Appendix K

Geotechnical Investigations - FMG

Preliminary Geotechnical Investigation Report

Civil Engineering at Stirling Golf Club

Job Number	275203
Client	Venture Capital Developments Pty Ltd
Site	Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Date	04/05/2021
Revision	0

Document Status

REV NO.	STATUS	AUTHOR	REVIEWER		APPROVED FOR ISSUE	
			Name	Date	Name	Date
0	FINAL	Frank Fu	Richard Atkinson	06/05/2021	Frank Fu	06/05/2021

Contents

1.0 Introduction

FMG Engineering (FMG) has been commissioned to undertake a preliminary geotechnical investigation at Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152 for a Development Application to develop the site as Mount Lofty Golf Estate. The approximate site extents are shown below in Figure 1.

Figure 1: Site location

1.1 Proposed development and objectives

We understand from the documents and discussions provided that the proposed Mount Lofty Golf Estate development comprises accommodation Chalets, hotel, restaurant, pro shop, carpark and amphitheatre etc. Maximum building height of two-storey is proposed. We have been provided with the following drawings on which we have based this assumption.

- *MOUNT LOFTY COURSE MASTER PLAN*

A preliminary geotechnical investigation was required to better understand the top soil profiles and to classify the site soils. The approved scope of work can be found in our Fee Proposal letter (EST23936).

1.2 Reporting

This report summarizes the methodology adopted and the works undertaken during the site investigation, followed by the investigation findings and site classification. Borelogs are appended.

2.0 Preliminary / Desktop study

2.1 Site description

The site investigation area is located within the established Stirling Golf Club site. The site is approximately 20km South East of the Adelaide CBD and 0.5km off South Eastern Freeway. The site is near the toe of a hill sloping down towards the north, and terraced for buildings and carpark. A small dam and creek are noted north of the proposed development. A significant number of trees are present on site and on surrounding lands.

Surrounding site conditions comprise:

- North: Golf court
- East: Vacant land
- South: Golf court and Golflinks Road on upper hill
- West: Mount George

2.2 Geology

The South Australian Department for Energy and Mining online GIS database "SARIG" indicates that the regional near surface geology across the entire site to be Barossa Complex, described as Metamorphic rocks with retrograde metamorphism; metasediments, strongly banded parallel to gneissic foliation; minor intrusive granitic, pegmatitic and amphibolitic dykes. Granulite facies metapelites.

Nearby boreholes in the SARIG and FMG database indicate that the weathered rock bed could be at shallow depth (0.5m from shallowest record).

3.0 Site investigation and results

3.1 Methodology

Independent service locating was undertaken by ILS prior to drilling.

Borehole were located according to verbal advice provided by yourselves, and are shown on the site plan included in Appendix A. As advised, an additional borehole than proposed in our initial proposal was added. A total of 11 Boreholes were drilled using a Rockmaster 4WD mounted drill rig owned and operated by SPK Geodrill under the supervision of a Geotechnical Engineering on 29th April 2021.

Thick walled tubes were used to recover relatively continuous cores. Tubes were progressed by pushing the tube against the weight of the vehicle, by a high-frequency hydraulic hammer, and rotation of the tubes.

Only BH10 was terminated at the target depth, the rest of boreholes were all terminated when high resistance was encountered to push tubes. Depth achieved ranged from 0.4m to 4.0m. Recovered samples were placed in trays and transported to our laboratory for logging.

Visual tactile logging was carried out in accordance with AS1726 by an experienced Soil Technician and checked by Geotechnical Engineer. Borelogs are included in Appendix B.

A summary of achieved depths is shown in Table 1.

Table 1 Summary of achieved depths

TEST	DEPTH ACHIEVED (m)	TEST	DEPTH ACHIEVED (m)
BH01	2.2	**BH07**	0.4
BH02	2.8	**BH08**	1.8
BH03	2.3	**BH09**	2.1
BH04	1.2	**BH10**	4.0
BH05	2.1	**BH11**	3.0
BH06	1.6		

3.2 Summary of subsoil conditions

A description of the materials encountered during the investigation is included in the borehole log included in Appendix B and a generalised summary can be found in the table below. It should be noted that pocket penetrometer readings included on the logs indicate an approximation of unconfined shear strength and have been used in the interpretation of the allowable bearing capacities given in the footing recommendations section.

High resistance encountered to the drilling is interpreted as weathered rock. Weathering is likely to decrease with depth, with an increase in rock strength. It should be noted that the drilling method used does not provide any information regarding defects or bedding of the rock, and hence can not provide any data on the strength nor stability of the rock mass.

Table 2 outlines a summary of subsurface conditions.

Table 2 Summary of subsurface conditions

MATERIAL	DEPTH ENCOUNTERED (m)					
	BH01	**BH02**	**BH03**	**BH04**	**BH05**	**BH06**
Fill	0-0.2	0-0.35	N.E	N.E	0-0.2	0-0.2
Natural soils	0.2-1.8	0.35-2.6	0-1.6	0-0.7	0.2-1.5	0.2-1.3
Rock	1.8-2.2	2.6-2.8	1.6-2.3	0.7-1.2	1.5-2.1	1.3-1.6
MATERIAL	**DEPTH ENCOUNTERED (m)**					
	BH07	**BH08**	**BH09**	**BH10**	**BH11**	
Fill	0-0.2	0-0.3	0-0.65	0-1.4	0-0.25	
Natural soils	0.2-0.3	0.3-1.4	0.65-1.7	1.4-4.0	0.25-2.8	
Rock	0.3-0.4	1.4-1.8	1.7-2.1	N.E	2.8-3.0	

N.E Not Encountered

The natural subsurface conditions encountered in the boreholes are considered consistent with the regional geology from our desktop study.

3.3 Groundwater

Groundwater was not observed during drilling. It should be noted that the occurrence of groundwater may vary seasonally with rainfall intensity and duration.

3.4 Site classification

Free swell y_s values have been calculated in accordance with AS2870-2011. Although AS2870-2011 is considered appropriate for this application the design should be based on engineering principles.

The site in its current condition is classified as CLASS **P** (problem site) due to the presence of fill and trees and **M-D** due to soil reactivity.

The characteristic surface movement due to soil shrinking and swelling (y_s) has been calculated in accordance with AS2870-2011 "Residential Slabs and Footings" (to the nearest 5mm). Taking into account the effects of trees in accordance with AS2870-2011, the additional characteristic surface movement due to group tree effects (y_t) has also been calculated.

- y_s = 35mm
- y_t = 15mm

The site classification is strongly related to depth of the rock. Locations where rock is shallow have lower shrink-swell potential. Values of heave ys vary from 2mm at Borehole 7 to 37mm at Boreholes 2 and 11.

It must be emphasised that in classifying this site, FMG Engineering did not place sole reliance on the borelog as a means of being an absolute representation of all subsurface features existing at this site. The following have also been taken into consideration.

- The broad experience of FMG Engineering
- Well established and relevant local knowledge of the general behavioural characteristics of foundation soils in the vicinity of the site
- Specific geotechnical reports and classification on adjacent sites which were referred to
- FMG Engineering's vast experience relating to past performance of existing structures in the general area
- Published geological maps
- Engineering assessment of the likely characteristic surface movement (ys) based on estimated Ips values as noted on the borelog. Ips values are based on Shrink Swell tests (Iss) carried out in a laboratory on similar soils to this site
- It can occasionally be difficult to distinguish between natural soil and controlled FILL during testing. It is also impossible to distinguish between uncontrolled FILL and controlled FILL without appropriate information. It shall be the Client's responsibility to determine whether any controlled FILL exists on the site, and to provide FMG with the relevant Certificate(s) at the time of our engagement, prior to the fieldwork being carried out. FMG takes no responsibility for any additional costs which may be incurred due the presence of Controlled FILL which is not detected during our testing, and which is instead logged as either (uncontrolled) FILL or natural soil.

4.0 Important notes about the interpretation and use of this geotechnical report

These notes are offered to help in the interpretation of your Geotechnical Report.

The level of investigation and degree of certainty required is dependent upon the complexity of the proposed construction.

Should a more conclusive assessment be required regarding the subsoil conditions at the property, FMG Engineering can arrange to undertake a more detailed study including further sampling and laboratory testing. There will always be uncertainties arising from the practical limitations of the extent and nature of site testing and localised changes in soil conditions may not be found in any cause.

This report should be read as a whole. Borelogs should not be separated from the body of the report and interpreted independently. The whole of this report should be provided to contractors in order to provide the best available information to the contractors. To avoid any misinterpretation of the contents of the report consult the geotechnical engineer for any queries or proposed changes or unexpected conditions.

4.1 The limitations of a geotechnical investigation

Although the information provided by a geotechnical investigation can reduce exposure to such risks, no geotechnical investigation, however diligently carried out, can eliminate them. Even a rigorous professional assessment may fail to detect all subsoil and ground water variations on a site. The geology of the site may make predicting changes difficult.

A geotechnical investigation is based upon a unique set of project conditions.

Your report should not be used:

- When the nature of the proposed development or use is changed, for example if a residential development is proposed instead of a commercial one
- When the size or configuration of the proposed development is altered
- When the location or orientation of the proposed structure is modified
- When there is a change of ownership
- For application to an adjacent site.

The circumstances about a particular development or contract may require a specified approach to the assessment of soil and groundwater conditions.

To help avoid costly problems, refer to your consultant to determine how any factors which have changed subsequent to the date of the report may affect our recommendations.

4.2 Geotechnical 'findings' are professional estimates

Site assessment identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall subsurface conditions

and the nature and homogeneity of subsurface conditions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, and no subsurface exploration programme, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise its impact. For this reason, owners should retain the services of their consultants through the development stage, to identify variations, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site or during the tender process.

A report prepared for the purposes of the geotechnical engineer's direct client may not meet the objectives of a third party or contractor. Consult the geotechnical engineer for guidance in the application of the report to your purposes.

4.3 Unforeseen conditions

Should conditions encountered on site be markedly different from those anticipated and described in this report then FMG Engineering should be notified immediately. Early identification of site anomalies generally results in any problems being more readily resolved and allows reinterpretation and assessment of the implications for future work.

4.4 Safety in design

This Geotechnical Report presents factual information about the soil conditions at the subject site. This may be used for design purposes. At the time that this report was prepared, FMG Engineering were not informed of the details at the proposed building (workplace) to be constructed. Consequently, FMG Engineering have not carried out a Preliminary Hazard Analysis nor been able to consider Safety in Design for the proposed development. It is the responsibility of the designer to use the information contained within this report when undertaking a Safety in Design assessment for the specific development.

Please contact FMG Engineering if Safety in Design analysis is required as the project develops.

Appendix A

Site plan


BH04
BH03
BH05
BH06
BH07
BH08
BH09
BH02
BH01
35 Golflinks Rd
BH11
BH10

Appendix B

Borelogs

ENGINEERING

Borehole No.
BH01
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.50m 400kPa	-1	1		FILL	GRAVELLY SAND: pale grey yellow; of non plasticity; with silt; sand, medium grained; gravel, angular, up to 20mm; dry to moist; loose.	D - M	L	0%		FILL
							SC-SM		M	L - MD	0.5%		TOPSOIL
							CH	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	VSt	3.5%		ALLUVIUM
							CI-CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	St	2%		
								SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.					
							SC	CLAYEY SAND: pale cream yellow ; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.3%		
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
				-2	2			WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
				-3	3			Hole Terminated at 2.20m - Refusal					

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH02
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client:	Venture Capital Developments Pty Ltd	Commenced:	29/04/2021
Project Name:	Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152	Completed:	29/04/2021
Hole Location:		Logged By:	PP
Hole Position:	Coordinate System: MGA94 54H	Checked By:	FF
Drill Model:	Rockmaster	RL Surface:	
Drill Operator:	SPK GeoDrill Pty Ltd	Hole Diameter: 50mm	Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.50m 400kPa	-1	1		FILL	GRAVELLY SAND: black to orange brown; of low plasticity; with clay / silt; sand, medium grained; gravel, angular, up to 20mm; moist; loose; some roots, glass pieces were observed.	M	L	0.3%		FILL
							SC-SM		M	L - MD	0.5%		TOPSOIL
							CH	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	VSt	3.5%		ALLUVIUM
								CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.					
				-2	2		CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
							SC	CLAYEY SAND: pale cream yellow ; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.3%		
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
				-3	3			Hole Terminated at 2.80m - Refusal					

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH03
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
PT		Groundwater Not Encountered		-1	1		SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%		TOPSOIL
							CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		ALLUVIUM
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
								WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
				-2	2			WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
								Hole Terminated at 2.30m - Refusal					
				-3	3								

