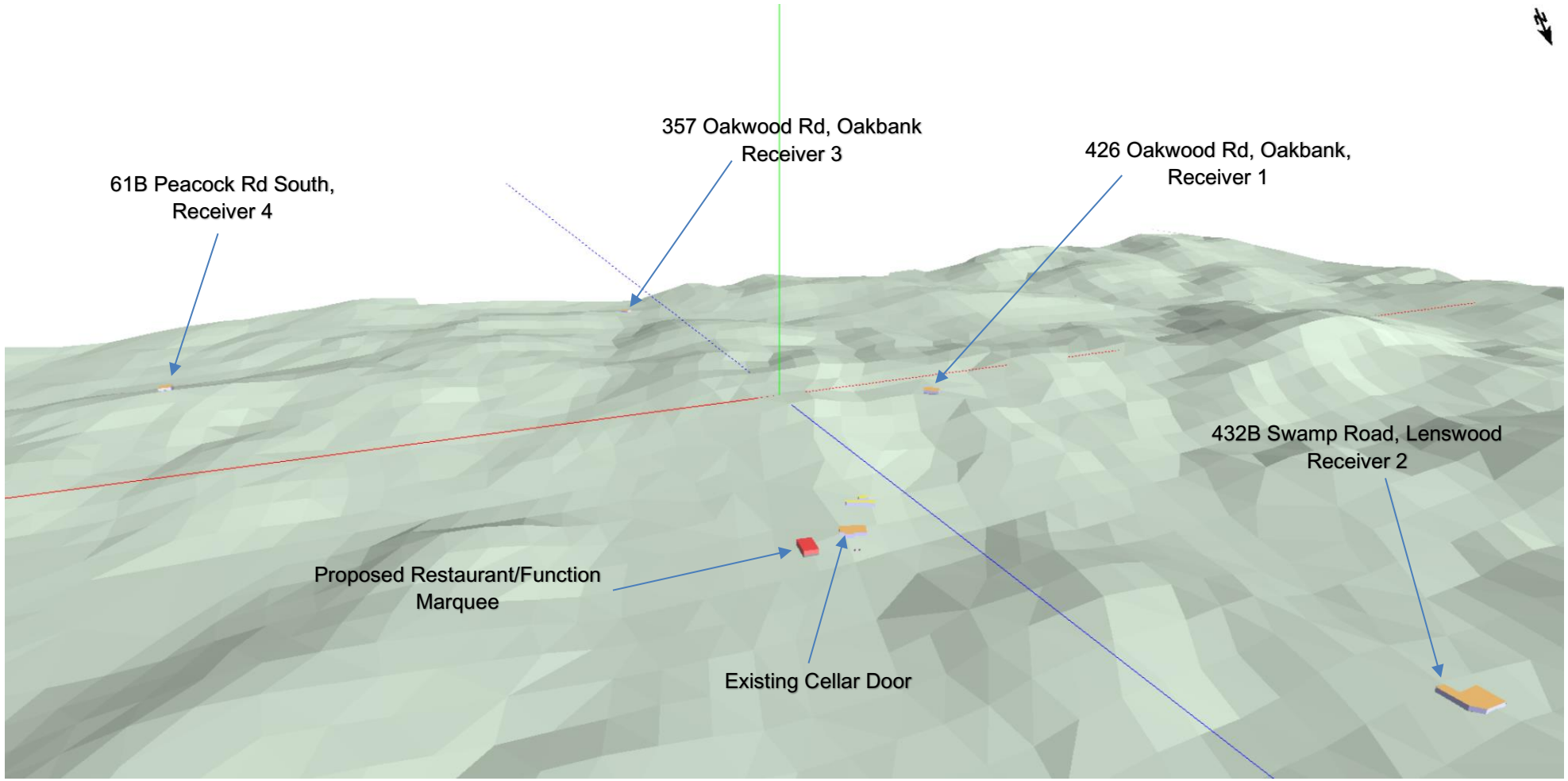


Figure B 1: SoundPlan 3D model - Music Noise (the red dots indicate the outdoor loudspeakers)

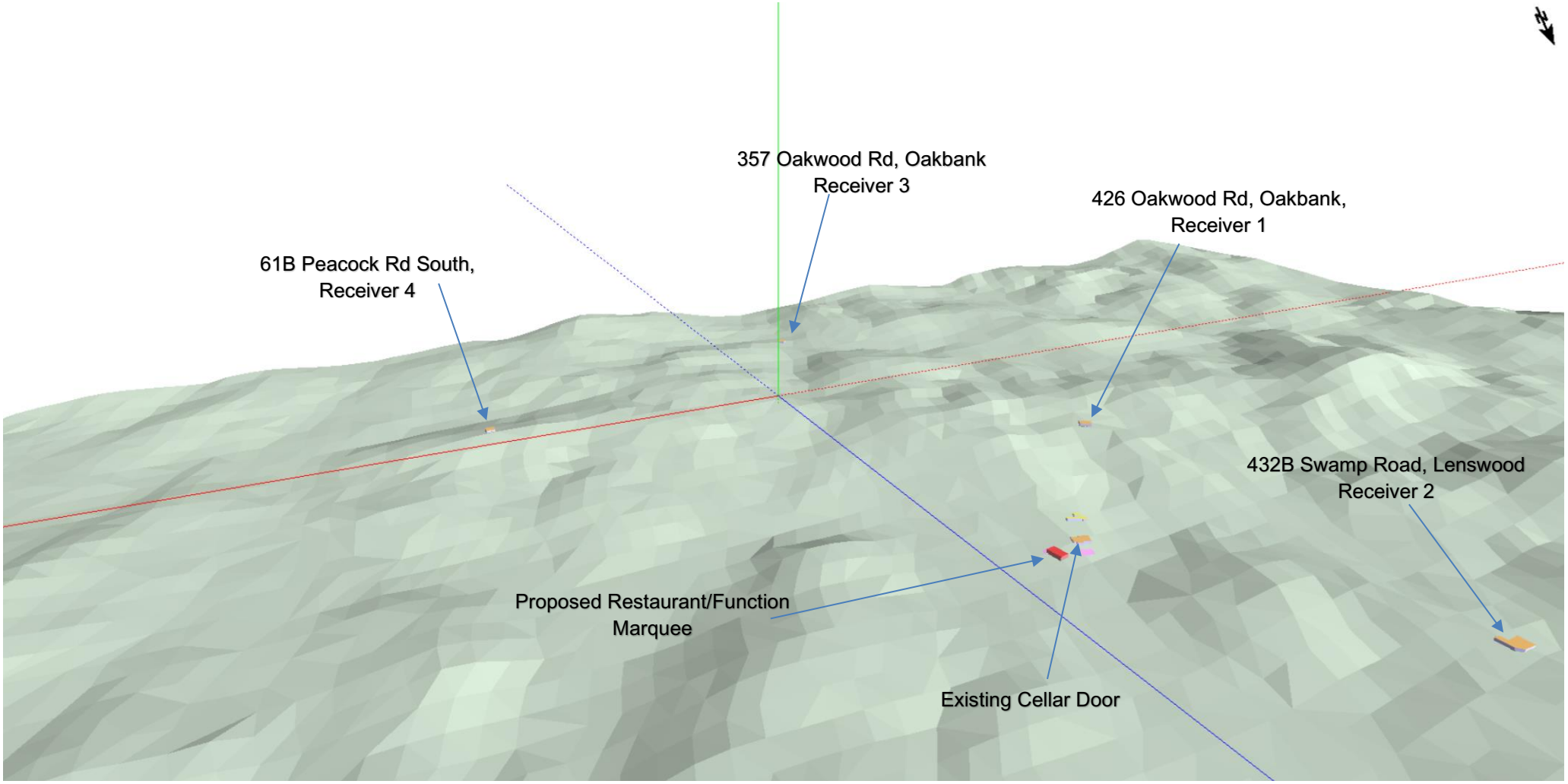


Figure B 2: SoundPlan 3D model - Patron Noise (the pink areas indicate patrons outdoor)

APPENDIX D

SoundPlan Results – Scenario 1

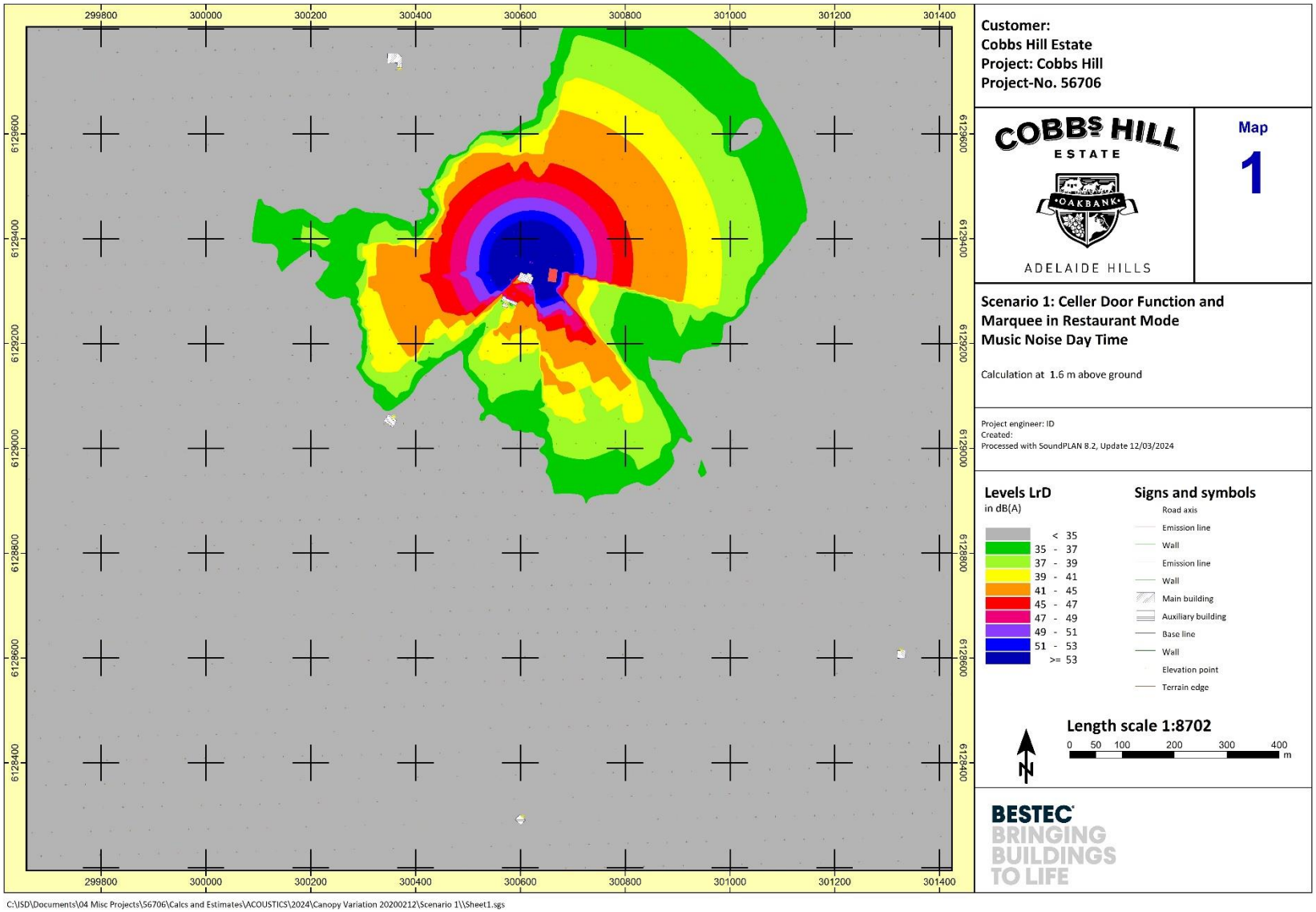


Figure D 1: Calculated Day Time Noise Levels - Music Noise

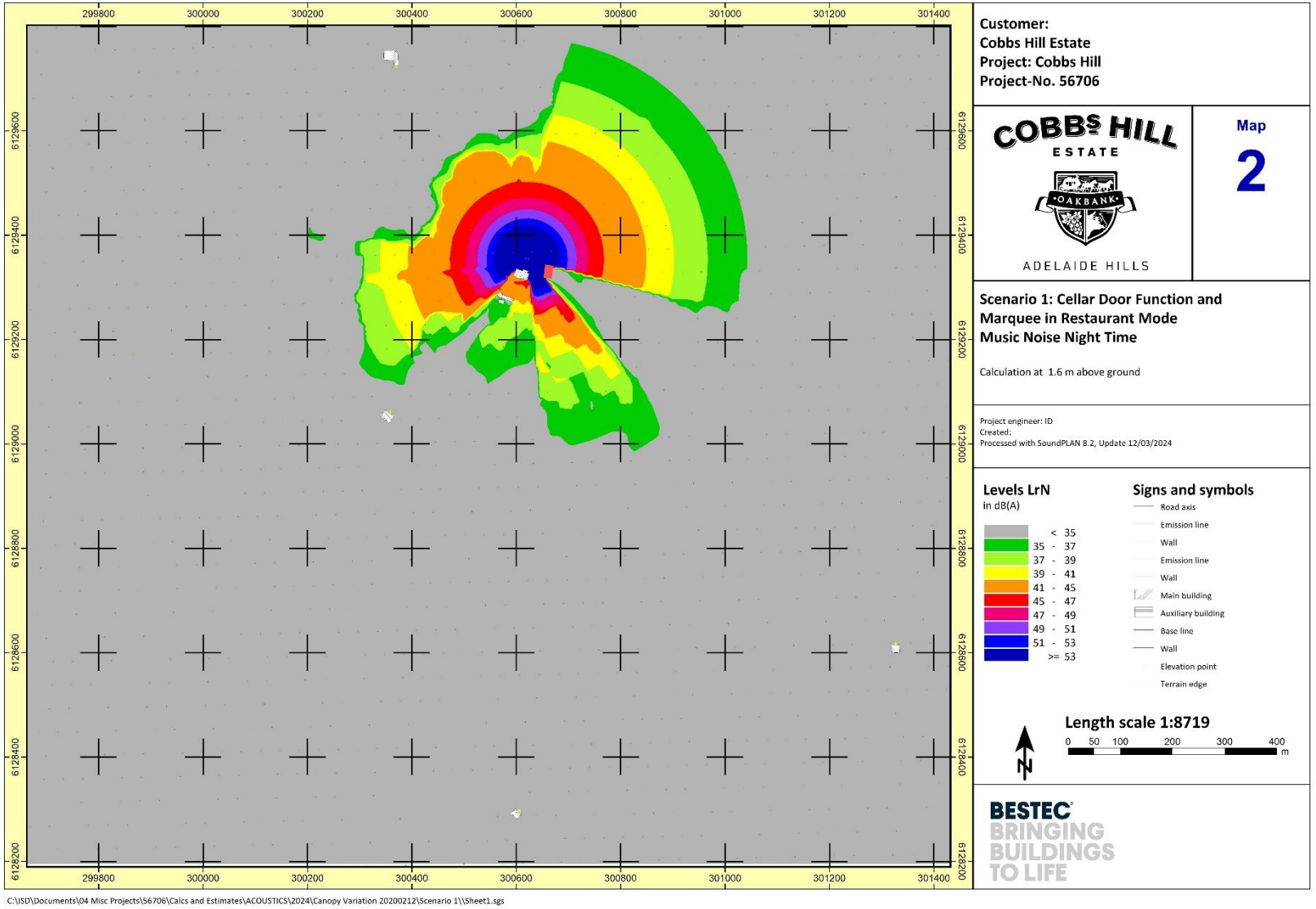


Figure D 2: Calculated Night Time Noise Levels - Music Noise

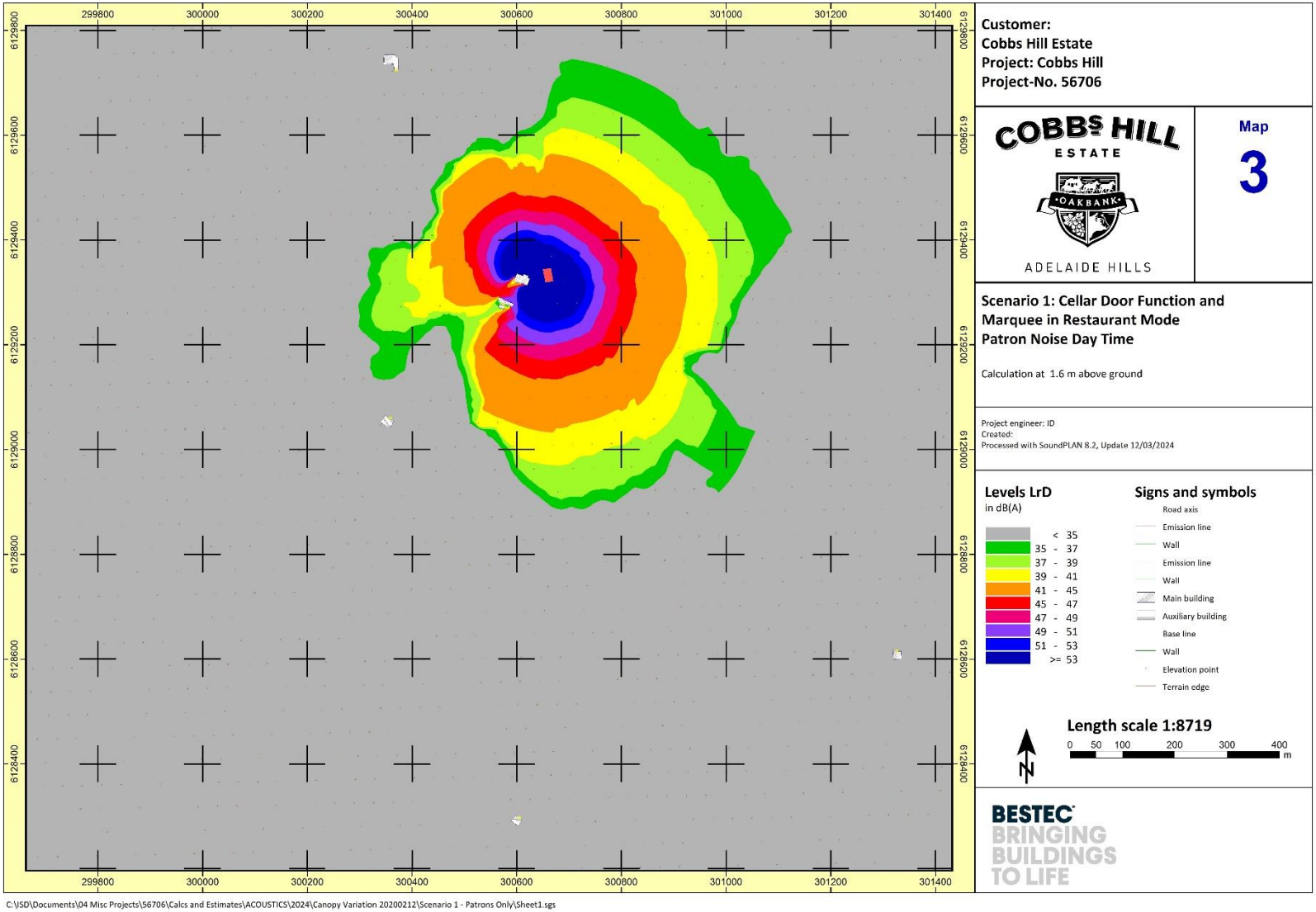


Figure D 3: Calculated Day Time Noise Levels - Patron Noise

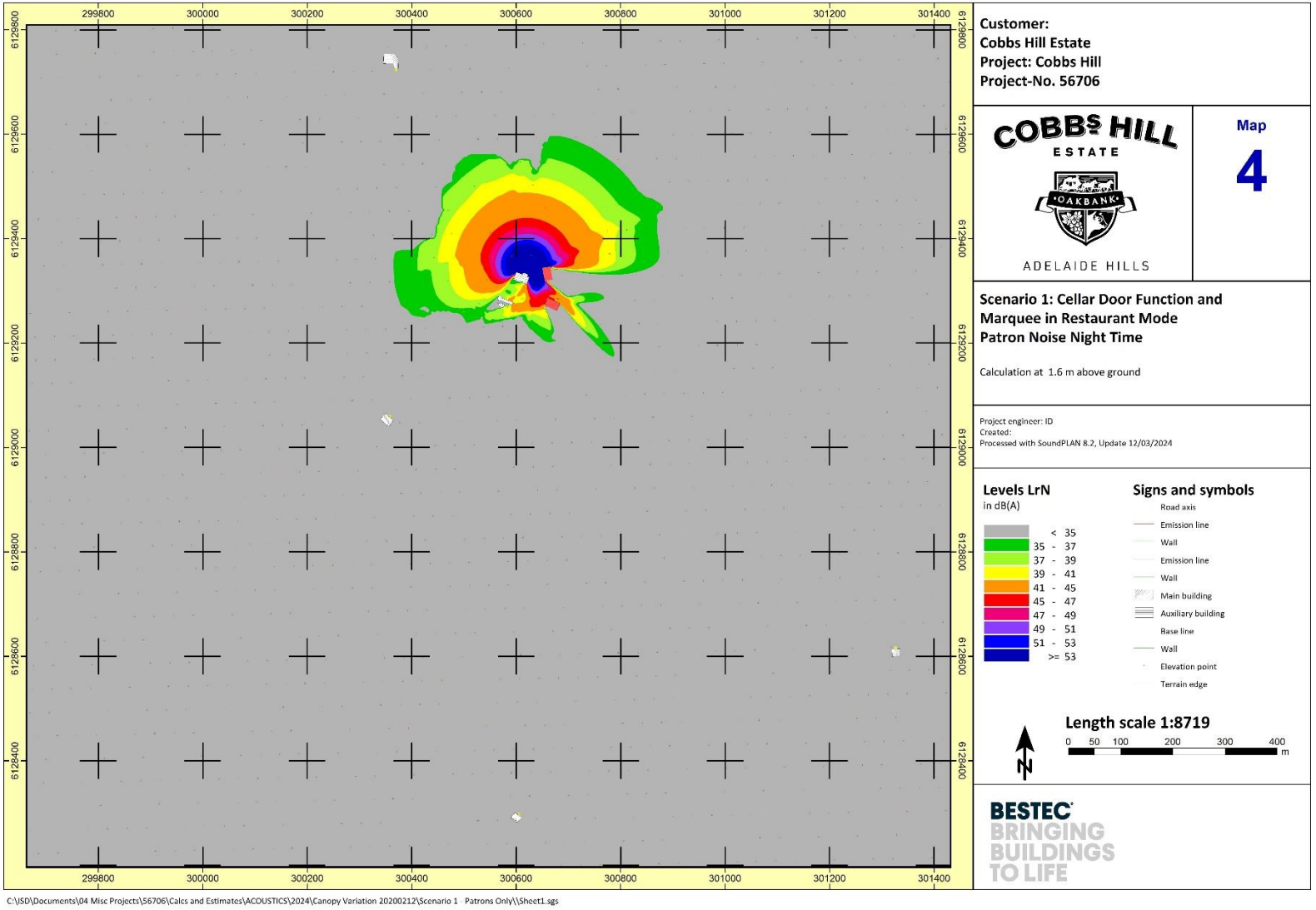


Figure D 4: Calculated Night Time Noise Levels - Patron Noise

APPENDIX E

SoundPlan Results – Scenario 2

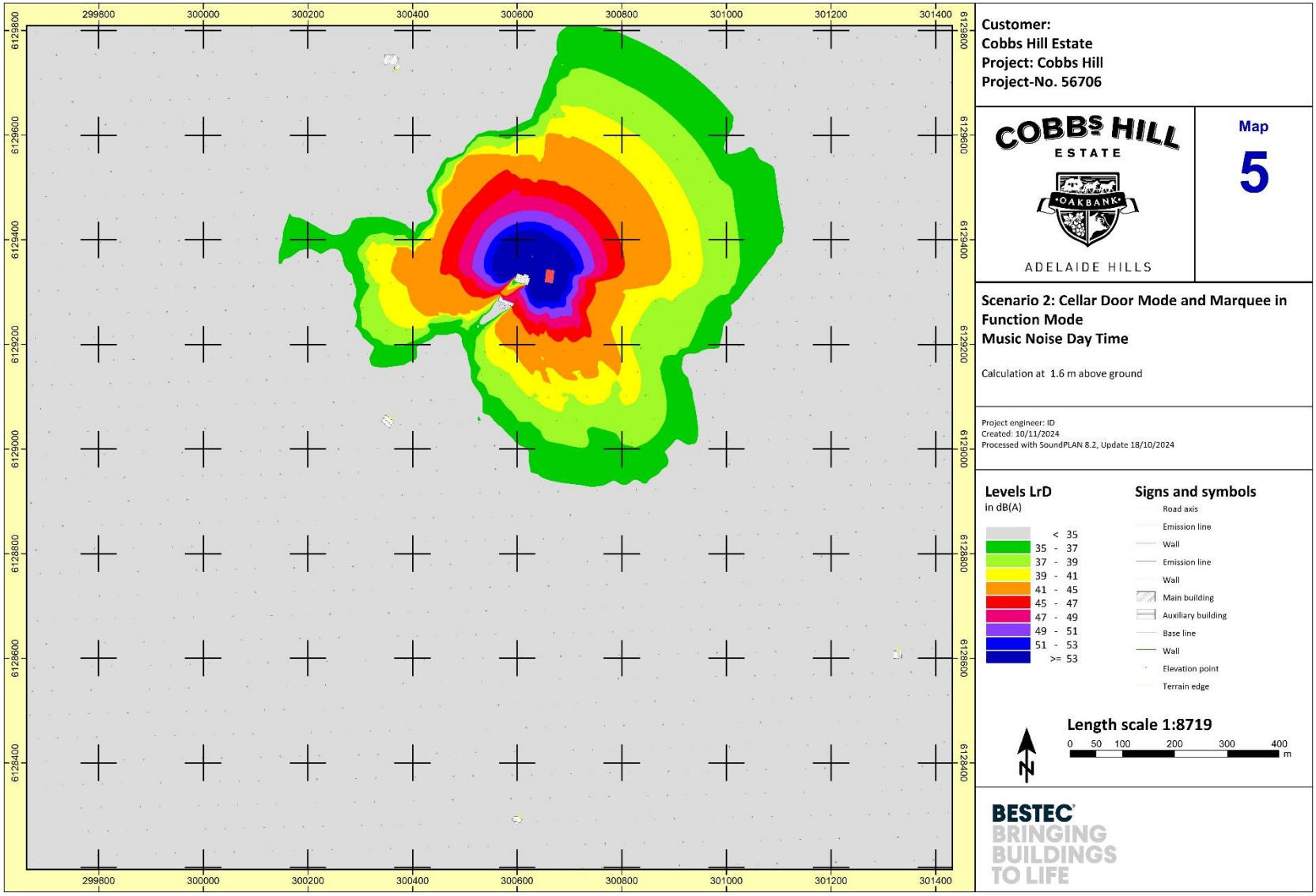


Figure E 1: Calculated Day Time Noise Levels – Music Noise

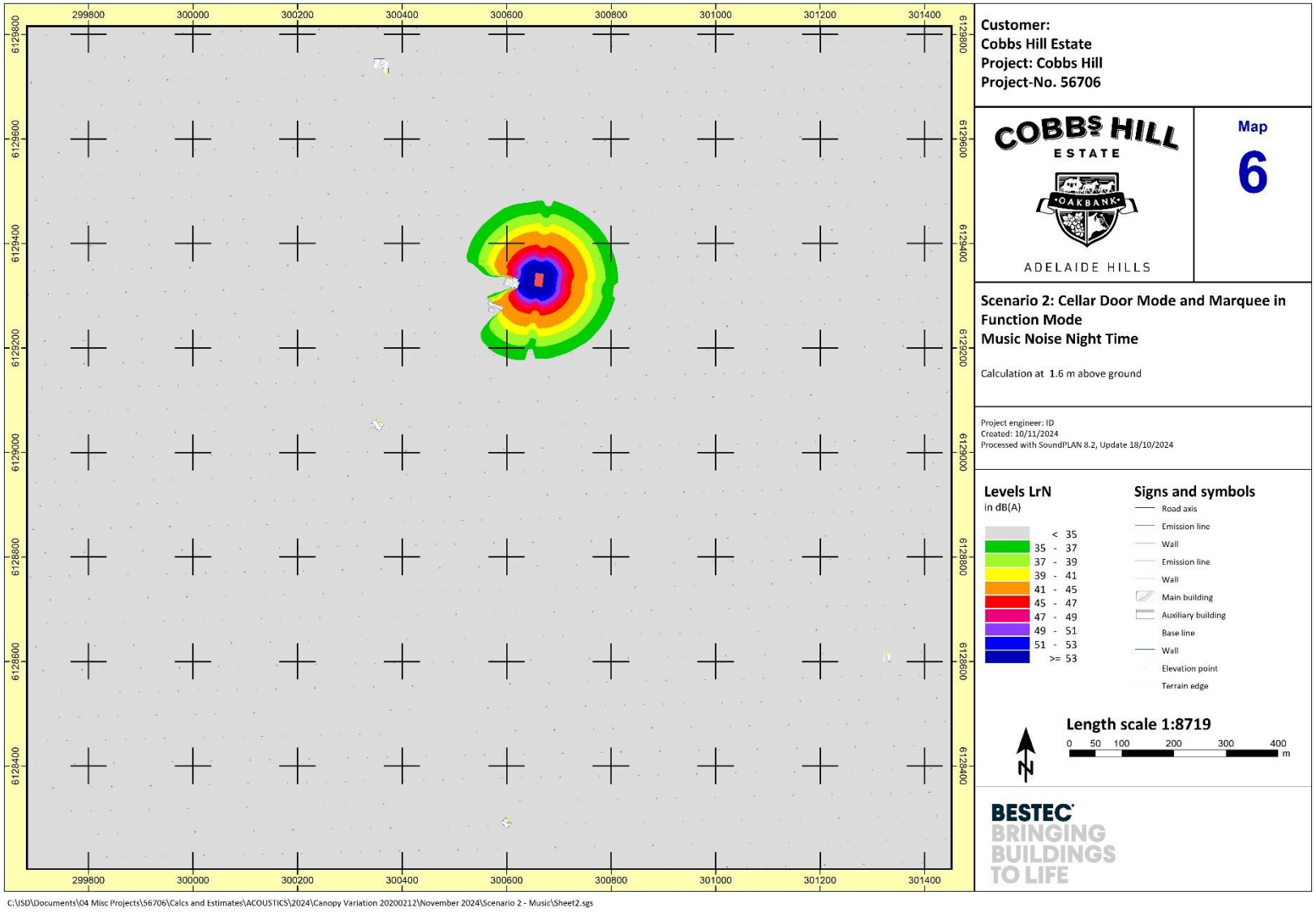


Figure E 2: Calculated Night Time Noise Levels – Music Noise

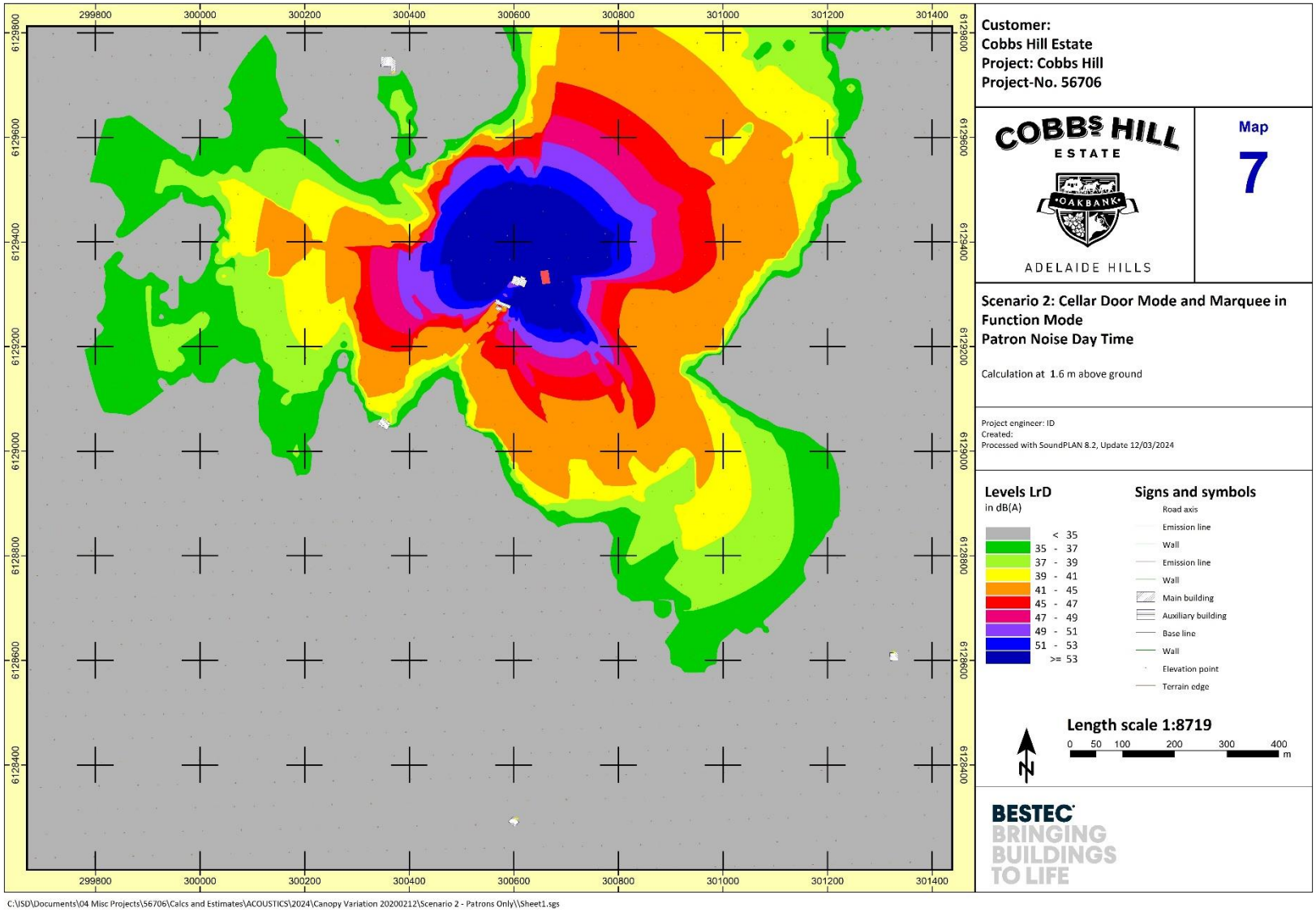


Figure E 3: Calculated Day Time Noise Levels – Patron Noise

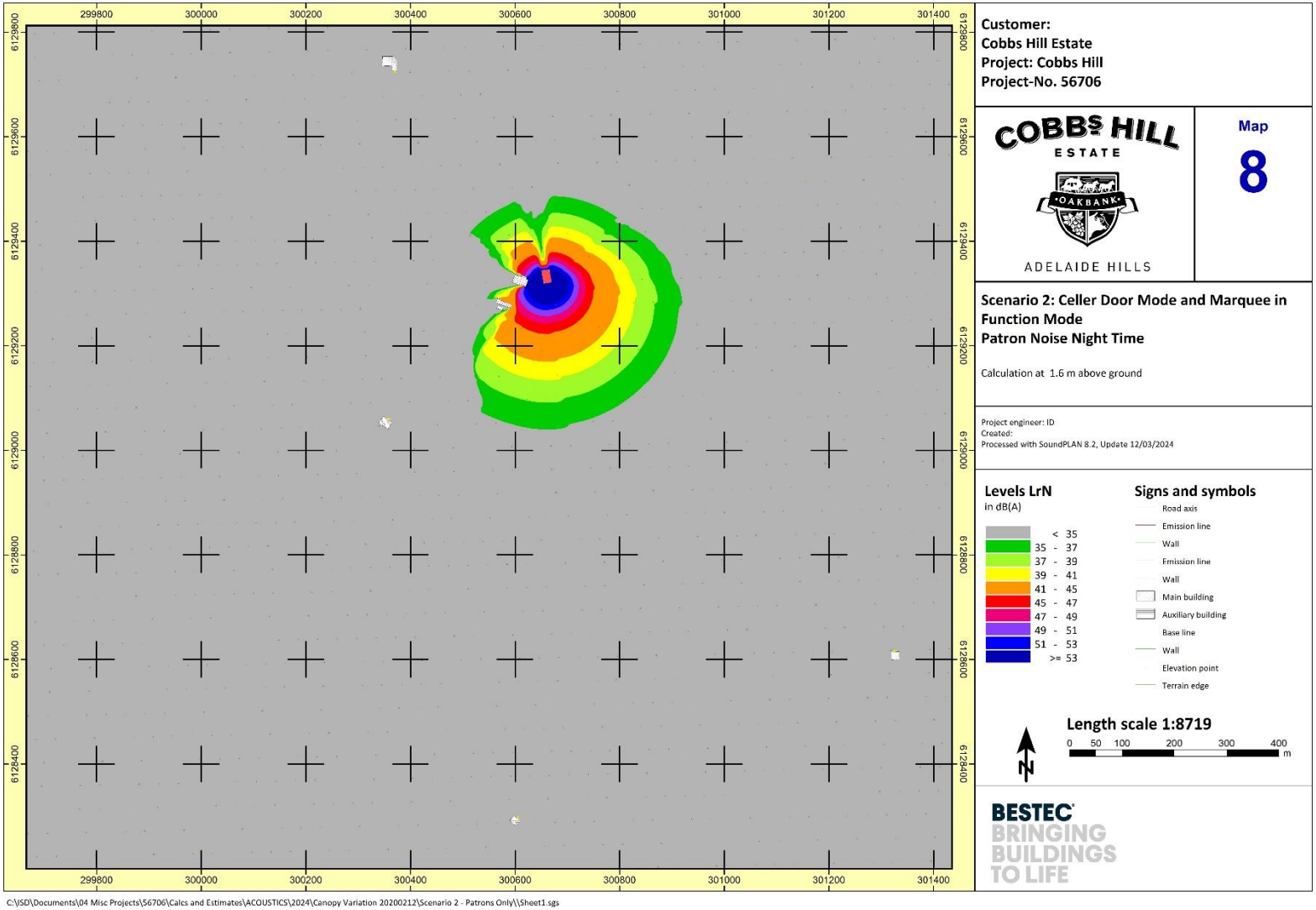


Figure E 4: Calculated Night Time Noise Levels – Patron Noise

APPENDIX F

SoundPlan Results – Scenario 3

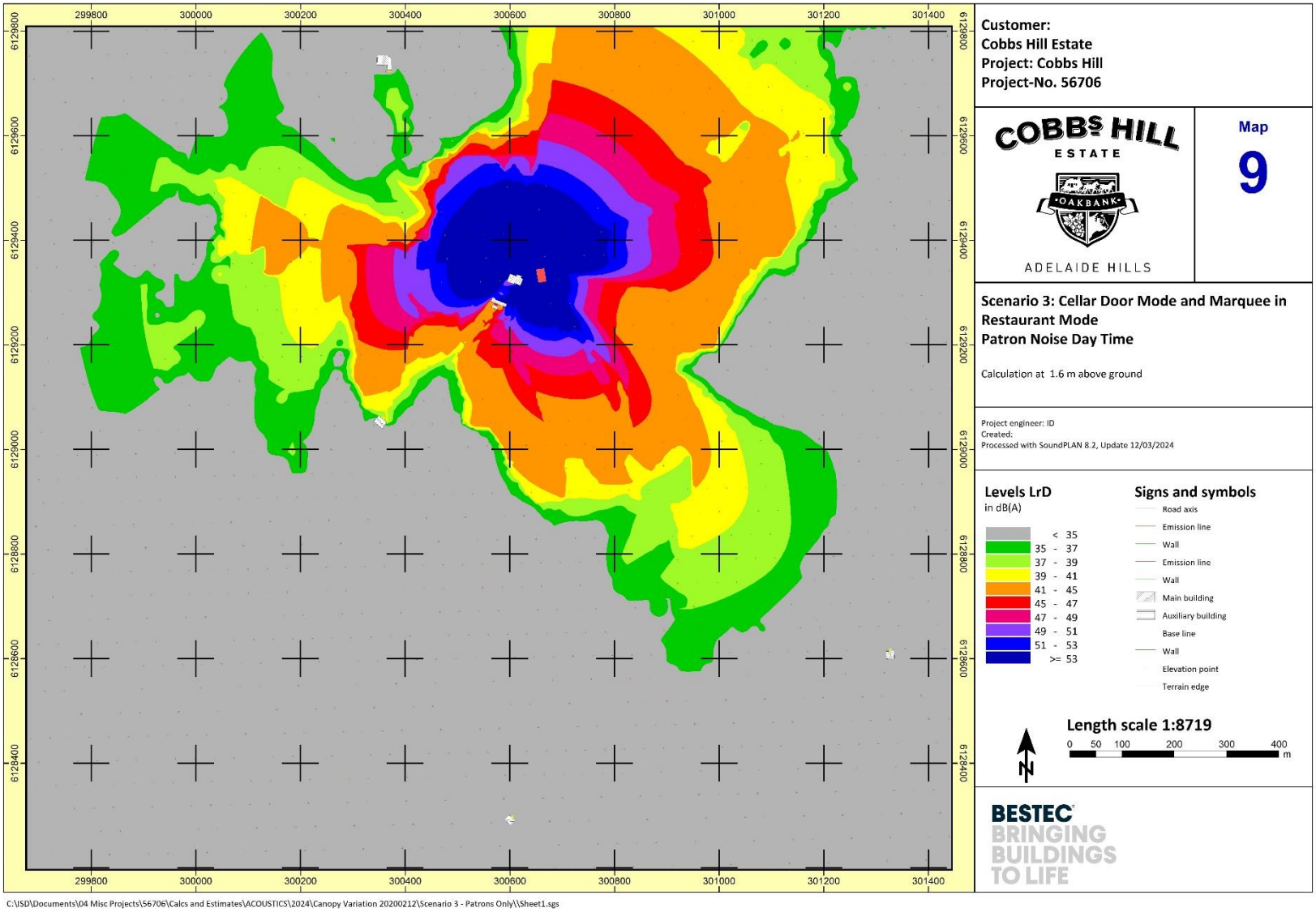


Figure F 11: Calculated Day Time Noise Levels – Patron Noise

APPENDIX G

SoundPlan Results – Scenario 4

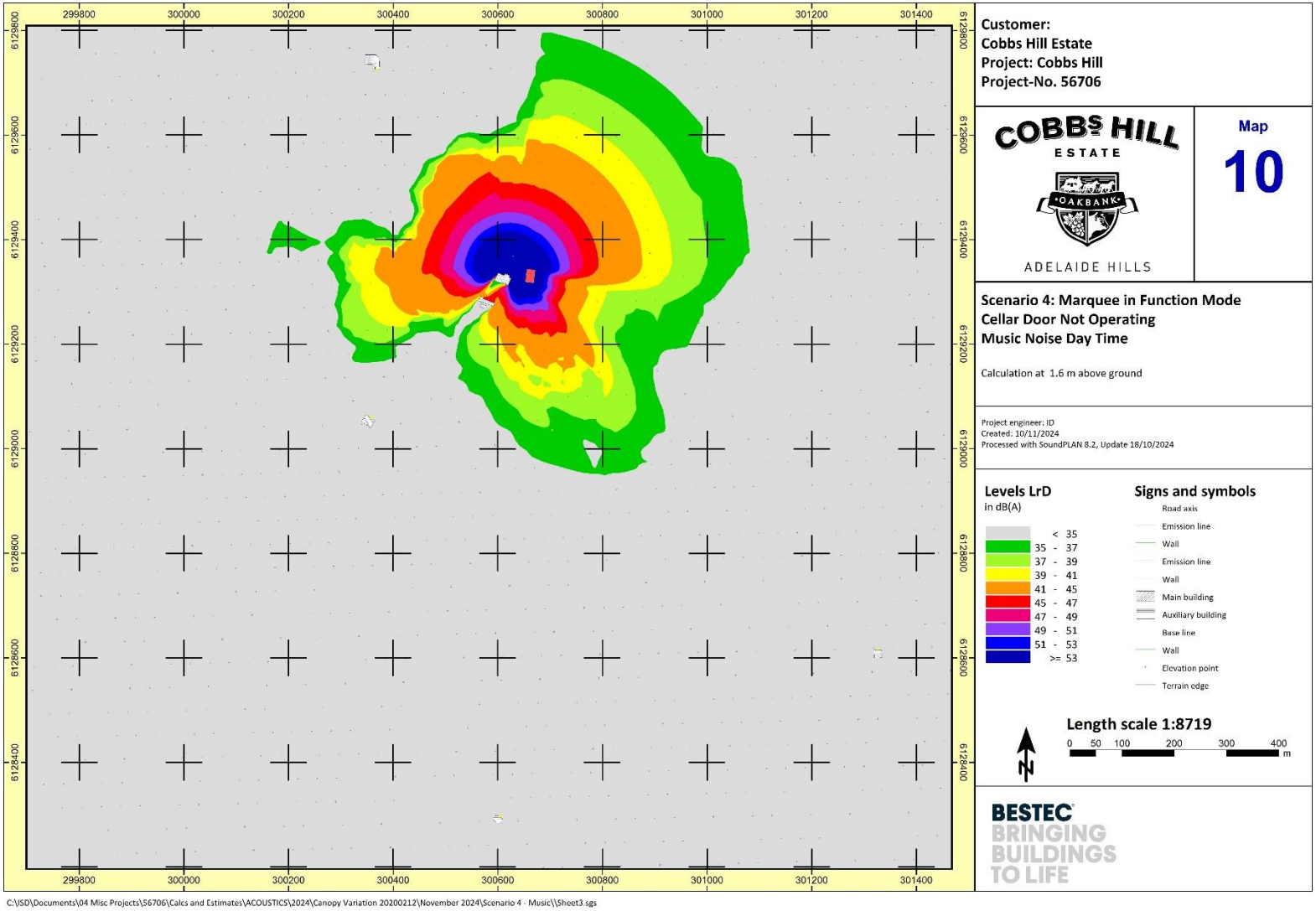


Figure G 1: Calculated Day Time Noise Levels – Music Noise

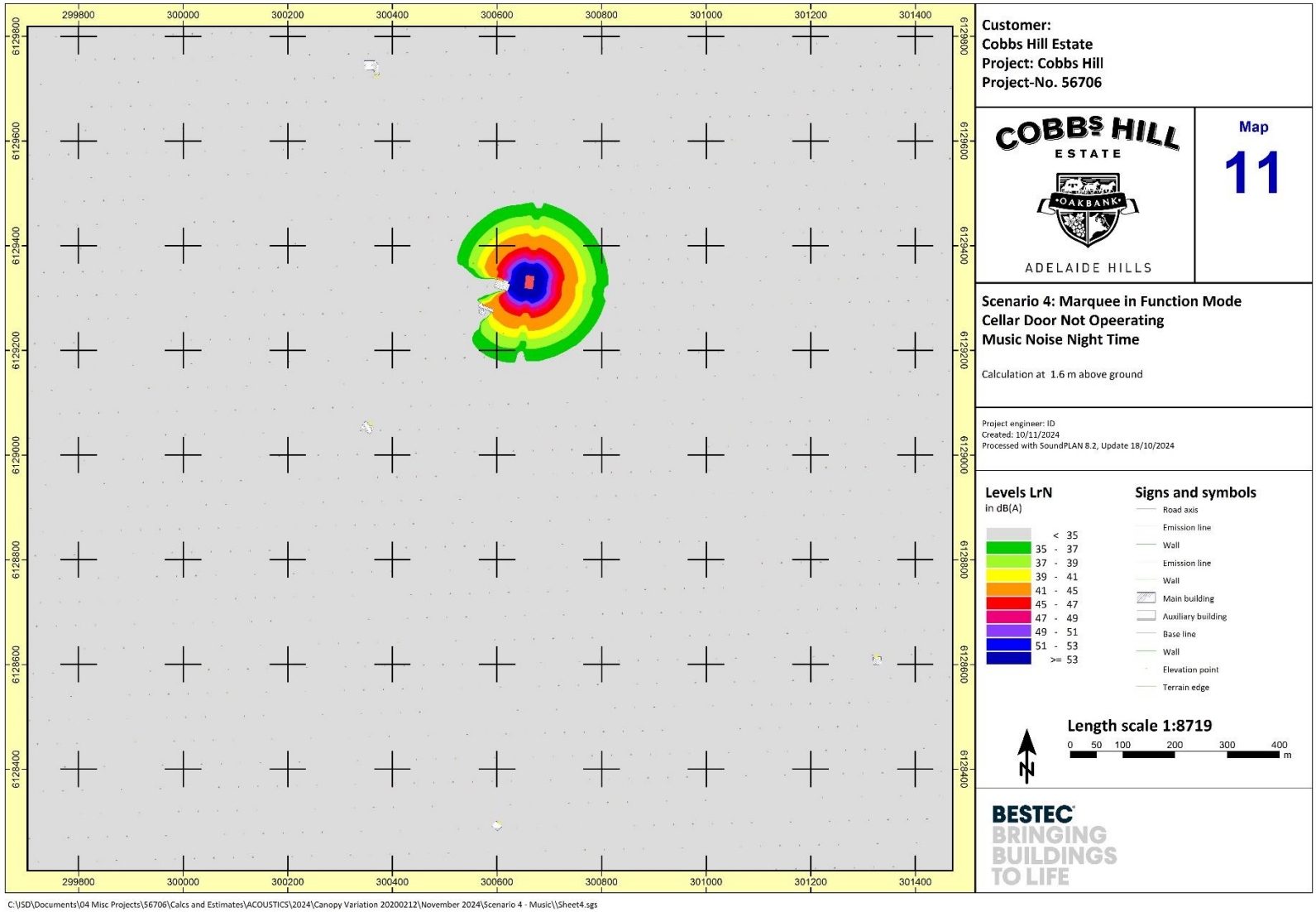


Figure G 2: Calculated Night Time Noise Levels – Music Noise

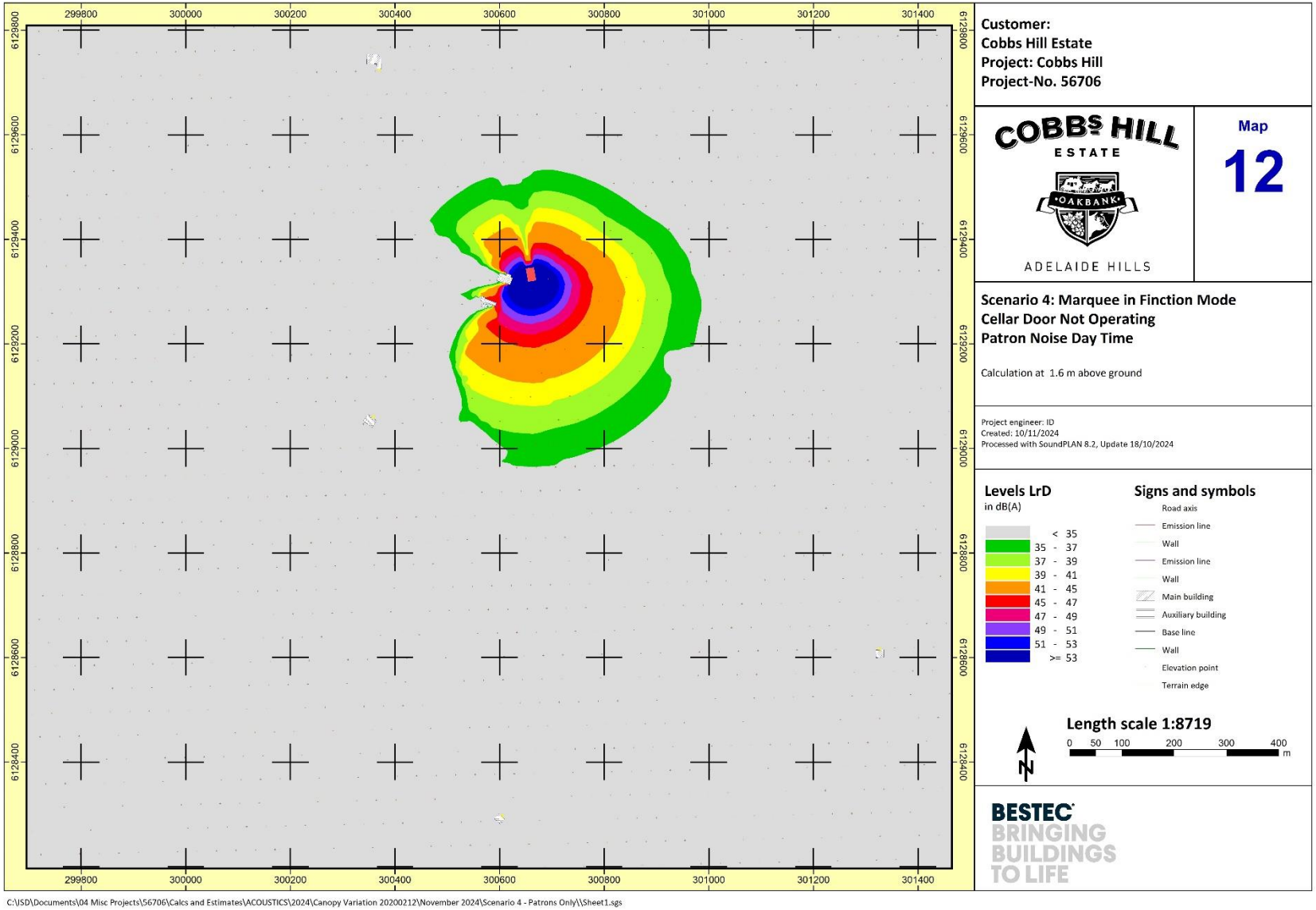


Figure G 3: Calculated Dayt Time Noise Levels – Patron Noise

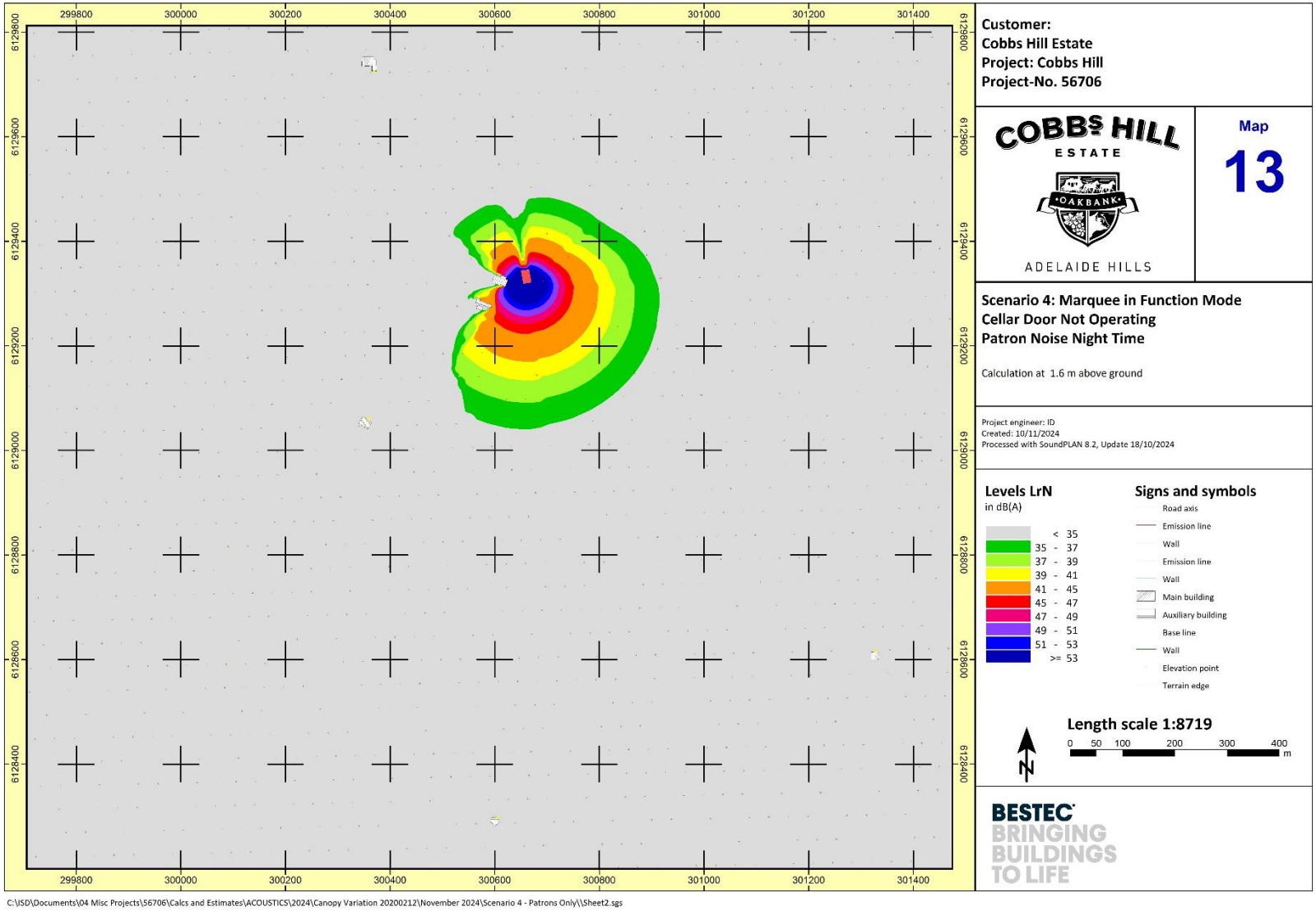


Figure G 4: Calculated Day Time Noise Levels – Patron Noise

APPENDIX H

Glossary of Acoustic Terminology

dB(A) Also referred to as dBA. A unit of measurement, decibels(A), of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") so as to more closely approximate human ear response at a loudness level of 40 phons. The table below outlines the subjective rating of different sound pressure levels.

Noise Level (dBA)	Subjective Rating
25-30	Barely audible and very unobtrusive.
30-35	Audible but very unobtrusive.
35-40	Audible but unobtrusive.
40-45	Moderate but unobtrusive.
45-50	Unobtrusive with low levels of surrounding activity.
50-55	Unobtrusive with high levels of surrounding activity.

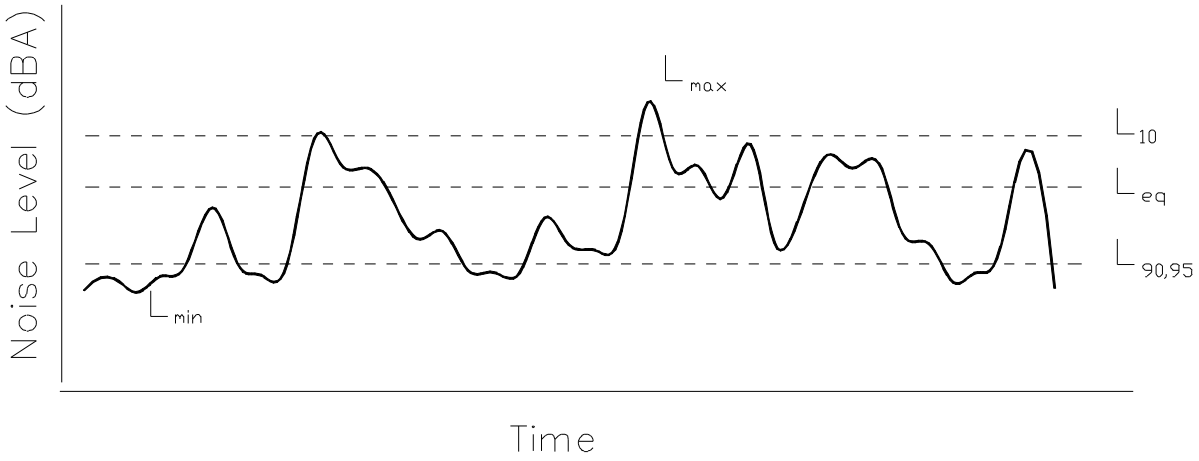
L_1 The noise level which is equalled or exceeded for 1% of the measurement period. L_1 is an indicator of the impulse noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{10} The noise level which is equalled or exceeded for 10% of the measurement period. L_{10} is an indicator of the mean maximum noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{90}, L_{95} The noise level which is equalled or exceeded for 90% of the measurement period. L_{90} or L95 is an indicator of the mean minimum noise level, and is used in Australia as the descriptor for background or ambient noise (usually in dBA).

L_{eq} The equivalent continuous noise level for the measurement period. L_{eq} is an indicator of the average noise level (usually in dBA).

L_{max} The maximum noise level for the measurement period (usually in dBA).



Note: The subjective reaction or response to changes in noise levels can be summarised as follows: A 3dBA increase in sound pressure level is required for the average human ear to notice a change; a 5dBA increase is quite noticeable and a 10dBA increase is typically perceived as a doubling in loudness.

STC/R_W Sound Transmission Class or Weighted Sound Reduction Index. Provides a single number rating (from the sound transmission loss or sound reduction index for each frequency band) of the sound insulation performance of a partition. The higher the value, the better the performance of the partition. The subjective impression of different ratings is shown in the table below.

Type of noise source	STC/Rw Rating				
	40	45	50	55	60
Normal Speech	Audible	Just Audible	Not Audible		
Raised speech	Clearly Audible	Audible	Just Audible	Not Audible	
Shouting	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Small television/small entertainment system	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Large television/large hi-fi music system	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Just Audible
DVD with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible
Digital television with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible

FSTC/R_W' The equivalent of STC/R_W, unit for sound insulation performance of a building element measured in the field.

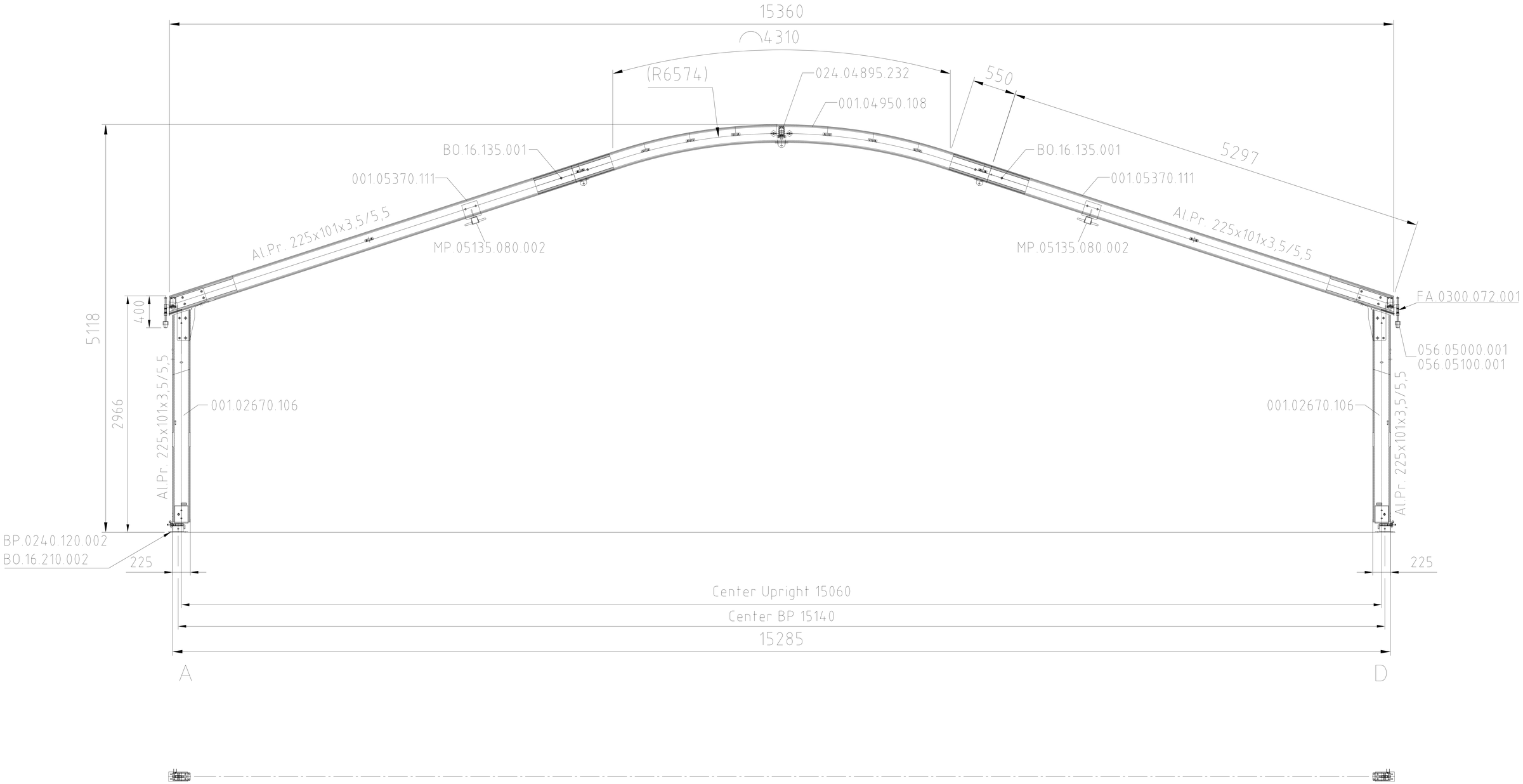
C_I, C_{tr} The ratings (R_W, D_{nTw}, L_{nTw}) are weighted in accordance to a spectrum suited to speech. This term modifies the overall rating to account for noise with different spectra, such as traffic (C_{tr}) or footfalls (C_I). The ratings may be written as R_W+C_{tr}, or $D_{nTw}/L_{nTw}+C_I$.

NNIC/D_{nTw} Normalised Noise Isolation Class, or Weighted Standardised Sound Level Difference. Provides a single number rating of the sound level difference between two spaces, and incorporates the effects of flanking noise between two spaces. This rating is generally accepted to be about 5 points less than the STC/R_W rating.

IIC/L_{nw} Impact Insulation Class, or Weighted Normalised Impact Sound Level. L_{nw}=110-IIC. The higher the IIC rating, or the lower the L_{nw} rating the better the performance of the building element at insulating impact noise. The table below gives the subjective impression of different ratings:

IIC	Lnw	Subjective Rating
40	70	Clearly Audible
45	65	Clearly Audible
50	60	Audible
55	55	Audible
60	50	Just Audible
65	45	Inaudible

FIIC/L_{nTw}' The equivalent of IIC/L_{nw}, but the performance is for the building element measured in the field.



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Please, check them directly at the object.

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				Gepr.		
				Ers.f.		
Zust.	Änderungen	Datum	Name			

Maßstab 1:50	Gewicht
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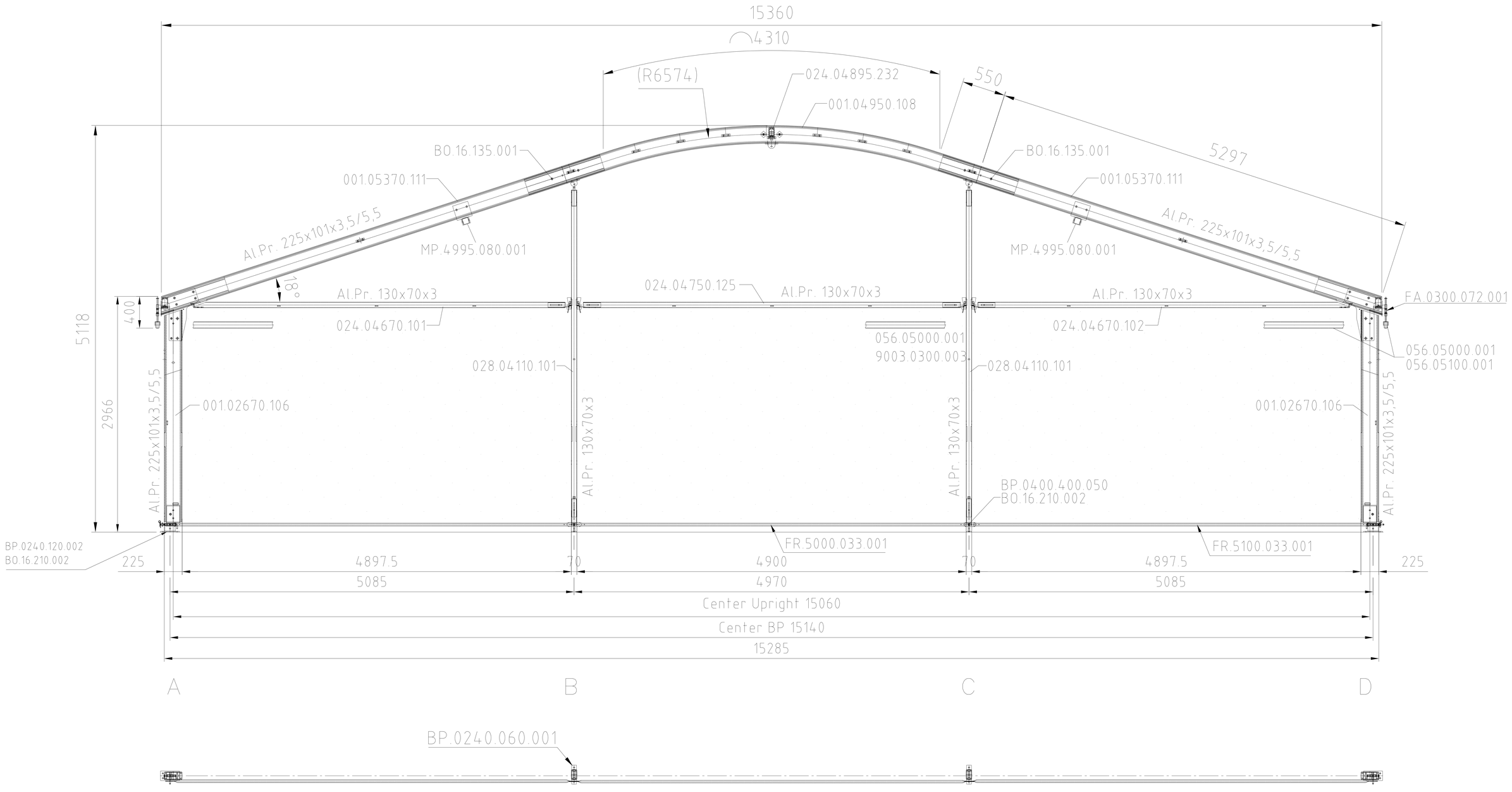
Gable view
Axis 1, Thermo

GZ_PR.1500.300.074_A1 | Blatt A3

Dateiname –



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Please, check them directly at the object.

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Zust.	Änderungen	Datum	Name			

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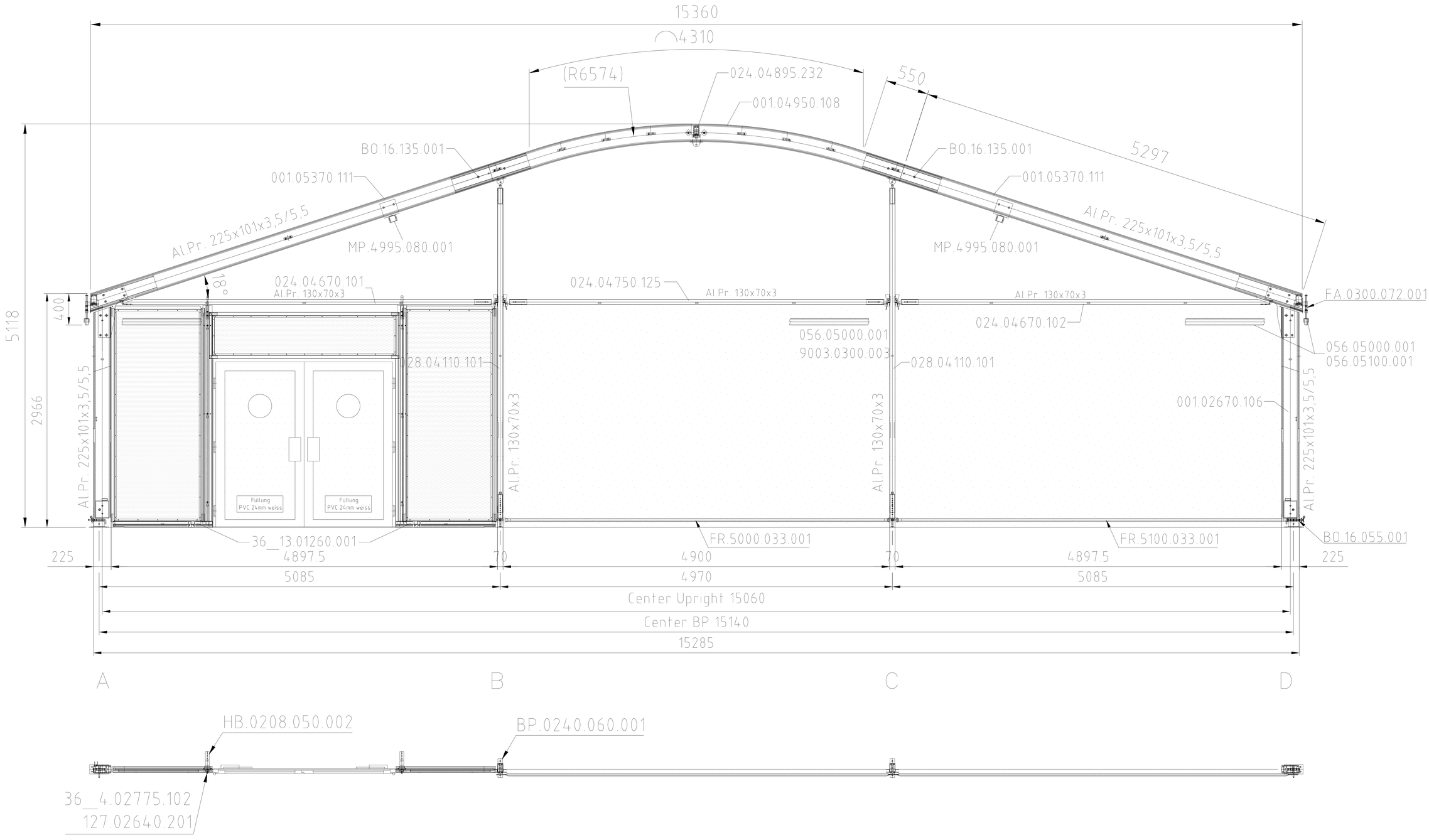
Dateiname –



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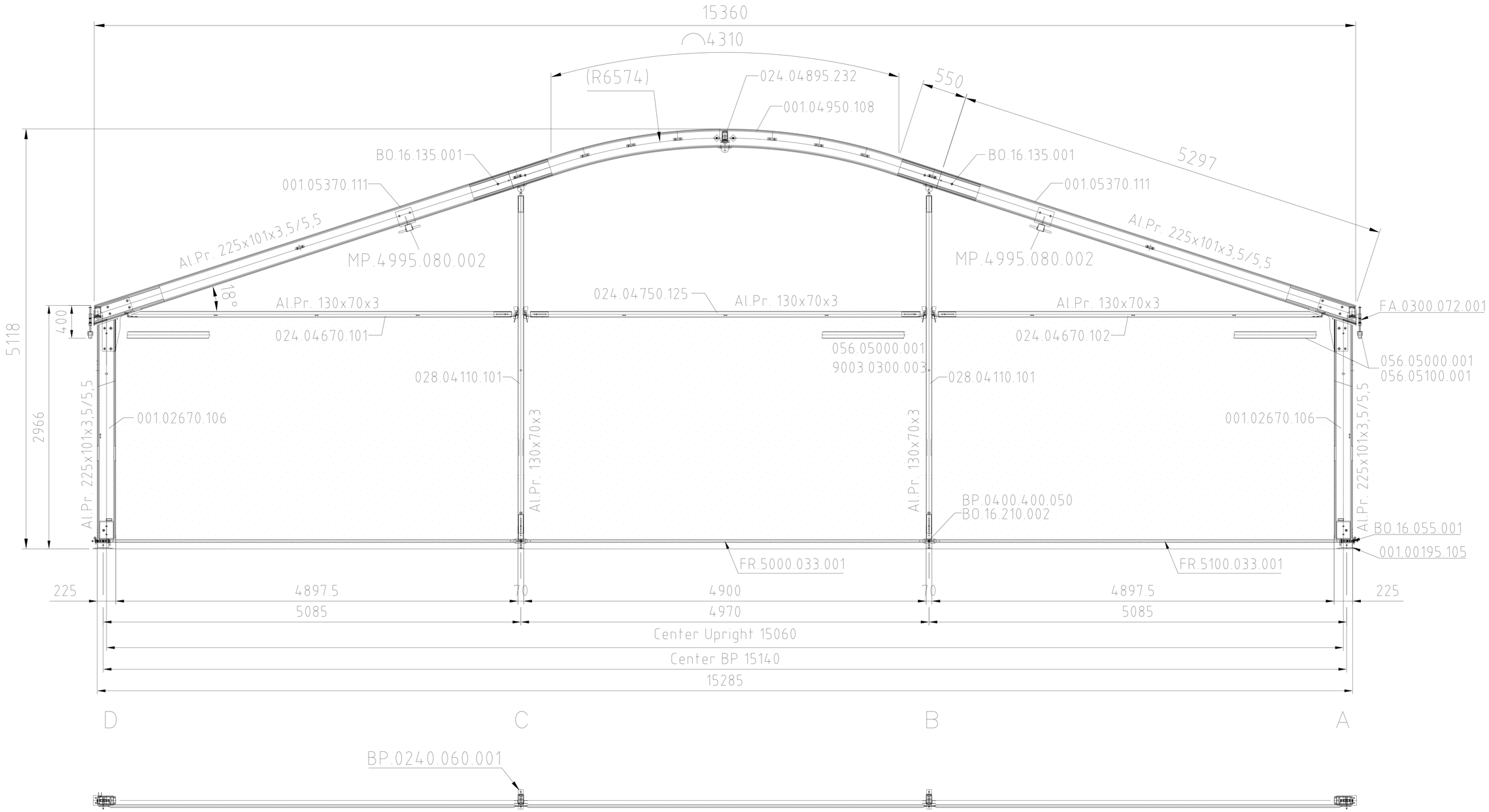

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Please, check them directly at the object.