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
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SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH04
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered		-1	1		SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%		TOPSOIL
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		ALLUVIUM
								WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
				-2	2			Hole Terminated at 1.20m - Refusal					
				-3	3								

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
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Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

FMG ENGINEERING

Borehole No.
BH05
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.50m 400kPa				FILL	SILTY SAND: pale orange brown; of non plasticity; with clay / gravel; sand, medium to fine grained; gravel, angular, up to 20mm; dry to moist; loose.	D - M	L	0%		FILL
							SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%		TOPSOIL
				-1	1		CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%		ALLUVIUM
							CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
				-2	2			WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
				-3	3			Hole Terminated at 2.10m - Refusal					

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
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VD - Very Dense

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Moisture Condition
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Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH06
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.50m 400kPa	-1	1		FILL	SILTY SAND: pale orange brown; of non plasticity; with clay / gravel; sand, medium to fine grained; gravel, angular, up to 20mm; dry to moist; loose.	D - M	L	0%		FILL
							SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%		TOPSOIL
							CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%		ALLUVIUM
							CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
								WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
				-2	2			WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream. Hole Terminated at 1.60m - Refusal	M	H	0%		BEDROCK
				-3	3								

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH07
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client:	Venture Capital Developments Pty Ltd	Commenced:	29/04/2021
Project Name:	Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152	Completed:	29/04/2021
Hole Location:		Logged By:	PP
Hole Position:	Coordinate System: MGA94 54H	Checked By:	FF
Drill Model:	Rockmaster	RL Surface:	
Drill Operator:	SPK GeoDrill Pty Ltd	Hole Diameter: 50mm	Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Not Enco. water					FILL	GRAVELLY SAND: pale orange brown; of non plasticity; with clay / silt; sand, medium to fine grained; gravel, angular, up to 50mm; dry to moist; loose.	D - M	L	0%		FILL
							SC-SM		M	L - MD	0.5%		TOPSOIL
								CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	H	0%		BEDROCK
				-1	1			WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream. Hole Terminated at 0.40m - Refusal					
				-2	2								
				-3	3								

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

ENGINEERING

Borehole No.
BH08
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client:	Venture Capital Developments Pty Ltd	Commenced:	29/04/2021
Project Name:	Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152	Completed:	29/04/2021
Hole Location:		Logged By:	PP
Hole Position:	Coordinate System: MGA94 54H	Checked By:	FF
Drill Model:	Rockmaster	RL Surface:	
Drill Operator:	SPK GeoDrill Pty Ltd	Hole Diameter: 50mm	Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.40m 400kPa	-1	1		FILL	GRAVELLY SAND: pale grey yellow; of non plasticity; with silt; sand, medium grained; gravel, angular, up to 25mm; dry to moist; loose; old paving base and bitumen.	D - M	L	0%		FILL
							CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%		ALLUVIUM
							Cl-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							Cl	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
								WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
									M	H	0%		BEDROCK
				-2	2			WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream. Hole Terminated at 1.80m - Refusal					
				-3	3								

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

FMG ENGINEERING

Borehole No.
BH09
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description								Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)		Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.80m 400kPa	-1	1		FILL	SILTY SAND: pale orange brown; of low plasticity; with clay / gravel; sand, medium to fine grained; gravel, angular, up to 20mm; dry to moist; loose; bitumen concrete fragments.	D - M	L	0.3%			FILL
							SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%			TOPSOIL
							CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%			ALLUVIUM
							CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%			
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%			
				-2	2			WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%			RESIDUAL SOIL
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream. Hole Terminated at 2.10m - Refusal	M	H	0%			BEDROCK
				-3	3									

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

FMG ENGINEERING

Borehole No.
BH10
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 1.50m 400kPa	-1	1		FILL	GRAVELLY SAND: pale grey yellow; of non plasticity; with silt; sand, medium grained; gravel, angular, up to 20mm; dry to moist; loose.	D - M	L	0%		FILL
							FILL	SILTY SANDY CLAY: black brown; of low plasticity, trace gravel; gravel, angular, up to 30mm; moist; firm.	M	F	0.5%		
				-2	2		CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%		ALLUVIUM
							CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							SC	CLAYEY SAND: pale cream yellow ; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.3%		
				-3	3		CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
								Hole Terminated at 4.00m - Target depth					

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance range to refusal

Photo

ENGINEERING

Borehole No.
BH11
Page 1 of 1

Engineering Log - Borehole

Project No.: S53897/275203

Client: Venture Capital Developments Pty Ltd
Project Name: Stirling Golf Club, 35 Golflinks Road, STIRLING, SA 5152
Hole Location:
Hole Position: Coordinate System: MGA94 54H
Drill Model: Rockmaster
Drill Operator: SPK GeoDrill Pty Ltd Hole Diameter: 50mm

Commenced: 29/04/2021
Completed: 29/04/2021
Logged By: PP
Checked By: FF
RL Surface:
Datum:

Drilling Information						Soil Description							Observations
Method	Penetration	Water	Samples Tests Remarks	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency / Relative Density	Estimated Ipt	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT		Groundwater Not Encountered	PP: 0.60m 400kPa	-1	1		FILL	SILTY SAND: pale orange brown; of non plasticity; with clay / gravel; sand, medium to fine grained; gravel, angular, up to 20mm; dry to moist; loose.	D - M	L	0%		FILL
							SC-SM	CLAYEY SILTY SAND: pale brown yellow; of low plasticity, trace gravel; sand, medium to fine grained; gravel, sub-rounded to angular, up to 10mm; moist; loose to medium dense.	M	L - MD	0.5%		TOPSOIL
							CH	CLAY: grey mottled brown; of high plasticity, trace sand; moist; very stiff.	M	VSt	3.5%		ALLUVIUM
				-2	2		CI-CH	SILTY SANDY CLAY: pale brown orange; of medium to high plasticity, trace gravel; gravel, angular, up to 20mm; moist; stiff.	M	St	2%		
							CI	SILTY SANDY CLAY: pale grey mottled yellow; of medium plasticity; moist; stiff.	M	St	1.5%		
				-3	3			WEATHERED SILTSTONE: trace of gravel, angular, up to 20mm, silty clay in seams. of low plasticity, pale orange mottled cream.	M	H	0.3%		RESIDUAL SOIL
								WEATHERED SILTSTONE: fragmented pieces, non-plastic. pale yellow cream.	M	H	0%		BEDROCK
								Hole Terminated at 3.00m - Refusal					

Pocket Penetrometer UCS (kPa): 100, 200, 300, 400, 500

Method
PT - Push tube

Consistency / Relative Density
VS - Very Soft
S - Soft
F - Firm
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test
PP - Pocket Penetrometer

Moisture Condition
D - Dry
M - Moist
W - Wet

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
> PL
= PL
< PL

Penetration
No resistance
range to refusal

Photo

Borelogs and laboratory test results

Soil description notes

The dominant soil constituents are given in capital letters followed by secondary textures. The dominant feature is determined from the Unified Soil Classification System and a soil symbol is used to define a soil layer as follows:

Table 3 Borelog symbols

USC SYMBOL	SYMBOL MEANING
GW	Well graded gravel
GP	Poorly graded gravel
GM	Silty gravel
GC	Clayey gravel
SW	Well graded sand
SP	Poorly graded sand
SM	Silty sand
SC	Clayey sand
ML	Silt of low plasticity
CL	Clay of low plasticity
OL	Organic soil of low plasticity
CI	Clay of intermediate plasticity
MH	Silt of high plasticity
CH	Clay of high plasticity
OH	Organic soil of high plasticity
Pt	Peaty soil

The appropriate symbols are selected on the results of visual examination, field tests and available laboratory tests, such as, sieve analysis, liquid limit and plasticity index.

Plasticity

The potential for undergoing change in volume with moisture change is assessed from its degree of plasticity. The classification of the degree of plasticity in terms of the Liquid Limit (%) is as follows:

Table 4 Description of plasticity

DESCRIPTION OF PLASTICITY	LIQUID LIMIT FOR SILT (%)	LIQUID LIMIT FOR CLAY (%)
Low	$\leq$ 50	$\leq$ 35
Medium	Not Applicable	>35 - $\leq$ 50
High	>50	>50

Condition

The consistency of a cohesive soil is defined by descriptive terminology such as very soft, soft, firm, stiff, very stiff and hard. These terms are fixed by the shear strength of the soil as observed visually by the pocket penetrometer values and resistance to deformation to hand moulding.

Relative density terms such as very loose, loose, medium, dense and very dense are used to describe silt and sandy materials, and these are usually based on resistance to drilling penetration. Other condition terms, such as friable, powdery or crumbly may also be used.

Moisture content

For cohesive soils, the following code is used:

Table 5 Code for cohesive soils

SYMBOL	PLASTIC CONDITION	MOISTURE CONDITION
MC≈LL	Moisture content near the liquid limit	Moist to wet
MC<LL	Moisture content less than liquid limit	Moist to wet
MC>PL	Moisture content greater than plastic limit	Damp to moist
MC≈PL	Moisture content near the plastic limit	Damp to moist
MC<≈PL	Moisture content less than or equal to plastic limit	Dry to damp to moist
MC<PL	Moisture content less than plastic limit	Dry to damp
MC«PL	Moisture content much less than plastic limit	Dry

For cohesionless soils, the following code is used:

Table 6 Code for cohesionless soils

MOISTURE CONDITION	DEGREE OF SATURATION
Dry	0
Humid	1 to 25
Damp	25 to 50
Moist	50 to 75
Wet	75 to 99
Saturated	100

Cohesive consistency – Pocket penetrometer (PP)

The instrument is used in the field or the laboratory to provide approximate determination of unconfined compressive strength of cohesive soils. The values are recorded in kPa, as follows:

Table 7 Values for cohesive consistency

STRENGTH	SYMBOL	READINGS (kPa)
Very Soft	VS	<25
Soft	S	25 to 50
Firm	F	50 to 100
Stiff	St	100 to 200
Very Stiff	VSt	200 to 400
Hard	H	>400

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Appendix L

Architectural Design Statement – RArchitecture

MOUNT LOFTY GOLF ESTATE – DESIGN STATEMENT

INTRODUCTION

Mt Lofty Golf Estate was established in 1921. The founders imagined that their descendants would "build and rebuild the club as they like". They hoped only that it would "retain the friendly and social atmosphere for which The Mount Lofty Club is, and has been, so highly regarded"[1]. The Applicant's vision is to return the Stirling Golf Club to its original name; the Mt Lofty Golf Estate. The aim is to achieve this vision in time for the Club's centenary celebrations which commence in 2026.

This Design Statement outlines:

- The design philosophy,
- The evolution of the proposal (including options explored and discounted) from the initial concept to the final design with reference to the Design Review Panel process which the Applicant undertook,
- Site access,
- Servicing strategy, including emergency access,
- Building site selection,
- Built form and visual impact,
- Materiality,
- Landscaping, including the proposal's response to the unique landscape setting and any work in the public realm,
- Environmentally Sustainable Design,
- Universal/equitable access,
- Adaptive reuse of the Local Heritage Place – the Perfumery.

DESIGN PHILOSOPHY

The key objectives of the design philosophy are:

- Minimise impact to existing site topography
- Preserve and enhance native flora and fauna
- Preserve and enhance the original publicly accessible golf course
- Respect for Traditional Owners
- Reflect the history and character of the Adelaide Hills
- Optimise views
- Showcase environmentally sustainable design
- Showcase local produce
- Preserve and enhance local amenity
- Grow regional tourism and make a positive economic contribution

The design philosophy evolved from a detailed site analysis and investigations process. The consideration of topography, existing built form, flora and fauna, key view corridors and

[1] Cox, B., 1975, Out of the Rough, A history of the Mount Lofty Golf Club, Gillingham Printers Pty Ltd, Adelaide South Australia, pg 90.

environmental conditions informed the building's siting and design. Detailed site investigations were undertaken in relation to the existing trees, vegetation and waterways, with a 'retain and protect' approach employed. The resultant architecture aims to maximise the opportunities to integrate and merge the landscape into the built form and minimise the architectural response to the land.

The constraints and opportunities of the site informed the siting of buildings. Three potential locations were investigated as part of the initial site investigations which informed the site's location. Site selection was based on the following criteria:

- Topography
- Minimising view impacts from the Heysen Trail
- Distance to Mount George Conservation Park
- Availability and proximity to services
- Minimising visual impacts to residents on Golf Links Road
- Minimising functional impacts to the existing 18-hole Golf Course
- Minimising the need for removal of trees and vegetation - through application of advice sought from the Native Vegetation Council (NVC)
- Minimising cut and fill
- Minimising impacts to people and property in the event of a bushfire - through application of advice sought from the Country Fire Service (CFS)

DESIGN EVOLUTION

The proposed design has evolved considerably from the initial master planning proposals. It was initially proposed that the development would be a hotel while maintaining the existing golf pro-shop and clubhouse. This evolved with the building being in various positions. Eventually it was deemed most appropriate to locate the hotel closer to the existing buildings to provide better connections and easier site operation and management. The initial design approach was based on 'boxier' geometry. Through the design review process with the State Commission Assessment Panel (SCAP), a more organic and terraced building form was established to help the building sit more comfortably within the landscape.

The accommodation PODs went through a similar design process. The early locations for the PODs were considered to have a large impact on native vegetation and bushfire safety. In addition to this having the PODs located far away from the main building, although provided a unique experience from a user perspective, they were not suitable from a management and servicing perspective. Therefore, the current location was determined to be best i.e. close to the main hotel building while still having the character being amongst the trees and landscape. Once this location was established, the layout and number of PODs also went through various iterations to achieve an outcome that minimized the impact on native vegetation along with providing a safe and accessible accommodation in the event of a bushfire. The number of PODs was reduced from 20 to 17 as part of the design evolution.

The Applicant also took advantage of the opportunity to engage in the Design Review Panel (DRP) and Pre-lodgement Panel Process to assist in the evolution of the proposed development and gain formal agency feedback. Taking on board the Government Architect's feedback, the scale of the development and the design concept has evolved considerably since inception. A visual representation of the design's evolution throughout the design review process is provided overleaf.

The visual bulk and scale have been substantially reduced through the design's evolution. Materials selection and a reduction in the scale of the proposed buildings, played a large part in integrating the built form into its surroundings.

Following public exhibition of the proposed development, the project was amended as follows:

- Removal of the 17 accommodation pods and 1 service Pod, that previously were proposed to the west of the main Tourist Accommodation and Golf Club Facilities buildings.

- A reduction in the amount of native vegetation impacted from 1.716 hectares (ha) and 151 scattered trees to 0.757 ha and seven scattered trees. This equates to a reduction in the amount of native vegetation impacted of almost 1 ha and a 95% reduction in the amount of impacted scattered trees.
- Reconfiguration of Perfumery Gardens and Orchard to retain additional trees.
- Additional detail regarding externally lit areas, together with night-time imagery of the proposal.
- Relocation and additional car parking for staff, now accessible from Old Carey Gully Road, to reduce forecast daily traffic movements on Golflinks Road.

A new dedicated pedestrian trail adjacent Golflinks Road to increase pedestrian safety and separate cars from pedestrians.

The most recent design changes made in November 2024, in response to final comments received from the Government Architect's Office include:

1. Concealing Hotel carpark entry:

The hotel carpark entry has been relocated to not be visible from the arrival area. The access driveway has been relocated to be off the main driveway and is concealed behind a new landscaped mound.

2. Concealing Facilities vehicle entry:

The entry door to lower level carpark for guests & golfclub patrons has been relocated further up the main driveway instead of being in the public promenade. This change supports segregation of vehicles accessing the carpark from the hotel guest and public promenade and presents a more pedestrian focused plaza.

Services and staff carpark are now located on the upper deck which is accessible from a service driveway which is now concealed behind the Roof Terrace and associated sloped landscape.

3. Facilities carpark presentation:

Concrete and metal mesh previously proposed for the Facilities carpark has been substituted with timber fins and open sections in between. The façade has also been stepped along the terrace. The wall has been repositioned with more clearance to the main driveway to allow for additional tree planting. Ground levels have been readdressed to create opportunity for integrated and immersive landscape presentation.

Reimagining the carpark presentation to main arrival promenade has added a more human scale and presentation to the built form.

4. Roof Terrace design:

The roof terrace has been split into a lower terrace which now overlooks the arrival promenade and has direct access from inside the Facilities building as well as pedestrian access from tee box 1. The upper terrace is designed for more intimate gatherings and functions overlooking fairway 1 and visual connection to tree canopy to south. The upper terrace has now shifted away from arrival to reduce overall building mass and scale-down the built form. In addition to this the detail for lower terrace balustrade has be redesigned to reduce overall wall height.

The upper terrace adopts the level difference created by head clearances required for services vehicles at loading dock.

5. Re-arranging internal spaces & façade activation:

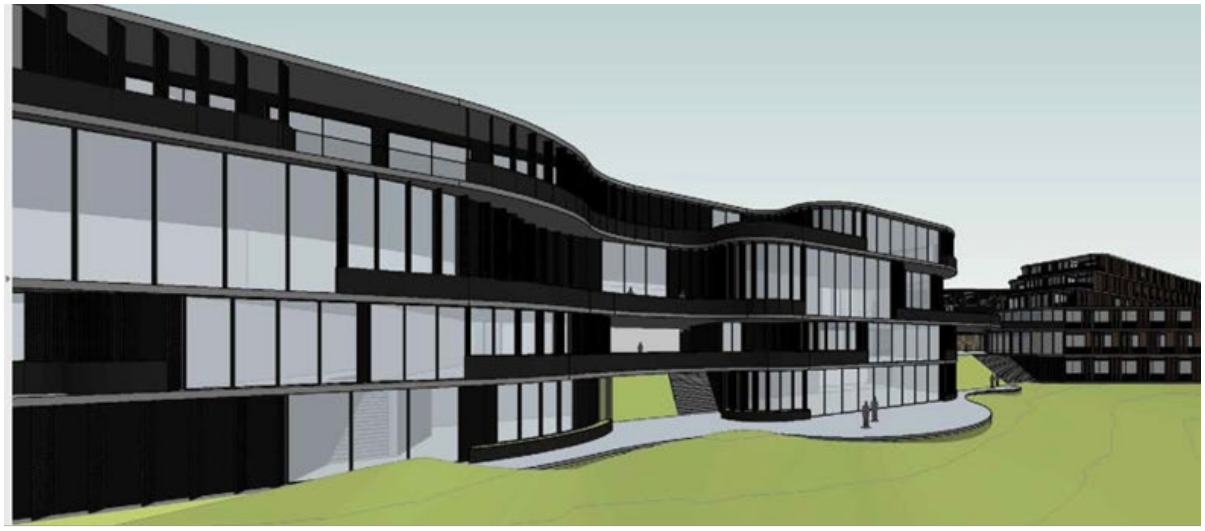
Back of house spaces in the facilities building have been re-arranged to suit functionality and activation of façade. This re-arrangement of internal spaces in the facilities building now provides staff with glazed windows overlooking the public promenade which also result in better work environment, as well as activation of the building façade. The eastern façade of the building facing tee box 1 is proposed to have Mount Lofty Golf Club logo etched into the wall to create a backdrop at the 1st tee.

6. Topography to built-form connection:

The overall approach to site wide planning such as segregation of vehicles from pedestrians, services vehicles vs guest arrival point and walkable connections within the main hotel / facilities / golf precinct as well as design details and finishes such as the facilities carpark wall height, timber fins, earth mounds and landscape integration, have established a more seamless connection between topography and built-form; one that is welcoming and encourages public engagement.

Imagery of the design's evolution are provided below:

EARLIER DESIGN ITERATIONS:



EARLIER DESIGN ITERATIONS:

CURRENT DESIGN:

A Design Process Report is provided at **Attachment A**. This report provides additional detail of the design intent and progression that brought about the design's most recent evolution. These changes were in response to final comments received from the Government Architect's Office for Design and Architecture dated 19 July 2024.

BUILT FORM AND SITE SELECTION

The proposal utilises location of the existing golf club and car parks. In its current form, the site is already highly modified comprising the golf course and golf club buildings and car parking areas. The use of this area minimises the impact on the surrounding landscape and vegetation, along with benefiting from the existing site cuts and benching.

The built form has an organic appearance, with curved building forms complimenting the dynamic nature of the site's topography. As the building rises it steps back and twists to create a more interesting visual appearance, along with orientating the building to the various panoramic views of the site and to the northern aspect.

The built form is intentionally split into two for a few reasons. The first to create a unique arrival experience with a larger central courtyard and pedestrian promenade. The gap between the buildings gives people a glimpse of the landscape beyond. Only until you enter the building and are met with a wall of glass do you get the full impact of the impressive landscape.

The other benefit of the separation is to create clear separation of uses. People staying at the hotel have clear separation from the golf club. These are still linked at the lower ground level to allow for functional management and services of the development.

This break in built form also provides some relief when viewing the building from across the site. It was important that the vegetation and canopies of the trees where visible behind and between the buildings.

The building also steps back as it gets taller, maintaining a 3-4 storey form as it terraces back towards Golf Links Road with the steep topography. The buildings form nestles into the landscape and topography rather than appear as though it was dropped onto the site.

The site of the proposed development was chosen because:

- It utilises the existing 'pad' where the clubrooms are located, minimising the need for significant cut and fill
- It designs with the sites unique topography by stepping the building form, and
- It can connect to existing services (with some upgrades), and
- It minimises the potential for impacts to views from external vantage points by locating the buildings centrally within the site and at a low point of the site, and
- Minimises impacts to the function of the golf course through utilising the area presently occupied by the existing golf club buildings, and
- Is located away from Mount George Conservation Park.

BUILT FORM AND VISUAL IMPACT

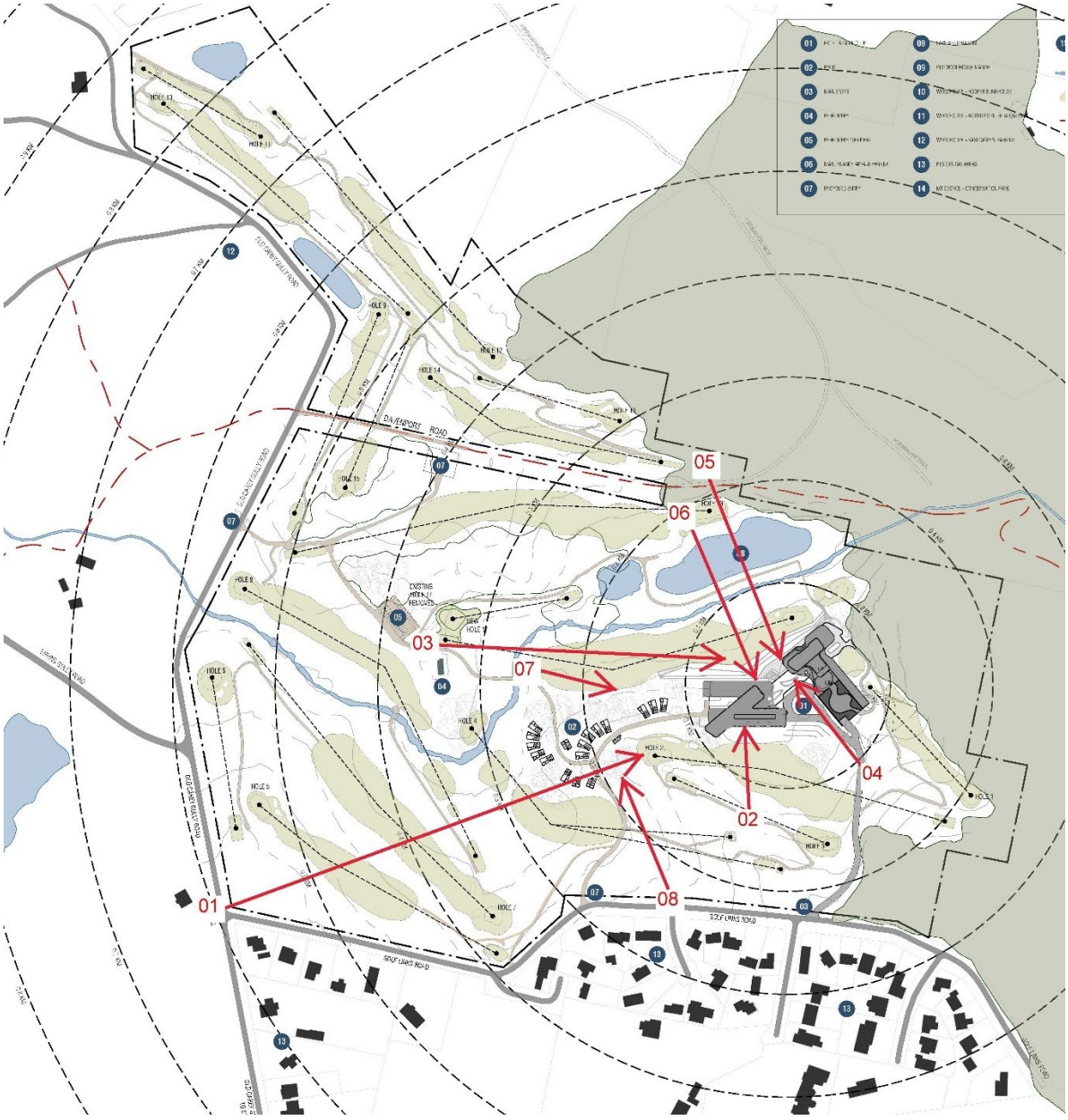
Given the location of the proposal being in the Mt Lofty Ranges, it required a bespoke approach to siting, design and architecture, which responded to the scenic and natural character of the area. The proposed design sought to achieve this through:

- High quality design complementary to the locality,
- Maximises views to and from the site,
- Architectural form and materiality which responds to its natural surroundings,
- Building scale which responds to the site's peri-urban and highly accessible context.