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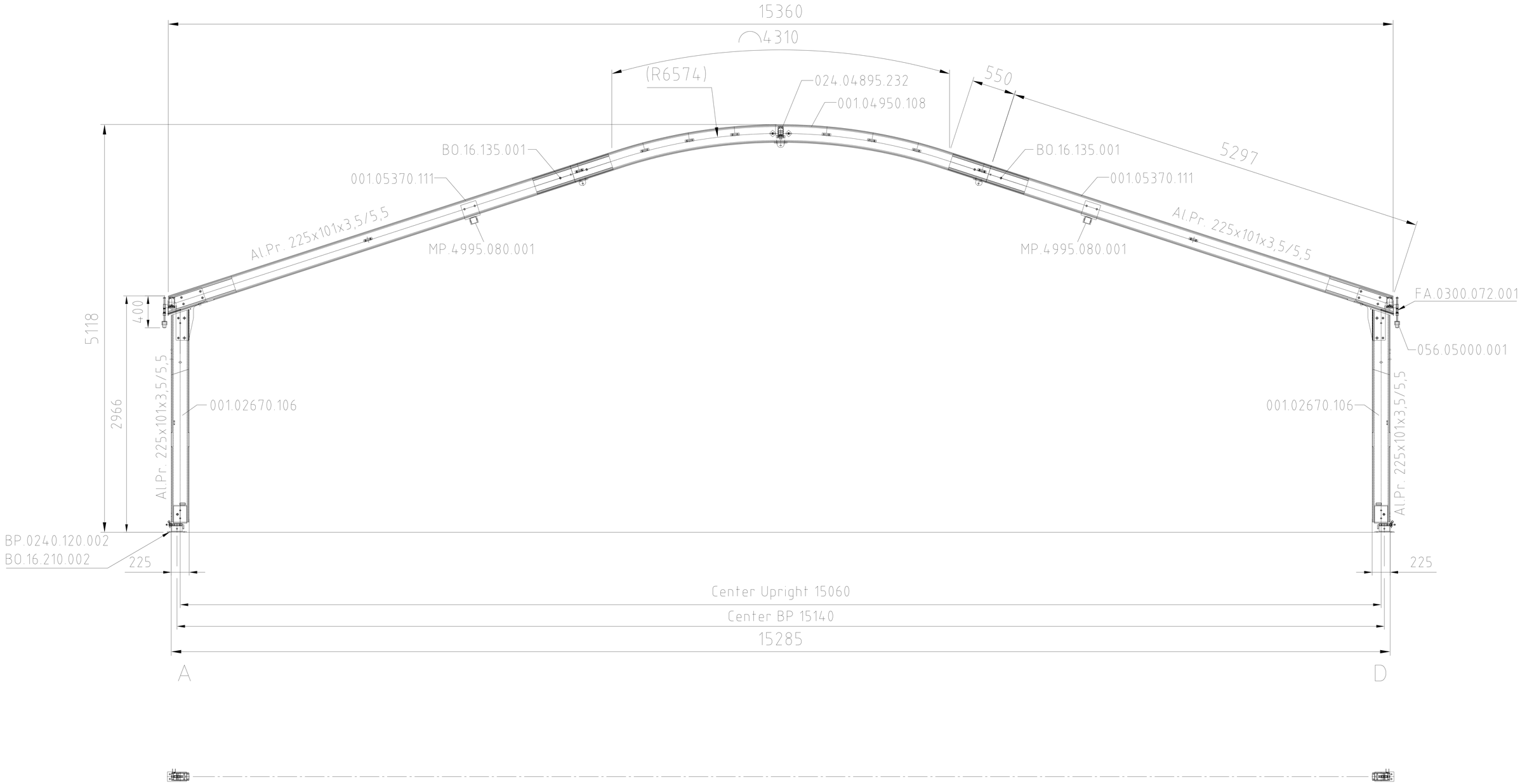

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Axis 3+4, Thermo

GZ_PR.1500.300.074_B

Blatt A3

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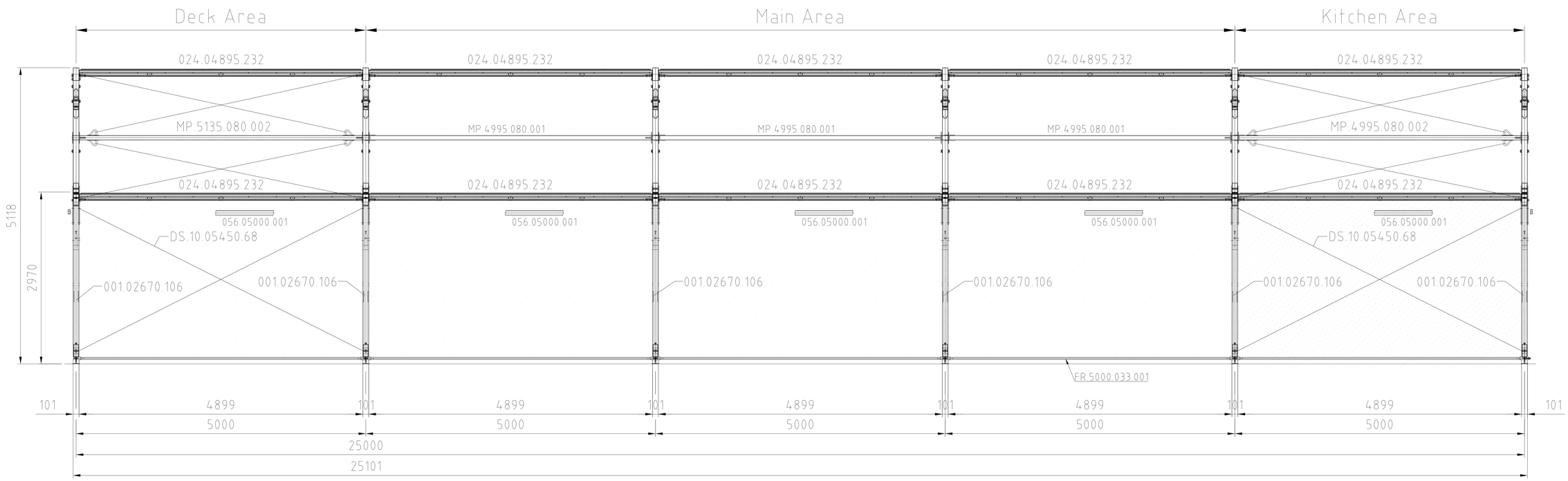

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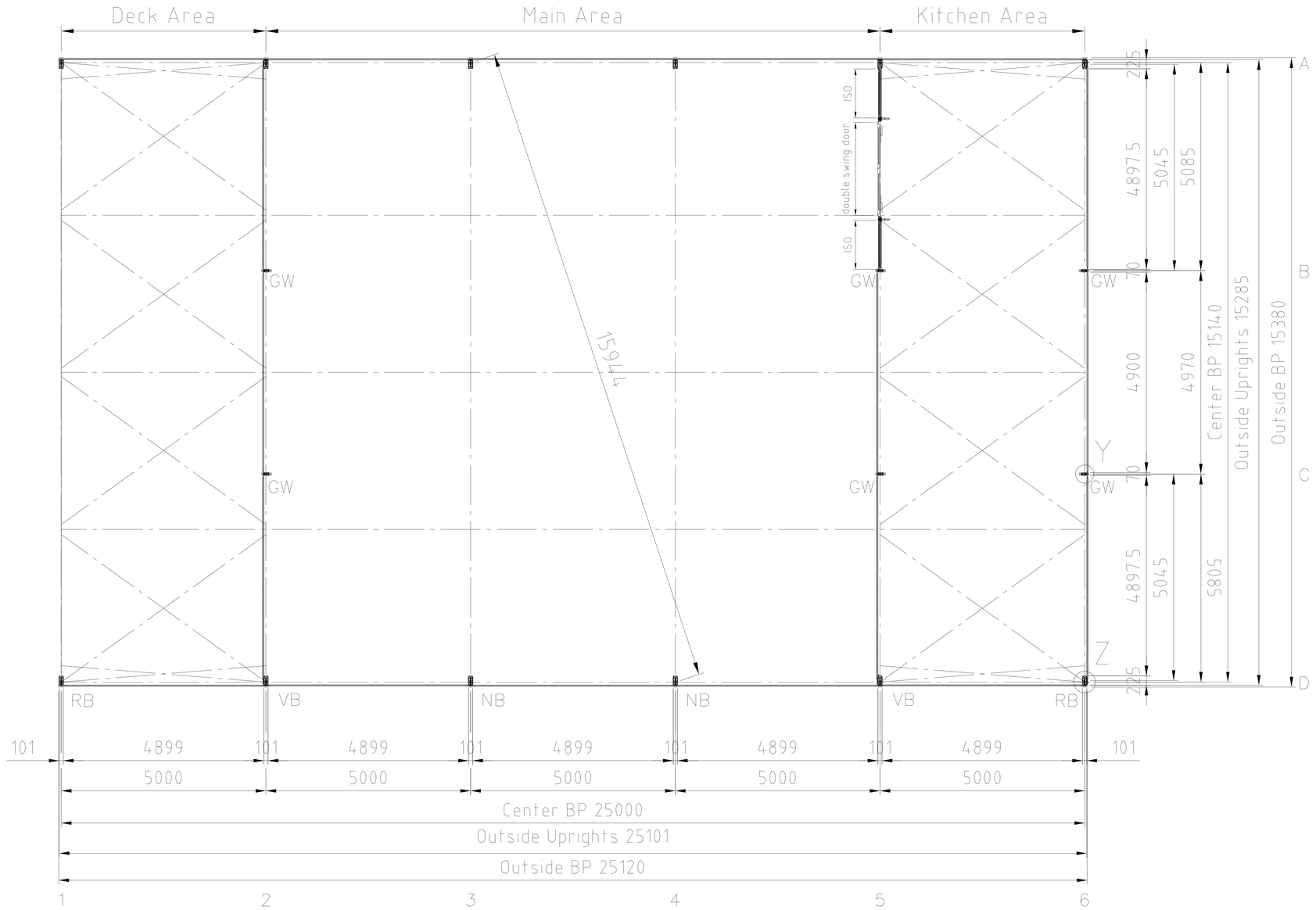
HTS TENTIQ

Side view
Thermo

GZ_PR.1500.300.074_C

Blatt A3

Dateiname –



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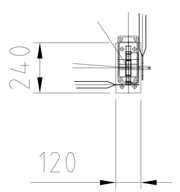

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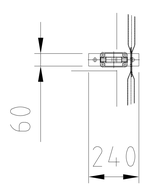

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HTS TENTIQ

Anchor plate plan
Thermo

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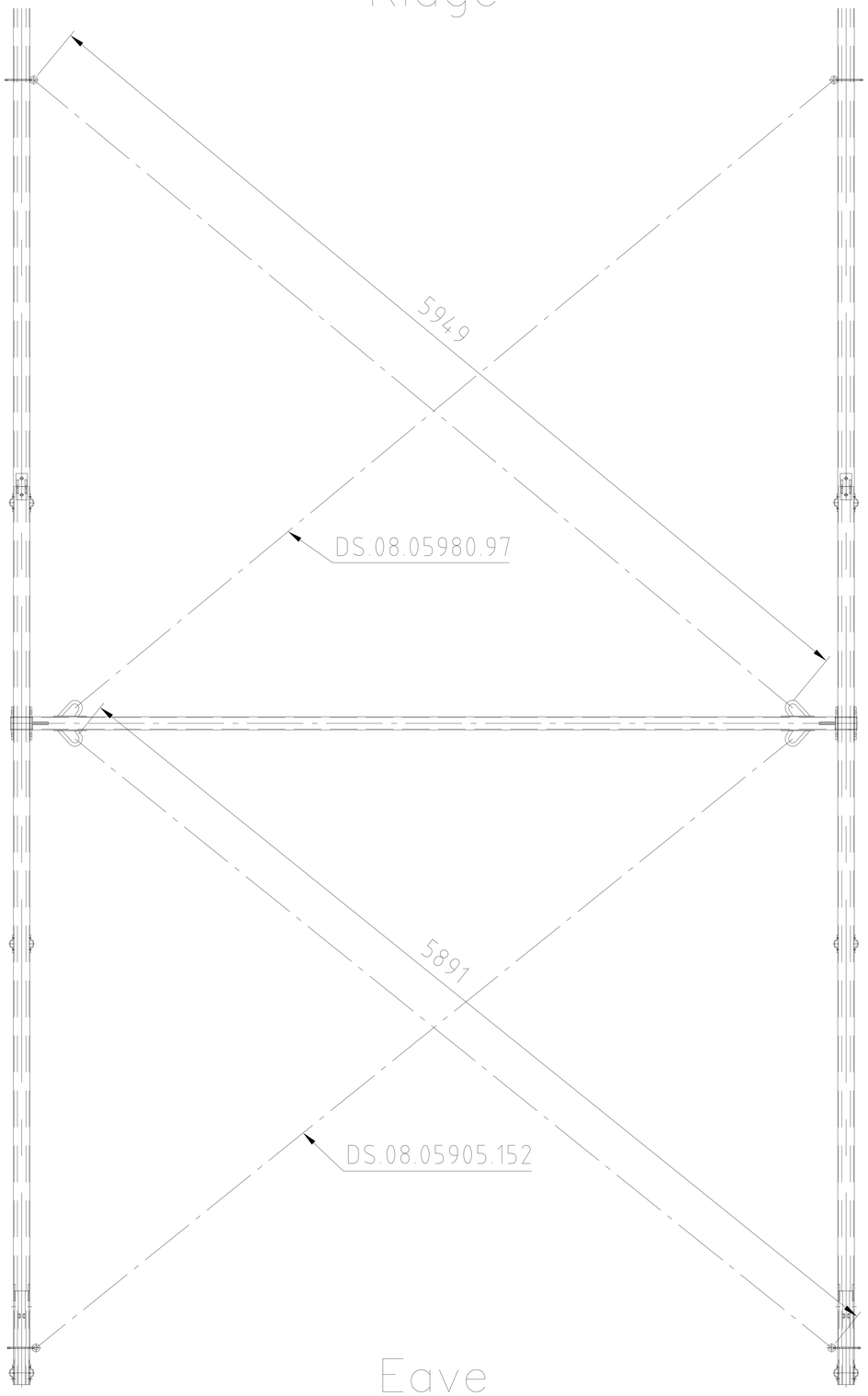
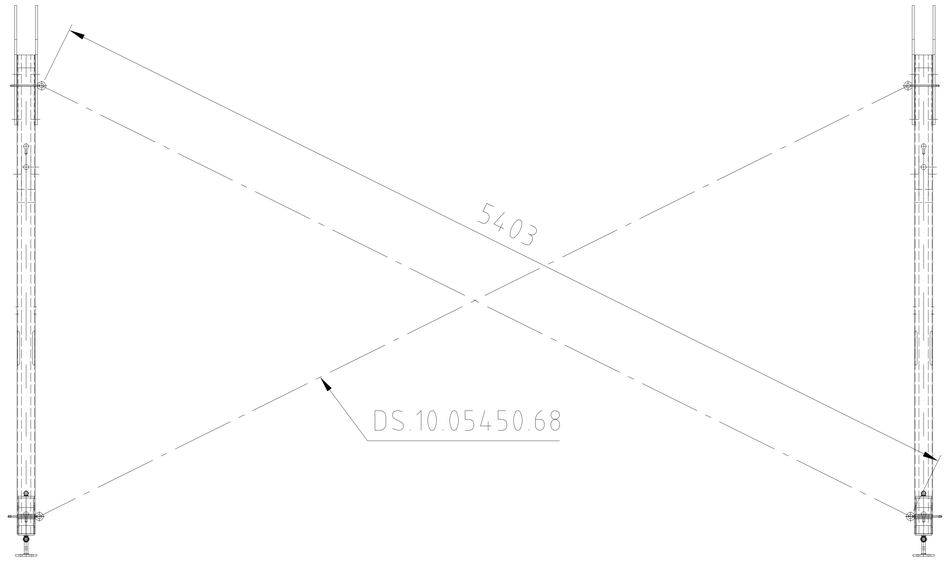
Dateiname

Ridge



Eave

Eave



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Zust.	Änderungen	Datum	Name			

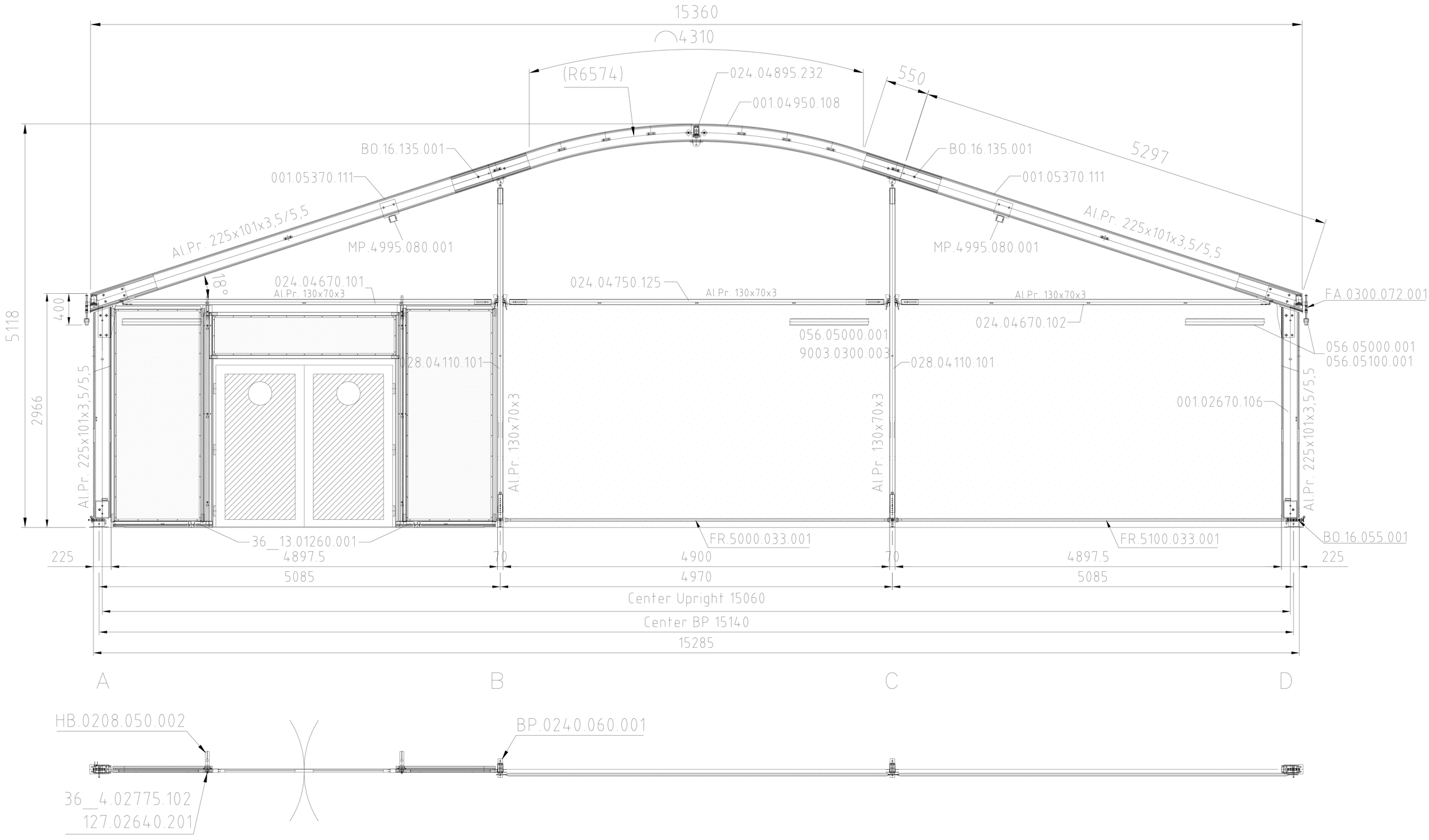
HTS TENTIQ

Cable brace
Thermo

GZ_PR.1500.300.074_E

Blatt A3

Dateiname –



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Maßstab 1:50	Gewicht
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Gable view inner
Axis 5, Thermo

GZ_PR.1500.300.074_A5_01

Blatt A3

Dateiname –

MAXWELL – CONSULTING ENGINEERS
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12 James Schofield Dr, Adelaide Airport, 5950
PO Box 33, Adelaide Airport 5950
Alex Dowling : 0406 168 560
Office: (08) 8426 0352
Email: engineering@maxwellengineers.com.au

Soil & Footing Construction Report

Report Date:	12/09/2023
Job Number:	ME2275
Client:	Cobbs Hill Winery jed@cobbshillestate.com.au
Site Address:	382 Swamp Rd, Oakbank
Proposed Structure:	Proposed New Marquee
Footing Type:	Bored Piers

The details in this report contain advice designed to minimise risk to the building. It is an important document and shall be kept in a safe place. It is essential that this information is supplied to subsequent owners so that they are aware of the consequences of making changes to the building and garden. Without this information, they may institute changes to site management that could jeopardise the long-term serviceability of the building.

Document Control

Version	Date	Author	Reason	Sections	Checked
3.0	11/09/2023	AD	Initial Release	All	BW
3.1	12/09/2023	AD	Change of Footings & Full Report Re-issue	All	BW

Report Prepared By:

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Ph : 0406 168 560
engineering@maxwellengineers.com.au

Document Distribution
Electronic copies are provided of this report for the clients' convenience and printed copies are available upon request.

Important Notes on Footings, Construction & Management Recommended Practices

This report inclusive of specification sheets contains advice which is designed to minimise the risk to the superstructure. This document should be given to the owner to provide awareness of the potential consequences of making changes to the building and landscaping. These notes shall be read in conjunction with the report and the CSIRO document BTF 18: Foundation Maintenance and Footing Performance: A Homeowner's Guide. These documents form essential reading for all clients and outline methodologies for minimising the potential for damage to occur.

There are many factors which can affect the performance of your footing system. It is important for the owner to be aware that damage may occur from the effects of nature or actions of neighbours.

There are limitless potential causes which may result in damage to the structure, this firm and the engineers associated are professionals who exercise their expertise and knowledge in order to advise on how to reduce the risk of damage to your superstructure caused by soil movement.

There are multiple inspections this firm are able to undertake throughout the construction process at the clients' discretion. There are compulsory site inspections which are of paramount importance in order to ensure that the design has been conformed with and the site conditions / works to date have not reduced design performance.

These compulsory inspections are performed by the engineer or suitably qualified representative and will ensure that the design is being strictly followed, as well as to assess whether any remediation works need to occur prior to the continuation of construction. The engineer makes these compulsory site inspections in order to protect the client, should the engineer not be notified of these inspections this may release the engineer from liability.

Site Inspections

The mandatory inspections are to ensure that the work is being carried out in accordance with the requirements of the report. The inspections shall not be of a detailed supervisory nature, and it shall remain the client's responsibility to ensure the overall adequacy of construction. The inspections shall exclude the checking of levels, layout dimensions, squareness, relationships to boundaries and other items which will not affect the structural performance of the building. The Engineer shall keep a written and dated record of inspections.

The mandatory inspections for this construction type are:

- Upon completion of excavation of piers to ensure suitable conditions for the loads imposed

The following standard inspections may be carried out at any of the stages below at the builders or clients request however they are <u>not mandatory</u>:

- Upon completion of primary earthworks, where the depth of excavation exceeds 600mm, the inspection shall be limited to a visual assessment of the earthworks, and any approval shall be conditional upon the client completing the final earthworks to the correct levels and slopes at a later stage. Where the Engineer considers that additional testing of investigation is required as a result of the earthworks, the client shall be advised that building work shall not proceed until the additional work has been completed. The additional testing, investigation and reporting is deemed to be an extra to the standard requirements.

- Upon completion of excavation from main sewers, to ensure that the trenches as constructed do not interfere with the design parameters determined from the original plans. The checking of sewers for compliance with the requirements of statutory authorities is specifically excluded.
- Upon placement of any brickwork to ensure the control joints have been provided at the specified locations. The checking of joint details which are not visible shall be excluded
- Upon completion of installation of paving, storm water drains, pipes etc to check their compliance with drainage requirements. The checking of sections not visible shall be excluded. Maintenance of ground slopes to ensure continues and proper draining will be required subsequent to the inspection and shall remain the client's responsibility.

MAXWELL'S INSPECTION & CERTIFICATION FEES

In order to ensure compliance with design and to provide certification for the construction, inspections of the footings shall be carried out by an engineer or nominated representative of Maxwell Project Services Consulting Engineers at the following stages of construction.

Mandatory Inspections:

1. **At completion of excavated bored piers**

Note: A minimum of 48 hours' notice is required to attend each of the site inspections specified as mandatory in this report. It is the responsibility of the client or their nominated representative to provide adequate notice to this firm in order to carry out these inspections.

Please note that these mandatory inspections and are at an additional cost to this report. These inspections are charged a minimum of $220+ GST per inspection and $40+GST for sign off and certification. These fees can be confirmed, at the request of client / nominated representative at the time of booking inspections.

Site Overview

Site Address: 382 Swamp Rd, Oakbank

Soil Sampling
A soil investigation was carried out on 25/03/2022 by drilling 2 holes on the site using a Hydraulic Push Tube.

Corrosion Zone
This site is located outside of the corrosion zone, concrete shall be 20MPa min, unless otherwise noted.

Soil Maps
Not available for this area

Previous Investigations from Nearby Sites
None, but 2 boreholes show consistent properties for this area.

The footing recommendations and design parameters outlined in this report are based largely on the bore logs for the site. Due to the limitations of the sample size taken for each site, it is not possible for this engineer to provide judgements and opinions for the entire site. It is essential that any variations in soil type or characteristics noted during excavations for footings or services are brought to the attention of the design engineer for advice.

JR SOIL SAMPLING
Box 178, Echunga 5153
Telephone/Fax: 8388 8431
Mobile: 0408 814 329

DATE 25.3.22

ENGINEER MAX.

ENGINEER'S JOB No. COBBS HILL WINERY.

LOCATION 382 SWAMP Rd. OAKBANK.

TRAY No.	A1	A1								
No. OF BORES	1	2								
DEPTH	2.4	2.4								
WATER TABLE LEVELS	-	-								

SITE SURFACE CONDITIONS GRAVEL.

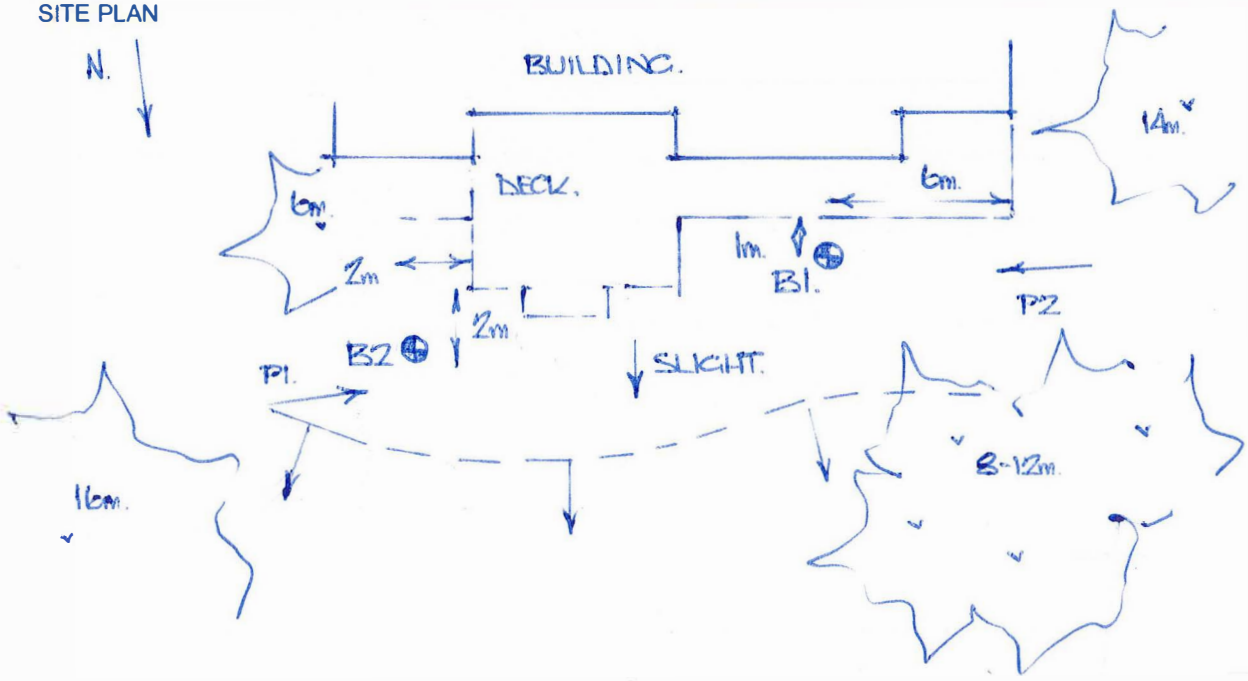
SLOPE SEE PLAN.

DIRECTION

EXCAVATIONS AND DRAINS

VEGETATION TREES.

SITE PLAN



COMMENTS POST EQUIP.
Rs 0-2.0 MED 2.0-2.4 MED-HIGH.

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Surface Soil Borelog

Date Logged:	31/03/2022	**Drilled by:**	JR Soil Sampling
Client Name:	Cobbs Hill Winery	**Logged by:**	AD
Site Address:	382 Swamp Road Oakbank	**Sampling Method:**	Hydraulic Push Tube
Job Number:	ME2275	**Tray Number:**	A1

Horizon Depth (mm)		Description	Soil Colour	USC	Estimated Ipt %	Bearing Capacity
Borehole 1	Borehole 2					
0-350	0-360	"FILL" Sandy CLAYS Occasional Stone	Red Brown	CL	0.015	Firm
350-1040	360-1270	Sandy CLAYS	Red Brown	CL	0.022	Stiff
1040-1480	1270-1750	Sandy CLAYS Siltier with Depth	Red Brown	CL	0.015	Stiff
1480-2400	1750-2400	SILTS & SILSTONES	Grey Brown	-	0.003	Stiff to Hard
REFUSAL	REFUSAL					
Comments :			**Classification :**	**M-D**	**Ys:**	**32mm**

The soil descriptions and estimates of soil shrinkage index and soil strength have been derived from the visual-tactile identification approach in accordance with AS 1726. It is not economically possible or practical to determine every sub-surface feature on a site. Because of this any variations or discrepancies in soil type, colour, or horizon depth, shall be referred to this engineer immediately.

Bearing Strength at Time of Logging (kPa)	
VL: Very Low (soft/possibly collapsing)	<50
L: Low - Firm	50 - 100
M: Medium - Stiff	100 - 200
H: High - Very stiff - Hard	>200

Reactivity - expressed in terms of Shrinkage Index (Ips)	
VL: Very Low	0.50%
L: Low	1%
M: Medium	2%
H: High	3% - 4%
VH: Very High	> 4%

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Soil Heave Calculation

Date Logged:	31/03/2022	**Drilled by:**	JR Soil Sampling
Client Name:	Cobbs Hill Winery	**Logged by:**	AD
Site Address:	382 Swamp Road Oakbank	**Sampling Method:**	Hydraulic Push Tube
Job Number:	ME2275	**Tray Number:**	A1

Borehole 1

Layer	Pf Top	Pf Bottom	Pf 1	Pf 2	Pf (ave)	Ipt (est)	Ys(mm)	Ym(mm)
1	0	350	1.20	1.10	1.15	0.015	6.0	4.2
2	350	1040	1.10	0.89	0.9915	0.022	15.1	10.5
3	1040	1480	0.89	0.756	0.82	0.015	5.4	3.8
4	1480	2400	0.756	0.48	0.62	0.003	1.7	1.2
5	2400	3000	0.48	0.30	0.39	0.000	0.0	0.0
6	3000	4000	0.30	0.00	0.15	0.000	0.0	0.0
						TOTAL	**28.2**	**19.7**

Borehole 2

Layer	Pf Top	Pf Bottom	Pf 1	Pf 2	Pf (ave)	Ipt (est)	Ys(mm)	Ym(mm)
1	0	360	1.20	1.09	1.15	0.015	6.2	4.3
2	360	1270	1.09	0.82	0.9555	0.022	19.1	13.4
3	1270	1750	0.82	0.675	0.75	0.015	5.4	3.8
4	1750	2400	0.675	0.48	0.58	0.003	1.1	0.8
5	2400	3000	0.48	0.30	0.39	0.000	0.0	0.0
6	3000	4000	0.30	0.00	0.15	0.000	0.0	0.0
						TOTAL	**31.8**	**22.3**

Borehole 3

Layer	Pf Top	Pf Bottom	Pf 1	Pf 2	Pf (ave)	Ipt (est)	Ys(mm)	Ym(mm)
						TOTAL	**0.0**	**0.0**

Borehole 4

Layer	Pf Top	Pf Bottom	Pf 1	Pf 2	Pf (ave)	Ipt (est)	Ys(mm)	Ym(mm)
						TOTAL	**0.0**	**0.0**

Design Ys = **32 mm**
Ym = **22 mm**

FOOTING CONSTRUCTION RECOMMENDATIONS

Site Location	382 Swamp Rd, Oakbank
Soil Classification	The soil is classified as **M-D** in accordance with AS 1726 & AS 2870
Proposed Structure:	Proposed New Marquee, comprised of the following:
Roof -	**To Manufacturers Specifications**
Walls -	**Lightweight Clad Veneer**
Footing Type -	**Bored Piers**

Footing Recommendations:	**Dimensions depth x width (mm)**	**Reinforcement**
Piers (P1)	**1500 x 600Ø**	**6 Vert N12**
Piers (P2)	**1200 x 600Ø**	**6 Vert N12**
Piers (P3)	**950 x 600Ø**	**6 Vert N12**
Concrete requirements	**20MPa**	

Footing details and reinforcement shall be as per the drawings and specifications outlined in this report.
Footings have been designed in accordance with the requirements of AS2870 in addition to local knowledge of the area & the special provisions provided by the Engineers Australia Footings Group.

A. Dowling
MIEAust CPEng NER

SOIL CLASSIFICATION

THE SITE IS CLASSIFIED AS "M-D" (DUE TO SOIL REACTIVITY) IN ACCORDANCE WITH **AS 2870-2011**

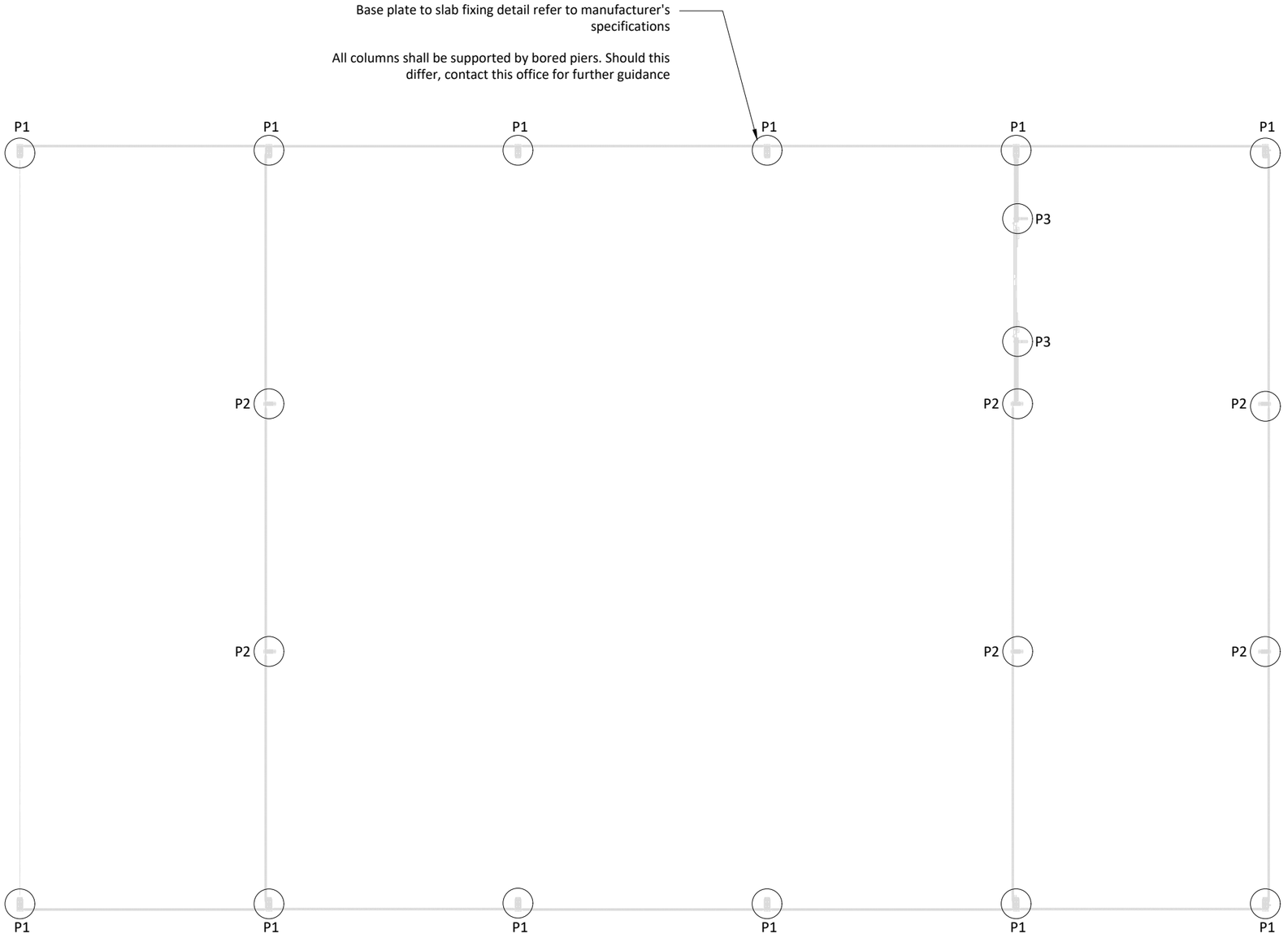
Inspection	Requirement
Piers	Mandatory

During construction if any aspect of this report is unclear, the contractor shall contact this engineer for clarification prior to continuing works

PIERS	DEPTH	WIDTH	PIER REINFORCEMENT
P1	1500	600Ø	6 Vert N12
P2	1200	600Ø	6 Vert N12
P3	950	600Ø	6 Vert N12

NOTES:

Flexible Connections are not required



1. This plan shall be read in conjunction with the footing construction report, architectural drawings and detail sheet specifications.
2. Concrete used shall be **N20**.
3. Under no circumstances may the supporting subgrade be undermined during footing construction
4. Written dimensions shall take precedence over scaled dimensions
5. All piers to be min 350mm into natural soil UNO.
6. Location and number of piers shall be at the engineers' discretion and is to be determined upon excavation of trenches
7. Where brittle floor coverings are to be used refer to the specifications attached
8. Lagging using closed cell polyethylene shall be 20mm to M & H sites and 40mm to E sites.
9. Curing of concrete is mandatory - refer to specifications
10. The owners' attention shall be drawn to AS2870 - Appendix B 'Performance Requirements & Foundation Maintenance'
11. Control joints shall be installed as per lightweight cladding manufactures recommendations

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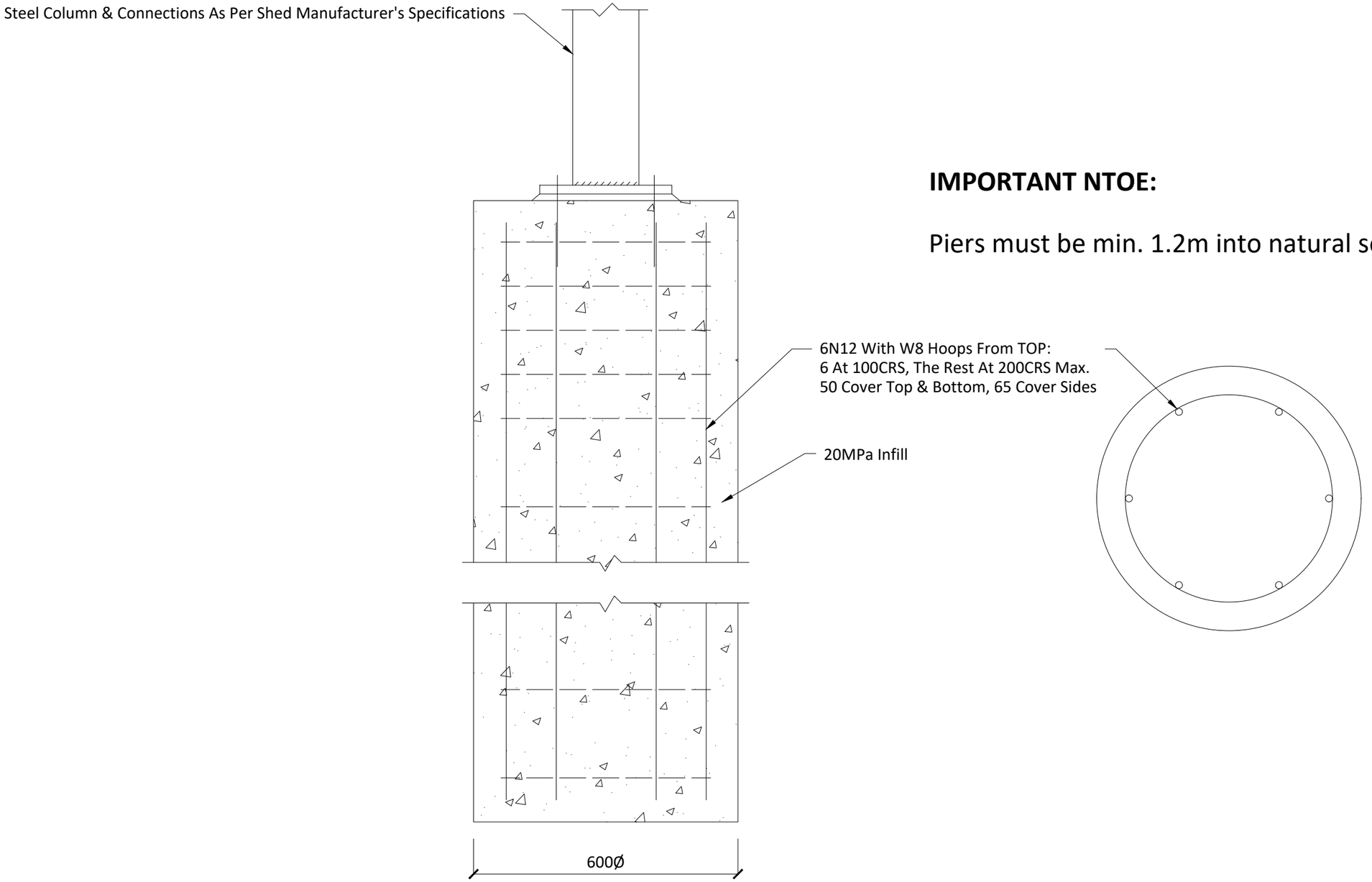
CLIENT:	COBBS HILL WINERY
PROJECT TITLE:	PROPOSED NEW MARQUEE
SITE ADDRESS:	382 SWAMP RD, OAKBANK
DRAWING TITLE:	FOOTING LAYOUT PLAN
SHEET No.: FP.1	DESIGNED/DRAWN BY: PL
SCALE: 1:100 @ A3	CHECKED BY: JB
JOB NUMBER: ME2275	DATE: 12/9/2023



IMPORTANT NTOE:

Piers must be min. 1.2m into natural soil

P1 / P2 CONNECTION DETAILS

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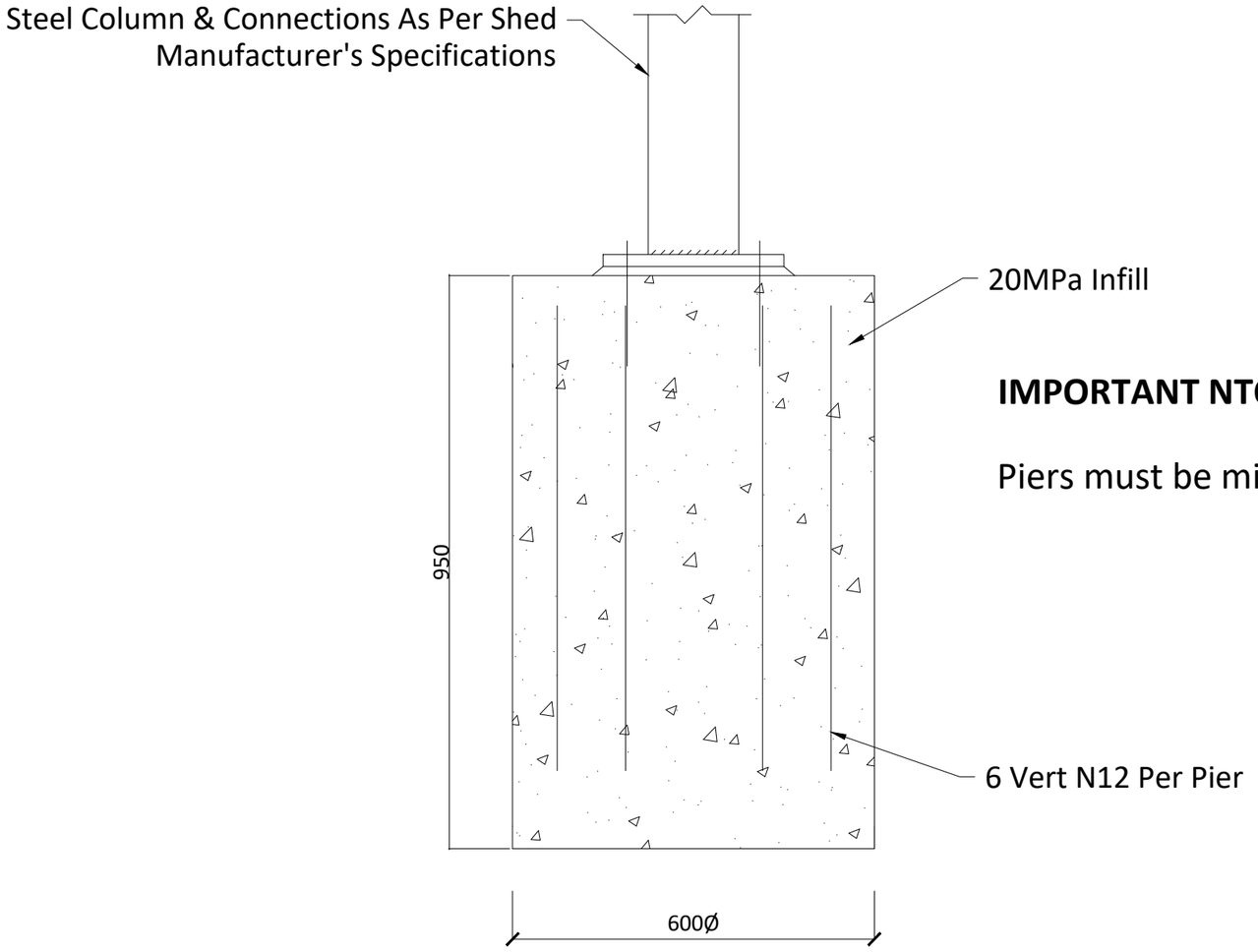
CLIENT: COBBS HILL WINERY	
PROJECT TITLE: PROPOSED NEW MARQUEE	
SITE ADDRESS: 382 SWAMP RD, OAKBANK	
DRAWING TITLE: P1 / P2 CONNECTION DETAILS	
SHEET No: D.1	DESIGNED/DRAWN BY: PL
SCALE: 1:10 @ A3	CHECKED BY: JB
JOB NUMBER: ME2275	DATE: 12/9/2023



IMPORTANT NTOE:

Piers must be min. 0.7 m into natural soil

P3 CONNECTION DETAIL

MAXWELL PROJECT SERVICES - CONSULTING ENGINEERS
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12 James Schofield Dr, Adelaide Airport, 5950
Phone: 08 8426 0352 **Mobile:** 0406 168 560
Email: engineering@maxwellprojectservices.com.au

CLIENT: COBBS HILL WINERY	
PROJECT TITLE: PROPOSED NEW MARQUEE	
SITE ADDRESS: 382 SWAMP RD, OAKBANK	
DRAWING TITLE: P3 CONNECTION DETAIL	
SHEET NR: D.2	DESIGNED/DRAWN BY: PL
SCALE: 1:10 @ A3	CHECKED BY: JB
JOB NUMBER: ME2275	DATE: 12/9/2023

Geotechnical parameters

Geotechnical report = ME2275
Allowable end bearing capacity = 200 kPa at 400 mm below finished surface (bearing material)
Allowable side friction = 30 kPa after 400 mm below finished surface (friction material)
Material description = 200mm into stiff clay at the base of fill or silt

Pier dimension = 600 mm
Pier shape = C (C)ircular,(S)quare
Base area = 0.283 m²
Perimeter = 1.885 m

Reduce by concrete self weight of = 25.0 kN/m³ to 400 mm below finished surface (fill)
Then reduce by concrete self weight of = 6.0 kN/m³ thereafter
Concrete self weight for uplift = 25.0 kN/m³

Pier capacities - socket into bearing soils, 400mm depth below finished surface

Interval = 250 mm

Depth	Socket	Bear. Cap.	Fr. Cap	SW in Fill	SW in Natural	Capacity	øUplift
mm	mm	kN	kN	kN	kN	kN	kN
0	0	0.0	0.0	0.0	0.0	0.0	0.0
250	0	0.0	0.0	-1.8	0.0	0.0	1.6
500	100	56.5	5.7	-2.8	-0.2	59.2	8.3
750	350	56.5	19.8	-2.8	-0.6	72.9	22.6
1000	600	56.5	33.9	-2.8	-1.0	86.6	36.9
1250	850	56.5	48.1	-2.8	-1.4	100.3	51.2
1500	1100	56.5	62.2	-2.8	-1.9	114.1	65.5
1750	1350	56.5	76.3	-2.8	-2.3	127.8	79.8
2000	1600	56.5	90.5	-2.8	-2.7	141.5	94.2
2250	1850	56.5	104.6	-2.8	-3.1	155.2	108.5
2500	2100	56.5	118.8	-2.8	-3.6	168.9	122.8
2750	2350	56.5	132.9	-2.8	-4.0	182.6	137.1
3000	2600	56.5	147.0	-2.8	-4.4	196.3	151.4
3250	2850	56.5	161.2	-2.8	-4.8	210.1	165.7
3500	3100	56.5	175.3	-2.8	-5.3	223.8	180.0
3750	3350	56.5	189.4	-2.8	-5.7	237.5	194.4
4000	3600	56.5	203.6	-2.8	-6.1	251.2	208.7
4250	3850	56.5	217.7	-2.8	-6.5	264.9	223.0
4500	4100	56.5	231.8	-2.8	-7.0	278.6	237.3
4750	4350	56.5	246.0	-2.8	-7.4	292.3	251.6
5000	4600	56.5	260.1	-2.8	-7.8	306.0	265.9
5250	4850	56.5	274.3	-2.8	-8.2	319.8	280.2
5500	5100	56.5	288.4	-2.8	-8.7	333.5	294.5
5750	5350	56.5	302.5	-2.8	-9.1	347.2	308.9
6000	5600	56.5	316.7	-2.8	-9.5	360.9	323.2
6250	5850	56.5	330.8	-2.8	-9.9	374.6	337.5
6500	6100	56.5	344.9	-2.8	-10.3	388.3	351.8
6750	6350	56.5	359.1	-2.8	-10.8	402.0	366.1
7000	6600	56.5	373.2	-2.8	-11.2	415.7	380.4
7250	6850	56.5	387.4	-2.8	-11.6	429.5	394.7
7500	7100	56.5	401.5	-2.8	-12.0	443.2	409.1
7750	7350	56.5	415.6	-2.8	-12.5	456.9	423.4
8000	7600	56.5	429.8	-2.8	-12.9	470.6	437.7
8250	7850	56.5	443.9	-2.8	-13.3	484.3	452.0
8500	8100	56.5	458.0	-2.8	-13.7	498.0	466.3
8750	8350	56.5	472.2	-2.8	-14.2	511.7	480.6
9000	8600	56.5	486.3	-2.8	-14.6	525.5	494.9
9250	8850	56.5	500.5	-2.8	-15.0	539.2	509.3
9500	9100	56.5	514.6	-2.8	-15.4	552.9	523.6
9750	9350	56.5	528.7	-2.8	-15.9	566.6	537.9
10000	9600	56.5	542.9	-2.8	-16.3	580.3	552.2

WIND LOAD DESIGN

Date: **12/09/2023**

Job Number: **ME2275**

Client: **Cobbs Hill Winery**

Site Address: **382 Swamp Rd, Oakbank**

Wind Region:	**A**
Terrain Category Classification:	TC2
Topographic Classification:	T1
Shielding Classification:	**NS**
Wind Classification:	N3 (41m/s)

The wind speed calculated, V_h is for use in design only. It has been calculated for a domestic dwelling in accordance with the limitations as in AS4055-2012.

Wind Speed Classification by:

Alex Dowling
MIEAust CPEng NER

Footing Construction Tolerances & Design Criteria

The details in this report contain advice that is designed to minimise the risk to the building. This is an important document and should be kept in a safe place. It is essential that the Footing Construction Report and all general notes be supplied to subsequent owners so that they are aware of making changes to the building and landscaping. Without this information they may change aspects of the site that could jeopardise the long-term serviceability of the building.

It is imperative the owners understand that clays shrink and swell due to moisture changes. The primary cause of footing failure of domestic structures is associated with the movement of reactive clay soils. It is neither possible nor economical to design for extreme conditions, the owner is the only person who can maintain reasonable moisture conditions within the site. The owner should appreciate that on reactive clays it is impossible to design a footing system that will totally prevent movement. Some minor aesthetic cracking, while undesirable may occur in this dwelling. It is also almost impossible to provide remedial measures that will prevent future movements if distress does occur.

Different types of construction types allow for different levels of movement with respect to the slab. This firm has designed footings to be as a Bored Piers. Substitution of construction type is prohibited unless approved by this engineer. The footings in this report have been designed to meet a level of performance as shown in Table 1 and as referenced in table 4.1 AS2870 – 2011.

Table 1: Maximum Design Differential Footing Deflection for Design of Footings

Type of construction	Maximum differential deflection, as a function of span, mm	Maximum differential deflection, mm
Clad Frame	L/300	40
Articulated Masonry Veneer	L/400	30
Masonry Veneer	L/600	20
Articulated Full Masonry	L/800	15
Full Masonry	L/2000	10

It is advised that all sites with reactive clays (class M, H & E), following excavation of sub-beams and underfloor plumbing, undergo placement of vapour barrier and pouring of concrete with minimum of delay. Furthermore, all sites will perform better if there is not undue delay between cutting of site and commencement of excavation for footing beams. The footings in this report have been designed to meet a level of performance within the regions of category 0 – 1 as defined in Table 2 & Table 3. It is a condition of use of this footing construction report that the above basis for design is acceptable.

It is emphasised that in the event of leaking water or sewer pipes or a significant departure in site management requirements contained in this report, the above category of damage becomes inapplicable.

Table 2: Classification of Damage with Reference to Walls (Extract from AS2870 – Table C1)

Description of Typical Damage	Width Limit	Damage Category
Hairline	<0.1mm	0 (Negligible)
Fine cracks that do not need repair	<1.0mm	1 (Very Slight)
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5.0mm	2 (Slight)
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Door and windows stick. Service pipes can fracture. Weather-tightness is often impaired.	>5.0mm, <15.0mm (or several cracks 3.0mm or more in one group)	3 (Moderate)
Extensive repair work involving breaking out and replacing sections of walls, especially over doors and windows. Doorframes distort. Walls lean or bulge noticeably. Some loss of bearing in beams. Service pipes disrupted.	>15.0, <25.0mm but also depends on number of cracks	4 (Severe)
Major repair required involving partial or full rebuilding. Beams loose, bearing walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	Usually greater than 25.0mm but depends on the number	5 (Very Severe)

Table 3: Classification of Damage with Reference to Concrete Floors (Extract from AS 2870 - Table C2)

Description of Typical Damage	Approx. crack width limit in floor	Change in offset from a 3m straight edge centres over defect	Damage Category
Hairline cracks, insignificant movement of slab from level	<0.3mm	<8.0mm	0 (Negligible)
Fine but noticeable cracks. Slab reasonably level	<1.0mm	<10.0mm	1 (Very Slight)
Distinct cracks. Slab noticeably curved or changed in level	<2.0mm	<15.0mm	2 (Slight)
Wide cracks. Obvious curvature or change in level	2.0mm to 4.0mm	15.0 to 25.0mm	3 (Moderate)
Gaps in slab. Disturbing curvature or change in level	4.0mm to 10.0mm	>25.0mm	4 (Severe)

This report shall be read in conjunction with the CSIRO publication BTF 18: Foundation Maintenance and Footing Performance: A Homeowner's Guide. These documents form the essential reading material for all clients and outline the methodologies for minimising the potential for damage to occur.

The performance of this footing system depends largely on the maintenance routine provided by the homeowner. To avoid extreme soil moisture conditions, it is essential that homeowners are aware of their responsibility to care for and maintain a dwelling on soils with the potential for ground movement.

Use of the footing recommendations outlined in this report constitutes agreement of the potential damage category for which the footings have been designed for. Should higher expectations of performance be required, the engineer must be advised and will design accordingly to engineering principles.

Extensions

The design in this report provides a footing system that is sufficiently stiff for loads imposed. However significant movement can occur between any new and old structures due to differing subsoil moisture conditions. This does not affect the structural integrity of the new addition but may result in large movement at the control joints between the two structures as new and old footings are only connected via dowels which allows the potential for hinging to occur.

It is very difficult to prevent tilting of the extension relative to the existing building, any extension shall be constructed to allow relative movement between the new and the existing building. This provision for relative movement applies to all work including floors, tiling, wall and ceiling finishes, etc.

Soil Bore logs

The soil profiles as indicated by the test cores form the basis of the footing recommendations contained within this report. The soil descriptions and estimates of soil shrinkage index and soil strength have been derived from the visual-tactile identification approach in accordance with AS 1726 unless otherwise noted and has been presented in a bore log under the Unified Soil Classification System.

The footings have been selected based on the recognized characteristics of each soil horizon encountered. It has been assumed that aspects of site drainage, paving and landscaping which are described in this report have been or will be implemented as soon as possible. Where these aspects do not form part of the building contract, it is a mandatory requirement that they be carried out within a period stated in the construction report. If a period is not stated, then these must be carried out within twelve months of pouring the slab. It is not economically possible or practical to determine every sub-surface feature on a site. Because of this any variations or discrepancies in soil type, colour, or horizon depth, shall be referred to this engineer immediately.

Site Preparation

Trees and shrubs shall be removed from the building area and any voids left shall be filled with compacted site material free from organic matter. All organic matter and topsoil shall be stripped from the building area and removed from site. Surface drainage provisions shall be controlled from the start of site preparation and carry through to the construction phase.

Clean topsoil, free of debris shall be redistributed to a depth of 100mm to all areas in which cutting, filling and excavation operations have occurred. Any surplus topsoil and shall be removed from the site and disposed of at a location approved by the local authority.

CUT/FILL & SITEWORKS

All earthworks shall be in accordance with AS2870 & AS3798. Council and / or other statutory requirements giving the relationship between finished floor level, road levels, external paving and / or sewer flood gully, and paving requirement, must be adhered to. Regardless of the complexity of earthworks to be undertaken, it is imperative that adequate supervision takes place. The supervision of construction is the responsibility of the builder. All construction works shall be supervised by a suitably qualified person. All Footings shall be founded 200mm into natural soil or controlled fill. The bench level set on the cut and fill proposal must be adhered to. The extent of cut and fill outside
of the immediate building envelope shall not be exceeded with respect to the following requirements:

- Cut or fill on the boundary should not exceed 600 mm (unless a suitable retaining wall is specified).
- Cut on the boundary should not undermine any structure that exists on an adjacent property.
- Generally, cut or fill within the building envelope should not exceed 900 mm (unless a suitable retaining wall is specified).
- Where bank heights do not exceed 1.5m and the natural slope of the site does not exceed 1 vertical to 5 horizontal, the batter slopes recommended in Table 4 may be used.

Table 4: Recommended Batter Slopes

Material	Recommended Batter Slope
Sound & Unfractured Rock	Nearly Vertical is Permissible
Weathered Rock in Good Condition	1 Vertical to 0.5 Horizontal
Stiff Clays	1 Vertical to 1 Horizontal
Sandy Clays/Clayey Sands	1 Vertical to 1.5 Horizontal
Sands & Cohesionless Soils	1 Vertical to 2 Horizontal

On sites subject to wind or water erosion, the foundation of the edge beam or footing shall be protected. Protection shall be provided by one or more of the following:

- Grading the ground surface to minimise the catchment area adjacent to the building.
- Providing a drainage system that inhibits stormwater run-off near the building.
- Providing a 1000mm concrete path around the building envelope.

If a retaining wall has been specified, the cut or fill should not exceed the design height of the specified retaining wall.

Slopes and gradings of the cut bench or platform shown on the cut and fill plans are to be strictly adhered to in order to allow for the site to be drained. A temporary toe may need to be provided at the base of cut banks to provide a drain. This drain should fall sufficiently to the low side so that water does not pond. On sand sites and sites where erosion may be a critical problem, provision of trench drains above the cut bank to prevent erosion during the construction phase may be required.

Cutting and filling with correct compaction as per **Table 5** shall provide a level working platform which is raised slightly above surrounding ground to ensure it is drained. Due to the soil under a Bored Piers wetting up over time, soils beneath the house area should be kept in as moist a condition as possible. For strip footings with timber floors due to the soil underneath drying out, the building area should be kept as dry as possible in order to minimise moisture changes from start of construction through to completion.

Excavations for footings shall be such that the lowest corner of the trench is dug beyond the line of the house to ensure any run off or seepage water shall be diverted to a low spot where it may be pumped out.

Table 5: Compaction Requirements

Fill Material	Comments	Required Density	Compaction Equipment Recommended	Layer Thickness (mm) for Heavy Roller	Layer Thickness (mm) for Hand Roller / Vibratory Plate
Quarry rubble, crushed rock	Easy to compact provided near optimum moisture content	95% of E2.1	Smooth drum vibratory roller or dead weight roller	Max 250 Loose	Max 75 Loose
Fine Sands / Silts	Difficult to compact, moisture level slightly above optimum when compacting.	90% of E2.1	Smooth drum vibratory roller	Max 200 Loose	Max 75 Loose
Silty / Sandy Clays of Low Plasticity	Some difficulty in compaction, moisture level slightly below optimum when compacting.	95% of E1.1	Sheepsfoot roller or smooth drum vibratory roller	Max 150 Loose	N/A
Silty Clays / Clays of Medium to High Plasticity	Difficult to compact, moisture level slightly below optimum when compacting.	95% of E1.1	Sheepsfoot vibratory roller	Max 100	N/A

Care shall be taken by the builder when vibrating rollers are used for compaction, particularly in built up areas / where buildings are on adjacent allotments. Note that the footings and slab have been designed assuming above levels of compaction. If engineer cannot confirm achievement of above levels, the footing beams shall be piered to 250 mm below natural surface and slab thickness shall be increased by 25mm and an additional layer of mesh of the same size as the top mesh provided in bottom face. Piers shall be in accordance with the typical pier note on the footing layout plan.

Where service trenches are excavated parallel to the footings, care shall be taken to ensure the temporary excavation shall conform with Figure 1 and not increase the chance of undermining. For a Bored Piers, quarry rubble should be provided at or near optimum moisture content, compacted and spread to a minimum thickness of 100mm over entire slab area, to provide a working surface. The quarry rubble must be free of any sharp faces which could damage the vapour barrier.

After footings have been completed, the site surface adjacent to the footings shall be graded by additional cutting and/or filling to achieve a positive surface gradient of not less than 1 in 10 away from the footing for not less than one metre. This grading shall discharge all surface runoff away from the house area. Generally, any cut area shall be drained via a surface drain at the base of the cut embankment discharging to the low side of the site.

Water shall not pond within temporary or permanent excavations. If this occurs, water must be pumped out immediately and the proper grading and drainage implemented at once.

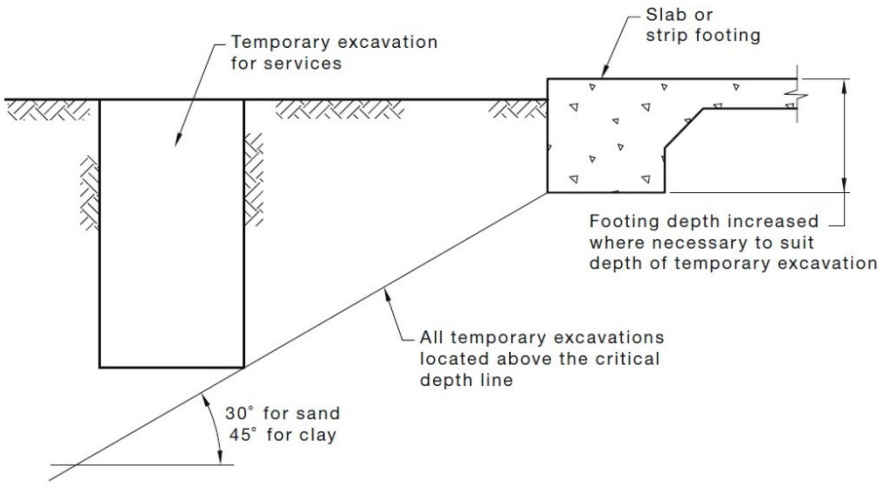


Figure 1: Excavation Critical Depth Line

All excavations shall not extend below a line drawn 30° to the horizontal for sand, or 45° to the horizontal for clay, from the bottom edge of the edge beam, strip footing or pier without prior approval from the engineer based upon either a site visit or assessment in accordance with engineering principles.

Permanent Excavations

Any vertical or near-vertical permanent excavation within 2 m of the building and deeper than 0.6 m in material other than rock shall be adequately retained or battered. The effects of excavations on drainage or foundation drying shall be considered.

Temporary Excavations

Temporary excavations in the area of the footing shall be carried out only where adequate support for the footing system is maintained. Examples of such temporary excavation include levelling of the building platform and trenching for services. Where it is expected that future excavation in the area of the footing system may be required for maintenance of underground services, provision shall be made for continued support of the footings, for example by provision of piers to beneath the expected excavation level.

Fill Used in Construction

Fill material shall conform to the following general requirements:

- Soil classified as silty sand (SM), silty and sandy clays (CL) and gravelly sands (SP/SW) are generally acceptable
- Sandy or silty clays shall have a plasticity index (PI) not greater than 30
- Materials shall have a dry density not less than 1.8t/m^3 and an optimum moisture content not exceeding 15%.

Filling used for the support of a slab shall be controlled fill or rolled fill as follows:

(a) Controlled fill: Sand fill up to 0.8 m deep that is well compacted by a vibrating plate or vibrating roller in layers not more than 0.3 m thick is deemed to be controlled fill. For sand fill not containing gravel-sized material a blow count of 7 or more per 0.3 m using the penetrometer test described in AS 1289.6.3.3 is deemed to satisfy this requirement. Non-sand fill up to 0.4 m deep that is well compacted by a mechanical roller in layers not more than 0.15 m thick is deemed to be controlled fill. Clay fill shall be moist during compaction. One test for each 100 m2 of building area (or 3 tests minimum per visit - whichever is greater) is required for every 600 mm thickness of compacted material.

(b) Rolled fill Rolled fill consists of material compacted in layers by repeated rolling with an excavator or similar equipment. The depth of rolled fill shall not exceed 0.6 m compacted in layers not more than 0.3 m thick for sand material or 0.3 m compacted in layers not more than 0.15 m thick for other material. Noting that the depths of fill given are measured after compaction.

Piers shall be required if footings are not founded at least 250mm below natural surface level on a firm natural base. Pier dimensions shall be that of width of footing as shown and spaced as per notes on Footing Layout Plan with dimensions from edge to edge of Piers.

Edge beams may be founded on controlled fill. This fill shall continue past the edge of the building by at least 1 m and shall be retained or battered beyond this point by a slope not steeper than 1:2. Edge beams shall not be founded on rolled fill.

Bearing Capacity

Pad footings shall have a minimum bearing capacity of 100kPa.

Stepping of Strip Footings

The base of a strip footing shall be horizontal or at a slope of not more than 1:10, or the footing shall be stepped in accordance with one of the methods given Figure 2.

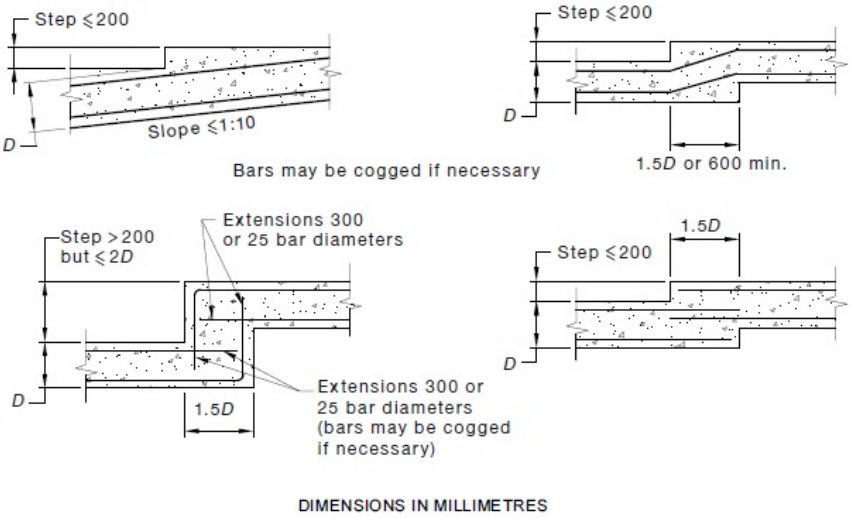


Figure 2: Acceptable Methods of Stepping Strip Footings

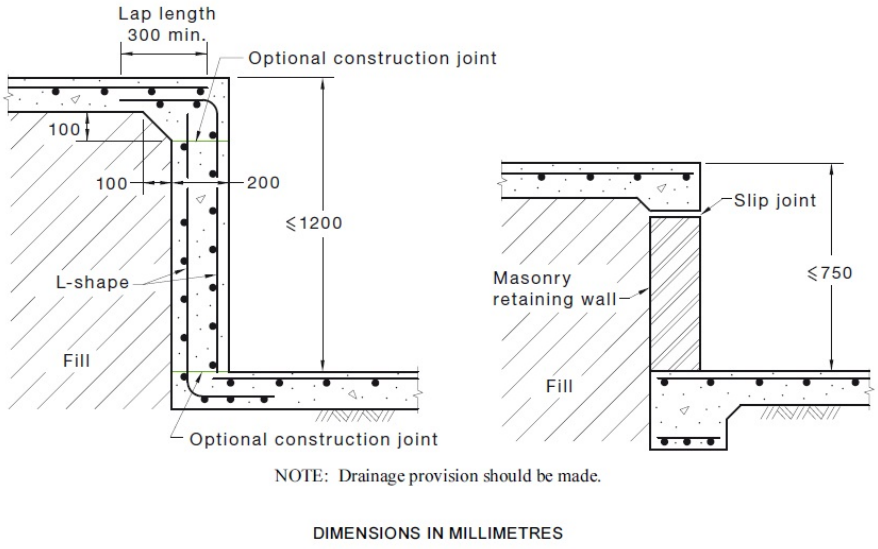


Figure 3: Slab Step Options on Class A or S Sites

DRAINAGE

This report is provided on the basis that appropriate site drainage, paving and landscaping shall be implemented as soon as possible to ensure the satisfactory performance of the footings. Differential moisture variation is the main cause of movement in clay soils, therefore effective drainage is of the greatest importance as it reduces the chance of footings having to cope with extremes of soil movement.

Surface drainage shall be designed and constructed such that no water can pond against, in, or near the footing. The ground immediately adjacent to the building perimeter shall be graded to fall 50mm minimum away from the footing over 1m and shaped such that ponding of water cannot occur. The site drainage conditions shall be maintained for the economic life of the building.

The effective drainage of this site is a requirement for the satisfactory performance of the footing system. Issues may arise where the landscaping / finishing earthworks and drainage are not included in the builders' contract.

Surface drainage shall be considered in the design of the footing system and necessary modification shall be included in the design documentation. Surface drainage of the site shall be controlled from the start of site preparation and though construction. The drainage system shall be fully commissioned upon completion of construction. Roof waters are to be taken a minimum of 5 metres from foundations using a minimum 6 x 90mm PVC downpipes to new structure. Surface waters shall be diverted such that flow is directed away from the building. Temporary installations may be required during construction to achieve drainage requirements. All roof waters shall be effectively drained, all downpipes shall be connected to a compliant stormwater system and shall be directed away from the house to the street or other stormwater management systems such as detention tanks. Under no circumstances may the overflow from hot water services, air-conditioning units or the like discharge adjacent to the footings. Plumbing leaks from stormwater or sewage shall be promptly repaired.
If specified in the report recommendations, subsoil drainage shall be installed as shown. It is important to note that potential seepage or subsoil drainage problems may not be evident until after the site has been occupied for the first winter. If problems occur at this later stage, the engineer is to be advised.

Flexible Connections are not required for waste and stormwater pipes at this site. On highly reactive sites, drains attached to or emerging from the footings shall incorporate flexible joints. These flexible joints shall occur immediately outside of the footing and commencing within 1m of the building perimeter to accommodate for a total range of differential movement equal to the estimated characteristic surface movement of the site (ys). Unless otherwise specified, the fittings shall be set at the mid position of their range of possible movement at the time of installation. This requirement applies to all stormwater and sanitary plumbing and discharge lines.

Excavations shall always be maintained free of water, regardless of source or method of entry into the excavation. Cut-off drains, diversion drains, pumps and bunds may be necessary to keep excavations dry and in a safe condition.

To reduce variations in subsoil moisture content, an effective drainage system must be installed and maintained throughout the site not just the immediate building envelope. The surface and subsurface water shall be directed away from the house. Where cuts are involved, the minimum requirement for drainage shall be that the ground is sloped away from the base of the slab with a spoon drain at the base of the batter to redirect water away from the house. Where erosion is likely to occur on the high side of batters, a spoon drain may be required.

PAVING & LANDSCAPING

The soils on any given site have the potential for movement due to changes in the subsoil moisture content. In order to minimise these movements, the following precautions must be adhered to:

- Large trees must not be planted near footings, refer to standard notes on Tree Planting Recommendations in this report.
- Garden beds shall not be placed at the edge of footings.
- Paving is Desired to one metre around the dwelling footings. External paving shall be sloped away from the footings as per the specifications in this report.
- Refer to the CSIRO foundation handbook a homeowner's guide – attached to this report for further information

Concrete perimeter pavements shall be minimum 20MPa & have a thickness of not less than 75 mm. It is recommended that concrete paving be reinforced with minimum SL62 reinforcing mesh in the top third. Perimeter paving typical control joints shall be provided in accordance with Figure 4. Pavements shall be not less than 1m in width and shall have a crossfall in accordance with Table 6. All paving shall have slopes directed away from the structure.

Table 6: Minimum Crossfall to Pavement

Site Classification	Minimum Crossfall (mm)
A, S & M	40
H1, H2 & E	50

Where the estimated soil swell is in excess of 40 mm it is recommended that paving be constructed at the end of winter, when the site soils are wet, so that crossfalls constructed in the paving will not reduce. It is important, however, if the house is occupied during a winter period and no paving provided, that the soil surface around the perimeter of the house is maintained in a well-drained state until such time as paving can be installed.

Paving shall be constructed on a firm clean base. Ensure that all building debris is removed from the perimeter of the house. Provide a compacted quarry rubble base if necessary, in order to elevate paving and achieve the necessary crossfall.

The paving must not be constructed above the level of any damp-proof course or built-in damp-proof membrane. The minimum height of the slab above finished ground, landscaping or paving level shall be 150 mm. Should the paved perimeter separate horizontally from the perimeter of the house. It is important that any gaps between the paving and footing be immediately sealed with a flexible sealant.

The development of gardens shall not interfere with the drainage requirements or the subfloor ventilation. Garden beds shall not be placed immediately adjacent to the structure. Overwatering of gardens situated near the structure shall be minimised.

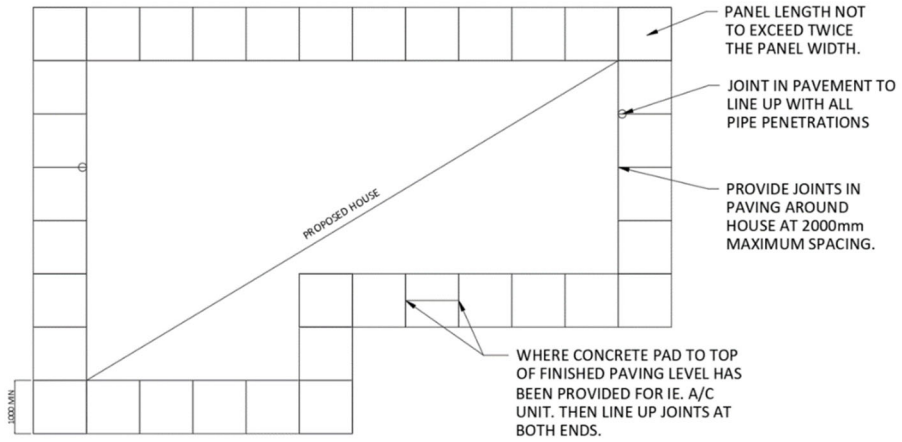
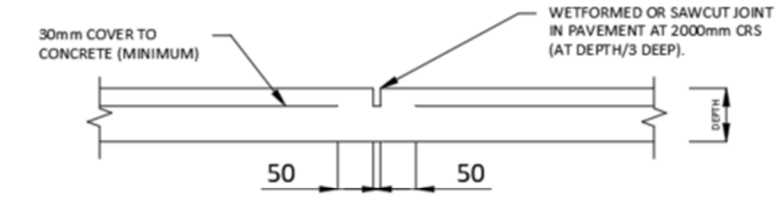


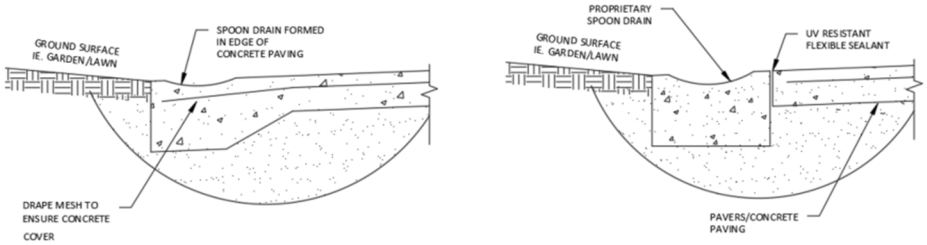
Figure 4: Typical Pavement Joint Locations



PAVING JOINT DETAIL

REINFORCEMENT TO COMPLY WITH TABLE 2
AS3727.1-2016 AND GENERAL NOTES OF THIS REPORT

Figure 5: Typical Paving Joint Detail



ALTERNATIVE SPOON DRAIN DETAILS

REFER TO AS3727.1-2016 GUIDE TO RESIDENTIAL PAVEMENTS
"LIGHT" TRAFFIC CONDITION & THE GENERAL NOTES OF THIS REPORT.

Figure 6: Typical Spoon Drain Details

Tree Planting Recommendations

The most common cause of changes in subsoil moisture changes are from the presence of trees. Tree influenced desiccation is likely to cause greater soil swells than should the site be free of trees. With the move towards smaller block sizes, trees are often placed unavoidably close to nearby structures. The proposed planting of trees should be avoided on reactive clay sites.

There are minimal trees in the vicinity of the proposed works. We have attempted to account for any future trees planted and their effects by designing for a greater soil movement than would otherwise occur, however, due to the complex tree root geometry, variable moisture extraction by the tree and the difficulty in predicting future tree growth, a precise design for the effects of trees is outside current knowledge. The owner must be aware that although precautions have been taken for the effects of trees in our design, some distortion must be accepted.

Planting of trees shall not occur near the foundation of the structure or neighbouring structure as they have the potential to cause damage due to the desiccation of clay soils. In order to reduce, but not eliminate, the possibility of damage due to tree effects, the proposed tree planting shall be restricted to a distance from the house as shown in Table 7.

Table 7: Minimum Recommended Planting Distance for Given Tree Configuration

Soil Classification	Single Tree	Row or Group of Trees
A, S	1x Mature Height	1x Mature Height
M	1x Mature Height	1.5x Mature Height
H1, H2	1x Mature Height	1.5x Mature Height
E	1.5x Mature Height	2x Mature Height

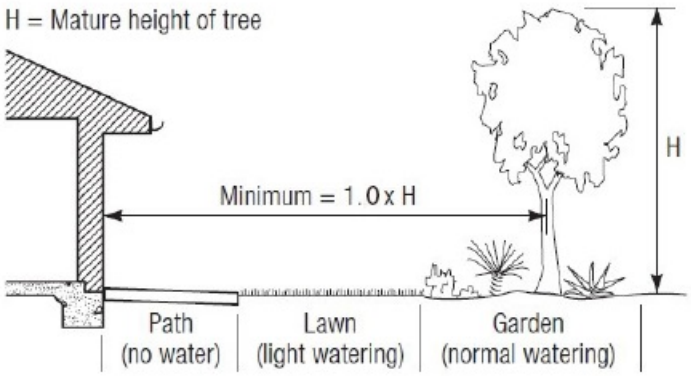


Figure 7: Tree Planting Distance

The removal of large trees from a site also has the potential to change the moisture conditions of the site. When a large tree is removed, the soil moisture is gradually increased and the resultant swelling of clays shall be accounted

for. The best practice is for the swelling of clays to occur prior to construction i.e. via deep pre wetting provisions. This is less critical on A & S sites where the tree effects are not as prominent.

Pre-Wetting

Where there are reactive clays on site and a Bored Piers footing is to be used, prewetting of the site is most advantageous. Prewetting is a desirable procedure aimed at minimising the future movement of reactive clays. Sites classified as M, H1, H2, or E should be maintained at essentially stable moisture conditions and extremes of wetting and drying prevented.

Prewetting is best achieved by watering the site before under slab filling is placed; watering shall be carried out with garden sprinklers for a minimum of 2 hours daily for a period of preferably 10 - 14 days immediately prior to commencement of construction. After watering, the under-slab filling must be placed and compacted within a period of not more than 3 days.

Termites

Termite treatment used shall be in accordance with AS 3660.1.

Vapour Barrier

The vapour barrier shall be a 0.2mm thick polythene film which acts as a barrier against vapour rising through the voids in the soil and otherwise condensing in the slab or being trapped under impermeable floor coverings.

A vapour barrier shall be used under all slabs and shall be of thickness not less than 200 microns. This engineer may specify medium or high impact resistant vapour barrier dependent on the soil conditions of your site. Vapour barrier shall be lapped 300mm and taped and all penetrations shall be taped and sealed. Vapour barrier to be supplied and installed as per AS 2870. Care shall be taken to ensure that damage does not occur to the vapour barrier during the placement of the reinforcement and concrete.

Reinforcement

Reinforcement used shall be of type D500N (Normal ductility – Hot rolled steel used for reinforcing bar) or D500L (Low ductility – cold worked wire used in reinforcing mesh). Reinforcing bar & reinforcing wire mesh shall be in accordance with AS 4671. Reinforcement shall be placed in accordance with AS3600. Lap lengths for reinforcing bars shall be a minimum of 45 reinforcing bar diameters. For reinforcing mesh, the lap length shall be defined as where the two outermost transverse wires of one sheet of mesh overlap the two outermost transverse wires of the sheet being lapped. Reinforcement shall be supported by chairs to provide specified cover.

The sizes of reinforcement required shall be as shown in the footing layout plan and shall be fixed to achieve clear cover to all reinforcement as shown in Table 8. This is a standard table and shall be increased accordingly should acid sulphate / saline soils be present.

Table 8: Minimum Cover Requirements

Minimum Cover (mm)	Case
40	Base and sides of beams lined with vapour barrier
70	Where concrete is in direct contact with the soil
30	Top of internal beams and slab

Reinforcing bars and mesh shall be supported on bar chairs at maximum spacings of 750mm to achieve 20mm cover from the top of slab. Correctly fix in position to prevent dislodgement of reinforcement or puncturing of membrane during concrete pouring.

The tolerances for cover to the reinforcement from the surface in contact with the ground shall be within +40 mm and -10mm of the specified cover, except that the bottom cover to beams may be increased where the beams are deeper than specified; The cover to the reinforcement from the internal surface shall be within +20 mm and -10 mm of the specified cover.

Reinforcement shall not be placed after or during concrete and must be set prior to the placement of concrete in accordance with AS 2425. Welding/heating of reinforcement is strictly prohibited unless approved by this engineer.

Oversize Footings

If the footings as excavated are wider than specified, provide an additional reinforcing bar of the same diameter top and bottom for every 100mm increase in width.

Formwork

Formwork shall be designed and constructed in accordance with AS 3610 & AS 3600. Precedence shall be given to AS 3600 where more stringent.

Concrete

Concrete shall be manufactured, supplied, tested and placed in accordance with AS 1379 & AS 3600. Trenches shall be cleaned and dewatered prior to concrete placement such that no soft / loose or deleterious material remains. All concrete shall be N20 “Normal class 20MPa” with 100mm Slump and maximum aggregate size shall be 20mm unless otherwise stated within this report and shall comply with AS3600 & AS2870. Under no circumstances shall additional water be added to make the concrete more workable. Additional water reduces concrete strength and increases drying shrinkage and crack widths. The finished surface of the slab is to be +- 10mm from level and have a tolerance of +/- 6mm over a 3m straight edge.

In accordance with AS 1379, no concrete shall be poured when the concrete temperature at the time of delivery is less than 5°C or greater than 35°C. Pouring concrete in hot & cold weather are complex tasks in order to ensure design strength is achieved and as such, no concrete shall be poured in these conditions without written approval

from this engineer. Prior to placing concrete in trenches during hot weather, dampen the excavations and formwork immediately prior to placing concrete.

Compaction of the concrete is a vital process in which air is expelled from freshly placed concrete and therefore the density and ultimate strength of the concrete is increased. Further benefits to compaction are a reduction in permeability and the minimisation of shrinkage and creep characteristics. There are two stages to the compaction of concrete. The first stage consolidates the aggregate and provides a level top surface, the second stage expels the entrapped air. It is imperative that the concrete is sufficiently compacted to provide the design strength.

Immersion vibration is typically used for the compaction of concrete in this application. The rod shall be quickly inserted vertically into the concrete taking care to avoid contact with reinforcement & formwork. The rod shall remain stationary for 15-20 seconds until air bubbles cease to rise to the surface of the concrete and then the rod shall be slowly pulled out and subsequently reinserted in a new position adjacent to the first until all concrete has been compacted. The vibrator shall not be used to move concrete, nor shall it contact formwork or else segregation may occur. Under vibration is far more common in practice than over vibration and has a greater potential for negative outcome to occur.