The design and its evolution as described in this design statement achieves the above. This assists in minimising the visual impact of the proposed development. Of note also, is the existing condition of the site, it is a highly modified landscape, and has been as such for at least the least 50 years. The appearance of the land is in contrast to the nearby residential properties on Golflinks Road and the densely vegetated natural landscape of the Mount George Conservation Park. Manmade structures are anticipated in association with a golf course. To this extent, a member of the general public would expect to see built form associated with the golf course, in this location, as has occurred for many years at this site.

The following views have been analysed of the proposed built form, to detail how it will sit visually in the landscape and the level of visual impact post development.

VIEWING ANGLES



This visual impact analysis was based on the following criteria:

1. Whether the view is from an external or internal vantage points, the following scale was applied: 2 – external view point, 1 – internal view point.
2. How different the view is post development compared to pre-development, the following scale was applied: 3 – very different, 2 – somewhat different, 1 – not very different, 0 - barely visible.

The higher the rating, the greater the post development visual impact, for example:

- **1 - low impact**
- **2 – low to medium impact**
- **3 – medium impact**
- **4 – medium to high impact**
- **5 – high impact**

VIEW 01

This view is from Old Carey Gully Road and Golflinks Road, it is external from the site (2) and the post development view is barely visible (0) = total visual impact = (2) – **low to medium visual impact**

VIEW 02

This view is from well within the site, approximately 130m away from the nearest residential propoerty at Golflinks Road. It demonstrates the topography of the site and the siting of the built form at low point of the land. It is an internal view (1) and the view is somewhat different (2) given that from this vantage point would have always contained the built form of the existing golf club buildings = total visual impact = 3 – **medium impact.**

VIEW 03

This view is internal to the site (1). It is of the 18th hole towards the facilities building and new clubrooms. In the existing this view provides important visual relief, common to Golf Courses around the world, whereby the end of the course is in sight. This view demonstrates the buildings materiality in action and how it assists in blending it into its landscape context. The view is somewhat different (2) given that from this vantage point, a golfer would always be able to see the built form of the golf club buildings = total visual impact = 3 **– medium impact.**

VIEW 04

View 04 is internal to the site (1). It was the architects intention to create a sense of arrival at this location. The split in the built form at this view point provides visual relief and provides a strong visual

link through to Mt George. This view is somewhat different (2). The total visual impact from View 04 is 3 - **medium impact.**

VIEW 05

This view is internal to the site (1), as the Heysen Trail traverses the site in this location. The visual impact from this vantage point is very different (3). Retention of established trees assists in mitigating the extent of visual impact of the development from this view. It is not uncommon that man-made structures are visible from the Heysen Trail given its expansive length and diverse terrain. A walker on the Heysen Trail would have always viewed built form from this location, albeit that the scale has now changed. The total visual impact from View 05 is 4 **– medium to high impact.**

VIEW 06

As with View 05, this view is internal to the site (1) and the visual impact from this vantage point is very different (3). The impacts stated in View 05 are the same as View 06. The total visual impact from View 06 is 4 **– medium to high impact.**

VIEW 07

View 07 is internal to the site (1). It is not very different when compared to existing (2). The use of materials, the scale of the PODs and their orientation assists in mitigating visual impacts from this view point. Total visual impact = 2 **- low to medium impact**

VIEW 08

View 08 is external to the site (2). The development is barely visible from this view (2). The siting of the PODs, the use of materials natural toned materials and their scale assists in mitigating visual impacts from this view point. Total visual impact = 2 **- low to medium impact**

The cumulative visual impact arising from the development is 3 - **medium impact**. This was based on an average of the impacts from each view point, as follows:

- View 01 = 2 – **low to medium visual impact**
- View 02 = 3 – **medium impact**
- View 03 = 3 – **medium impact**
- View 04 = 3 – **medium impact**
- View 05 = 4 – **medium to high impact**
- View 06 = 4 – **medium to high impact**
- View 07 = 2 – **low to medium impact**
- View 08 = 2 – **low to medium impact**

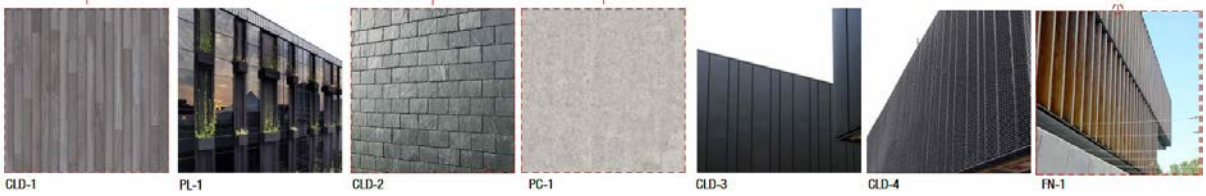
Total visual impact (based on an average of the above) = 3 - **medium impact**

The cumulative visual impact is **medium.** A degree of visual impact is anticipated in a development of this scale. The architectural response sought to minimise visual impacts through:

- Choice of materials, the use of timber cladding, curved precast concrete and slate cladding respond to the sites natural surroundings,
- Breaking up the building form into two parts to provide visual relief and provide a landscaped backdrop,
- Designing with the sites topography to minimise views of the building form from external vantage points, and
- Optimise views from within the site from the accommodation and golf course to create a high amenity accommodation and golfing experience.

MATERIALITY

The chosen materials palette is depicted below. The use of timber cladding, curved precast concrete and slate cladding were key shifts in the design evolution which responded to the sites natural surroundings. The façade is intended to patina over time, allowing it to settle into its landscape context. Exposed concrete, complimented with black metal accents provide a sleek and modern appearance juxtaposed against the softness of the timber cladding.



MATERIALS & FINISHED SCHEDULE

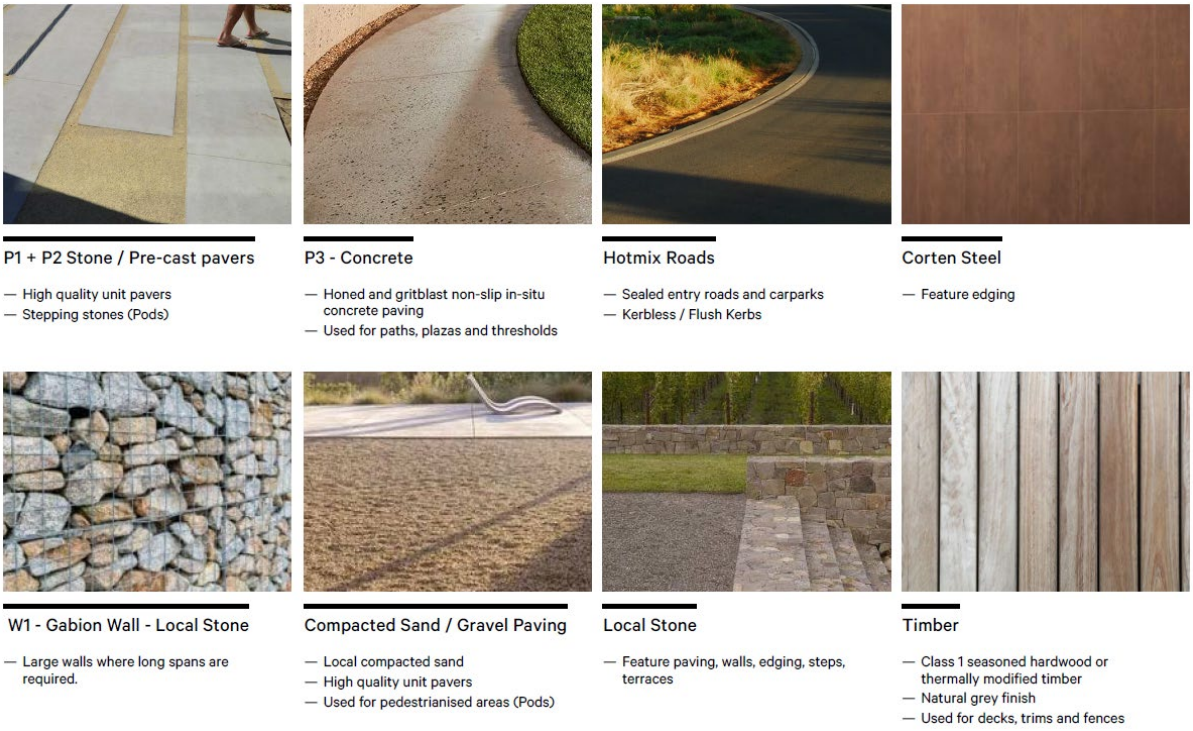
WALLS	CON-1: INSITU CONCRETE SLAB EDGE AND WALLS COLOUR: NATURAL CONCRETE PC-1: CURVED PRECASTE CONCRETE PANELS COLOUR: NATURAL CONCRETE PC-2: PRECASTE CONCRETE PANELS COLOUR: NATURAL CONCRETE CLD-1: TIMBER CLADDING - MORTLOCK TRENDPLANK SHIPLAP CLADDING SPECIES: PACIFIC TEAK - BAL-19 COMPLIANT (OR EQUIVALENT) CLEAR OILED FINISH TO WHEATHER CLD-2: SLATE SHINGLE CLADDING. COLOUR: NATRUAL FINISH CLD-3: PANALISED METAL CLADDING. 300MM INTERLOCKING PROFILE COLOUR: COLORBOND NIGHT SKY (BLACK OR EQUIVALENT) CLD-4: PERFORATED METAL CLADDING. COLOUR: COLORBOND NIGHT SKY (BLACK OR EQUIVALENT)
RAISED PLANTERS	PL-1: PREFABRICATED ALUMINIUM PLANTER WITH WIRE TERLLIS COLOUR: COLORBOND NIGHT SKY (BLACK OR EQUIVALENT)
BALUSTRADE	BAL-1: STEEL BLADE BALUSTRADE COLOUR: COLORBOND NIGHT SKY (BLACK OR EQUIVALENT)
WINDOWS	POWDERCOAT ALUMINIUM FRAME WINDOWS WITH GLAZING. COLOUR: BLACK (OR SIMILAR)
DOORS	CARPARK DOORS: PERFORATED METAL SECTIONAL GARAGE DOORS COLOUR: COLORBOND NIGHT SKY- BLACK (OR SIMILAR)

FINISHES LEGEND

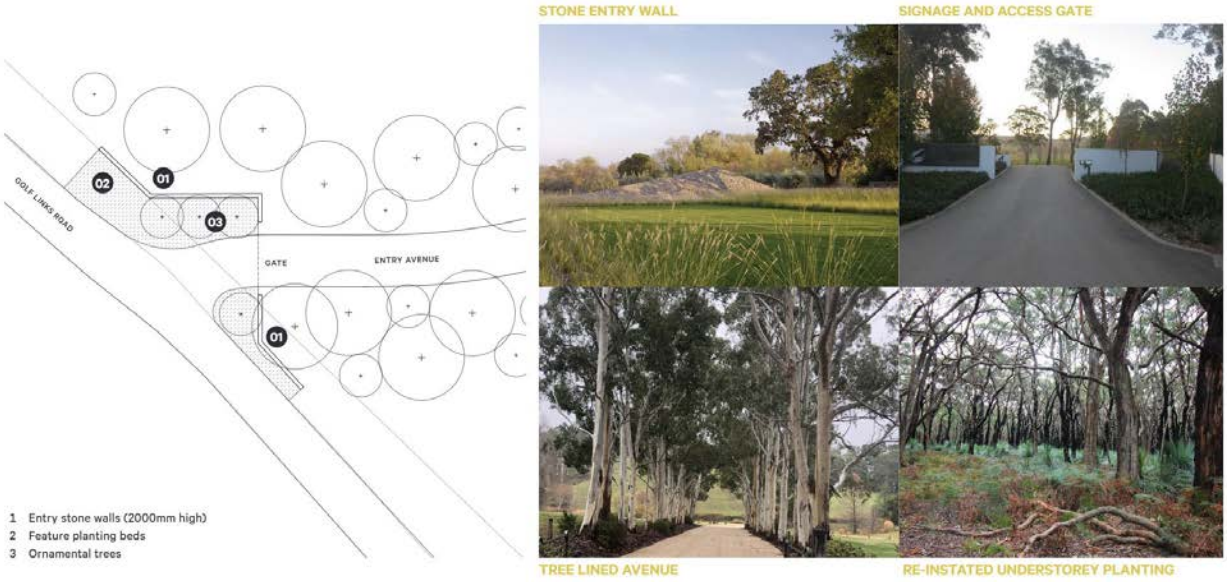
CON-1	INSITU CONCRETE FINISH
CLD-1	TIMBER CLADING
CLD-2	NATURAL SLATE CLADDING
CLD-3	METAL PANALISED CLADDING
CLD-4	PERFORATED METAL CLADDING
FN-1	TIMBER LAMANITED FINS
WN-1	POWDERCOATED ALUMINIUM WINDOWS
PL-1	PREFABRICATED METAL PLANTER WITH TRELLIS
BAL-1	METAL BLADE BALUSTRADE

LANDSCAPE

Local Landscape Architects, Oxigen, undertook the landscape design for the site. The approach focuses on re-establishing the site's tree canopy and increasing the site's green credentials through the application of distinct landscape typologies. The middle and under-storey canopies are re-established under the existing native tree canopy. Blackberries, gorse and other weed species are removed. The new native planting comprises species native to the Adelaide Hills region with an emphasis on wattles, bottlebrush and correa comprising yellow and red winter and early summer flowerings. Whenever possible, the existing forest of Manna Gum and Stringybark are retained. Particular care is taken to preserve views to Mt George and to position the new built form so to reduce the impact on views from the Heysen Trail. The choice of materials reflects the desire to blend the building with its surroundings. The following extracts from the landscape design strategy detail approach to planting, site design and materiality.