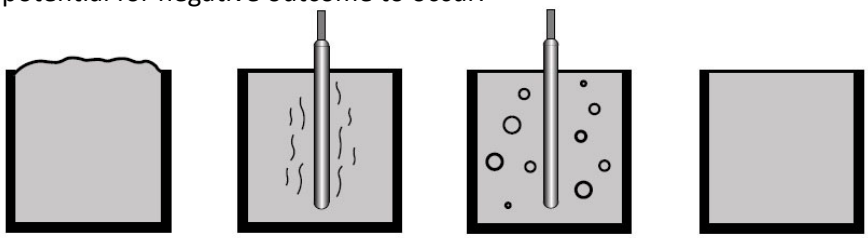


Figure 8: Vibration of Concrete

Figure 8 above shows the typical concrete compaction process and consists of liquefaction of the concrete and the expulsion of entrapped air.

The concrete shall be placed as close as possible to its final position, and the pour shall proceed in one continuous operation, ensuring that no more than 45 minutes elapse before placing fresh concrete against previously placed, in order to eliminate cold joints.

Construction Joints

A construction joint occurs where two or more separate placements of concrete meet, at this interface it is desirable to provide continuous reinforcement and sufficient bond in order to provide continuity of structural performance. Should the placement between concrete trucks be delayed significantly, a construction joints shall be made at the interface at right angles to reinforcement where possible. This joint shall be able to provide load transfer between the respective pours. This engineer recommends the use of Danley Keyjoint for construction joints with 12mm dowels at 300mm centres unless otherwise noted, however other approved alternatives may be used.

Construction joints will not be permitted in the footings without approval from the Engineer, except where noted on the detail drawings. If a raft footing system is specified, it is required that the footing be poured integrally with the floor slab. If it is necessary to pour the footing beams separately to the floor slab, the beams shall be poured

to a level exposing the top reinforcement by approximately 100 mm. Where construction joints are used, the concrete surface shall be formed up vertically and the hardened surface of the first pour shall be thoroughly cleaned of all laitance, loose aggregate dirt, etc. The hardened concrete shall be thoroughly wetted, and neat slurry shall be applied to its surfaces in a thin layer cement immediately prior to pouring fresh concrete.

If there is to be a delay greater than 48 hours between pours, the above methodology shall be supplemented by the addition of a PVA based emulsion bonding agent such as Blue Circle Cemstik in accordance with manufacturers specifications. The pour must not occur if the current air temperature is less than 5° C or greater than 32° C.

Curing of Concrete

Curing of concrete shall comply with AS 3799 and is mandatory. Curing shall commence immediately after trowelling by wetting up and covering with polythene sheeting for a minimum of 7 days or another method specified by the engineer. Spray type curing compounds are not permitted due to the potential issues for adhesion to finishes.

Curing is designed primarily to keep the concrete moist, by preventing the loss of moisture from the concrete during the period in which it is gaining strength. Curing improves strength, reduces permeability, reduces the risk of cracking and crack widths. Curing may be applied in several ways and the most appropriate means of curing may be dictated by the site or the construction method.

Polythene sheeting forms an effective barrier against water loss, providing it is securely fixed at all edges and protected from damage after wetting up. The effectiveness of this curing method is severely reduced if draughts occur under the sheeting. The polythene sheet shall be placed over exposed surfaces as soon as possible to do so without marring the finish. The sheeting shall extend beyond the slab for a length at least twice the thickness of the slab.

Ponding is another alternative curing methodology that can be utilised should it be deemed practical. A dam is constructed around the edge of the slab and then water is added to create a shallow pond. Care must be taken to ensure the evaporation rate and any leaks are managed such that the pond remains. Ponding has the advantage of maintaining a uniform temperature of the surface of the slab thus lessening the likelihood of thermal cracking.

Brittle Floor Coverings

Where brittle floor coverings such as ceramic tiles are to be used, the amount of reinforcement in the slab may need to be increased to control shrinkage cracking. Alternatively, the laying of tiles with flexible adhesive shall be delayed for at least 90 days. With vinyl tiles, timber boards, parquetry, etc it should be noted that it takes about one month for every 25mm of slab thickness for the moisture content of the concrete to stabilise. An average 100mm thick slab should therefore be left for four months prior to the adhesive fixing of this flooring, unless special adhesives are used.

The attachment of finished floor surfaces to concrete slabs that have not fully cured may cause issues via moisture reactions with glues and or concrete shrinkage. Concrete shrinks as it dries, this usually results in some minor cracking. This has little effect on the structural performance or watertightness of the slab but may impact brittle floor coverings if they are installed too soon after the slab has been poured.

Aggressive Soils

Saline or acid sulphate soils with a magnesium content of 1000ppm or more are deemed aggressive soils and this engineer shall design to the extent known. Where aggressive soils are present it is recommended that a vapour barrier of high impact resistance and resistance to puncture and penetration is used.

Acid sulphate soils soften the concrete, reducing the capacity of the member and exposing the reinforcement to corrosion. While salinity levels are generally low enough not to have any effect on the concrete. For more aggressive soils it is recommended that both isolation of the concrete from the soil and increased strength and cover requirements be adopted to reduce the risk of damage.

If salts are present in the soil or groundwater, increasing the concrete strength to provide improved durability is highly recommended. An N25 grade concrete is recommended for moderately saline soils, N32 for very saline soils and N40 for highly saline soils. In aggressive soils, cover shall be increased in accordance with Table 5.4 of AS 2870.

Abnormal Moisture Conditions

Abnormal moisture conditions are the result of foundation moisture variations beyond those of a normal site. Structures on sites with abnormal moisture condition have a higher likelihood of sustaining damage than structure on a site with normal moisture conditions. The footing system designed for this site will perform best when the subsoil moisture condition is in equilibrium, that is when the footing is not exposed to defined wet and dry cycles.

Abnormal moisture conditions can occur prior to construction or be the direct result from poor construction practice, some examples of abnormal moisture conditions that can occur are as follows noting that this is not an exhaustive list:

- Removal of a timber floored home and the construction of a new dwelling on a raft footing.
- Removal of trees prior to construction.
- Pools that have been filled in.
- Failure to provide adequate site drainage.
- Trees being planted too close to footings.
- Excessive or irregular watering of gardens adjacent to footings.
- Failure to repair plumbing leaks.

Maintenance

The maintenance of the site after construction is imperative to the long-term performance of the footing. Maintenance is required to primarily minimise the variation in soil moisture levels around the footings that could lead to excessive soil movements. If the slab is used to form part of the termite barrier system as outlined in AS 3660.1, regular maintenance of the slab and surroundings is essential to ensure that any termites are detected and subsequently treated. Stormwater, plumbing and sewage leaks can all affect the moisture content of the soil and subsequently should be routinely checked for leaks and blockages.

For category 1 and 2 damage as shown in Table 2 & Table 3, remedial action shall concentrate on stabilizing the moisture conditions of the soil and paying attention to repairing the visual damage. The stabilisation of moisture content should be regarded as part of the routine maintenance of structures.

SAFETY

The Contractor shall provide employees with all necessary equipment and protective clothing to allow the safe construction of the Works and shall ensure maintenance to all plant and machinery allows for their safe operation. On notification from the Engineer in respect to any operation, machine or structure being, in the opinion of the Engineer, unsafe, the Contractor shall cease use immediately of such operation, machine or structure and shall conduct remedial work to the satisfaction of the Engineer before continuing to use the operation, machine or structure in the Works. Where no remedial action can ensure continued safe use of an operation, machine or structure, the Contractor shall, in the case of an operation, cease such operation, and, in the case of a machine or structure, shall dismantle and remove such machine or structure from the Site. Where the general safety of the Public is concerned and time of notification of the Contractor further jeopardises this safety, the Engineer may order immediate remedial works to be conducted at the Contractor's expense.

ADDITIONAL REQUIREMENTS FOR MODERATELY, HIGHLY AND EXTREMELY REACTIVE SITES

For stiffened rafts, waffle rafts, or strip footings on moderately, highly and extremely reactive sites, the following requirements apply to the building services and footing system in addition to the requirements of Clauses 6.4 and 6.5 from AS2870:

(a) Where the design of the footing system relies on specific detailing of masonry construction to minimize any damage caused by foundation movement, that detailing shall be included on the drawings.
(b) Penetrations of the edge beam and footing by services shall be sleeved using closed-cell polythene lagging or similar.
(c) During construction, water run-off shall be collected and channelled away from the building.
(d) Excavations near the edge of the footing system shall be backfilled in such a way as to prevent access of water to the foundation. For example, excavations should be backfilled above or adjacent to the footing with moist clay compacted by hand-rodding or tamping. Porous material such as sand, gravel or building rubble should not be used.
(e) Water shall not be allowed to pond in the trenches.

For slab or strip footings on highly and extremely reactive sites, the following requirements apply:

(i) Drains attached to or emerging from underneath the building shall incorporate flexible joints immediately outside the footing and commencing within 1 m of the building perimeter to accommodate a total range of differential movement in any direction equal to the estimated characteristic surface movement of the site (ys). In the absence of specific design requirements, the fittings or other devices that are provided to allow for the movement shall be set at the mid position of their range of possible movement at the time of installation, so as to allow for movement equal to 0.5ys in any direction from the initial setting. This requirement applies to all stormwater and sanitary plumbing drains and discharge pipes.
(ii) Concrete in beams shall be mechanically vibrated.

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

BTF 18 replaces Information Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction
There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion
All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation
This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil
All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure
This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

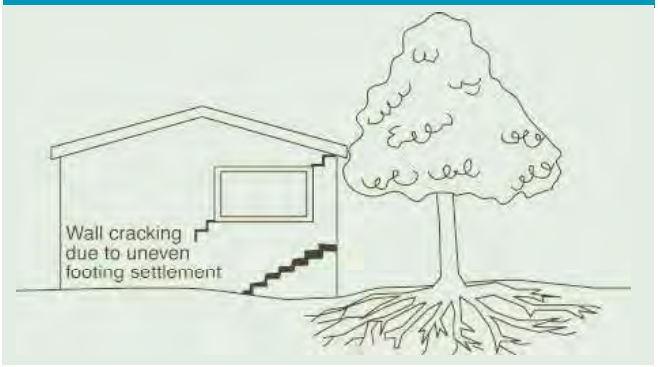
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

Trees can cause shrinkage and damage



As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.
Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

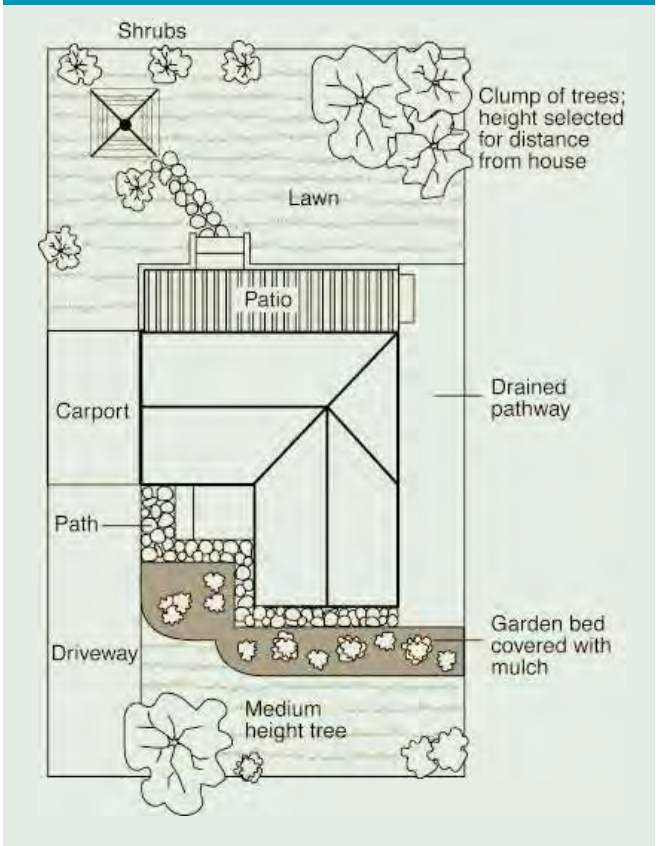
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4

Gardens for a reactive site



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

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A builder's guide to preventing damage to dwellings

Part 1 – Site investigation and preparation

THE PROBLEMS

History

Many homes in Australia suffer from one or more of the several maladies that result from conditions that could have been prevented had the engineer and/or builder undertaken thorough site investigation and subsequent site preparation. This work is just as important as employing sound practice in construction – in fact, at law it is increasingly seen as part of sound building practice. The result is that a reasonably competent builder is now expected to know more about building movement caused by foundation soils than was the case before the landmark legal battles of the middle 1990s.

The growth of consumerism has led to the notion that a consumer can rely on the builder to be competent in all matters related to construction. We know that the builder relies on the competence of specialists and professionals, but in the end it is the builder's duty to the customer to ensure that the building is not adversely affected by defective foundations. There are many builders who are sufficiently competent in soils to carry out the level of elementary investigation required for most small sites. For them, this document may serve as a checklist for their initial inspection and a reminder that if they discover any soil problems, they should engage a suitably qualified engineer. For those builders who are not familiar with site investigation, this document is designed to give the rudiments of soils as they affect housing in most parts of Australia, and to help the practitioner on the road toward an understanding of the issues. Such builders, while in the process of learning, would be wise to engage an expert engineer for site investigation prior to finalisation of the engineering design drawings.

The predominant practice in residential construction is for the builder to ignore the soil except for the provision of bearing surfaces for footings. In fact, Clause 3.2 of AS 1684 requires the site to be clear of tree roots etc. and to be well drained. AS 2870 requires soil classification and gives a brief description of the allowable methods. AS 3798 details a number of issues that should be covered in a site investigation. All of these standards have been incorporated into the Building Code of Australia (BCA). Because the BCA has been adopted by every relevant jurisdiction in the nation, the law requires the builder to abide by the provisions in the standards or have an engineered solution accepted that will meet the performance requirements of the BCA.

Results of soil problems

The upshot of all the above is that no longer are defects such as falls in floor levels, cracking in floor tiles, cracking in concrete slabs, cracking in walls and ceilings (especially cornices), squeaky flooring, binding doors and windows, deflecting roof slopes, and cracked mortar bedding to ridge and hip caps believed to be caused by a natural phenomenon beyond the responsibility of the builder. The builder should therefore carry out proper site investigation and prepare the site accordingly.

Water problems

The principal enemy is water – either flowing, ponding, seeping by gravitational force, migrating by capillary action or in the air as vapour. Any masonry product that can absorb water can be damaged by it or by the chemicals carried with water; any permeable mortar is also susceptible; timber will decay in contact with water or vapour; gypsum plasterboard decomposes; steel is obviously also vulnerable.

Aside from direct damage to building elements, water very commonly causes damage to buildings indirectly by working on the foundation soil – erosion, subsidence, swelling and shrinkage of soil by absorption and shedding of moisture.

Buildings with subfloor voids, such as found when timber or steel frame floors are constructed, also suffer from high humidity in the subfloor when water flows or ponding exist. This can encourage decay of the timber, cup the floorboards and raise the humidity level in the living space.

This introduces another dimension of the problems created by water – that of living organisms. The presence of water attracts insects including termites. In turn, predators such as spiders are also attracted. Perhaps the most insidious and serious hazard is introduced by dust mites and some types of fungus, that have been shown to greatly increase the incidence of respiratory ailment symptoms in susceptible occupants.

Slab-on-ground construction is also subject to water incursion problems. The added problem this method has is the ease with which water can gain access to the cavity via weepholes. Once in the cavity, it creates a damp environment which is very slow to dry, transferring moisture to the inner leaf walls and timber finishes and creating high humidity in the living space.

Vegetation problems

The other source of instability to structures that this BTF deals with is vegetation and organic matter. Tree roots can cause upheaval when growing and subsidence when decomposed, as well as creating uneven moisture content by taking in water. Organic material generally in the subsoil is not stable and does not properly compact, therefore making a poor foundation for a structure.

SOIL TYPES

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and cohesive. Quite often foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Cohesive soils are either clay or silt. Clay soils are by far the more common and are subject to saturation and swell/shrink problems.
As most buildings suffering continuing movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The following table is reproduced from AS 2870.

TABLE 2.1
GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites* with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites (see Clause 2.4.6)
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

* For examples of clay sites classified as Class S, refer to Appendix D.

SOIL PROBLEMS

Rock
Excluding movement caused by seismic events, monolithic rock is not subject to movement problems. However, there are things to watch for:
- Footings may be founded on boulders or 'floaters' which can move due to erosion of soil around them.
- Rock is susceptible to water migration via faults and between strata. Many dwellings founded on sandstone suffer from water in the subfloor.

Granular soils
There are a number of problems to be avoided:
- These soils are not cohesive and can be susceptible to local shear failure when not confined. For this reason, building on sand dunes is inadvisable.
- Sandy soils are prone to erosion so service trenches, pipes, surface water and ground water flows can be hazards.
- Organic material left in the soil may be eaten by termites, leaving a void which will be filled by surrounding granular soil, thus reducing the bearing capacity of the foundation in that area.
- Sand expands when damp – surface tension will adhere water to grains, thus expanding the volume. Conversely, when saturated, sand is at its lowest volume. The fact that these changes occur means that care must be exercised to ensure that sand is well-compacted when constructing footings.

Silt
The chief risk presented by silt is its susceptibility to erosion, so the hazards that apply to granular soils may also apply to silt.

Clay
Most clays provide good residential foundations when dry, but most clays react significantly to the introduction of water:
- Local shear failure is not uncommon when soft clays are wet.
- When saturated, virtually any clay substantially loses its bearing capacity.
- The cohesive quality of clay makes it slower to compress under load than other soil types.
- A small volume of water can have a significant effect on clay.
- Clay absorbs and sheds water slowly.

CAUSES OF MOVEMENT

Settlement due to construction
There are two types of settlement that occur as a result of construction:
- Immediate settlement takes place when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular, particularly sandy soil, is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will largely take place during the first few months after construction, but has been known to take many years in exceptional cases.

Erosion
All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay, particularly with a sand component of say 10% or more, can suffer from erosion.

Saturation
This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers – however this usually occurs as immediate settlement.

Seasonal swelling & shrinkage of soil
As can be seen in the table above, all clays react to the presence of water by slowly absorbing it, making the soil increase in volume. The degree of increase varies considerably in various clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be significant unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure
This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. This can occur through saturation of clay, failure of a damp reactive clay when attempting to raise a footing that is being acted on by a superior downward force, or any soil that loses its compaction.

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:
- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

In addition, roots that are left in the ground after the tree is felled can be eaten by termites and/or destroyed by decay. This leaves a void which can turn into a watercourse and/or cause subsidence under or adjacent to the footings.

SITE INVESTIGATION

Factors
The factors that need to be investigated are:
- Soil classification.
- Soil condition.
- Watertable.
- Ground slope.
- Trees, shrubs and organic material.
- Service trenches.
- Water run-off.

Soil classification test
AS 2870 requires that the soil to be used as foundation for construction be classified. The requirement is that the soil be classified not by its geotechnic type, but by its reactivity. Reactivity can be defined as the change in volume brought about in the soil by the introduction or removal of water – in other words, the swell and shrinkage. Soil classes A, S, M, H and E cover the range of reactivity, and P is used where soil has abnormalities that do not allow normal classification. In some long-established areas, information on soil class may be obtained from buildings adjacent to the site, where the buildings are footed on lightly stiffened strip footings or slabs-on-ground. AS 2870 Tables 2.2, C1 and C2 are a guide to determining soil class by measuring differential movement or masonry cracking.

This easy classification method should, however, be regarded as the exception rather than the rule, because the majority of new buildings are constructed in areas where adjacent buildings, if they exist, are not sufficiently well established to enable sound data to be taken. In years gone by, local councils assumed some responsibility for providing soil classification to applicants for developments, but local authorities are increasingly divesting themselves of this type of service and, in any case, council area classifications do not necessarily apply to specific sites. Therefore, the job falls back on the engineer and the builder to ascertain the soil class which will determine the footing and masonry design.

It is desirable to inspect the site before clearing and/or excavation, because although the ground may be covered with topsoil, organic material or vegetation, there may be valuable evidence that will not be apparent after excavation. Usually, test pits or boreholes can, without difficulty, be dug to reach the depth required by Clause 2.3.3 and Table 2.4 of AS 2870, reproduced below.

> ***2.3.3 Depth of investigation*** *The soil profile shall be examined to a minimum depth equal to 0.75 times the depth of the suction change, H_s, as given in Table 2.4, but not less than 1.5 m, unless rock is encountered or in the opinion of the classifier, further drilling is unnecessary for the purpose of identifying the soil profile in accordance with Clause 2.2.1(a).*

TABLE 2.4
RECOMMENDED SOIL SUCTION CHANGE PROFILES FOR CERTAIN LOCATIONS

Location	Change in suction at the soil surface (Δu) pF	Depth of design suction change (H_s) m
Adelaide	1.2	4.0
Albury/Wodonga	1.2	3.0
Brisbane/Ipswich	1.2	1.5–2.3 (see Note)
Hobart	1.5	2.0
Hunter Valley	1.5	2.0
Launceston	1.2	2.0
Melbourne	1.2	1.5–2.3 (see Note)
Newcastle/Gosford	1.5	1.5
Perth	1.2	3.0
Sydney	1.5	1.5
Toowoomba	1.2	1.8–2.3 (see Note)

NOTE: The variation in H_s depends largely on climatic variation.

This investigation is necessary if correct soil classification has not been ascertained by other means. For a Class 1 building, a single test hole is usually sufficient for soil classification. However, if at a predominantly clay site, the clay extends to the bottom of the borehole, or if abnormalities are apparent, further investigation will be required. This may need to be carried out or followed up by a suitably qualified engineer and, in the case of clay soil, some laboratory analysis may be needed. In any case, while soil class may be ascertained by one borehole, a better picture of class and condition will emerge if investigation extends to the footprint extremities, particularly on sloping sites. For most purposes, a manually dug test pit is more useful than a borehole, but if boreholes are to be used, 400 mm diameter gives good vision.

The site investigation will also incorporate examination of the surface for cracking, gilgais, grades, identification of tree species and their locations relative to the proposed building, signs of ponding, saturation or erosion, condition of the road, kerbs, gulleys, surrounding land as to water run-off, and filled trenches carrying services such as stormwater, sewer, telephone, gas, electricity.

There is a trend, particularly in the case of standard designs like project homes, for engineers to assume a soil class when designing a structure, then visit the site when the footings excavation is under way in order to verify their assumption or, if the soil turns out to be less stable, order more and/or deeper piers. This practice has shortcomings:

- The engineer tends to rely on the excavation contractor to report on issues instead of carrying out his/her own tests.
- It is usually not possible to ascertain the difference between S, M and H class soils by a site inspection undertaken soon after excavation has been carried out, particularly where imported fill is used.
- In the event of a change being deemed necessary, the ensuing instructions become ad hoc corrective measures rather than holistic design considerations which would be worked through if the design were undertaken with the site's characteristics in mind.
- The instructions inevitably mean that the consumer pays for a variation due to 'latent conditions' that were within the builder's power to discover.
- Site drainage characteristics and requirements are never addressed.

This is not to say that the engineer should not visit the site to view the footings excavations, but rather to point out that this is not the time to be designing the structure.

Soil condition

When assessing the condition of soil for use as foundation material, the primary concerns are moisture content, depth of watertable, evidence of surface and ground water flows or moisture migration, and voids which may cause subsidence and/or act as ducts for water flows.

Ignoring any topsoil, which will be skimmed off before construction, the walls of the test pit will give an indication of the moisture content of the soil:

- Dry sand will tend not to hold its shape when squeezed.
- Moist or wet sand will tend to hold its shape when squeezed.
- Dry clay, even soft clay, tends to be firm.
- Moist clay tends to be plastic.
- Saturated clay tends to be boggy.

The next sign to look for is seepage, which will usually but not always emanate from the uphill side of the hole. The depth, compaction, amount of flow and type of soil should be noted. It should be realised that seepage or any other form of moisture migration may not show itself immediately and, where testing for moisture migration, it may be necessary to seal the top of the pit and leave it for several days or longer.

Watertable

A hole that is 1.5 m or more deep is likely to show the watertable, especially in deforested or built-up areas. The watertable becomes important where it is high and can affect the ability of the soil surface to dry out and, in the case of clay, to achieve a reasonably even moisture content throughout the footprint.

Ground slope

The fall of the land is important for two reasons:

- In order to achieve even settlement and maintain equilibrium across the structure, it is essential to found it on similar soil throughout. With a sloping site this can become difficult because strata may not be consistently deep around the footprint; they may not, in fact, even be continuous as the slope continues down. It is not unusual for a slope to cut through strata and in this event it is essential for the designer to know beforehand because it may affect the whole approach to footings.
- Either because of discontinuous strata or because of the necessity to cut at the uphill elevation, water flows often reach the surface adjacent to the footings or in the subfloor.

For both the above reasons it is advisable to dig holes at the upper and lower extremities, first to check for a satisfactory common soil, then to look for seepage. To check for water surfacing within the footprint, it is only necessary to inspect and walk on the soil. Another sign may be profusion of vegetation or a different type of vegetation.

Trees, shrubs & organic material

It is important to mark on a site plan the location of any tree, large shrub or stump within or adjacent to the footprint. It is not unusual for arborists to grub out stumps after felling but leave major roots. The same result can occur when trees are removed by a machine. It is essential to ensure that the stump and significant roots are removed and the soil is compacted in the

void. The excavator should be instructed to remove any organic material while cutting or skimming. In addition, particularly where a sandy foundation exists, it is good practice to probe the subsoil in the immediate area around where a stump has been removed. A good tool to use is a 1 m length of 6–10 mm round reinforcement bar. Driven with a hammer, this will discover not only tree roots, but floaters and voids or poorly compacted areas. In some cases, poorly compacted areas are composed of leaves and other decayed vegetable matter. This material must not be left under or adjacent to the location of any footings as it will reduce in volume and cause a void.

Service trenches

It is not unusual to find that trenches that are dug to house services are not well backfilled or compacted. Often the trench is used as a repository for trade spoil. Where a subsoil water flow picks up such a trench, a watercourse is provided where water may be delivered alongside or even under footings. Typically, sewer and stormwater pipes run adjacent to and/or under footings. Where building additions are being constructed it is important to check around existing service trenches that may carry water to the proposed construction. Of course, it is also imperative to ensure that trenches dug for the new project are properly located, backfilled and compacted, but this topic is dealt with in BTF 20. During the site investigation, other than any pre-existing domestic service trenches, the following are some of the possible problems:

- Trenches under the footpath or roadway for telephone cables, gas, electricity, stormwater or sewer all have risers to the surface. Often, water can gain access to the trench from around the riser or manhole, then flow along or pond in the trench until finding a way to flow out, through the proposed domestic feed, or just by permeating the soil in the area.
- Street stormwater gullies can also be vulnerable, particularly older ones with brickwork in their structure.
- The possibility of leaking water, stormwater or sewer piping should not be ignored.

Where the new structure is downhill from these water sources, moisture can surface under the building or at the external footing where the soil has been cut. Builders sometimes believe that running agricultural pipe around the external side of the footing excavation solves the problem. This is not always the case, because some systems in common use may collect only a moderate percentage of the water, particularly when not expertly installed. In fact, this practice often delivers water directly to the footing area.

Water run-off

Surface water must not be allowed to flow to the building. A thorough inspection of the topography is necessary in order to properly allow for finished ground falls and water run-off collection. Particularly on a sloping site, the finished falls can be critical to the maintenance of good drainage.

REMEDIAL MEASURES

Other than the exception of water flow through rock faults, which is very difficult to stop, almost all of the problems above can be addressed by correct drainage of the soil or, in the case of poor existing trenches, removal of poor ballast material then refilling and compacting.

Correct drainage is an engineering matter and, unless very straightforward, should be the province of a suitably qualified person, however in essence the job is to prevent water from coming into contact with the building or entering the soil within the footprint and its environs.

The object of good ground drainage should be to exclude all possible water from the building, the foundation and its area of influence. There is a notion that reactive clays should be kept at a constant moisture content in order to provide equilibrium. Irrigation systems have been developed to try to provide constant moisture content to subfloor areas, but these can fail because there are other factors involved, i.e.:

- A building creates its own environment and predominant weather conditions will either create moisture flow toward the centre of the subfloor or away from it. This influence is never evenly distributed but varies with several factors.
- Solar influence dries some areas more rapidly than others.
- Ground slope or other factors can result in uneven water content at various parts of the perimeter.

These and other naturally occurring factors mean that the irrigation system would have to be very sophisticated indeed in order to keep all the foundation soil and immediately adjacent soil at the same stage of volumetric expansion.

In practice, the best solution in all but extreme cases is to drain the ground and surface water away from the building and keep the foundations dry. In reactive clay this is likely to result in cracking due to some shrinkage, and this needs to be redressed, but once this has been remedied and providing the drainage system is kept in working order, the building will remain stable.

This document has covered the bulk of the issues that a builder should deal with in regard to discovery of pre-existing conditions that can affect the stability of the foundation soil. There are also several construction do's and don'ts that the builder must know about and put into practice in order to make sure that the building itself does not contribute to instability of the soil and resultant movement in the structure. These matters are dealt with in BTF 22.

FURTHER READING

AS 1684, *Residential Timber-Framed Construction*, Standards Australia, Sydney, 1999.

AS 2870, *Residential Slabs and Footings – Construction*, Standards Australia, Sydney, Amdt 2, 2003.

AS 3798, *Guidelines on Earthworks for Commercial and Residential Developments*, Standards Australia, Sydney, 1996.

BTF 22, *A Builder's Guide to Preventing Damage to Dwellings: Part 2 – Sound Construction Methods*, CSIRO, Highett, Victoria, 2003.

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A builder's guide to preventing damage to dwellings

Part 2 – Sound construction methods

THE PROBLEMS

Site water problem identification
It is essential to investigate the site and prepare it in such a way that ground and surface water are prevented from entering the building footprint, whether the building has suspended floors or is footed on a ground slab. Site investigation methods are dealt with in BTF 19, which should be read prior to reading this BTF. It is also recommended that BTF 18 be read as additional information on this subject.

Legal considerations
Good site drainage always addresses both surface and ground water flows. Lack of attention to potential building movement caused by moisture migration can be a costly oversight for the builder, who may be found liable for damage long after any statutory warranty has expired. The Building Code of Australia (BCA) has not made site drainage mandatory, although it does set out acceptable construction practice in Volume 2, Clause 3.1.2, to be used where a local drainage authority deems it necessary. This makes for uncertainty in the minds of builders as to their responsibilities, but the courts tend to view the builder as the expert and, where some foreseeable damage occurs, it is usually found that the builder should have used methods that would have prevented the damage.

Where site investigation has revealed that there is existing or potential erosion problem, or where reactive clay subsoil is present, the builder is wise to give written advice to the owner and strongly recommend that ground drainage be installed. Where the owner declines in writing, some jurisdictions are known to have accepted that it is within the contractor's rights to continue the project. However, ground drainage is an area where contractors ignore or try to side-step at their own peril.

As to water entering a building, the BCA is quite clear. It is the task of the builder to prevent rainwater from entering a building, even when the rainwater is propelled by a storm of a magnitude that would only be expected to occur, on average, once in a hundred years. What is not so obvious to many is that water should not be allowed to enter the cavity, which is there not as a drain or repository for water that enters through openings, but as a break between the outer and inner leaves of exterior walls to prevent water from permeating through as it used to do when buildings were constructed of 230 mm solid brickwork. When water enters the cavity in volume, a wet, dark and enclosed environment is set up that can result in serious consequences for the health and amenity of the occupants.

Water problems in buildings are usually cumulative, resulting from several oversights rather than from a single source. This BTF is designed as a general checklist of commonly occurring flaws in construction methods, to help the builder deliver a product that will be durable, weatherproof and provide a healthy environment.

SURFACE AND GROUND WATER PREVENTION

It is no longer acceptable for a builder to claim that building movement is outside his or her power to prevent. The subsoil of land that is available for building development normally has an allowable bearing capacity well in excess of the loads imposed by class 1a buildings. The movement problems that are experienced by buildings are very often brought about by the failure of the builder and designers to deal with site water.

Surface and ground water that is allowed within the footprint of the building causes erosion and foundation soil movement, which in turn causes an exacerbation of cracking in slabs; cracking and failure in masonry and finishes; doming and dishing of floors; cupping and lifting of timber flooring; decay to timber members; degradation of metals and mortar; doming and dishing of roofs, leading to breakage of tiles and degradation of mortar beds.

Surface drainage methods
The basis of good surface water drainage is to:

- Have the finished exterior ground level at the building perimeter a minimum of 150 mm below finished floor level, ground floor cavity flashing weepholes or subfloor vents, whichever are the lowest. However, where a slab is used as part of a termite management system, 75 mm at the top of the slab edge must be visible or able to be made visible.
- In the finished ground, provide a 1:20 fall away from the building for at least the first metre. Nothing that needs to be watered, including lawn, should be within this graded area and it should preferably be a hard surface.

The above requirements mean that thought may need to be given to finished floor level etc. before the plans go to council.

Where there is natural topography that leads to surface water being encouraged toward the building, a dish or other surface drain should be installed and connected to the stormwater system through a pit.

Ground water drainage methods
If it is desired to keep the soil dry in areas other than the building footprint, it should be realised that this other drainage may not be sufficient to prevent water entering the footprint, and additional drainage for the building may be necessary. It should be understood that ground drainage is a complex subject, often requiring the expertise of an engineer who is suitably competent in hydrology and geotechnics. For anything other than straightforward problems, even drainers or builders experienced in installing ground drainage should engage a consultant to assist in the design. This section is therefore intended to give reminders to already competent people, and to assist others toward a rudimentary understanding to help them discuss the issues with a consultant. In addition, it is essential for a builder or drainer to comply with the minimum requirements of BCA Volume 2, Clause 3.1.2, and AS 3500.3.2, Sections 6–8, unless installing a system certified by an engineer.

The first step is to investigate the depth and volume of the subsoil flow of water. Test pits, particularly on the uphill perimeter of the footprint should be dug as outlined in BTF 19. It is, however, important to remember that ground drainage problems are not restricted to sloping sites. Some of the most susceptible sites are on flat land, particularly where the area is ringed by

higher ground. In addition, as explained in BTF 18, where warm, wet summers and colder, dry winters are experienced, the building itself will tend to cause inward water migration.

In any case, the minimum depth of drainage should comply with BCA Volume 2, Clause 3.1.2.4, that the top of the drain be a minimum of 400 mm below ground and 100 mm below the adjacent footing. This means that the trench should be dug at a safe distance from the footing to ensure that the foundation is not affected. If this is not practicable, temporary measures to support the trench walls may be needed and/or the strength of the pipe material may need to be increased. It is important to remember that in clay the allowable angle between the external bottom corner of the footing and the nearest part of the bottom of the trench is usually 45°, whereas the normally applicable angle for compact granular soil is 30°. These may be exceeded where the trench fill is well compacted and the piping is non-compressible, but supervision by a competent engineer is normally necessary for soil classification and strength issues. A good working arrangement is to locate the trench toward the edge of the area that is graded away from the building to allow run-off of surface water.

Having discovered the required depth, the next step is to establish whether it is above the depth of the local authority's stormwater system, to determine the method of dispersal of the captured water. It must be borne in mind that the BCA's minimum fall for ground drainage is 1:300, and a silt arrestor requires a minimum drop of 50 mm from the invert of the inlet to the inner roof of the outlet. If the depth of the ground drainage is too low for the council system, councils may allow a soakage pit for any naturally occurring ground water, so that the drainage can divert the water from the uphill side of the building to the downhill side. The builder should confirm this with the council.

Next, the type of drainage should be determined. For general purposes, a geocomposite system using 90 mm slotted stormwater pipe with fabric sock and geofabric perimeter material is adequate, however suppliers can advise on other systems. It is desirable in any ground drainage system and essential where the fall is shallower than 1:100 to install inspection openings to enable the system to be flushed out. These should be at changes of direction greater than 45° and at the connection to the stormwater system. Where practicable, pits make the ideal inspection opening, particularly when configured as silt arrestors.

Drainage to rock substrates
BTF 19 discusses the special drainage problems with rock foundations. While a solid rock foundation remains stable regardless of water flows, water damage to building elements and high subfloor relative humidity can have potentially serious consequences. When the ground floor is to be suspended, and particularly when using timber framing and/or flooring, drains should be cut around the perimeter where water can otherwise enter the subfloor. Totally preventing water entering the subfloor area can be impracticable because of faults and interstrata gaps. Where water flows on rock foundations cannot be prevented, the design should allow for an open subfloor and an increased minimum clearance between the floor and the ground, commensurate with the volume of water experienced. If a completely open subfloor is impracticable, openings should be as large as possible, particularly where subfloor walls would otherwise dam water. Watercourses should be cut out to divert water if this is beneficial to the aim of removing water as soon as possible. A mechanical ventilation system may need to be installed as an augmentation to the measures discussed above, but when relied upon without sufficient other precautions, such a system may be inadequate.

Subfloor ponding
When constructing dwellings with suspended floors, it is essential to grade the subfloor area so that no depressions remain that can allow water to pond. With rock foundations it may be necessary to use concrete to fill depressions.

Dampproof courses
Ground moisture usually carries salts and other chemicals. When moisture migrates through masonry by capillary action, some chemicals may be transported. It is often these chemicals that attack the building elements. Different dampproof course (DPC) materials are susceptible to different chemicals.

It is not always possible to predict the nature of pollutants to which the underside of a DPC will be exposed. This is one of the reasons that moisture should be kept away from the building. DPCs that have poor plasticity or develop poor plasticity through exposure to water and chemicals, are unsuited for use where building movement cannot be totally prevented, because they tend to break. When a DPC is discontinuous it allows water to penetrate the gap. This is one common way that rising damp occurs in buildings constructed in the modern era.

The safest suggestion for overcoming the problem of lack of durability in DPCs for applications where high moisture content is expected, is to double up, perhaps using two different types, one on top of the other.

Antcapping
Antcapping should never be used as a DPC unless is has been tested and designed for this purpose. Galvanising will break down over time when in constant contact with moisture, particularly when salts are present. It is essential to isolate the antcapping from any water in the masonry by using a DPC between. The galvanising should also be checked for quality and any cuts or damage should be coated with cold galvanising, because even when the antcapping is isolated from direct contact with water, constant high humidity in the air will tend to attack the steel. Once corrosion has eaten through the metal, termites are given a path of entry to the building. This is not a rare condition.

RAINWATER PREVENTION

In addition to surface and ground water considerations, there are several issues of construction that builders must address in order to prevent rainwater from entering the building.

Rainwater is not only a problem when it enters the living area as water, but also when it is allowed into the cavities and voids and onto building members that can degrade or decay. In addition, rainwater has a more insidious danger in that it gives life to fungus and promotes pests like dust mites – these conditions are conducive to illness in people who are abnormally susceptible to breathing disorders.

Builders and tradespeople often attempt to make a building weatherproof by the use of sealants. It should be realised that sealants cannot be regarded as a durable solution to most weatherproofing problems. Durability can only be attained by sound construction method.

Ridge capping
Mortar bedding to ridge capping is permeable, even with flexible pointing applied over it. Water can migrate through the bedding and pond on the tile above the bedding. Any condensation tends to perpetuate the moisture and, in addition, where summers are warm and wet and winters are cold and dry the tendency is for moisture to be drawn in. The above factors tend to create an overflow of water that may drip into the roof space or run down the soffit of the tiling, decaying battening or framing and/or eventually damaging fastenings. This flow adds to flows caused by the natural absorption of water through tiles and any wind-driven rain that penetrates the gaps between tiles. These are the flows that lead to inundation of the roof. Weepholes should be created in the beds at the depressions in tiles to allow water to flow to the top surface of the tiles.

Where footing movement occurs, usually due to the action of water on the foundation soil, the roof moves. Cut and pitched roofs will dome and dish in the same way that floors do, because of the uneven rise and fall of reactive clay soils. This movement causes a stress on rigid members of the roof structure such as mortar beds to hips, ridges and verges, which hog and sag, tending to crack the mortar and/or the tiles. When 1:2 cement: sand mortar pointing is used, this will retard the cracking, but it will eventually crack and when it does, the water entry will increase accordingly. On truss roofs the effect is less but still sufficient to cause cracking. If there is no footing movement, the pointing tends to last many years. Where some movement is expected, it is recommended that flexible pointing be used.

Sarking
In general, roof tiles are of marginal suitability for installing on a roof slope of less than 18° and should never be used where the pitch is lower than 15° For other roof slopes below 25°, the manufacturer's recommendations should be checked before

installing a particular profile. Where flat profile tiles are to be used on a roof that has a pitch below 25° or where any tiles are to be used on a roof below 20°, sarking should be installed to prevent water entering the roof void. Where the common rafter length is greater than 4500 mm and sarking is not fitted to the whole slope, the table shown below (source: AS 2050, Table 5) should be consulted and sarking may have to be fitted to the lower end of the slope.

SARKING REQUIREMENTS IN RELATION TO PITCH/RAFTER LENGTH

Roof (degrees of pitch)	Maximum rafter length without sarking (mm)
≥18<20	4500
≥20<22	5500
≥22	6000

In addition, on any slope with a pitch of 20° or less, an anti-ponding board should be installed between the bottom batten and the oversail to ensure that the sarking does not sag sufficiently to create ponding, or allow rainwater into the eaves or structural elements.

Guttering too high

The front bead of eaves guttering is usually higher than the highest point of the rear vertical face that sits against the fascia board. A common mistake where there is a long run to the downpipe, is to install the guttering with the front bead level with or above the top of the fascia so as to allow for fall to the downpipe. The reasons why this is an error are:

- Where there is a roof overhang, this allows water to overflow onto the eaves lining. In the case of framed external leaf walls, the rainwater is fed into the frame.
- Where there is no overhang and extruded bricks are used for the external leaf, the overflowing water spills into the core holes and saturates the brickwork from within.
- Where water cannot feed entirely into the extruded brickwork or where pressed clay bricks are used, rainwater falls directly into the cavity if one is present.

This is one of the reasons that the BCA calls for downpipes at a maximum of 12 m intervals. Such intervals mean that 6 m should be the maximum distance away from a downpipe for any part of the guttering. The minimum fall for eaves gutters is 1:500, so gutters can be installed with a 12 mm fall from the highest point to the downpipe.

Section 3 of AS 3500.3.2 requires that the front bead of the guttering is lower than the top of the fascia, so as to allow overflow and prevent rainwater entering the building. A process contained in AS 3500.3.2, Appendices G and H, is used to determine how much lower the front bead of the guttering must be than the top of the fascia board. Appendix G also contains some examples of acceptable alternatives.

Roof flashings

All metal materials on a roof should be compatible. Lead flashings should not be used with Colorbond/Zincalume roofing. Galvanic action will degrade the zinc and cause corrosion that will lead to roof leakage. In the event that re-roofing introduces Colorbond/Zincalume to a roof that has existing lead flashings, the lead should be coated on both sides using a suitable paint. Other incompatibilities are listed in AS 3500.3.2, Tables 4.2 and 4.3.

Rainwater spreaders

Where water is collected by guttering to an upper roof and deposited onto a lower roof via a spreader, the lower slope is called upon to carry an additional volume of water – sometimes too great a volume. It must be realised that tile systems are designed to prevent water entry in accordance with the performance requirements of the BCA Volume 2, Clause 2.2.1 (b), which states: '*(b) Surface water, resulting from a storm having an average recurrence interval of 100 years must not enter the building.*'

When rainwater is gathered from a large catchment and concentrated by a spreader on another catchment, the volume of water on that catchment may well be above the capacity of the tiling to cope, particularly in a case where wind is tending to drive the rain up the slope. This type of overloading cannot be taken into account by tile designers or building designers. If it is intended to use a rainwater spreader on a tiled roof, the tile manufacturer should be consulted. Spreaders may also create a local guttering overflow.

Another even more serious problem is caused by the practice of locating a spreader on a flashing. This allows the combination of wind and the proximity of the flashing and the tile to push water up and over the top of the tile, then into the roof space. This practice should never occur. If a spreader is allowable on a roof slope, it should always be well below any flashing, but the best practice is to run the water from the upper roof to the ground by a downpipe.

Roof/wall interfaces

Where a roof meets a cavity wall and the wall then becomes internal, such as a garage abutting a two-storey dwelling, a tray flashing is necessary to carry water to an external wall cavity flashing. Where the roof slopes away from the wall this can be a horizontal combination of overflashing and cavity flashing. The most important consideration is the provision of a positive method of transferral from the tray flashing to the standard floor-level cavity flashing so that no water can escape.

Where the roof slopes along the wall the combination overflashing/cavity flashing is stepped. A requirement of this is that the 'uphill' end of the cavity flashing be turned up to ensure that water follows the steps down to the standard floor-level cavity flashing. Other information is available in BCA Volume 2, Clause 2.2.4.10.

Cavity flashings

Brickwork is permeable. A single leaf of brickwork will allow water to migrate from the exterior to the cavity. This is the main reason that a cavity is necessary. In fact, when significant wind-driven rain falls against single-leaf brickwork, water can be plainly seen running down the internal face.

More and more is being learned about the problems associated with water that is trapped in the cavity. This water can quickly accumulate, but because it is not exposed to sunlight, it can take a significant time to dissipate. Water in a cavity is not just harmful to building elements, but it also promotes fungal growth and creates an ideal environment for termites, other insects, spiders and mites, including dust mites, which are known to be harmful to people who are susceptible to respiratory ailments. In addition, the humidity that is created can transfer moisture into the inner leaf of walling that is measurable on the internal face. This is particularly true in southern exposure rooms and is undesirable, particularly in living or bedroom areas.

Because cavity flashings are bedded into the masonry during the building of the wall, mortar is dropped into the flashing as the wall rises. These droppings accumulate and harden. Because of their height inconsistency, water will inevitably be dammed in the cavity. Also, weepholes become partially or fully blocked by these mortar droppings, further reducing the possibility that water will escape.

Mortar droppings should be cleaned out of the flashing before they become difficult to remove, at least once a day during the bricklaying process. As the wall rises and cleaning by hand becomes impracticable, a hose can be used, provided that the mortar beds at the flashing level are sufficiently cured to resist deterioration by the water. Anything that bridges the cavity between the inner and outer leaves of walling and allows the transfer of water to the inner leaf must be removed.

Another common defect is that the flashing does not extend to the outer edge of the external leaf. The function of a cavity flashing is to gather water and direct it to the external face of the brickwork. It usually also acts as a DPC whose function is to prevent vertical moisture migration (either up or down). A DPC or flashing that does not extend to the outer edge of the brickwork will allow migration down by gravity or up by capillary action.

If the brickwork is to be cement rendered, the flashing should be continuous to the face of the render. A neat way to overcome this is to create a v-joint at the flashing, then cut the flashing off at the inner extremity of the v-joint. This method creates a control joint that will prevent unsightly cracking of the render.

Weepholes
AS 3700, Clause 12.7.2.3, requires that weepholes are formed immediately above the cavity flashing and that mortar is removed from the joint so that the opening is clean and the flashing is exposed. This is to ensure the free flow of water from the cavity. It is not uncommon to find blocked weepholes, recessed DPCs and fouled cavity flashings all on the same job.

Window and door openings
The popularity of unevenly faced bricks has led to a problem at openings. The problem arises where brickwork reveals do not present a straight line against windows, and is exacerbated by the fact that these bricks are generally not suited to flush mortar bedding. Consequently, it is common to see gaps at window/reveal interfaces caused by brick unevenness and raked joints. Such gaps mean that the building envelope is not weatherproof within the requirements of the BCA.

It should be realised that the cavity is not envisaged as a part of a water removal system, but is there to prevent moisture permeation from the outer skin to the inner skin. It may also act as a last line of defence in the event of an extraordinary event, however the idea that a builder should leave gaps in the building envelope through which water can penetrate into the cavity is in direct conflict with the objectives and requirements of the BCA. An external wall that routinely allows water to enter the cavity, turns that cavity into a hazard to the building elements, and to the health and amenity of the occupants. It is the job of the builder to make the envelope weatherproof. The construction system must prevent significant volumes of water entering the cavity.

In the case of window and door reveals, the bricklayer, while being mindful of the danger of ceramic growth, should not rake or iron the joint past the leading edge of the frame. In some cases where gaps must be left because long walls make ceramic growth a hazard, or where the brick profile is badly uneven, storm moulds should be installed, and bedding should be left flush with the leading edge of the storm mould.

It is also common to see cases where an overwide cavity creates insufficient overlap between the window and the brickwork reveal. Where this occurs, storm moulds are also called for.

Window gaskets
When fitted to brick veneer construction, windows need to be clear of the brickwork sill so as to allow for timber shrinkage in the frame. The usual allowance is 5–10 mm clearance to ground floor windows and a minimum of 15 mm on the second storey. For this purpose, aluminium window assemblies are fitted with neoprene gaskets to bridge the gap between the window frame and the brickwork sill. As with reveals, the brickwork sill should have joints left flush from the leading edge of the gasket to the rear edge of the sill. Commonly, little attention is paid to seating the gasket to provide a waterproof surface. Mortar is left on top of sill bricks which, when timber shrinkage reduces or closes the gap, pushes the gasket up and away from the brick and allows water to enter the cavity. Mortar should be cleaned off the top of bricks while laying. In addition, bricklayers commonly turn the ends of gaskets down into the perpends at the sill/ reveal joints. This is poor practice, as it leaves a gap above the gasket where water can gain entry to the cavity and which also encourages water into the mortar where the gasket turns down. These gaskets should be cleanly cut off flush with the reveal and the mortar should be flush with the sill brickwork. If the reveal bed aligns with the gasket there is no reason that the gasket cannot be bedded into it.

Sills and thresholds
Where brickwork sills are significantly sloped, it is common to find that the bricks are cut to have a minimal overlap with the gasket. These gaskets need a minimum 15 mm overlap with the sill bricks where the sill is at 30° to the horizontal. For lesser angles the necessary overlap increases.

Brickwork patio and other door thresholds are often laid without any fall away from the building. This will always result in water entering the cavity. Some bricklayers fill the cavity in at the doorway to prevent water incursion, but this does not work and only inhibits the operation of the flashing. The builder must provide the bricklayer with sufficient height to allow for weepholes to be continued across the doorway as necessary, and for either a soldier course sill with sufficient fall or room to lay a sloped tiling threshold.

Subfloor vents
In dwellings having suspended ground floors, particularly where timber floor framing is used, adequate cross-flow ventilation must be installed to counteract condensation. BCA Volume 2, Section 3.4.1, gives minimum ventilation standards that are deemed to satisfy the performance requirements. The required ventilation area is based on the perimeter length of the building and differs depending on:
- The zone in which the dwelling is located.
- The moisture content of the foundation soil.

It is also important to realise that where the floor is lower to the ground, there is less volume of air to dissipate the moisture that is transferred to it from the ground.

Landscaping
Two important aspects of landscaping that relate to water entry were introduced in the surface drainage section above, viz.:
- The finished exterior ground level at the building perimeter should be a minimum of 150 mm below finished floor level, ground floor cavity flashing weepholes or subfloor vents, whichever are the lowest. However, if paving is to be used around the building perimeter, the clearance may be 50 mm. Where a slab is used as part of a termite management system, 75 mm at the top of the slab edge must be visible or able to be made visible.
- The finished ground should have a 1:20 fall away from the building for at least the first metre. Nothing that needs to be watered, including lawn, should be within this graded area and it should preferably be a hard surface.

In addition, the landscaper should only install automatic watering systems where the beds that they service are lower than the base of the footings or where they are separated from the building by a properly engineered surface and ground water drainage system.

FURTHER READING/REFERENCED DOCUMENTS

AS 2050, *Installation of Roof Tiles*, Standards Australia, Sydney, 2002.
AS 3500.3.2, *Stormwater Drainage – Acceptable Solutions*, Standards Australia, Sydney, 1998.
AS 3700, *Masonry Structures*, Standards Australia, Sydney, 2001.
BTF 18, *Foundation Maintenance and Footing Performance – A Homeowner's Guide*, CSIRO, Highett, Victoria, 2001.
BTF 19, *A Builder's Guide to Preventing Damage to Dwellings: Part 1 – Site Investigation and Preparation*, CSIRO, Highett, Victoria, 2003.
Building Code of Australia (BCA) Volume 2, Australian Building Codes Board, Canberra, 1996.

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ABN 54 159 265 022
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21 May 2025

Adelaide Hills Council
ATT: Doug Samardzija

By Upload

Dear Doug

RE: 25007199 – VARIATION OF DA 21017786 (FUNCTION CENTRE RELOCATION AND APPEARANCE)

I confirm receipt of your request for information (RFI) of 24 April 2025, and I have since sought further details and clarification from the applicant.

In response, I upload:

- Site Plan, prepared by Heynen Planning Consultants, dated 20.05.2025, Rev. D3;
- Localised Plan, prepared by Heynen Planning Consultants, dated 20.05.2025, Rev. D3; and
- Floor Plan, prepared by Heynen Planning Consultants, dated 20.05.2025, Rev. D3.

This additional information addresses points 1 and 2 of the RFI.

Turning to point 3 of the RFI, I confirm as the following:

(a) The kitchen area is simply for "plating up" and the basic finishing of dishes; and
(b) The existing toilets associated with the premises are to be used by the function centre guests and no new toilets are proposed.

For completeness, item (a) is also noted on the Floor Plan as uploaded.

In relation to point 4 of the RFI, I have been advised by the applicant that no native trees are in proximity to the function centre.

Finally, in relation to point 5, I confirm that this development application seeks planning consent on a retrospective basis.

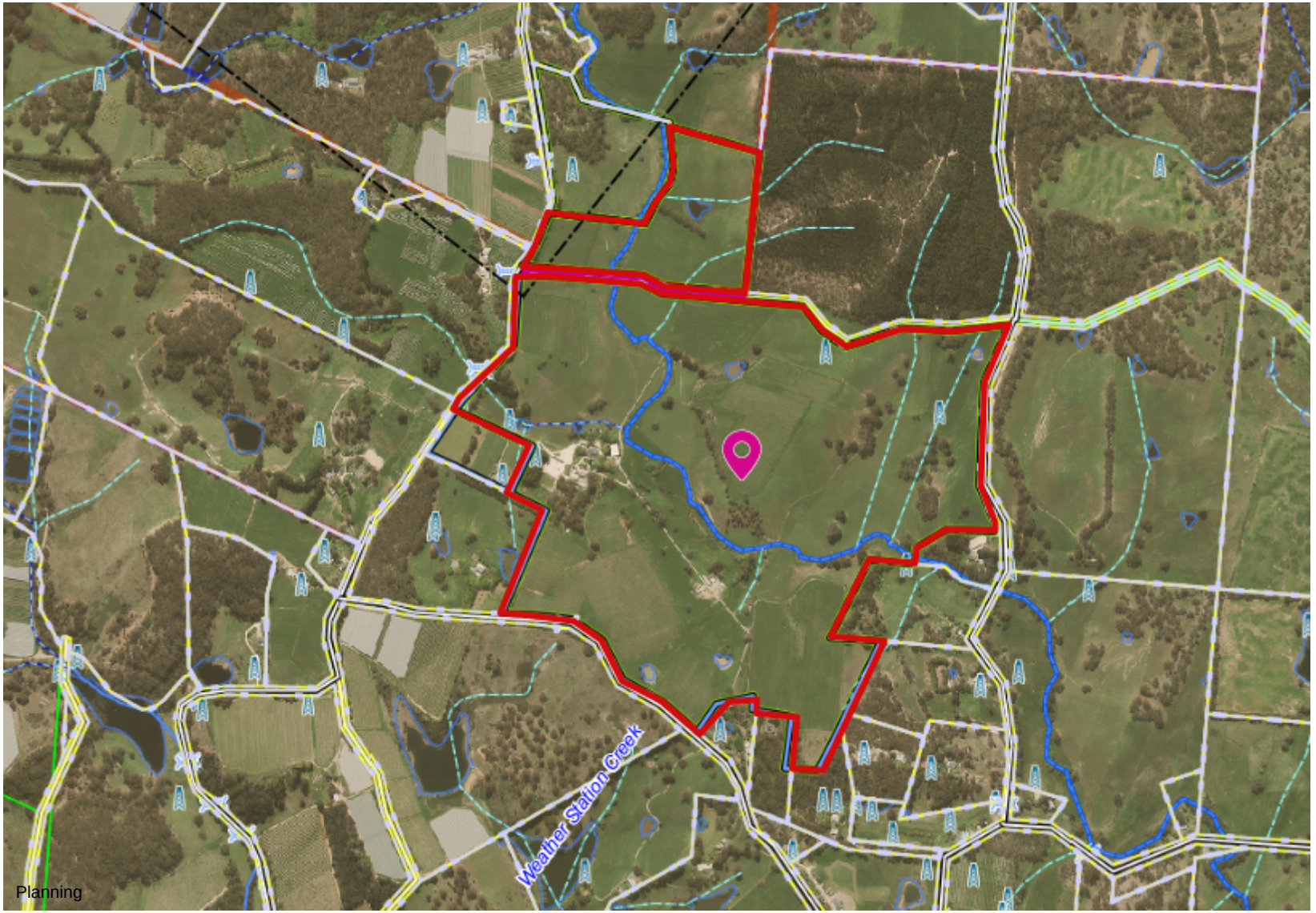
Should you have any queries, please contact me at your convenience.

Yours faithfully

Garth Heynen, MPIA
BA Planning, Grad Dip Regional and Urban Planning, Grad Dip Property

cc. Cobbs Hill Estate, by email

23-Jun-2025



Adelaide Hills COUNCIL

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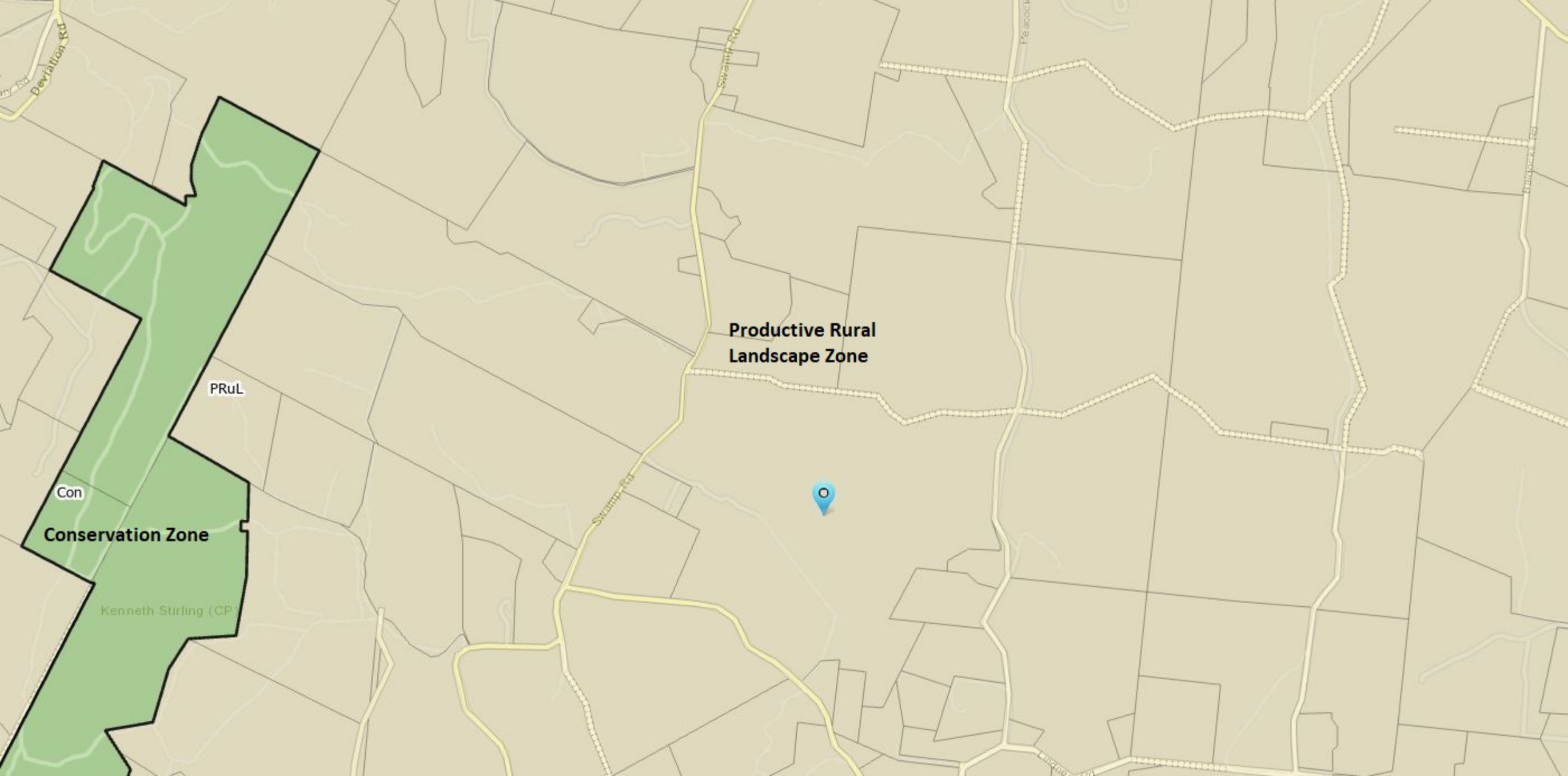
500 m


Deviation Rd
Swamp Rd
Productive Rural
Landscape Zone
PRuL
Con
Conservation Zone
Kenneth Stirling (CP)

Outlook

RE: Confirmation if EPA referral is required

From Chrystal, Melissa (EPA) <Melissa.Chrystal@sa.gov.au>
Date Wed 4/9/2025 4:07 PM
To Doug Samardzija <dsamardzija@ahc.sa.gov.au>
Cc EPA:Planning <EPA.Planning@sa.gov.au>

Hello Doug,

Thank you for your email.

I note the EPA's assessment of this previous DA considered whether the proposal would have a neutral or beneficial impact on water quality. The EPA's assessment focussed on the proposed wastewater system and resulted in the EPA directing two conditions to ensure:

- The existing onsite wastewater system is decommissioned, and
- a new onsite wastewater system is established in accordance with the 'Wastewater Engineers Report Cobb's Hill Estate Wastewater System Upgrade for Function Centre & Cellar Door' report by Ametqua, prior to occupation of the new function centre.
-

As the current variation DA does not propose to increase the capacity of the function centre nor change the approved wastewater system, the proposed variation will not alter the EPA's previous assessment and directed conditions.

Also, it will assist the EPA to respond promptly to any future enquiries, if you copy in epa.planning@sa.gov.au .

Kind regards,
Melissa

Melissa Chrystal (she/her)
Acting Principal Adviser Development Assessment

Planning and Impact Assessment | Sustainable Development, Policy and Systems
Environment Protection Authority
T: 08 8204 1318
Level 2, 211 Victoria Square, Adelaide SA 5000
Tarntanyangga, Kaurna Country

From: Doug Samardzija <dsamardzija@ahc.sa.gov.au>
Sent: Wednesday, 9 April 2025 3:20 PM
To: Chrystal, Melissa (EPA) <melissa.chrystal@sa.gov.au>
Subject: Confirmation if EPA referral is required

Hi Melissa

Hope you are well.

I just wanted to check with you if I need to refer a variation DA to you. I just received a variation to DA 21017786 to change the Function Venue location and appearance. Original application was referred to you for assessment and given that the variation only seeks to alter the location of the function venue building without changing the waste system or changing anything as far as the capacity or the nature of the use I wasn't sure if it is something that you wanted to see again.

Attached are the documents for the variation application which outline the changes.

Can you let me know if this is something that we need to refer to you so that I can charge the fees.

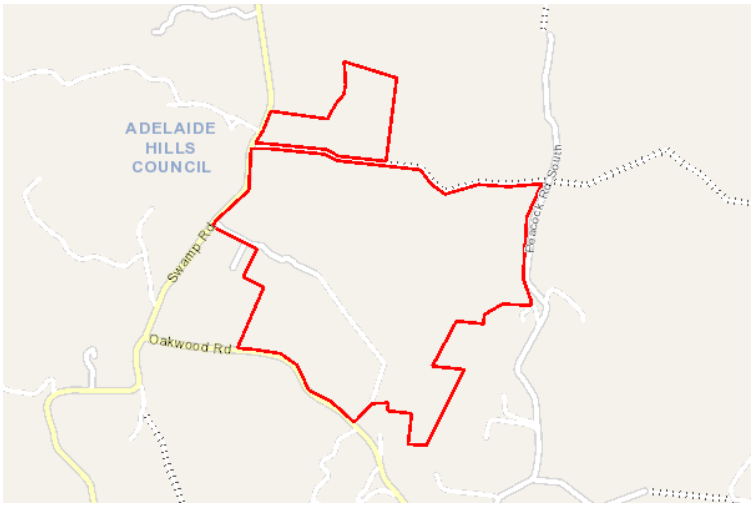
Regards

Adelaide Hills COUNCIL

Doug Samardzija
Senior Statutory Planner
8408 0596
dsamardzija@ahc.sa.gov.au
ahc.sa.gov.au

Address: 362 OAKWOOD RD OAKBANK SA 5243

To view a detailed interactive property map in SAPPA click on the map below



Property Zoning Details

Zone

Productive Rural Landscape

Overlay

Environment and Food Production Area
Hazards (Bushfire - High Risk)
Hazards (Flooding - Evidence Required)
Limited Land Division
Mount Lofty Ranges Water Supply Catchment (Area 2)
Native Vegetation
Prescribed Water Resources Area
Water Resources

Development Pathways

- Productive Rural Landscape

1. Accepted Development
   Means that the development type does not require planning consent (planning approval). Please ensure compliance with relevant land use and development controls in the Code.
   - None

2. Code Assessed - Deemed to Satisfy
   Means that the development type requires consent (planning approval). Please ensure compliance with relevant land use and development controls in the Code.
   - Deck

3. Code Assessed - Performance Assessed
   Performance Assessed development types listed below are those for which the Code identifies relevant policies.
   Additional development types that are not listed as Accepted, Deemed to Satisfy or Restricted default to a Performance assessed Pathway. Please contact your local council for more information.
   - Deck

4. Impact Assessed - Restricted
   Means that the development type requires approval. Classes of development that are classified as Restricted are listed in Table 4 of the relevant Zones.

Part 2 - Zones and Sub Zones

Productive Rural Landscape Zone

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	A diverse range of land uses at an appropriate scale and intensity that capitalise on the region's proximity to the metropolitan area and the tourist and lifestyle opportunities this presents while also conserving the natural and rural character, identity, biodiversity and sensitive environmental areas and scenic qualities of the landscape.
DO 2	A zone that promotes agriculture, horticulture, value adding opportunities, farm gate businesses, the sale and consumption of agricultural based products, tourist development and accommodation that expands the economic base and promotes its regional identity.
DO 3	Create local conditions that support new and continuing investment while seeking to promote co-existence with adjoining activities and mitigate land use conflicts.

Performance Outcomes (PO) and Deemed to Satisfy (DTS) / Designated Performance Feature (DPF) Criteria

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use and Intensity	
PO 1.1 The productive value of rural land for a range of primary production and horticultural activities and associated value adding of primary produce (such as beverage production), retailing and tourism is supported, protected and maintained. The proliferation of land uses that may be sensitive to those activities is avoided.	DTS/DPF 1.1 Development comprises one or more of the following: (a) Advertisement (b) Agricultural building (c) Brewery (d) Carport (e) Cidery (f) Commercial forestry (g) Distillery (h) Dwelling (i) Dwelling addition (j) Farming (k) Function venue (l) Horse keeping (m) Horticulture (n) Industry (o) Low intensity animal husbandry (p) Outbuilding (q) Shop (r) Small-scale ground mounted solar power facility (s) Tourist accommodation (t) Transport distribution (u) Verandah (v) Warehouse (w) Winery (x) Workers' accommodation
Siting and Design	

PO 2.1 Development is provided with suitable vehicle access.	DTS/DPF 2.1 Development is serviced by an all-weather trafficable public road.
PO 2.2 Buildings are generally located on flat land to minimise cut and fill and the associated visual impacts.	DTS/DPF 2.2 Buildings: (a) are located on a site with a slope not greater than 10% (1-in-10) (b) do not result excavation and/or filling of land that is greater than 1.5m from natural ground level.
Horticulture	
PO 3.1 Horticulture is located and conducted on land that has the physical capability of supporting the activity and in a manner that: (a) enhances the productivity of the land for the growing of food and produce in a sustainable manner (b) avoids adverse interface conflicts with other land uses (c) utilises sound environmental practices to mitigate negative impacts on natural resources and water quality (d) is sympathetic to surrounding rural landscape character and amenity, where horticulture is proposed to be carried out in an enclosed building such as such as a greenhouse.	DTS/DPF 3.1 Horticultural activities: (a) are conducted on an allotment with an area of at least 1ha (b) are sited on land with a slope not greater than 10% (1-in-10) (c) are not conducted within 50m of a watercourse or native vegetation (d) are not conducted within 100m of a sensitive receiver in other ownership (e) provide for a headland area between plantings and property boundaries of at least 10m in width (f) where carried out in an enclosed building such as a greenhouse, the building has a total floor area not greater than 250m^2 (g) in the form of olive growing, is not located within 500m of a conservation or national park.
Rural Industry	
PO 4.1 Small-scale industry (including beverage production and washing, processing, bottling and packaging activities), storage, warehousing, produce grading and packing, transport distribution or similar activities provide opportunities for diversification and value adding to locally sourced primary production activities.	DTS/DPF 4.1 Industries, storage, warehousing, produce grading and packing and transport distribution activities and similar activities (or any combination thereof): (a) are directly related and ancillary to a primary production use on the same or adjoining allotment (b) are located on an allotment not less than 2ha in area (c) have a total floor area not exceeding 350m^2.
PO 4.2 Expansion of established small-scale or new large scale industry (including beverage production and washing, processing, bottling and packaging activities), storage, warehousing, produce grading and packing, transport distribution or similar activities: (a) are commensurate with the allotment on which it is situated to mitigate adverse impacts on the amenity of land in other ownership and the character of locality (b) realise efficiencies in primary production related storage, sorting, packaging, manufacturing and the like (c) primarily involve primary production commodities sourced from the same allotment and/or surrounding rural areas.	DTS/DPF 4.2 None are applicable.
PO 4.3 Industry, storage, warehousing, transport distribution or similar activities are sited, designed and of a scale that maintains rural function and character in a manner that respects landscape amenity.	DTS/DPF 4.3 Buildings and associated activities: (a) are setback at least 50m from all road and allotment boundaries (b) are not sited within 100m of a sensitive receiver in other ownership (c) have a building height not greater than 10m above natural ground level (d) incorporate the loading and unloading of vehicles within the confines of the allotment.

Dwellings	
PO 5.1 Dwellings provide a convenient base for landowners to conduct and manage commercial scale primary production and related value adding activities without compromising the use of the allotment, adjacent land or long term purpose of the zone for primary production or related tourism values due to a proliferation of dwellings.	DTS/DPF 5.1 Dwellings: (a) are located on an allotment with an area not less than: (b) are located on an allotment used for and is ancillary to primary production and/or primary production related value-adding activities (c) will not result in more than one dwelling on an allotment. In relation to DTS/DPF 5.1, in instances where: (d) more than one value is returned, refer to the *Minimum Dwelling Allotment Size Technical and Numeric Variation* layer in the SA planning database to determine the applicable value relevant to the site of the proposed development (e) no value is returned for DTS/DPF 5.1(a) (ie there is a blank field), then there is no minimum dwelling allotment size applicable and DTS/DPF 5.1(a) is met.
PO 5.2 Dwelling are sited, designed and of a scale that maintains a pleasant natural and rural character and amenity.	DTS/DPF 5.2 Dwellings: (a) are setback from all allotment boundaries by at least 40m (b) do not exceed 2 building levels and 9m measured from the top of the footings (c) have a wall height no greater than 6m.
PO 5.3 Development resulting in more than one dwelling on an allotment supports ageing in place for the owner of the allotment or multi-generational management of farms in a manner that minimises the potential loss of land available for primary production.	DTS/DPF 5.3 Dwelling that will result in more than one dwelling on an allotment where all the following are satisfied: (a) it is located within 20m of an existing dwelling (b) share the same utilities of the existing dwelling (c) will use the same access point from a public road as the existing dwelling (d) it is located on an allotment not less than 40ha in area (e) will not result in more than two dwellings on an allotment.
PO 5.4 Dwelling additions are sited, designed and of a scale that maintains a pleasant rural character and amenity.	DTS/DPF 5.4 Additions or alterations to an existing dwelling: (a) are setback behind the main façade of the existing dwelling (b) do not exceed 2 building levels and 9m measured from the top of the footings (c) have a wall height that is no greater than 6m from the top of the footings.
Shops, Tourism and Function Venues	
PO 6.1 Shops are associated with an existing primary production or primary production related value adding industry to support diversification of employment, provide services to visitors and showcase local and regional products.	DTS/DPF 6.1 Shops, other than where located in The Cedars Subzone: (a) are ancillary to and located on the same allotment or adjoining allotment used for primary production or primary production related value adding industries (b) offer for sale or consumption produce or goods that are primarily sourced, produced or manufactured on the same allotment or adjoining allotments

	(c) have a gross leasable floor area not exceeding 100m^2 or 250m^2 in the case of a cellar door (d) have an area for the display of produce or goods external to a building not exceeding 25m^2 (e) do not result in more than 75 seats for customer dining purposes in a restaurant.
PO 6.2 Shops that are proposed in new buildings are sited, designed and of a scale that maintains a pleasant rural character and amenity.	DTS/DPF 6.2 Shops in new buildings: (a) are setback from all property boundaries by at least 20m (b) are not sited within 100m of a sensitive receiver in other ownership (c) have a building height that does not exceed 9m above natural ground level.
PO 6.3 Tourist accommodation is associated with the primary use of the land for primary production or primary production related value adding industry to enhance and provide authentic visitor experiences.	DTS/DPF 6.3 Tourist accommodation, other than where located in The Cedars Subzone: (a) is ancillary to and located on the same allotment or an adjoining allotment used for primary production or primary production related value adding industry (b) in relation to the area used for accommodation: (i) where in a new building, or buildings, does not exceed a cumulative total floor area of 100m^2 or (ii) where in an existing building, does not exceed 150m^2 and (c) does not result in more than one tourist accommodation facility being located on the same allotment.
PO 6.4 Tourist accommodation proposed in a new building or buildings are sited, designed and of a scale that maintains a pleasant rural character and amenity.	DTS/DPF 6.4 Tourist accommodation in new buildings: (a) is setback from all property boundaries by at least 40m (b) has a building height that does not exceed 7m above natural ground level.
PO 6.5 Function venues are associated with the primary use of the land for primary production or primary production related value adding industry.	DTS/DPF 6.5 Function venues, other than where located in The Cedars Subzone: (a) are ancillary to and located on the same allotment or an adjoining allotment used for primary production or primary production related value adding industry (b) do not exceed a capacity of 75 persons for customer dining purposes.
PO 6.6 Function venues are sited, designed and of a scale that maintains a pleasant natural and rural character and amenity.	DTS/DPF 6.6 Function venues: (a) are located on an allotment having an area of at least 5ha (b) are setback from all property boundaries by at least 40m (c) are not sited within 100m of a sensitive receiver in other ownership (d) have a building height that does not exceed 9m above natural ground level.
Offices	
PO 7.1 Offices are directly related to and associated with the primary use of	DTS/DPF 7.1 Offices, other than where located in The Cedars Subzone:

the land for primary production or primary production related value adding industry.	(a) are ancillary to and located on the same allotment or an adjoining allotment used for primary production or primary production related value adding industry (b) have a gross leasable floor area not exceeding 100m^2.
Adaptive Reuse of Existing Buildings	
PO 8.1 Adaptive reuse of existing buildings for small-scale shops, offices, tourist accommodation or ancillary rural activities.	DTS/DPF 8.1 Development within an existing building is for any of the following: (a) a shop (b) office (c) tourist accommodation.
Workers' accommodation	
PO 9.1 Workers' accommodation provides short-term accommodation for persons temporarily engaged in the production, management or processing of primary produce.	DTS/DPF 9.1 Workers' accommodation: (a) is developed on a site at least 2ha in area (b) has a total floor area not exceeding 250m^2 (c) is in the form of a single building or part of a cluster of buildings that are physically connected (d) amenities accommodate not more than 20 persons at any one time (e) is setback at least 50m from a road boundary (f) is setback at least 40m from a side or rear allotment boundary (g) is located within 20m of an existing dwelling on the same allotment (h) does not result in more than one facility being located on the same allotment.
Renewable Energy Facilities	
PO 10.1 Renewable energy facilities and ancillary development minimises significant fragmentation or displacement of existing primary production.	DTS/DPF 10.1 None are applicable.
PO 10.2 Small-scale ground mounted solar power facilities support rural production or value-adding industries.	DTS/DPF 10.2 None are applicable.
Built Form and Character	
PO 11.1 Large buildings designed and sited to reduce impacts on scenic and rural vistas by: (a) having substantial setbacks from boundaries and adjacent public roads (b) using low reflective materials and finishes that blend with the surrounding landscape (c) being located below ridgelines.	DTS/DPF 11.1 None are applicable.
Land Division	
PO 12.1 Land division creating additional allotments is not supported other than where located in The Cedars Subzone to support tourist development.	DTS/DPF 12.1 Except where the land division is proposed in The Cedars Subzone, no additional allotments are created.
PO 12.2 Allotment boundaries, including by realignment, are positioned to incorporate sufficient space around existing residential, tourist accommodation and other habitable buildings (including boarding	DTS/DPF 12.2 Allotment boundaries are located no closer to an existing residential, tourist accommodation or other habitable building than the greater of the following:

houses, hostels, dormitory style accommodation, student accommodation and workers' accommodation) to: (a) maintain a pleasant rural character and amenity for occupants (b) manage vegetation within the same allotment to mitigate bushfire hazard.	(a) 40m (b) the distance required to accommodate an asset protection zone wholly within the relevant allotment.
Agricultural Buildings	
PO 13.1 Agricultural buildings and associated activities are sited, designed and of a scale that maintains a pleasant rural character and function.	DTS/DPF 13.1 Agricultural buildings: (a) are located on an allotment having an area of at least 2ha (b) are setback at least 40m from an allotment boundary (c) have a building height not exceeding 10m above natural ground level (d) do not exceed 350m^2 in total floor area (e) incorporate the loading and unloading of vehicles within the confines of the allotment.
Outbuildings, Carports and Verandahs	
PO 14.1 Outbuildings are sited, designed and of a scale that maintain a pleasant natural and rural character and amenity.	DTS/DPF 14.1 Outbuildings: (a) have a primary street setback that is at least as far back as the building to which it is ancillary (b) have a combined total floor area that does not exceed 100m^2 (c) do not exceed 5m in wall height measured from natural ground level (not including a gable end) (d) have a total roof height that does not exceed 6m measured from natural ground level (e) if clad in sheet metal, it is pre-colour treated or painted in a non-reflective colour (f) will not result in more than 2 outbuildings on the same allotment.
PO 14.2 Carports and verandahs are sited, designed and of a scale to maintain a pleasant natural and rural character and amenity.	DTS/DPF 14.2 Carports and verandahs: (a) are set back from the primary street at least as far back as the building to which it is ancillary (b) have a total floor area that does not exceed 80m^2 (c) have a post height that does not exceed 3m measured from natural ground level (not including a gable end) (d) have a total roof height that does not exceed 5m measured from natural ground level (e) if clad in sheet metal, the cladding is pre-colour treated or painted in a non-reflective colour.
Concept Plans	
PO 15.1 Development is compatible with the outcomes sought by any relevant Concept Plan contained within Part 12 - Concept Plans of the Planning and Design Code to support the orderly development of land through staging of development and provision of infrastructure.	DTS/DPF 15.1 The site of the development is wholly located outside any relevant Concept Plan boundary. The following Concept Plans are relevant: In relation to DTS/DPF 15.1, in instances where: (a) one or more Concept Plan is returned, refer to Part 12 - Concept Plans in the Planning and Design Code to determine if a Concept Plan is relevant to the site of the proposed development. Note: multiple concept plans may be relevant. (b) in instances where 'no value' is returned, there is no relevant concept plan and DTS/DPF 15.1 is met.
Advertisements	

PO 16.1 Freestanding advertisements that identify the associated business without creating a visually dominant element within the locality.	DTS/DPF 16.1 Freestanding advertisements: (a) do not exceed 2m in height (b) do not have a sign face that exceeds 2m2 per side.

Table 5 - Procedural Matters (PM) - Notification

The following table identifies, pursuant to section 107(6) of the *Planning, Development and Infrastructure Act 2016*, classes of performance assessed development that are excluded from notification. The table also identifies any exemptions to the placement of notices when notification is required.

Interpretation

Notification tables exclude the classes of development listed in Column A from notification provided that they do not fall within a corresponding exclusion prescribed in Column B.

Where a development or an element of a development falls within more than one class of development listed in Column A, it will be excluded from notification if it is excluded (in its entirety) under any of those classes of development. It need not be excluded under all applicable classes of development.

Where a development involves multiple performance assessed elements, all performance assessed elements will require notification (regardless of whether one or more elements are excluded in the applicable notification table) unless every performance assessed element of the application is excluded in the applicable notification table, in which case the application will not require notification.

A relevant authority may determine that a variation to 1 or more corresponding exclusions prescribed in Column B is minor in nature and does not require notification.

Class of Development (Column A)	Exceptions (Column B)
1. Development which, in the opinion of the relevant authority, is of a minor nature only and will not unreasonably impact on the owners or occupiers of land in the locality of the site of the development.	None specified.
2. Any development involving any of the following (or of any combination of any of the following): (a) advertisement (b) agricultural building (c) air handling unit, air conditioning system or exhaust fan (d) ancillary accommodation (e) carport (f) deck (g) fence (h) dwelling (i) dwelling addition (j) farming (k) horse keeping (l) internal building work (m) land division (n) outbuilding (o) pergola (p) private bushfire shelter (q) protective tree netting structure (r) replacement building (s) retaining wall (t) solar photovoltaic panels (roof mounted) (u) shade sail (v) swimming pool or spa pool and associated swimming pool safety features	None specified.