Source: Oxigen

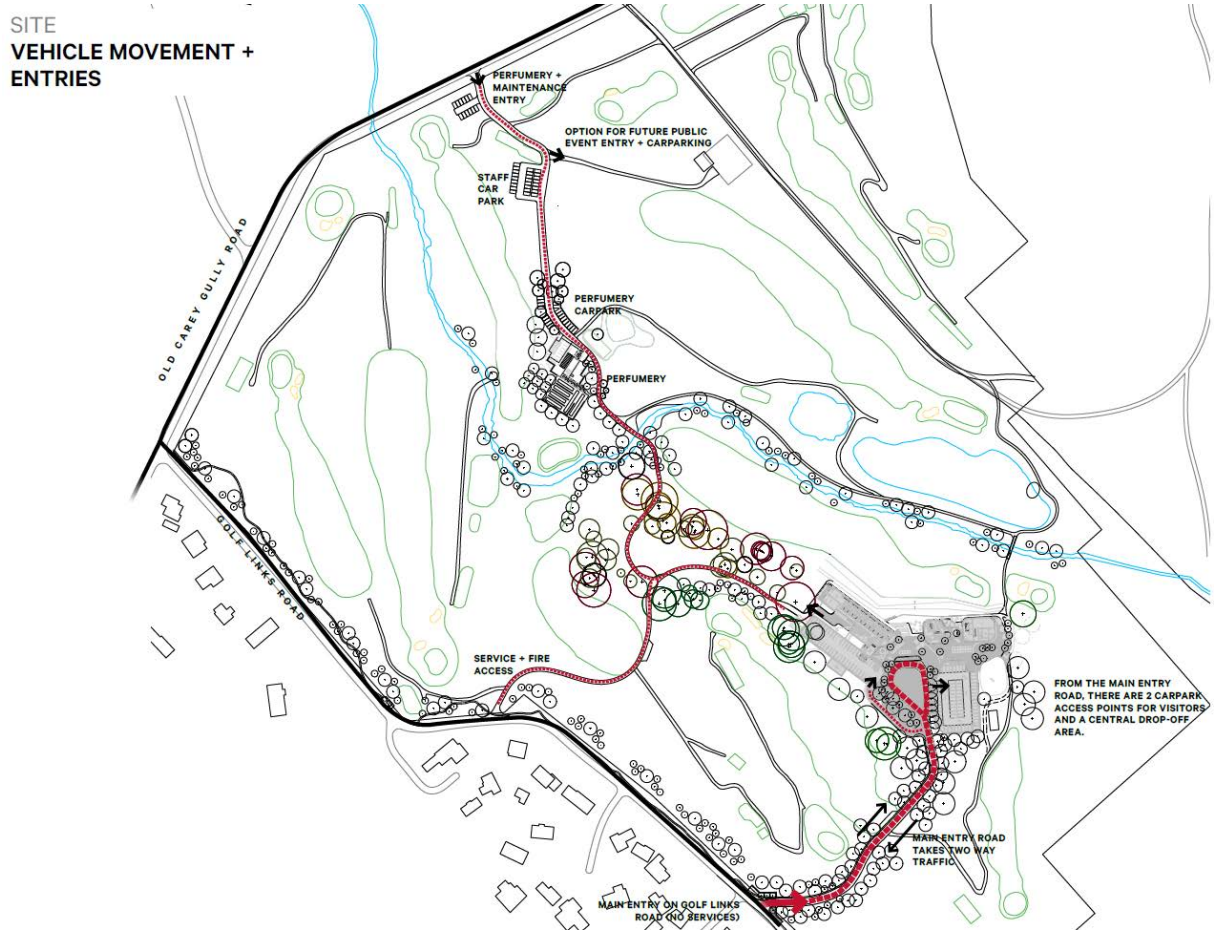


Source: Oxigen

SITE ACCESS

The design proposes to upgrade the existing infrastructure and utilise the existing points of access where possible. Additional site access has been proposed to Golf Links road which is to be used for emergency access and egress. Not for regular day to day use. There is also existing access via Old Carey Gully Road which is to be upgraded for vehicular access. This connects to the proposed parking adjacent to the refurbished heritage building. The existing network of pathways are to be upgraded to comply with vehicle and fire truck access and circulation.

Services/maintenance and delivery vehicles will use the main access. There is a loading bay and circulation provided from this point that links to all aspects of the building.



Source: Oxigen

ENVIRONMENTALLY SUSTAINABILITY DESIGN

A key driver in the project was to showcase environmentally sustainable design. From design inception ESD initiatives were integrated into the architecture to reduce the development's impact on the environment in both construction and operation. These ESD initiatives were derived using computer building simulation design techniques so that the sustainability performance of the built form could be assessed.

The architectural response to ESD is:

- Buildings oriented toward the north which captures free heating from the winter sun with external shade elements and balconies used to provide shade protection from the summer sun, reducing the reliance on active climate control techniques.
- Facade shading elements and glazing specifications have been selected by energy performance modelling and computer simulation techniques.
- A tailored approach has been taken regarding facade glazing. Solar heat gain coefficients have been optimised for each building type to ensure a balance between summer and winter temperature regulating.
- Air leakage pressure testing will be conducted on the external facade to ensure ideal air leakage rates, significantly reducing air conditioning energy consumption.
- Installation of a green roof, facade planters and extensive landscaping will provide a passive cooling effect from water transpiration and act as a barrier
- Completely electrified energy system with no fossil fuels or natural gas required.

- Installation of 300 solar voltaic panels on the rooftop at 330W per panel, providing 20% of the total energy requirement of the building.

Additional sustainable practices will be incorporated in the hiring or local labour and materials as well as selecting recycled materials and highly efficient water and electrical fittings.

The confluence of these actions and practices reduce the energy consumption of the proposal by 24% (and the carbon emissions from energy use by 18%) when compared to a reference study from the National Construction Code (DSquared, 2022).

UNIVERSAL ACCESS

The proposal has been designed to provide universal / equitable access where possible. Upon arrival by vehicle, people are able to move throughout the ground floor freely with a large pedestrian concourse proposed to link the variety of amenities provided on this level. Lifts have been provided in various locations to allow for safe access to all other levels of the buildings.

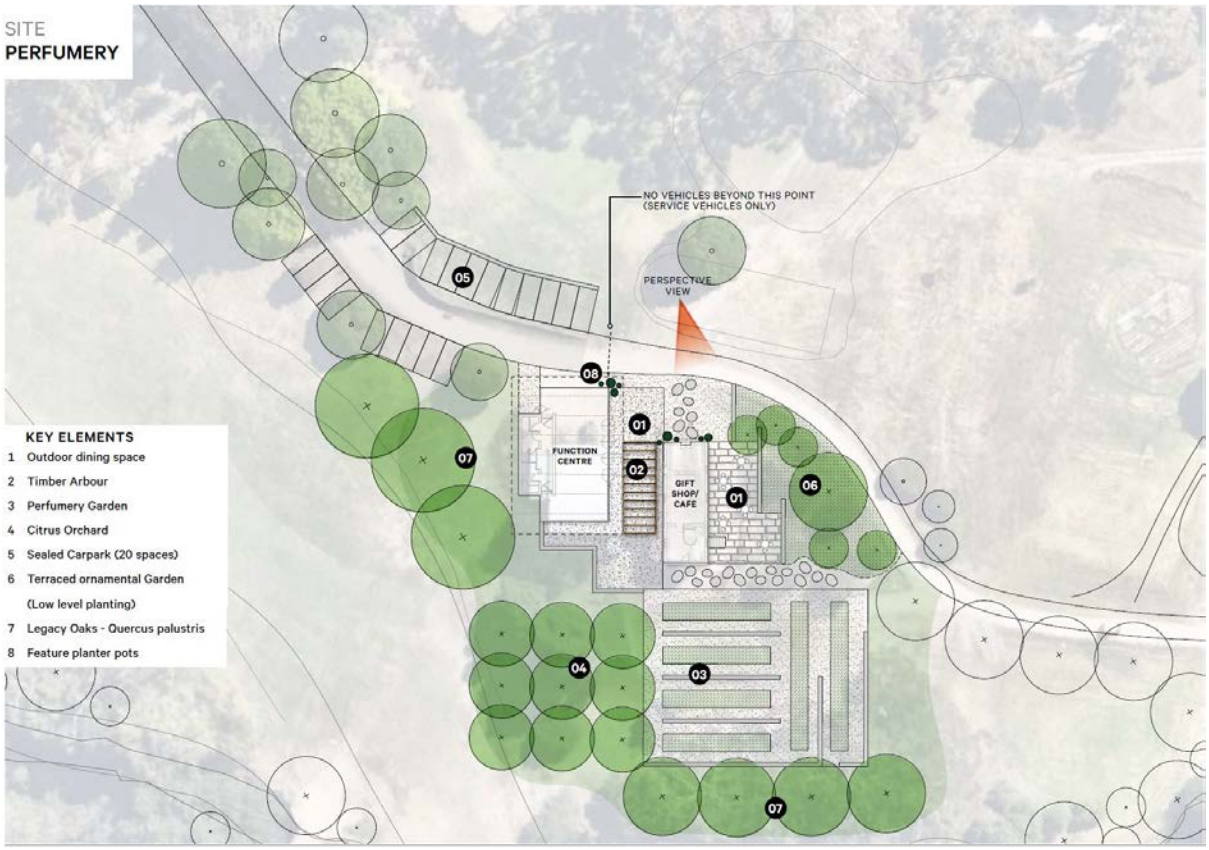
Due to the steep sloping nature of the site – compliant ramps are generally not possible due to the existing gradients. Golf Carts will be readily for people to move throughout the site – linking the proposed perfumery, PODs and main building areas.