(w) temporary accommodation in an area affected by bushfire (x) tree damaging activity (y) verandah (z) water tank.	
3. Any development involving any of the following (or of any combination of any of the following): (a) industry (b) store (c) warehouse.	Except development that does not satisfy any of the following: 1. Productive Rural Landscape Zone DTS/DPF 4.1 2. Productive Rural Landscape Zone DTS/DPF 4.3.
4. Demolition.	Except any of the following: 1. the demolition (or partial demolition) of a State or Local Heritage Place (other than an excluded building) 2. the demolition (or partial demolition) of a building in a Historic Area Overlay (other than an excluded building).
5. Function venue within The Cedars Subzone.	None specified.
6. Function venue.	Except function venue that does not satisfy Productive Rural Landscape Zone DTS/DPF 6.6.
7. Horticulture.	Except horticulture that does not satisfy any of the following: 1. Productive Rural Landscape Zone DTS/DPF 3.1(d) 2. Productive Rural Landscape Zone DTS/DPF 3.1(e).
8. Railway line.	Except where located outside of a rail corridor or rail reserve.
9. Shop within The Cedars Subzone.	None specified.
10. Shop.	Except shop that does not satisfy any of the following: 1. Productive Rural Landscape Zone DTS/DPF 6.1 2. Productive Rural Landscape Zone DTS/DPF 6.2.
11. Tourist accommodation within The Cedars Subzone.	None specified.
12. Tourist accommodation.	Except tourist accommodation that does not to satisfy any of the following: 1. Productive Rural Landscape Zone DTS/DPF 6.3 2. Productive Rural Landscape Zone DTS/DPF 6.4.

Placement of Notices - Exemptions for Performance Assessed Development

Pursuant to regulation 47(6)(c) of the Planning, Development and Infrastructure (General) Regulations 2017, the requirement to place a notice on the relevant land under section 107(3)(a)(ii) of the *Planning, Development and Infrastructure Act 2016* does not apply in the Productive Rural Landscape Zone.

Placement of Notices - Exemptions for Restricted Development

Pursuant to regulation 47(6)(c) of the Planning, Development and Infrastructure (General) Regulations 2017, the requirement to place a notice on the relevant land under section 110(2)(a)(iv) of the *Planning, Development and Infrastructure Act 2016* does not apply in the Productive Rural Landscape Zone.

Part 3 - Overlays

Environment and Food Production Areas Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Protection of valuable rural, landscape, environmental and food production areas from urban encroachment.

Performance Outcomes (PO) and Deemed to Satisfy (DTS) / Designated Performance Feature (DPF) Criteria

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 Land division undertaken in accordance with Section 7 of the *Planning, Development and Infrastructure Act 2016.*	DTS/DPF 1.1 None are applicable.

Procedural Matters (PM)

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
None	None	None	None

Hazards (Bushfire - High Risk) Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development, including land division is sited and designed to minimise the threat and impact of bushfires on life and property with regard to the following risks: (a) potential for uncontrolled bushfire events taking into account the increased frequency and intensity of bushfires as a result of climate change (b) high levels and exposure to ember attack (c) impact from burning debris (d) radiant heat (e) likelihood and direct exposure to flames from a fire front.
DO 2	Activities that increase the number of people living and working in the area or where evacuation would be difficult is sited away from areas of unacceptable bushfire risk.
DO 3	To facilitate access for emergency service vehicles to aid the protection of lives and assets from bushfire danger.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use	
PO 1.1 Development that significantly increases the potential for fire outbreak as a result of the spontaneous combustion of materials, spark generation or through the magnification and reflection of light is not located in areas of unacceptable bushfire risk.	DTS/DPF 1.1 None are applicable.
PO 1.2 Child care facilities, educational facilities, hospitals, retirement and supported accommodation are sited away from areas of unacceptable bushfire risk and locations that: (a) are remote from or require extended periods of travel to reach safer locations (b) don't have a safe path of travel to safer locations.	DTS/DPF 1.2 None are applicable.
Siting	
PO 2.1 Buildings and structures are located away from areas that pose an unacceptable bushfire risk as a result of vegetation cover and type, and terrain.	DTS/DPF 2.1 None are applicable.
Built Form	
PO 3.1 Buildings and structures are designed and configured to reduce the impact of bushfire through using designs that reduce the potential for trapping burning debris against or underneath the building or structure, or between the ground and building floor level in the case of transportable buildings and buildings on stilts.	DTS/DPF 3.1 None are applicable.
PO 3.2 Extensions to buildings, outbuildings and other ancillary structures are sited and constructed using materials to minimise the threat of fire spread to residential and tourist accommodation (including boarding houses, hostels, dormitory style accommodation, student accommodation and Workers' accommodation) in the event of bushfire.	DTS/DPF 3.2 Outbuildings and other ancillary structures are sited no closer than 6m from the habitable building.
Habitable Buildings	
PO 4.1 To minimise the threat, impact and potential exposure to bushfires on life and property, residential and tourist accommodation and habitable buildings for vulnerable communities (including boarding houses, hostels, dormitory style accommodation, student accommodation and workers' accommodation) is sited on the flatter portion of allotments away from steep slopes.	DTS/DPF 4.1 None are applicable.
PO 4.2 Residential and tourist accommodation and habitable buildings for vulnerable communities (including boarding houses, hostels, dormitory style accommodation, student accommodation and workers' accommodation) is sited away from vegetated areas that pose an unacceptable bushfire risk.	DTS/DPF 4.2 Residential and tourist accommodation and habitable buildings for vulnerable communities are provided with asset protection zone(s) in accordance with (a) and (b): (a) the asset protection zone has a minimum width of at least: (i) 50 metres to unmanaged grasslands (ii) 100 metres to hazardous bushland vegetation (b) the asset protection zone is contained wholly within the allotment of the development.

PO 4.3 Residential and tourist accommodation and habitable buildings for vulnerable communities (including boarding houses, hostels, dormitory style accommodation, student accommodation and workers' accommodation) has a dedicated area available that: (a) is capable of accommodating a bushfire protection system comprising firefighting equipment and water supply in accordance with *Ministerial Building Standard MBS 008 - Designated bushfire prone areas - additional requirements* (b) includes the provision of an all-weather hardstand area in a location that: (i) allows fire-fighting vehicles to safely access the dedicated water supply and exit the site in a forward direction (ii) is no further than 6 metres from the dedicated water supply outlet(s) where required.	DTS/DPF 4.3 None are applicable.
Land Division	
PO 5.1 Land division for residential and tourist accommodation and habitable buildings for vulnerable communities (including boarding houses, hostels, dormitory style accommodation, student accommodation and workers' accommodation) is limited to those areas specifically set aside for these uses.	DTS/DPF 5.1 None are applicable.
PO 5.2 Land division is designed and incorporates measures to minimise the danger of fire hazard to residents and occupants of buildings, and to protect buildings and property from physical damage in the event of a bushfire.	DTS/DPF 5.2 None are applicable.
PO 5.3 Land division is designed to provide a continuous street pattern (avoiding the use of dead end roads/cul-de-sac road design) to facilitate the safe movement and evacuation of emergency vehicles, residents, occupants and visitors. Where cul-de-sac / dead end roads are proposed, an alternative emergency evacuation route is provided.	DTS/DPF 5.3 None are applicable.
PO 5.4 Where 10 or more new allotments are proposed, land division includes at least two separate and safe exit points to enable multiple avenues of evacuation in the event of a bushfire.	DTS/DPF 5.4 None are applicable.
PO 5.5 Land division provides sufficient space for future asset protection zones and incorporates perimeter roads of adequate design in conjunction with bushfire buffer zones to achieve adequate separation between residential allotments and areas of unacceptable bushfire risk and to support safe access for the purposes of fire-fighting.	DTS/DPF 5.5 None are applicable.
Vehicle Access –Roads, Driveways and Fire Tracks	
PO 6.1 Roads are designed and constructed to facilitate the safe and effective: (a) access, operation and evacuation of fire-fighting vehicles and emergency personnel (b) evacuation of residents, occupants and visitors.	DTS/DPF 6.1 Roads: (a) are constructed with a formed, all-weather surface (b) have a gradient of not more than 16 degrees (1-in-3.5) at any point along the road (c) have a cross fall of not more than 6 degrees (1-in-9.5) at any point along the road (d) have a minimum formed road width of 6m

	(e) provide overhead clearance of not less than 4.0m between the road surface and overhanging branches or other obstructions including buildings and/or structures (Figure 1) (f) allow fire-fighting services (personnel and vehicles) to travel in a continuous forward movement around road curves by constructing the curves with a minimum external radius of 12.5m (Figure 2) (g) incorporating cul-de-sac endings or dead end roads are provided within an alternative evacuation route and do not exceed 200m in length and the end of the road has either: (i) a turning area with a minimum formed surface radius of 12.5m (Figure 3) or (ii) a 'T' or 'Y' shaped turning area with a minimum formed surface length of 11m and minimum internal radii of 9.5m (Figure 4) (h) incorporate solid, all-weather crossings over any watercourse that support fire-fighting vehicles with a gross vehicle mass (GVM) of 21 tonnes.
PO 6.2 Access to habitable buildings is designed and constructed to facilitate the safe and effective: (a) use, operation and evacuation of fire-fighting and emergency personnel (b) evacuation of residents, occupants and visitors.	DTS/DPF 6.2 Access is in accordance with (a) or (b): (a) a clear and unobstructed vehicle or pedestrian pathway of not greater than 60 metres in length is available between the most distant part of the habitable building and the nearest part of a formed public access road (b) driveways: (i) do not exceed 600m in length (ii) are constructed with a formed, all-weather surface (iii) are connected to a formed, all-weather public road with the transition area between the road and driveway having a gradient of not more than 7 degrees (1-in-8) (iv) have a gradient of not more than 16 degrees (1-in-3.5) at any point along the driveway (v) have a crossfall of not more than 6 degrees (1-in-9.5) at any point along the driveway (vi) have a minimum formed width of 3m (4m where the gradient of the driveway is steeper than 12 degrees (1-in-4.5)) plus 0.5 metres clearance either side of the driveway from overhanging branches or other obstructions, including buildings and/or structures (Figure 1) (vii) incorporate passing bays with a minimum width of 6m and length of 17m every 200m (Figure 5) (viii) provide overhead clearance of not less than 4.0m between the driveway surface and overhanging branches or other obstructions, including buildings and/or structures (Figure 1) (ix) allow fire-fighting services (personnel and vehicles) to travel in a continuous forward movement around driveway curves by constructing the curves with a minimum external radius of 12.5m (Figure 2) (x) allow fire-fighting vehicles to safely enter and exit an allotment in a forward direction by using a 'U' shaped drive through design or by incorporating at the end of the driveway either: A. a loop road around the building or B. a turning area with a minimum radius of 12.5m (Figure 3) or C. a 'T' or 'Y' shaped turning area with a minimum formed length of 11m and minimum internal radii of 9.5m (Figure 4)

	(xi) incorporate solid, all-weather crossings over any watercourse that support fire-fighting vehicles with a gross vehicle mass (GVM) of 21 tonnes.
PO 6.3 Development does not rely on fire tracks as means of evacuation or access for fire-fighting purposes unless there are no safe alternatives available.	DTS/DPF 6.3 None are applicable.

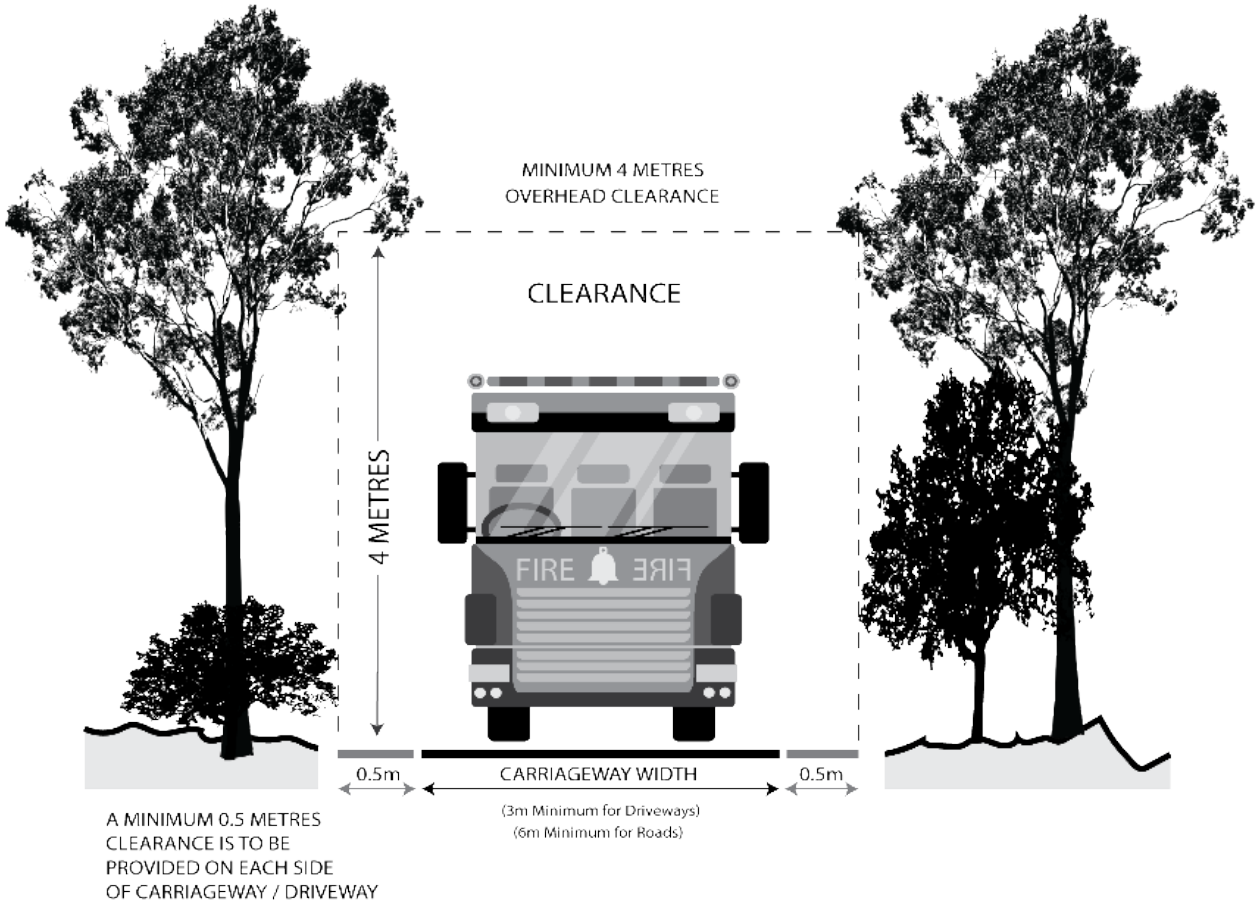
Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
Except if a ***relevant certificate*** accompanies the application for planning consent in respect of the development, any of the following classes of development (including alterations and additions which increase the floor area of such buildings by 10% or more): (a) land division creating one or more additional allotments (b) dwelling (c) ancillary accommodation (d) residential flat building (e) tourist accommodation (f) boarding home (g) dormitory style accommodation (h) workers' accommodation (i) student accommodation (j) child care facility (k) educational facility (l) retirement village (m) supported accommodation (n) residential park (o) hospital (p) camp ground.	South Australian Country Fire Service.	To provide expert assessment and direction to the relevant authority on the potential impacts of bushfire on the development.	Development of a class to which Schedule 9 clause 3 item 2 of the Planning, Development and Infrastructure (General) Regulations 2017 applies.

Figures and Diagrams

Fire Appliance Clearances
Figure 1 - Overhead and Side Clearances



Roads and Driveway Design

Figure 2 - Road and Driveway Curves

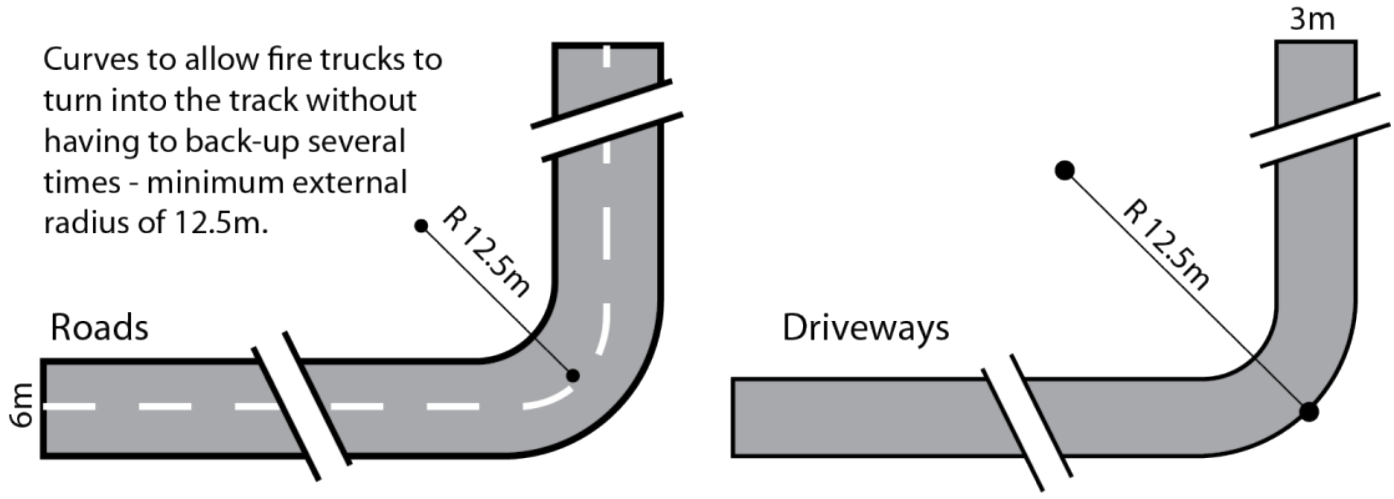


Figure 3 - Full Circle Turning Area

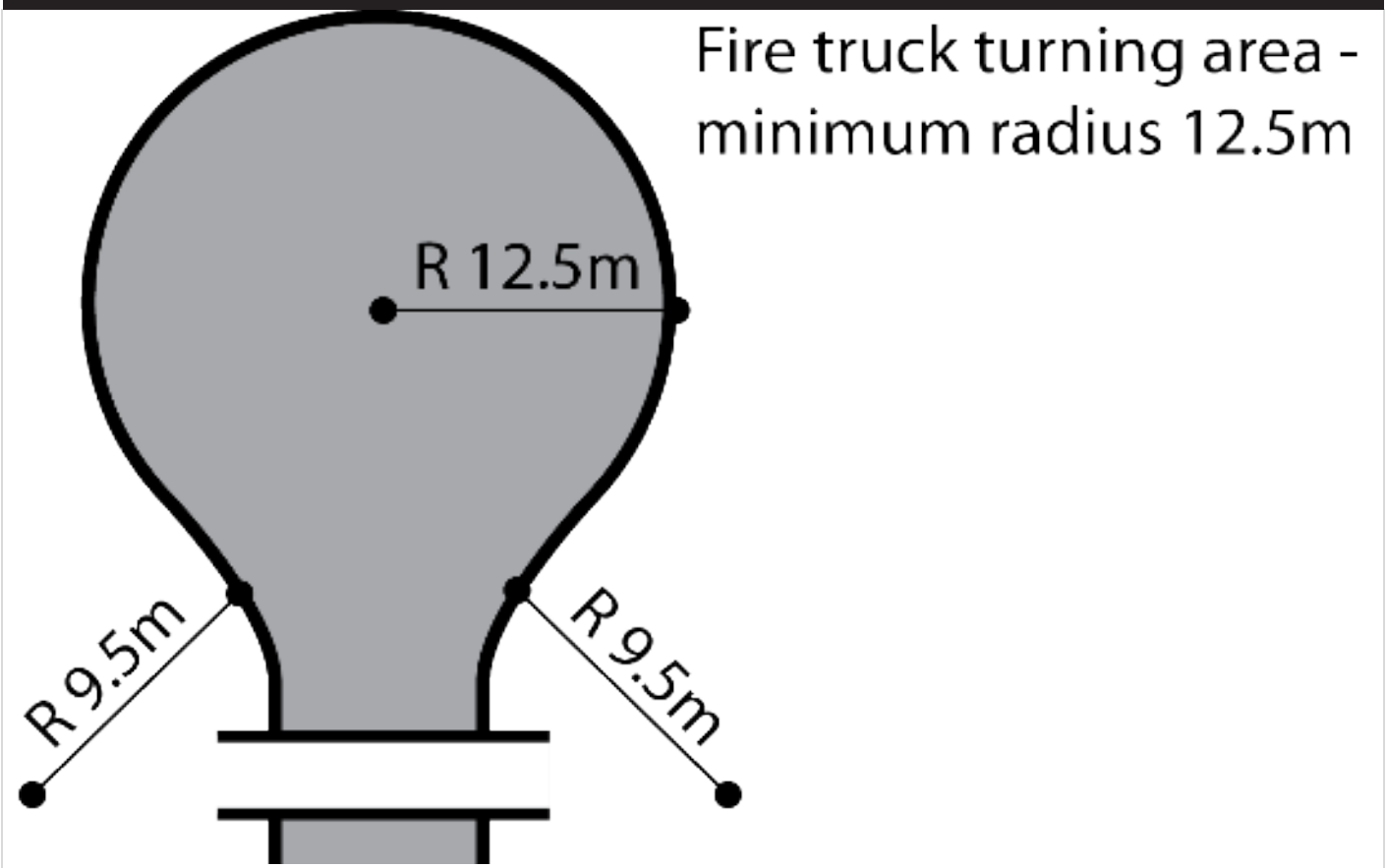
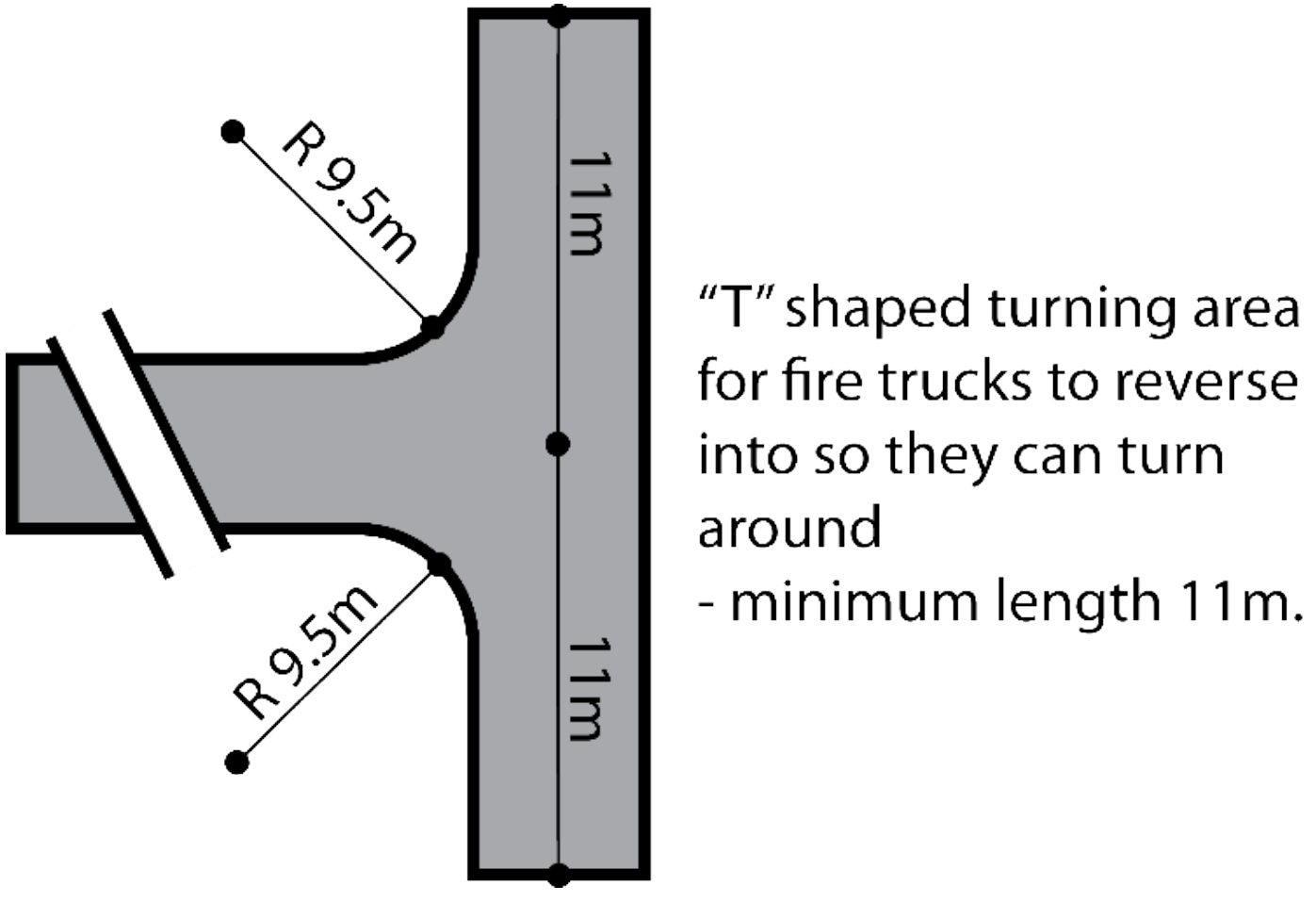


Figure 4 - 'T' or 'Y' Shaped Turning Head



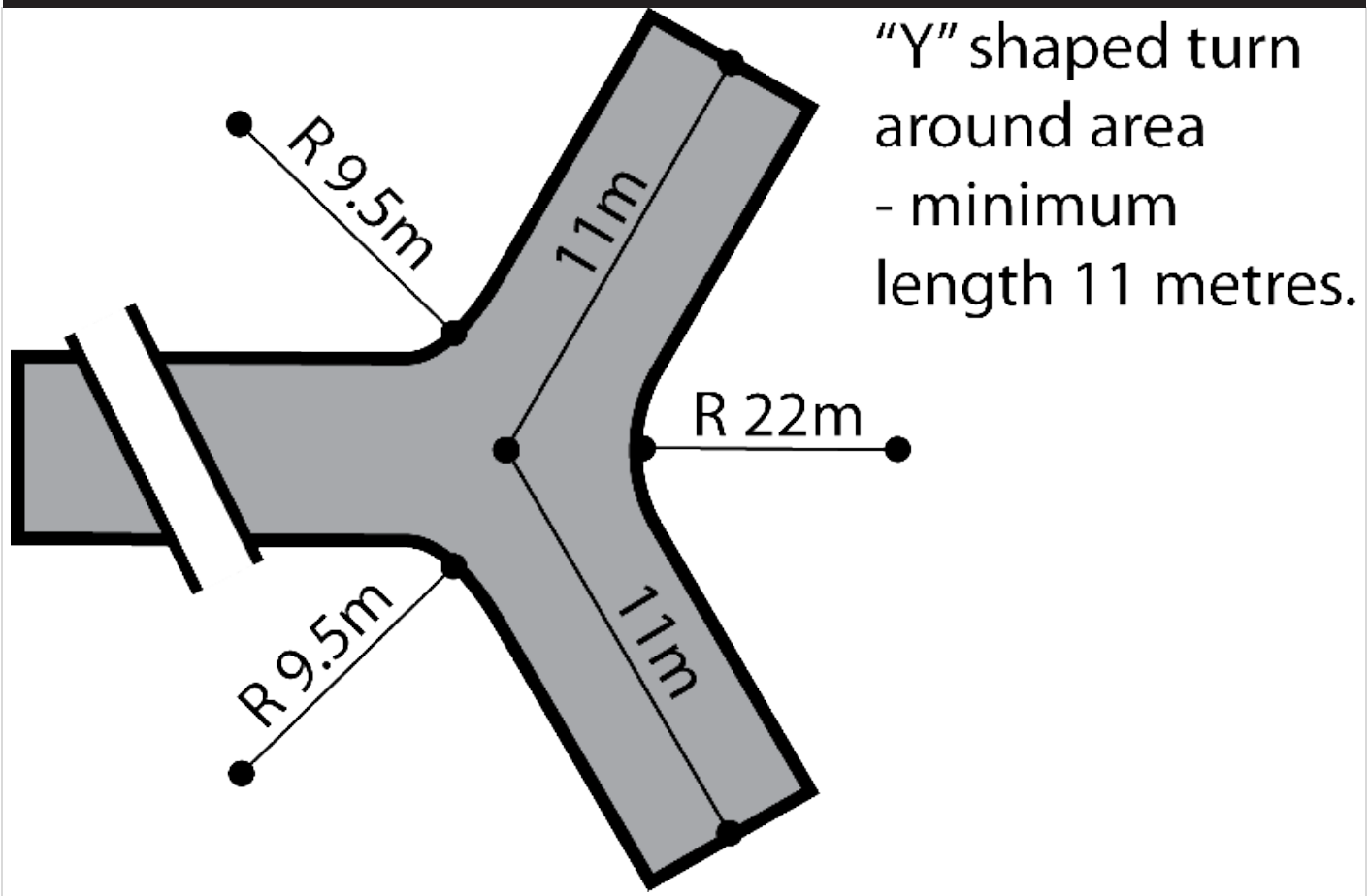
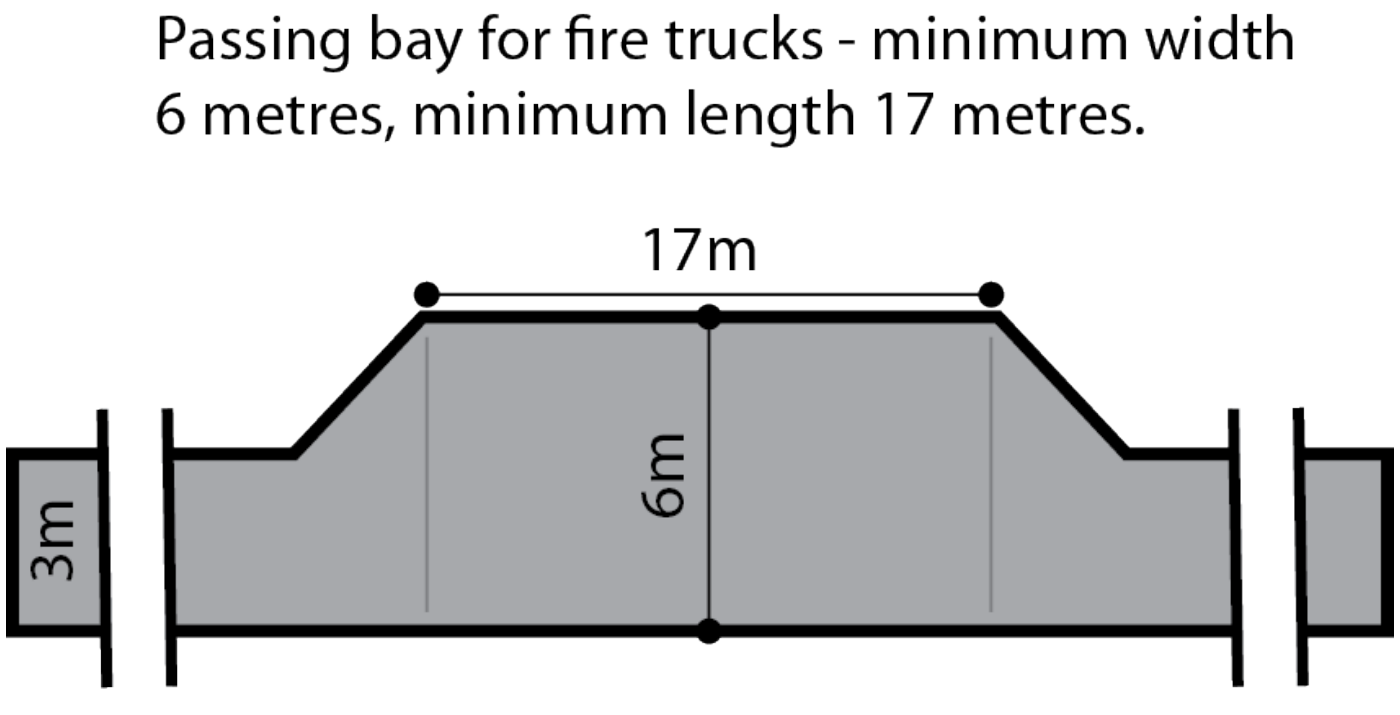


Figure 5 - Driveway Passing Bays



Hazards (Flooding - Evidence Required) Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development adopts a precautionary approach to mitigate potential impacts on people, property, infrastructure and the environment from potential flood risk through the appropriate siting and design of development.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Flood Resilience	
PO 1.1 Development is sited, designed and constructed to minimise the risk of entry of potential floodwaters where the entry of flood waters is likely to result in undue damage to or compromise ongoing activities within buildings.	DTS/DPF 1.1 Habitable buildings, commercial and industrial buildings, and buildings used for animal keeping incorporate a finished floor level at least 300mm above: (a) the highest point of top of kerb of the primary street or (b) the highest point of natural ground level at the primary street boundary where there is no kerb
Environmental Protection	
PO 2.1 Buildings and structures used either partly or wholly to contain or store hazardous materials are designed to prevent spills or leaks leaving the confines of the building.	DTS/DPF 2.1 Development does not involve the storage of hazardous materials.

Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
None	None	None	None

Limited Land Division Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	The long term use of land for primary production is maintained by minimising fragmentation through division of land.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
General	
PO 1.1 Land division does not result in the creation of an additional allotment.	DTS/DPF 1.1 No additional allotments are created.
PO 1.2 Land division involving boundary realignments occurs only where the number of resulting allotments with a site area less than that specified	DTS/DPF 1.2 None are applicable.

in the relevant Zone is not greater than the number that existed prior to the realignment.	

Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
None	None	None	None

Mount Lofty Ranges Water Supply Catchment (Area 1) Overlay

Assessment Provisions (AP)

Performance Outcomes (PO) and Deemed to Satisfy (DTS) / Designated Performance Feature (DPF) Criteria

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Wastewater	
DTS/DPF 2.4 All components of an effluent disposal area are: (a) set back 50 metres or more from a watercourse (b) set back 100 metres or more from a public water supply reservoir (c) located on land with a slope no greater than 1-in-5 (20%) (d) located on land with 1.2m or more depth to bedrock or a seasonal or permanent water table (e) above the 10% AEP flood level.	Stormwater
DTS/DPF 3.4 Development includes: (a) rainwater tanks with a minimum capacity of 1,000L connected to carports, verandahs and outbuildings or (b) rainwater tanks with a minimum capacity of 4,500L connected to agricultural buildings exceeding 100m^2.	DTS/DPF 3.5 Dwelling additions are connected to a rainwater tank with a minimum capacity of 1,000L.
DTS/DPF 3.6 Shops and tourist accommodation satisfy all the following: (a) are located 50m or more from watercourses, wetlands, land prone to waterlogging and bores (b) are located 100m or more from public water supply reservoirs and diversion weirs (c) are located on land with a slope not exceeding 20% (d) includes buildings connected to rainwater tanks with a minimum capacity of 1,000L (e) includes swales that divert clean stormwater away from areas where it could be polluted.	DTS/DPF 3.9 Excavation and/or filling satisfy all the following: (a) is located 50m or more from watercourses (b) is located 100m or more from public water supply reservoirs and diversion weirs (c) does not involve excavation exceeding a vertical height of 0.75m (d) does not involve filling exceeding a vertical height of 0.75m (e) does not involve a total combined excavation and filling vertical height of 1.5m.

Mount Lofty Ranges Water Supply Catchment (Area 2) Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Safeguard Greater Adelaide's public water supply by ensuring development has a neutral or beneficial effect on the quality of water harvested from secondary reservoirs or diversion weir catchments from the Mount Lofty Ranges.

Performance Outcomes (PO) and Deemed to Satisfy (DTS) / Designated Performance Feature (DPF) Criteria

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Water Quality	
PO 1.1 Development results in a neutral or beneficial effect on the quality of water draining from the site to maintain and enhance the role of the catchment as a water supply.	DTS/DPF 1.1 None are applicable.
PO 1.2 Development does not include land uses that have the potential to cause adverse impacts on the quality of water draining into secondary public water supply reservoirs and weirs.	DTS/DPF 1.2 Development does not involve any one or combination of the following: (a) landfill (b) special industry.
Wastewater	
PO 2.1 Development that generates human wastewater, including alterations and additions, are established at an intensity and in a manner to minimise potential adverse impact on water quality within secondary reservoir and weir catchment areas.	DTS/DPF 2.1 Development including alterations and additions, in combination with existing built form and activities within an allotment: (a) do not generate a combined total of more than 1500 litres of wastewater per day and (b) will be connected to the same on-site wastewater system that is compliant with relevant South Australian standards or is otherwise connected to a sewer or community wastewater management system.
PO 2.2 Dairy development is of a scale and design that will avoid adverse water quality impacts.	DTS/DPF 2.2 Dairy development satisfies all of the following: (a) is located at least 100 metres from any watercourse, dam, bore or well (b) is connected to a wastewater management system that is located 200 metres from any watercourse, dam, bore or well and is designed and constructed to avoid leakage to groundwater or overflow under extreme rainfall conditions (c) treated wastewater irrigation areas: (i) have a slope of less than 1-in-5 (20 percent) (ii) are greater than 100 metres from any watercourse, dam, bore or well are suitable to provide for seasonal wastewater irrigation without causing pollution of surface or groundwater.
PO 2.3 Development that generates trade or industrial wastewater is designed to ensure wastewater disposal avoids adverse impacts on the quality of water draining into secondary public water supply reservoirs and weirs.	DTS/DPF 2.3 Development that generates trade or industrial wastewater is connected to:

	(a) a sewer or community wastewater management system with sufficient hydraulic and treatment capacity to accept the inflow or (b) an on-site wastewater holding tank which has storage capacity of more than four days total flow during peak operations and is contained within an impervious, bunded area with a total liquid holding capacity of more than 120 percent of the total holding tank capacity, prior to transporting for off-site disposal.
PO 2.4 Wastewater management systems result in a neutral or beneficial effect on the quality of water draining from the site.	DTS/DPF 2.4 Development results in: (a) a building or land use that is currently connected to an existing on-site wastewater system that is non-compliant with relevant South Australian standards being connected to a new or upgraded system that complies with such standards or (b) an existing on-site wastewater system being decommissioned and wastewater being disposed of to a sewer or community wastewater management system that complies with relevant South Australian standards.
PO 2.5 Surface and groundwater protected from wastewater discharge pollution.	DTS/DPF 2.5 All components of an effluent disposal area are: (a) setback 50 metres or more from a watercourse (b) setback 100 metres or more from a public water supply reservoir (c) located on land with a slope no greater than 1-in-5 (20%) (d) located on land with 1.2m or more depth to bedrock or a seasonal or permanent water table (e) above the 10% AEP flood level.
Stormwater	
PO 3.1 Post-development peak stormwater discharge quantities and rates do not exceed pre-development quantities and rates to maintain water quality leaving the site.	DTS/DPF 3.1 None are applicable.
PO 3.2 Stormwater run-off from areas not likely to be subject to pollution diverted away from areas that could cause pollution.	DTS/DPF 3.2 None are applicable.
PO 3.3 Polluted stormwater is treated prior to discharge from the site.	DTS/DPF 3.3 None are applicable.
PO 3.4 Stormwater from carports, verandahs, outbuildings and agricultural buildings captured to protect water quality.	DTS/DPF 3.4 Development includes: (a) rainwater tanks with a minimum capacity of 1,000L connected to carports, verandahs and outbuildings or (b) rainwater tanks with a minimum capacity of 4,500L connected to agricultural buildings exceeding 100m^2.
PO 3.5 Stormwater from dwelling additions captured to protect water quality.	DTS/DPF 3.5 Dwelling additions are connected to a rainwater tank with a minimum capacity of 1,000L.
PO 3.6 Stormwater from shops and tourist accommodation is managed to protect water quality.	DTS/DPF 3.6 Shops and tourist accommodation satisfy all the following: (a) are located 50m or more from watercourses, wetlands, land prone to waterlogging and bores

	(b) are located 100m or more from public water supply reservoirs and diversion weirs (c) are located on land with a slope not exceeding 20% (d) includes buildings connected to rainwater tanks with a minimum capacity of 1,000L (e) includes swales that divert clean stormwater away from areas where it could be polluted.
PO 3.7 Stormwater from horse keeping and low intensity animal husbandry is managed to protect water quality.	DTS/DPF 3.7 Horse keeping and low intensity animal husbandry satisfy all the following: (a) is located 50m or more from watercourses, wetlands, land prone to waterlogging and bores (b) is located on land with a slope not exceeding 10% (c) includes stables, shelters or other roofed structures connected to rainwater tanks with a minimum capacity of 1,000L (d) includes swales that divert clean stormwater away from areas (including yards, manure storage areas, and watering points) within which it could be polluted.
PO 3.8 Stormwater from horticulture is managed to protect water quality.	DTS/DPF 3.8 Horticulture satisfies all the following: (a) is located 50m or more from watercourses, wetlands, land prone to waterlogging and bores (b) is located 100m or more from public water supply reservoirs and diversion weirs (c) is located on land with a slope not exceeding 10% (d) includes swales or other structures that divert clean stormwater away from areas (including plant growing areas, chemical storage areas and plant waste storage areas) within which it could be polluted.
PO 3.9 Stormwater from excavated and filled areas is managed to protect water quality.	DTS/DPF 3.9 Excavation and/or filling satisfy all the following: (a) is located 50m or more from watercourses (b) is located 100m or more from public water supply reservoirs and diversion weirs (c) does not involve excavation exceeding a vertical height of 0.75m (d) does not involve filling exceeding a vertical height of 0.75m (e) does not involve a total combined excavation and filling vertical height of 1.5m.
Landscapes and Natural Features	
PO 4.1 Development minimises the need to modify landscapes and natural features.	DTS/DPF 4.1 None are applicable.
Land Division	
PO 5.1 Land division does not result in an increased risk of pollution to surface or underground water.	DTS/DPF 5.1 Land division does not create additional allotments and satisfies (a) and/or (b): (a) is for realignment of allotment boundaries to correct an anomaly in the placement of those boundaries with respect to the location of existing buildings or structures or (b) is for realignment of allotment boundaries in order to improve management of the land for primary production and/or conservation of natural features.

PO 5.2 Realignment of allotment boundaries does not create development potential for a dwelling and associated onsite wastewater management system where no such potential currently exists.	DTS/DPF 5.2 None are applicable.

Procedural Matters (PM)

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
Any of the following classes of development that are not connected (or not proposed to be connected) to a community wastewater management system or sewerage infrastructure: (a) land division creating one or more additional allotments, either partly or wholly within the area of the overlay (b) function venue with more than 75 seats for customer dining purposes (c) restaurant with more than 40 seats for customer dining purposes (d) restaurant with more than 30 seats for customer dining purposes in association with a cellar door (e) dwelling where a habitable dwelling or tourist accommodation or workers' accommodation already exists on the same allotment (including where a valid planning authorisation exists to erect a dwelling or tourist accommodation or workers' accommodation on the same allotment), except where the existing habitable dwelling or tourist accommodation or workers' accommodation on the same allotment is proposed to be demolished and the existing on-site wastewater system is proposed to be decommissioned (f) tourist accommodation where a habitable dwelling or tourist accommodation or workers' accommodation already exists on the same allotment (including where a valid planning authorisation exists to erect a habitable dwelling or tourist accommodation or workers' accommodation on the same allotment), except where the existing habitable dwelling or tourist accommodation or workers' accommodation on the same allotment is proposed to be demolished and the existing on-site wastewater system is proposed to be decommissioned (g) workers' accommodation where a habitable dwelling or tourist accommodation or workers' accommodation already exists on the same allotment (including where a valid planning authorisation exists to erect a habitable dwelling or tourist accommodation or workers' accommodation on the same allotment), except where the existing habitable dwelling or tourist accommodation or workers' accommodation on the same allotment is proposed to be demolished and the existing on-site wastewater system is proposed to be decommissioned	Environment Protection Authority.	To provide expert technical assessment and direction to the relevant authority on whether a proposed development will have a neutral or beneficial impact on water quality.	Development of a class to which Schedule 9 clause 3 item 9 of the Planning, Development and Infrastructure (General) Regulations 2017 applies.

(h) any other development that generates human wastewater from a peak loading capacity of more than 40 persons (or more than 6,000 litres/day)			
Composting works (excluding a prescribed approved activity) - being a depot, facility or works with the capacity to treat, during a 12 month period more than 200 tonnes of organic waste or matter (EPA Licence)			
Wastewater treatment works - being sewage treatment works, a community wastewater management system, winery wastewater treatment works or any other wastewater treatment works with the capacity to treat, during a 12 month period more than 2.5 ML of wastewater (EPA Licence required at more than 5ML)			
Feedlots - being carrying on an operation for holding in confined yard or area and feeding principally by mechanical means or by hand not less than an average of 200 cattle (EPA Licence) or 1,600 sheep or goats per day over any period of 12 months, but excluding any such operation carried on at an abattoir, slaughterhouse or saleyard or for the purpose only of drought or other emergency feeding			
Piggeries - being the conduct of a piggery (being premises having confined or roofed structures for keeping pigs) with a capacity of 130 or more standard pig units (EPA Licence required at 650 or more standard pig units)			
Dairies - carrying on of a dairy with a total processing capacity exceeding 100 milking animals at any one time.			

Native Vegetation Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

	Desired Outcome
DO 1	Areas of native vegetation are protected, retained and restored in order to sustain biodiversity, threatened species and vegetation communities, fauna habitat, ecosystem services, carbon storage and amenity values.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Environmental Protection	
PO 1.1 Development avoids, or where it cannot be practically avoided, minimises the clearance of native vegetation taking into account the	DTS/DPF 1.1 An application is accompanied by:

siting of buildings, access points, bushfire protection measures and building maintenance.	(a) a declaration stating that the proposal will not, or would not, involve clearance of native vegetation under the Native Vegetation Act 1991, including any clearance that may occur: (i) in connection with a relevant access point and / or driveway (ii) within 10m of a building (other than a residential building or tourist accommodation) (iii) within 20m of a dwelling or addition to an existing dwelling for fire prevention and control (iv) within 50m of residential or tourist accommodation in connection with a requirement under a relevant overlay to establish an asset protection zone in a bushfire prone area or (b) a report prepared in accordance with Regulation 18(2)(a) of the Native Vegetation Regulations 2017 that establishes that the clearance is categorised as 'Level 1 clearance'.
PO 1.2 Native vegetation clearance in association with development avoids the following: (a) significant wildlife habitat and movement corridors (b) rare, vulnerable or endangered plants species (c) native vegetation that is significant because it is located in an area which has been extensively cleared (d) native vegetation that is growing in, or in association with, a wetland environment.	DTS/DPF 1.2 None are applicable.
PO 1.3 Intensive animal husbandry, commercial forestry and agricultural activities are sited, set back and designed to minimise impacts on native vegetation, including impacts on native vegetation in an adjacent State Significant Native Vegetation Area, from: (a) in the case of commercial forestry, the spread of fires from a plantation (b) the spread of pest plants and phytophthora (c) the spread of non-indigenous plants species (d) excessive nutrient loading of the soil or loading arising from surface water runoff (e) soil compaction (f) chemical spray drift.	DTS/DPF 1.3 Development within 500 metres of a boundary of a State Significant Native Vegetation Area does not involve any of the following: (a) horticulture (b) intensive animal husbandry (c) dairy (d) commercial forestry (e) aquaculture.
PO 1.4 Development restores and enhances biodiversity and habitat values through revegetation using locally indigenous plant species.	DTS/DPF 1.4 None are applicable.
Land division	
PO 2.1 Land division does not result in the fragmentation of land containing native vegetation, or necessitate the clearance of native vegetation, unless such clearance is considered minor, taking into account the location of allotment boundaries, access ways, fire breaks, boundary fencing and potential building siting or the like.	DTS/DPF 2.1 Land division where: (a) an application is accompanied by one of the following: (i) a declaration stating that none of the allotments in the proposed plan of division contain native vegetation under the *Native Vegetation Act 1991* (ii) a declaration stating that no native vegetation clearance under the *Native Vegetation Act 1991* will be required as a result of the division of land (iii) a report prepared in accordance with Regulation 18(2)(a) of the Native Vegetation Regulations 2017 that establishes that the vegetation to be cleared is categorised as 'Level 1 clearance' or

	(b) an application for land division which is being considered concurrently with a proposal to develop each allotment which will satisfy, or would satisfy, the requirements of DTS/DPF 1.1, including any clearance that may occur or (c) the division is to support a Heritage Agreement under the Native Vegetation Act 1991 or the *Heritage Places Act 1993*.

Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
Development that is the subject of a report prepared in accordance with Regulation 18(2)(a) of the *Native Vegetation Regulations 2017* that categorises the clearance, or potential clearance, as 'Level 3 clearance' or 'Level 4 clearance'.	Native Vegetation Council	To provide expert assessment and direction to the relevant authority on the potential impacts of development on native vegetation.	Development of a class to which Schedule 9 clause 3 item 11 of the Planning, Development and Infrastructure (General) Regulations 2017 applies.

Prescribed Water Resources Area Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

	Desired Outcome
DO 1	Sustainable water use in prescribed water resources areas maintains the health and natural flow paths of surface water, watercourses and wells.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 All development, but in particular development involving any of the following: (a) horticulture (b) activities requiring irrigation (c) aquaculture (d) industry (e) intensive animal husbandry (f) commercial forestry	DTS/DPF 1.1 Development satisfies either of the following: (a) the applicant has a current water licence in which sufficient spare capacity exists to accommodate the water needs of the proposed use or (b) the proposal does not involve the taking of water for which a licence would be required under the *Landscape South Australia Act 2019*.

has a lawful, sustainable and reliable water supply that does not place undue strain on water resources in prescribed water resource areas.	
PO 1.2 Development comprising the erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert surface water flowing over land is undertaken in a manner that maintains the quality and quantity of flows required to meet the needs of the environment as well as downstream users.	DTS/DPF 1.2 None are applicable.

Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
Development that comprises the erection, construction, modification, enlargement or removal of a dam, wall or other structure that will collect or divert, or collects or diverts surface water flowing over land.	Relevant authority under the *Landscape South Australia Act 2019* that would, if it were not for the operation of section 106(1)(e) of that Act, have the authority under that Act to grant or refuse a permit to undertake the subject development.	To provide expert assessment and direction to the relevant authority on potential impacts from development on the health, sustainability and/or natural flow paths of water resources in accordance with the provisions of the relevant water allocation plan or regional landscape plan or equivalent.	Development of a class to which Schedule 9 clause 3 item 12 of the Planning, Development and Infrastructure (General) Regulations 2017 applies.
Any of the following classes of development that require or may require water to be taken in addition to any allocation that has already been granted under the *Landscape South Australia Act 2019*: (a) horticulture (b) activities requiring irrigation (c) aquaculture (d) industry (e) intensive animal husbandry (f) commercial forestry	The Chief Executive of the Department of the Minister responsible for the administration of the *Landscape South Australia Act 2019.*	To provide expert technical assessment and direction to the relevant authority on the taking of water to ensure development is undertaken sustainably and maintains the health and natural flow paths of water resources.	Development of a class to which Schedule 9 clause 3 item 13 of the Planning, Development and Infrastructure (General) Regulations 2017 applies.
Commercial forestry that requires a forest water licence under Part 8 Division 6 of the *Landscape South Australia Act 2019.*			

Water Resources Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Protection of the quality of surface waters considering adverse water quality impacts associated with projected reductions in

	rainfall and warmer air temperatures as a result of climate change.
DO 2	Maintain the conveyance function and natural flow paths of watercourses to assist in the management of flood waters and stormwater runoff.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Water Catchment	
PO 1.1 Watercourses and their beds, banks, wetlands and floodplains (1% AEP flood extent) are not damaged or modified and are retained in their natural state, except where modification is required for essential access or maintenance purposes.	DTS/DPF 1.1 None are applicable.
PO 1.2 Development avoids interfering with the existing hydrology or water regime of swamps and wetlands other than to improve the existing conditions to enhance environmental values.	DTS/DPF 1.2 None are applicable.
PO 1.3 Wetlands and low-lying areas providing habitat for native flora and fauna are not drained, except temporarily for essential management purposes to enhance environmental values.	DTS/DPF 1.3 None are applicable.
PO 1.4 Watercourses, areas of remnant native vegetation, or areas prone to erosion that are capable of natural regeneration are fenced off to limit stock access.	DTS/DPF 1.4 None are applicable.
PO 1.5 Development that increases surface water run-off includes a suitably sized strip of vegetated land on each side of a watercourse to filter runoff to: (a) reduce the impacts on native aquatic ecosystems (b) minimise soil loss eroding into the watercourse.	DTS/DPF 1.5 A strip of land 20m or more wide measured from the top of existing banks on each side of the watercourse is free from development, livestock use and revegetated with locally indigenous vegetation.
PO 1.6 Development resulting in the depositing or placing of an object or solid material in a watercourse or lake occurs only where it involves any of the following: (a) the construction of an erosion control structure (b) devices or structures used to extract or regulate water flowing in a watercourse (c) devices used for scientific purposes (d) the rehabilitation of watercourses.	DTS/DPF 1.6 None are applicable.
PO 1.7 Watercourses, floodplains (1% AEP flood extent) and wetlands protected and enhanced by retaining and protecting existing native vegetation.	DTS/DPF 1.7 None are applicable.
PO 1.8 Watercourses, floodplains (1% AEP flood extent) and wetlands are protected and enhanced by stabilising watercourse banks and reducing sediments and nutrients entering the watercourse.	DTS/DPF 1.8 None are applicable.
PO 1.9 Dams, water tanks and diversion drains are located and constructed to	DTS/DPF 1.9 None are applicable.

maintain the quality and quantity of flows required to meet environmental and downstream needs.	

Procedural Matters (PM) - Referrals

The following table identifies classes of development / activities that require referral in this Overlay and the applicable referral body. It sets out the purpose of the referral as well as the relevant statutory reference from Schedule 9 of the Planning, Development and Infrastructure (General) Regulations 2017.

Class of Development / Activity	Referral Body	Purpose of Referral	Statutory Reference
None	None	None	None

Part 4 - General Development Policies

Advertisements

Assessment Provisions (AP)

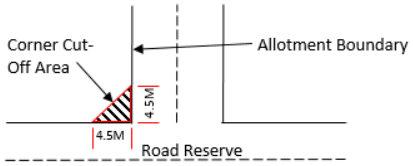
Desired Outcome (DO)

	Desired Outcome
DO 1	Advertisements and advertising hoardings are appropriate to context, efficient and effective in communicating with the public, limited in number to avoid clutter, and do not create hazard.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Appearance	
PO 1.1 Advertisements are compatible and integrated with the design of the building and/or land they are located on.	DTS/DPF 1.1 Advertisements attached to a building satisfy all of the following: (a) are not located in a Neighbourhood-type zone (b) where they are flush with a wall: (i) if located at canopy level, are in the form of a fascia sign (ii) if located above canopy level: A. do not have any part rising above parapet height B. are not attached to the roof of the building (c) where they are not flush with a wall: (i) if attached to a verandah, no part of the advertisement protrudes beyond the outer limits of the verandah structure (ii) if attached to a two-storey building: A. has no part located above the finished floor level of the second storey of the building

	B. does not protrude beyond the outer limits of any verandah structure below C. does not have a sign face that exceeds 1m2 per side. (d) if located below canopy level, are flush with a wall (e) if located at canopy level, are in the form of a fascia sign (f) if located above a canopy: (i) are flush with a wall (ii) do not have any part rising above parapet height (iii) are not attached to the roof of the building. (g) if attached to a verandah, no part of the advertisement protrudes beyond the outer limits of the verandah structure (h) if attached to a two-storey building, have no part located above the finished floor level of the second storey of the building (i) where they are flush with a wall, do not, in combination with any other existing sign, cover more than 15% of the building facade to which they are attached.
PO 1.2 Advertising hoardings do not disfigure the appearance of the land upon which they are situated or the character of the locality.	DTS/DPF 1.2 Where development comprises an advertising hoarding, the supporting structure is: (a) concealed by the associated advertisement and decorative detailing or (b) not visible from an adjacent public street or thoroughfare, other than a support structure in the form of a single or dual post design.
PO 1.3 Advertising does not encroach on public land or the land of an adjacent allotment.	DTS/DPF 1.3 Advertisements and/or advertising hoardings are contained within the boundaries of the site.
PO 1.4 Where possible, advertisements on public land are integrated with existing structures and infrastructure.	DTS/DPF 1.4 Advertisements on public land that meet at least one of the following: (a) achieves Advertisements DTS/DPF 1.1 (b) are integrated with a bus shelter.
PO 1.5 Advertisements and/or advertising hoardings are of a scale and size appropriate to the character of the locality.	DTS/DPF 1.5 None are applicable.
Proliferation of Advertisements	
PO 2.1 Proliferation of advertisements is minimised to avoid visual clutter and untidiness.	DTS/DPF 2.1 No more than one freestanding advertisement is displayed per occupancy.
PO 2.2 Multiple business or activity advertisements are co-located and coordinated to avoid visual clutter and untidiness.	DTS/DPF 2.2 Advertising of a multiple business or activity complex is located on a single advertisement fixture or structure.
PO 2.3 Proliferation of advertisements attached to buildings is minimised to avoid visual clutter and untidiness.	DTS/DPF 2.3 Advertisements satisfy all of the following: (a) are attached to a building (b) other than in a Neighbourhood-type zone, where they are flush with a wall, cover no more than 15% of the building facade to which they are attached (c) do not result in more than one sign per occupancy that is not flush with a wall.

Advertising Content	
PO 3.1 Advertisements are limited to information relating to the lawful use of land they are located on to assist in the ready identification of the activity or activities on the land and avoid unrelated content that contributes to visual clutter and untidiness.	DTS/DPF 3.1 Advertisements contain information limited to a lawful existing or proposed activity or activities on the same site as the advertisement.
Amenity Impacts	
PO 4.1 Light spill from advertisement illumination does not unreasonably compromise the amenity of sensitive receivers.	DTS/DPF 4.1 Advertisements do not incorporate any illumination.
Safety	
PO 5.1 Advertisements and/or advertising hoardings erected on a verandah or projecting from a building wall are designed and located to allow for safe and convenient pedestrian access.	DTS/DPF 5.1 Advertisements have a minimum clearance of 2.5m between the top of the footpath and base of the underside of the sign.
PO 5.2 Advertisements and/or advertising hoardings do not distract or create a hazard to drivers through excessive illumination.	DTS/DPF 5.2 No advertisement illumination is proposed.
PO 5.3 Advertisements and/or advertising hoardings do not create a hazard to drivers by: (a) being liable to interpretation by drivers as an official traffic sign or signal (b) obscuring or impairing drivers' view of official traffic signs or signals (c) obscuring or impairing drivers' view of features of a road that are potentially hazardous (such as junctions, bends, changes in width and traffic control devices) or other road or rail vehicles at/or approaching level crossings.	DTS/DPF 5.3 Advertisements satisfy all of the following: (a) are not located in a public road or rail reserve (b) are located wholly outside the land shown as 'Corner Cut-Off Area' in the following diagram 
PO 5.4 Advertisements and/or advertising hoardings do not create a hazard by distracting drivers from the primary driving task at a location where the demands on driver concentration are high.	DTS/DPF 5.4 Advertisements and/or advertising hoardings are not located along or adjacent to a road having a speed limit of 80km/h or more.
PO 5.5 Advertisements and/or advertising hoardings provide sufficient clearance from the road carriageway to allow for safe and convenient movement by all road users.	DTS/DPF 5.5 Where the advertisement or advertising hoarding is: (a) on a kerbed road with a speed zone of 60km/h or less, the advertisement or advertising hoarding is located at least 0.6m from the roadside edge of the kerb (b) on an unkerbed road with a speed zone of 60km/h or less, the advertisement or advertising hoarding is located at least 5.5m from the edge of the seal (c) on any other kerbed or unkerbed road, the advertisement or advertising hoarding is located a minimum of the following distance from the roadside edge of the kerb or the seal: (a) 110 km/h road - 14m (b) 100 km/h road - 13m (c) 90 km/h road - 10m (d) 70 or 80 km/h road - 8.5m.
PO 5.6	DTS/DPF 5.6

Advertising near signalised intersections does not cause unreasonable distraction to road users through illumination, flashing lights, or moving or changing displays or messages.	Advertising: (a) is not illuminated (b) does not incorporate a moving or changing display or message (c) does not incorporate a flashing light(s).

Animal Keeping and Horse Keeping

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Animals are kept at a density that is not beyond the carrying capacity of the land and in a manner that minimises their adverse effects on the environment, local amenity and surrounding development.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Siting and Design	
PO 1.1 Animal keeping, horse keeping and associated activities do not create adverse impacts on the environment or the amenity of the locality.	DTS/DPF 1.1 None are applicable.
PO 1.2 Animal keeping and horse keeping is located and managed to minimise the potential transmission of disease to other operations where animals are kept.	DTS/DPF 1.2 None are applicable.
Horse Keeping	
PO 2.1 Water from stable wash-down areas is directed to appropriate absorption areas and/or drainage pits to minimise pollution of land and water.	DTS/DPF 2.1 None are applicable.
PO 2.2 Stables, horse shelters or associated yards are sited appropriate distances away from sensitive receivers and/or allotments in other ownership to avoid adverse impacts from dust, erosion and odour.	DTS/DPF 2.2 Stables, horse shelters and associated yards are sited in accordance with all of the following: (a) 30m or more from any sensitive receivers (existing or approved) on land in other ownership (b) where an adjacent allotment is vacant and in other ownership, 30m or more from the boundary of that allotment.
PO 2.3 All areas accessible to horses are separated from septic tank effluent disposal areas to protect the integrity of that system. Stable flooring is constructed with an impervious material to facilitate regular cleaning.	DTS/DPF 2.3 Septic tank effluent disposal areas are enclosed with a horse-proof barrier such as a fence to exclude horses from this area.
PO 2.4 To minimise environmental harm and adverse impacts on water resources, stables, horse shelters and associated yards are appropriately set back from a watercourse.	DTS/DPF 2.4 Stables, horse shelters and associated yards are set back 50m or more from a watercourse.

PO 2.5 Stables, horse shelters and associated yards are located on slopes that are stable to minimise the risk of soil erosion and water runoff.	DTS/DPF 2.5 Stables, horse shelters and associated yards are not located on land with a slope greater than 10% (1-in-10).
Kennels	
PO 3.1 Kennel flooring is constructed with an impervious material to facilitate regular cleaning.	DTS/DPF 3.1 The floors of kennels satisfy all of the following: (a) are constructed of impervious concrete (b) are designed to be self-draining when washed down.
PO 3.2 Kennels and exercise yards are designed and sited to minimise noise nuisance to neighbours through measures such as: (a) adopting appropriate separation distances (b) orientating openings away from sensitive receivers.	DTS/DPF 3.2 Kennels are sited 500m or more from the nearest sensitive receiver on land in other ownership.
PO 3.3 Dogs are regularly observed and managed to minimise nuisance impact on adjoining sensitive receivers from animal behaviour.	DTS/DPF 3.3 Kennels are sited in association with a permanent dwelling on the land.
Wastes	
PO 4.1 Storage of manure, used litter and other wastes (other than wastewater lagoons) is designed, constructed and managed to minimise attracting and harbouring vermin.	DTS/DPF 4.1 None are applicable.
PO 4.2 Facilities for the storage of manure, used litter and other wastes (other than wastewater lagoons) are located to minimise the potential for polluting water resources.	DTS/DPF 4.2 Waste storage facilities (other than wastewater lagoons) are located outside the 1% AEP flood event areas.

Aquaculture

Assessment Provisions (AP)

Desired Outcome (DO)

	Desired Outcome
DO 1	Aquaculture facilities are developed in an ecologically, economically and socially sustainable manner to support an equitable sharing of marine, coastal and inland resources and mitigate conflict with other water-based and land-based uses.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land-based Aquaculture	
PO 1.1 Land-based aquaculture and associated components are sited and designed to mitigate adverse impacts on nearby sensitive receivers.	DTS/DPF 1.1 Land-based aquaculture and associated components are located to satisfy all of the following: (a) 200m or more from a sensitive receiver in other ownership

	(b) 500m or more from the boundary of a zone primarily intended to accommodate sensitive receivers or The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 1.2 Land-based aquaculture and associated components are sited and designed to prevent surface flows from entering ponds in a 1% AEP sea flood level event.	DTS/DPF 1.2 None are applicable.
PO 1.3 Land-based aquaculture and associated components are sited and designed to prevent pond leakage that would pollute groundwater.	DTS/DPF 1.3 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 1.4 Land-based aquaculture and associated components are sited and designed to prevent farmed species escaping and entering into any waters.	DTS/DPF 1.4 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 1.5 Land-based aquaculture and associated components, including intake and discharge pipes, are designed to minimise the need to traverse sensitive areas to minimise impact on the natural environment.	DTS/DPF 1.5 None are applicable.
PO 1.6 Pipe inlets and outlets associated with land-based aquaculture are sited and designed to minimise the risk of disease transmission.	DTS/DPF 1.6 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 1.7 Storage areas associated with aquaculture activity are integrated with the use of the land and sited and designed to minimise their visual impact on the surrounding environment.	DTS/DPF 1.7 None are applicable.
Marine Based Aquaculture	
PO 2.1 Marine aquaculture is sited and designed to minimise its adverse impacts on sensitive ecological areas including: (a) creeks and estuaries (b) wetlands (c) significant seagrass and mangrove communities (d) marine habitats and ecosystems.	DTS/DPF 2.1 None are applicable.
PO 2.2 Marine aquaculture is sited in areas with adequate water current to disperse sediments and dissolve particulate wastes to prevent the build-up of waste that may cause environmental harm.	DTS/DPF 2.2 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 2.3 Marine aquaculture is designed to not involve discharge of human waste on the site, on any adjacent land or into nearby waters.	DTS/DPF 2.3 The development does not include toilet facilities located over water.
PO 2.4 Marine aquaculture (other than inter-tidal aquaculture) is located an appropriate distance seaward of the high water mark.	DTS/DPF 2.4 Marine aquaculture development is located 100m or more seaward of the high water mark or The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.

PO 2.5 Marine aquaculture is sited and designed to not obstruct or interfere with: (a) areas of high public use (b) areas, including beaches, used for recreational activities such as swimming, fishing, skiing, sailing and other water sports (c) areas of outstanding visual or environmental value (d) areas of high tourism value (e) areas of important regional or state economic activity, including commercial ports, wharfs and jetties (f) the operation of infrastructure facilities including inlet and outlet pipes associated with the desalination of sea water.	DTS/DPF 2.5 None are applicable.
PO 2.6 Marine aquaculture is sited and designed to minimise interference and obstruction to the natural processes of the coastal and marine environment.	DTS/DPF 2.6 None are applicable.
PO 2.7 Marine aquaculture is designed to be as unobtrusive as practicable by incorporating measures such as: (a) using feed hoppers painted in subdued colours and suspending them as close as possible to the surface of the water (b) positioning structures to protrude the minimum distance practicable above the surface of the water (c) avoiding the use of shelters and structures above cages and platforms unless necessary to exclude predators and protected species from interacting with the farming structures and/or stock inside the cages, or for safety reasons (d) positioning racks, floats and other farm structures in unobtrusive locations landward from the shoreline.	DTS/DPF 2.7 None are applicable.
PO 2.8 Access, launching and maintenance facilities utilise existing established roads, tracks, ramps and paths to or from the sea where possible to minimise environmental and amenity impacts.	DTS/DPF 2.8 The development utilises existing established roads, tracks, ramps and/or paths (as applicable) to access the sea.
PO 2.9 Access, launching and maintenance facilities are developed as common user facilities and are co-located where practicable to mitigate adverse impacts on coastal areas.	DTS/DPF 2.9 The development utilises existing established roads, tracks, ramps and/or paths (as applicable) to access the sea.
PO 2.10 Marine aquaculture is sited to minimise potential impacts on, and to protect the integrity of, reserves under the *National Parks and Wildlife Act 1972*.	DTS/DPF 2.10 Marine aquaculture is located 1000m or more seaward of the boundary of any reserve under the *National Parks and Wildlife Act 1972*.
PO 2.11 Onshore storage, cooling and processing facilities do not impair the coastline and its visual amenity by: (a) being sited, designed, landscaped and of a scale to reduce the overall bulk and appearance of buildings and complement the coastal landscape (b) making provision for appropriately sited and designed vehicular access arrangements, including using existing vehicular access arrangements as far as practicable (c) incorporating appropriate waste treatment and disposal.	DTS/DPF 2.11 The development does not include any onshore facilities in conjunction with a proposal for marine aquaculture.
Navigation and Safety	
PO 3.1	DTS/DPF 3.1

Marine aquaculture sites are suitably marked to maintain navigational safety.	The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
PO 3.2 Marine aquaculture is sited to provide adequate separation between farms for safe navigation.	DTS/DPF 3.2 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.
Environmental Management	
PO 4.1 Marine aquaculture is maintained to prevent hazards to people and wildlife, including breeding grounds and habitats of native marine mammals and terrestrial fauna, especially migratory species.	DTS/DPF 4.1 None are applicable.
PO 4.2 Marine aquaculture is designed to facilitate the relocation or removal of structures in the case of emergency such as oil spills, algal blooms and altered water flows.	DTS/DPF 4.2 None are applicable.
PO 4.3 Marine aquaculture provides for progressive or future reclamation of disturbed areas ahead of, or upon, decommissioning.	DTS/DPF 4.3 None are applicable.
PO 4.4 Aquaculture operations incorporate measures for the removal and disposal of litter, disused material, shells, debris, detritus, dead animals and animal waste to prevent pollution of waters, wetlands, or the nearby coastline.	DTS/DPF 4.4 The development is the subject of an aquaculture lease and/or licence (as applicable) granted under the *Aquaculture Act 2001*.

Beverage Production in Rural Areas

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Mitigation of potential amenity and environmental impacts of value-adding beverage production facilities such as wineries, distilleries, cideries and breweries.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Odour and Noise	
PO 1.1 Beverage production activities are designed and sited to minimise odour impacts on rural amenity.	DTS/DPF 1.1 None are applicable.
PO 1.2 Beverage production activities are designed and sited to minimise noise impacts on sensitive receivers.	DTS/DPF 1.2 None are applicable.
PO 1.3 Fermentation, distillation, manufacturing, storage, packaging and	DTS/DPF 1.3 None are applicable.

bottling activities occur within enclosed buildings to improve the visual appearance within a locality and manage noise associated with these activities.	
PO 1.4 Breweries are designed to minimise odours emitted during boiling and fermentation stages of production.	DTS/DPF 1.4 Brew kettles are fitted with a vapour condenser.
PO 1.5 Beverage production solid wastes are stored in a manner that minimises odour impacts on sensitive receivers in other ownership.	DTS/DPF 1.5 Solid waste from beverage production is collected and stored in sealed containers and removed from the site within 48 hours.
Water Quality	
PO 2.1 Beverage production wastewater management systems (including wastewater irrigation) are set back from watercourses to minimise adverse impacts on water resources.	DTS/DPF 2.1 Wastewater management systems are set back 50m or more from the banks of watercourses and bores.
PO 2.2 The storage or disposal of chemicals or hazardous substances is undertaken in a manner to prevent pollution of water resources.	DTS/DPF 2.2 None are applicable.
PO 2.3 Stormwater runoff from areas that may cause contamination due to beverage production activities (including vehicle movements and machinery operations) is drained to an onsite stormwater treatment system to manage potential environmental impacts.	DTS/DPF 2.3 None are applicable.
PO 2.4 Stormwater runoff from areas unlikely to cause contamination by beverage production and associated activities (such as roof catchments and clean hard-paved surfaces) is diverted away from beverage production areas and wastewater management systems.	DTS/DPF 2.4 None are applicable.
Wastewater Irrigation	
PO 3.1 Beverage production wastewater irrigation systems are designed and located to not contaminate soil and surface and ground water resources or damage crops.	DTS/DPF 3.1 None are applicable.
PO 3.2 Beverage production wastewater irrigation systems are designed and located to minimise impact on amenity and avoid spray drift onto adjoining land.	DTS/DPF 3.2 Beverage production wastewater is not irrigated within 50m of any dwelling in other ownership.
PO 3.3 Beverage production wastewater is not irrigated onto areas that pose an undue risk to the environment or amenity such as: (a) waterlogged areas (b) land within 50m of a creek, swamp or domestic or stock water bore (c) land subject to flooding (d) steeply sloping land (e) rocky or highly permeable soil overlaying an unconfined aquifer.	DTS/DPF 3.3 None are applicable.

Bulk Handling and Storage Facilities

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Facilities for the bulk handling and storage of agricultural, mineral, petroleum, rock, ore or other similar commodities are designed to minimise adverse impacts on transport networks, the landscape and surrounding land uses.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Siting and Design	
PO 1.1 Bulk handling and storage facilities are sited and designed to minimise risks of adverse air quality and noise impacts on sensitive receivers.	DTS/DPF 1.1 Facilities for the handling, storage and dispatch of commodities in bulk (excluding processing) meet the following minimum separation distances from sensitive receivers: (a) bulk handling of agricultural crop products, rock, ores, minerals, petroleum products or chemicals at a wharf or wharf side facility (including sea-port grain terminals), where the handling of these materials into or from vessels does not exceed 100 tonnes per day: 300m or more from residential premises not associated with the facility (b) bulk handling of agricultural crop products, rock, ores, minerals, petroleum products or chemicals to or from any commercial storage facility: 300m or more from residential premises not associated with the facility (c) bulk petroleum storage involving individual containers with a capacity up to 200 litres and a total on-site storage capacity not exceeding 1,000 cubic metres: 500m or more (d) coal handling with: a. capacity up to 1 tonne per day or a storage capacity up to 50 tonnes: 500m or more b. capacity exceeding 1 tonne per day but not exceeding 100 tonnes per day or a storage capacity exceeding 50 tonnes but not exceeding 5000 tonnes: 1000m or more.
Buffers and Landscaping	
PO 2.1 Bulk handling and storage facilities incorporate a buffer area for the establishment of dense landscaping adjacent road frontages to enhance the appearance of land and buildings from public thoroughfares.	DTS/DPF 2.1 None are applicable.
PO 2.2 Bulk handling and storage facilities incorporate landscaping to assist with screening and dust filtration.	DTS/DPF 2.2 None are applicable.
Access and Parking	
PO 3.1 Roadways and vehicle parking areas associated with bulk handling and storage facilities are designed and surfaced to control dust emissions and prevent drag out of material from the site.	DTS/DPF 3.1 Roadways and vehicle parking areas are sealed with an all-weather surface.
Slipways, Wharves and Pontoons	
PO 4.1 Slipways, wharves and pontoons used for the handling of bulk materials	DTS/DPF 4.1 None are applicable.

(such as fuel, oil, catch, bait and the like) incorporate catchment devices to avoid the release of materials into adjacent waters.	

Clearance from Overhead Powerlines

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Protection of human health and safety when undertaking development in the vicinity of overhead transmission powerlines.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 Buildings are adequately separated from aboveground powerlines to minimise potential hazard to people and property.	DTS/DPF 1.1 One of the following is satisfied: (a) a declaration is provided by or on behalf of the applicant to the effect that the proposal would not be contrary to the regulations prescribed for the purposes of section 86 of the *Electricity Act 1996* (b) there are no aboveground powerlines adjoining the site that are the subject of the proposed development.

Design

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development is: (a) contextual - by considering, recognising and carefully responding to its natural surroundings or built environment and positively contributes to the character of the immediate area (b) durable - fit for purpose, adaptable and long lasting (c) inclusive - by integrating landscape design to optimise pedestrian and cyclist usability, privacy and equitable access, and promoting the provision of quality spaces integrated with the public realm that can be used for access and recreation and help optimise security and safety both internally and within the public realm, for occupants and visitors (d) sustainable - by integrating sustainable techniques into the design and siting of development and landscaping to improve community health, urban heat, water management, environmental performance, biodiversity and local amenity and to minimise energy consumption.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
All development	
External Appearance	

PO 1.1 Buildings reinforce corners through changes in setback, articulation, materials, colour and massing (including height, width, bulk, roof form and slope).	DTS/DPF 1.1 None are applicable.
PO 1.2 Where zero or minor setbacks are desirable, development provides shelter over footpaths (in the form of verandahs, awnings, canopies and the like, with adequate lighting) to positively contribute to the walkability, comfort and safety of the public realm.	DTS/DPF 1.2 None are applicable.
PO 1.3 Building elevations facing the primary street (other than ancillary buildings) are designed and detailed to convey purpose, identify main access points and complement the streetscape.	DTS/DPF 1.3 None are applicable.
PO 1.4 Plant, exhaust and intake vents and other technical equipment is integrated into the building design to minimise visibility from the public realm and negative impacts on residential amenity by: (a) positioning plant and equipment in unobtrusive locations viewed from public roads and spaces (b) screening rooftop plant and equipment from view (c) when located on the roof of non-residential development, locating the plant and equipment as far as practicable from adjacent sensitive land uses.	DTS/DPF 1.4 Development does not incorporate any structures that protrude beyond the roofline.
PO 1.5 The negative visual impact of outdoor storage, waste management, loading and service areas is minimised by integrating them into the building design and screening them from public view (such as fencing, landscaping and built form) taking into account the form of development contemplated in the relevant zone.	DTS/DPF 1.5 None are applicable.
Safety	
PO 2.1 Development maximises opportunities for passive surveillance of the public realm by providing clear lines of sight, appropriate lighting and the use of visually permeable screening wherever practicable.	DTS/DPF 2.1 None are applicable.
PO 2.2 Development is designed to differentiate public, communal and private areas.	DTS/DPF 2.2 None are applicable.
PO 2.3 Buildings are designed with safe, perceptible and direct access from public street frontages and vehicle parking areas.	DTS/DPF 2.3 None are applicable.
PO 2.4 Development at street level is designed to maximise opportunities for passive surveillance of the adjacent public realm.	DTS/DPF 2.4 None are applicable.
PO 2.5 Common areas and entry points of buildings (such as the foyer areas of residential buildings), and non-residential land uses at street level, maximise passive surveillance from the public realm to the inside of the building at night.	DTS/DPF 2.5 None are applicable.
Landscaping	
PO 3.1	DTS/DPF 3.1

Soft landscaping and tree planting is incorporated to: (a) minimise heat absorption and reflection (b) maximise shade and shelter (c) maximise stormwater infiltration (d) enhance the appearance of land and streetscapes (e) contribute to biodiversity.	None are applicable.
PO 3.2 Soft landscaping and tree planting maximises the use of locally indigenous plant species, incorporates plant species best suited to current and future climate conditions and avoids pest plant and weed species.	DTS/DPF 3.2 None are applicable.
Environmental Performance	
PO 4.1 Buildings are sited, oriented and designed to maximise natural sunlight access and ventilation to main activity areas, habitable rooms, common areas and open spaces.	DTS/DPF 4.1 None are applicable.
PO 4.2 Buildings are sited and designed to maximise passive environmental performance and minimise energy consumption and reliance on mechanical systems, such as heating and cooling.	DTS/DPF 4.2 None are applicable.
PO 4.3 Buildings incorporate climate-responsive techniques and features such as building and window orientation, use of eaves, verandahs and shading structures, water harvesting, at ground landscaping, green walls, green roofs and photovoltaic cells.	DTS/DPF 4.3 None are applicable.
Water Sensitive Design	
PO 5.1 Development is sited and designed to maintain natural hydrological systems without negatively impacting: (a) the quantity and quality of surface water and groundwater (b) the depth and directional flow of surface water and groundwater (c) the quality and function of natural springs.	DTS/DPF 5.1 None are applicable.
On-site Waste Treatment Systems	
PO 6.1 Dedicated on-site effluent disposal areas do not include any areas to be used for, or could be reasonably foreseen to be used for, private open space, driveways or car parking.	DTS/DPF 6.1 Effluent disposal drainage areas do not: (a) encroach within an area used as private open space or result in less private open space than that specified in Design Table 1 - Private Open Space (b) use an area also used as a driveway (c) encroach within an area used for on-site car parking or result in less on-site car parking than that specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.
Carparking Appearance	
PO 7.1 Development facing the street is designed to minimise the negative impacts of any semi-basement and undercroft car parking on the streetscapes through techniques such as: (a) limiting protrusion above finished ground level	DTS/DPF 7.1 None are applicable.

(b) screening through appropriate planting, fencing and mounding (c) limiting the width of openings and integrating them into the building structure.	
PO 7.2 Vehicle parking areas are appropriately located, designed and constructed to minimise impacts on adjacent sensitive receivers through measures such as ensuring they are attractively developed and landscaped, screen fenced and the like.	DTS/DPF 7.2 None are applicable.
PO 7.3 Safe, legible, direct and accessible pedestrian connections are provided between parking areas and the development.	DTS/DPF 7.3 None are applicable.
PO 7.4 Street level vehicle parking areas incorporate tree planting to provide shade and reduce solar heat absorption and reflection.	DTS/DPF 7.4 None are applicable.
PO 7.5 Street level parking areas incorporate soft landscaping to improve visual appearance when viewed from within the site and from public places.	DTS/DPF 7.5 None are applicable.
PO 7.6 Vehicle parking areas and associated driveways are landscaped to provide shade and positively contribute to amenity.	DTS/DPF 7.6 None are applicable.
PO 7.7 Vehicle parking areas and access ways incorporate integrated stormwater management techniques such as permeable or porous surfaces, infiltration systems, drainage swales or rain gardens that integrate with soft landscaping.	DTS/DPF 7.7 None are applicable.
Earthworks and sloping land	
PO 8.1 Development, including any associated driveways and access tracks, minimises the need for earthworks to limit disturbance to natural topography.	DTS/DPF 8.1 Development does not involve any of the following: (a) excavation exceeding a vertical height of 1m (b) filling exceeding a vertical height of 1m (c) a total combined excavation and filling vertical height of 2m or more.
PO 8.2 Driveways and access tracks are designed and constructed to allow safe and convenient access on sloping land (with a gradient exceeding 1 in 8).	DTS/DPF 8.2 Driveways and access tracks on sloping land (with a gradient exceeding 1 in 8) satisfy (a) and (b): (a) do not have a gradient exceeding 25% (1-in-4) at any point along the driveway (b) are constructed with an all-weather trafficable surface.
PO 8.3 Driveways and access tracks on sloping land (with a gradient exceeding 1 in 8): (a) do not contribute to the instability of embankments and cuttings (b) provide level transition areas for the safe movement of people and goods to and from the development (c) are designed to integrate with the natural topography of the land.	DTS/DPF 8.3 None are applicable.