ADAPTIVE REUSE OF THE LOCAL HERITAGE PERFUMERY

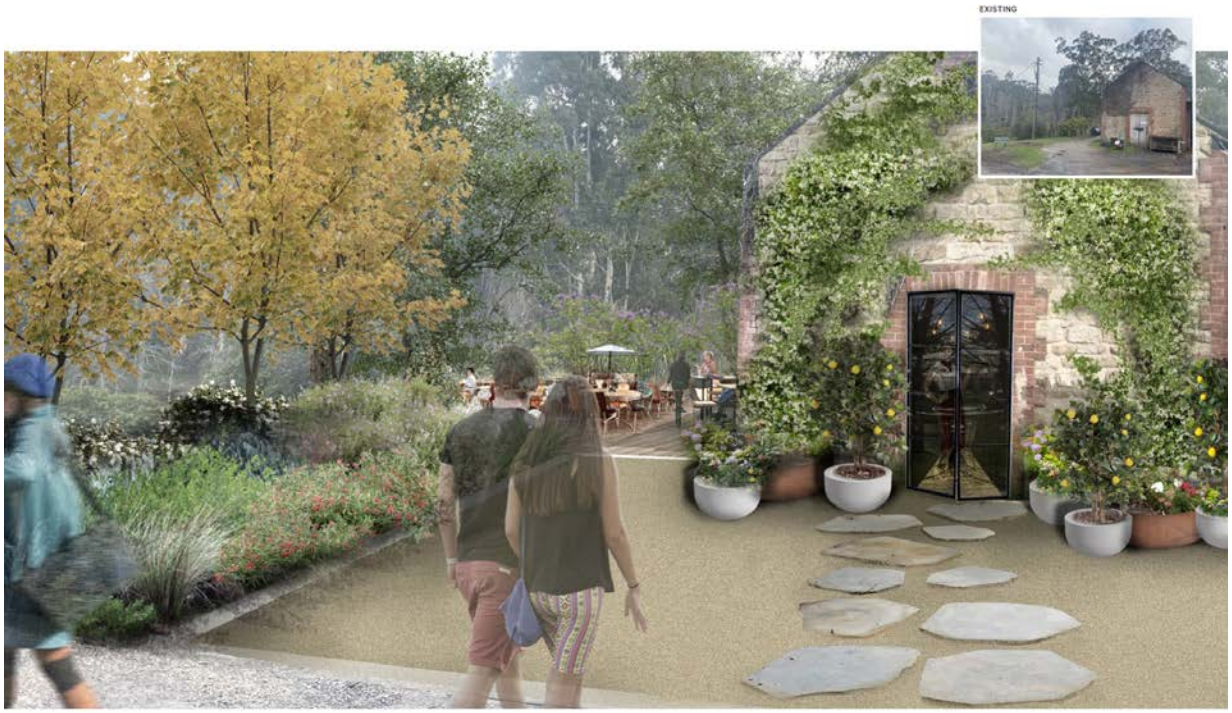
The design intent for the perfumery is to restore the existing heritage building to its original state (or as close as possible). The building is to be refurbished with a new modern structure to sit adjacent providing additional amenity and dining spaces. The materiality will consist of mainly glass and metal to provide a contrast and clear modern addition to the existing stone building. The intent is to have modern pavilion in juxtaposition, providing a clear timeline of architectural styles. The new pavilion will be looked to touch lightly on the ground. The interior of the heritage building is to have minimal work done to showcase the stone structure and exposed timber trusses. There is existing power and water provided to the building. As this is currently used as the site maintenance building and office.

Oxigen Landscape Architects proposed reinforcing the historical ties to the use of the Perfumery building in the adjacent landscape design. A scent garden, tree orchard and potential outdoor seating provide opportunities to enjoy the adaptive reuse of the Local Heritage Place.

Source: RArchitecture

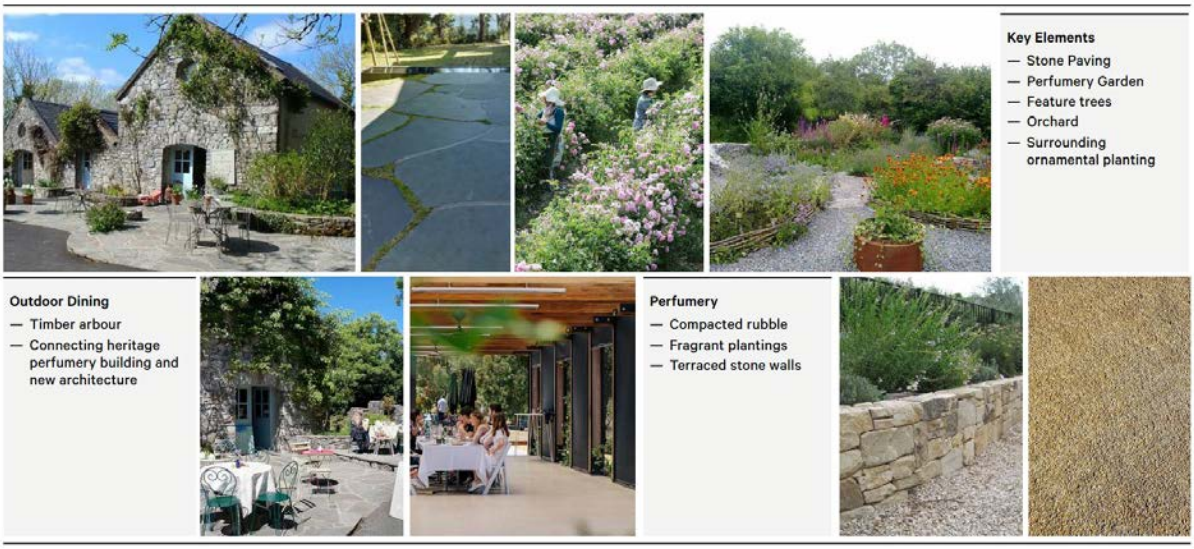


Source: Oxigen



Source: Oxigen

PERFUMERY
ELEMENTS + MATERIALS



Source: Oxigen

Attachment A - Design Process Report

MOUNT LOFTY GOLF ESTATE

DESIGN PROCESS REPORT

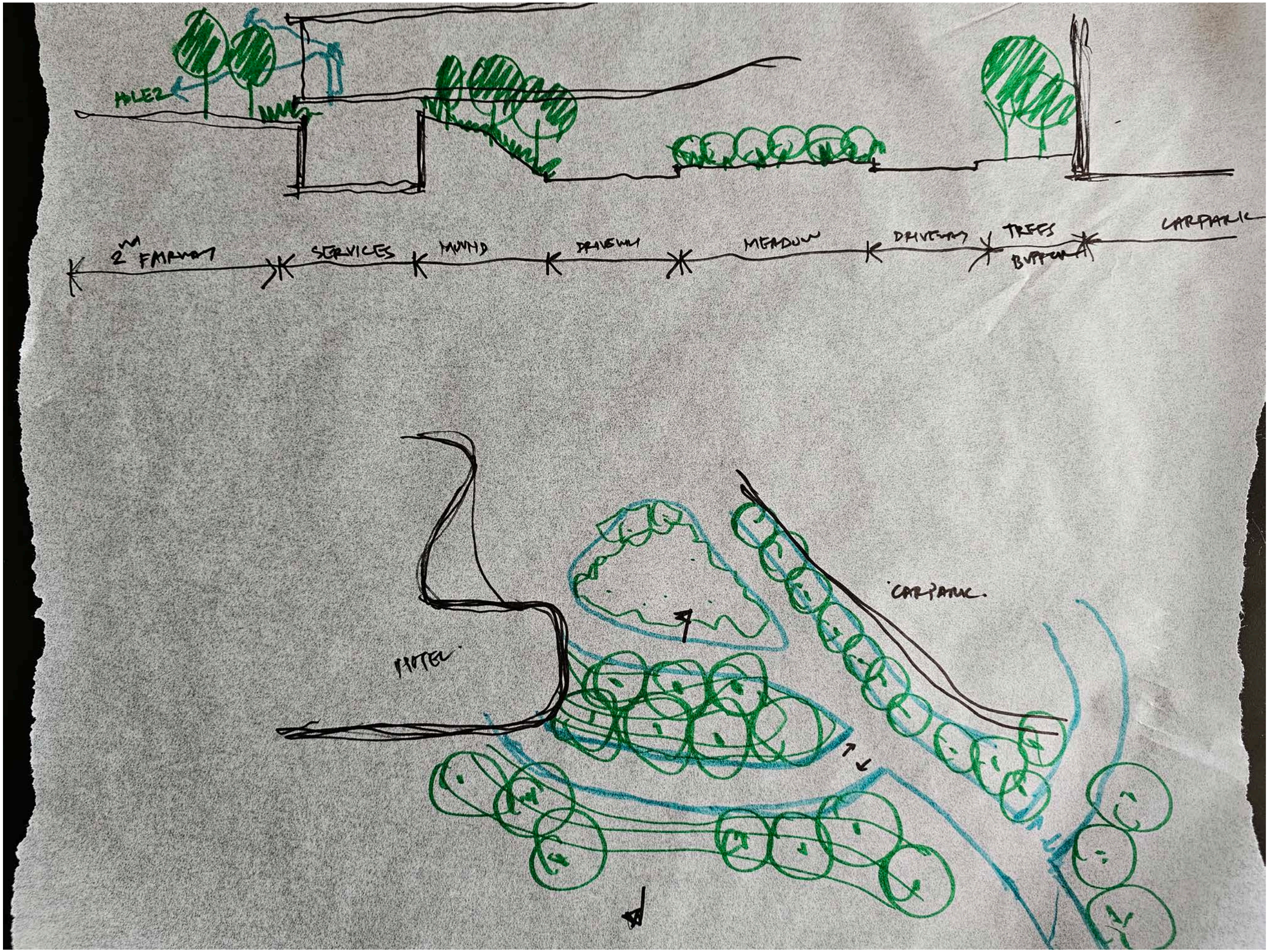
R ARCHITECTURE

30/10/24

2

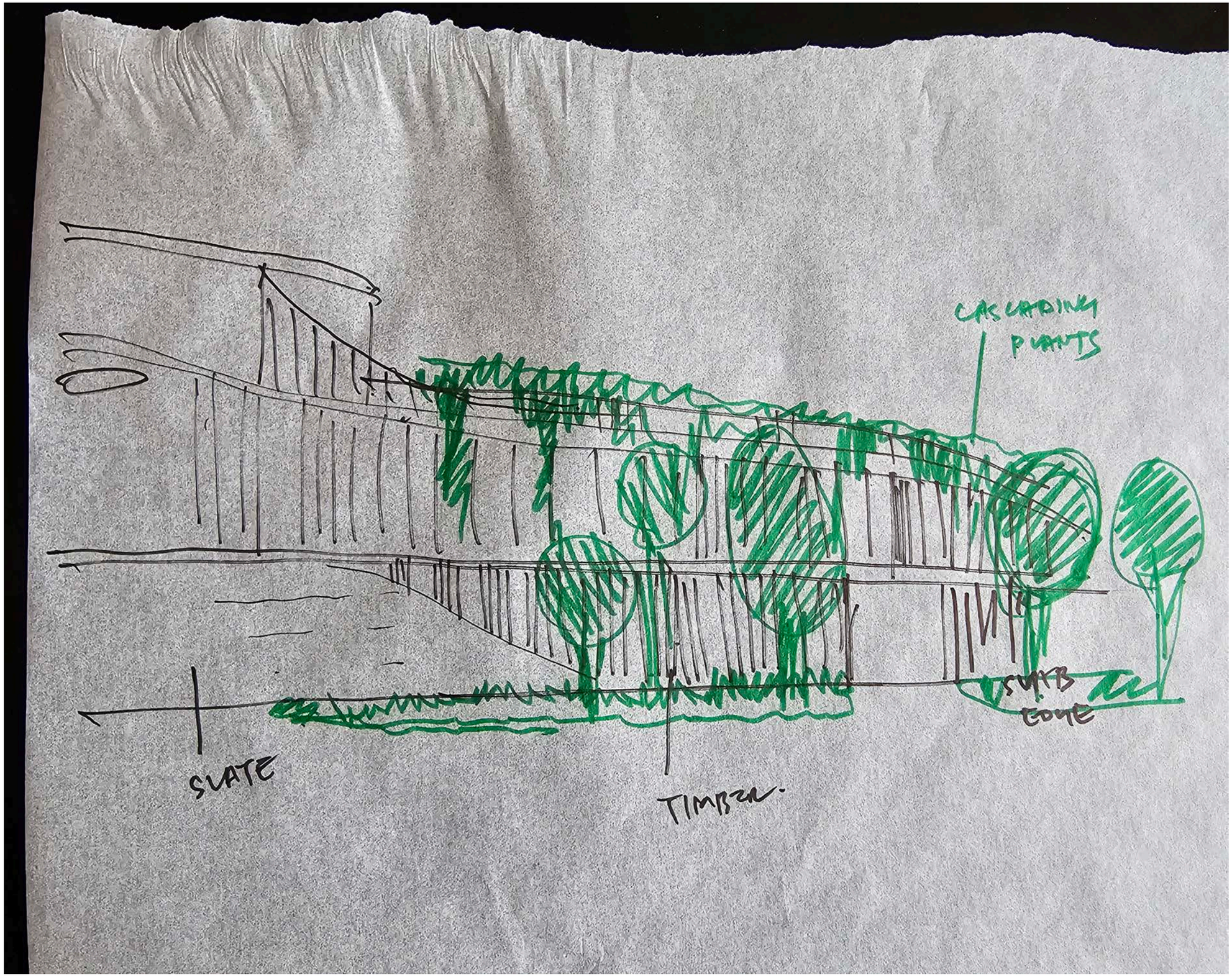
HOTEL DRIVEWAY ACCESS CONCEPT

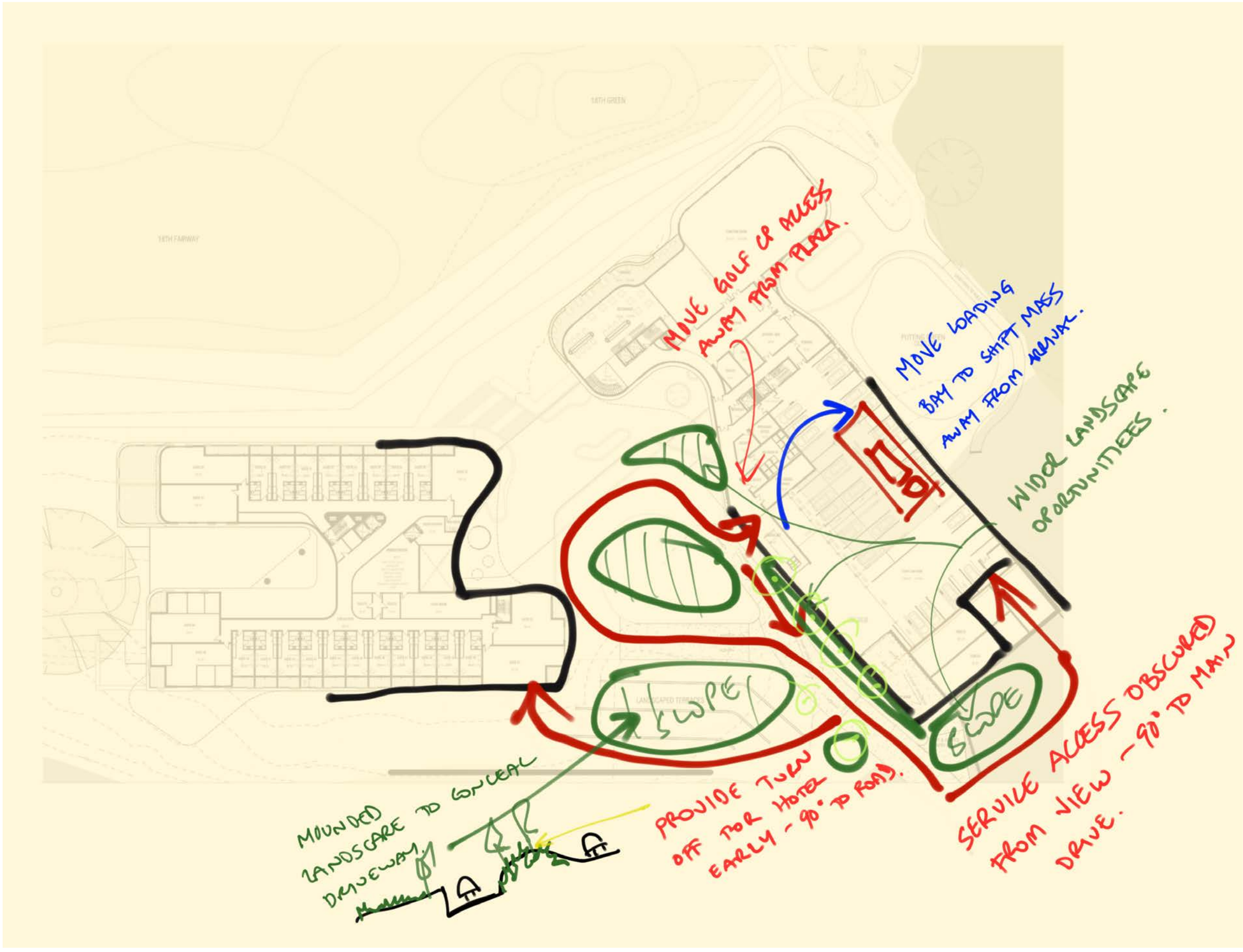
MOUNDED GARDEN



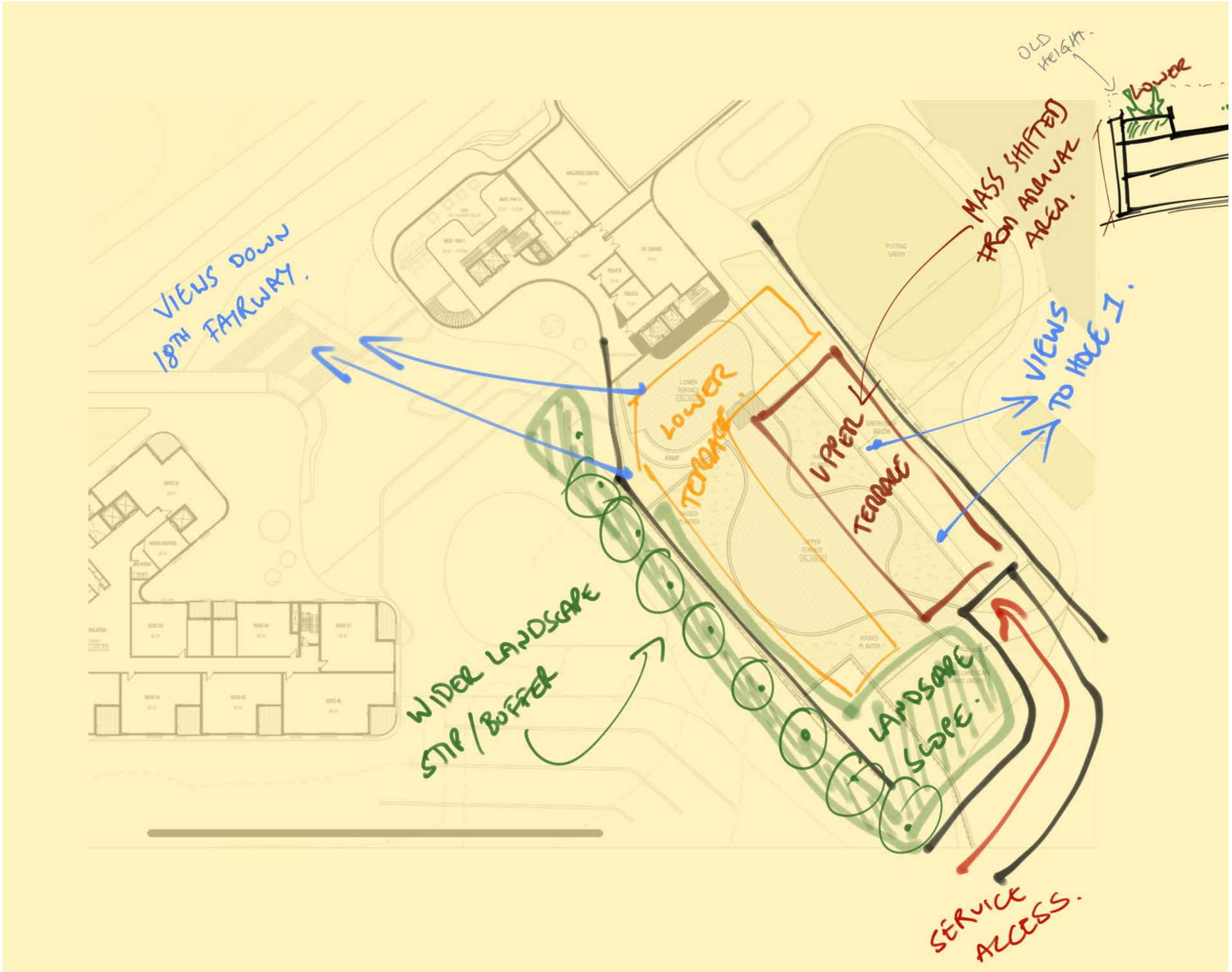
R ARCHITECTURE

MOUNT LOFTY GOLF ESTATE
DESIGN PROCESS REPORT
23/10/2024


CASCADING PLANTS
SLATE
TIMBER
SLATE EDGE


MOVE GOLF CP AWAY FROM PLAZA.
MOVE LOADING BAY TO SHIFT MASS AWAY FROM ARRIVAL.
WIDE LANDSCAPE OPPORTUNITIES.
SLOPE
SLOPE
MOUNDED LANDSCAPE TO CONCEAL DRIVEWAY.
PROVIDE TURN OFF FOR HOTEL EARLY - 90° TO ROAD.
SERVICE ACCESS OBSCURED FROM VIEW - 90° TO MAIN DRIVE.