PO 8.4 Development on sloping land (with a gradient exceeding 1 in 8) avoids the alteration of natural drainage lines and includes on-site drainage systems to minimise erosion.	DTS/DPF 8.4 None are applicable.
PO 8.5 Development does not occur on land at risk of landslip nor increases the potential for landslip or land surface instability.	DTS/DPF 8.5 None are applicable.
Fences and Walls	
PO 9.1 Fences, walls and retaining walls are of sufficient height to maintain privacy and security without unreasonably impacting the visual amenity and adjoining land's access to sunlight or the amenity of public places.	DTS/DPF 9.1 None are applicable.
PO 9.2 Landscaping incorporated on the low side of retaining walls is visible from public roads and public open space to minimise visual impacts.	DTS/DPF 9.2 A vegetated landscaped strip 1m wide or more is provided against the low side of a retaining wall.
Overlooking / Visual Privacy (in building 3 storeys or less)	
PO 10.1 Development mitigates direct overlooking from upper level windows to habitable rooms and private open spaces of adjoining residential uses.	DTS/DPF 10.1 Upper level windows facing side or rear boundaries shared with a residential allotment/site satisfy one of the following: (a) are permanently obscured to a height of 1.5m above finished floor level and are fixed or not capable of being opened more than 200mm (b) have sill heights greater than or equal to 1.5m above finished floor level (c) incorporate screening with a maximum of 25% openings, permanently fixed no more than 500mm from the window surface and sited adjacent to any part of the window less than 1.5 m above the finished floor level.
PO 10.2 Development mitigates direct overlooking from balconies, terraces and decks to habitable rooms and private open space of adjoining residential uses.	DTS/DPF 10.2 One of the following is satisfied: (a) the longest side of the balcony or terrace will face a public road, public road reserve or public reserve that is at least 15m wide in all places faced by the balcony or terrace or (b) all sides of balconies or terraces on upper building levels are permanently obscured by screening with a maximum 25% transparency/openings fixed to a minimum height of: (i) 1.5m above finished floor level where the balcony is located at least 15 metres from the nearest habitable window of a dwelling on adjacent land or (ii) 1.7m above finished floor level in all other cases
All Residential development	
Front elevations and passive surveillance	
PO 11.1 Dwellings incorporate windows along primary street frontages to encourage passive surveillance and make a positive contribution to the streetscape.	DTS/DPF 11.1 Each dwelling with a frontage to a public street: (a) includes at least one window facing the primary street from a habitable room that has a minimum internal room dimension of 2.4m (b) has an aggregate window area of at least $2m^2$ facing the primary street.

PO 11.2 Dwellings incorporate entry doors within street frontages to address the street and provide a legible entry point for visitors.	DTS/DPF 11.2 Dwellings with a frontage to a public street have an entry door visible from the primary street boundary.
Outlook and amenity	
PO 12.1 Living rooms have an external outlook to provide a high standard of amenity for occupants.	DTS/DPF 12.1 A living room of a dwelling incorporates a window with an outlook towards the street frontage or private open space, public open space, or waterfront areas.
PO 12.2 Bedrooms are separated or shielded from active communal recreation areas, common access areas and vehicle parking areas and access ways to mitigate noise and artificial light intrusion.	DTS/DPF 12.2 None are applicable.
Ancillary Development	
PO 13.1 Residential ancillary buildings and structures are sited and designed to not detract from the streetscape or appearance of buildings on the site or neighbouring properties.	DTS/DPF 13.1 Ancillary buildings (excluding ancillary accommodation): (a) are ancillary to a dwelling erected on the same site (b) have a floor area not exceeding 60m2 (c) are not constructed, added to or altered so that any part is situated: (i) in front of any part of the building line of the dwelling to which it is ancillary or (ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads) (d) in the case of a garage or carport, the garage or carport: (i) is set back at least 5.5m from the boundary of the primary street (ii) when facing a primary street or secondary street, has a total door / opening not exceeding: A. for dwellings of single building level - 7m in width or 50% of the site frontage, whichever is the lesser B. for dwellings comprising two or more building levels at the building line fronting the same public street - 7m in width (e) if situated on a boundary (not being a boundary with a primary street or secondary street), do not exceed a length of 11.5m unless: (i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary and (ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (f) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (g) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or about the proposed wall or structure (h) have a wall height or post height not exceeding 3m above natural ground level (and not including a gable end) (i) have a roof height where no part of the roof is more than 5m above the natural ground level (j) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour

(k) retains a total area of soft landscaping in accordance with (i) or (ii), whichever is less:

(i) a total area as determined by the following table:

Dwelling site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
201-450	20%
>450	25%

(ii) the amount of existing soft landscaping prior to the development occurring.

PO 13.2

Ancillary buildings and structures do not impede on-site functional requirements such as private open space provision or car parking requirements and do not result in over-development of the site.

DTS/DPF 13.2

Ancillary buildings and structures do not result in:

(a) less private open space than specified in Design in Urban Areas Table 1 - Private Open Space

(b) less on-site car parking than specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.

PO 13.3

Fixed plant and equipment in the form of pumps and/or filtration systems for a swimming pool or spa is positioned and/or housed to not cause unreasonable noise nuisance to adjacent sensitive receivers.

DTS/DPF 13.3

The pump and/or filtration system is ancillary to a dwelling erected on the same site and is:

(a) enclosed in a solid acoustic structure that is located at least 5m from the nearest habitable room located on an adjoining allotment
or

(b) located at least 12m from the nearest habitable room located on an adjoining allotment.

PO 13.4

Buildings and structures that are ancillary to an existing non-residential use do not detract from the streetscape character, appearance of buildings on the site of the development, or the amenity of neighbouring properties.

DTS/DPF 13.4

Non-residential ancillary buildings and structures:

(a) are ancillary and subordinate to an existing non-residential use on the same site

(b) have a floor area not exceeding the following:

Allotment size	Floor area
≤500m2	60m2
>500m2	80m2

(c) are not constructed, added to or altered so that any part is situated:

(i) in front of any part of the building line of the main building to which it is ancillary
or

(ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads)

(d) in the case of a garage or carport, the garage or carport:

(i) is set back at least 5.5m from the boundary of the primary street

(e) if situated on a boundary (not being a boundary with a primary street or secondary street), do not exceed a length of 11.5m unless:

(i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary

	(ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (f) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (g) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or about the proposed wall or structure (h) have a wall height (or post height) not exceeding 3m (and not including a gable end) (i) have a roof height where no part of the roof is more than 5m above the natural ground level (j) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour.
PO 13.5 Ancillary accommodation: (a) is sited and designed to not detract from the streetscape or appearance of primary residential buildings on the site or neighbouring properties (b) is integrated within the site of the dwelling to which it is ancillary and incorporates shared utilities and shared open space.	DTS/DPF 13.5 Ancillary accommodation: (a) is ancillary to a dwelling erected on the same site (b) has a floor area not exceeding 70m^2 (c) is not constructed, added to, or altered so that any part is situated: (i) in front of any part of the building line of the dwelling to which it is ancillary or (ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads) (d) if situated on a boundary (not being a boundary with a primary street or secondary street), does not exceed a length of 11.5m unless: (i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary and (ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (e) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (f) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or abut the proposed wall or structure (g) has a wall height or post height not exceeding 3m above natural ground level (and not including a gable end) (h) has a roof height where no part of the roof is more than 5m above the natural ground level (i) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour (j) retains a total area of soft landscaping in accordance with (i) or (ii), whichever is less: (i) a total area as determined by the following table: **Dwelling site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)** / **Minimum percentage of site** <150 / 10% 150-200 / 15%

201-450	20%
>450	25%

(ii) the amount of existing soft landscaping prior to the development occurring.

(k) does not have separate connection to utilities and services (such as electricity, gas, water, telecommunications, sewerage system, wastewater system or waste control system) to those servicing the existing dwelling

(l) has unrestricted access to the private open space associated with the existing dwelling to which it is ancillary

(m) in the case of the Rural Zone, Productive Rural Landscape Zone, or Rural Horticulture Zone, is located within 20m of an existing dwelling.

Garage appearance

PO 14.1

Garaging is designed to not detract from the streetscape or appearance of a dwelling.

DTS/DPF 14.1

Garages and carports facing a street:

(a) are situated so that no part of the garage or carport is in front of any part of the building line of the dwelling

(b) are set back at least 5.5m from the boundary of the primary street

(c) have a garage door / opening not exceeding 7m in width

(d) have a garage door /opening width not exceeding 50% of the site frontage unless the dwelling has two or more building levels at the building line fronting the same public street.

Massing

PO 15.1

The visual mass of larger buildings is reduced when viewed from adjoining allotments or public streets.

DTS/DPF 15.1

None are applicable

Dwelling additions

PO 16.1

Dwelling additions are sited and designed to not detract from the streetscape or amenity of adjoining properties and do not impede on-site functional requirements.

DTS / DPF 16.1

Dwelling additions:

(a) are not constructed, added to or altered so that any part is situated closer to a public street

(b) do not result in:

(i) excavation exceeding a vertical height of 1m

(ii) filling exceeding a vertical height of 1m

(iii) a total combined excavation and filling vertical height of 2m or more

(iv) less Private Open Space than specified in Design Table 1 - Private Open Space

(v) less on-site parking than specified in Transport Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas

(vi) upper level windows facing side or rear boundaries unless:

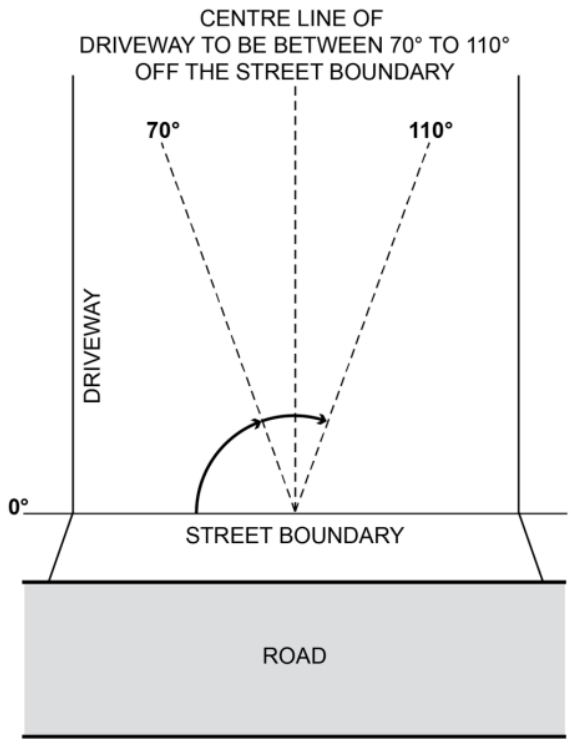
A. they are permanently obscured to a height of 1.5m above finished floor level that is fixed or not capable of being opened more than 200mm
or

B. have sill heights greater than or equal to 1.5m above finished floor level
or

C. incorporate screening to a height of 1.5m above finished floor level

	(vii) all sides of balconies or terraces on upper building levels are permanently obscured by screening with a maximum 25% transparency/openings fixed to a minimum height of: A. 1.5m above finished floor level where the balcony is located at least 15 metres from the nearest habitable window of a dwelling on adjacent land B. 1.7m above finished floor level in all other cases.
Private Open Space	
PO 17.1 Dwellings are provided with suitable sized areas of usable private open space to meet the needs of occupants.	DTS/DPF 17.1 Private open space is provided in accordance with Design Table 1 - Private Open Space.
Water Sensitive Design	
PO 18.1 Residential development creating a common driveway / access includes stormwater management systems that minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system, watercourses or other water bodies.	DTS/DPF 18.1 Residential development creating a common driveway / access that services 5 or more dwellings achieves the following stormwater runoff outcomes: (a) 80 per cent reduction in average annual total suspended solids (b) 60 per cent reduction in average annual total phosphorus (c) 45 per cent reduction in average annual total nitrogen.
PO 18.2 Residential development creating a common driveway / access includes a stormwater management system designed to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that the development does not increase the peak flows in downstream systems.	DTS/DPF 18.2 Development creating a common driveway / access that services 5 or more dwellings: (a) maintains the pre-development peak flow rate from the site based upon a 0.35 runoff coefficient for the 18.1% AEP 30-minute storm and the stormwater runoff time to peak is not increased or captures and retains the difference in pre-development runoff volume (based upon a 0.35 runoff coefficient) vs post development runoff volume from the site for an 18.1% AEP 30-minute storm; and (b) manages site generated stormwater runoff up to and including the 1% AEP flood event to avoid flooding of buildings.
Car parking, access and manoeuvrability	
PO 19.1 Enclosed parking spaces are of a size and dimensions to be functional, accessible and convenient.	DTS/DPF 19.1 Residential car parking spaces enclosed by fencing, walls or other structures have the following internal dimensions (separate from any waste storage area): (a) single width car parking spaces: (i) a minimum length of 5.4m per space (ii) a minimum width of 3.0m (iii) a minimum garage door width of 2.4m (b) double width car parking spaces (side by side): (i) a minimum length of 5.4m (ii) a minimum width of 5.4m (iii) minimum garage door width of 2.4m per space.
PO 19.2 Uncovered parking spaces are of a size and dimensions to be	DTS/DPF 19.2 Uncovered car parking spaces have:

functional, accessible and convenient.	(a) a minimum length of 5.4m (b) a minimum width of 2.4m (c) a minimum width between the centre line of the space and any fence, wall or other obstruction of 1.5m
PO 19.3 Driveways and access points are located and designed to facilitate safe access and egress while maximising land available for street tree planting, pedestrian movement, domestic waste collection, landscaped street frontages and on-street parking.	DTS/DPF 19.3 Driveways and access points on sites with a frontage to a public road of 10m or less have a width between 3.0 and 3.2 metres measured at the property boundary and are the only access point provided on the site.
PO 19.4 Vehicle access is safe, convenient, minimises interruption to the operation of public roads and does not interfere with street infrastructure or street trees.	DTS/DPF 19.4 Vehicle access to designated car parking spaces satisfy (a) or (b): (a) is provided via a lawfully existing or authorised access point or an access point for which consent has been granted as part of an application for the division of land (b) where newly proposed: (i) is set back 6m or more from the tangent point of an intersection of 2 or more roads (ii) is set back outside of the marked lines or infrastructure dedicating a pedestrian crossing (iii) does not involve the removal, relocation or damage to of mature street trees, street furniture or utility infrastructure services.
PO 19.5 Driveways are designed to enable safe and convenient vehicle movements from the public road to on-site parking spaces.	DTS/DPF 19.5 Driveways are designed and sited so that: (a) the gradient of the driveway does not exceed a grade of 1 in 4 and includes transitions to ensure a maximum grade change of 12.5% (1 in 8) for summit changes, and 15% (1 in 6.7) for sag changes, in accordance with AS 2890.1:2004 to prevent vehicles bottoming or scraping (b) the centreline of the driveway has an angle of no less than 70 degrees and no more than 110 degrees from the street boundary to which it takes its access as shown in the following diagram:

	 (c) if located to provide access from an alley, lane or right of way - the alley, land or right or way is at least 6.2m wide along the boundary of the allotment / site
PO 19.6 Driveways and access points are designed and distributed to optimise the provision of on-street visitor parking.	DTS/DPF 19.6 Where on-street parking is available abutting the site's street frontage, on-street parking is retained in accordance with the following requirements: (a) minimum 0.33 on-street spaces per dwelling on the site (rounded up to the nearest whole number) (b) minimum car park length of 5.4m where a vehicle can enter or exit a space directly (c) minimum carpark length of 6m for an intermediate space located between two other parking spaces or to an end obstruction where the parking is indented.
Waste storage	
PO 20.1 Provision is made for the adequate and convenient storage of waste bins in a location screened from public view.	DTS/DPF 20.1 None are applicable.
Design of Transportable Dwellings	
PO 21.1 The sub-floor space beneath transportable buildings is enclosed to give the appearance of a permanent structure.	DTS/DPF 21.1 Buildings satisfy (a) or (b): (a) are not transportable or (b) the sub-floor space between the building and ground level is clad in a material and finish consistent with the building.
Group dwelling, residential flat buildings and battle-axe development	
Amenity	
PO 22.1 Dwellings are of a suitable size to accommodate a layout that is well organised and provides a high standard of amenity for occupants.	DTS/DPF 22.1 Dwellings have a minimum internal floor area in accordance with the following table:

	<table><tr><th>Number of bedrooms</th><th>Minimum internal floor area</th></tr><tr><td>Studio</td><td>35m^2</td></tr><tr><td>1 bedroom</td><td>50m^2</td></tr><tr><td>2 bedroom</td><td>65m^2</td></tr><tr><td>3+ bedrooms</td><td>80m^2 and any dwelling over 3 bedrooms provides an additional 15m^2 for every additional bedroom</td></tr></table>
PO 22.2 The orientation and siting of buildings minimises impacts on the amenity, outlook and privacy of occupants and neighbours.	DTS/DPF 22.2 None are applicable.
PO 22.3 Development maximises the number of dwellings that face public open space and public streets and limits dwellings oriented towards adjoining properties.	DTS/DPF 22.3 None are applicable.
PO 22.4 Battle-axe development is appropriately sited and designed to respond to the existing neighbourhood context.	DTS/DPF 22.4 Dwelling sites/allotments are not in the form of a battle-axe arrangement.
Communal Open Space	
PO 23.1 Private open space provision may be substituted for communal open space which is designed and sited to meet the recreation and amenity needs of residents.	DTS/DPF 23.1 None are applicable.
PO 23.2 Communal open space is of sufficient size and dimensions to cater for group recreation.	DTS/DPF 23.2 Communal open space incorporates a minimum dimension of 5 metres.
PO 23.3 Communal open space is designed and sited to: (a) be conveniently accessed by the dwellings which it services (b) have regard to acoustic, safety, security and wind effects.	DTS/DPF 23.3 None are applicable.
PO 23.4 Communal open space contains landscaping and facilities that are functional, attractive and encourage recreational use.	DTS/DPF 23.4 None are applicable.
PO 23.5 Communal open space is designed and sited to: (a) in relation to rooftop or elevated gardens, minimise overlooking into habitable room windows or onto the useable private open space of other dwellings (b) in relation to ground floor communal space, be overlooked by habitable rooms to facilitate passive surveillance.	DTS/DPF 23.5 None are applicable.
Carparking, access and manoeuvrability	
PO 24.1 Driveways and access points are designed and distributed to optimise the provision of on-street visitor parking.	DTS/DPF 24.1 Where on-street parking is available directly adjacent the site, on-street parking is retained adjacent the subject site in accordance with the following requirements:

	(a) minimum 0.33 on-street car parks per proposed dwellings (rounded up to the nearest whole number) (b) minimum car park length of 5.4m where a vehicle can enter or exit a space directly (c) minimum carpark length of 6m for an intermediate space located between two other parking spaces or to an end obstruction where the parking is indented.
PO 24.2 The number of vehicular access points onto public roads is minimised to reduce interruption of the footpath and positively contribute to public safety and walkability.	DTS/DPF 24.2 Access to group dwellings or dwellings within a residential flat building is provided via a single common driveway.
PO 24.3 Residential driveways that service more than one dwelling are designed to allow safe and convenient movement.	DTS/DPF 24.3 Driveways that service more than 1 dwelling or a dwelling on a battle-axe site: (a) have a minimum width of 3m (b) for driveways servicing more than 3 dwellings: (i) have a width of 5.5m or more and a length of 6m or more at the kerb of the primary street (ii) where the driveway length exceeds 30m, incorporate a passing point at least every 30 metres with a minimum width of 5.5m and a minimum length of 6m.
PO 24.4 Residential driveways in a battle-axe configuration are designed to allow safe and convenient movement.	DTS/DPF 24.4 Where in a battle-axe configuration, a driveway servicing one dwelling has a minimum width of 3m.
PO 24.5 Residential driveways that service more than one dwelling are designed to allow passenger vehicles to enter and exit the site and manoeuvre within the site in a safe and convenient manner.	DTS/DPF 24.5 Driveways providing access to more than one dwelling, or a dwelling on a battle-axe site, allow a B85 passenger vehicle to enter and exit the garages or parking spaces in no more than a three-point turn manoeuvre.
PO 24.6 Dwellings are adequately separated from common driveways and manoeuvring areas.	DTS/DPF 24.6 Dwelling walls with entry doors or ground level habitable room windows are set back at least 1.5m from any driveway or area designated for the movement and manoeuvring of vehicles.
Soft Landscaping	
PO 25.1 Soft landscaping is provided between dwellings and common driveways to improve the outlook for occupants and appearance of common areas.	DTS/DPF 25.1 Other than where located directly in front of a garage or a building entry, soft landscaping with a minimum dimension of 1m is provided between a dwelling and common driveway.
PO 25.2 Soft landscaping is provided that improves the appearance of common driveways.	DTS/DPF 25.2 Where a common driveway is located directly adjacent the side or rear boundary of the site, soft landscaping with a minimum dimension of 1m is provided between the driveway and site boundary (excluding along the perimeter of a passing point).
Site Facilities / Waste Storage	
PO 26.1 Provision is made for suitable mailbox facilities close to the major pedestrian entry to the site or conveniently located considering the nature of accommodation and mobility of occupants.	DTS/DPF 26.1 None are applicable.
PO 26.2 Provision is made for suitable external clothes drying facilities.	DTS/DPF 26.2 None are applicable.
PO 26.3	DTS/DPF 26.3

Provision is made for suitable household waste and recyclable material storage facilities which are: (a) located away, or screened, from public view, and (b) conveniently located in proximity to dwellings and the waste collection point.	None are applicable.
PO 26.4 Waste and recyclable material storage areas are located away from dwellings.	DTS/DPF 26.4 Dedicated waste and recyclable material storage areas are located at least 3m from any habitable room window.
PO 26.5 Where waste bins cannot be conveniently collected from the street, provision is made for on-site waste collection, designed to accommodate the safe and convenient access, egress and movement of waste collection vehicles.	DTS/DPF 26.5 None are applicable.
PO 26.6 Services including gas and water meters are conveniently located and screened from public view.	DTS/DPF 26.6 None are applicable.
Supported accommodation and retirement facilities	
Siting and Configuration	
PO 27.1 Supported accommodation and housing for aged persons and people with disabilities is located where on-site movement of residents is not unduly restricted by the slope of the land.	DTS/DPF 27.1 None are applicable.
Movement and Access	
PO 28.1 Development is designed to support safe and convenient access and movement for residents by providing: (a) ground-level access or lifted access to all units (b) level entry porches, ramps, paths, driveways, passenger loading areas and areas adjacent to footpaths that allow for the passing of wheelchairs and resting places (c) car parks with gradients no steeper than 1-in-40 and of sufficient area to provide for wheelchair manoeuvrability (d) kerb ramps at pedestrian crossing points.	DTS/DPF 28.1 None are applicable.
Communal Open Space	
PO 29.1 Development is designed to provide attractive, convenient and comfortable indoor and outdoor communal areas to be used by residents and visitors.	DTS/DPF 29.1 None are applicable.
PO 29.2 Private open space provision may be substituted for communal open space which is designed and sited to meet the recreation and amenity needs of residents.	DTS/DPF 29.2 None are applicable.
PO 29.3 Communal open space is of sufficient size and dimensions to cater for group recreation.	DTS/DPF 29.3 Communal open space incorporates a minimum dimension of 5 metres.
PO 29.4 Communal open space is designed and sited to: (a) be conveniently accessed by the dwellings which it services (b) have regard to acoustic, safety, security and wind effects.	DTS/DPF 29.4 None are applicable.

PO 29.5 Communal open space contains landscaping and facilities that are functional, attractive and encourage recreational use.	DTS/DPF 29.5 None are applicable.
PO 29.6 Communal open space is designed and sited to: (a) in relation to rooftop or elevated gardens, minimise overlooking into habitable room windows or onto the useable private open space of other dwellings (b) in relation to ground floor communal space, be overlooked by habitable rooms to facilitate passive surveillance.	DTS/DPF 29.6 None are applicable.
Site Facilities / Waste Storage	
PO 30.1 Development is designed to provide storage areas for personal items and specialised equipment such as small electric powered vehicles, including facilities for the recharging of small electric powered vehicles.	DTS/DPF 30.1 None are applicable.
PO 30.2 Provision is made for suitable mailbox facilities close to the major pedestrian entry to the site or conveniently located considering the nature of accommodation and mobility of occupants.	DTS/DPF 30.2 None are applicable.
PO 30.3 Provision is made for suitable external clothes drying facilities.	DTS/DPF 30.3 None are applicable.
PO 30.4 Provision is made for suitable household waste and recyclable material storage facilities conveniently located and screened from public view.	DTS/DPF 30.4 None are applicable.
PO 30.5 Waste and recyclable material storage areas are located away from dwellings.	DTS/DPF 30.5 Dedicated waste and recyclable material storage areas are located at least 3m from any habitable room window.
PO 30.6 Provision is made for on-site waste collection where 10 or more bins are to be collected at any one time.	DTS/DPF 30.6 None are applicable.
PO 30.7 Services including gas and water meters are conveniently located and screened from public view.	DTS/DPF 30.7 None are applicable.
All non-residential development	
Water Sensitive Design	
PO 31.1 Development likely to result in significant risk of export of litter, oil or grease includes stormwater management systems designed to minimise pollutants entering stormwater.	DTS/DPF 31.1 None are applicable.
PO 31.2 Water discharged from a development site is of a physical, chemical and biological condition equivalent to or better than its pre-developed state.	DTS/DPF 31.2 None are applicable.
Wash-down and Waste Loading and Unloading	
PO 32.1 Areas for activities including loading and unloading, storage of waste refuse bins in commercial and industrial development or wash-down areas used for the cleaning of vehicles, vessels, plant or equipment are:	DTS/DPF 32.1 None are applicable.

(a) designed to contain all wastewater likely to pollute stormwater within a bunded and roofed area to exclude the entry of external surface stormwater run-off
(b) paved with an impervious material to facilitate wastewater collection
(c) of sufficient size to prevent 'splash-out' or 'over-spray' of wastewater from the wash-down area
(d) designed to drain wastewater to either:
  (i) a treatment device such as a sediment trap and coalescing plate oil separator with subsequent disposal to a sewer, private or Community Wastewater Management Scheme
  or
  (ii) a holding tank and its subsequent removal off-site on a regular basis.

Decks

Design and Siting

PO 33.1

Decks are designed and sited to:

(a) complement the associated building form
(b) minimise impacts on the streetscape through siting behind the building line of the principal building (unless on a significant allotment or open space)
(c) minimise cut and fill and overall massing when viewed from adjacent land.

DTS/DPF 33.1

Decks:

(a) where ancillary to a dwelling:
  (i) are not constructed, added to or altered so that any part is situated:
    A. in front of any part of the building line of the dwelling to which it is ancillary
    or
    B. within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads)
  (ii) are set back at least 900mm from side or rear allotment boundaries
  (iii) when attached to the dwelling, has a finished floor level consistent with the finished ground floor level of the dwelling
  (iv) where associated with a residential use, retains a total area of soft landscaping for the entire development site, including any common property, with a minimum dimension of 700mm in accordance with (A) or (B), whichever is less:
    A. a total area is determined by the following table:

Site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
>200-450	20%
>450	25%

    B. the amount of existing soft landscaping prior to the development occurring.

(b) where in association with a non-residential use:
  (i) are set back at least 2 metres from the boundary of an allotment used for residential purposes.
  (ii) are set back at least 2 metres from a public road.
  (iii) have a floor area not exceeding 25m^2

	(c) in all cases, has a finished floor level not exceeding 1 metre above natural ground level at any point.
PO 33.2 Decks are designed and sited to minimise direct overlooking of habitable rooms and private open spaces of adjoining residential uses in neighbourhood-type zones through suitable floor levels, screening and siting taking into account the slope of the subject land, existing vegetation on the subject land, and fencing.	DTS/DPF 33.2 Decks with a finished floor level/s 500mm or more above natural ground level facing side or rear boundaries shared with a residential use in a neighbourhood-type zone incorporate screening with a maximum of 25% transparency/openings, permanently fixed to the outer edge of the deck not less than 1.5 m above the finished floor level/s.
PO 33.3 Decks used for outdoor dining, entertainment or other commercial uses provide carparking in accordance with the primary use of the deck.	DTS/DPF 33.3 Decks used for commercial purposes do not result in less on-site car parking for the primary use of the subject land than specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.

Table 1 - Private Open Space

Dwelling Type	Minimum Rate
Dwelling (at ground level)	Total private open space area: (a) Site area <301m^2: 24m^2 located behind the building line. (b) Site area ≥ 301m^2: 60m^2 located behind the building line. Minimum directly accessible from a living room: 16m^2 / with a minimum dimension 3m.
Dwelling (above ground level)	Studio (no separate bedroom): 4m^2 with a minimum dimension 1.8m One bedroom: 8m^2 with a minimum dimension 2.1m Two bedroom dwelling: 11m^2 with a minimum dimension 2.4m Three + bedroom dwelling: 15m^2 with a minimum dimension 2.6m
Cabin or caravan (permanently fixed to the ground) in a residential park or a caravan and tourist park	Total area: 16m^2, which may be used as second car parking space, provided on each site intended for residential occupation.

Design in Urban Areas

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development is: (a) contextual - by considering, recognising and carefully responding to its natural surroundings or built environment and positively contributing to the character of the locality

	(b) durable - fit for purpose, adaptable and long lasting (c) inclusive - by integrating landscape design to optimise pedestrian and cyclist usability, privacy and equitable access and promoting the provision of quality spaces integrated with the public realm that can be used for access and recreation and help optimise security and safety both internally and within the public realm, for occupants and visitors (d) sustainable - by integrating sustainable techniques into the design and siting of development and landscaping to improve community health, urban heat, water management, environmental performance, biodiversity and local amenity and to minimise energy consumption.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
All Development	
External Appearance	
PO 1.1 Buildings reinforce corners through changes in setback, articulation, materials, colour and massing (including height, width, bulk, roof form and slope).	DTS/DPF 1.1 None are applicable.
PO 1.2 Where zero or minor setbacks are desirable, development provides shelter over footpaths (in the form of verandahs, awnings, canopies and the like, with adequate lighting) to positively contribute to the walkability, comfort and safety of the public realm.	DTS/DPF 1.2 None are applicable.
PO 1.3 Building elevations facing the primary street (other than ancillary buildings) are designed and detailed to convey purpose, identify main access points and complement the streetscape.	DTS/DPF 1.3 None are applicable.
PO 1.4 Plant, exhaust and intake vents and other technical equipment are integrated into the building design to minimise visibility from the public realm and negative impacts on residential amenity by: (a) positioning plant and equipment discretely, in unobtrusive locations as viewed from public roads and spaces (b) screening rooftop plant and equipment from view (c) when located on the roof of non-residential development, locating the plant and equipment as far as practicable from adjacent sensitive land uses.	DTS/DPF 1.4 Development does not incorporate any structures that protrude beyond the roofline.
PO 1.5 The negative visual impact of outdoor storage, waste management, loading and service areas is minimised by integrating them into the building design and screening them from public view (such as fencing, landscaping and built form), taking into account the form of development contemplated in the relevant zone.	DTS/DPF 1.5 None are applicable.
Safety	
PO 2.1 Development maximises opportunities for passive surveillance of the public realm by providing clear lines of sight, appropriate lighting and the use of visually permeable screening wherever practicable.	DTS/DPF 2.1 None are applicable.
PO 2.2 Development is designed to differentiate public, communal and private areas.	DTS/DPF 2.2 None are applicable.
PO 2.3 Buildings are designed with safe, perceptible and direct access from public street frontages and vehicle parking areas.	DTS/DPF 2.3 None are applicable.

PO 2.4 Development at street level is designed to maximise opportunities for passive surveillance of the adjacent public realm.	DTS/DPF 2.4 None are applicable.
PO 2.5 Common areas and entry points of buildings (such as the foyer areas of residential buildings) and non-residential land uses at street level, maximise passive surveillance from the public realm to the inside of the building at night.	DTS/DPF 2.5 None are applicable.
Landscaping	
PO 3.1 Soft landscaping and tree planting are incorporated to: (a) minimise heat absorption and reflection (b) maximise shade and shelter (c) maximise stormwater infiltration (d) enhance the appearance of land and streetscapes.	DTS/DPF 3.1 None are applicable.
Environmental Performance	
PO 4.1 Buildings are sited, oriented and designed to maximise natural sunlight access and ventilation to main activity areas, habitable rooms, common areas and open spaces.	DTS/DPF 4.1 None are applicable.
PO 4.2 Buildings are sited and designed to maximise passive environmental performance and minimise energy consumption and reliance on mechanical systems, such as heating and cooling.	DTS/DPF 4.2 None are applicable.
PO 4.3 Buildings incorporate climate responsive techniques and features such as building and window orientation, use of eaves, verandahs and shading structures, water harvesting, at ground landscaping, green walls, green roofs and photovoltaic cells.	DTS/DPF 4.3 None are applicable.
Water Sensitive Design	
PO 5.1 Development is sited and designed to maintain natural hydrological systems without negatively impacting: (a) the quantity and quality of surface water and groundwater (b) the depth and directional flow of surface water and groundwater (c) the quality and function of natural springs.	DTS/DPF 5.1 None are applicable.
On-site Waste Treatment Systems	
PO 6.1 Dedicated on-site effluent disposal areas do not include any areas to be used for, or could be reasonably foreseen to be used for, private open space, driveways or car parking.	DTS/DPF 6.1 Effluent disposal drainage areas do not: (a) encroach within an area used as private open space or result in less private open space than that specified in Design in Urban Areas Table 1 - Private Open Space (b) use an area also used as a driveway (c) encroach within an area used for on-site car parking or result in less on-site car parking than that specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.
Car parking appearance	

PO 7.1 Development facing the street is designed to minimise the negative impacts of any semi-basement and undercroft car parking on streetscapes through techniques such as: (a) limiting protrusion above finished ground level (b) screening through appropriate planting, fencing and mounding (c) limiting the width of openings and integrating them into the building structure.	DTS/DPF 7.1 None are applicable.
PO 7.2 Vehicle parking areas appropriately located, designed and constructed to minimise impacts on adjacent sensitive receivers through measures such as ensuring they are attractively developed and landscaped, screen fenced and the like.	DTS/DPF 7.2 None are applicable.
PO 7.3 Safe, legible, direct and accessible pedestrian connections are provided between parking areas and the development.	DTS/DPF 7.3 None are applicable.
PO 7.4 Street-level vehicle parking areas incorporate tree planting to provide shade, reduce solar heat absorption and reflection.	DTS/DPF 7.4 Vehicle parking areas that are open to the sky and comprise 10 or more car parking spaces include a shade tree with a mature canopy of 4m diameter spaced for each 10 car parking spaces provided and a landscaped strip on any road frontage of a minimum dimension of 1m.
PO 7.5 Street level parking areas incorporate soft landscaping to improve visual appearance when viewed from within the site and from public places.	DTS/DPF 7.5 Vehicle parking areas comprising 10 or more car parking spaces include soft landscaping with a minimum dimension of: (a) 1m along all public road frontages and allotment boundaries (b) 1m between double rows of car parking spaces.
PO 7.6 Vehicle parking areas and associated driveways are landscaped to provide shade and positively contribute to amenity.	DTS/DPF 7.6 None are applicable.
PO 7.7 Vehicle parking areas and access ways incorporate integrated stormwater management techniques such as permeable or porous surfaces, infiltration systems, drainage swales or rain gardens that integrate with soft landscaping.	DTS/DPF 7.7 None are applicable.
Earthworks and sloping land	
PO 8.1 Development, including any associated driveways and access tracks, minimises the need for earthworks to limit disturbance to natural topography.	DTS/DPF 8.1 Development does not involve any of the following: (a) excavation exceeding a vertical height of 1m (b) filling exceeding a vertical height of 1m (c) a total combined excavation and filling vertical height of 2m or more.
PO 8.2 Driveways and access tracks designed and constructed to allow safe and convenient access on sloping land.	DTS/DPF 8.2 Driveways and access tracks on sloping land (with a gradient exceeding 1 in 8) satisfy (a) and (b): (a) do not have a gradient exceeding 25% (1-in-4) at any point along the driveway (b) are constructed with an all-weather trafficable surface.
PO 8.3 Driveways and access tracks on sloping land (with a gradient exceeding 1 in 8):	DTS/DPF 8.3 None are applicable.

(a) do not contribute to the instability of embankments and cuttings (b) provide level transition areas for the safe movement of people and goods to and from the development (c) are designed to integrate with the natural topography of the land.	
PO 8.4 Development on sloping land (with a gradient exceeding 1 in 8) avoids the alteration of natural drainage lines and includes on site drainage systems to minimise erosion.	DTS/DPF 8.4 None are applicable.
PO 8.5 Development does not occur on land at risk of landslip or increase the potential for landslip or land surface instability.	DTS/DPF 8.5 None are applicable.
Fences and walls	
PO 9.1 Fences, walls and retaining walls of sufficient height maintain privacy and security without unreasonably impacting visual amenity and adjoining land's access to sunlight or the amenity of public places.	DTS/DPF 9.1 None are applicable.
PO 9.2 Landscaping is incorporated on the low side of retaining walls that are visible from public roads and public open space to minimise visual impacts.	DTS/DPF 9.2 A vegetated landscaped strip 1m wide or more is provided against the low side of a retaining wall.
Overlooking / Visual Privacy (low rise buildings)	
PO 10.1 Development mitigates direct overlooking from upper level windows to habitable rooms and private open spaces of adjoining residential uses in neighbourhood-type zones.	DTS/DPF 10.1 Upper level windows facing side or rear boundaries shared with a residential use in a neighbourhood-type zone: (a) are permanently obscured to a height of 1.5m above finished floor level and are fixed or not capable of being opened more than 125mm (b) have sill heights greater than or equal to 1.5m above finished floor level (c) incorporate screening with a maximum of 25% openings, permanently fixed no more than 500mm from the window surface and sited adjacent to any part of the window less than 1.5 m above the finished floor level.
PO 10.2 Development mitigates direct overlooking from balconies to habitable rooms and private open space of adjoining residential uses in neighbourhood type zones.	DTS/DPF 10.2 One of the following is satisfied: (a) the longest side of the balcony or terrace will face a public road, public road reserve or public reserve that is at least 15m wide in all places faced by the balcony or terrace or (b) all sides of balconies or terraces on upper building levels are permanently obscured by screening with a maximum 25% transparency/openings fixed to a minimum height of: (i) 1.5m above finished floor level where the balcony is located at least 15 metres from the nearest habitable window of a dwelling on adjacent land or (ii) 1.7m above finished floor level in all other cases
Site Facilities / Waste Storage (excluding low rise residential development)	
PO 11.1 Development provides a dedicated area for on-site collection and sorting of recyclable materials and refuse, green organic waste and wash bay facilities for the ongoing maintenance of bins that is adequate in size considering the number and nature of the activities they will serve and the frequency of collection.	DTS/DPF 11.1 None are applicable.

PO 11.2 Communal waste storage and collection areas are located, enclosed and designed to be screened from view from the public domain, open space and dwellings.	DTS/DPF 11.2 None are applicable.
PO 11.3 Communal waste storage and collection areas are designed to be well ventilated and located away from habitable rooms.	DTS/DPF 11.3 None are applicable.
PO 11.4 Communal waste storage and collection areas are designed to allow waste and recycling collection vehicles to enter and leave the site without reversing.	DTS/DPF 11.4 None are applicable.
PO 11.5 For mixed use developments, non-residential waste and recycling storage areas and access provide opportunities for on-site management of food waste through composting or other waste recovery as appropriate.	DTS/DPF 11.5 None are applicable.
All Development - Medium and High Rise	
External Appearance	
PO 12.1 Buildings positively contribute to the character of the local area by responding to local context.	DTS/DPF 12.1 None are applicable.
PO 12.2 Architectural detail at street level and a mixture of materials at lower building levels near the public interface are provided to reinforce a human scale.	DTS/DPF 12.2 None are applicable.
PO 12.3 Buildings are designed to reduce visual mass by breaking up building elevations into distinct elements.	DTS/DPF 12.3 None are applicable.
PO 12.4 Boundary walls visible from public land include visually interesting treatments to break up large blank elevations.	DTS/DPF 12.4 None are applicable.
PO 12.5 External materials and finishes are durable and age well to minimise ongoing maintenance requirements.	DTS/DPF 12.5 Buildings utilise a combination of the following external materials and finishes: (a) masonry (b) natural stone (c) pre-finished materials that minimise staining, discolouring or deterioration.
PO 12.6 Street-facing building elevations are designed to provide attractive, high quality and pedestrian-friendly street frontages.	DTS/DPF 12.6 Building street frontages incorporate: (a) active uses such as shops or offices (b) prominent entry areas for multi-storey buildings (where it is a common entry) (c) habitable rooms of dwellings (d) areas of communal public realm with public art or the like, where consistent with the zone and/or subzone provisions.
PO 12.7 Entrances to multi-storey buildings are safe, attractive, welcoming, functional and contribute to streetscape character.	DTS/DPF 12.7 Entrances to multi-storey buildings are: (a) oriented towards the street (b) clearly visible and easily identifiable from the street and vehicle parking areas (c) designed to be prominent, accentuated and a welcoming feature if there are no active or occupied ground floor uses

(d) designed to provide shelter, a sense of personal address and transitional space around the entry
(e) located as close as practicable to the lift and / or lobby access to minimise the need for long access corridors
(f) designed to avoid the creation of potential areas of entrapment.

PO 12.8

Building services, plant and mechanical equipment are screened from the public realm.

DTS/DPF 12.8

None are applicable.

Landscaping

PO 13.1

Development facing a street provides a well landscaped area that contains a deep soil space to accommodate a tree of a species and size adequate to provide shade, contribute to tree canopy targets and soften the appearance of buildings.

DTS/DPF 13.1

Buildings provide a 4m by 4m deep soil space in front of the building that accommodates a medium to large tree, except where no building setback from front property boundaries is desired.

PO 13.2

Deep soil zones are provided to retain existing vegetation or provide areas that can accommodate new deep root vegetation, including tall trees with large canopies to provide shade and soften the appearance of multi-storey buildings.

DTS/DPF 13.2

Multi-storey development provides deep soil zones and incorporates trees at not less than the following rates, except in a location or zone where full site coverage is desired.

Site area	Minimum deep soil area	Minimum dimension	Tree / deep soil zones
<300 m^2	10 m^2	1.5m	1 small tree / 10 m^2
300-1500 m^2	7% site area	3m	1 medium tree / 30 m^2
>1500 m^2	7% site area	6m	1 large or medium tree / 60 m^2

Tree size and site area definitions	
Small tree	4-6m mature height and 2-4m canopy spread
Medium tree	6-12m mature height and 4-8m canopy spread
Large tree	12m mature height and >8m canopy spread
Site area	The total area for development site, not average area per dwelling

PO 13.3

Deep soil zones with access to natural light are provided to assist in maintaining vegetation health.

DTS/DPF 13.3

None are applicable.

PO 13.4

Unless separated by a public road or reserve, development sites adjacent to any zone that has a primary purpose of accommodating low-rise residential development incorporate a deep soil zone along the common boundary to enable medium to large trees to be retained or established to assist in screening new buildings of 3 or more building levels in height.

DTS/DPF 13.4

Building elements of 3 or more building levels in height are set back at least 6m from a zone boundary in which a deep soil zone area is incorporated.

Environmental

PO 14.1

Development minimises detrimental micro-climatic impacts on adjacent land and buildings.

DTS/DPF 14.1

None are applicable.

PO 14.2 Development incorporates sustainable design techniques and features such as window orientation, eaves and shading structures, water harvesting and use, green walls and roof designs that enable the provision of rain water tanks (where they are not provided elsewhere on site), green roofs and photovoltaic cells.	DTS/DPF 14.2 None are applicable.
PO 14.3 Development of 5 or more building levels, or 21m or more in height (as measured from natural ground level and excluding roof-mounted mechanical plant and equipment) is designed to minimise the impacts of wind through measures such as: (a) a podium at the base of a tall tower and aligned with the street to deflect wind away from the street (b) substantial verandahs around a building to deflect downward travelling wind flows over pedestrian areas (c) the placement of buildings and use of setbacks to deflect the wind at ground level (d) avoiding tall shear elevations that create windy conditions at street level.	DTS/DPF 14.3 None are applicable.
Car Parking	
PO 15.1 Multi-level vehicle parking structures are designed to contribute to active street frontages and complement neighbouring buildings.	DTS/DPF 15.1 Multi-level vehicle parking structures within buildings: (a) provide land uses such as commercial, retail or other non-car parking uses along ground floor street frontages (b) incorporate facade treatments in building elevations facing along major street frontages that are sufficiently enclosed and detailed to complement adjacent buildings.
PO 15.2 Multi-level vehicle parking structures within buildings complement the surrounding built form in terms of height, massing and scale.	DTS/DPF 15.2 None are applicable.
Overlooking/Visual Privacy	
PO 16.1 Development mitigates direct overlooking of habitable rooms and private open spaces of adjacent residential uses in neighbourhood-type zones through measures such as: (a) appropriate site layout and building orientation (b) off-setting the location of balconies and windows of habitable rooms or areas with those of other buildings so that views are oblique rather than direct to avoid direct line of sight (c) building setbacks from boundaries (including building boundary to boundary where appropriate) that interrupt views or that provide a spatial separation between balconies or windows of habitable rooms (d) screening devices that are integrated into the building design and have minimal negative effect on residents' or neighbours' amenity.	DTS/DPF 16.1 None are applicable.
All residential development	
Front elevations and passive surveillance	
PO 17.1 Dwellings incorporate windows facing primary street frontages to encourage passive surveillance and make a positive contribution to the streetscape.	DTS/DPF 17.1 Each dwelling with a frontage to a public street: (a) includes at least one window facing the primary street from a habitable room that has a minimum internal room dimension of 2.4m

	(b) has an aggregate window area of at least 2m^2 facing the primary street.
PO 17.2 Dwellings incorporate entry doors within street frontages to address the street and provide a legible entry point for visitors.	DTS/DPF 17.2 Dwellings with a frontage to a public street have an entry door visible from the primary street boundary.
Outlook and Amenity	
PO 18.1 Living rooms have an external outlook to provide a high standard of amenity for occupants.	DTS/DPF 18.1 A living room of a dwelling incorporates a window with an external outlook of the street frontage, private open space, public open space, or waterfront areas.
PO 18.2 Bedrooms are separated or shielded from active communal recreation areas, common access areas and vehicle parking areas and access ways to mitigate noise and artificial light intrusion.	DTS/DPF 18.2 None are applicable.
Ancillary Development	
PO 19.1 Residential ancillary buildings are sited and designed to not detract from the streetscape or appearance of primary residential buildings on the site or neighbouring properties.	DTS/DPF 19.1 Ancillary buildings (excluding ancillary accommodation): (a) are ancillary to a dwelling erected on the same site (b) have a floor area not exceeding 60m2 (c) are not constructed, added to or altered so that any part is situated: (i) in front of any part of the building line of the dwelling to which it is ancillary or (ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads) (d) in the case of a garage or carport, the garage or carport: (i) is set back at least 5.5m from the boundary of the primary street (ii) when facing a primary street or secondary street, has a total door / opening not exceeding: A. for dwellings of single building level - 7m in width or 50% of the site frontage, whichever is the lesser B. for dwellings comprising two or more building levels at the building line fronting the same public street - 7m in width (e) if situated on a boundary (not being a boundary with a primary street or secondary street), do not exceed a length of 11.5m unless: (i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary and (ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (f) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (g) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or about the proposed wall or structure (h) have a wall height or post height not exceeding 3m above natural ground level (and not including a gable end)

(i) have a roof height where no part of the roof is more than 5m above the natural ground level

(j) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour

(k) retains a total area of soft landscaping for the entire development site, including any common property, with a minimum dimension of 700mm in accordance with (i) or (ii), whichever is less:

(i) a total area as determined by the following table:

Dwelling site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
>200-450	20%
>450	25%

(ii) the amount of existing soft landscaping prior to the development occurring.

PO 19.2

Ancillary buildings and structures do not impede on-site functional requirements such as private open space provision, car parking requirements or result in over-development of the site.

DTS/DPF 19.2

Ancillary buildings and structures do not result in:

(a) less private open space than specified in Design in Urban Areas Table 1 - Private Open Space

(b) less on-site car parking than specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.

PO 19.3

Fixed plant and equipment in the form of pumps and/or filtration systems for a swimming pool or spa positioned and/or housed to not cause unreasonable noise nuisance to adjacent sensitive receivers.

DTS/DPF 19.3

The pump and/or filtration system is ancillary to a dwelling erected on the same site and is:

(a) enclosed in a solid acoustic structure that is located at least 5m from the nearest habitable room located on an adjoining allotment
or

(b) located at least 12m from the nearest habitable room located on an adjoining allotment.

PO 19.4

Buildings and structures that are ancillary to an existing non-residential use do not detract from the streetscape character, appearance of buildings on the site of the development, or the amenity of neighbouring properties.

DTS/DPF 19.4

Non-residential ancillary buildings and structures:

(a) are ancillary and subordinate to an existing non-residential use on the same site

(b) have a floor area not exceeding the following:

Allotment size	Floor area
≤500m2	60m2
>500m2	80m2

(c) are not constructed, added to or altered so that any part is situated:

(i) in front of any part of the building line of the main building to which it is ancillary
or

(ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads)

(d) in the case of a garage or carport, the garage or carport:

	(i) is set back at least 5.5m from the boundary of the primary street (e) if situated on a boundary (not being a boundary with a primary street or secondary street), do not exceed a length of 11.5m unless: (i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary (ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (f) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (g) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or about the proposed wall or structure (h) have a wall height (or post height) not exceeding 3m (and not including a gable end) (i) have a roof height where no part of the roof is more than 5m above the natural ground level (j) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour.
PO 19.5 Ancillary accommodation: (a) is sited and designed to not detract from the streetscape or appearance of primary residential buildings on the site or neighbouring properties (b) is integrated within the site of the dwelling to which it is ancillary and incorporates shared utilities and shared open space.	DTS/DPF 19.5 Ancillary accommodation: (a) is ancillary to a dwelling erected on the same site (b) has a floor area not exceeding 70m^2 (c) is not constructed, added to, or altered so that any part is situated: (i) in front of any part of the building line of the dwelling to which it is ancillary or (ii) within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads) (d) if situated on a boundary (not being a boundary with a primary street or secondary street), does not exceed a length of 11.5m unless: (i) a longer wall or structure exists on the adjacent site and is situated on the same allotment boundary and (ii) the proposed wall or structure will be built along the same length of boundary as the existing adjacent wall or structure to the same or lesser extent (e) if situated on a boundary of the allotment (not being a boundary with a primary street or secondary street), all walls or structures on the boundary will not exceed 45% of the length of that boundary (f) will not be located within 3m of any other wall along the same boundary unless on an adjacent site on that boundary there is an existing wall of a building that would be adjacent to or abut the proposed wall or structure (g) has a wall height or post height not exceeding 3m above natural ground level (and not including a gable end) (h) has a roof height where no part of the roof is more than 5m above the natural ground level (i) if clad in sheet metal, is pre-colour treated or painted in a non-reflective colour

(j) retains a total area of soft landscaping for the entire development site, including any common property, with a minimum dimension of 700mm in accordance with (i) or (ii), whichever is less:

(i) a total area as determined by the following table:

Dwelling site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
>200-450	20%
>450	25%

(ii) the amount of existing soft landscaping prior to the development occurring.

(k) does not have separate connection to utilities and services (such as electricity, gas, water, telecommunications, sewerage system, wastewater system or waste control system) to those servicing the existing dwelling

(l) has unrestricted access to the private open space associated with the existing dwelling to which it is ancillary

(m) in the case of the Rural Zone, Productive Rural Landscape Zone, or Rural Horticulture Zone, is located within 20m of an existing dwelling.

Residential Development - Low Rise

External appearance

PO 20.1

Garaging is designed to not detract from the streetscape or appearance of a dwelling.

DTS/DPF 20.1

Garages and carports facing a street:

(a) are situated so that no part of the garage or carport will be in front of any part of the building line of the dwelling

(b) are set back at least 5.5m from the boundary of the primary street

(c) have a garage door / opening width not exceeding 7m

(d) have a garage door / opening width not exceeding 50% of the site frontage unless the dwelling has two or more building levels at the building line fronting the same public street.

PO 20.2

Dwelling elevations facing public streets and common driveways make a positive contribution to the streetscape and the appearance of common driveway areas.

DTS/DPF 20.2

Each dwelling includes at least 3 of the following design features within the building elevation facing a primary street, and at least 2 of the following design features within the building elevation facing any other public road (other than a laneway) or a common driveway:

(a) a minimum of 30% of the building wall is set back an additional 300mm from the building line

(b) a porch or portico projects at least 1m from the building wall

(c) a balcony projects from the building wall

(d) a verandah projects at least 1m from the building wall

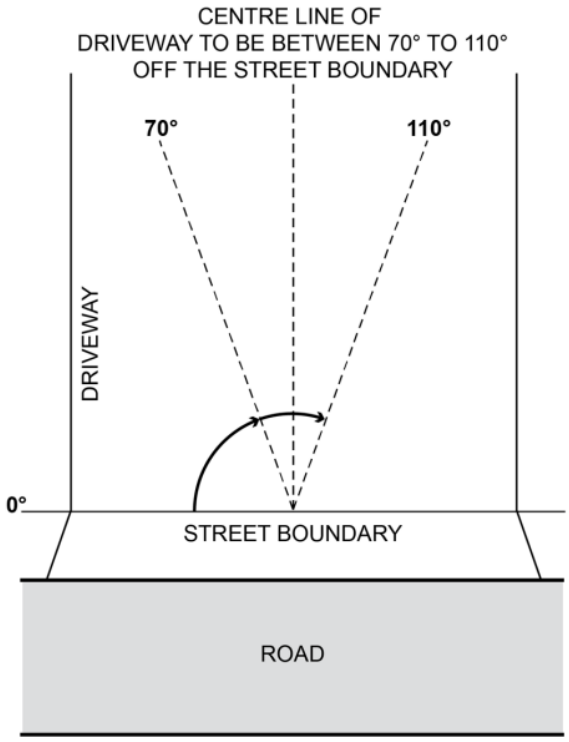
(e) eaves of a minimum 400mm width extend along the width of the front elevation

(f) a minimum 30% of the width of the upper level projects forward from the lower level primary building line by at least 300mm

(g) a minimum of two different materials or finishes are incorporated on the walls of the front building elevation, with a maximum of 80% of the building elevation in a single material or finish.

PO 20.3 The visual mass of larger buildings is reduced when viewed from adjoining allotments or public streets.	DTS/DPF 20.3 None are applicable
Private Open Space	
PO 21.1 Dwellings are provided with suitable sized areas of usable private open space to meet the needs of occupants.	DTS/DPF 21.1 Private open space is provided in accordance with Design in Urban Areas Table 1 - Private Open Space.
PO 21.2 Private open space is positioned to provide convenient access from internal living areas.	DTS/DPF 21.2 Private open space is directly accessible from a habitable room.
Landscaping	
PO 22.1 Soft landscaping is incorporated into development to: (a) minimise heat absorption and reflection (b) contribute shade and shelter (c) provide for stormwater infiltration and biodiversity (d) enhance the appearance of land and streetscapes.	DTS/DPF 22.1 Residential development incorporates soft landscaping with a minimum dimension of 700mm provided in accordance with (a) and (b): (a) a total area for the entire development site, including any common property, as determined by the following table: **Site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2) / Minimum percentage of site** <150 / 10% 150-200 / 15% >200-450 / 20% >450 / 25% (b) at least 30% of any land between the primary street boundary and the primary building line.
Car parking, access and manoeuvrability	
PO 23.1 Enclosed car parking spaces are of dimensions to be functional, accessible and convenient.	DTS/DPF 23.1 Residential car parking spaces enclosed by fencing, walls or other structures have the following internal dimensions (separate from any waste storage area): (a) single width car parking spaces: (i) a minimum length of 5.4m per space (ii) a minimum width of 3.0m (iii) a minimum garage door width of 2.4m (b) double width car parking spaces (side by side): (i) a minimum length of 5.4m (ii) a minimum width of 5.4m (iii) minimum garage door width of 2.4m per space.
PO 23.2 Uncovered car parking space are of dimensions to be functional, accessible and convenient.	DTS/DPF 23.2 Uncovered car parking spaces have: (a) a minimum length of 5.4m (b) a minimum width of 2.4m

	(c) a minimum width between the centre line of the space and any fence, wall or other obstruction of 1.5m.
PO 23.3 Driveways and access points are located and designed to facilitate safe access and egress while maximising land available for street tree planting, pedestrian movement, domestic waste collection, landscaped street frontages and on-street parking.	DTS/DPF 23.3 Driveways and access points satisfy (a) or (b): (a) sites with a frontage to a public road of 10m or less, have a width between 3.0 and 3.2 metres measured at the property boundary and are the only access point provided on the site (b) sites with a frontage to a public road greater than 10m: (i) have a maximum width of 5m measured at the property boundary and are the only access point provided on the site; (ii) have a width between 3.0 metres and 3.2 metres measured at the property boundary and no more than two access points are provided on site, separated by no less than 1m.
PO 23.4 Vehicle access is safe, convenient, minimises interruption to the operation of public roads and does not interfere with street infrastructure or street trees.	DTS/DPF 23.4 Vehicle access to designated car parking spaces satisfy (a) or (b): (a) is provided via a lawfully existing or authorised access point or an access point for which consent has been granted as part of an application for the division of land (b) where newly proposed, is set back: (i) 0.5m or more from any street furniture, street pole, infrastructure services pit, or other stormwater or utility infrastructure unless consent is provided from the asset owner (ii) 2m or more from the base of the trunk of a street tree unless consent is provided from the tree owner for a lesser distance (iii) 6m or more from the tangent point of an intersection of 2 or more roads (iv) outside of the marked lines or infrastructure dedicating a pedestrian crossing.
PO 23.5 Driveways are designed to enable safe and convenient vehicle movements from the public road to on-site parking spaces.	DTS/DPF 23.5 Driveways are designed and sited so that: (a) the gradient of the driveway does not exceed a grade of 1 in 4 and includes transitions to ensure a maximum grade change of 12.5% (1 in 8) for summit changes, and 15% (1 in 6.7) for sag changes, in accordance with AS 2890.1:2004 to prevent vehicles bottoming or scraping

	(b) the centreline of the driveway has an angle of no less than 70 degrees and no more than 110 degrees from the street boundary to which it takes its access as shown in the following diagram:  (c) if located to provide access from an alley, lane or right of way - the alley, land or right or way is at least 6.2m wide along the boundary of the allotment / site.
PO 23.6 Driveways and access points are designed and distributed to optimise the provision of on-street visitor parking.	DTS/DPF 23.6 Where on-street parking is available abutting the site's street frontage, on-street parking is retained in accordance with the following requirements: (a) minimum 0.33 on-street spaces per dwelling on the site (rounded up to the nearest whole number) (b) minimum car park length of 5.4m where a vehicle can enter or exit a space directly (c) minimum carpark length of 6m for an intermediate space located between two other parking spaces or to an end obstruction where the parking is indented.
Waste storage	
PO 24.1 Provision is made for the convenient storage of waste bins in a location screened from public view.	DTS/DPF 24.1 Where dwellings abut both side boundaries a waste bin storage area is provided behind the building line of each dwelling that: (a) has a minimum area of $2m^2$ with a minimum dimension of 900mm (separate from any designated car parking spaces or private open space); and (b) has a continuous unobstructed path of travel (excluding moveable objects like gates, vehicles and roller doors) with a minimum width of 800mm between the waste bin storage area and the street.
Design of Transportable Buildings	
PO 25.1 The sub-floor space beneath transportable buildings is enclosed to give the appearance of a permanent structure.	DTS/DPF 25.1 Buildings satisfy (a) or (b): (a) are not transportable

	(b) the sub-floor space between the building and ground level is clad in a material and finish consistent with the building.
Residential Development - Medium and High Rise (including serviced apartments)	
Outlook and Visual Privacy	
PO 26.1 Ground level dwellings have a satisfactory short range visual outlook to public, communal or private open space.	DTS/DPF 26.1 Buildings: (a) provide a habitable room at ground or first level with a window facing toward the street (b) limit the height / extent of solid walls or fences facing the street to 1.2m high above the footpath level or, where higher, to 50% of the site frontage.
PO 26.2 The visual privacy of ground level dwellings within multi-level buildings is protected.	DTS/DPF 26.2 The finished floor level of ground level dwellings in multi-storey developments is raised by up to 1.2m.
Private Open Space	
PO 27.1 Dwellings are provided with suitable sized areas of usable private open space to meet the needs of occupants.	DTS/DPF 27.1 Private open space provided in accordance with Design in Urban Areas Table 1 - Private Open Space.
Residential amenity in multi-level buildings	
DTS/DPF 28.1 Habitable rooms and balconies of independent dwellings and accommodation are separated by at least 6m from one another where there is a direct line of sight between them and 3m or more from a side or rear property boundary.	PO 28.1 Residential accommodation within multi-level buildings have habitable rooms, windows and balconies designed and positioned to be separated from those of other dwellings and accommodation to provide visual and acoustic privacy and allow for natural ventilation and the infiltration of daylight into interior and outdoor spaces.
PO 28.2 Balconies are designed, positioned and integrated into the overall architectural form and detail of the development to: (a) respond to daylight, wind, and acoustic conditions to maximise comfort and provide visual privacy (b) allow views and casual surveillance of the street while providing for safety and visual privacy of nearby living spaces and private outdoor areas.	DTS/DPF 28.2 Balconies utilise one or a combination of the following design elements: (a) sun screens (b) pergolas (c) louvres (d) green facades (e) openable walls.
PO 28.3 Balconies are of sufficient size and depth to accommodate outdoor seating and promote indoor / outdoor living.	DTS/DPF 28.3 Balconies open directly from a habitable room and incorporate a minimum dimension of 2m.
PO 28.4 Dwellings are provided with sufficient space for storage to meet likely occupant needs.	DTS/DPF 28.4 Dwellings (not including student accommodation or serviced apartments) are provided with storage at the following rates with at least 50% or more of the storage volume to be provided within the dwelling: (a) studio: not less than $6m^3$ (b) 1 bedroom dwelling / apartment: not less than $8m^3$ (c) 2 bedroom dwelling / apartment: not less than $10m^3$ (d) 3+ bedroom dwelling / apartment: not less than $12m^3$.
PO 28.5 Dwellings that use light wells for access to daylight, outlook and ventilation for habitable rooms, are designed to ensure a reasonable living amenity is provided.	DTS/DPF 28.5 Light wells: (a) are not used as the primary source of outlook for living rooms

	(b) up to 18m in height have a minimum horizontal dimension of 3m, or 6m if overlooked by bedrooms (c) above 18m in height have a minimum horizontal dimension of 6m, or 9m if overlooked by bedrooms.
PO 28.6 Attached or abutting dwellings are designed to minimise the transmission of sound between dwellings and, in particular, to protect bedrooms from possible noise intrusions.	DTS/DPF 28.6 None are applicable.
PO 28.7 Dwellings are designed so that internal structural columns correspond with the position of internal walls to ensure that the space within the dwelling/apartment is useable.	DTS/DPF 28.7 None are applicable.
Dwelling Configuration	
PO 29.1 Buildings containing in excess of 10 dwellings provide a variety of dwelling sizes and a range in the number of bedrooms per dwelling to contribute to housing diversity.	DTS/DPF 29.1 Buildings containing in excess of 10 dwellings provide at least one of each of the following: (a) studio (where there is no separate bedroom) (b) 1 bedroom dwelling / apartment with a floor area of at least $50m^2$ (c) 2 bedroom dwelling / apartment with a floor area of at least $65m^2$ (d) 3+ bedroom dwelling / apartment with a floor area of at least $80m^2$, and any dwelling over 3 bedrooms provides an additional $15m^2$ for every additional bedroom.
PO 29.2 Dwellings located on the ground floor of multi-level buildings with 3 or more bedrooms have the windows of their habitable rooms overlooking internal courtyard space or other public space, where possible.	DTS/DPF 29.2 None are applicable.
Common Areas	
PO 30.1 The size of lifts, lobbies and corridors is sufficient to accommodate movement of bicycles, strollers, mobility aids and visitor waiting areas.	DTS/DPF 30.1 Common corridor or circulation areas: (a) have a minimum ceiling height of 2.7m (b) provide access to no more than 8 dwellings (c) incorporate a wider section at apartment entries where the corridors exceed 12m in length from a core.
Group Dwellings, Residential Flat Buildings and Battle axe Development	
Amenity	
PO 31.1 Dwellings are of a suitable size to provide a high standard of amenity for occupants.	DTS/DPF 31.1 Dwellings have a minimum internal floor area in accordance with the following table:

Number of bedrooms	Minimum internal floor area
Studio	$35m^2$
1 bedroom	$50m^2$
2 bedroom	$65m^2$
3+ bedrooms	$80m^2$ and any dwelling over 3 bedrooms provides an additional $15m^2$ for every additional bedroom

PO 31.2 The orientation and siting of buildings minimises impacts on the amenity, outlook and privacy of occupants and neighbours.	DTS/DPF 31.2 None are applicable.
PO 31.3 Development maximises the number of dwellings that face public open space and public streets and limits dwellings oriented towards adjoining properties.	DTS/DPF 31.3 None are applicable.
PO 31.4 Battle-axe development is appropriately sited and designed to respond to the existing neighbourhood context.	DTS/DPF 31.4 Dwelling sites/allotments are not in the form of a battle-axe arrangement.
Communal Open Space	
PO 32.1 Private open space provision may be substituted for communal open space which is designed and sited to meet the recreation and amenity needs of residents.	DTS/DPF 32.1 None are applicable.
PO 32.2 Communal open space is of sufficient size and dimensions to cater for group recreation.	DTS/DPF 32.2 Communal open space incorporates a minimum dimension of 5 metres.
PO 32.3 Communal open space is designed and sited to: (a) be conveniently accessed by the dwellings which it services (b) have regard to acoustic, safety, security and wind effects.	DTS/DPF 32.3 None are applicable.
PO 32.4 Communal open space contains landscaping and facilities that are functional, attractive and encourage recreational use.	DTS/DPF 32.4 None are applicable.
PO 32.5 Communal open space is designed and sited to: (a) in relation to rooftop or elevated gardens, minimise overlooking into habitable room windows or onto the useable private open space of other dwellings (b) in relation to ground floor communal space, be overlooked by habitable rooms to facilitate passive surveillance.	DTS/DPF 32.5 None are applicable.
Car parking, access and manoeuvrability	
PO 33.1 Driveways and access points are designed and distributed to optimise the provision of on-street visitor parking.	DTS/DPF 33.1 Where on-street parking is available directly adjacent the site, on-street parking is retained adjacent the subject site in accordance with the following requirements: (a) minimum 0.33 on-street car parks per proposed dwelling (rounded up to the nearest whole number) (b) minimum car park length of 5.4m where a vehicle can enter or exit a space directly (c) minimum carpark length of 6m for an intermediate space located between two other parking spaces or to an end obstruction where the parking is indented.
PO 33.2 The number of vehicular access points onto public roads is minimised to reduce interruption of the footpath and positively contribute to public safety and walkability.	DTS/DPF 33.2 Access to group dwellings or dwellings within a residential flat building is provided via a single common driveway.
PO 33.3 Residential driveways that service more than one dwelling are designed to allow safe and convenient movement.	DTS/DPF 33.3 Driveways that service more than 1 dwelling or a dwelling on a battle-axe site:

	(a) have a minimum width of 3m (b) for driveways servicing more than 3 dwellings: (i) have a width of 5.5m or more and a length of 6m or more at the kerb of the primary street (ii) where the driveway length exceeds 30m, incorporate a passing point at least every 30 metres with a minimum width of 5.5m and a minimum length of 6m.
PO 33.4 Residential driveways that service more than one dwelling or a dwelling on a battle-axe site are designed to allow passenger vehicles to enter and exit and manoeuvre within the site in a safe and convenient manner.	DTS/DPF 33.4 Driveways providing access to more than one dwelling, or a dwelling on a battle-axe site, allow a B85 passenger vehicle to enter and exit the garages or parking spaces in no more than a three-point turn manoeuvre.
PO 33.5 Dwellings are adequately separated from common driveways and manoeuvring areas.	DTS/DPF 33.5 Dwelling walls with entry doors or ground level habitable room windows are set back at least 1.5m from any driveway or area designated for the movement and manoeuvring of vehicles.
Soft landscaping	
PO 34.1 Soft landscaping is provided between dwellings and common driveways to improve the outlook for occupants and appearance of common areas.	DTS/DPF 34.1 Other than where located directly in front of a garage or building entry, soft landscaping with a minimum dimension of 1m is provided between a dwelling and common driveway.
PO 34.2 Battle-axe or common driveways incorporate landscaping and permeability to improve appearance and assist in stormwater management.	DTS/DPF 34.2 Battle-axe or common driveways satisfy (a) and (b): (a) are constructed of a minimum of 50% permeable or porous material (b) where the driveway is located directly adjacent the side or rear boundary of the site, soft landscaping with a minimum dimension of 1m is provided between the driveway and site boundary (excluding along the perimeter of a passing point).
Site Facilities / Waste Storage	
PO 35.1 Provision is made for suitable mailbox facilities close to the major pedestrian entry to the site or conveniently located considering the nature of accommodation and mobility of occupants.	DTS/DPF 35.1 None are applicable.
PO 35.2 Provision is made for suitable external clothes drying facilities.	DTS/DPF 35.2 None are applicable.
PO 35.3 Provision is made for suitable household waste and recyclable material storage facilities which are: (a) located away, or screened, from public view, and (b) conveniently located in proximity to dwellings and the waste collection point.	DTS/DPF 35.3 None are applicable.
PO 35.4 Waste and recyclable material storage areas are located away from dwellings.	DTS/DPF 35.4 Dedicated waste and recyclable material storage areas are located at least 3m from any habitable room window.
PO 35.5 Where waste bins cannot be conveniently collected from the street, provision is made for on-site waste collection, designed to accommodate the safe and convenient access, egress and movement of waste collection vehicles.	DTS/DPF 35.5 None are applicable.

PO 35.6 Services including gas and water meters are conveniently located and screened from public view.	DTS/DPF 35.6 None are applicable.
Water sensitive urban design	
PO 36.1 Residential development creating a common driveway / access includes stormwater management systems that minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system, watercourses or other water bodies.	DTS/DPF 36.1 None are applicable.
PO 36.2 Residential development creating a common driveway / access includes a stormwater management system designed to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that the development does not increase the peak flows in downstream systems.	DTS/DPF 36.2 None are applicable.
Supported Accommodation and retirement facilities	
Siting, Configuration and Design	
PO 37.1 Supported accommodation and housing for aged persons and people with disabilities is located where on-site movement of residents is not unduly restricted by the slope of the land.	DTS/DPF 37.1 None are applicable.
PO 37.2 Universal design features are incorporated to provide options for people living with disabilities or limited mobility and / or to facilitate ageing in place.	DTS/DPF 37.2 None are applicable.
Movement and Access	
PO 38.1 Development is designed to support safe and convenient access and movement for residents by providing: (a) ground-level access or lifted access to all units (b) level entry porches, ramps, paths, driveways, passenger loading areas and areas adjacent to footpaths that allow for the passing of wheelchairs and resting places (c) car parks with gradients no steeper than 1-in-40, and of sufficient area to provide for wheelchair manoeuvrability (d) kerb ramps at pedestrian crossing points.	DTS/DPF 38.1 None are applicable.
Communal Open Space	
PO 39.1 Development is designed to provide attractive, convenient and comfortable indoor and outdoor communal areas to be used by residents and visitors.	DTS/DPF 39.1 None are applicable.
PO 39.2 Private open space provision may be substituted for communal open space which is designed and sited to meet the recreation and amenity needs of residents.	DTS/DPF 39.2 None are applicable.
PO 39.3 Communal open space is of sufficient size and dimensions to cater for group recreation.	DTS/DPF 39.3 Communal open space incorporates a minimum dimension of 5 metres.
PO 39.4 Communal open space is designed and sited to:	DTS/DPF 39.4 None are applicable.

(a) be conveniently accessed by the dwellings which it services (b) have regard to acoustic, safety, security and wind effects.	
PO 39.5 Communal open space contains landscaping and facilities that are functional, attractive and encourage recreational use.	DTS/DPF 39.5 None are applicable.
PO 39.6 Communal open space is designed and sited to: (a) in relation to rooftop or elevated gardens, minimise overlooking into habitable room windows or onto the useable private open space of other dwellings (b) in relation to ground floor communal space, be overlooked by habitable rooms to facilitate passive surveillance.	DTS/DPF 39.6 None are applicable.
Site Facilities / Waste Storage	
PO 40.1 Development is designed to provide storage areas for personal items and specialised equipment such as small electric powered vehicles, including facilities for the recharging of small electric-powered vehicles.	DTS/DPF 40.1 None are applicable.
PO 40.2 Provision is made for suitable mailbox facilities close to the major pedestrian entry to the site or conveniently located considering the nature of accommodation and mobility of occupants.	DTS/DPF 40.2 None are applicable.
PO 40.3 Provision is made for suitable external clothes drying facilities.	DTS/DPF 40.3 None are applicable.
PO 40.4 Provision is made for suitable household waste and recyclable material storage facilities conveniently located away, or screened, from view.	DTS/DPF 40.4 None are applicable.
PO 40.5 Waste and recyclable material storage areas are located away from dwellings.	DTS/DPF 40.5 Dedicated waste and recyclable material storage areas are located at least 3m from any habitable room window.
PO 40.6 Provision is made for on-site waste collection where 10 or more bins are to be collected at any one time.	DTS/DPF 40.6 None are applicable.
PO 40.7 Services, including gas and water meters, are conveniently located and screened from public view.	DTS/DPF 40.7 None are applicable.
Student Accommodation	
PO 41.1 Student accommodation is designed to provide safe, secure, attractive, convenient and comfortable living conditions for residents, including an internal layout and facilities that are designed to provide sufficient space and amenity for the requirements of student life and promote social interaction.	DTS/DPF 41.1 Student accommodation provides: (a) a range of living options to meet a variety of accommodation needs, such as one-bedroom, two-bedroom and disability access units (b) common or shared facilities to enable a more efficient use of space, including: (i) shared cooking, laundry and external drying facilities (ii) internal and external communal and private open space provided in accordance with Design in Urban Areas Table 1 - Private Open Space (iii) common storage facilities at the rate of $8m^3$ for every 2 dwellings or students

	(iv) common on-site parking in accordance with Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas (v) bicycle parking at the rate of one space for every 2 students.
PO 41.2 Student accommodation is designed to provide easy adaptation of the building to accommodate an alternative use of the building in the event it is no longer required for student housing.	DTS/DPF 41.2 None are applicable.
All non-residential development	
Water Sensitive Design	
PO 42.1 Development likely to result in risk of export of sediment, suspended solids, organic matter, nutrients, oil and grease include stormwater management systems designed to minimise pollutants entering stormwater.	DTS/DPF 42.1 None are applicable.
PO 42.2 Water discharged from a development site is of a physical, chemical and biological condition equivalent to or better than its pre-developed state.	DTS/DPF 42.2 None are applicable.
PO 42.3 Development includes stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that development does not increase peak flows in downstream systems.	DTS/DPF 42.3 None are applicable.
Wash-down and Waste Loading and Unloading	
PO 43.1 Areas for activities including loading and unloading, storage of waste refuse bins in commercial and industrial development or wash-down areas used for the cleaning of vehicles, plant or equipment are: (a) designed to contain all wastewater likely to pollute stormwater within a bunded and roofed area to exclude the entry of external surface stormwater run-off (b) paved with an impervious material to facilitate wastewater collection (c) of sufficient size to prevent 'splash-out' or 'over-spray' of wastewater from the wash-down area (d) are designed to drain wastewater to either: (i) a treatment device such as a sediment trap and coalescing plate oil separator with subsequent disposal to a sewer, private or Community Wastewater Management Scheme or (ii) a holding tank and its subsequent removal off-site on a regular basis.	DTS/DPF 43.1 None are applicable.
Laneway Development	
Infrastructure and Access	
PO 44.1 Development with a primary street comprising a laneway, alley, lane, right of way or similar minor thoroughfare only occurs where: (a) existing utility infrastructure and services are capable of accommodating the development	DTS/DPF 44.1 Development with a primary street frontage that is not an alley, lane, right of way or similar public thoroughfare.

(b) the primary street can support access by emergency and regular service vehicles (such as waste collection)
(c) it does not require the provision or upgrading of infrastructure on public land (such as footpaths and stormwater management systems)
(d) safety of pedestrians or vehicle movement is maintained
(e) any necessary grade transition is accommodated within the site of the development to support an appropriate development intensity and orderly development of land fronting minor thoroughfares.

Decks

Design and Siting

PO 45.1

Decks are designed and sited to:

(a) complement the associated building form
(b) minimise impacts on the streetscape through siting behind the building line of the principal building (unless on a significant allotment or open space)
(c) minimise cut and fill and overall massing when viewed from adjacent land.

DTS/DPF 45.1

Decks:

(a) where ancillary to a dwelling:
  (i) are not constructed, added to or altered so that any part is situated:
    A. in front of any part of the building line of the dwelling to which it is ancillary
    or
    B. within 900mm of a boundary of the allotment with a secondary street (if the land has boundaries on two or more roads)
  (ii) are set back at least 900mm from side or rear allotment boundaries
  (iii) when attached to the dwelling, has a finished floor level consistent with the finished ground floor level of the dwelling
  (iv) where associated with a residential use, retains a total area of soft landscaping for the entire development site, including any common property, with a minimum dimension of 700mm in accordance with (A) or (B), whichever is less:
    A. a total area is determined by the following table:

Site area (or in the case of residential flat building or group dwelling(s), average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
>200-450	20%
>450	25%

    B. the amount of existing soft landscaping prior to the development occurring.

(b) where in association with a non-residential use:
  (i) are set back at least 2 metres from the boundary of an allotment used for residential purposes.
  (ii) are set back at least 2 metres from a public road.
  (iii) have a floor area not exceeding 25m^2

(c) in all cases, has a finished floor level not exceeding 1 metre above natural ground level at any point.

PO 45.2

Decks are designed and sited to minimise direct overlooking of

DTS/DPF 45.2

Decks with a finished floor level/s 500mm or more above natural

habitable rooms and private open spaces of adjoining residential uses in neighbourhood-type zones through suitable floor levels, screening and siting taking into account the slope of the subject land, existing vegetation on the subject land, and fencing.	ground level facing side or rear boundaries shared with a residential use in a neighbourhood-type zone incorporate screening with a maximum of 25% transparency/openings, permanently fixed to the outer edge of the deck not less than 1.5 m above the finished floor level/s.
PO 45.3 Decks used for outdoor dining, entertainment or other commercial uses provide carparking in accordance with the primary use of the deck.	DTS/DPF 45.3 Decks used for commercial purposes do not result in less on-site car parking for the primary use of the subject land than specified in Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas.

Table 1 - Private Open Space

Dwelling Type	Dwelling / Site Configuration	Minimum Rate
Dwelling (at ground level, other than a residential flat building that includes above ground dwellings)		Total private open space area: (a) Site area <301m^2: 24m^2 located behind the building line. (b) Site area ≥ 301m^2: 60m^2 located behind the building line. Minimum directly accessible from a living room: 16m^2 / with a minimum dimension 3m.
Cabin or caravan (permanently fixed to the ground) in a residential park or caravan and tourist park		Total area: 16m^2, which may be uses as second car parking space, provided on each site intended for residential occupation.
Dwelling in a residential flat building or mixed use building which incorporate above ground level dwellings	Dwellings at ground level:	15m^2 / minimum dimension 3m
	Dwellings above ground level:	
	Studio (no separate bedroom)	4m^2 / minimum dimension 1.8m
	One bedroom dwelling	8m^2 / minimum dimension 2.1m
	Two bedroom dwelling	11m^2 / minimum dimension 2.4m
	Three + bedroom dwelling	15 m^2 / minimum dimension 2.6m

Forestry

Assessment Provisions (AP)

Desired Outcome (DO)

	Desired Outcome
DO 1	Commercial forestry is designed and sited to maximise economic benefits whilst managing potential negative impacts on the environment, transport networks, surrounding land uses and landscapes.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Siting	
PO 1.1 Commercial forestry plantations are established where there is no detrimental effect on the physical environment or scenic quality of the rural landscape.	DTS/DPF 1.1 None are applicable.
PO 1.2 Commercial forestry plantations are established on slopes that are stable to minimise the risk of soil erosion.	DTS/DPF 1.2 Commercial forestry plantations are not located on land with a slope exceeding 20% (1-in-5).
PO 1.3 Commercial forestry plantations and operations associated with their establishment, management and harvesting are appropriately set back from any sensitive receiver to minimise fire risk and noise disturbance.	DTS/DPF 1.3 Commercial forestry plantations and operations associated with their establishment, management and harvesting are set back 50m or more from any sensitive receiver.
Water Protection	
PO 2.1 Commercial forestry plantations incorporate artificial drainage lines (i.e. culverts, runoffs and constructed drains) integrated with natural drainage lines to minimise concentrated water flows onto or from plantation areas.	DTS/DPF 2.1 None are applicable.
PO 2.2 Appropriate siting, layout and design measures are adopted to minimise the impact of commercial forestry plantations on surface water resources.	DTS/DPF 2.2 Commercial forestry plantations: (a) do not involve cultivation (excluding spot cultivation) in drainage lines (b) are set back 20m or more from the banks of any major watercourse (a third order or higher watercourse), lake, reservoir, wetland or sinkhole (with direct connection to an aquifer) (c) are set back 10m or more from the banks of any first or second order watercourse or sinkhole (with no direct connection to an aquifer).
Fire Management	
PO 3.1 Commercial forestry plantations incorporate appropriate firebreaks and fire management design elements.	DTS/DPF 3.1 Commercial forestry plantations provide: (a) 7m or more wide external boundary firebreaks for plantations of 40ha or less (b) 10m or more wide external boundary firebreaks for plantations of between 40ha and 100ha (c) 20m or more wide external boundary firebreaks, or 10m with an additional 10m or more of fuel-reduced plantation, for plantations of 100ha or greater. Note: Firebreaks prescribed above (as well as access tracks) may be included within the setback buffer distances prescribed by other policies of the Code.
PO 3.2 Commercial forestry plantations incorporate appropriate fire management access tracks.	DTS/DPF 3.2 Commercial forestry plantation fire management access tracks: (a) are incorporated within all firebreaks (b) are 7m or more wide with a vertical clearance of 4m or more

	(c) are aligned to provide straight through access at junctions, or if they are a no through access track are appropriately signposted and provide suitable turnaround areas for fire-fighting vehicles (d) partition the plantation into units of 40ha or less in area.
Power-line Clearances	
PO 4.1 Commercial forestry plantations achieve and maintain appropriate clearances from aboveground powerlines.	DTS/DPF 4.1 Commercial forestry plantations incorporating trees with an expected mature height of greater than 6m meet the clearance requirements listed in the following table:

Voltage of transmission line	Tower or Pole	Minimum horizontal clearance distance between plantings and transmission lines
500 kV	Tower	38m
275 kV	Tower	25m
132 kV	Tower	30m
132 kV	Pole	20m
66 kV	Pole	20m
Less than 66 kV	Pole	20m

Housing Renewal

Assessment Provisions (AP)

The Housing Renewal General Development Policies are only applicable to dwellings or residential flat building undertaken by:

(a) the South Australian Housing Trust either individually or jointly with other persons or bodies
or
(b) a provider registered under the Community Housing National Law participating in a program relating to the renewal of housing endorsed by the South Australian Housing Trust.

Desired Outcome (DO)

Desired Outcome	
DO 1	Renewed residential environments replace older social housing and provide new social housing infrastructure and other housing options and tenures to enhance the residential amenity of the local area.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use and Intensity	
PO 1.1 Residential development provides a range of housing choices.	DTS/DPF 1.1 Development comprises one or more of the following: (a) detached dwellings (b) semi-detached dwellings (c) row dwellings (d) group dwellings

	(e) residential flat buildings.
PO 1.2 Medium-density housing options or higher are located in close proximity to public transit, open space and/or activity centres.	DTS/DPF 1.2 None are applicable.
Building Height	
PO 2.1 Buildings generally do not exceed 3 building levels unless in locations close to public transport, centres and/or open space.	DTS/DPF 2.1 Building height (excluding garages, carports and outbuildings) does not exceed 3 building levels and 12m and wall height does not exceed 9m (not including a gable end).
PO 2.2 Medium or high rise residential flat buildings located within or at the interface with zones which restrict heights to a maximum of 2 building levels transition down in scale and height towards the boundary of that zone, other than where it is a street boundary.	DTS/DPF 2.2 None are applicable.
Primary Street Setback	
PO 3.1 Buildings are set back from the primary street boundary to contribute to an attractive streetscape character.	DTS/DPF 3.1 Buildings are no closer to the primary street (excluding any balcony, verandah, porch, awning or similar structure) than 3m.
Secondary Street Setback	
PO 4.1 Buildings are set back from secondary street boundaries to maintain separation between building walls and public streets and contribute to a suburban streetscape character.	DTS/DPF 4.1 Buildings are set back at least 900mm from the boundary of the allotment with a secondary street frontage.
Boundary Walls	
PO 5.1 Boundary walls are limited in height and length to manage visual impacts and access to natural light and ventilation.	DTS/DPF 5.1 Except where the dwelling is located on a central site within a row dwelling or terrace arrangement, dwellings with side boundary walls are sited on only one side boundary and satisfy (a) or (b): (a) adjoin or abut a boundary wall of a building on adjoining land for the same length and height (b) do not: (i) exceed 3.2m in height from the lower of the natural or finished ground level (ii) exceed 11.5m in length (iii) when combined with other walls on the boundary of the subject development site, a maximum 45% of the length of the boundary (iv) encroach within 3 metres of any other existing or proposed boundary walls on the subject land.
PO 5.2 Dwellings in a semi-detached, row or terrace arrangement maintain space between buildings consistent with a suburban streetscape character.	DTS/DPF 5.2 Dwellings in a semi-detached or row arrangement are set back 900mm or more from side boundaries shared with allotments outside the development site, except for a carport or garage.
Side Boundary Setback	
PO 6.1 Buildings are set back from side boundaries to provide:	DTS/DPF 6.1 Other than walls located on a side boundary, buildings are set back

(a) separation between dwellings in a way that contributes to a suburban character (b) access to natural light and ventilation for neighbours.	from side boundaries in accordance with the following: (a) where the wall height does not exceed 3m - at least 900mm (b) for a wall that is not south facing and the wall height exceeds 3m - at least 900mm from the boundary of the site plus a distance of 1/3 of the extent to which the height of the wall exceeds 3m from the top of the footings (c) for a wall that is south facing and the wall height exceeds 3m - at least 1.9m from the boundary of the site plus a distance of 1/3 of the extent to which the height of the wall exceeds 3m from the top of the footings.
Rear Boundary Setback	
PO 7.1 Buildings are set back from rear boundaries to provide: (a) separation between dwellings in a way that contributes to a suburban character (b) access to natural light and ventilation for neighbours (c) private open space (d) space for landscaping and vegetation.	DTS/DPF 7.1 Dwellings are set back from the rear boundary: (a) 3m or more for the first building level (b) 5m or more for any subsequent building level.
Buildings elevation design	
PO 8.1 Dwelling elevations facing public streets and common driveways make a positive contribution to the streetscape and common driveway areas.	DTS/DPF 8.1 Each dwelling includes at least 3 of the following design features within the building elevation facing a primary street, and at least 2 of the following design features within the building elevation facing any other public road (other than a laneway) or a common driveway: (a) a minimum of 30% of the building elevation is set back an additional 300mm from the building line (b) a porch or portico projects at least 1m from the building elevation (c) a balcony projects from the building elevation (d) a verandah projects at least 1m from the building elevation (e) eaves of a minimum 400mm width extend along the width of the front elevation (f) a minimum 30% of the width of the upper level projects forward from the lower level primary building line by at least 300mm. (g) a minimum of two different materials or finishes are incorporated on the walls of the building elevation, with a maximum of 80% of the building elevation in a single material or finish.
PO 8.2 Dwellings incorporate windows along primary street frontages to encourage passive surveillance and make a positive contribution to the streetscape.	DTS/DPF 8.2 Each dwelling with a frontage to a public street: (a) includes at least one window facing the primary street from a habitable room that has a minimum internal room dimension of 2.4m (b) has an aggregate window area of at least $2m^2$ facing the primary street
PO 8.3 The visual mass of larger buildings is reduced when viewed from adjoining allotments or public streets.	DTS/DPF 8.3 None are applicable.
PO 8.4 Built form considers local context and provides a quality design response through scale, massing, materials, colours and architectural expression.	DTS/DPF 8.4 None are applicable.
PO 8.5	DTS/DPF 8.5

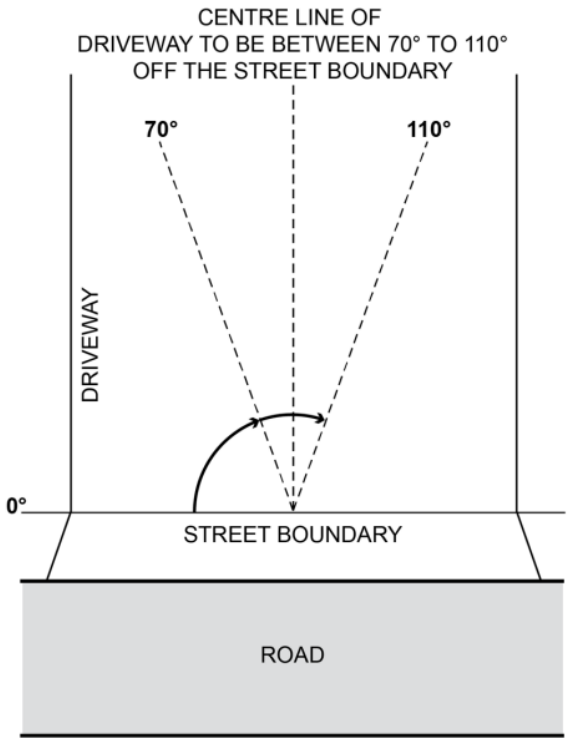
Entrances to multi-storey buildings are: (a) oriented towards the street (b) visible and easily identifiable from the street (c) designed to include a common mail box structure.	None are applicable.
Outlook and amenity	
PO 9.1 Living rooms have an external outlook to provide a high standard of amenity for occupants.	DTS/DPF 9.1 A living room of a dwelling incorporates a window with an external outlook towards the street frontage or private open space.
PO 9.2 Bedrooms are separated or shielded from active communal recreation areas, common access areas and vehicle parking areas and access ways to mitigate noise and artificial light intrusion.	DTS/DPF 9.2 None are applicable.
Private Open Space	
PO 10.1 Dwellings are provided with suitable sized areas of usable private open space to meet the needs of occupants.	DTS/DPF 10.1 Private open space is provided in accordance with the following table:

Dwelling Type	Dwelling / Site Configuration	Minimum Rate
Dwelling (at ground level)		Total area: 24m^2 located behind the building line Minimum adjacent to a living room: 16m^2 with a minimum dimension 3m
Dwelling (above ground level)	Studio	4m^2 / minimum dimension 1.8m
	One bedroom dwelling	8m^2 / minimum dimension 2.1m
	Two bedroom dwelling	11m^2 / minimum dimension 2.4m
	Three + bedroom dwelling	15 m^2 / minimum dimension 2.6m

PO 10.2 Private open space positioned to provide convenient access from internal living areas.	DTS/DPF 10.2 At least 50% of the required area of private open space is accessible from a habitable room.
PO 10.3 Private open space is positioned and designed to: (a) provide useable outdoor space that suits the needs of occupants; (b) take advantage of desirable orientation and vistas; and (c) adequately define public and private space.	DTS/DPF 10.3 None are applicable.
Visual privacy	
PO 11.1 Development mitigates direct overlooking from upper level windows to habitable rooms and private open spaces of adjoining residential uses.	DTS/DPF 11.1 Upper level windows facing side or rear boundaries shared with another residential allotment/site satisfy one of the following:

	(a) are permanently obscured to a height of 1.5m above finished floor level and are fixed or not capable of being opened more than 200mm (b) have sill heights greater than or equal to 1.5m above finished floor level (c) incorporate screening with a maximum of 25% openings, permanently fixed no more than 500mm from the window surface and sited adjacent to any part of the window less than 1.5m above the finished floor.
PO 11.2 Development mitigates direct overlooking from upper level balconies and terraces to habitable rooms and private open space of adjoining residential uses.	DTS/DPF 11.2 One of the following is satisfied: (a) the longest side of the balcony or terrace will face a public road, public road reserve or public reserve that is at least 15m wide in all places faced by the balcony or terrace or (b) all sides of balconies or terraces on upper building levels are permanently obscured by screening with a maximum 25% transparency/openings fixed to a minimum height of: (i) 1.5m above finished floor level where the balcony is located at least 15 metres from the nearest habitable window of a dwelling on adjacent land or (ii) 1.7m above finished floor level in all other cases
Landscaping	
PO 12.1 Soft landscaping is incorporated into development to: (a) minimise heat absorption and reflection (b) maximise shade and shelter (c) maximise stormwater infiltration and biodiversity (d) enhance the appearance of land and streetscapes.	DTS/DPF 12.1 Residential development incorporates pervious areas for soft landscaping with a minimum dimension of 700mm provided in accordance with (a) and (b): (a) a total area as determined by the following table: Dwelling site area (or in the case of residential flat building or group dwelling(s), average site area) (m2) / Minimum percentage of site <150 / 10% <200 / 15% 200-450 / 20% >450 / 25% (b) at least 30% of land between the road boundary and the building line.
Water Sensitive Design	
PO 13.1 Residential development is designed to capture and use stormwater to: (a) maximise efficient use of water resources (b) manage peak stormwater runoff flows and volume to ensure the carrying capacities of downstream systems are not overloaded (c) manage runoff quality to maintain, as close as practical, pre-development conditions.	DTS/DPF 13.1 None are applicable.
Car Parking	
PO 14.1 On-site car parking is provided to meet the anticipated demand of residents, with less on-site parking in areas in close proximity to public transport.	DTS/DPF 14.1 On-site car parking is provided at the following rates per dwelling: (a) 2 or fewer bedrooms - 1 car parking space (b) 3 or more bedrooms - 2 car parking spaces.
PO 14.2	DTS/DPF 14.2

Enclosed car parking spaces are of dimensions to be functional, accessible and convenient.	Residential parking spaces enclosed by fencing, walls or other obstructions with the following internal dimensions (separate from any waste storage area): (a) single parking spaces: (i) a minimum length of 5.4m (ii) a minimum width of 3.0m (iii) a minimum garage door width of 2.4m (b) double parking spaces (side by side): (i) a minimum length of 5.4m (ii) a minimum width of 5.5m (iii) minimum garage door width of 2.4m per space.
PO 14.3 Uncovered car parking spaces are of dimensions to be functional, accessible and convenient.	DTS/DPF 14.3 Uncovered car parking spaces have: (a) a minimum length of 5.4m (b) a minimum width of 2.4m (c) a minimum width between the centre line of the space and any fence, wall or other obstruction of 1.5m.
PO 14.4 Residential flat buildings and group dwelling developments provide sufficient on-site visitor car parking to cater for anticipated demand.	DTS/DPF 14.4 Visitor car parking for group and residential flat buildings incorporating 4 or more dwellings is provided on-site at a minimum ratio of 0.25 car parking spaces per dwelling.
PO 14.5 Residential flat buildings provide dedicated areas for bicycle parking.	DTS/DPF 14.5 Residential flat buildings provide one bicycle parking space per dwelling.
Overshadowing	
PO 15.1 Development minimises overshadowing of the private open spaces of adjoining land by ensuring that ground level open space associated with residential buildings receive direct sunlight for a minimum of 2 hours between 9am and 3pm on 21 June.	DTS/DPF 15.1 None are applicable.
Waste	
PO 16.1 Provision is made for the convenient storage of waste bins in a location screened from public view.	DTS/DPF 16.1 A waste bin storage area is provided behind the primary building line that: (a) has a minimum area of $2m^2$ with a minimum dimension of 900mm (separate from any designated car parking spaces or private open space).; and (b) has a continuous unobstructed path of travel (excluding moveable objects like gates, vehicles and roller doors) with a minimum width of 800mm between the waste bin storage area and the street.
PO 16.2 Residential flat buildings provide a dedicated area for the on-site storage of waste which is: (a) easily and safely accessible for residents and for collection vehicles (b) screened from adjoining land and public roads (c) of sufficient dimensions to be able to accommodate the waste storage needs of the development considering the intensity and nature of the development and the frequency of collection.	DTS/DPF 16.2 None are applicable.

Vehicle Access	
PO 17.1 Driveways are located and designed to facilitate safe access and egress while maximising land available for street tree planting, landscaped street frontages and on-street parking.	DTS/DPF 17.1 None are applicable.
PO 17.2 Vehicle access is safe, convenient, minimises interruption to the operation of public roads and does not interfere with street infrastructure or street trees.	DTS/DPF 17.2 Vehicle access to designated car parking spaces satisfy (a) or (b): (a) is provided via a lawfully existing or authorised access point or an access point for which consent has been granted as part of an application for the division of land (b) where newly proposed, is set back: (i) 0.5m or more from any street furniture, street pole, infrastructure services pit, or other stormwater or utility infrastructure unless consent is provided from the asset owner (ii) 2m or more from the base of the trunk of a street tree unless consent is provided from the tree owner for a lesser distance (iii) 6m or more from the tangent point of an intersection of 2 or more roads (iv) outside of the marked lines or infrastructure dedicating a pedestrian crossing.
PO 17.3 Driveways are designed to enable safe and convenient vehicle movements from the public road to on-site parking spaces.	DTS/DPF 17.3 Driveways are designed and sited so that: (a) the gradient of the driveway does not exceed a grade of 1 in 4 and includes transitions to ensure a maximum grade change of 12.5% (1 in 8) for summit changes, and 15% (1 in 6.7) for sag changes, in accordance with AS 2890.1:2004 to prevent vehicles bottoming or scraping (b) the centreline of the driveway has an angle of no less than 70 degrees and no more than 110 degrees from the street boundary to which it takes its access as shown in the following diagram: 

	(c) if located to provide access from an alley, lane or right of way - the alley, land or right or way is at least 6.2m wide along the boundary of the allotment / site.
PO 17.4 Driveways and access points are designed and distributed to optimise the provision of on-street parking.	DTS/DPF 17.4 Where on-street parking is available abutting the site's street frontage, on-street parking is retained in accordance with the following requirements: (a) minimum 0.33 on-street spaces per dwelling on the site (rounded up to the nearest whole number) (b) minimum car park length of 5.4m where a vehicle can enter or exit a space directly (c) minimum carpark length of 6m for an intermediate space located between two other parking spaces or to an end obstruction where the parking is indented.
PO 17.5 Residential driveways that service more than one dwelling of a dimension to allow safe and convenient movement.	DTS/DPF 17.5 Driveways that service more than 1 dwelling or a dwelling on a battle-axe site: (a) have a minimum width of 3m (b) for driveways servicing more than 3 dwellings: (i) have a width of 5.5m or more and a length of 6m or more at the kerb of the primary street (ii) where the driveway length exceeds 30m, incorporate a passing point at least every 30 metres with a minimum width of 5.5m and a minimum length of 6m.
PO 17.6 Residential driveways that service more than one dwelling are designed to allow passenger vehicles to enter and exit the site and manoeuvre within the site in a safe and convenient manner.	DTS/DPF 17.6 Driveways providing access to more than one dwelling, or a dwelling on a battle-axe site, allow a B85 passenger vehicle to enter and exit the garages or parking spaces in no more than a three-point turn manoeuvre
PO 17.7 Dwellings are adequately separated from common driveways and manoeuvring areas.	DTS/DPF 17.7 Dwelling walls with entry doors or ground level habitable room windows are set back at least 1.5m from any driveway or area designated for the movement and manoeuvring of vehicles.
Storage	
PO 18.1 Dwellings are provided with sufficient and accessible space for storage to meet likely occupant needs.	DTS/DPF 18.1 Dwellings are provided with storage at the following rates and 50% or more of the storage volume is provided within the dwelling: (a) studio: not less than $6m^3$ (b) 1 bedroom dwelling / apartment: not less than $8m^3$ (c) 2 bedroom dwelling / apartment: not less than $10m^3$ (d) 3+ bedroom dwelling / apartment: not less than $12m^3$.
Earthworks	
PO 19.1 Development, including any associated driveways and access tracks, minimises the need for earthworks to limit disturbance to natural topography.	DTS/DPF 19.1 The development does not involve: (a) excavation exceeding a vertical height of 1m or (b) filling exceeding a vertical height of 1m or (c) a total combined excavation and filling vertical height exceeding 2m.
Service connections and infrastructure	
PO 20.1 Dwellings are provided with appropriate service connections and	DTS/DPF 20.1 The site and building:

infrastructure.	(a) have the ability to be connected to a permanent potable water supply (b) have the ability to be connected to a sewerage system, or a wastewater system approved under the *South Australian Public Health Act 2011* (c) have the ability to be connected to electricity supply (d) have the ability to be connected to an adequate water supply (and pressure) for fire-fighting purposes (e) would not be contrary to the Regulations prescribed for the purposes of Section 86 of the *Electricity Act 1996*.
Site contamination	
PO 21.1 Land that is suitable for sensitive land uses to provide a safe environment.	DTS/DPF 21.1 Development satisfies (a), (b), (c) or (d): (a) does not involve a change in the use of land (b) involves a change in the use of land that does not constitute a change to a more sensitive use (c) involves a change in the use of land to a more sensitive use on land at which site contamination does not exist (as demonstrated in a site contamination declaration form) (d) involves a change in the use of land to a more sensitive use on land at which site contamination exists, or may exist (as demonstrated in a site contamination declaration form), and satisfies both of the following: (i) a site contamination audit report has been prepared under Part 10A of the *Environment Protection Act 1993* in relation to the land within the previous 5 years which states that A. site contamination does not exist (or no longer exists) at the land or B. the land is suitable for the proposed use or range of uses (without the need for any further remediation) or C. where remediation is, or remains, necessary for the proposed use (or range of uses), remediation work has been carried out or will be carried out (and the applicant has provided a written undertaking that the remediation works will be implemented in association with the development) and (ii) no other class 1 activity or class 2 activity has taken place at the land since the preparation of the site contamination audit report (as demonstrated in a site contamination declaration form).

Infrastructure and Renewable Energy Facilities

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Efficient provision of infrastructure networks and services, renewable energy facilities and ancillary development in a manner that

	minimises hazard, is environmentally and culturally sensitive and manages adverse visual impacts on natural and rural landscapes and residential amenity.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
General	
PO 1.1 Development is located and designed to minimise hazard or nuisance to adjacent development and land uses.	DTS/DPF 1.1 None are applicable.
Visual Amenity	
PO 2.1 The visual impact of above-ground infrastructure networks and services (excluding high voltage transmission lines), renewable energy facilities (excluding wind farms), energy storage facilities and ancillary development is minimised from townships, scenic routes and public roads by: (a) utilising features of the natural landscape to obscure views where practicable (b) siting development below ridgelines where practicable (c) avoiding visually sensitive and significant landscapes (d) using materials and finishes with low-reflectivity and colours that complement the surroundings (e) using existing vegetation to screen buildings (f) incorporating landscaping or landscaped mounding around the perimeter of a site and between adjacent allotments accommodating or zoned to primarily accommodate sensitive receivers.	DTS/DPF 2.1 None are applicable.
PO 2.2 Pumping stations, battery storage facilities, maintenance sheds and other ancillary structures incorporate vegetation buffers to reduce adverse visual impacts on adjacent land.	DTS/DPF 2.2 None are applicable.
PO 2.3 Surfaces exposed by earthworks associated with the installation of storage facilities, pipework, penstock, substations and other ancillary plant are reinstated and revegetated to reduce adverse visual impacts on adjacent land.	DTS/DPF 2.3 None are applicable.
Rehabilitation	
PO 3.1 Progressive rehabilitation (incorporating revegetation) of disturbed areas, ahead of or upon decommissioning of areas used for renewable energy facilities and transmission corridors.	DTS/DPF 3.1 None are applicable.
Hazard Management	
PO 4.1 Infrastructure and renewable energy facilities and ancillary development located and operated to not adversely impact maritime or air transport safety, including the operation of ports, airfields and landing strips.	DTS/DPF 4.1 None are applicable.
PO 4.2 Facilities for energy generation, power storage and transmission are separated as far as practicable from dwellings, tourist accommodation and frequently visited public places	DTS/DPF 4.2 None are applicable.

(such as viewing platforms / lookouts) to reduce risks to public safety from fire or equipment malfunction.	
PO 4.3 Bushfire hazard risk is minimised for renewable energy facilities by providing appropriate access tracks, safety equipment and water tanks and establishing cleared areas around substations, battery storage and operations compounds.	DTS/DPF 4.3 None are applicable.
Electricity Infrastructure and Battery Storage Facilities	
PO 5.1 Electricity infrastructure is located to minimise visual impacts through techniques including: (a) siting utilities and services: (i) on areas already cleared of native vegetation (ii) where there is minimal interference or disturbance to existing native vegetation or biodiversity (b) grouping utility buildings and structures with non-residential development, where practicable.	DTS/DPF 5.1 None are applicable.
PO 5.2 Electricity supply (excluding transmission lines) serving new development in urban areas and townships installed underground, excluding lines having a capacity exceeding or equal to 33kV.	DTS/DPF 5.2 None are applicable.
PO 5.3 Battery storage facilities are co-located with substation infrastructure where practicable to minimise the development footprint and reduce environmental impacts.	DTS/DPF 5.3 None are applicable.
Telecommunication Facilities	
PO 6.1 The proliferation of telecommunications facilities in the form of towers/monopoles in any one locality is managed, where technically feasible, by co-locating a facility with other communications facilities to mitigate impacts from clutter on visual amenity.	DTS/DPF 6.1 None are applicable.
PO 6.2 Telecommunications antennae are located as close as practicable to support structures to manage overall bulk and mitigate impacts on visual amenity.	DTS/DPF 6.2 None are applicable.
PO 6.3 Telecommunications facilities, particularly towers/monopoles, are located and sized to mitigate visual impacts by the following methods: (a) where technically feasible, incorporating the facility within an existing structure that may serve another purpose or all of the following: (b) using existing buildings and landscape features to obscure or interrupt views of a facility from nearby public roads, residential areas and places of high public amenity to the extent practical without unduly hindering the effective provision of telecommunications services	DTS/DPF 6.3 None are applicable.

(c) using materials and finishes that complement the environment (d) screening using landscaping and vegetation, particularly for equipment shelters and huts.	
Renewable Energy Facilities	
PO 7.1 Renewable energy facilities are located as close as practicable to existing transmission infrastructure to facilitate connections and minimise environmental impacts as a result of extending transmission infrastructure.	DTS/DPF 7.1 None are applicable.
Renewable Energy Facilities (Wind Farm)	
PO 8.1 Visual impact of wind turbine generators on the amenity of residential and tourist development is reduced through appropriate separation.	DTS/DPF 8.1 Wind turbine generators are: (a) set back at least 2000m from the base of a turbine to any of the following zones: (i) Rural Settlement Zone (ii) Township Zone (iii) Rural Living Zone (iv) Rural Neighbourhood Zone with an additional 10m setback per additional metre over 150m overall turbine height (measured from the base of the turbine). (b) set back at least 1500m from the base of the turbine to non-associated (non-stakeholder) dwellings and tourist accommodation
PO 8.2 The visual impact of wind turbine generators on natural landscapes is managed by: (a) designing wind turbine generators to be uniform in colour, size and shape (b) coordinating blade rotation and direction (c) mounting wind turbine generators on tubular towers as opposed to lattice towers.	DTS/DPF 8.2 None are applicable.
PO 8.3 Wind turbine generators and ancillary development minimise potential for bird and bat strike.	DTS/DPF 8.3 None are applicable.
PO 8.4 Wind turbine generators incorporate recognition systems or physical markers to minimise the risk to aircraft operations.	DTS/DPF 8.4 No Commonwealth air safety (CASA / ASA) or Defence requirement is applicable.
PO 8.5 Meteorological masts and guidewires are identifiable to aircraft through the use of colour bands, marker balls, high visibility sleeves or flashing strobes.	DTS/DPF 8.5 None are applicable.
Renewable Energy Facilities (Solar Power)	
PO 9.1 Ground mounted solar power facilities generating 5MW or more are not located on land requiring the clearance of areas of intact native vegetation or on land of high environmental, scenic or cultural value.	DTS/DPF 9.1 None are applicable.
PO 9.2 Ground mounted solar power facilities allow for movement of wildlife by:	DTS/DPF 9.2 None are applicable.

(a) incorporating wildlife corridors and habitat refuges (b) avoiding the use of extensive security or perimeter fencing or incorporating fencing that enables the passage of small animals without unreasonably compromising the security of the facility.	
PO 9.3 Amenity impacts of solar power facilities are minimised through separation from conservation areas and sensitive receivers in other ownership.	DTS/DPF 9.3 Ground mounted solar power facilities are set back from land boundaries, conservation areas and relevant zones in accordance with the following criteria: **Generation Capacity** / **Approximate size of array** / **Setback from adjoining land boundary** / **Setback from conservation areas** / **Setback from Township, Rural Settlement, Rural Neighbourhood and Rural Living Zones[1]** 50MW> / 80ha+ / 30m / 500m / 2km 10MW<50MW / 16ha-<80ha / 25m / 500m / 1.5km 5MW<10MW / 8ha to <16ha / 20m / 500m / 1km 1MW<5MW / 1.6ha to <8ha / 15m / 500m / 500m 100kW<1MW / 0.5ha<1.6ha / 10m / 500m / 100m <100kW / <0.5ha / 5m / 500m / 25m Notes: 1. Does not apply when the site of the proposed ground mounted solar power facility is located within one of these zones.
PO 9.4 Ground mounted solar power facilities incorporate landscaping within setbacks from adjacent road frontages and boundaries of adjacent allotments accommodating non-host dwellings, where balanced with infrastructure access and bushfire safety considerations.	DTS/DPF 9.4 None are applicable.
Hydropower / Pumped Hydropower Facilities	
PO 10.1 Hydropower / pumped hydropower facility storage is designed and operated to minimise the risk of storage dam failure.	DTS/DPF 10.1 None are applicable.
PO 10.2 Hydropower / pumped hydropower facility storage is designed and operated to minimise water loss through increased evaporation or system leakage, with the incorporation of appropriate liners, dam covers, operational measures or detection systems.	DTS/DPF 10.2 None are applicable.
PO 10.3 Hydropower / pumped hydropower facilities on existing or former mine sites minimise environmental impacts from site contamination, including from mine operations or water sources subject to such processes, now or in the future.	DTS/DPF 10.3 None are applicable.
Water Supply	
PO 11.1	DTS/DPF 11.1

Development is connected to an appropriate water supply to meet the ongoing requirements of the intended use.	Development is connected, or will be connected, to a reticulated water scheme or mains water supply with the capacity to meet the on-going requirements of the development.
PO 11.2 Dwellings are connected to a reticulated water scheme or mains water supply with the capacity to meet the requirements of the intended use. Where this is not available an appropriate rainwater tank or storage system for domestic use is provided.	DTS/DPF 11.2 A dwelling is connected, or will be connected, to a reticulated water scheme or mains water supply with the capacity to meet the requirements of the development. Where this is not available it is serviced by a rainwater tank or tanks capable of holding at least 50,000 litres of water which is: (a) exclusively for domestic use (b) connected to the roof drainage system of the dwelling.
Wastewater Services	
PO 12.1 Development is connected to an approved common wastewater disposal service with the capacity to meet the requirements of the intended use. Where this is not available an appropriate on-site service is provided to meet the ongoing requirements of the intended use in accordance with the following: (a) it is wholly located and contained within the allotment of the development it will service (b) in areas where there is a high risk of contamination of surface, ground, or marine water resources from on-site disposal of liquid wastes, disposal systems are included to minimise the risk of pollution to those water resources (c) septic tank effluent drainage fields and other wastewater disposal areas are located away from watercourses and flood prone, sloping, saline or poorly drained land to minimise environmental harm.	DTS/DPF 12.1 Development is connected, or will be connected, to an approved common wastewater disposal service with the capacity to meet the requirements of the development. Where this is not available it is instead capable of being serviced by an on-site waste water treatment system in accordance with the following: (a) the system is wholly located and contained within the allotment of development it will service; and (b) the system will comply with the requirements of the South Australian Public Health Act 2011.
PO 12.2 Effluent drainage fields and other wastewater disposal areas are maintained to ensure the effective operation of waste systems and minimise risks to human health and the environment.	DTS/DPF 12.2 Development is not built on, or encroaches within, an area that is, or will be, required for a sewerage system or waste control system.
Temporary Facilities	
PO 13.1 In rural and remote locations, development that is likely to generate significant waste material during construction, including packaging waste, makes provision for a temporary on-site waste storage enclosure to minimise the incidence of wind-blown litter.	DTS/DPF 13.1 A waste collection and disposal service is used to dispose of the volume of waste at the rate it is generated.
PO 13.2 Temporary facilities to support the establishment of renewable energy facilities (including borrow pits, concrete batching plants, laydown, storage, access roads and worker amenity areas) are sited and operated to minimise environmental impact.	DTS/DPF 13.2 None are applicable.

Intensive Animal Husbandry and Dairies

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development of intensive animal husbandry and dairies in locations that are protected from encroachment by sensitive receivers and in a manner that minimises their adverse effects on amenity and the environment.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Siting and Design	
PO 1.1 Intensive animal husbandry, dairies and associated activities are sited, designed, constructed and managed to not unreasonably impact on the environment or amenity of the locality.	DTS/DPF 1.1 None are applicable.
PO 1.2 Intensive animal husbandry, dairies and associated activities are sited, designed, constructed and managed to prevent the potential transmission of disease to other operations where animals are kept.	DTS/DPF 1.2 None are applicable.
PO 1.3 Intensive animal husbandry and associated activities such as wastewater lagoons and liquid/solid waste disposal areas are sited, designed, constructed and managed to not unreasonably impact on sensitive receivers in other ownership in terms of noise and air emissions.	DTS/DPF 1.3 None are applicable.
PO 1.4 Dairies and associated activities such as wastewater lagoons and liquid/solid waste disposal areas are sited, designed, constructed and managed to not unreasonably impact on sensitive receivers in other ownership in terms of noise and air emissions.	DTS/DPF 1.4 Dairies, associated wastewater lagoon(s) and liquid/solid waste storage and disposal facilities are located 500m or more from the nearest sensitive receiver in other ownership.
PO 1.5 Lagoons for the storage or treatment of milking shed effluent is adequately separated from roads to minimise impacts from odour on the general public.	DTS/DPF 1.5 Lagoons for the storage or treatment of milking shed effluent are set back 20m or more from public roads.
Waste	
PO 2.1 Storage of manure, used litter and other wastes (other than waste water lagoons) is sited, designed, constructed and managed to: (a) avoid attracting and harbouring vermin (b) avoid polluting water resources (c) be located outside 1% AEP flood event areas.	DTS/DPF 2.1 None are applicable.
Soil and Water Protection	
PO 3.1 To avoid environmental harm and adverse effects on water resources, intensive animal husbandry operations are appropriately set back from: (a) public water supply reservoirs (b) major watercourses (third order or higher stream) (c) any other watercourse, bore or well used for domestic or stock water supplies.	DTS/DPF 3.1 Intensive animal husbandry operations are set back: (a) 800m or more from a public water supply reservoir (b) 200m or more from a major watercourse (third order or higher stream) (c) 100m or more from any other watercourse, bore or well used for domestic or stock water supplies.
PO 3.2 Intensive animal husbandry operations and dairies incorporate	DTS/DPF 3.2 None are applicable.

appropriately designed effluent and run-off facilities that: (a) have sufficient capacity to hold effluent and runoff from the operations on site (b) ensure effluent does not infiltrate and pollute groundwater, soil or other water resources.	

Interface between Land Uses

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
General Land Use Compatibility	
PO 1.1 Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.	DTS/DPF 1.1 None are applicable.
PO 1.2 Development adjacent to a site containing a sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts.	DTS/DPF 1.2 None are applicable.
Hours of Operation	
PO 2.1 Non-residential development does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers) or an adjacent zone primarily for sensitive receivers through its hours of operation having regard to: (a) the nature of the development (b) measures to mitigate off-site impacts (c) the extent to which the development is desired in the zone (d) measures that might be taken in an adjacent zone primarily for sensitive receivers that mitigate adverse impacts without unreasonably compromising the intended use of that land.	DTS/DPF 2.1 Development operating within the following hours: **Class of Development** / **Hours of operation** Consulting room: 7am to 9pm, Monday to Friday; 8am to 5pm, Saturday Office: 7am to 9pm, Monday to Friday; 8am to 5pm, Saturday Shop, other than any one or combination of the following: (a) restaurant: 7am to 9pm, Monday to Friday; 8am to 5pm, Saturday and Sunday

	(b) cellar door in the Productive Rural Landscape Zone, Rural Zone or Rural Horticulture Zone		

Overshadowing	
PO 3.1 Overshadowing of habitable room windows of adjacent residential land uses in: a. a neighbourhood-type zone is minimised to maintain access to direct winter sunlight b. other zones is managed to enable access to direct winter sunlight.	DTS/DPF 3.1 North-facing windows of habitable rooms of adjacent residential land uses in a neighbourhood-type zone receive at least 3 hours of direct sunlight between 9.00am and 3.00pm on 21 June.
PO 3.2 Overshadowing of the primary area of private open space or communal open space of adjacent residential land uses in: a. a neighbourhood type zone is minimised to maintain access to direct winter sunlight b. other zones is managed to enable access to direct winter sunlight.	DTS/DPF 3.2 Development maintains 2 hours of direct sunlight between 9.00 am and 3.00 pm on 21 June to adjacent residential land uses in a neighbourhood-type zone in accordance with the following: a. for ground level private open space, the smaller of the following: i. half the existing ground level open space or ii. 35m2 of the existing ground level open space (with at least one of the area's dimensions measuring 2.5m) b. for ground level communal open space, at least half of the existing ground level open space.
PO 3.3 Development does not unduly reduce the generating capacity of adjacent rooftop solar energy facilities taking into account: (a) the form of development contemplated in the zone (b) the orientation of the solar energy facilities (c) the extent to which the solar energy facilities are already overshadowed.	DTS/DPF 3.3 None are applicable.
PO 3.4 Development that incorporates moving parts, including windmills and wind farms, are located and operated to not cause unreasonable nuisance to nearby dwellings and tourist accommodation caused by shadow flicker.	DTS/DPF 3.4 None are applicable.
Activities Generating Noise or Vibration	
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Commercial and Industrial Noise) Policy criteria.
PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including: (a) locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers	DTS/DPF 4.2 None are applicable.

(b) when sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers (c) housing plant and equipment within an enclosed structure or acoustic enclosure (d) providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone.	
PO 4.3 Fixed plant and equipment in the form of pumps and/or filtration systems for a swimming pool or spa are positioned and/or housed to not cause unreasonable noise nuisance to adjacent sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.3 The pump and/or filtration system ancillary to a dwelling erected on the same site is: (a) enclosed in a solid acoustic structure located at least 5m from the nearest habitable room located on an adjoining allotment or (b) located at least 12m from the nearest habitable room located on an adjoining allotment.
PO 4.4 External noise into bedrooms is minimised by separating or shielding these rooms from service equipment areas and fixed noise sources located on the same or an adjoining allotment.	DTS/DPF 4.4 Adjacent land is used for residential purposes.
PO 4.5 Outdoor areas associated with licensed premises (such as beer gardens or dining areas) are designed and/or sited to not cause unreasonable noise impact on existing adjacent sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.5 None are applicable.
PO 4.6 Development incorporating music achieves suitable acoustic amenity when measured at the boundary of an adjacent sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers.	DTS/DPF 4.6 Development incorporating music includes noise attenuation measures that will achieve the following noise levels: **Assessment location** / **Music noise level** Externally at the nearest existing or envisaged noise sensitive location / Less than 8dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum (LOCT10,15 < LOCT90,15 + 8dB)
Air Quality	
PO 5.1 Development with the potential to emit harmful or nuisance-generating air pollution incorporates air pollution control measures to prevent harm to human health or unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers) within the locality and zones primarily intended to accommodate sensitive receivers.	DTS/DPF 5.1 None are applicable.
PO 5.2 Development that includes chimneys or exhaust flues (including cafes, restaurants and fast food outlets) is designed to minimise nuisance or adverse health impacts to sensitive receivers (or lawfully approved sensitive receivers) by: (a) incorporating appropriate treatment technology before exhaust emissions are released (b) locating and designing chimneys or exhaust flues to maximise the dispersion of exhaust emissions, taking into account the location of sensitive receivers.	DTS/DPF 5.2 None are applicable.
Light Spill	
PO 6.1	DTS/DPF 6.1

External lighting is positioned and designed to not cause unreasonable light spill impact on adjacent sensitive receivers (or lawfully approved sensitive receivers).	None are applicable.
PO 6.2 External lighting is not hazardous to motorists and cyclists.	DTS/DPF 6.2 None are applicable.
Solar Reflectivity / Glare	
PO 7.1 Development is designed and comprised of materials and finishes that do not unreasonably cause a distraction to adjacent road users and pedestrian areas or unreasonably cause heat loading and micro-climatic impacts on adjacent buildings and land uses as a result of reflective solar glare.	DTS/DPF 7.1 None are applicable.
Electrical Interference	
PO 8.1 Development in rural and remote areas does not unreasonably diminish or result in the loss of existing communication services due to electrical interference.	DTS/DPF 8.1 The building or structure: (a) is no greater than 10m in height, measured from existing ground level or (b) is not within a line of sight between a fixed transmitter and fixed receiver (antenna) other than where an alternative service is available via a different fixed transmitter or cable.
Interface with Rural Activities	
PO 9.1 Sensitive receivers are located and designed to mitigate impacts from lawfully existing horticultural and farming activities (or lawfully approved horticultural and farming activities), including spray drift and noise and do not prejudice the continued operation of these activities.	DTS/DPF 9.1 None are applicable.
PO 9.2 Sensitive receivers are located and designed to mitigate potential impacts from lawfully existing intensive animal husbandry activities and do not prejudice the continued operation of these activities.	DTS/DPF 9.2 None are applicable.
PO 9.3 Sensitive receivers are located and designed to mitigate potential impacts from lawfully existing land-based aquaculture activities and do not prejudice the continued operation of these activities.	DTS/DPF 9.3 Sensitive receivers are located at least 200m from the boundary of a site used for land-based aquaculture and associated components in other ownership.
PO 9.4 Sensitive receivers are located and designed to mitigate potential impacts from lawfully existing dairies including associated wastewater lagoons and liquid/solid waste storage and disposal facilities and do not prejudice the continued operation of these activities.	DTS/DPF 9.4 Sensitive receivers are sited at least 500m from the boundary of a site used for a dairy and associated wastewater lagoon(s) and liquid/solid waste storage and disposal facilities in other ownership.
PO 9.5 Sensitive receivers are located and designed to mitigate the potential impacts from lawfully existing facilities used for the handling, transportation and storage of bulk commodities (recognising the potential for extended hours of operation) and do not prejudice the continued operation of these activities.	DTS/DPF 9.5 Sensitive receivers are located away from the boundary of a site used for the handling, transportation and/or storage of bulk commodities in other ownership in accordance with the following: (a) 300m or more, where it involves the handling of agricultural crop products, rock, ores, minerals, petroleum products or chemicals to or from any commercial storage facility (b) 300m or more, where it involves the handling of agricultural crop products, rock, ores, minerals, petroleum products or chemicals at a wharf or wharf side facility (including sea-port grain terminals) where the handling of these materials into or from vessels does not exceed 100 tonnes per day

	(c) 500m or more, where it involves the storage of bulk petroleum in individual containers with a capacity up to 200 litres and a total on-site storage capacity not exceeding 1000 cubic metres (d) 500m or more, where it involves the handling of coal with a capacity up to 1 tonne per day or a storage capacity up to 50 tonnes (e) 1000m or more, where it involves the handling of coal with a capacity exceeding 1 tonne per day but not exceeding 100 tonnes per day or a storage capacity exceeding 50 tonnes but not exceeding 5000 tonnes.
PO 9.6 Setbacks and vegetation plantings along allotment boundaries should be incorporated to mitigate the potential impacts of spray drift and other impacts associated with agricultural and horticultural activities.	DTS/DPF 9.6 None are applicable.
PO 9.7 Urban development does not prejudice existing agricultural and horticultural activities through appropriate separation and design techniques.	DTS/DPF 9.7 None are applicable.
Interface with Mines and Quarries (Rural and Remote Areas)	
PO 10.1 Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.	DTS/DPF 10.1 Sensitive receivers are located no closer than 500m from the boundary of a Mining Production Tenement under the *Mining Act 1971.*

Land Division

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Land division: (a) creates allotments with the appropriate dimensions and shape for their intended use (b) allows efficient provision of new infrastructure and the optimum use of underutilised infrastructure (c) integrates and allocates adequate and suitable land for the preservation of site features of value, including significant vegetation, watercourses, water bodies and other environmental features (d) facilitates solar access through allotment orientation (e) creates a compact urban form that supports active travel, walkability and the use of public transport (f) avoids areas of high natural hazard risk.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
All land division	
Allotment configuration	
PO 1.1 Land division creates allotments suitable for their intended use.	DTS/DPF 1.1 Division of land satisfies (a) or (b):

	(a) reflects the site boundaries illustrated and approved in an operative or existing development authorisation for residential development under the *Development Act 1993* or *Planning, Development and Infrastructure Act 2016* where the allotments are used or are proposed to be used solely for residential purposes (b) is proposed as part of a combined land division application with deemed-to-satisfy dwellings on the proposed allotments.
PO 1.2 Land division considers the physical characteristics of the land, preservation of environmental and cultural features of value and the prevailing context of the locality.	DTS/DPF 1.2 None are applicable.
Design and Layout	
PO 2.1 Land division results in a pattern of development that minimises the likelihood of future earthworks and retaining walls.	DTS/DPF 2.1 None are applicable.
PO 2.2 Land division enables the appropriate management of interface impacts between potentially conflicting land uses and/or zones.	DTS/DPF 2.2 None are applicable.
PO 2.3 Land division maximises the number of allotments that face public open space and public streets.	DTS/DPF 2.3 None are applicable.
PO 2.4 Land division is integrated with site features, adjacent land uses, the existing transport network and available infrastructure.	DTS/DPF 2.4 None are applicable.
PO 2.5 Development and infrastructure is provided and staged in a manner that supports an orderly and economic provision of land, infrastructure and services.	DTS/DPF 2.5 None are applicable.
PO 2.6 Land division results in watercourses being retained within open space and development taking place on land not subject to flooding.	DTS/DPF 2.6 None are applicable.
PO 2.7 Land division results in legible street patterns connected to the surrounding street network.	DTS/DPF 2.7 None are applicable.
PO 2.8 Land division is designed to preserve existing vegetation of value including native vegetation and regulated and significant trees.	DTS/DPF 2.8 None are applicable.
Roads and Access	
PO 3.1 Land division provides allotments with access to an all-weather public road.	DTS/DPF 3.1 None are applicable.
PO 3.2 Street patterns and intersections are designed to enable the safe and efficient movement of pedestrian, cycle and vehicular traffic.	DTS/DPF 3.2 None are applicable.
PO 3.3 Land division does not impede access to publicly owned open space and/or recreation facilities.	DTS/DPF 3.3 None are applicable.
PO 3.4	DTS/DPF 3.4

Road reserves provide for safe and convenient movement and parking of projected volumes of vehicles and allow for the efficient movement of service and emergency vehicles.	None are applicable.
PO 3.5 Road reserves are designed to accommodate pedestrian and cycling infrastructure, street tree planting, landscaping and street furniture.	DTS/DPF 3.5 None are applicable.
PO 3.6 Road reserves accommodate stormwater drainage and public utilities.	DTS/DPF 3.6 None are applicable.
PO 3.7 Road reserves provide unobstructed vehicular access and egress to and from individual allotments and sites.	DTS/DPF 3.7 None are applicable.
PO 3.8 Roads, open space and thoroughfares provide safe and convenient linkages to the surrounding open space and transport network.	DTS/DPF 3.8 None are applicable.
PO 3.9 Public streets are designed to enable tree planting to provide shade and enhance the amenity of streetscapes.	DTS/DPF 3.9 None are applicable.
PO 3.10 Local streets are designed to create low-speed environments that are safe for cyclists and pedestrians.	DTS/DPF 3.10 None are applicable.
Infrastructure	
PO 4.1 Land division incorporates public utility services within road reserves or dedicated easements.	DTS/DPF 4.1 None are applicable.
PO 4.2 Waste water, sewage and other effluent is capable of being disposed of from each allotment without risk to public health or the environment.	DTS/DPF 4.2 Each allotment can be connected to: (a) a waste water treatment plant that has the hydraulic volume and pollutant load treatment and disposal capacity for the maximum predicted wastewater volume generated by subsequent development of the proposed allotment or (b) a form of on-site waste water treatment and disposal that meets relevant public health and environmental standards.
PO 4.3 Septic tank effluent drainage fields and other waste water disposal areas are maintained to ensure the effective operation of waste systems and minimise risks to human health and the environment.	DTS/DPF 4.3 Development is not built on, or encroaches within, an area that is or will be, required for a sewerage system or waste control system.
PO 4.4 Constructed wetland systems, including associated detention and retention basins, are sited and designed to ensure public health and safety is protected, including by minimising potential public health risks arising from the breeding of mosquitoes.	DTS/DPF 4.4 None are applicable.
PO 4.5 Constructed wetland systems, including associated detention and retention basins, are sited and designed to allow sediments to settle prior to discharge into watercourses or the marine environment.	DTS/DPF 4.5 None are applicable.
PO 4.6 Constructed wetland systems, including associated detention and retention basins, are sited and designed to function as a landscape	DTS/DPF 4.6 None are applicable.

feature.	
Minor Land Division (Under 20 Allotments)	
Open Space	
PO 5.1 Land division proposing an additional allotment under 1 hectare provides or supports the provision of open space.	DTS/DPF 5.1 None are applicable.
Solar Orientation	
PO 6.1 Land division for residential purposes facilitates solar access through allotment orientation.	DTS/DPF 6.1 None are applicable.
Water Sensitive Design	
PO 7.1 Land division creating a new road or common driveway includes stormwater management systems that minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system, watercourses or other water bodies.	DTS/DPF 7.1 None are applicable.
PO 7.2 Land division designed to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that the development does not increase the peak flows in downstream systems.	DTS/DPF 7.2 None are applicable.
Battle-Axe Development	
PO 8.1 Battle-axe development appropriately responds to the existing neighbourhood context.	DTS/DPF 8.1 Allotments are not in the form of a battle-axe arrangement.
PO 8.2 Battle-axe development designed to allow safe and convenient movement.	DTS/DPF 8.2 The handle of a battle-axe development: (a) has a minimum width of 4m or (b) where more than 3 allotments are proposed, a minimum width of 5.5m.
PO 8.3 Battle-axe allotments and/or common land are of a suitable size and dimension to allow passenger vehicles to enter and exit and manoeuvre within the site in a safe and convenient manner.	DTS/DPF 8.3 Battle-axe development allows a B85 passenger vehicle to enter and exit parking spaces in no more than a three-point turn manoeuvre.
PO 8.4 Battle-axe or common driveways incorporate landscaping and permeability to improve appearance and assist in stormwater management.	DTS/DPF 8.4 Battle-axe or common driveways satisfy (a) and (b): (a) are constructed of a minimum of 50% permeable or porous material (b) where the driveway is located directly adjacent the side or rear boundary of the site, soft landscaping with a minimum dimension of 1m is provided between the driveway and site boundary (excluding along the perimeter of a passing point).
Major Land Division (20+ Allotments)	
Open Space	
PO 9.1 Land division allocates or retains evenly distributed, high quality areas of open space to improve residential amenity and provide urban heat amelioration.	DTS/DPF 9.1 None are applicable.
PO 9.2	DTS/DPF 9.2

Land allocated for open space is suitable for its intended active and passive recreational use considering gradient and potential for inundation.	None are applicable.
PO 9.3 Land allocated for active recreation has dimensions capable of accommodating a range of active recreational activities.	DTS/DPF 9.3 None are applicable.
Water Sensitive Design	
PO 10.1 Land division creating 20 or more allotments includes a stormwater management system designed to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure that the development does not increase the peak flows in downstream systems.	DTS/DPF 10.1 None are applicable.
PO 10.2 Land division creating 20 or more allotments includes stormwater management systems that minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system, watercourses or other water bodies.	DTS/DPF 10.2 None are applicable.
Solar Orientation	
PO 11.1 Land division creating 20 or more allotments for residential purposes facilitates solar access through allotment orientation and allotment dimensions.	DTS/DPF 11.1 None are applicable.

Marinas and On-Water Structures

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Marinas and on-water structures are located and designed to minimise the impairment of commercial, recreational and navigational activities and adverse impacts on the environment.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Navigation and Safety	
PO 1.1 Safe public access is provided or maintained to the waterfront, public infrastructure and recreation areas.	DTS/DPF 1.1 None are applicable.
PO 1.2 The operation of wharves is not impaired by marinas and on-water structures.	DTS/DPF 1.2 None are applicable.
PO 1.3	DTS/DPF 1.3

Navigation and access channels are not impaired by marinas and on-water structures.	None are applicable.
PO 1.4 Commercial shipping lanes are not impaired by marinas and on-water structures.	DTS/DPF 1.4 Marinas and on-water structures are set back 250m or more from commercial shipping lanes.
PO 1.5 Marinas and on-water structures are located to avoid interfering with the operation or function of a water supply pumping station.	DTS/DPF 1.5 On-water structures are set back: (a) 3km or more from upstream water supply pumping station take-off points (b) 500m or more from downstream water supply pumping station take-off points.
PO 1.6 Maintenance of on-water infrastructure, including revetment walls, is not impaired by marinas and on-water structures.	DTS/DPF 1.6 None are applicable.
Environmental Protection	
PO 2.1 Development is sited and designed to facilitate water circulation and exchange.	DTS/DPF 2.1 None are applicable.

Open Space and Recreation

Assessment Provisions (AP)

Desired Outcome (DO)

	Desired Outcome
DO 1	Pleasant, functional and accessible open space and recreation facilities are provided at State, regional, district, neighbourhood and local levels for active and passive recreation, biodiversity, community health, urban cooling, tree canopy cover, visual amenity, gathering spaces, wildlife and waterway corridors, and a range of other functions and at a range of sizes that reflect the purpose of that open space.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use and Intensity	
PO 1.1 Recreation facilities are compatible with surrounding land uses and activities.	DTS/DPF 1.1 None are applicable.
PO 1.2 Open space areas include natural or landscaped areas using locally indigenous plant species and large trees.	DTS/DPF 1.2 None are applicable.
Design and Siting	
PO 2.1 Open space and recreation facilities address adjacent public roads to optimise pedestrian access and visibility.	DTS/DPF 2.1 None are applicable.

PO 2.2 Open space and recreation facilities incorporate park furniture, shaded areas and resting places.	DTS/DPF 2.2 None are applicable.
PO 2.3 Open space and recreation facilities link habitats, wildlife corridors and existing open spaces and recreation facilities.	DTS/DPF 2.3 None are applicable.
Pedestrians and Cyclists	
PO 3.1 Open space incorporates: (a) pedestrian and cycle linkages to other open spaces, centres, schools and public transport nodes; (b) safe crossing points where pedestrian routes intersect the road network; (c) easily identified access points.	DTS/DPF 3.1 None are applicable.
Usability	
PO 4.1 Land allocated for open space is suitable for its intended active and passive recreational use taking into consideration its gradient and potential for inundation.	DTS/DPF 4.1 None are applicable.
Safety and Security	
PO 5.1 Open space is overlooked by housing, commercial or other development to provide casual surveillance where possible.	DTS/DPF 5.1 None are applicable.
PO 5.2 Play equipment is located to maximise opportunities for passive surveillance.	DTS/DPF 5.2 None are applicable.
PO 5.3 Landscaping provided in open space and recreation facilities maximises opportunities for casual surveillance throughout the park.	DTS/DPF 5.3 None are applicable.
PO 5.4 Fenced parks and playgrounds have more than one entrance or exit to minimise potential entrapment.	DTS/DPF 5.4 None are applicable.
PO 5.5 Adequate lighting is provided around toilets, telephones, seating, litter bins, bicycle storage, car parks and other such facilities.	DTS/DPF 5.5 None are applicable.
PO 5.6 Pedestrian and bicycle movement after dark is focused along clearly defined, adequately lit routes with observable entries and exits.	DTS/DPF 5.6 None are applicable.
Signage	
PO 6.1 Signage is provided at entrances to and within the open space and recreation facilities to provide clear orientation to major points of interest such as the location of public toilets, telephones, safe routes, park activities and the like.	DTS/DPF 6.1 None are applicable.
Buildings and Structures	
PO 7.1 Buildings and car parking areas in open space areas are designed, located and of a scale to be unobtrusive.	DTS/DPF 7.1 None are applicable.

PO 7.2 Buildings and structures in open space areas are clustered where practical to ensure that the majority of the site remains open.	DTS/DPF 7.2 None are applicable.
PO 7.3 Development in open space is constructed to minimise the extent of impervious surfaces.	DTS/DPF 7.3 None are applicable.
PO 7.4 Development that abuts or includes a coastal reserve or Crown land used for scenic, conservation or recreational purposes is located and designed to have regard to the purpose, management and amenity of the reserve.	DTS/DPF 7.4 None are applicable.
Landscaping	
PO 8.1 Open space and recreation facilities provide for the planting and retention of large trees and vegetation.	DTS/DPF 8.1 None are applicable.
PO 8.2 Landscaping in open space and recreation facilities provides shade and windbreaks: (a) along cyclist and pedestrian routes; (b) around picnic and barbecue areas; (c) in car parking areas.	DTS/DPF 8.2 None are applicable.
PO 8.3 Landscaping in open space facilitates habitat for local fauna and facilitates biodiversity.	DTS/DPF 8.3 None are applicable.
PO 8.4 Landscaping including trees and other vegetation passively watered with local rainfall run-off, where practicable.	DTS/DPF 8.4 None are applicable.

Out of Activity Centre Development

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO1	The role of Activity Centres in contributing to the form and pattern of development and enabling equitable and convenient access to a range of shopping, administrative, cultural, entertainment and other facilities in a single trip is maintained and reinforced.

Performance Outcomes and Deemed to Satisfy / Designated Performance Outcome Criteria

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 Non-residential development outside Activity Centres of a scale and type that does not diminish the role of Activity Centres: (a) as primary locations for shopping, administrative, cultural, entertainment and community services (b) as a focus for regular social and business gatherings (c) in contributing to or maintaining a pattern of development that supports equitable community access to services and facilities.	DTS/DPF 1.1 None are applicable.

PO 1.2 Out-of-activity centre non-residential development complements Activity Centres through the provision of services and facilities: (a) that support the needs of local residents and workers, particularly in underserviced locations (b) at the edge of Activities Centres where they cannot readily be accommodated within an existing Activity Centre to expand the range of services on offer and support the role of the Activity Centre.	DTS/DPF 1.2 None are applicable.

Resource Extraction

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Resource extraction activities are developed in a manner that minimises human and environmental impacts.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use and Intensity	
PO 1.1 Resource extraction activities minimise landscape damage outside of those areas unavoidably disturbed to access and exploit a resource and provide for the progressive reclamation and betterment of disturbed areas.	DTS/DPF 1.1 None are applicable.
PO 1.2 Resource extraction activities avoid damage to cultural sites or artefacts.	DTS/DPF 1.2 None are applicable.
Water Quality	
PO 2.1 Stormwater and/or wastewater from resource extraction activities is diverted into appropriately sized treatment and retention systems to enable reuse on site.	DTS/DPF 2.1 None are applicable.
Separation Treatments, Buffers and Landscaping	
PO 3.1 Resource extraction activities minimise adverse impacts upon sensitive receivers through incorporation of separation distances and/or mounding/vegetation.	DTS/DPF 3.1 None are applicable.
PO 3.2 Resource extraction activities are screened from view from adjacent land by perimeter landscaping and/or mounding.	DTS/DPF 3.2 None are applicable.

Site Contamination

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Ensure land is suitable for the proposed use in circumstances where it is, or may have been, subject to site contamination.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 Ensure land is suitable for use when land use changes to a more sensitive use.	DTS/DPF 1.1 Development satisfies (a), (b), (c) or (d): (a) does not involve a change in the use of land (b) involves a change in the use of land that does not constitute a change to a more sensitive use (c) involves a change in the use of land to a more sensitive use on land at which site contamination is unlikely to exist (as demonstrated in a site contamination declaration form) (d) involves a change in the use of land to a more sensitive use on land at which site contamination exists, or may exist (as demonstrated in a site contamination declaration form), and satisfies both of the following: (i) a site contamination audit report has been prepared under Part 10A of the *Environment Protection Act 1993* in relation to the land within the previous 5 years which states that- A. site contamination does not exist (or no longer exists) at the land or B. the land is suitable for the proposed use or range of uses (without the need for any further remediation) or C. where remediation is, or remains, necessary for the proposed use (or range of uses), remediation work has been carried out or will be carried out (and the applicant has provided a written undertaking that the remediation works will be implemented in association with the development) and (ii) no other class 1 activity or class 2 activity has taken place at the land since the preparation of the site contamination audit report (as demonstrated in a site contamination declaration form).

Tourism Development

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Tourism development is built in locations that cater to the needs of visitors and positively contributes to South Australia's visitor economy.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
General	
PO 1.1 Tourism development complements and contributes to local, natural, cultural or historical context where: (a) it supports immersive natural experiences (b) it showcases South Australia's landscapes and produce (c) its events and functions are connected to local food, wine and nature.	DTS/DPF 1.1 None are applicable.
PO 1.2 Tourism development comprising multiple accommodation units (including any facilities and activities for use by guests and visitors) is clustered to minimise environmental and contextual impact.	DTS/DPF 1.2 None are applicable.
Caravan and Tourist Parks	
PO 2.1 Potential conflicts between long-term residents and short-term tourists are minimised through suitable siting and design measures.	DTS/DPF 2.1 None are applicable.
PO 2.2 Occupants are provided privacy and amenity through landscaping and fencing.	DTS/DPF 2.2 None are applicable.
PO 2.3 Communal open space and centrally located recreation facilities are provided for guests and visitors.	DTS/DPF 2.3 12.5% or more of a caravan park comprises clearly defined communal open space, landscaped areas and areas for recreation.
PO 2.4 Perimeter landscaping is used to enhance the amenity of the locality.	DTS/DPF 2.4 None are applicable.
PO 2.5 Amenity blocks (showers, toilets, laundry and kitchen facilities) are sufficient to serve the full occupancy of the development.	DTS/DPF 2.5 None are applicable.
PO 2.6 Long-term occupation does not displace tourist accommodation, particularly in important tourist destinations such as coastal and riverine locations.	DTS/DPF 2.6 None are applicable.
Tourist accommodation in areas constituted under the National Parks and Wildlife Act 1972	
PO 3.1 Tourist accommodation avoids delicate or environmentally sensitive areas such as sand dunes, cliff tops, estuaries, wetlands or substantially intact strata of native vegetation (including regenerated areas of native vegetation lost through bushfire).	DTS/DPF 3.1 None are applicable.
PO 3.2 Tourist accommodation is sited and designed in a manner that is	DTS/DPF 3.2 None are applicable.

subservient to the natural environment and where adverse impacts on natural features, landscapes, habitats and cultural assets are avoided.	
PO 3.3 Tourist accommodation and recreational facilities, including associated access ways and ancillary structures, are located on cleared (other than where cleared as a result of bushfire) or degraded areas or where environmental improvements can be achieved.	DTS/DPF 3.3 None are applicable.
PO 3.4 Tourist accommodation is designed to prevent conversion to private dwellings through: (a) comprising a minimum of 10 accommodation units (b) clustering separated individual accommodation units (c) being of a size unsuitable for a private dwelling (d) ensuring functional areas that are generally associated with a private dwelling such as kitchens and laundries are excluded from, or physically separated from individual accommodation units, or are of a size unsuitable for a private dwelling.	DTS/DPF 3.4 None are applicable.

Transport, Access and Parking

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	A comprehensive, integrated and connected transport system that is safe, sustainable, efficient, convenient and accessible to all users.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Movement Systems	
PO 1.1 Development is integrated with the existing transport system and designed to minimise its potential impact on the functional performance of the transport system.	DTS/DPF 1.1 None are applicable.
PO 1.2 Development is designed to discourage commercial and industrial vehicle movements through residential streets and adjacent other sensitive receivers.	DTS/DPF 1.2 None are applicable.
PO 1.3 Industrial, commercial and service vehicle movements, loading areas and designated parking spaces are separated from passenger vehicle car parking areas to ensure efficient and safe movement and minimise potential conflict.	DTS/DPF 1.3 None are applicable.
PO 1.4 Development is sited and designed so that loading, unloading and	DTS/DPF 1.4 All vehicle manoeuvring occurs onsite.

turning of all traffic avoids interrupting the operation of and queuing on public roads and pedestrian paths.	
Sightlines	
PO 2.1 Sightlines at intersections, pedestrian and cycle crossings, and crossovers to allotments for motorists, cyclists and pedestrians are maintained or enhanced to ensure safety for all road users and pedestrians.	DTS/DPF 2.1 None are applicable.
PO 2.2 Walls, fencing and landscaping adjacent to driveways and corner sites are designed to provide adequate sightlines between vehicles and pedestrians.	DTS/DPF 2.2 None are applicable.
Vehicle Access	
PO 3.1 Safe and convenient access minimises impact or interruption on the operation of public roads.	DTS/DPF 3.1 The access is: (a) provided via a lawfully existing or authorised driveway or access point or an access point for which consent has been granted as part of an application for the division of land or (b) not located within 6m of an intersection of 2 or more roads or a pedestrian activated crossing.
PO 3.2 Development incorporating vehicular access ramps ensures vehicles can enter and exit a site safely and without creating a hazard to pedestrians and other vehicular traffic.	DTS/DPF 3.2 None are applicable.
PO 3.3 Access points are sited and designed to accommodate the type and volume of traffic likely to be generated by the development or land use.	DTS/DPF 3.3 None are applicable.
PO 3.4 Access points are sited and designed to minimise any adverse impacts on neighbouring properties.	DTS/DPF 3.4 None are applicable.
PO 3.5 Access points are located so as not to interfere with street trees, existing street furniture (including directional signs, lighting, seating and weather shelters) or infrastructure services to maintain the appearance of the streetscape, preserve local amenity and minimise disruption to utility infrastructure assets.	DTS/DPF 3.5 Vehicle access to designated car parking spaces satisfy (a) or (b): (a) is provided via a lawfully existing or authorised access point or an access point for which consent has been granted as part of an application for the division of land (b) where newly proposed, is set back: (i) 0.5m or more from any street furniture, street pole, infrastructure services pit, or other stormwater or utility infrastructure unless consent is provided from the asset owner (ii) 2m or more from the base of the trunk of a street tree unless consent is provided from the tree owner for a lesser distance (iii) 6m or more from the tangent point of an intersection of 2 or more roads (iv) outside of the marked lines or infrastructure dedicating a pedestrian crossing.
PO 3.6 Driveways and access points are separated and minimised in number to optimise the provision of on-street visitor parking (where on-street parking is appropriate).	DTS/DPF 3.6 Driveways and access points: (a) for sites with a frontage to a public road of 20m or less, one access point no greater than 3.5m in width is provided

	(b) for sites with a frontage to a public road greater than 20m: (i) a single access point no greater than 6m in width is provided or (ii) not more than two access points with a width of 3.5m each are provided.
PO 3.7 Access points are appropriately separated from level crossings to avoid interference and ensure their safe ongoing operation.	DTS/DPF 3.7 Development does not involve a new or modified access or cause an increase in traffic through an existing access that is located within the following distance from a railway crossing: (a) 80 km/h road - 110m (b) 70 km/h road - 90m (c) 60 km/h road - 70m (d) 50km/h or less road - 50m.
PO 3.8 Driveways, access points, access tracks and parking areas are designed and constructed to allow adequate movement and manoeuvrability having regard to the types of vehicles that are reasonably anticipated.	DTS/DPF 3.8 None are applicable.
PO 3.9 Development is designed to ensure vehicle circulation between activity areas occurs within the site without the need to use public roads.	DTS/DPF 3.9 None are applicable.
Access for People with Disabilities	
PO 4.1 Development is sited and designed to provide safe, dignified and convenient access for people with a disability.	DTS/DPF 4.1 None are applicable.
Vehicle Parking Rates	
PO 5.1 Sufficient on-site vehicle parking and specifically marked accessible car parking places are provided to meet the needs of the development or land use having regard to factors that may support a reduced on-site rate such as: (a) availability of on-street car parking (b) shared use of other parking areas (c) in relation to a mixed-use development, where the hours of operation of commercial activities complement the residential use of the site, the provision of vehicle parking may be shared (d) the adaptive reuse of a State or Local Heritage Place.	DTS/DPF 5.1 Development provides a number of car parking spaces on-site at a rate no less than the amount calculated using one of the following, whichever is relevant: (a) Transport, Access and Parking Table 2 - Off-Street Vehicle Parking Requirements in Designated Areas if the development is a class of development listed in Table 2 and the site is in a Designated Area (b) Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements where (a) does not apply (c) if located in an area where a lawfully established carparking fund operates, the number of spaces calculated under (a) or (b) less the number of spaces offset by contribution to the fund.
Vehicle Parking Areas	
PO 6.1 Vehicle parking areas are sited and designed to minimise impact on the operation of public roads by avoiding the use of public roads when moving from one part of a parking area to another.	DTS/DPF 6.1 Movement between vehicle parking areas within the site can occur without the need to use a public road.
PO 6.2 Vehicle parking areas are appropriately located, designed and constructed to minimise impacts on adjacent sensitive receivers through measures such as ensuring they are attractively developed and landscaped, screen fenced, and the like.	DTS/DPF 6.2 None are applicable.
PO 6.3 Vehicle parking areas are designed to provide opportunity for	DTS/DPF 6.3 None are applicable.

integration and shared-use of adjacent car parking areas to reduce the total extent of vehicle parking areas and access points.	
PO 6.4 Pedestrian linkages between parking areas and the development are provided and are safe and convenient.	DTS/DPF 6.4 None are applicable.
PO 6.5 Vehicle parking areas that are likely to be used during non-daylight hours are provided with sufficient lighting to entry and exit points to ensure clear visibility to users.	DTS/DPF 6.5 None are applicable.
PO 6.6 Loading areas and designated parking spaces for service vehicles are provided within the boundary of the site.	DTS/DPF 6.6 Loading areas and designated parking spaces are wholly located within the site.
PO 6.7 On-site visitor parking spaces are sited and designed to be accessible to all visitors at all times.	DTS/DPF 6.7 None are applicable.
Undercroft and Below Ground Garaging and Parking of Vehicles	
PO 7.1 Undercroft and below ground garaging of vehicles is designed to enable safe entry and exit from the site without compromising pedestrian or cyclist safety or causing conflict with other vehicles.	DTS/DPF 7.1 None are applicable.
Internal Roads and Parking Areas in Residential Parks and Caravan and Tourist Parks	
PO 8.1 Internal road and vehicle parking areas are surfaced to prevent dust becoming a nuisance to park residents and occupants.	DTS/DPF 8.1 None are applicable.
PO 8.2 Traffic circulation and movement within the park is pedestrian friendly and promotes low speed vehicle movement.	DTS/DPF 8.2 None are applicable.
Bicycle Parking in Designated Areas	
PO 9.1 The provision of adequately sized on-site bicycle parking facilities encourages cycling as an active transport mode.	DTS/DPF 9.1 Areas and / or fixtures are provided for the parking and storage of bicycles at a rate not less than the amount calculated using Transport, Access and Parking Table 3 - Off Street Bicycle Parking Requirements.
PO 9.2 Bicycle parking facilities provide for the secure storage and tethering of bicycles in a place where casual surveillance is possible, is well lit and signed for the safety and convenience of cyclists and deters property theft.	DTS/DPF 9.2 None are applicable.
PO 9.3 Non-residential development incorporates end-of-journey facilities for employees such as showers, changing facilities and secure lockers, and signage indicating the location of the facilities to encourage cycling as a mode of journey-to-work transport.	DTS/DPF 9.3 None are applicable.
Corner Cut-Offs	
PO 10.1 Development is located and designed to ensure drivers can safely turn into and out of public road junctions.	DTS/DPF 10.1 Development does not involve building work, or building work is located wholly outside the land shown as Corner Cut-Off Area in the following diagram:

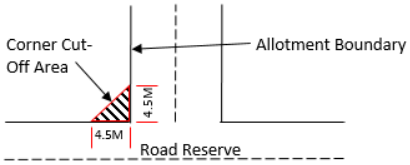
	
Heavy Vehicle Parking	
PO 11.1 Heavy vehicle parking and access is designed and sited so that the activity does not result in nuisance to adjoining neighbours as a result of dust, fumes, vibration, odour or potentially hazardous loads.	DTS/DPF 11.1 Heavy vehicle parking occurs in accordance with the following: (a) the site is not located within a Neighbourhood-type zone (except a Rural Living Zone) (b) the site is a minimum of 0.4 ha (c) where the site is 2 ha or more, no more than 2 vehicles exceeding 3,000 kilograms each (and trailers) are to be parked on the allotment at any time (d) where the site is between 0.4 ha and 2 ha, only one vehicle exceeding 3,000 kilograms (and one trailer) are to be parking on the allotment at any time (e) the vehicle parking area achieves the following setbacks: (i) behind the building line or 30m, whichever is greater (ii) 20m from the secondary street if it is a State Maintained Road (iii) 10m from the secondary street if it is a local road (iv) 10m from side and rear boundaries (f) parking and access areas (including internal driveways) should be sealed or have a surface that can be treated and maintained to minimise dust and mud nuisance (g) does not include refrigerated trailers or vehicles (h) vehicles only enter and exit the property in accordance with the following hours: (i) Monday to Saturday 6:00am and 9:30pm (ii) Sunday and public holidays between 9:30 am and 7:00 pm (i) the handling or trans-shipment of freight is not carried out on the property.
PO 11.2 Heavy vehicle parking ensures that vehicles can enter and exit a site safely and without creating a hazard to pedestrians and other vehicular traffic.	DTS/DPF 11.2 Heavy vehicles: (a) can enter and exit the site in a forward direction; and (b) operate within the statutory mass and dimension limited for General Access Vehicles (as prescribed by the National Heavy Vehicle Regulator).
PO 11.3 Heavy vehicle parking is screened through siting behind buildings, screening, landscaping or the like to obscure views from adjoining properties and public roads.	DTS/DPF 11.3 None are applicable.

Table 1 - General Off-Street Car Parking Requirements

The following parking rates apply and if located in an area where a lawfully established carparking fund operates, the number of spaces is reduced by an amount equal to the number of spaces offset by contribution to the fund.

Class of Development	Car Parking Rate (unless varied by Table 2 onwards)

	Where a development comprises more than one development type, then the overall car parking rate will be taken to be the sum of the car parking rates for each development type.
Residential Development	
Detached Dwelling	Dwelling with 1 bedroom (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 2 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered.
Group Dwelling	Dwelling with 1 or 2 bedrooms (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 3 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered. 0.33 spaces per dwelling for visitor parking where development involves 3 or more dwellings.
Residential Flat Building	Dwelling with 1 or 2 bedrooms (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 3 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered. 0.33 spaces per dwelling for visitor parking where development involves 3 or more dwellings.
Row Dwelling where vehicle access is from the primary street	Dwelling with 1 bedroom (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 2 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered.
Row Dwelling where vehicle access is not from the primary street (i.e. rear-loaded)	Dwelling with 1 or 2 bedrooms (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 3 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered.
Semi-Detached Dwelling	Dwelling with 1 bedroom (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 2 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling, 1 of which is to be covered.
Aged / Supported Accommodation	
Retirement facility	Dwelling with 1 or 2 bedrooms (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 3 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling. 0.2 spaces per dwelling for visitor parking.
Supported accommodation	0.3 spaces per bed.
Residential Development (Other)	
Ancillary accommodation	No additional requirements beyond those associated with the main dwelling.
Residential park	Dwelling with 1 or 2 bedrooms (including rooms capable of being used as a bedroom) - 1 space per dwelling. Dwelling with 3 or more bedrooms (including rooms capable of being used as a bedroom) - 2 spaces per dwelling. 0.2 spaces per dwelling for visitor parking.
Student accommodation	0.3 spaces per bed.
Workers' accommodation	0.5 spaces per bed plus 0.2 spaces per bed for visitor parking.
Tourist	
Caravan and tourist park	Parks with 100 sites or less - a minimum of 1 space per 10 sites to be used for accommodation. Parks with more than 100 sites - a minimum of 1 space per 15 sites used for accommodation. A minimum of 1 space for every caravan (permanently fixed to the ground) or cabin.
Tourist accommodation other than a caravan and tourist park	1 car parking space per accommodation unit / guest room.
Commercial Uses	

Auction room/ depot	1 space per 100m2 of building floor area plus an additional 2 spaces.
Automotive collision repair	3 spaces per service bay.
Motor repair station	3 spaces per service bay.
Office	For a call centre, 8 spaces per 100m2 of gross leasable floor area In all other cases, 4 spaces per 100m2 of gross leasable floor area.
Retail fuel outlet	3 spaces per 100m2 gross leasable floor area.
Service trade premises	2.5 spaces per 100m2 of gross leasable floor area 1 space per 100m2 of outdoor area used for display purposes.
Shop (no commercial kitchen)	5.5 spaces per 100m2 of gross leasable floor area where not located in an integrated complex containing two or more tenancies (and which may comprise more than one building) where facilities for off-street vehicle parking, vehicle loading and unloading, and the storage and collection of refuse are shared. 5 spaces per 100m2 of gross leasable floor area where located in an integrated complex containing two or more tenancies (and which may comprise more than one building) where facilities for off-street vehicle parking, vehicle loading and unloading, and the storage and collection of refuse are shared.
Shop (in the form of a bulky goods outlet)	2.5 spaces per 100m2 of gross leasable floor area.
Shop (in the form of a restaurant or involving a commercial kitchen)	Premises with a dine-in service only (which may include a take-away component with no drive-through) - 0.4 spaces per seat. Premises with take-away service but with no seats - 12 spaces per 100m2 of total floor area plus a drive-through queue capacity of ten vehicles measured from the pick-up point. Premises with a dine-in and drive-through take-away service - 0.3 spaces per seat plus a drive through queue capacity of 10 vehicles measured from the pick-up point.
Community and Civic Uses	
Community facility	For a library, 4 spaces per 100m2 of total floor area. For a hall/meeting hall, 0.2 spaces per seat. In all other cases, 10 spaces per 100m2 of total floor area.
Educational facility	For a primary school - 1.1 space per full time equivalent employee plus 0.25 spaces per student for a pickup/set down area either on-site or on the public realm within 300m of the site. For a secondary school - 1.1 per full time equivalent employee plus 0.1 spaces per student for a pickup/set down area either on-site or on the public realm within 300m of the site. For a tertiary institution - 0.4 per student based on the maximum number of students on the site at any time.
Place of worship	1 space for every 3 visitor seats.
Child care facility	For a child care centre, 0.25 spaces per child In all other cases, 1 per employee plus 0.25 per child (drop off/pick up bays).
Health Related Uses	
Consulting room	4 spaces per consulting room excluding ancillary facilities.
Hospital	4.5 spaces per bed for a public hospital. 1.5 spaces per bed for a private hospital.
Recreational and Entertainment Uses	
Cinema complex	0.2 spaces per seat.
Concert hall / theatre	0.2 spaces per seat.
Hotel	1 space for every 2m2 of total floor area in a public bar plus 1 space for every 6m2 of total floor area available to the public in a lounge, beer garden plus 1 space per 2 gaming machines, plus 1 space per 3 seats in a restaurant.
Indoor recreation facility	6.5 spaces per 100m2 of total floor area for a Fitness Centre 4.5 spaces per 100m2 of total floor area for all other Indoor recreation facilities.

Industry/Employment Uses	
Fuel depot	1.5 spaces per 100m2 total floor area 1 spaces per 100m2 of outdoor area used for fuel depot activity purposes.
Industry	1.5 spaces per 100m2 of total floor area.
Store	0.5 spaces per 100m2 of total floor area.
Timber yard	1.5 spaces per 100m2 of total floor area 1 space per 100m2 of outdoor area used for display purposes.
Warehouse	0.5 spaces per 100m2 total floor area.
Other Uses	
Funeral Parlour	1 space per 5 seats in the chapel plus 1 space for each vehicle operated by the parlour.
Radio or Television Station	5 spaces per 100m2 of total building floor area.

Table 2 - Off-Street Car Parking Requirements in Designated Areas

The following parking rates apply in any zone, subzone or other area described in the 'Designated Areas' column.

Class of Development	Car Parking Rate Where a development comprises more than one development type, then the overall car parking rate will be taken to be the sum of the car parking rates for each development type.		Designated Areas
	Minimum number of spaces	Maximum number of spaces	
Development generally			
All classes of development	No minimum.	No maximum except in the Primary Pedestrian Area identified in the Primary Pedestrian Area Concept Plan, where the maximum is: 1 space for each dwelling with a total floor area less than 75 square metres 2 spaces for each dwelling with a total floor area between 75 square metres and 150 square metres 3 spaces for each dwelling with a total floor area greater than 150 square metres. Residential flat building or Residential component of a multi-storey building: 1 visitor space for each 6 dwellings.	Capital City Zone City Main Street Zone City Riverbank Zone Adelaide Park Lands Zone Business Neighbourhood Zone (within the City of Adelaide) The St Andrews Hospital Precinct Subzone and Women's and Children's Hospital Precinct Subzone of the Community Facilities Zone
Non-residential development			
Non-residential development excluding tourist accommodation	3 spaces per 100m2 of gross leasable floor area.	5 spaces per 100m2 of gross leasable floor area.	City Living Zone Urban Corridor (Boulevard) Zone Urban Corridor (Business) Zone Urban Corridor (Living) Zone Urban Corridor (Main Street) Zone Urban Neighbourhood Zone (except for Bowden, Brompton or Hindmarsh)
Non-residential development excluding tourist accommodation	3 spaces per 100m2 of gross leasable floor area.	6 spaces per 100m2 of gross leasable floor area.	Strategic Innovation Zone in the City of Burnside, City of Marion or City of Mitcham Strategic Innovation Zone outside the City of Burnside, City of Marion or City of Mitcham when the site is also in a high frequency public

			transit area Suburban Activity Centre Zone when the site is also in a high frequency public transit area Suburban Business Zone when the site is also in a high frequency public transit area Business Neighbourhood Zone outside of the City of Adelaide when the site is also in a high frequency public transit area Suburban Main Street Zone when the site is also in a high frequency public transit area Urban Activity Centre Zone
Non-residential development excluding tourist accommodation	3 spaces per 100 square metres of gross leasable floor area 1.5 spaces per 100 square metres of gross leasable floor area above ground floor level other than for a shop	3 spaces per 100 square metres of gross leasable floor area	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)
Tourist accommodation	1 space for every 4 bedrooms up to 100 bedrooms plus 1 space for every 5 bedrooms over 100 bedrooms	1 space per 2 bedrooms up to 100 bedrooms and 1 space per 4 bedrooms over 100 bedrooms	City Living Zone Urban Activity Centre Zone when the site is also in a high frequency public transit area Urban Corridor (Boulevard) Zone Urban Corridor (Business) Zone Urban Corridor (Living) Zone Urban Corridor (Main Street) Zone Urban Neighbourhood Zone (except for Bowden, Brompton or Hindmarsh)
Residential development			
Residential component of a multi-storey building	Dwelling with no separate bedroom -0.25 spaces per dwelling 1 bedroom dwelling - 0.75 spaces per dwelling 2 bedroom dwelling - 1 space per dwelling 3 or more bedroom dwelling - 1.25 spaces per dwelling 0.25 spaces per dwelling for visitor parking.	None specified.	City Living Zone Strategic Innovation Zone in the City of Burnside, City of Marion or City of Mitcham Strategic Innovation Zone outside the City of Burnside, City of Marion or City of Mitcham when the site is also in a high frequency public transit area Urban Activity Centre Zone when the site is also in a high frequency public transit area Urban Corridor (Boulevard) Zone Urban Corridor (Business) Zone

			Urban Corridor (Living) Zone Urban Corridor (Main Street) Zone Urban Neighbourhood Zone (except for Bowden, Brompton or Hindmarsh)
Residential component of a multi-storey building	0.75 per dwelling	None specified	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)
Residential flat building	Dwelling with no separate bedroom -0.25 spaces per dwelling 1 bedroom dwelling - 0.75 spaces per dwelling 2 bedroom dwelling - 1 space per dwelling 3 or more bedroom dwelling - 1.25 spaces per dwelling 0.25 spaces per dwelling for visitor parking.	None specified.	City Living Zone Urban Activity Centre Zone when the site is also in a high frequency public transit area Urban Corridor (Boulevard) Zone Urban Corridor (Business) Zone Urban Corridor (Living) Zone Urban Corridor (Main Street) Zone Urban Neighbourhood Zone (except for Bowden, Brompton or Hindmarsh)
Residential flat building	0.75 per dwelling	None specified	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)
Detached dwelling	0.75 per dwelling	None specified	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)
Row dwelling	0.75 per dwelling	None specified	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)
Semi-detached dwelling	0.75 per dwelling	None specified	Urban Neighbourhood Zone (in Bowden, Brompton or Hindmarsh)

Table 3 - Off-Street Bicycle Parking Requirements

The bicycle parking rates apply within designated areas located within parts of the State identified in the Schedule to Table 3.

Class of Development	Bicycle Parking Rate Where a development comprises more than one development type, then the overall bicycle parking rate will be taken to be the sum of the bicycle parking rates for each development type.
Consulting room	1 space per 20 employees plus 1 space per 20 consulting rooms for customers.
Educational facility	For a secondary school - 1 space per 20 full-time time employees plus 10 percent of the total number of employee spaces for visitors.

	For tertiary education - 1 space per 20 employees plus 1 space per 10 full time students.
Hospital	1 space per 15 beds plus 1 space per 30 beds for visitors.
Indoor recreation facility	1 space per 4 employees plus 1 space per 200m2 of gross leasable floor area for visitors.
Licensed Premises	1 per 20 employees, plus 1 per 60 square metres total floor area, plus 1 per 40 square metres of bar floor area, plus 1 per 120 square metres lounge and beer garden floor area, plus 1 per 60 square metres dining floor area, plus 1 per 40 square metres gaming room floor area.
Office	1 space for every 200m2 of gross leasable floor area plus 2 spaces plus 1 space per 1000m2 of gross leasable floor area for visitors.
Child care facility	1 space per 20 full time employees plus 1 space per 40 full time children.
Recreation area	1 per 1500 spectator seats for employees plus 1 per 250 visitor and customers.
Residential flat building	Within the City of Adelaide 1 for every dwelling for residents with a total floor area less than 150 square metres, 2 for every dwelling for residents with a total floor area greater than 150 square metres, plus 1 for every 10 dwellings for visitors, and in all other cases 1 space for every 4 dwellings for residents plus 1 for every 10 dwellings for visitors.
Residential component of a multi-storey building	Within the City of Adelaide 1 for every dwelling for residents with a total floor area less than 150 square metres, 2 for every dwelling for residents with a total floor area greater than 150 square metres, plus 1 for every 10 dwellings for visitors, and in all other cases 1 space for every 4 dwellings for residents plus 1 space for every 10 dwellings for visitors.
Shop	1 space for every 300m2 of gross leasable floor area plus 1 space for every 600m2 of gross leasable floor area for customers.
Tourist accommodation	1 space for every 20 employees plus 2 for the first 40 rooms and 1 for every additional 40 rooms for visitors.

Schedule to Table 3

Designated Area	Relevant part of the State The bicycle parking rate applies to a designated area located in a relevant part of the State described below.
All zones	City of Adelaide
Business Neighbourhood Zone Strategic Innovation Zone Suburban Activity Centre Zone Suburban Business Zone Suburban Main Street Zone Urban Activity Centre Zone Urban Corridor (Boulevard) Zone Urban Corridor (Business) Zone Urban Corridor (Living) Zone Urban Corridor (Main Street) Zone Urban Neighbourhood Zone	Metropolitan Adelaide

Waste Treatment and Management Facilities

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Mitigation of the potential environmental and amenity impacts of waste treatment and management facilities.

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Siting	
PO 1.1 Waste treatment and management facilities incorporate separation distances and attenuation measures within the site between waste operations areas (including all closed, operating and future cells) and sensitive receivers and sensitive environmental features to mitigate off-site impacts from noise, air and dust emissions.	DTS/DPF 1.1 None are applicable.
Soil and Water Protection	
PO 2.1 Soil, groundwater and surface water are protected from contamination from waste treatment and management facilities through measures such as: (a) containing potential groundwater and surface water contaminants within waste operations areas (b) diverting clean stormwater away from waste operations areas and potentially contaminated areas (c) providing a leachate barrier between waste operations areas and underlying soil and groundwater.	DTS/DPF 2.1 None are applicable.
PO 2.2 Wastewater lagoons are set back from watercourses to minimise environmental harm and adverse effects on water resources.	DTS/DPF 2.2 Wastewater lagoons are set back 50m or more from watercourse banks.
PO 2.3 Wastewater lagoons are designed and sited to: (a) avoid intersecting underground waters; (b) avoid inundation by flood waters; (c) ensure lagoon contents do not overflow; (d) include a liner designed to prevent leakage.	DTS/DPF 2.3 None are applicable.
PO 2.4 Waste operations areas of landfills and organic waste processing facilities are set back from watercourses to minimise adverse impacts on water resources.	DTS/DPF 2.4 Waste operations areas are set back 100m or more from watercourse banks.
Amenity	
PO 3.1 Waste treatment and management facilities are screened, located and designed to minimise adverse visual impacts on amenity.	DTS/DPF 3.1 None are applicable.
PO 3.2 Access routes to waste treatment and management facilities via residential streets is avoided.	DTS/DPF 3.2 None are applicable.
PO 3.3 Litter control measures minimise the incidence of windblown litter.	DTS/DPF 3.3 None are applicable.
PO 3.4 Waste treatment and management facilities are designed to minimise adverse impacts on both the site and surrounding areas from weed and vermin infestation.	DTS/DPF 3.4 None are applicable.
Access	

PO 4.1 Traffic circulation movements within any waste treatment or management site are designed to enable vehicles to enter and exit the site in a forward direction.	DTS/DPF 4.1 None are applicable.
PO 4.2 Suitable access for emergency vehicles is provided to and within waste treatment or management sites.	DTS/DPF 4.2 None are applicable.
Fencing and Security	
PO 5.1 Security fencing provided around waste treatment and management facilities prevents unauthorised access to operations and potential hazard to the public.	DTS/DPF 5.1 Chain wire mesh or pre-coated painted metal fencing 2m or more in height is erected along the perimeter of the waste treatment or waste management facility site.
Landfill	
PO 6.1 Landfill gas emissions are managed in an environmentally acceptable manner.	DTS/DPF 6.1 None are applicable.
PO 6.2 Landfill facilities are separated from areas of environmental significance and land used for public recreation and enjoyment.	DTS/DPF 6.2 Landfill facilities are set back 250m or more from a public open space reserve, forest reserve, national park or Conservation Zone.
PO 6.3 Landfill facilities are located on land that is not subject to land slip.	DTS/DPF 6.3 None are applicable.
PO 6.4 Landfill facilities are separated from areas subject to flooding.	DTS/DPF 6.4 Landfill facilities are set back 500m or more from land inundated in a 1% AEP flood event.
Organic Waste Processing Facilities	
PO 7.1 Organic waste processing facilities are separated from the coast to avoid potential environment harm.	DTS/DPF 7.1 Organic waste processing facilities are set back 500m or more from the coastal high water mark.
PO 7.2 Organic waste processing facilities are located on land where the engineered liner and underlying seasonal water table cannot intersect.	DTS/DPF 7.2 None are applicable.
PO 7.3 Organic waste processing facilities are sited away from areas of environmental significance and land used for public recreation and enjoyment.	DTS/DPF 7.3 Organic waste processing facilities are set back 250m or more from a public open space reserve, forest reserve, national park or a Conservation Zone.
PO 7.4 Organic waste processing facilities are located on land that is not subject to land slip.	DTS/DPF 7.4 None are applicable.
PO 7.5 Organic waste processing facilities separated from areas subject to flooding.	DTS/DPF 7.5 Organic waste processing facilities are set back 500m or more from land inundated in a 1% AEP flood event.
Major Wastewater Treatment Facilities	
PO 8.1 Major wastewater treatment and disposal systems, including lagoons, are designed to minimise potential adverse odour impacts on sensitive receivers, minimise public and environmental health risks and protect water quality.	DTS/DPF 8.1 None are applicable.
PO 8.2	DTS/DPF 8.2

Artificial wetland systems for the storage of treated wastewater are designed and sited to minimise potential public health risks arising from the breeding of mosquitoes.	None are applicable.

Workers' accommodation and Settlements

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Appropriately designed and located accommodation for seasonal and short-term workers in rural areas that minimises environmental and social impacts.

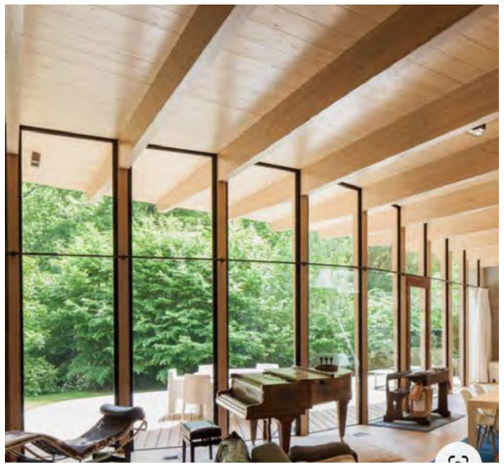
Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 1.1 Workers' accommodation and settlements are obscured from scenic routes, tourist destinations and areas of conservation significance or otherwise designed to complement the surrounding landscape.	DTS/DPF 1.1 None are applicable.
PO 1.2 Workers' accommodation and settlements are sited and designed to minimise nuisance impacts on the amenity of adjacent users of land.	DTS/DPF 1.2 None are applicable.
PO 1.3 Workers' accommodation and settlements are built with materials and colours that blend with the landscape.	DTS/DPF 1.3 None are applicable.
PO 1.4 Workers' accommodation and settlements are supplied with service infrastructure such as power, water and effluent disposal sufficient to satisfy the living requirements of workers.	DTS/DPF 1.4 None are applicable.

No criteria applies to this land use. Please check the definition of the land use for further detail.

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

ARTISTS IMPRESSION


MOOD BOARD

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

anatoly patrick
architect
0401 387 789

PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

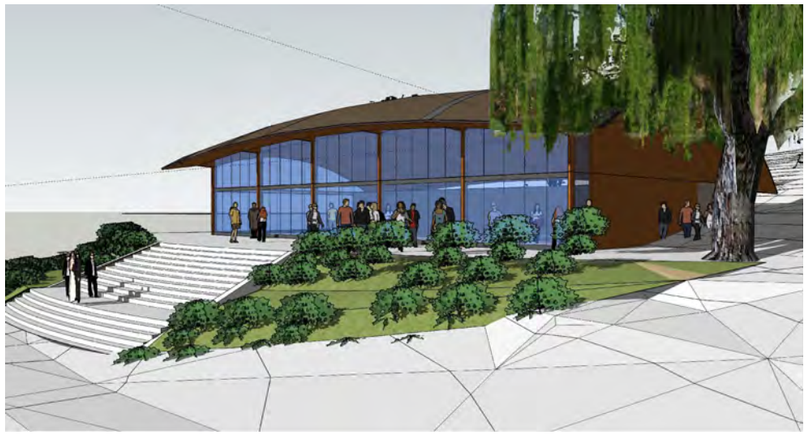
START DATE 2020
JB NO 2014

CONCEPT DESIGN

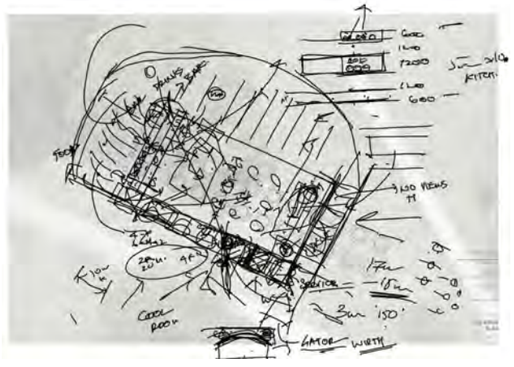
A/AA A

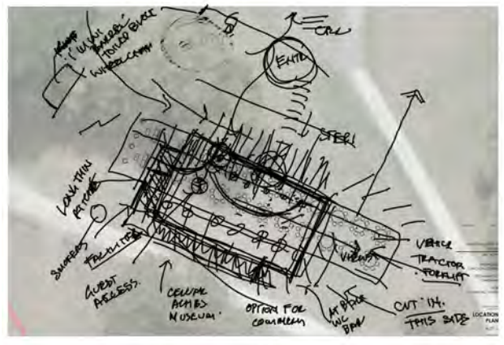
1:1 @ A3

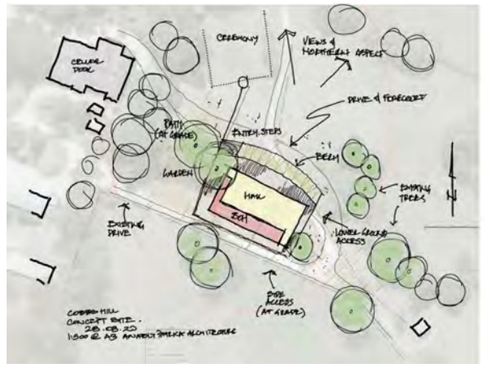
PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

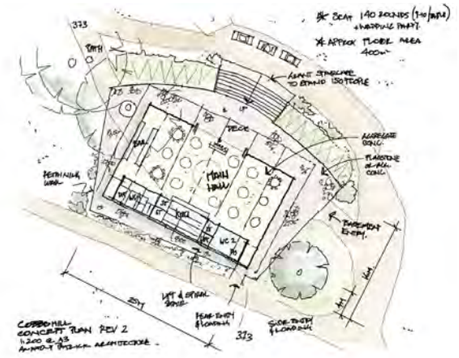


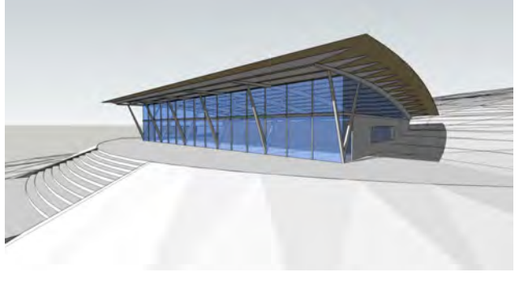
DESIGN MODEL CONCEPT

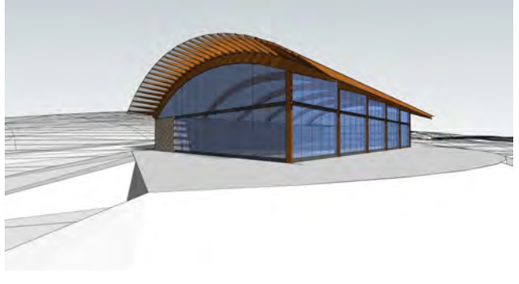


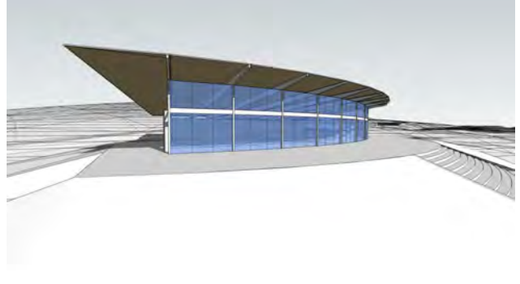


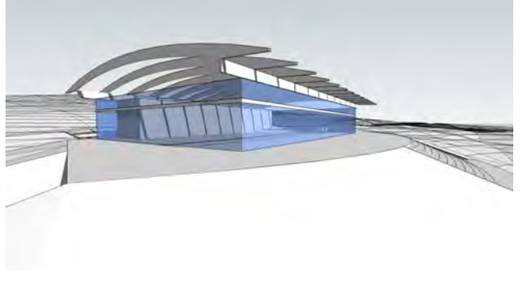












DESIGN DEVELOPMENT

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

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architect
0401 387 789

PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

DESIGN DEVELOPMENT

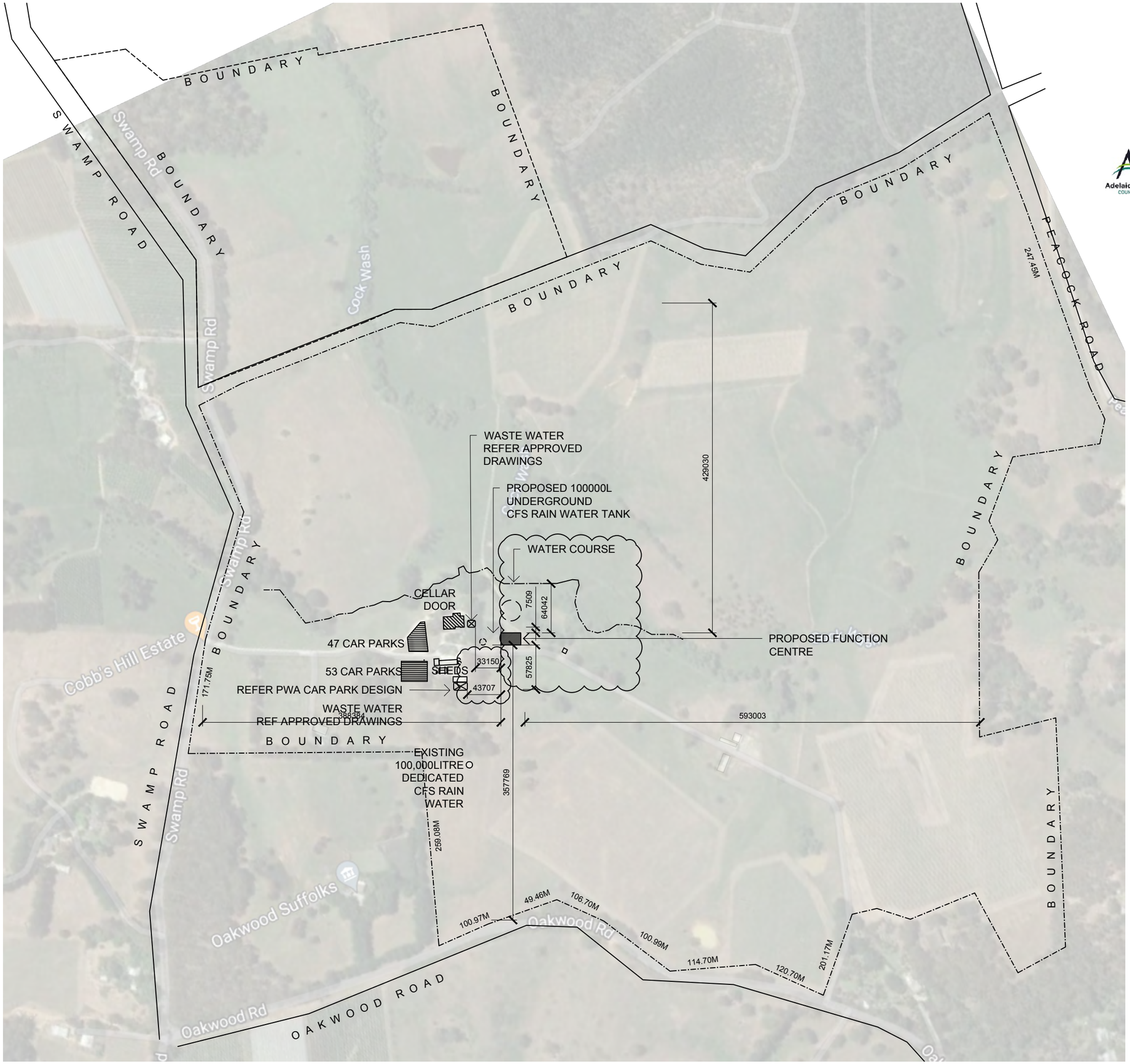
A/BB A

1:1 @ A3

FIRE FIGHTING
- DEDICATED WATER TANKS PROVIDED FOR CFS USE
- TURNING CIRCLE SUITABLE FOR FIRE TRUCK USE

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2
03.09.2021 DIMS TO WASTE WATER

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0401 387 789

PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

LOCATION PLAN

A/01 B

1:500 @ A3

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

FIRE FIGHTING
- DEDICATED WATER TANKS PROVIDED FOR CFS USE
- TURNING CIRCLE SUITABLE FOR FIRE TRUCK USE

RL 371.00
9.5M TURNING CIRCLE
RL 372.00
NEW PATH AT GRADE
EXISTING GRAVEL ROAD
RL 372.05
NEW STEPS
RL 372.95
NEW TERRACE
NEW TERRACE
NEW PODIUM
RL 372.00
RL 372.14
PROPOSED FUNCTION CENTRE
FFL RL 374.00
UNDER GROUND CFS R/W
RL 377.00
RL 373.00
RL 379.27
EXISTING GRAVEL ROAD
RL 376.24
RL 377.46
EXISTING CELLAR DOOR
EXISTING SEPTIC TANK
RL 379.00
RL 380.5
EXISTING SHEDS
R/W
SHEDS
RL 376.64
REMOVE EXISTING TREE
RL 383.15
CAR PARK DESIGN BY PHIL WEAVER & ASSOCIATES DATED 16 JANUARY 2023 TO BE FOLLOWED
RETAIN TREE
ACCESS CAR PARK / DELIVERIES

REMOVE TREE (OLIVE)
REDIRECT GRAVEL ROAD
BASEMENT ACCESS

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2
27.02.2023 CAR PARK REV 3

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PROPOSED FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

LOCATION PLAN

A/02 B

1:500 @ A3

PROPOSED = 330 SQM

FUNCTION ROOM AREA 292 SQM
BACK OF HOUSE AREA 91.5 SQM

RL 372.00

LANDING
STONE
RL 372.95

LAWN
RL 372.95

LAWN
RL 372.95

MAIN PATH FROM
CELLAR DOOR
RL 374.00

PODIUM
STONE
RL 373.90

PROPOSED
FUNCTION CENTRE
412 SQM
FFL RL 374.00

DRIVEWAY
RL 370.40

BALCONY WALL
1000MM

ACCESS CAR PARK /
DELIVERIES
RL 378.97

ACCESS PATH
RL 373.90

ACCESS PATH

EXISTING GRAVEL ROAD

NATIVE

EXOTIC

5399
10000
3529
15859
1996
1812

2752
9080
25997
1994
6949

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

N

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PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

SITE PLAN

A/03 A

1:200 @ A3

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

PODIUM
STONE

26000

OPENING GLASS DOORS

MAIN ENTRY

UP

KITCHEN

BAR

FUNCTION ROOM
POLISHED CONC

DRY

COLD

MALE

LIFT

FEMALE

STONE CLAD WALL

STONE CLAD WALL

FIRE PLACE
T&G TIMBER

STONE CLAD WALL

STONE CLAD WALL

STORE
CONC

MALE
P.CONC

FEM
P.CONC

ACCESS
WC

16859

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

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PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

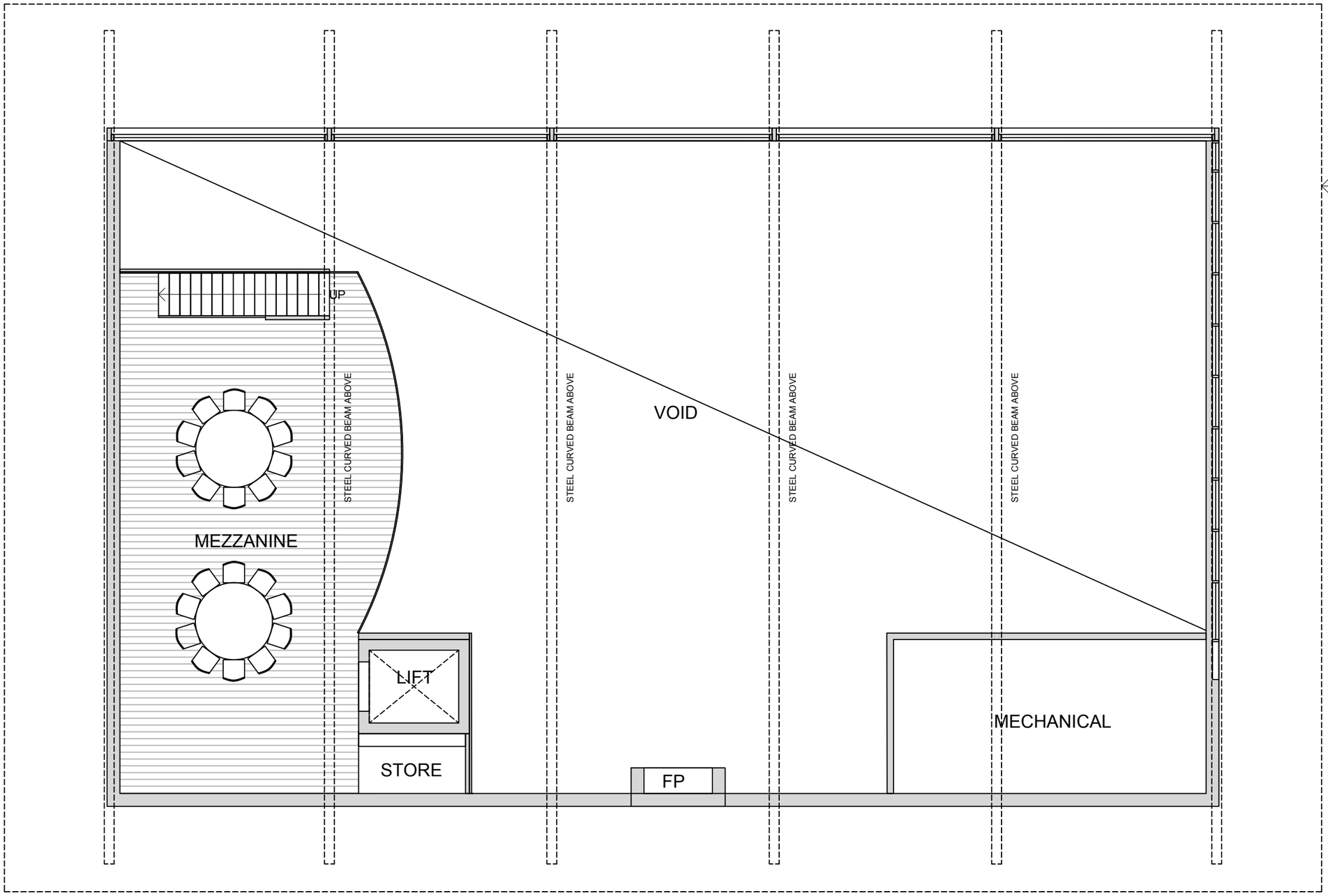
START DATE 2020
JB NO 2014

PLAN

A/04 A

1:100 @ A3

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



FIRST FLOOR
PLAN

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

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0401 387 789

PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

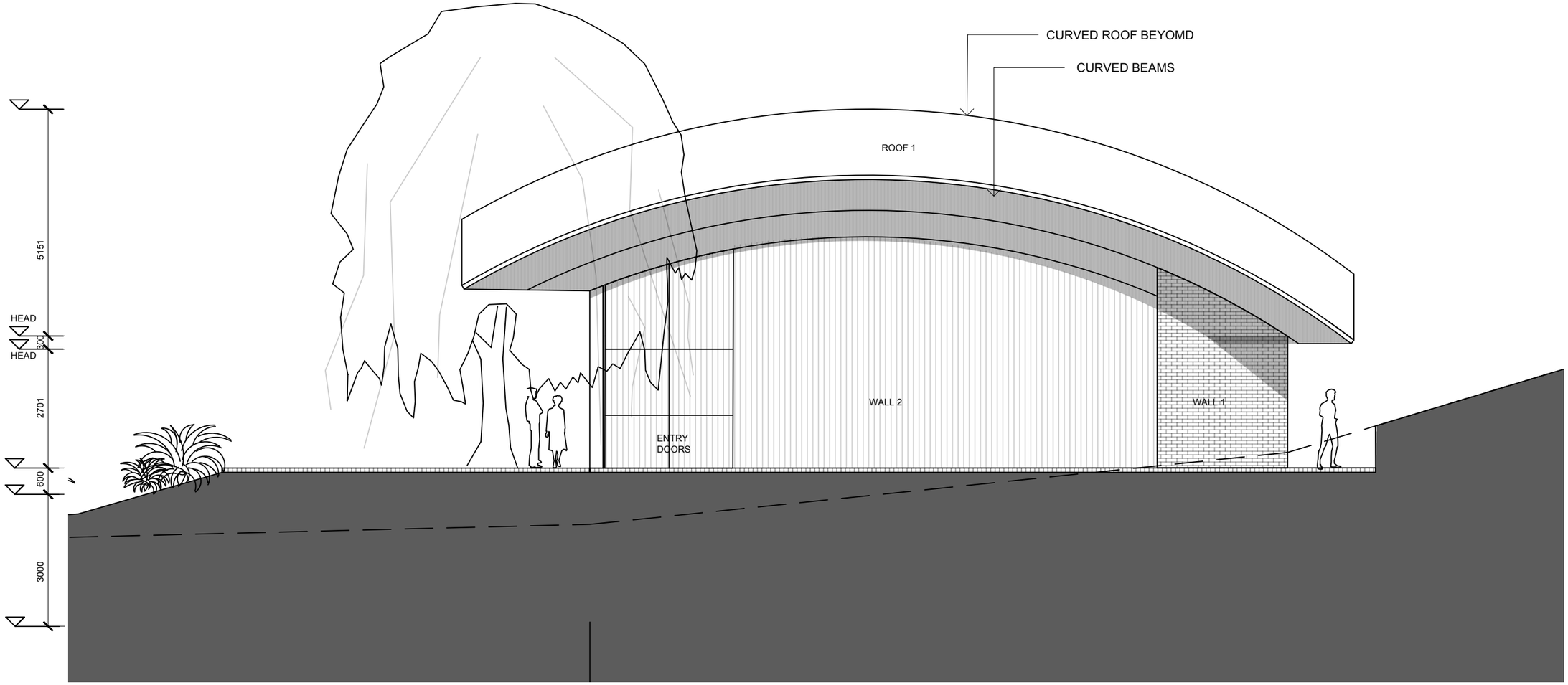
FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

FIRST FLOOR PLAN

A/05 A

1:100 @ A3



EAST ELEVATION

FINISHES SCHEDULE -
REFER A/06

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

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PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

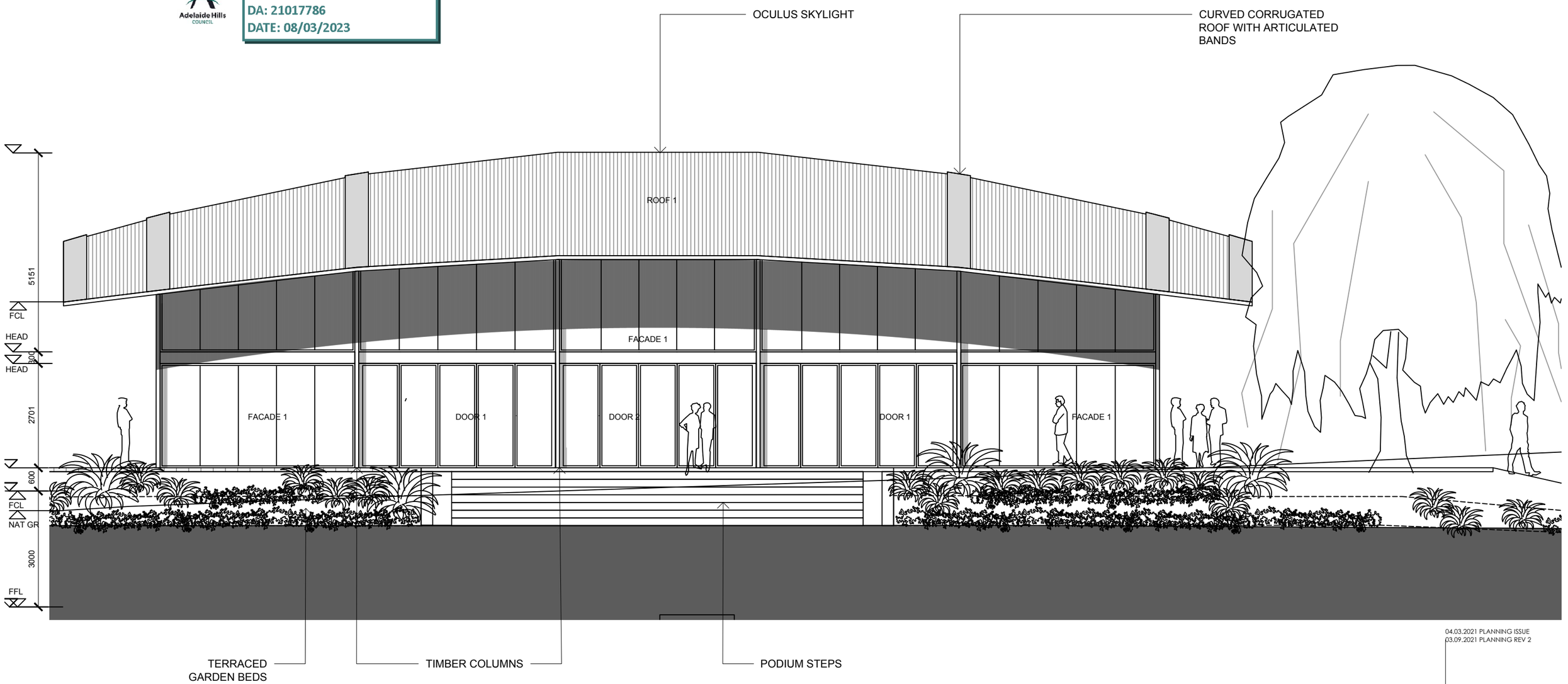
START DATE 2020
JB NO 2014

ELEVATION 02

A/07 A

1:100 @ A3

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



NORTH ELEVATION

FINISHES		
WALL 1	PAINTED BRICK	OFF WHITE
WALL 2	TIMBER OAK	CLEAR COAT
FACADE 1	P/COAT ALUMINIUM FRAME FIXED	MATT BLACK
DOORS 1	P/COAT ALUMINIUM FRAME STACKING	MATT BLACK
DOORS 2	FRAMELESS CAFE STACKING	
ROOF	CORRUGATED IRON	ARKAROOLA
ROOF STRUCTURE	CURVED GLUE LAMINATED BEAMS	CLEAR COAT

04.03.2021 PLANNING ISSUE
03.09.2021 PLANNING REV 2

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PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

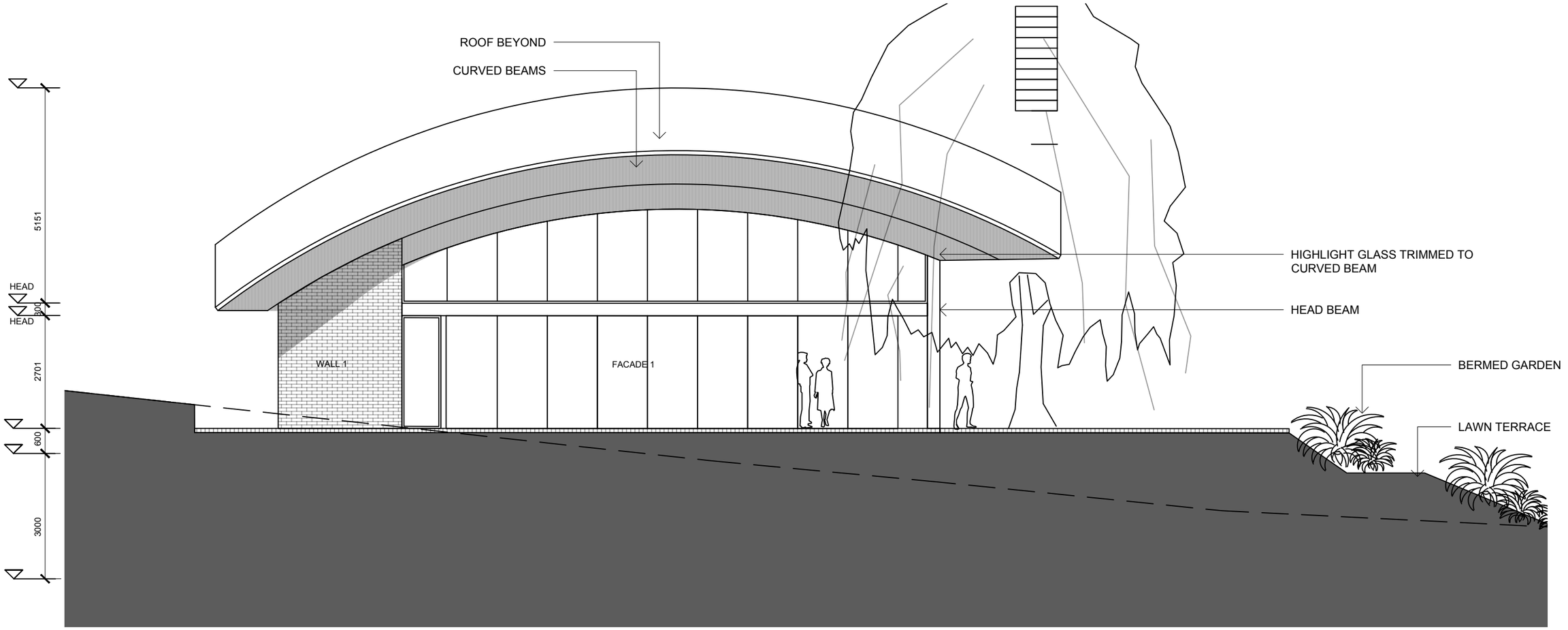
START DATE 2020
JB NO 2014

ELEVATION 01

A/06 B

1:100 @ A3

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



WEST ELEVATION

FINISHES SCHEDULE -
REFER A/06

04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

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0401 387 789

PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

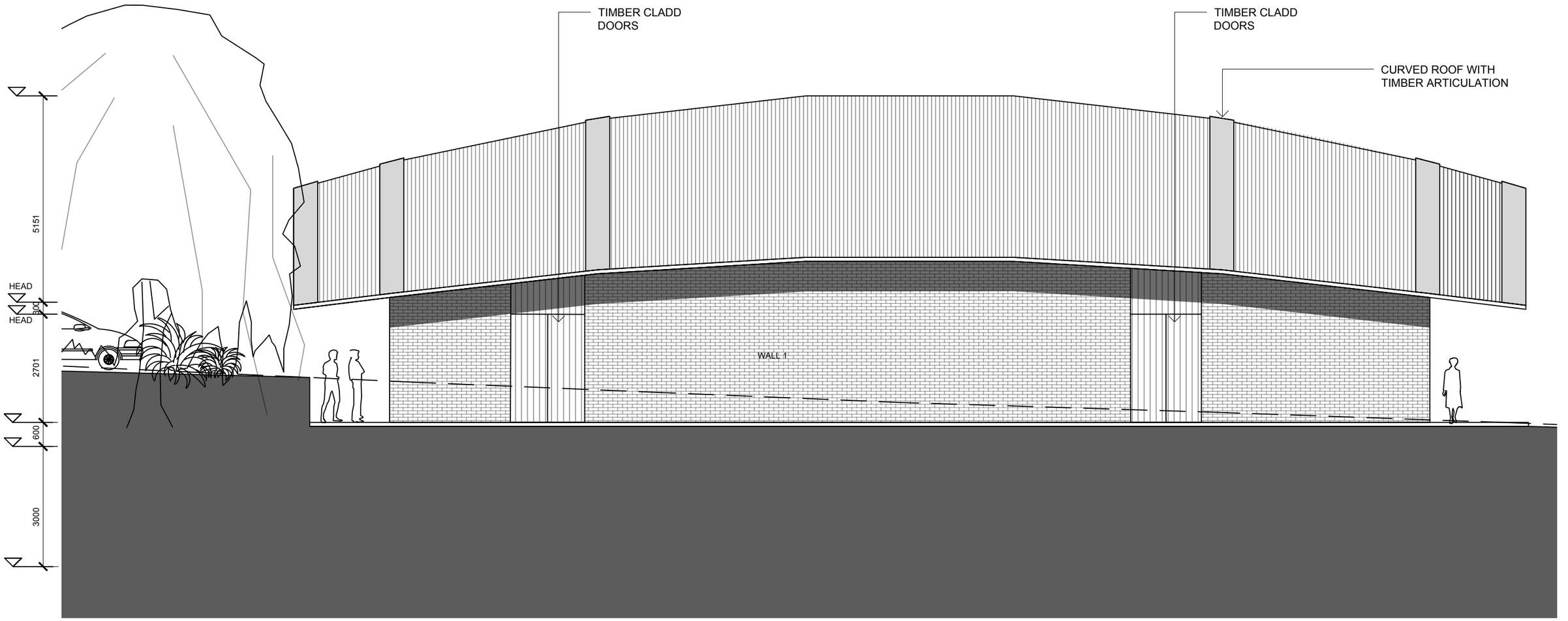
START DATE 2020
JB NO 2014

ELEVATION 03

A/08 A

1:100 @ A3

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



04.03.2021 PLANNING ISSUE
15.07.2021 PLANNING REV 2

SOUTH ELEVATION

FINISHES SCHEDULE -
REFER A/06

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PROPOSED
FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

START DATE 2020
JB NO 2014

ELEVATION 04

A/09 A

1:100 @ A3

CIVIL DESIGN NOTES

1. ALL STORMWATER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH AS 3500.3.
2. UNLESS NOTED OTHERWISE, ALL DN100 STORMWATER PIPES TO BE UPVC CLASS SN10, ALL ≥ DN150 STORMWATER PIPES TO BE UPVC CLASS SN8 AND ALL ≥ DN375 STORMWATER PIPES TO BE RUBBER RING JOINTED REINFORCED CONCRETE IN ACCORDANCE WITH AS 1260 AND AS 3725.
3. REFER TO ARCHITECTURAL DRAWINGS FOR ALL ROOF GUTTER, DOWNPIPE, SUMP AND OVERFLOW MATERIAL, SIZE AND LOCATION.
4. REFER TO ARCHITECTURAL DRAWINGS FOR RAINWATER TANK LOCATION AND DETAIL.
5. REFER TO LANDSCAPE DRAWINGS FOR PLANTING DETAILS AND TREE PROTECTION ZONES. ALL WORK AT OR NEAR TREE PROTECTION ZONES TO BE CARRIED OUT UNDER THE SUPERVISION OF THE PROJECT ARBORIST. HAND EXCAVATION MAY BE REQUIRED.
6. BUILDER TO OBTAIN ALL WORK PERMITS REQUIRED FROM AUTHORITIES.
7. BUILDER TO ALLOW FOR TOP OF EXISTING SERVICES PITS TO BE ADJUSTED TO SUIT NEW PAVING AND/OR LANDSCAPE LEVELS.
8. BUILDER TO IDENTIFY ALL EXISTING SERVICES LOCATED WITHIN THE VICINITY OF NEW STORMWATER WORKS AND ENSURE PROPOSED STORMWATER DOES NOT INTERFERE WITH ANY EXISTING SERVICES BEFORE COMMENCING CONSTRUCTION.
9. BUILDER TO CO-ORDINATE ALL SERVICES CROSSING STORMWATER.
10. CARE TO BE TAKEN WHEN EXCAVATING AT OR NEAR EXISTING SERVICES. HAND EXCAVATION MAYBE REQUIRED. LIAISE WITH RELEVANT AUTHORITY.
11. ALL SURFACE LEVELS SHOWN ON CIVIL DRAWINGS ARE TO AUSTRALIAN HEIGHT DATUM (AHD). REFER TO PLAN OF SURVEY PREPARED BY WEBER FRANKIW SURVEYORS. REFERENCE No.8226.
12. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
13. CIVIL DRAWINGS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS FOR THIS PROJECT.
14. CIVIL DRAWINGS ARE NOT TO USED FOR DIMENSIONS OR SETOUT PURPOSES. REFER TO ARCHITECT'S DRAWINGS FOR SETOUT INSTRUCTIONS.

LEGEND

- EXISTING SURFACE LEVEL
- EXISTING SURFACE CONTOUR
- DENOTES APPROXIMATE PROPOSED LEVELS.
- DENOTES APPROXIMATE EXISTING LEVELS.
- DENOTES APPROX. EXISTING TRACK
- DENOTES NEW STORMWATER
- DENOTES NEW Ø100 A.G. DRAIN
- I.O. PROPOSED INSPECTION OPENING
- P1 DENOTES APPROXIMATE LOCATION OF 450X450 GRATED PIT. (CLASS B.) TOP OF GRATE TO MATCH LANDSCAPE / INVERT LEVEL OF SWALE DRAIN. GRATE TO BE HEELSAFE.
- P2 DENOTES APPROXIMATE LOCATION OF 600X600 GRATED PIT. (CLASS C) TOP OF GRATE TO MATCH LANDSCAPE / PAVING LEVEL. GRATE TO BE HEELSAFE.
- P3 DENOTES APPROXIMATE LOCATION OF 900X900 GRATED PIT. (CLASS B) TOP OF GRATE TO MATCH LANDSCAPE / PAVING LEVEL. GRATE TO BE HEELSAFE.
- PROPOSED GARDEN BED. REFER TO LANDSCAPE DRAWINGS FOR DETAILS.
- PROPOSED GRAVEL PAVEMENT. (MEDIUM DUTY)
- PROPOSED STONE PAVEMENT. (LIGHT DUTY)

TBM METAL PIN RL = 377.744m

TBM METAL PIN RL = 373.414m

EXISTING CAR PARK

EXISTING CELLAR DOOR

EXISTING SEPTIC TANK

EXISTING SHED

NEW TURNING CIRCLE

PROPOSED FUNCTION CENTRE

PROPOSED CARPARK

NEW PATH AT GRADE

EXISTING GRAVEL ROAD

UNDERGROUND RAINWATER TANK

NEW ACCESSIBLE CAR PARKING

EXISTING TREE TO REMAIN.

EXISTING TREE TO BE REMOVED.

APPROXIMATE EXTENT OF NEW DRIVEWAY WORKS. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT OF PROPOSED DRIVEWAY. NEW DRIVEWAY LEVEL TO MATCH INTO EXISTING ROAD LEVEL. REFER TO SK2 FOR TYPICAL ROAD SECTIONS.

APPROXIMATE EXTENT OF NEW DRIVEWAY WORKS. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT OF PROPOSED DRIVEWAY. NEW DRIVEWAY LEVEL TO MATCH INTO EXISTING ROAD LEVEL. REFER TO SK2 FOR TYPICAL ROAD SECTIONS.

LOCALLY REGRADE AND MATCH INTO EXISTING LEVEL.

LOCALLY REGRADE AND MATCH INTO EXISTING LEVEL.

LOCALLY REGRADE BEHIND NEW CAR PARK AND MATCH INTO EXISTING LEVEL. (TYPICAL)

BUILDER TO ALLOW FOR 300 DIAM. TANK OVERFLOW PIPE AT HIGH LEVEL. GRADE PIPE 1:200 MIN AND CONNECT PIPE TO THE GRATED PIT. PROVIDE 600mm MIN COVER OVER PIPE.

APPROXIMATE LOCATION OF PROPOSED UNDERGROUND RAINWATER TANK. REFER TO HYDRAULIC ENGINEERS DRAWING FOR TANK LOCATION AND DETAILS. RAINWATER TANK TO BE CONNECTED TO ABLUTION FACILITIES.

NEW DRIVEWAY LEVEL TO MATCH INTO EXISTING ROAD LEVEL.

ALL DOWNPIPES FROM NEW FUNCTION CENTRE TO CONNECT TO NEW SOAK PIT B .

APPROXIMATE EXTENT OF NEW DRIVEWAY WORKS. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT OF PROPOSED DRIVEWAY. NEW DRIVEWAY LEVEL TO MATCH INTO EXISTING ROAD LEVEL. REFER TO SK2 FOR TYPICAL ROAD SECTIONS.

DOWNPIPES FROM PROPOSED FUNCTION CENTER TO BE CONNECTED TO THE UNDERGROUND RAINWATER TANK.

REFER TO LANDSCAPE DRAWING FOR ALL LANDSCAPE WORKS.

NEW DRIVEWAY LEVEL TO MATCH INTO EXISTING ROAD LEVEL.

(380.50) DENOTES APPROXIMATE EXISTING LEVEL

U.N.O DENOTES Ø100 A/G DRAIN.

DENOTES APPROXIMATE LOCATION OF CUT OFF SWALE DRAIN. FALL SWALE 1:200 MIN AND CONNECT TO GRATED PIT. LOCATION AND SIZE OF CUT OFF DRAIN TO BE CONFIRMED.

LOCALLY REGRADE BEHIND NEW CAR PARK AND MATCH INTO EXISTING LEVEL (TYPICAL)

A — APPROXIMATE LOCATION OF NEW ATLANTIS - FLO VAULT SOAK PIT. (OR EQUIVALENT) SOAK PIT TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS. BUILDER TO CONFIRM SOIL INFILTRATION RATE ON SITE. SOAK PIT SIZE AND LOCATION TO BE CONFIRMED.

B — APPROXIMATE LOCATION OF NEW ATLANTIS - FLO VAULT SOAK PIT. (OR EQUIVALENT) SOAK PIT TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS. BUILDER TO CONFIRM SOIL INFILTRATION RATE ON SITE. SOAK PIT SIZE AND LOCATION TO BE CONFIRMED.

NOTE:
- BUILDER TO ALLOW FOR DOWNPIPE CONNECTION FROM EACH DOWNPIPE FROM PROPOSED FUNCTION CENTRE AND CONNECT TO NEW SOAK PIT. REFER TO ARCHITECTURAL DRAWING FOR DOWNPIPE LOCATIONS, SIZE AND DETAILS.

- ALL STORMWATER PIPE SIZES SHOWN ARE TO BE CONFIRMED.

NOTE:
ALL CAR PARKS TO GRADE 1:100 MIN AND/OR 1:40 MAX FOR ACCESSIBLE PARKING. GRADE 1:20 MAX FOR ALL OTHER PARKING.

NOTE:
REFER TO GEOTECHNICAL REPORT FOR SITE PREPERATION NOTES.

NOTE:
U.N.O ALL Ø100 & Ø150 PIPE GRADE 1:100 MIN. AND PIPE ≥ Ø225 TO GRADE 1:200 MIN. PROVIDE 300mm MIN COVER OVER PIPE IN AREAS NOT SUBJECT TO VEHICLE LOADING AND 600mm MIN COVER OVER PIPE IN AREAS SUBJECT TO VEHICLE LOADING.

NOTE:
LONGITUDINAL DRIVEWAY GRADE TO COMPLY WITH CFS ACCESS REQUIREMENTS.

NOTE:
BUILDER TO PROVIDE A/G DRAIN FOR ALL NEW LANDSCAPE AREAS, GARDEN BEDS & RETAINING WALLS. GRADE PIPE 1:200 MIN AND CONNECT TO NEW SOAK PIT. PROVIDE 300mm MIN COVER OVER PIPE IN AREAS NOT SUBJECT TO VEHICLE LOADING AND 600mm MIN COVER OVER PIPE IN AREAS SUBJECT TO VEHICLE LOADING. PROVIDE INSPECTION OPENING (I.O.) AT ALL UPSTREAM END OF PIPES AND AT 90.0m MAX INTERVAL. A/G DRAIN BEHIND ALL RETAINING WALLS TO BE WRAPPED IN GEOTEXTILE FABRIC.

NOTE:
ALL WORKS AT OR NEAR TREE PROTECTION ZONES (TPZ) TO BE CARRIED OUT UNDER THE SUPERVISION OF THE PROJECT ARBORIST. HAND EXCAVATION MAY BE REQUIRED. ALL DRIVEWAY WORKS INCLUDING STORMWATER PIPES ARE TO BE DIVERTED AROUND TPZ ZONES AND/OR PIPES ARE TO BORED UNDERNEATH WITH A MINIMUM COVER OF 600MM TO TOP OF PIPE FROM NATURAL GROUND LEVEL TO THE SATISFACTION OF THE PROJECT ARBORIST.

NOTE: DRIVEWAY DRAINAGE
- U.N.O BUILDER TO ALLOW FOR OPEN EARTH DRAIN ALONG BOTH EDGES OF DRIVEWAY AND CONNECT TO SOAK PIT.

- U.N.O WHERE DRIVEWAY HAS A ONE-WAY CROSSFALL. PROVIDE OPEN EARTH DRAIN AT LOW END OF DRIVEWAY AND CONNECT TO SOAK PIT.

PLANNING CONSENT CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

PRELIMINARY

REVISIONS

P1	01-12-21	PRELIMINARY ISSUE.
P2	15-07-22	PRELIMINARY ISSUE.

ARCHITECT
anatoly patrick
architect
0401 387 789

BUILDER MUST VERIFY ALL DIMENSIONS AT THE JOB BEFORE COMMENCING ANY WORK SHOWN HEREON.

THIS DRAWING SHALL NOT BE USED FOR SETOUT PURPOSES. FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALING . . . . . IF IN DOUBT . . . ASK ! !

ORIENTATION

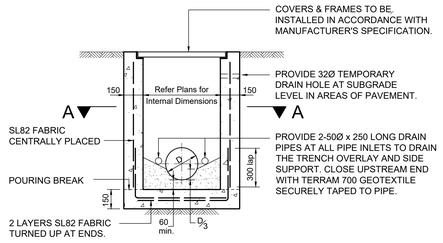
DESIGNED S.D.	DATE NOV 2021
DRAWN A.X.	SCALE 1:250
REF No. -	SHEET SIZE B1

Clive Steele Partners Pty Ltd
Consulting Structural & Civil Engineers
Building 6
62/195 WELLINGTON RD.
CLAYTON, VIC. 3168
Telephone (03) 9545 0223
Facsimile (03) 9545 3022
Email csp@clivesteele.com.au
A.C.N. 005 353 735 A.B.N. 92 627 427 761

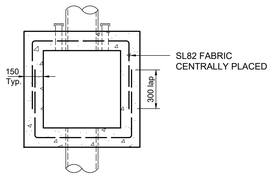
PROJECT
PROPOSED FUNCTION CENTRE
382 SWAMP RD OAKBANK

DRAWING
EXTERNAL WORKS
STORMWATER DRAINAGE

DRAWING No.	REV
20126 - SK1	P2



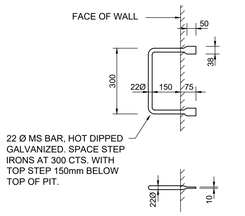
ELEVATION



SECTION A-A

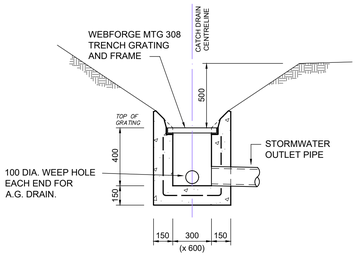
TYPICAL PIT DETAIL
1:20

NOTE:
STEP IRONS REQUIRED WHERE PIT DEPTH EXCEEDS 1200mm. (TYPICAL)



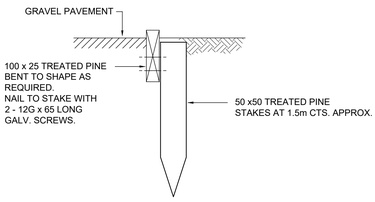
STEP IRON DETAIL
(NOT TO SCALE)

NOTE:
1. PITS DEEPER THAN 1200 TO BE FITTED WITH STEP IRONS.
2. PLACE STEP IRONS IN WALL WHICH IS CLEAR OF OPENINGS.



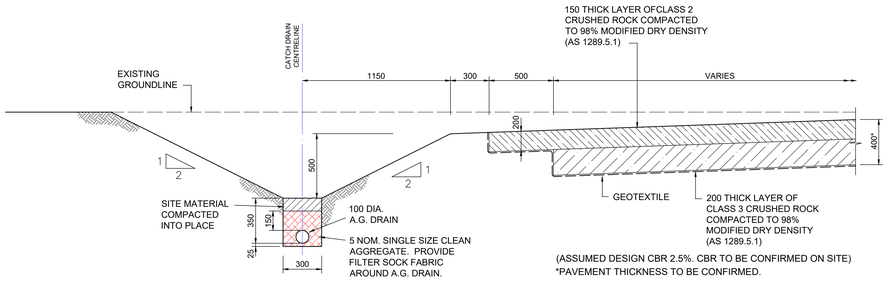
(U.N.O PIT TO BE 300 X 600)

CATCH PIT DETAIL
1:20



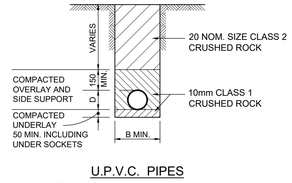
TIMBER EDGE DETAIL
1:5

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023



(ASSUMED DESIGN CBR 2.5%. CBR TO BE CONFIRMED ON SITE)
*PAVEMENT THICKNESS TO BE CONFIRMED.

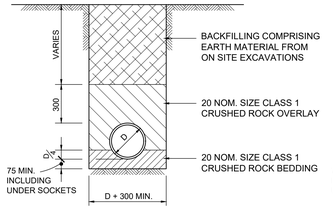
TYPICAL CATCH DRAIN DETAIL
1:20



U.P.V.C. PIPES

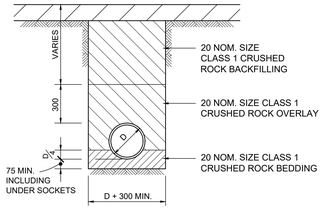
NOTE:

1. B MIN. = D + 200mm FOR 100mm NOMINAL SIZE AND ABOVE OR 2D FOR SMALLER THAN 100mm.
2. BEDDING OVERLAY AND BACKFILL OF TRENCH TO BE PLACED IN LAYERS NOT EXCEEDING 150mm LOOSE THICKNESS AND COMPACTED TO NOT LESS THAN 98% OF THE MAXIMUM DRY DENSITY. (AS 1289 5.1.1.0)



REINFORCED CONCRETE PIPES

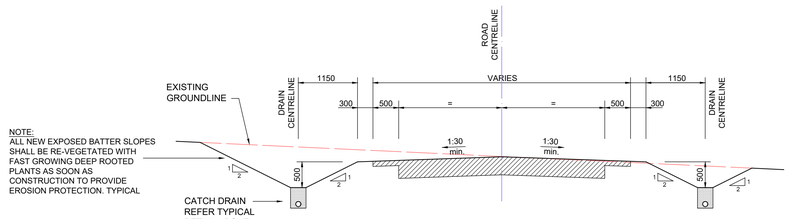
TRENCHES OTHER THAN BELOW STRUCTURES OR PAVEMENTS



REINFORCED CONCRETE PIPES

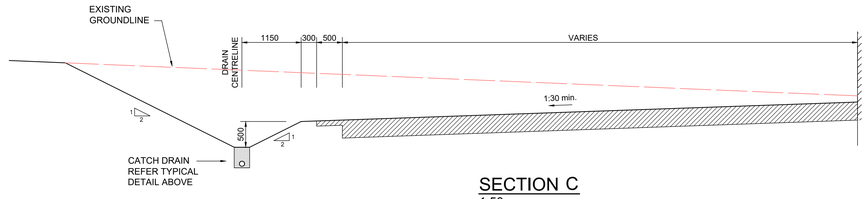
TRENCHES LOCATED WITHIN 300mm OF THE FOUNDATION SUPPORT ZONE FOR STRUCTURES OR PAVEMENTS

TYPICAL PIPE TRENCH DETAILS
1:20



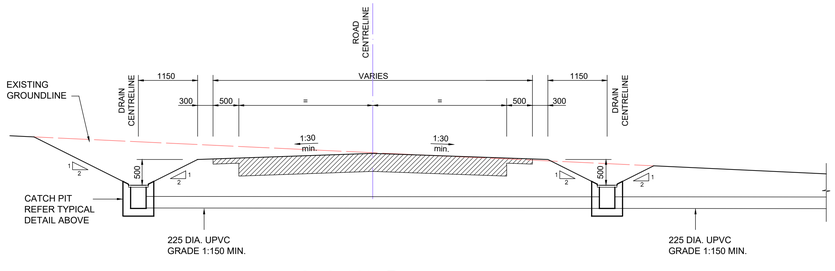
SECTION A
1:50

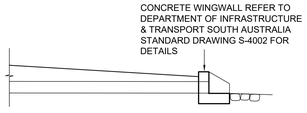
TYPICAL ROAD SECTION - TWO WAY CROSSFALL



SECTION C
1:50

TYPICAL ROAD SECTION - ONE WAY CROSSFALL ALONG BUILDING





SECTION B
1:50

TYPICAL ROAD SECTION - TWO WAY CROSSFALL

PRELIMINARY

REVISIONS

P1	01-12-19	PRELIMINARY ISSUE

ARCHITECT
anatoly patrick
architect
0401 387 789

BUILDER MUST VERIFY ALL DIMENSIONS AT THE JOB BEFORE COMMENCING ANY WORK SHOWN HEREON.

THIS DRAWING SHALL NOT BE USED FOR SETOUT PURPOSES. FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALING . . . . . IF IN DOUBT . . . ASK ! !

ORIENTATION

DESIGNED S.D.	DATE NOV 2021
DRAWN A.X.	SCALE AS NOTED
REF No. -	SHEET SIZE B1

Clive Steele Partners Pty Ltd
Consulting Structural & Civil Engineers
Building 6
62/195 WELLINGTON RD,
CLAYTON, VIC, 3168
Telephone (03) 9545 0223
Facsimile (03) 9545 3022
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A.C.N. 005 363 735 A.B.N. 92 627 427 761

PROJECT
PROPOSED FUNCTION CENTRE
382 SWAMP RD OAKBANK

DRAWING
EXTERNAL WORKS DETAILS - Sheet 1
-

DRAWING No.	REV
20126 - SK2	P1

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

RL 376.24
RL 377.46
EXISTING CELLAR DOOR
EXISTING SEPTIC TANK
RL 372.00
NEW PATH AT GRADE
EXISTING GRAVEL ROAD
RL 371.00
9.5M TURNING CIRCLE
SEDIMENT FENCE
RL 372.05
NEW STEPS
NEW TERRACE
RL 372.95
NEW TERRACE
REMOVE TREE (OLIVE)
NEW PODIUM
RL 372.00
REDIRECT GRAVEL ROAD
1 ACCESSIBLE CAR
EXISTING CARPARKING (28 INCL 2 ACC)
RL 379.00
PROPOSED FUNCTION CENTRE
FFL RL 374.00
RL 372.14
1 ACCESSIBLE CAR
UNDER GROUND R/W
RL 377.00
RL 373.00
RL 379.27
EXISTING GRAVEL ROAD
RL 380.5
PROPOSED CARPARKING (54)
3 STAFF CAR
EXISTING SHEDS
R/W
SHEDS
REMOVE EXISTING TREE
RL 376.64
RL 383.15
BATTERED EMBANKMENT
7 STAFF CAR
SITE TO HAVE COMPLETED 20MM RUBBLE AS LEVELS ARE ACHIEVED
RETAIN TREE
ACCESS CAR PARK / DELIVERIES
UNDERGROUND RAINWATER TANK PUMPED TO ABLUTIONS WITH OVERFLOW TO EXISITING SOAKAGE PIT
BATTERED EMBANKMENT
SITE TO HAVE COMPLETED 20MM RUBBLE AS LEVELS ARE ACHIEVED
DIVERSION TRENCH ON UPHILL SIDE OF THE SITE

15.07.2022 ISSUE

anatoly patrick
architect
0401 387 789

PROPOSED FUNCTION CENTRE

382 SWAMP RD
OAKBANK

FOR
COBBS HILL ESTATE

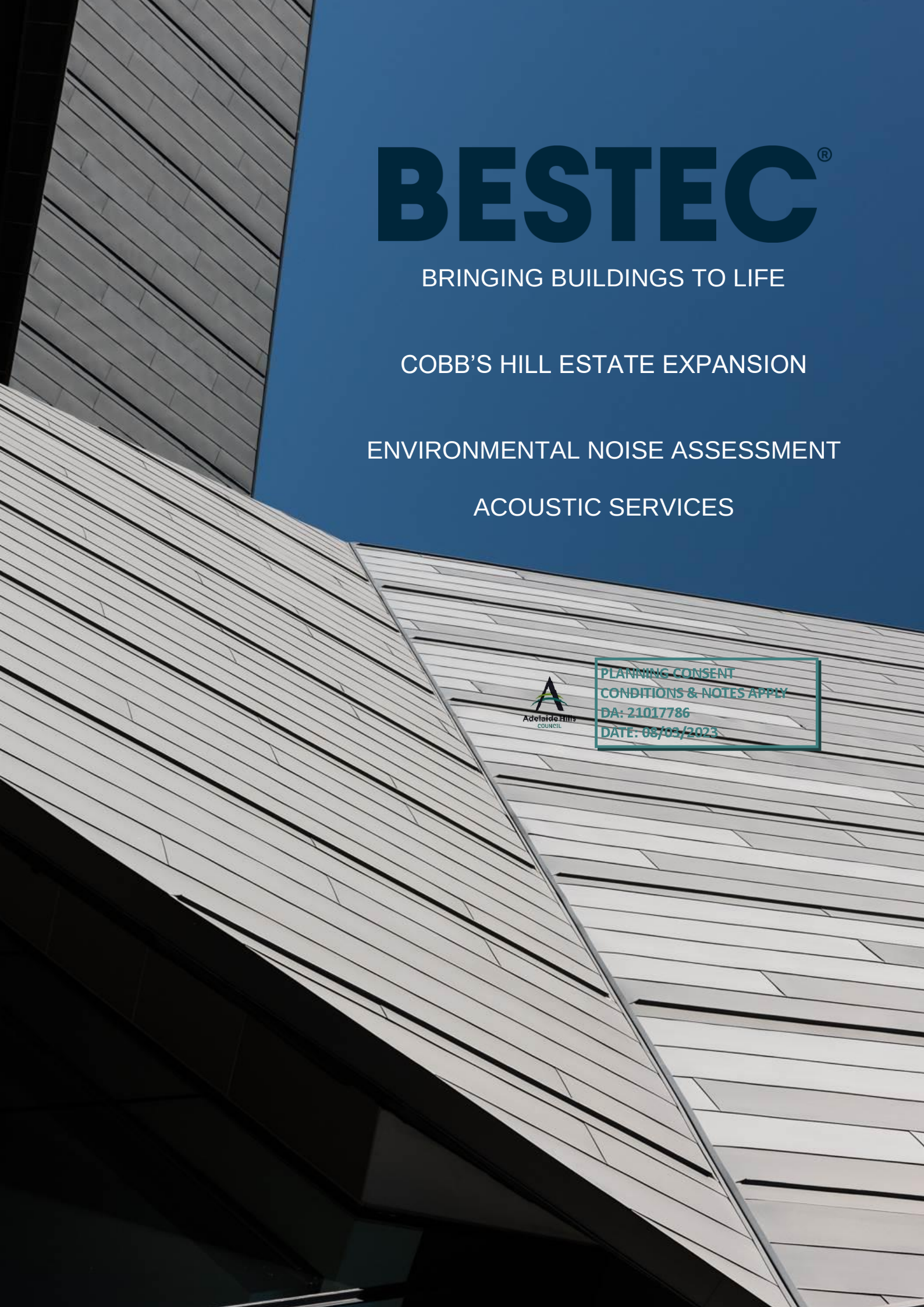
PLANNING

START DATE 2020
JB NO 2014

LOCATION PLAN

A/02 c

1:500 @ A3



BESTEC®

BRINGING BUILDINGS TO LIFE

COBB'S HILL ESTATE EXPANSION

ENVIRONMENTAL NOISE ASSESSMENT

ACOUSTIC SERVICES

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

BESTEC

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E. consulting@bestec.com.au
W. bestec.com.au

IVD:IVD
56706/6/1
19 January 2023

Cobbs Hill Estate
382 Swamp Road
OAKBANK SA 5063

Attention: Mr J Hicks

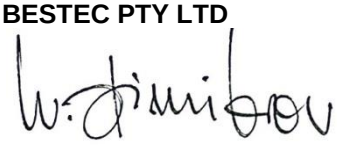
Dear Sir,

COBB'S HILL ESTATE EXPANSION
ENVIRONMENTAL NOISE ASSESSMENT
ACOUSTIC SERVICES

As requested, we enclose a copy of our updated environmental noise assessment report for the above project.

We trust that the report provides sufficient information for your immediate purpose and we would be most pleased to further discuss any aspect upon your request.

Yours faithfully
BESTEC PTY LTD



IVAILO DIMITROV
ASSOCIATE / PRINCIPAL ACOUSTIC CONSULTANT

DOCUMENT CONTROL

REVISION	DATE	REVISION DESCRIPTION
00	20.12.22	Initial Issue
01	19.01.23	Updated Issue

CONTENTS

Introduction

BESTEC Pty Ltd has been engaged to reassess the environmental noise impact to the nearest noise sensitive receivers resulting from the proposed function centre of Cobb's Hill Estate located at 382 Swamp Road, Oakbank.

This document presents a review of the proposed acoustic design criteria, results of the continuous environmental survey conducted at Cobb's Hill Estate, predicted noise levels associated with operation of the proposed expansion and the results of our assessment.

Executive Summary

In summary:

- The SA Planning and Design Code has been reviewed to determine the relevant planning conditions and requirements applicable to the proposed development.
- A continuous noise survey was conducted over 7-day period at the boundary with the nearest noise sensitive property. The survey results are presented in Appendix A.
- Appropriate environmental noise criteria have been derived in accordance with the SA Environment Protection (Noise) Policy 2007.
- The architectural drawings and the location of the proposed function centre was reviewed and a 3D acoustic model representing Cobbs Hill estate and the nearest noise sensitive receivers was developed (refer Appendix B).
- The noise levels at the nearest noise sensitive receivers were predicted (refer Appendices C, D and E) and the following acoustic design recommendations were provided to ensure the selected criteria are achieved:
  - The day time music noise criterion will be achieved at the nearest noise sensitive receivers when functions take place in the proposed restaurant/function centre under the above conditions;
  - The day time and night time music noise criteria will be achieved at the nearest noise sensitive receivers when functions take place at the existing cellar door lawn under the above conditions.
  - In order to ensure the criterion is achieved at all times, we recommend:
    - No speakers are to be installed externally to the proposed function centre.
    - Before each function at the existing cellar door the Operator or Duty Manager measures the sound pressure level from each speaker at 1m and ensures it does not exceed 85dBA during the function in accordance with the requirements set in the Noise Management.
    - Before each function in the proposed restaurant/function centre, the Operator or Duty Manager measures the reverberant sound pressure level (approximately in the middle of the function centre) and ensures it does not exceed 90dBA[1] (L_{Aeq}). during the function. We recommend an automatic sound limiter be used to monitor the sound pressure levels during performance. The sound limiter should be connected to the main amplifier power and set to cut the power if the maximum sound pressure level is exceeded. To facilitate this, the following is required:
    - Any external performers should use only the sound system and amplifier provided by the venue;
    - The sound system should be tuned and commissioned by an acoustic engineer once the speakers are in place and the sound limiter is installed.
    - The doors and any operable glazing be fitted with compressible acoustic seals (Raven or Schlegel ranges) and be kept closed when a function is taking place in the centre.
  - Patron noise – our assessment reveled that the selected continuous noise criterion will be achieved and therefore, no further acoustic treatment is required.
  - Noise associated with rubbish collection and carpark – our assessment reveled that the selected continuous noise criterion will be achieved and therefore, no further acoustic treatment is required.
- The noise levels at the nearest noise sensitive receivers resulting from the combined operational noise emissions from the proposed development have been calculated and assessed against the selected environmental noise criteria derived in accordance with the Environment Protection (Noise) Policy

[1] A reverberation time of 1.2 seconds was assumed within the function space, based on its volume. Please note that additional acoustic treatment will be required to reduce the reverberation in the space and achieve this reverberation time.

2007. The assessment revealed that the selected criteria will be achieved at all locations and therefore, performance outcomes PO 1.2, PO 2.1, PO 4.1, PO 4.2, PO 4.5 and PO 4.6 of the SA Planning and Design Code will be achieved.

Based on the above, we conclude that the desired outcome stipulated in the SA Planning and Design Code Assessment Provisions (Section Interface between Land Uses of the), *DO 1: The development to be located and designed to mitigate adverse effects on or from neighbouring and proximate uses* will be achieved.

References

The following documents have been referenced within the preparation of this report:

[1] SA Planning and Design Code, 2022.

[2] SA Environment Protection (Noise) Policy 2007.

[3] World Health Organisation (1999) "Guidelines for Community Noise".

[4] Music Noise from Indoor Venues and the South Australian Planning System, EPA Guideline, July 2015.

[5] Jens Holger Rindel, The Acoustics of places of social gatherings, Euronoise,2015, Maastricht.

[6] Pearsons, Bennett and Fidel "Speech levels in various noise environments" Report EPA-600/1-77-025, Washington, D.C.: U.S. Environmental Protection Agency, May 1977.

[7] Anatoly Patric Architects architectural drawings dated July 2021 provided by Cobb's Hill estate.

Existing Development

Cobb's Hill Estate is located on land zoned Productive Rural Landscape (PRuL) in the SA Planning and Design Code [1] and currently includes a cellar door with maximum capacity of 75 guests, motel with maximum capacity of 6 guests and the associated carpark. In addition to the cellar door and short-term accommodation, the allotment is used as gardens, grazing land and vines.

The existing development has a hardstand parking area for 14 vehicles and mini bus drop off area.

The currently approved operation times are 10:00 to 18:00 (Monday to Sunday).

The nearest noise sensitive receivers are the residential properties on the following addresses:

- 432B Swamp Rd, Lenswood, located at approximately 770m north-west from the cellar door building;
- 426 Oakwood Rd, Oakbank, located at approximately 350m south-west from the cellar door building;
- 357 Oakwood Rd, Oakbank, located at approximately 1,000m south from the cellar door building;
- 61B Peacock Rd South, located at approximately 1,000m south-east from the cellar door building.

Proposed Development and Conditions

The proposed expansion includes:

- Stage 1 – the existing cellar door operation be amended to:
  - 75 patrons Monday to Friday, 10:00 – 18:00;
  - 200 patrons on Saturday and Sunday, 10:00 – 18:00;
  - Functions for maximum 130 patrons 32 times per year, 15:00 – 0:00.

  The functions will take place at the lawn north of the exiting cellar door building.
- Stage 2 – construction of a restaurant and function centre for 130 patrons operating from 11:00 to 22:00, 2 days a week.

Functions taking place at the existing cellar door and at the new function centre building (indicated with L2 in Figure 1) will comply with the following conditions:

- The new function centre can operate in restaurant mode while a function is taking place at the cellar door;
- The cellar door can operate while a function is taking place at the new function centre;
- Two functions cannot occur concurrently on site.

The new function centre's building envelope construction is indicated on the architectural drawings as follows:

- Solid façade – combination
  - Brick veneer construction consisting of 110mm brick with internal lining of 1 layer of 13mm plasterboard on 90mm timber studs with cavity infill of 50mm, 11kg/m^3 glasswool.
  - Timber Oak cladding (we assumed 20mm thickness) with 10mm plasterboard and R2.0 thermal insulation in the wall cavity (90mm deep).
- Glazed façade – 10.38mm laminated glass.
- Roof – corrugated iron roof with 13mm plasterboard fixed to underside of 125mm deep purlins with R2.5 thermal insulation in the cavity.

To accommodate the increased number of patrons, additional 36 carpark spaces are proposed.

The Noise Management Plan also outlines the Duty Manager responsibilities to noise management as follows:

- Assess, prior to a function or an event, the suitability (i.e. type, style, amplification) of the proposed entertainment or amusement;
- Notify in writing the organiser of a function or an event if the entertainment or amusement is deemed inappropriate.
- Monitor noise levels from entertainment or amusement and if deemed to be too high will warn the performers and/or DJ no more three times and thereafter (if not complied with) will switch off power to the amplifier.
- Call "last drinks" 30 minutes before the close of the function or event.
- Operate amplified music in accordance with any conditions of consent as may be required by a Development Approval issued by the relevant Council planning authority.

Existing Acoustic Environment

An unattended noise survey was conducted in the south-western boundary of the estate (adjoining the nearest noise sensitive receiver) between 14 and 21 August 2020 in order to establish the existing ambient and background noise levels. The survey was conducted using an automatic noise logger SVAN 953, SN8951 (due for calibration on 16 April 2021).

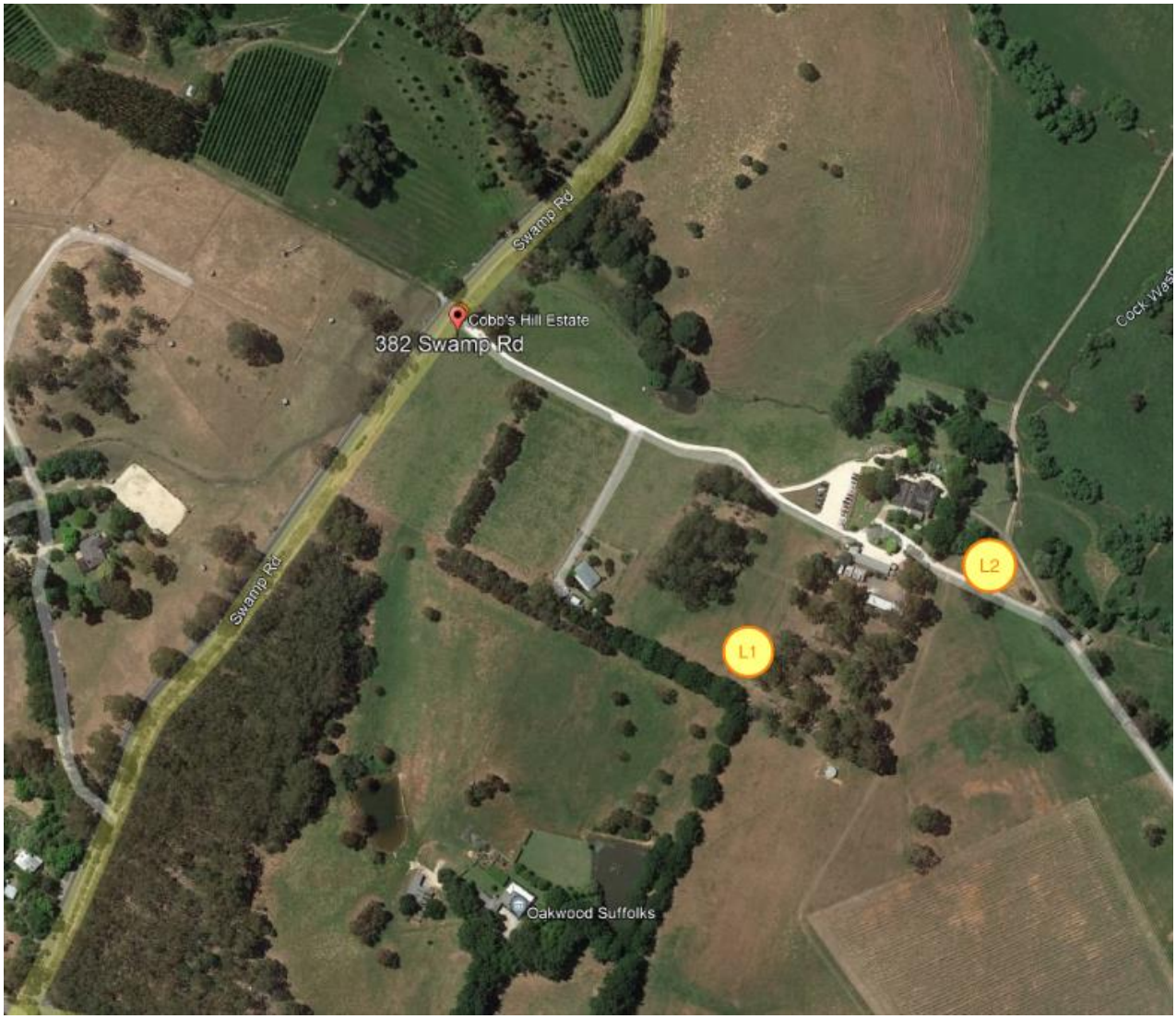


Figure 1: Location of the environmental logger during the survey

The logger was set to continuously measure and average A-weighted equivalent continuous noise levels ($L_{Aeq,15min}$), A-weighted maximum noise levels (L_{Amax}) and statistical noise descriptors (L_{A01}, L_{A10}, L_{A90}) using 1/3-octave bands (31.5Hz – 10,000Hz) over 15-minute intervals using Fast time weighting and audio recording set to record the ambient sound continuously. The calibration of the unit was checked before and after the survey and no drift was detected. Copy of the calibration certificate is available on request.

The detailed survey data are presented in Appendix A. The highlighted portions of the graphs represent the proposed hours of operation of the extension.

The analysis of the collected data revealed:

- The measured background noise levels (L_{A90}) hours during the proposed of operation were:
  - Night time - the measured minimum background noise level was 30dBA.
  - Day time – the measured minimum background noise levels was 32dBA.
- The ambient noise levels (L_{Aeq}) measured during the proposed of operation were:
  - Night time - the measured minimum ambient noise level was 34dBA.
  - Day time - the measured minimum ambient noise level was 39dBA.

Conditions

The SA Planning and Design Code [1] sets the Desired Outcome (DO) for developments, which might affect sensitive receivers in adjacent areas as follows:

> *DO 1 Development is located and designed to mitigate adverse effects on or from neighbouring and proximate uses.*

As the estate is a non-residential development, the SA Planning and Design Code [1] requirements (performance outcomes) relevant to Section Interface Between Land Uses) apply:

> *PO 1.2 Development adjacent to a site containing a sensitive receiver (or lawfully approved sensitive receiver) or primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts*
>
> *PO 2.1 Non-residential development does not unreasonably impact on the amenity of sensitive receivers (or lawfully approved sensitive receivers), or an adjacent zone primarily for sensitive receivers through its hours of operation having regard to:*
>
> *(a) The nature of the development;*
>
> *(b) Measures to mitigate off-site impacts;*
>
> *(c) The extent to which the development is desired in the zone;*
>
> *(d) Measures that might be taken in an adjacent zone primarily for sensitive receivers that mitigate adverse impacts without unreasonably compromising the intended use of land.*

A non-residential development is deemed to satisfy the above requirement if the noise emissions that affect the noise sensitive receivers achieves the relevant Environment Protection (Noise) Policy criteria (DTS/DPF 4.1).

> *PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved) sensitive receivers.*
>
> *PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including:*
>
> *(a) Locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers.*
>
> *(b) When sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers.*
>
> *(c) Housing plant and equipment within an enclosed structure or acoustic enclosure.*

(d) *Providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone.*

PO 4.5 Outdoor areas associated with licensed premises (such as beer gardens or dining areas) are designed and/or sited to not cause unreasonable noise impact on existing adjacent sensitive receivers (or lawfully approved sensitive receivers).

PO 4.6 Development incorporating music achieves suitable acoustic amenity when measured at the boundary of an adjacent sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers.

A development incorporating music should include noise attenuation measures that will achieve less than 8dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum ($L_{OCT10,15min} < L_{OCT90,\ 15min}$ + 8dB) externally at the nearest existing or envisaged noise sensitive location (DTS/DPF 4.6).

Design Criteria

Environmental Noise

As the Deemed-to-Satisfy/Designed Performance Feature (DTS/DPF 4.1) refers to compliance with relevant Environment Protection (Noise) Policy criteria, the environmental noise assessment has been conducted against the criteria set by the Environment Protection (Noise) Policy 2007 [2].

The EPP 2007 [2], sets out the maximum allowable continuous noise in terms of A-weighted Equivalent Continuous Noise Level (L_{Aeq}) based on the time of day and zoning / use of land in which the noise source and receiver are located. With reference to the SA Planning and Design Code [1] , we note that both Cobbs Hill estate and the nearest noise sensitive receiver are located on land zoned Productive Rural Landscape (PRuL), which is essentially a rural living zone. Table 1 details the indicative noise factors based on time of day and land-use as stipulated in Table 2 of the EPP 2007 [1]. As the EPP 2007 does not stipulate indicative noise levels for land zoned Deferred Urban, the indicative noise levels for Residential zone have been used.

Land Use Category	Day Time (07:00 to 22:00)	Night Time (22:00 to 07:00)
Rural Living	47	40

Table 1: Indicative noise factors based on time of day and land use

In accordance with the Policy, the predicted continuous noise level due to the proposed development (for application for development authorisation) should not exceed the indicative noise level, minus 5dBA.

Based on the average of the relevant land use categories, minus 5dBA for planning purposes, the applicable day and night time continuous noise criteria become:

- Day-time (07:00 to 22:00): 42dBA
- Night time (22:00 to 07:00): 35dBA

Note that if noise emitted by the proposed development contains any tones, modulation, impulsive or low frequency characteristics, the continuous noise level of the noise source must be adjusted as follows:

- Noise containing 1 characteristic - 5dBA penalty added to source continuous noise level.
- Noise containing 2 characteristics - 8dBA penalty added to source continuous noise level.
- Noise containing 3 or 4 characteristics - 10dBA penalty added to source continuous noise level.

Intermittent Noise

The criteria provided in the above section relate to continuous noise sources, and do not cater for intermittent noise events. We recommend the use of the World Health Organisation (WHO) Guidelines [3], which recommends a maximum A-weighted noise level L_{Amax}, of 45dBA in a bedroom in order to avoid sleep disturbance, which is equivalent to approximately 55dBA to 60dBA at the façade of the residential building with windows partially open.

Music Noise

The assessment of music noise emissions is to be conducted against the criteria set by the EPA Guidelines for Development Proposal Assessment for venues where music may be played [3] and the principles of development control in the SA Planning and Design Code [1].

The EPA Guidelines [3] state that:

> "*The music noise ($L_{10,\ 15min}$) from an entertainment venue when assessed at the nearest noise sensitive locations should be:*
>
> - *Less than 8dB above the level of background noise ($L_{90,\ 15min}$) in any octave band of the sound spectrum, and*

- *Less than 5dB(A) above the level of background noise ($L_{A90, 15min}$) for the overall (sum of octave bands) A-weighted level."*

Based on the above EPA SA Guideline and DTS/DPF 4.6, to control music noise emissions from the proposed function venue, we derived the music noise criteria based on the lowest background noise levels (L_{90}) measured during our continuous noise survey. Therefore, the calculated music noise criteria relevant to the neighbouring noise sensitive receivers will be as detailed in Table 2 and Table 3 below.

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
Lowest background noise level $L_{90, 15min}$ (day time)	32	32	30	31	26	22	22	20	32
Maximum allowable exceedance	8	8	8	8	8	8	8	8	5
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 2: Proposed music noise criteria – day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
Lowest background noise level $L_{90, 15min}$ (night time)	31	30	30	24	26	20	18	16	30
Maximum allowable exceedance	8	8	8	8	8	8	8	8	5
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 3: Proposed music noise criteria – night time

SoundPlan Models

We developed 3D acoustic model based on the site topography using SoundPlan 8.2 software package and predicted the noise levels at nearest noise sensitive receivers taking into account the following:

- Location and ground elevation of the existing door cellar and function area as well as the proposed restaurant/function centre relative to the noise sensitive receivers.
- The building envelope of the restaurant/function centre as defined above.
- Distances to the noise sensitive receivers and ground elevations.
- The topography of the area where the noise source and noise sensitive receivers are located.
- Ground sound reflectivity – we assumed ground reflectivity of 40% (40% of the sound incident to the ground will be reflected and 60% will be absorbed).
- Meteorological conditions:
  - Daytime – CONCAWE Category 5;
  - Night time – CONCAWE Category 6.
- Distances as measured from the site plan and Google Earth.
- When function is taking place in the proposed restaurant/function centre, the doors on the northern façade were modelled to stay open for 15 minutes in every hour in order to allow patrons to move between the restaurant and the outside podium;
- Reverberant noise level in the restaurant resulting from 16 patrons talking at raised voice level and 16 patrons talking at normal voice level (based on the results of the US EPA study [6]) of 83dBA, calculated in accordance with [5];
- Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level in front of the restaurant/function centre;
- Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level on the loan in front of the existing cellar door in function mode;
- Combined noise level of 86dBA at 1m resulting 100 patrons (50 male and 50 female) talking at raised voice level at the loan north of the existing cellar door (cellar door mode);

We calculated the following scenarios:

- Scenario 1:
  - A function of 130 guests taking place at the loan north from the existing cellar door building from 15:00 till midnight with recorded music played from 2 speakers at 85dBA (L_{A10}) at 1m from each speaker; and
  - Combined noise level of 79dBA at 1m resulting 32 patrons (16 male and 16 female) talking at raised voice level on the loan in front of the existing cellar door;
  - The restaurant operating at full capacity (130 patrons) with half of them inside and half of them outside (16 male and 16 female talking at raised voice level resulting in combined noise level of 79dBA at 1m) with background music only played inside.

  Assessment of the music noise conducted against music noise criteria (Table 2 and Table 3) and assessment of patron noise – against the environmental noise criteria (refer Section Environmental Noise).
- Scenario 2:
  - The cellar door operates in restaurant/cellar door mode at full capacity of 200 patrons outside (25 male and 25 female patrons talking at normal voice level, 25 male and 25 female patrons talking at raised voice level) and no music played; and
  - A function with 130 guests taking place in the restaurant/function centre with recorded music played in from 4 speakers located inside resulting in reverberant sound pressure level of 90dBA (L_{A10}) with half of the guests inside and half of the guests outside (16 male and 16 female talking at raised voice level resulting in combined noise level of 79dBA at 1m).

  Assessment of the music noise conducted against music noise criteria (Table 2) and assessment of patron noise – against the environmental day time noise criterion (refer Section Environmental Noise).
- Scenario 3:
  - The cellar door operates in restaurant/cellar door mode at full capacity of 200 patrons outside (25 male and 25 female patrons talking at normal voice level, 25 male and 25 female patrons talking at raised voice level) and no music played; and
  - The proposed restaurant operates at full capacity (130 guests) with only background music played inside (reverberant sound level of 70dBA) and with half of the guests inside and half of the guests outside (16 male and 16 female talking at raised voice level resulting in combined noise level of 79dBA at 1m) .

  Assessment of the music noise conducted against music noise criteria (Table 2) and assessment of patron noise – against the environmental day time noise criterion (refer Section Environmental Noise).

Graphic representation of the calculation results is provided in Appendices B and C.

Assessment and Recommendations

Music Noise

We calculated the music noise levels at the nearest noise sensitive receiver resulting from typical function taking place in the proposed function centre under the conditions described above and taking into account the distances from the function centre to the noise sensitive receiver, the construction of the building envelope elements and their area based on the architectural plans.

Based on above, our assessment revealed:

- The day time music noise criterion will be achieved at the nearest noise sensitive receivers when functions take place in the proposed restaurant/function centre under the above conditions;
- The day time and night time music noise criteria will be achieved at the nearest noise sensitive receivers when functions take place at the existing cellar door lawn under the above conditions.

The calculated music noise levels under the different scenarios are presented in Table 4, Table 5 and Table 6 along with the selected music noise criteria.

Calculated music noise level at receiver	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	40	37	38	36	29	22	10	-	36
432B Swamp Rd, Lenswood (Receiver 2)	37	36	37	35	30	24	9	-	36
357 Oakwood Rd, Oakbank (Receiver 3)	20	14	15	13	7	-	-	-	13
61B Peacock Rd South (Receiver 4)	37	31	30	31	28	20	-	-	31
Maximum allowable music noise level, $L_{10,15min}$ at the noise sensitive boundary	**40**	**40**	**38**	**39**	**34**	**30**	**30**	**28**	**37**

Table 4: Calculated music noise levels – Scenario 1, day time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	37	37	36	32	29	22	9	-	33
432B Swamp Rd, Lenswood (Receiver 2)	34	34	35	32	28	21	7	-	33
357 Oakwood Rd, Oakbank (Receiver 3)	17	14	13	11	3	-	-	-	12
61B Peacock Rd South (Receiver 4)	33	28	27	28	25	18	-	-	29
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 5: Calculated music noise levels – Scenario 1, night time

	Octave band sound pressure level dB re 20µPa at Octave Band Centre Frequency, Hz								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
426 Oakwood Rd, Oakbank (Receiver 1)	29	28	14	9	2	-	-	-	14
432B Swamp Rd, Lenswood (Receiver 2)	27	27	25	22	18	8	-	-	23
357 Oakwood Rd, Oakbank (Receiver 3)	15	12	1	-	-	-	-	-	-
61B Peacock Rd South (Receiver 4)	22	20	12	7	1	-	-	-	1
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	**39**	**38**	**38**	**32**	**34**	**28**	**26**	**24**	**35**

Table 6: Calculated music noise levels – Scenario 2, day time

To ensure the criterion is achieved at all times, we recommend:

- No speakers are to be installed externally to the proposed function centre.
- Before each function, the Operator or Duty Manager measures the reverberant sound pressure level (approximately in the middle of the function centre) and ensures it does not exceed 90dBA[2] (L_{Aeq}). during the function. We recommend an automatic sound limiter be used to monitor the sound pressure levels during performance. The sound limiter should be connected to the main amplifier power and set to cut the power if the maximum sound pressure level is exceeded. To facilitate this, the following is required:
  - Any external performers should use only the sound system and amplifier provided by the venue;
  - The sound system should be tuned and commissioned by an acoustic engineer once the speakers are in place and the sound limiter is installed.
- The doors and any operable glazing be fitted with compressible acoustic seals (Raven or Schlegel ranges) and be kept closed when a function is taking place in the centre.

[2] A reverberation time of 1.2 seconds was assumed within the function space, based on its volume. Please note that additional acoustic treatment will be required to reduce the reverberation in the space and achieve this reverberation time.

Patron Noise

Our assessment reveled that the selected environmental noise criterion will be achieved and therefore, no further acoustic treatment is required.

Noise Associated with Delivery Vehicles

We note that there is no specified loading area currently indicated on the provided preliminary drawings. Therefore, for the purpose of this assessment we have assumed that the loading and unloading activities will occur in the existing carpark adjacent the southern façade of the existing shed.

We calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) assuming the following activity durations and measured noise levels from similar activities on a previous project:

- Delivery vehicle accessing the loading dock (including reverse alarm) – 90 seconds, 73dB(A) at 5m.
- Loading/unloading activities including noise from refrigeration unit on the delivery vehicle – 8 minutes, 76dB(A) at 5m.
- Delivery vehicle departing – 90 seconds, 70dB(A) at 5m.
- The balance of a 15-minute interval – 4 minutes, 54dB(A) (ambient noise level).

The calculated A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,\ 15min}$) resulting from delivery vehicle activities, which we used in the assessment was 74dB(A) at 5m.

Based on the above and taking into account the distance to the nearest residences across Pipeline Rd (approximately 450m from the delivery zone), we predicted incident noise levels of 35dB(A) at the nearest residence, which achieves both daytime environmental noise criteria and night-time environmental noise criteria. However, we recommend deliveries be scheduled between 10:00am and 6:00pm in order to further reduce the noise impact associated with the proposed development.

Noise Associated with Rubbish Collection

We note that there is no specified rubbish collection area currently indicated on the provided preliminary drawings. Therefore, for the purpose of this assessment we have assumed that the rubbish collection will occur in the existing carpark to the west of the existing cellar door building. We assessed the noise impact on the nearest residential property resulting from noise emissions from typical rubbish collection vehicle including the following activities:

- Rubbish collection vehicle accessing the waste loading zone (including reverse alarm).
- Rubbish collection.
- Rubbish collection vehicle departing.

We calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) assuming the following activity durations and measured noise levels from similar activities on a previous project:

- Rubbish collection vehicle accessing the waste loading zone (including reverse alarm) – 90 seconds, 73dB(A) at 5m.
- Rubbish collection – 7 minutes, 65dB(A) at 5m.
- Rubbish collection vehicle departing – 90 seconds, 70dB(A) at 5m.
- The balance of a 15-minute interval – 5 minutes, 54dBA (ambient noise level).

The calculated A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) resulting from rubbish collection activities, which we used in the assessment was 66dBA at 5m. Taking into account the distance to the nearest residence to the south-west (approximately 350m from the waste collection zone), we calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval ($L_{Aeq,15min}$) at the façade of the nearest residence as 34dBA, which achieves both day time environmental noise criterion (we note that the rubbish collection will occur during day time only – between 7:00 and 17:00, Monday to Friday).

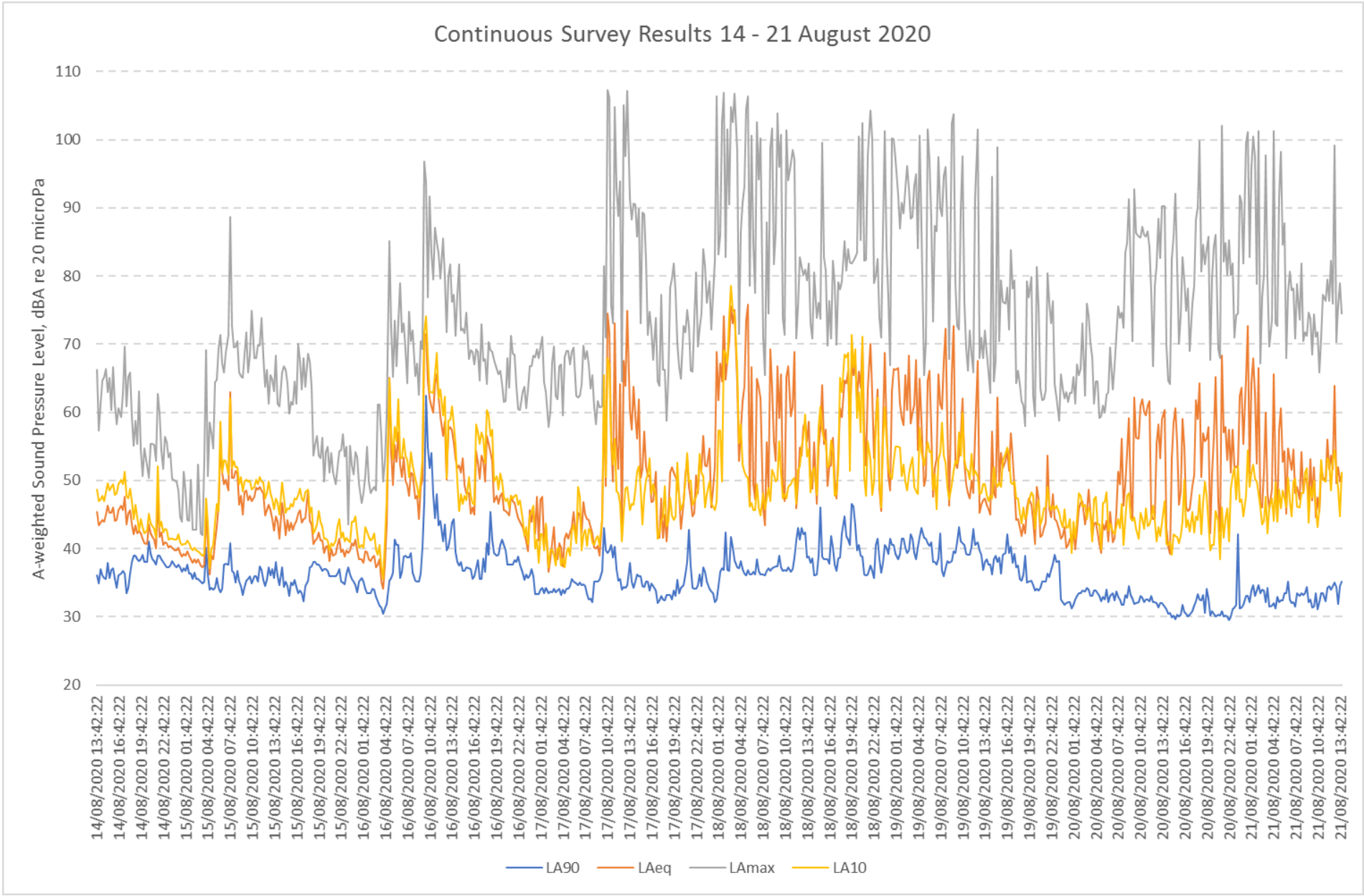
Noise Associated with Car Park

We assessed noise from the car park entrance lane (off Swamp Rd) using a time weighted average approach to generate an average noise level of 55dB(A) ($L_{Aeq,\ 15min}$), based on 8 car exits/entries and egress per 15 min period down the laneway. Therefore, the predicted noise level at the nearest noise sensitive residence

(approximately 350m away) would be 24dB(A), which complies with the selected criteria for environmental noise.

APPENDIX A

Continuous Noise Survey Results


Continuous Survey Results 14 - 21 August 2020
A-weighted Sound Pressure Level, dBA re 20 microPa
110
100
90
80
70
60
50
40
30
20
14/08/2020 13:42:22
14/08/2020 16:42:22
14/08/2020 19:42:22
14/08/2020 22:42:22
15/08/2020 01:42:22
15/08/2020 04:42:22
15/08/2020 07:42:22
15/08/2020 10:42:22
15/08/2020 13:42:22
15/08/2020 16:42:22
15/08/2020 19:42:22
15/08/2020 22:42:22
16/08/2020 01:42:22
16/08/2020 04:42:22
16/08/2020 07:42:22
16/08/2020 10:42:22
16/08/2020 13:42:22
16/08/2020 16:42:22
16/08/2020 19:42:22
16/08/2020 22:42:22
17/08/2020 01:42:22
17/08/2020 04:42:22
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18/08/2020 01:42:22
18/08/2020 04:42:22
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18/08/2020 22:42:22
19/08/2020 01:42:22
19/08/2020 04:42:22
19/08/2020 07:42:22
19/08/2020 10:42:22
19/08/2020 13:42:22
19/08/2020 16:42:22
19/08/2020 19:42:22
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20/08/2020 01:42:22
20/08/2020 04:42:22
20/08/2020 07:42:22
20/08/2020 10:42:22
20/08/2020 13:42:22
20/08/2020 16:42:22
20/08/2020 19:42:22
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21/08/2020 04:42:22
21/08/2020 07:42:22
21/08/2020 10:42:22
21/08/2020 13:42:22
LA90
LAeq
LAmax
LA10

APPENDIX B

SoundPlan Models

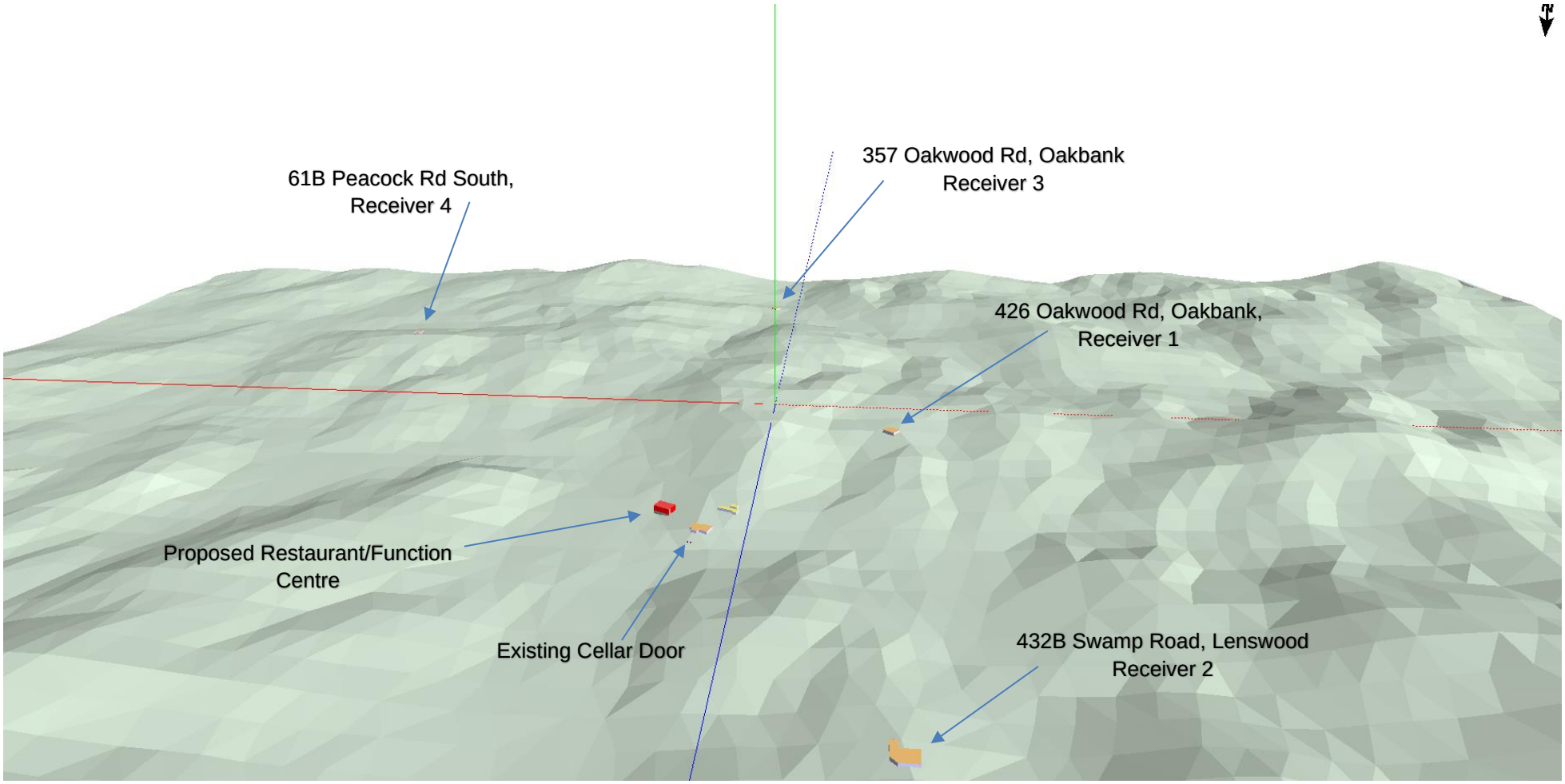

Figure B 1: SoundPlan 3D model - Music Noise (the red dots indicate the outdoor loudspeakers)

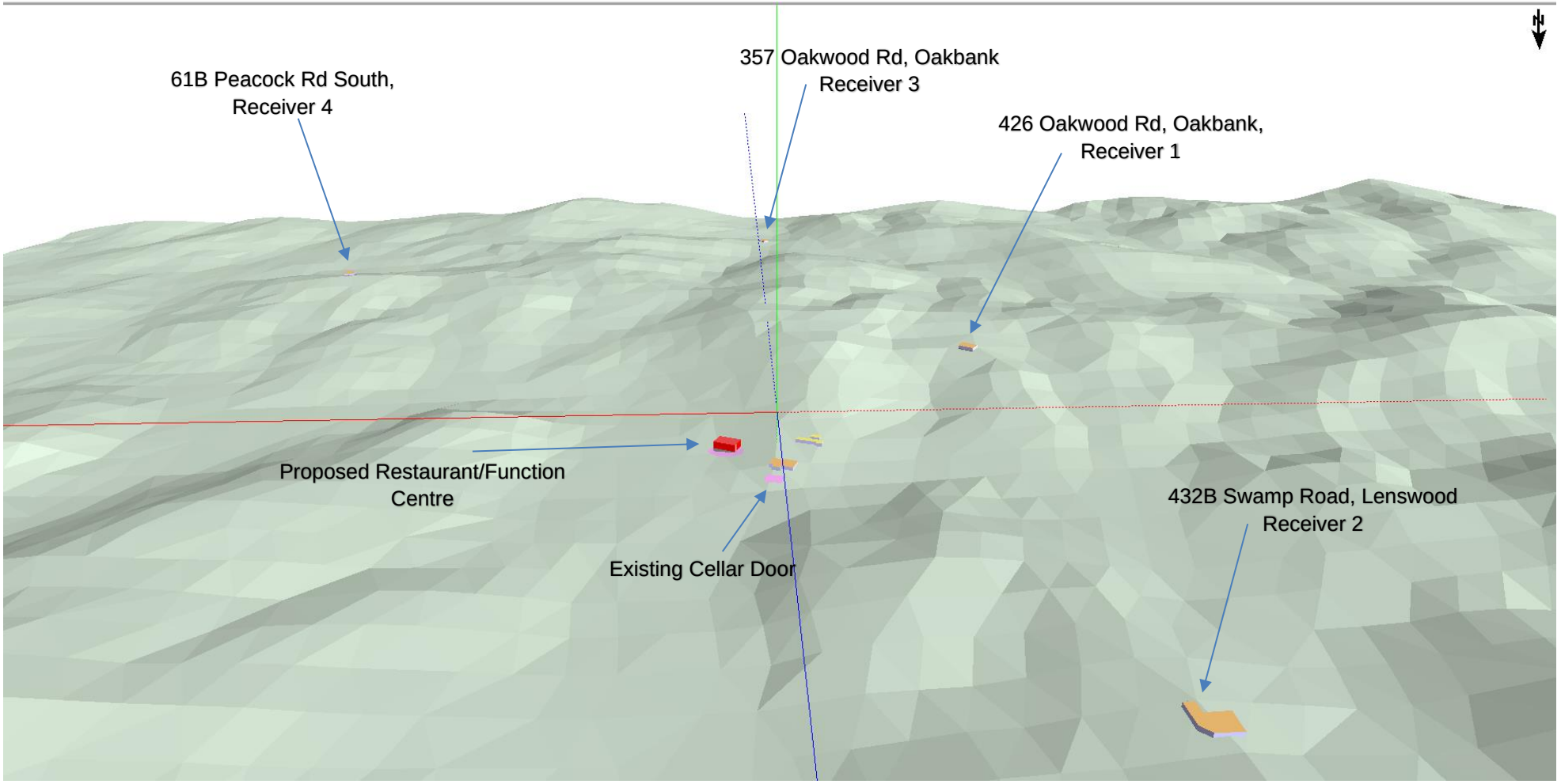

Figure B 2: SoundPlan 3D model - Patron Noise (the pink areas indicate patrons outdoor)

APPENDIX C

SoundPlan Results – Scenario 1

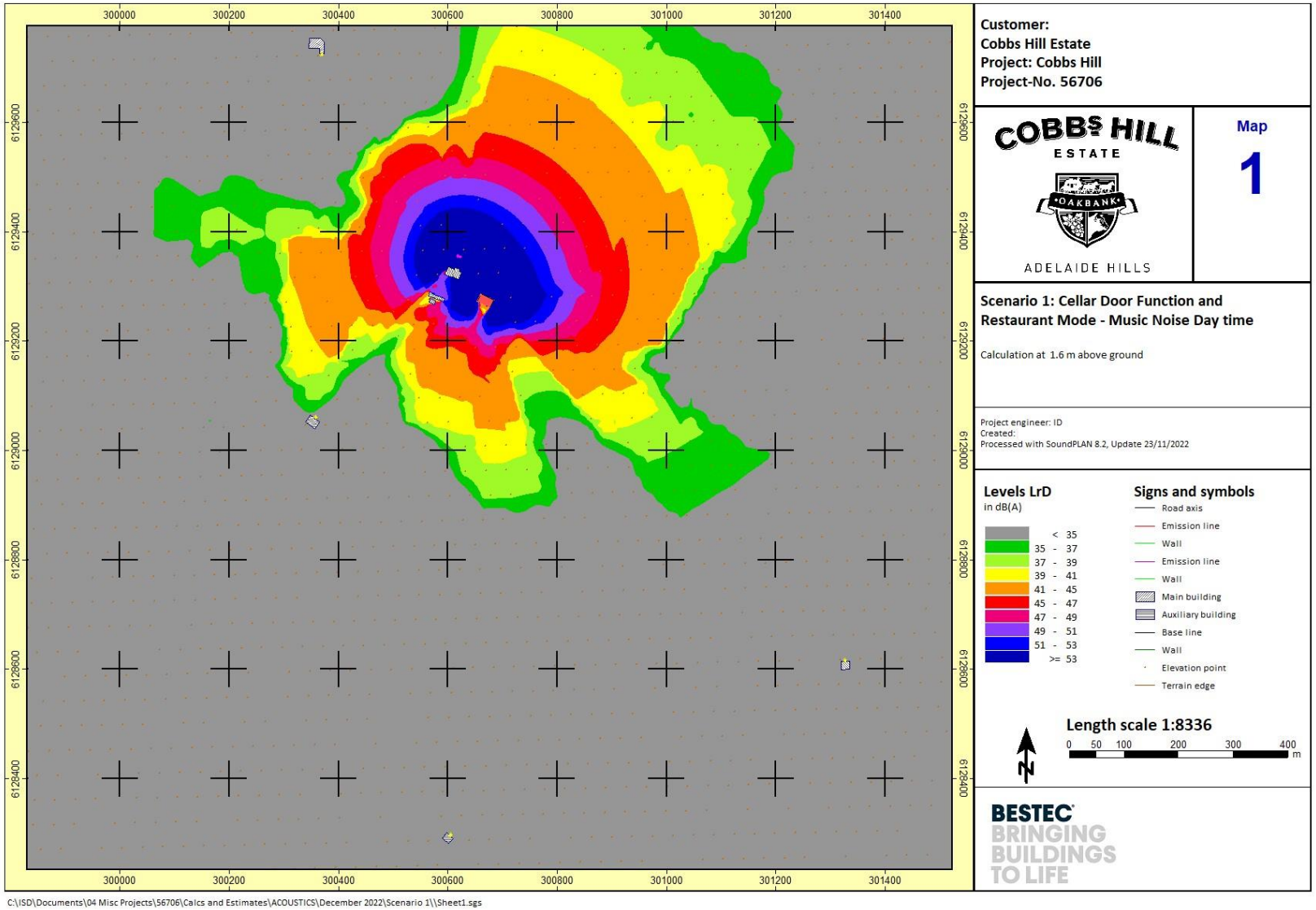

Figure C 1: Calculated Day Time Noise Levels - Music Noise

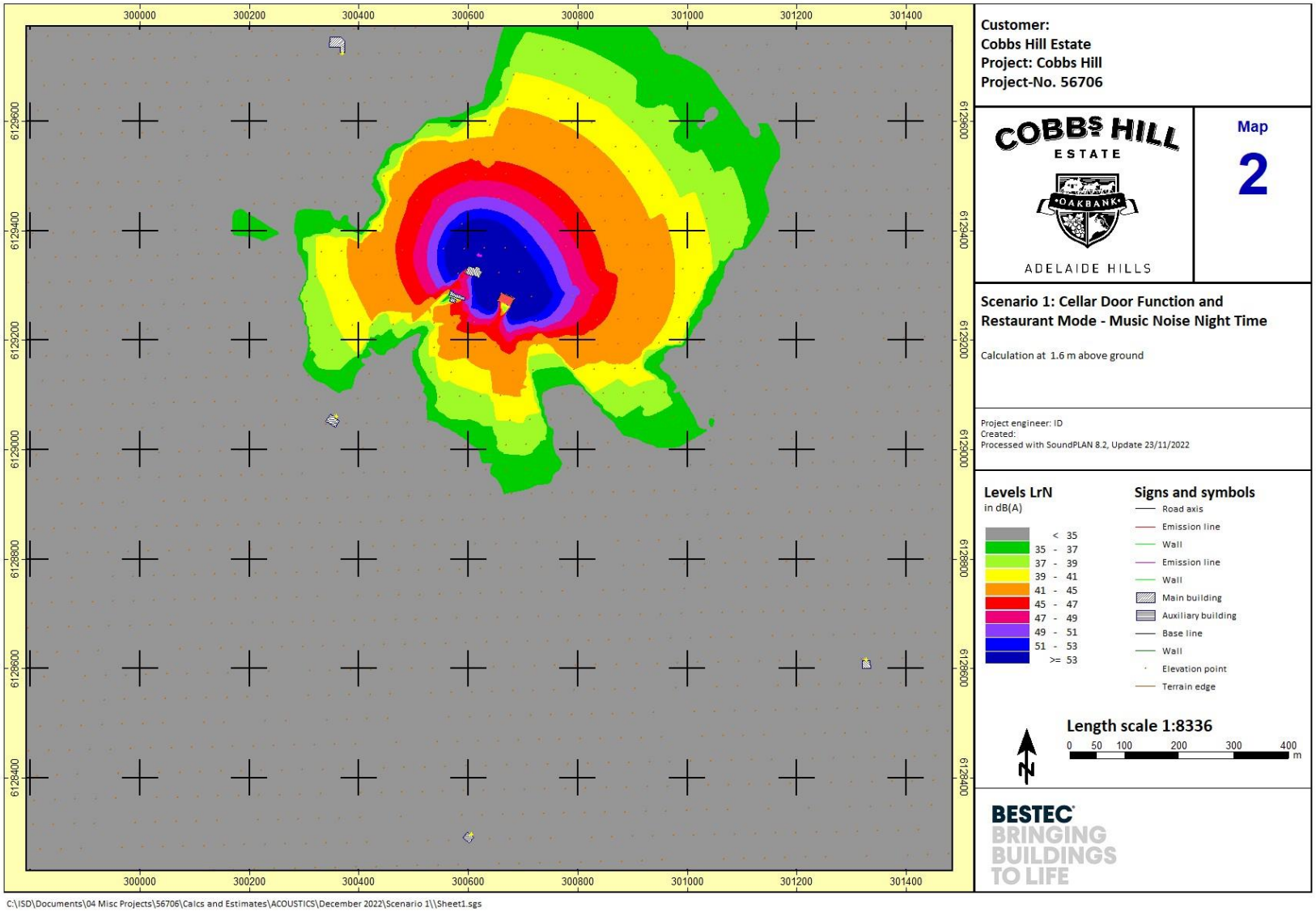

Figure C 2: Calculated Night Time Noise Levels - Music Noise

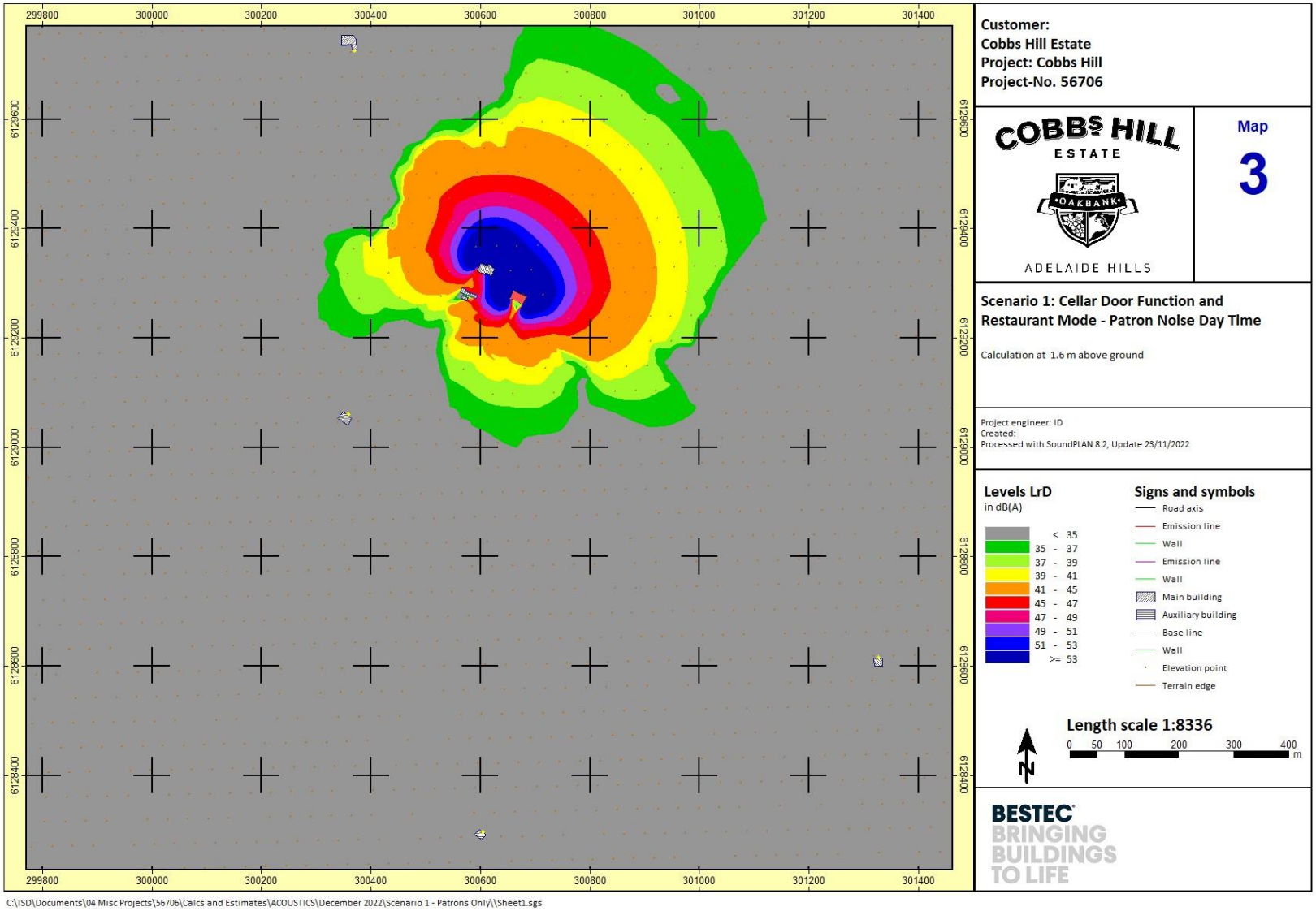

Figure C 3: Calculated Day Time Noise Levels - Patron Noise

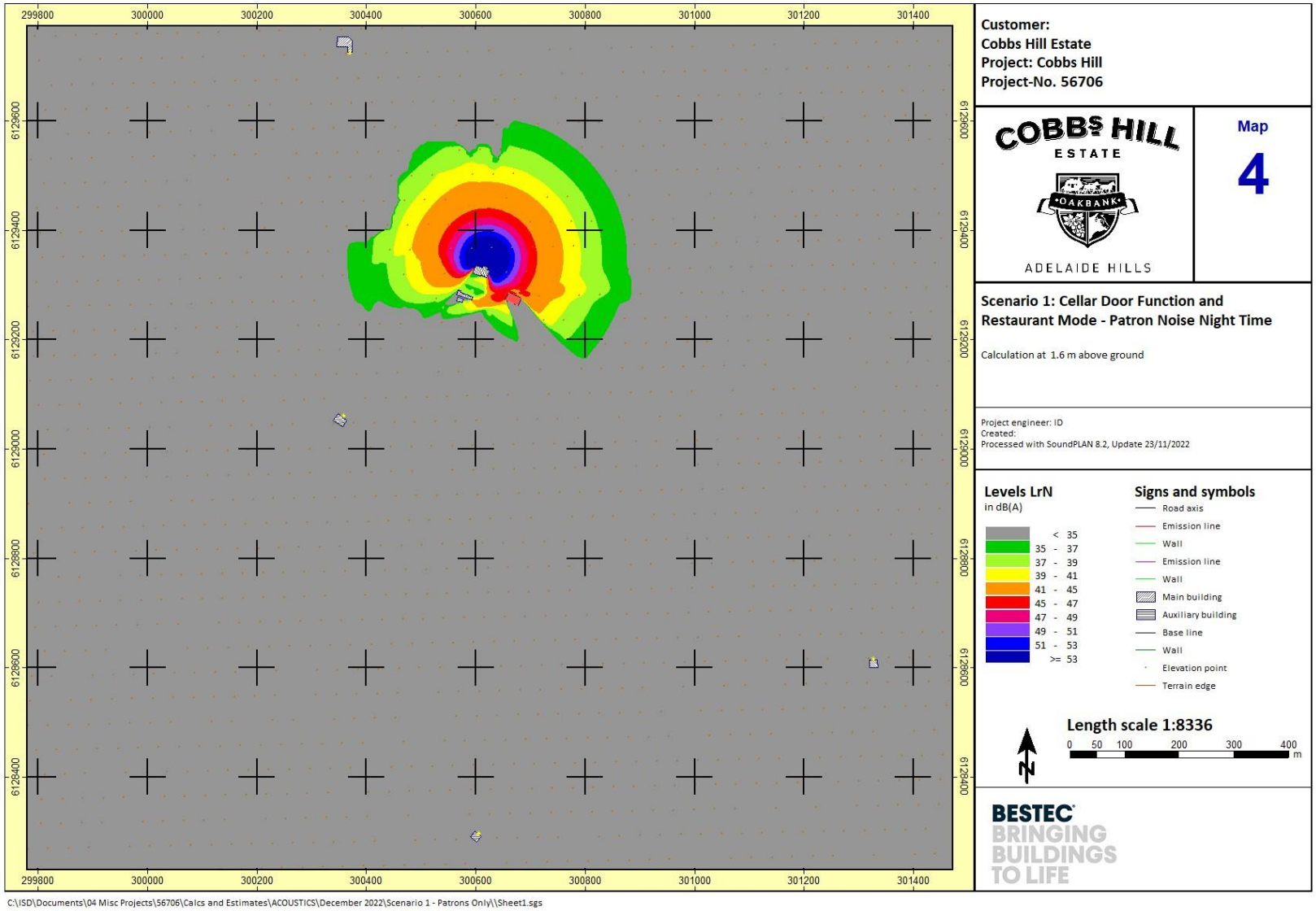

Figure C 4: Calculated Night Time Noise Levels - Patron Noise

APPENDIX D

SoundPlan Results – Scenario 2

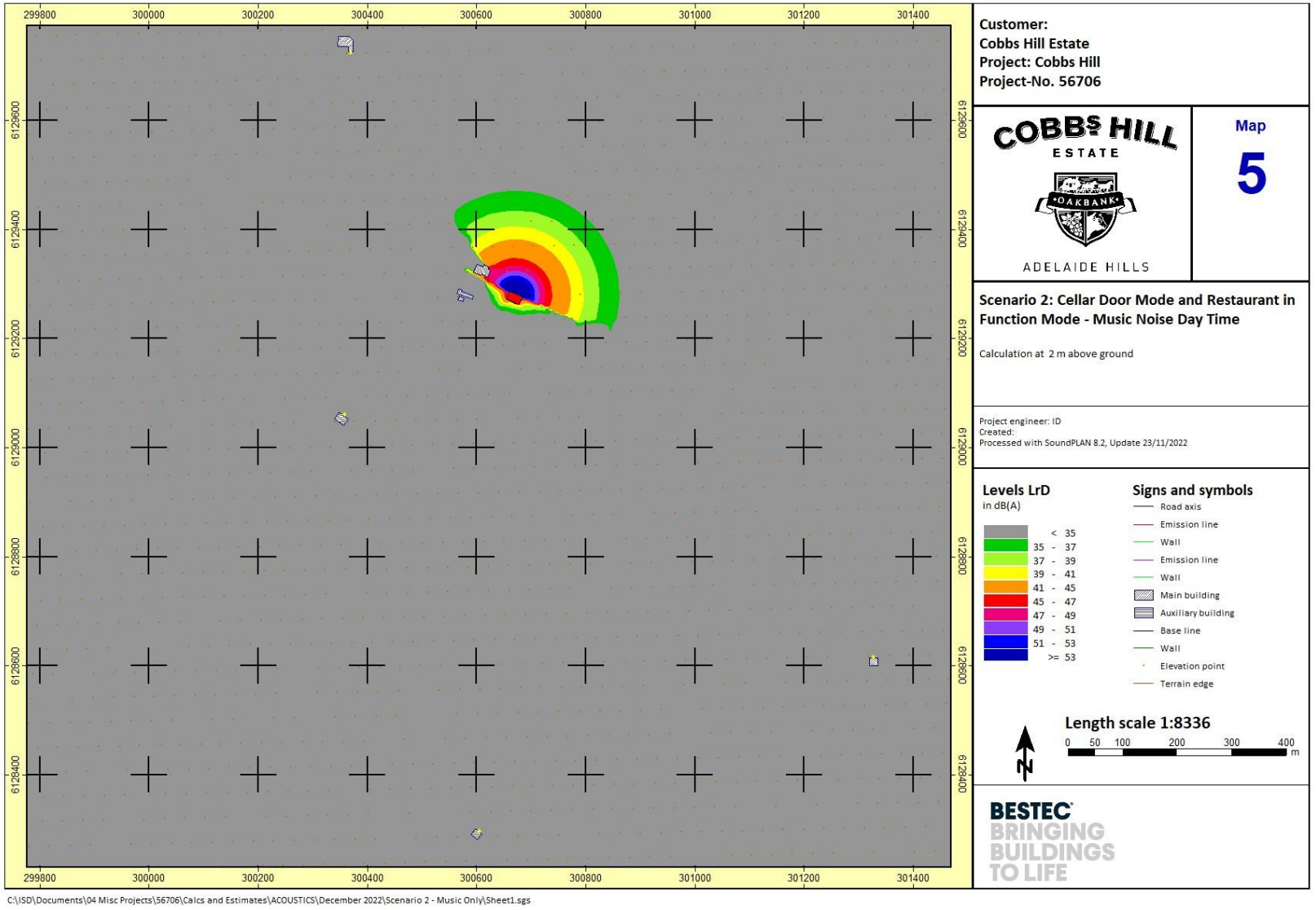

Figure D 1: Calculated Day Time Noise Levels – Music Noise

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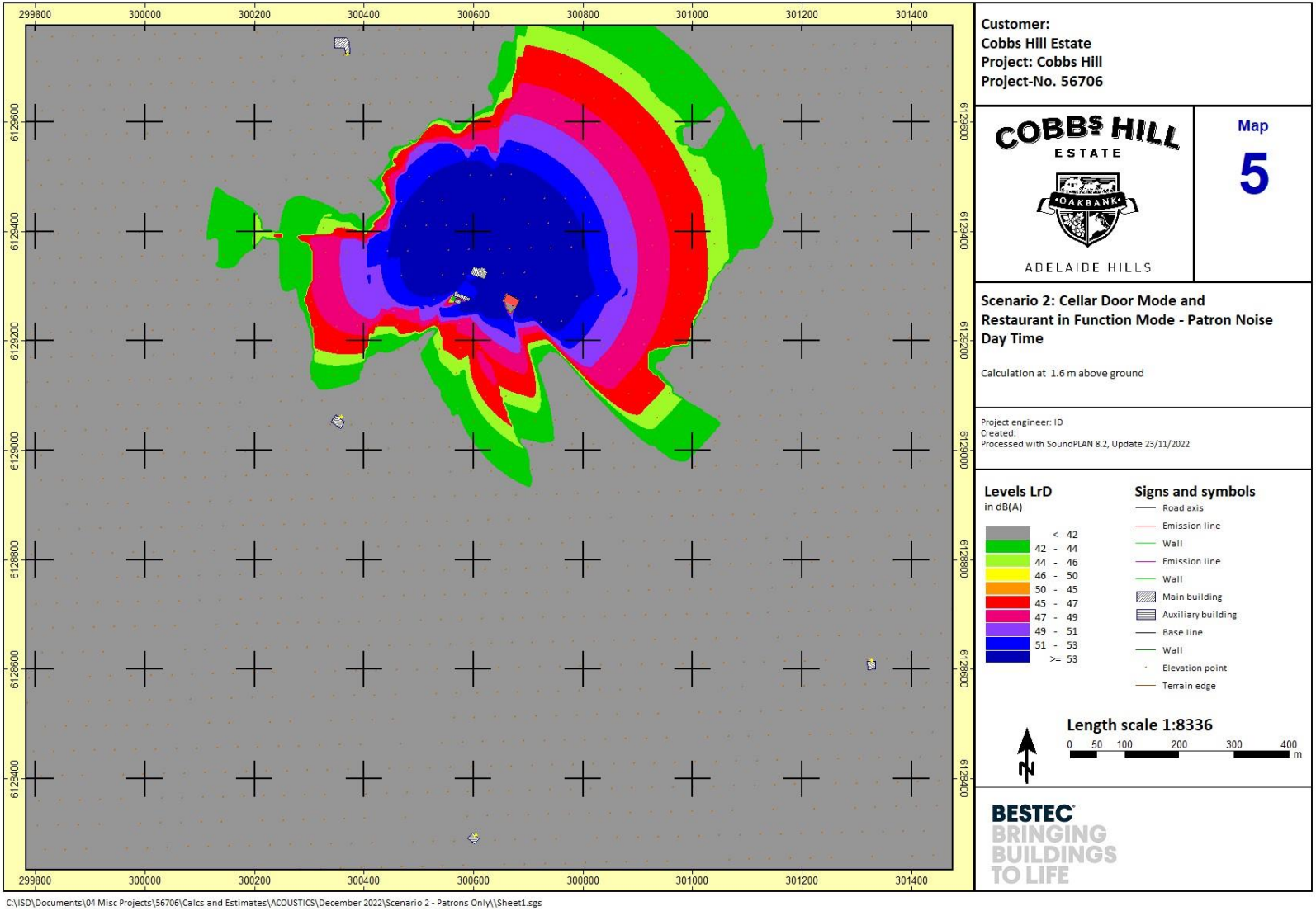


Figure D 2: Calculated Day Time Noise Levels – Patron Noise

APPENDIX E

SoundPlan Results – Scenario 3

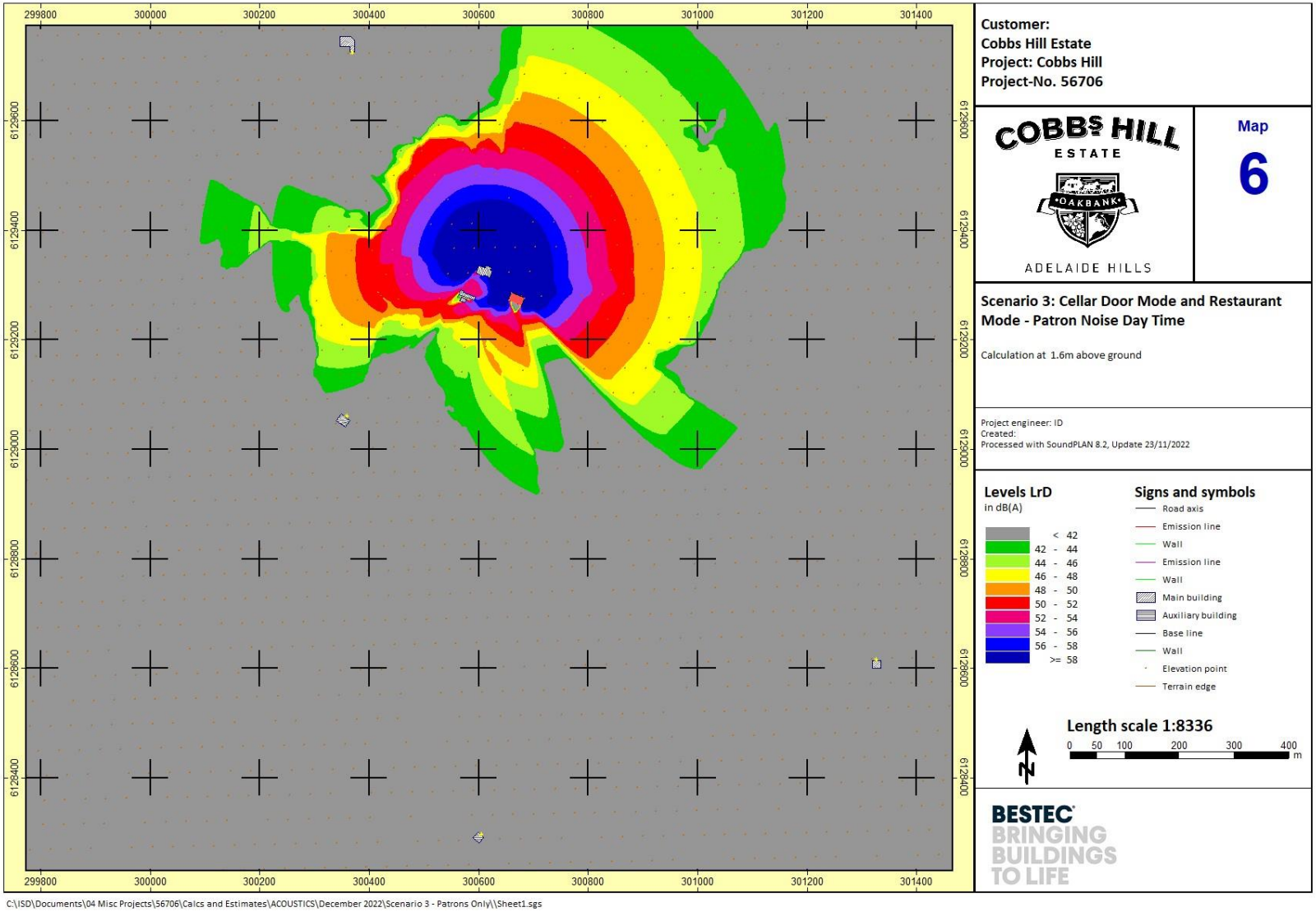


Figure E 1: Calculated Day Time Noise Levels – Patron Noise

APPENDIX F

Glossary of Acoustic Terminology

dB(A) Also referred to as dBA. A unit of measurement, decibels(A), of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") so as to more closely approximate human ear response at a loudness level of 40 phons. The table below outlines the subjective rating of different sound pressure levels.

Noise Level (dBA)	Subjective Rating
25-30	Barely audible and very unobtrusive.
30-35	Audible but very unobtrusive.
35-40	Audible but unobtrusive.
40-45	Moderate but unobtrusive.
45-50	Unobtrusive with low levels of surrounding activity.
50-55	Unobtrusive with high levels of surrounding activity.

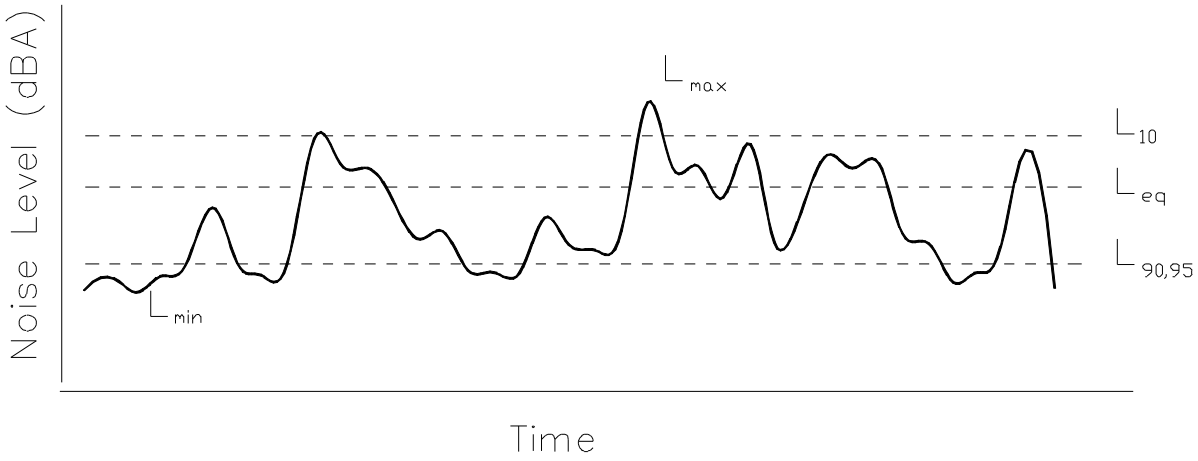
L_1 The noise level which is equalled or exceeded for 1% of the measurement period. L_1 is an indicator of the impulse noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{10} The noise level which is equalled or exceeded for 10% of the measurement period. L_{10} is an indicator of the mean maximum noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

L_{90}, L_{95} The noise level which is equalled or exceeded for 90% of the measurement period. L_{90} or L95 is an indicator of the mean minimum noise level, and is used in Australia as the descriptor for background or ambient noise (usually in dBA).

L_{eq} The equivalent continuous noise level for the measurement period. L_{eq} is an indicator of the average noise level (usually in dBA).

L_{max} The maximum noise level for the measurement period (usually in dBA).



Note: The subjective reaction or response to changes in noise levels can be summarised as follows: A 3dBA increase in sound pressure level is required for the average human ear to notice a change; a 5dBA increase is quite noticeable and a 10dBA increase is typically perceived as a doubling in loudness.

STC/R_W Sound Transmission Class or Weighted Sound Reduction Index. Provides a single number rating (from the sound transmission loss or sound reduction index for each frequency band) of the sound insulation performance of a partition. The higher the value, the better the performance of the partition. The subjective impression of different ratings is shown in the table below.

Type of noise source	STC/Rw Rating				
	40	45	50	55	60
Normal Speech	Audible	Just Audible	Not Audible		
Raised speech	Clearly Audible	Audible	Just Audible	Not Audible	
Shouting	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Small television/small entertainment system	Clearly Audible	Clearly Audible	Audible	Just Audible	Not Audible
Large television/large hi-fi music system	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Just Audible
DVD with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible
Digital television with surround sound	Clearly Audible	Clearly Audible	Clearly Audible	Audible	Audible

FSTC/R_W' The equivalent of STC/R_W, unit for sound insulation performance of a building element measured in the field.

C_I, C_{tr} The ratings (R_W, D_{nTw}, L_{nTw}) are weighted in accordance to a spectrum suited to speech. This term modifies the overall rating to account for noise with different spectra, such as traffic (C_{tr}) or footfalls (C_I). The ratings may be written as R_W+C_{tr}, or $D_{nTw}/L_{nTw}+C_I$.

NNIC/D_{nTw} Normalised Noise Isolation Class, or Weighted Standardised Sound Level Difference. Provides a single number rating of the sound level difference between two spaces, and incorporates the effects of flanking noise between two spaces. This rating is generally accepted to be about 5 points less than the STC/R_W rating.

IIC/L_{nw} Impact Insulation Class, or Weighted Normalised Impact Sound Level. L_{nw}=110-IIC. The higher the IIC rating, or the lower the L_{nw} rating the better the performance of the building element at insulating impact noise. The table below gives the subjective impression of different ratings:

IIC	Lnw	Subjective Rating
40	70	Clearly Audible
45	65	Clearly Audible
50	60	Audible
55	55	Audible
60	50	Just Audible
65	45	Inaudible

FIIC/L_{nTw}' The equivalent of IIC/L_{nw}, but the performance is for the building element measured in the field.

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File: 22-350

16 January 2023

Mr Gregg Jenkins
Heynen Planning Consultants
Suite 15, 198 Greenhill Road
EASTWOOD SA 5063

Via email: gregg@heynenplanning.com.au

Dear Gregg,

PROPOSED ALTERATIONS AND ADDITIONS TO COBBS HILL ESTATE, 382B SWAMP ROAD, OAKBANK (APPLICATION ID: 21017786) – TRAFFIC AND PARKING ASSESSMENT (AMENDED)

I refer to our previous discussions with respect to the above proposed development. I understand that this development will include alterations and additions to the existing development on the subject site including the proposed construction of a function centre and changes to existing on-site parking together with amendments to the licenced capacity and trading hours of the existing development.

We have previously undertaken an assessment of the traffic and parking related aspects of the above development in a report dated 21 December 2021. I understand that since the completion of that report a number of comments in relation to the traffic and parking related aspects of the proposed development form Council's Technical Officer have been included within an email from Council. Accordingly I have summarised and provided a response to these comments in the following amended report.

Existing Situation

The subject land is located on the eastern side of Swamp Road, Oakbank, within a *Productive Rural Landscape Zone.* The subject site is within the Adelaide Hills Council.

The subject land currently accommodates an existing residence, cellar door sales facility, motel/tourist accommodation facility containing three bedrooms, function area and outdoor seating associated with dining on-site. The tasting room, lounge areas and motel accommodation are provided in the building previously used as a residential dwelling i.e. the former homestead.

The existing development on the site is accessed via a two-way gateway on the eastern side of Swamp Road. The design of this access point provides an approximately 6.5m wide gate which is set back approximately 7.5 m from the eastern edge of Swamp Road. This gateway provides access to an internal gravel driveway providing vehicular access to the existing facilities on the subject site.

The initial section of this driveway extending east from the gate maintains a width of approximately 6.5 width for a distance of approximately 15 m which then narrows to approximately 3.5 m. Passing opportunities are subsequently provided intermittently along this section of roadway.

Swamp Road, adjacent to the subject land, is a two-lane roadway line marked with edge lines on each side of the roadway and centre lines between the northbound and southbound traffic lanes. The width of this roadway between the edge lines is approximately 6.5m.

The speed limit on Swamp Road adjacent to the site is 80 km/h.

We understand that Swamp Road carries approximately 1,531 vehicles per day (vpd).

A review of sight distances along Swamp Road to the north and south of the access point into the subject site indicates that sight distance in both directions is adequate for drivers approaching the subject access point to identify vehicles exiting from the site or turning right into the site from the northbound lane of Swamp Road. It is noted that curve warning advisory signs are installed within the combination crest vertical / horizontal curve on Swamp Road to the north of the subject access point.

From a review of the Location SA Map Viewer website it is identified that there have been no recorded road crashes reported in the most recent five-year recording period (2017-2021 inclusive) along Swamp Road adjacent to the boundary of the subject site including the intersection of the subject access point with Swamp Road.

Parking for patrons of the subject development is currently provided primarily on the northern side of the internal driveway to the west of the existing cellar door sales facility. An overflow car parking area is also provided on the southern side of the internal driveway. These car parking areas currently have a capacity to accommodate parking for the use of patrons and customers of the subject development. Parking associated with staff typically occurs adjacent to the various sheds and buildings on the site.

The design of the internal driveways provides access to the existing sheds on the site and traffic circulation is provided around the area of the site accommodating the former homestead building

The subject site and adjacent locality are identified in *Figure 1* below.

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Figure 1: Existing Development and adjoining locality

Current operation

The current operation of the subject development provides for use of the existing buildings on the subject site to accommodate a cellar door facility and functions including special events. I note that the current planning consent (DA 16/973/473) as dated 26 November 2020 provides for the use of the existing buildings on the subject site to accommodate: -

- Special Events with maximum capacity 208 persons on 7 occasions a year, or
- Functions with a maximum capacity of 130 persons on 18 occasions a year, and
- Use of the Cellar Door area with a maximum capacity of 75 persons.

The opening hours of the functions and special events are restricted to 10.00 am to 12.00 am (Midnight) on either Friday, Saturday or Sunday. I understand that the current hours of operation of the Cellar Door facility are from 11.00 am to 5.00 pm seven days per week.

Based upon the current conditions of Planning Consent, I understand that the above Special Events and smaller functions cannot coincide. However either of these events / functions can coincide with the day to day operation of the cellar door facility.

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Hence, it is calculated that the maximum number of patrons who can attend the site at any one time is currently limited to 283 persons. Such a capacity would generally occur on weekends given that functions held on site on Fridays are most likely to occur in evening periods i.e. after the cellar door is closed.

The Proposed Development

I note that the proposed development (as previously submitted to Council) is identified on a series of plans prepared by *Anatoly Patrick Architect* including a Location Plan A/02. This plan identifies that the proposed development will include:-

- Alterations and additions to the existing on-site parking areas with the plans nominally identifying a total of 82 car parking spaces,
- Minor alterations to the internal road network, and
- The construction of a proposed function centre with a total floor area of 412 m².

The above plan identifies provision for accessible (disability) car parking including the provision of:-

- one accessible car parking space and associated shared area on the western side of the proposed function centre,
- One accessible car parking space and associated shared area to the south-east of the existing cellar door facility, and
- Two accessible car parking spaces within the existing car parking area to the west of the cellar door facility.

The proposed development also provides for formalisation of existing overflow car parking area on the southern side of the main driveway. The plans indicate removal of potentially two or three existing trees within the site. While the notation on the plans suggests the provision of 54 car parking spaces of the area the actual design suggests only the provision of 36 spaces within the area.

Consequently we have undertaken a review of the car parking layout and have suggested minor changes to the design in order to maximise the number of car parking spaces within the proposed southern (overflow) car parking area. These changes are identified in Figure 2 provided within the appendix to this report.

The plans previously prepared by the architects (Anatoly Patrick Architecture) indicate the inclusion of a circular section of roadway to the north of the proposed function centre which would be similar to a roundabout with a clockwise circulation traffic flow.

A review of the above proposed treatment using Autotrack software has indicated some need for minor changes to this proposed feature in order to accommodate turning of large delivery vehicles up to and including the length of a Medium Rigid Vehicle (MRV) with a total length of 8.8m. These changes would be only minor and essentially consist of a reduction in the diameter of the central island to 15m and a consequent widening of the circulation roadway together with minor widening of the radius of the driveway entering this area from the west.

Subject to the incorporation of the minor amendments indicated above these vehicles would be able to circulate within the site around the existing and proposed buildings. These changes could be incorporated within the final civil engineering design.

The design of the two at-grade car parking areas as per Figure 2 would both reflect a medium term parking area (User Class 2) facility typically associated with a restaurant or function centre use providing the following dimensions:-

- Car parking spaces of 2.5m in width,
- Car parking spaces of 5.4m in length,
- An aisle width of at least 5.8m, and desirably 6.2m.

The accessible (disability) car parking spaces should be at least 2.4 in width with a 2.4m wide adjacent shared area.

On the above basis the design of the on-site car parking areas would more fully conform to the requirements of the relevant off-street car parking standards *(AS/NZS 2890.1:2004* and *AS/NZS 2890.6:2009)* and will meet the requirements of a *User Class 2* facility (medium term parking such as entertainment centres and accommodation facilities).

The internal driveways and car parking areas will typically be constructed from a permeable gravel surface. As such, it is considered that the car parking spaces should be delineated by wheel stops at the front end of each space.

The slope of the car parking areas should not exceed 1 in 20 (5%) measured parallel to the angle of parking, or 1 in 16 (6.25%) measured in any other direction.

The Proposed Operation

I understand that the proposed development will include changes to the existing hours and capacity of the subject development in conjunction with the proposed construction of the function centre. The proposed development will consequently result in the following:-

- Construction of the proposed restaurant and function centre building with a maximum capacity of 130 persons;
- Construction of the amended car parking areas and associated landscaping,
- Retention of the existing capacity of 75 persons within the cellar door facility with the hours of operation slightly changed to 10.00 am until 6.00 pm Monday to Friday,
- An increase in the capacity within the cellar door facility to 200 persons on Saturday, Sunday and Public Holidays from 10.00 am until 6.00 pm, and
- The number of functions to vary from the current 130 persons 18 times per year and 208 persons 7 times a year, to 130 persons 32 times per year.

Hence, I understand that the maximum number of patrons able to attend the site at any one time would be 330 persons compared to the current capacity of 283 persons. This would represent only an approximately 17% increase in the on-site capacity.

Such a maximum capacity would only occur on afternoon periods on weekends or public holidays given that use of the cellar door facility would be limited to 10.00 am until 6.00 pm on any day. Functions held in evening periods would mostly occur after the cellar door is closed.

Parking Assessment

The *Planning and Design Code* (version 2022.23) Planning and Design Code – 16 December 2022 includes car parking rates considered relevant to the subject development, namely:-

- Tourist accommodation - 1 car parking space per accommodation unit/guest room, and
- Shop (in the form of a restaurant) – 0.4 spaces per seat for premises with dine in service only.

On the basis of a capacity of:-

- A maximum of 330 persons attending either a function or using the cellar door facility on-site there would be a theoretical requirement for 132 car parking spaces associated with these components, and
- Theoretically a further three (3) car parking spaces associated with the accommodation facility. However advice from the operator indicates that in reality there would typically be only a single booking for the use of this area if there is an event, in order to accommodate guests such as a bridal party at a wedding, or otherwise it is not used during a function.

Hence in theory there would be a theoretical requirement for approximately 133 car parking spaces to be provided on-site.

However, in reality, the car parking demand associated with the proposed development should be lower than indicated above given the regional location of the subject development which should encourage a higher car occupancy than 2.5 persons per car compared to a similar development in a metropolitan area.

Furthermore a proportion of patrons attending functions, in particular, are likely to arrive by mini bus with higher occupancy levels than cars. Hence it is considered that there will be sufficient on-site car parking provided for the proposed development.

On the basis of a car parking rate of one space per three seats as required for a dining area associated hotel development i.e. a comparable land use there should be a total parking requirement for approximately 110 parking spaces. This would be met by a combination of the suggested changes to the existing car parking area as identified in Figure 2 below together with the staff parking spaces proposed on site and the provision of the two accessible car parking space to be located adjacent to the existing cellar door facility and the proposed function centre.

Traffic Assessment

Function centre developments do not have typical traffic generation rates. On a first-principles basis it is assumed that:-

- There would be one arrival and one departure vehicle movement for every 3 persons on-site, to correspond with the on-site car parking requirements and noting that visitors would not typically require multiple movements to and from the subject site,

- Staff movements and persons setting up functions would not occur during peak visitor arrival and departure periods,

- All attendees / guests are anticipated to arrive in the same one-hour period prior to a function. However it is unlikely that all departure movements would occur in the same one-hour period as function departure times can vary. For the purpose of this assessment, it is assumed that approximately two-thirds of guests attending a function would exit the site in any one-hour period,

- Peak periods associated with function centres typically occurs on weekends, particularly Saturday afternoons / evenings, and are unlikely to correspond with peak commuter periods on the public road network, and

- The majority of functions would not reach the maximum capacity of 130 person on-site.

On the above basis it is anticipated that the subject development could generate, on an infrequent worst-case basis, up to approximately 80 peak-hour vehicle trips on the basis that there would be some level of overlap between traffic generated by functions and the cellar door sales facility. It is anticipated that such volumes would typically occur on a Saturday afternoon / evening and that the subject development would potentially generate of the order of:-

- 70 entry and 10 exit movements in the one-hour period prior to a function commencing, and

- 5 entry and 45 exit movements in any one-hour period at the end of a function on the basis that drivers exiting the site during this period would take longer to leave than arrive and that departure from an event would generally occur after the cellar door facility is closed.

The existing access point on Swamp Road is appropriately designed to accommodate such volumes given that the width of this access point provides for simultaneous entry and an exit movements and the mostly tidal nature of the forecast traffic volumes before and after an event at the proposed function centre.

On the above basis it is considered that the proposed development will have not result in adverse traffic impacts on the capacity of the adjoining road network particularly given the volumes of traffic currently generated by the existing development on the subject site.

Adelaide Hills COUNCIL

PLANNING CONSENT
CONDITIONS & NOTES APPLY
DA: 21017786
DATE: 08/03/2023

Council Comments

I note that the following comments relating to the traffic and parking related aspects of the proposed development were provided in an email from Mr Doug Samardzija, Senior Statutory Planner, Adelaide Hills Council, in an email to you dated Friday 13 January 2023, namely: -

> *"Additionally Council's Technical Officer has reviewed your Traffic Report and has provided (the) following comments:*
>
> 1. *The increase in traffic volume would have no significant impact on the existing traffic volumes of 1531 vehicles per day on Swamp Road.*
>
> 2. *Council recommends the access driveway be widened to a minimum width of 6 metres to accommodate two way traffic flow. A minimum of 100 metres of the access driveway should be widened to prevent any potential backing up of traffic on Swamp Rd, this will alleviate any potential safety issues.*
>
> 3. *The access is to be sealed from the road edge to 20m within the property boundary to prevent any material drag out onto Swamp Rd.*
>
> *(An) Amended site plan should be provided showing the above changes to the driveway."*

In response:-

- I interpret the comment (point 1 above) in relation to the capacity of Swamp Road to appropriately accommodate the forecast increases in the volumes of traffic to be generated by the proposed development to have been acknowledged By Council's Technical Officer, and

- *Figure A* below is an aerial overlay plan identifying:

    - the 100m of driveway widening to a minimum width of 6m, i.e., in the area between the existing sections of two-way driveway (point 2 above), and

    - the recommended sealing of the first 20m of the access driveway into the site (point 3 above) inclusive of the verge area between the sealed carriageway of Swamp road and the property boundary.

Adelaide Hills COUNCIL

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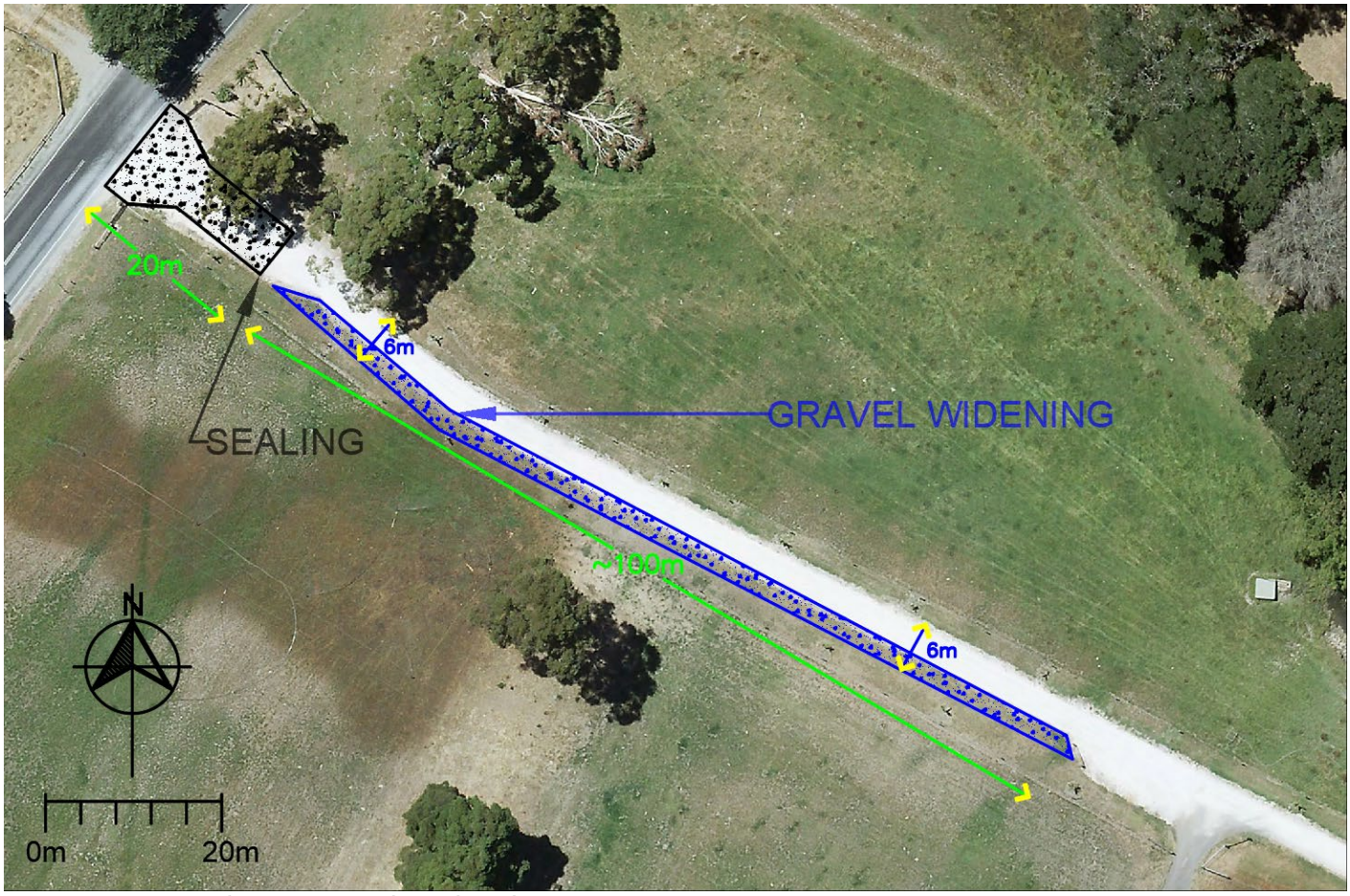


Figure A: Access driveway aerial overlay plan

Summary and Conclusions

In summary, I note that the proposed development will:-

- Provide a total of approximately 110 formalised car parking spaces on site. The proposed car parking areas will include provision for parking by the disabled with such spaces incorporating appropriately designed shared areas,

- Continue to provide accommodation for two mini-buses within the set down area which is located to the east of the cellar door facility,

- Be able to provide a design standard for the proposed car parking areas and associated driveways that would meet the requirement of the relevant Australian Standards for off-street car parking areas, subject to minor recommended alterations identified within this report,

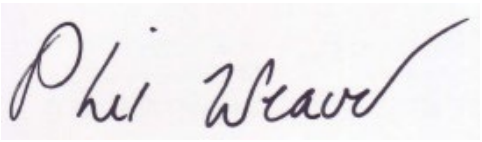
- Not generate excessive increases in traffic, noting that capacity of the subject development would increase by only approximately 37 persons from the current maximum capacity of 283 persons to the proposed 330 person capacity, and given the tidal nature of these anticipated traffic movements. On this basis, there should be minimal change in the traffic generation during peak events associated with the subject development,

- Primarily generate traffic movements by cars entering and exiting the site. There should be only infrequent traffic movements by larger vehicles entering and exiting the site albeit the current design accommodates access by trucks and buses, and

- Incorporate sealing of the first 20m of the existing access driveway and minimum access driveway widening of a further 100m as identified in *Figure A*.

In summary, I remain of the opinion that there should not be adverse traffic or impacts associated with the subject development and that there will be adequate car parking provided on the site to meet the anticipated peak parking demands of the subject development.

Yours sincerely



Phil Weaver
Phil Weaver and Associates Pty Ltd

Enc: Figure 2

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DATE: 08/03/2023

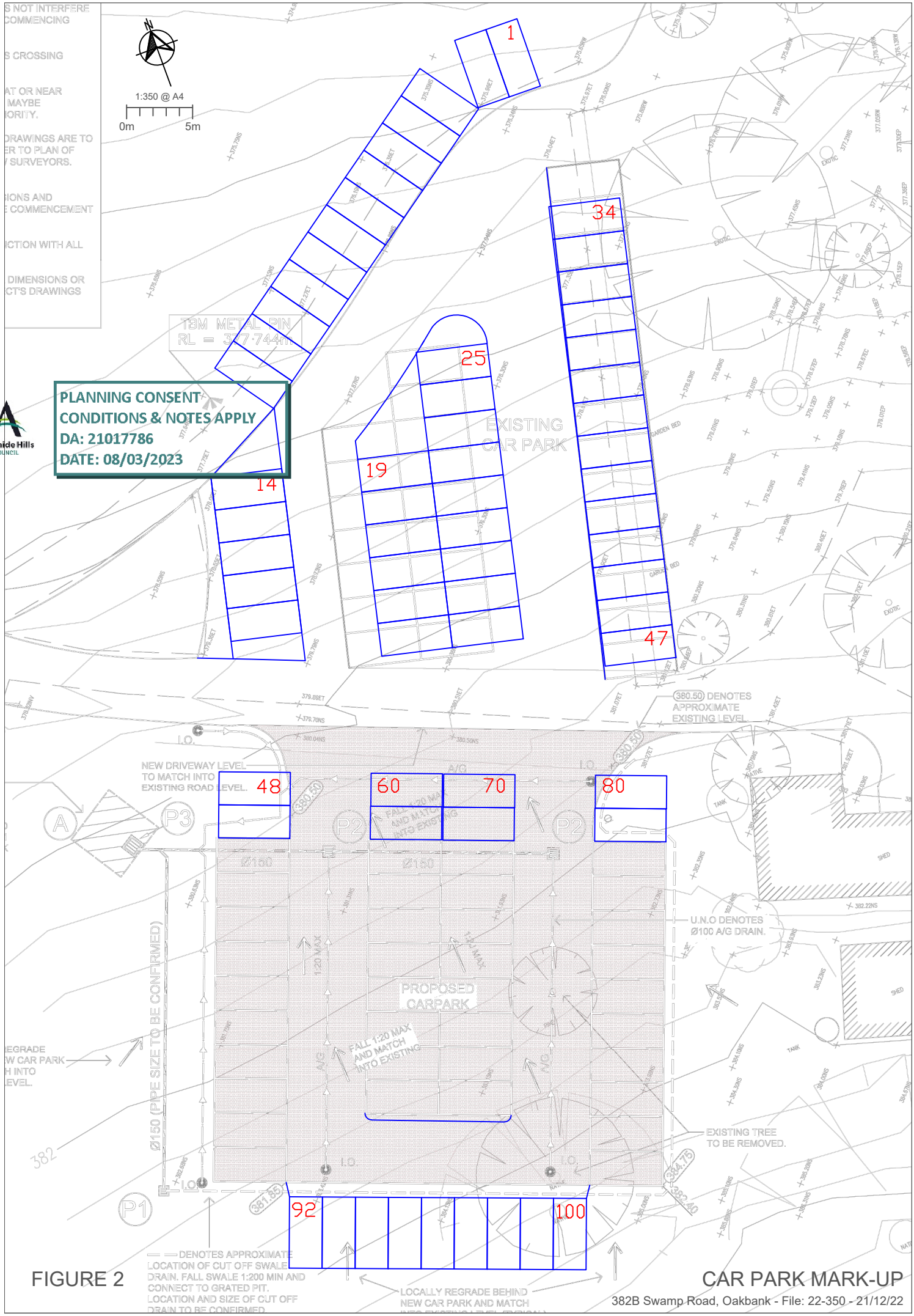

FIGURE 2

CAR PARK MARK-UP

382B Swamp Road, Oakbank - File: 22-350 - 21/12/22