TERRACE CONCEPT SKETCHES

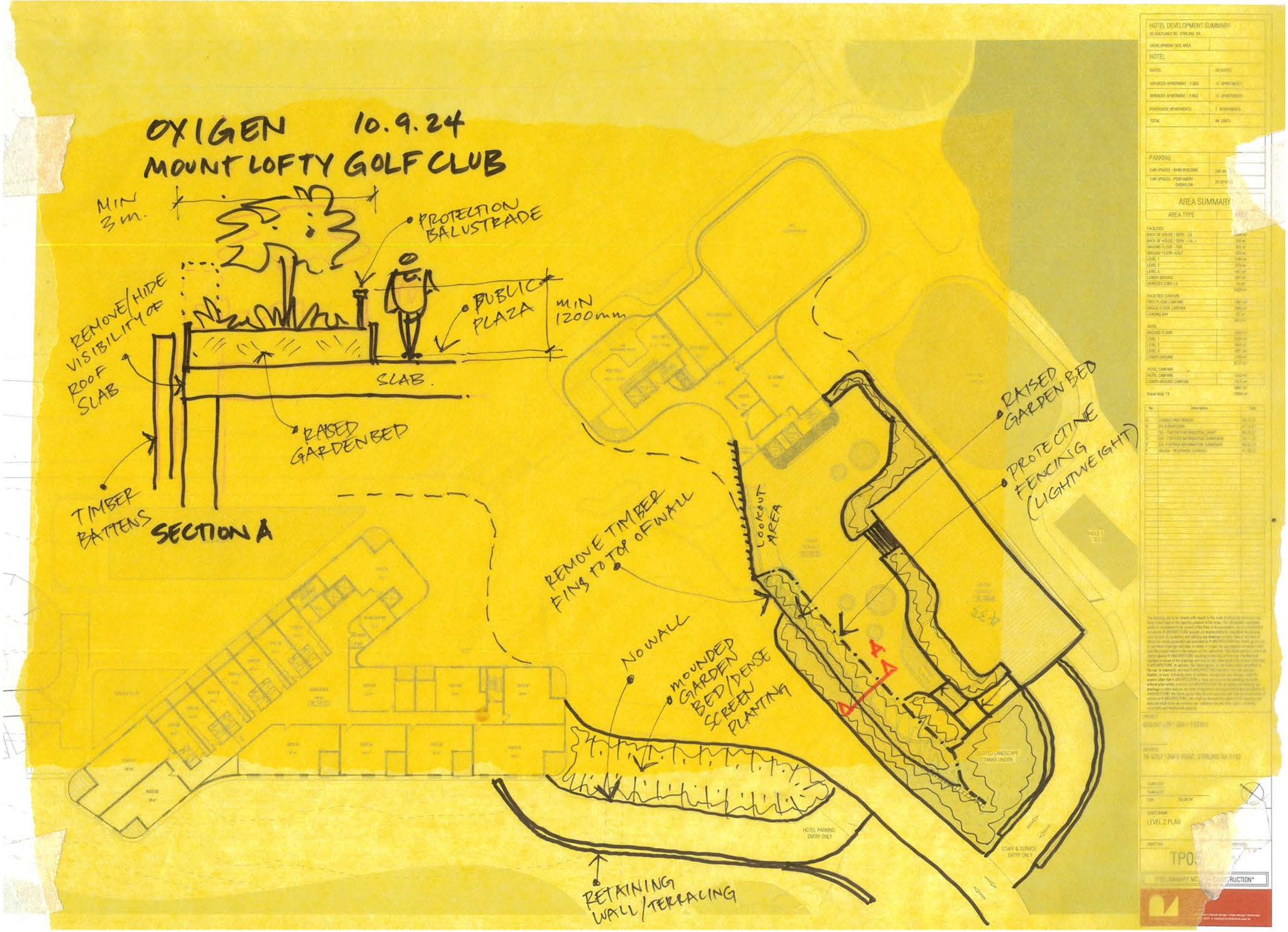


R ARCHITECTURE

6

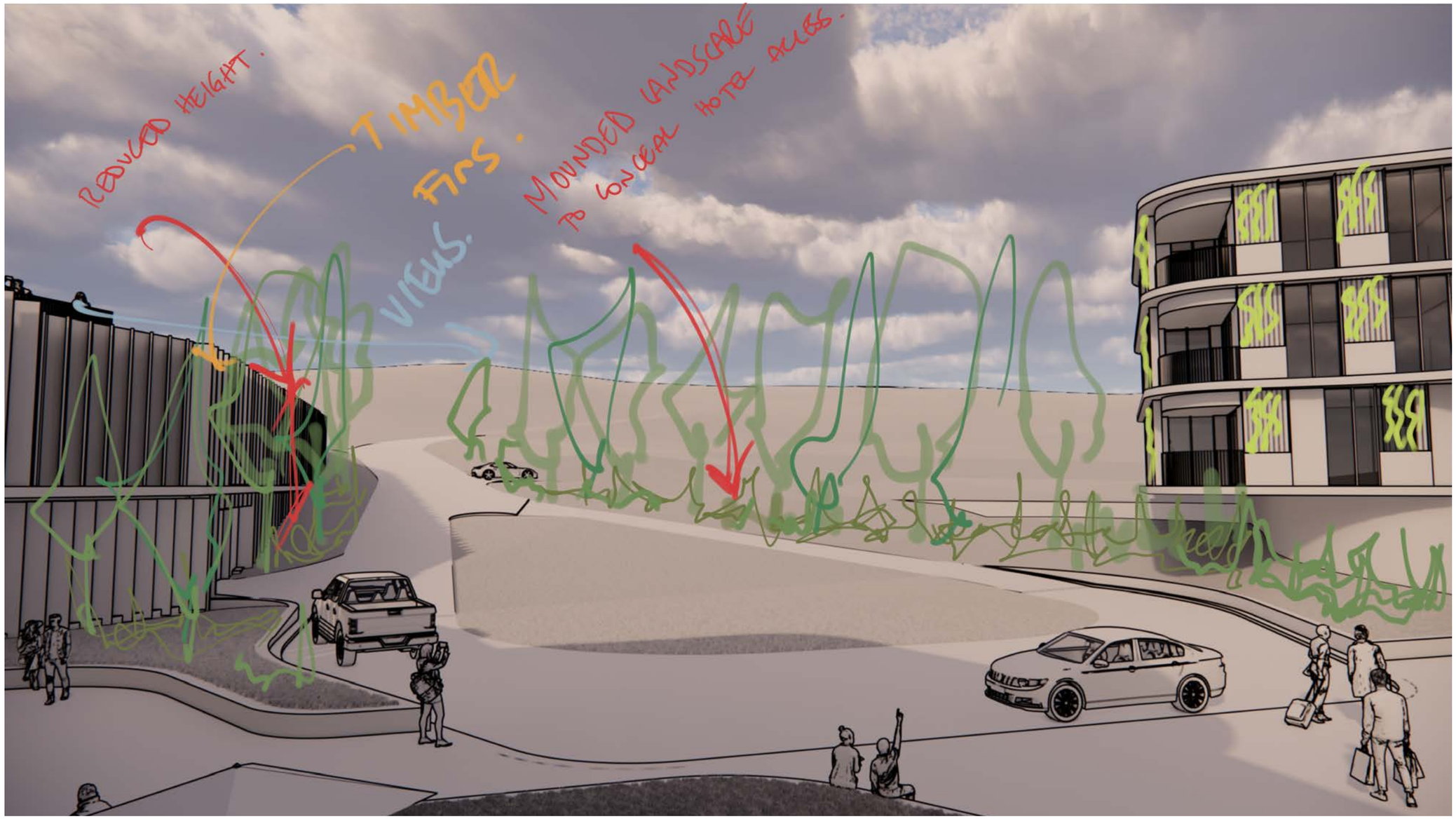
CARPARK INTERFACE DETAIL

OXIGEN - BALUSTRADE / PLANTER DTAIL



R ARCHITECTURE


REDUCED HEIGHT.
SHIFTED UPPER TERRACE.
VIEWS
VIEWS
LOW LEVELED ACCESS
WIDER LANDSCAPE STRIP.
CONCEALD ACCESS



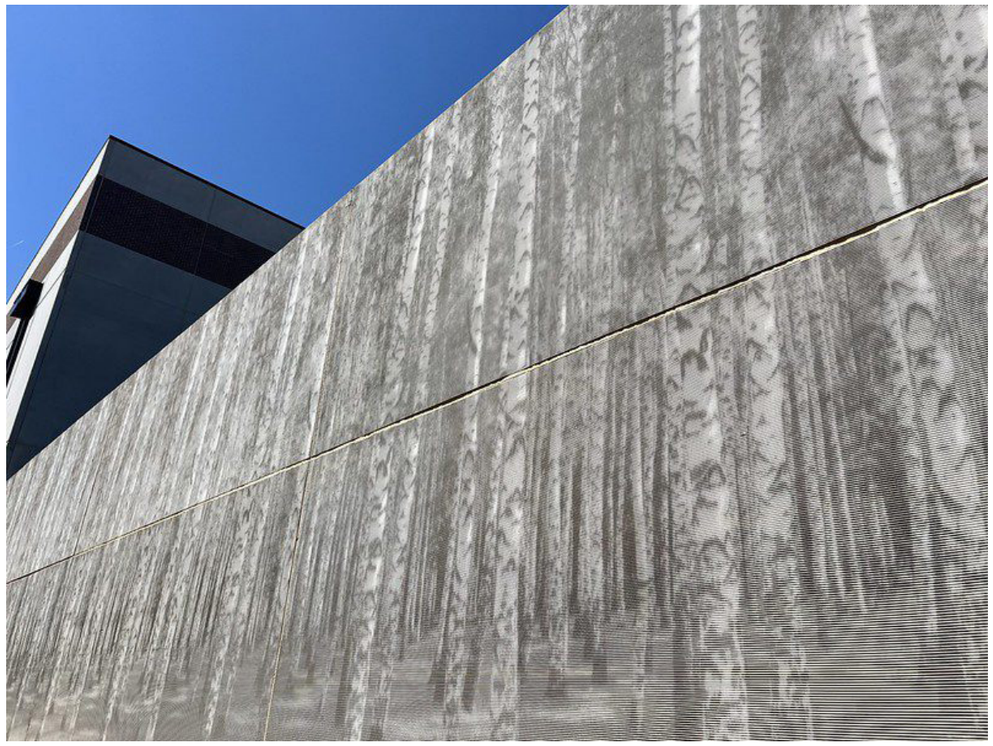
R ARCHITECTURE

MATERIAL CHANGES 09

TIMBER FINS

R ARCHITECTURE

MOUNT LOFTY
Golf Estate



R ARCHITECTURE

Appendix M

Native Vegetation Clearance Report - Succession Ecology

succession ecology

Native Vegetation Clearance

Mount Lofty Golf Estate

Data Report

Clearance under the *Native Vegetation Regulations 2017*

20 December 2024

Prepared by Dr C. E. Timothy Paine, Rachael Coggan, and Luisa Gonzalez

Document Specification

Client:	URPS
Client contact:	Chelsea Jurek
Client email:	cjurek@urps.com.au
Succession Ecology contact:	Dr C. E. Timothy Paine
Succession Ecology email:	tim@successionecology.com.au
Prepared by:	Luisa Gonzalez, Rachael Coggan and Dr C.E. Timothy Paine
Document #:	ES0324-03
Citation:	Succession Ecology (2024). Native Vegetation Clearance Mount Lofty Golf Estate Data Report. Succession Ecology report ES0324-03, prepared for URPS.

DOCUMENT HISTORY

Version	Issue Date	Prepared By	Reviewed By	Status
1	24/03/2024	Luisa Gonzalez and Rachael Coggan	Dr. Briony Horner and Doreen Marchesan	Draft
2	26/03/2024	Luisa Gonzalez and Abhishek Gopalakrishnan	Dr. Briony Horner	Draft
3	02/04/2024	Luisa Gonzalez	Dr. Briony Horner	Final
4	19/12/2024	Dr C. E. Timothy Paine	Dr C. E. Timothy Paine	Final

Acknowledgement of Country

Succession Ecology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

Glossary

AoLA	Atlas of Living Australia
BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEW	Department of Environment and Water (South Australia)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
IBRA	Interim Biogeographical Regionalisation of Australia
MNES	Matters of National Environmental Significance
NVC	Native Vegetation Council
PMST	Protected Matters Tool
SAM	Scattered Tree Assessment Methodology
SAPPA	South Australian Property and Planning Atlas
SEB	Significant Environmental Benefits
TEC	Threatened Ecological Community
VA	Vegetation Association
MLR	Mount Lofty Ranges
AMLR	Adelaide Mount Lofty Ranges

Table of contents

1. Application information

1.1 Application details

Applicant:	URPS on behalf of Mount Lofty Golf Estate Pty Ltd		
Key contact:	Chelsea Jurek cjurek@urps.com.au 0408 888 827		
Landowner:	Mount Lofty Golf Estate Pty Ltd.		
Site Address:	Stirling Golf Club, 35 Golflinks Road, Stirling South Australia, 5152		
Local Government Area:	Adelaide Hills Council	**Hundred:**	Onkaparinga
Title ID:	CT/5891/805	**Parcel ID:**	D59212 A53

1.2 Summary of proposed clearance

Purpose of clearance	Clearance is required for the construction of a new multistorey hotel and associated infrastructure. Other development, including the adaptive reuse of the existing "Perfumery", new carparking facilities, and roadways will use the existing footprint and not impact native vegetation.
Native Vegetation Regulation	Schedule 1, Part 6 – other activities (Regulation 12), clause 27, Major projects.
Description of the vegetation under application	Clearance of native vegetation is proposed within the following: Seven scattered trees One Vegetation Association - VA1: *Eucalyptus obliqua* open forest over open shrub and sparse native grasses, tussocks and weed species.
Total proposed clearance – area (ha) and number of trees	The proposed clearance is 0.431 ha (VA1) and seven scattered trees.
Level of clearance	Level 3
Overlay (Planning and Design Code)	Native Vegetation Overlay Although close to the site, the State Significant Vegetation Overlay is not impacted by the development.
Mitigation hierarchy	The design has been largely restricted and purposely planned in areas of existing infrastructure and exotic vegetation to minimise the removal of native vegetation.
SEB Offset proposal	A payment into the fund of $98,499.49 (includes admin fee)

2. Purpose of clearance

2.1 Description

Succession Ecology have been engaged by URPS, on behalf of Mount Lofty Golf Estate Pty Ltd, to undertake a native vegetation assessment for clearance associated with the proposed redevelopment of the Stirling Golf Course. This redevelopment will include a new multistorey hotel, the adaptive reuse of the existing Perfumery, new carparking facilities and access, and associated infrastructure. The design has been finalised and is not expected to change. Any further updates will be provided.

2.2 General location

The Project Area is the located within the Stirling Golf Course at 35 Golflinks Road, Stirling, which is located approximately 2.5 km northwest of Bridgewater and approximately 15 km southeast of Adelaide, SA (Figure 1). The Project Area is adjacent to Mount George Conservation Park (MGCP).

2.3 Background

The redevelopment of the Stirling Golf Course and Club intends to rebrand it as the Mount Lofty Golf Estate, which was the original name of the golf course when it first opened in 1925. The redevelopment aims to improve the tourism market in the area, as well as improving access and drawing more visitors and tourists to the club.

2.3.1 Administrative Boundaries

The Project Area is sited within the Adelaide Hills Local Government Area and is in the Hills and Fleurieu Landscape Board Region. The Project lies within the Uraidla Association, the Mount Lofty Ranges Sub-region, and the Flinders Lofty Block Region, as defined by the Interim Biogeographical Regionalisation of Australia (IBRA).

2.3.2 Local and Regional Land Use

Land use in the surrounding locality to the Project Area includes Mount George Conservation Park (northeast, east and southeast to the Project Area) residential, and agricultural land uses. The Southern Expressway is located south of the Project Area. Cox Creek traverses the wider Project Area, however this creek is not within the proposed development's impact area.

2.3.3 Native Vegetation Remnancy

The Project lies within the Uraidla Association, the Mount Lofty Ranges Sub-region, and the Flinders Lofty Block Region, as defined by the Interim Biogeographical Regionalisation of Australia (IBRA). Approximately 15% (46,342 ha) of the Mount Lofty Ranges IBRA Subregion, and approximately 26% (3,674 ha) of the Uraidla IBRA Environmental Association is mapped as remnant vegetation. Of this, 27% (12,706 ha) and 20% (749 ha) is formally conserved and protected, respectively (DCCEEW 2022). A review of NatureMaps indicates the native vegetation remnancy within 5 km of the Project Area is 28%. The Mount Lofty Ranges has undergone significant vegetation clearance over time.

The vegetation present within the Project Area includes remnant patches of native vegetation, large remnant scattered trees and planted vegetation. Exotic vegetation is associated with the golf course.

2.3.4 Associated Development

This application pertains to the development of a new multi-storey hotel building and associated infrastructure, as well as the redevelopment of the existing Perfumery building, as detailed in section 2.4. Earlier design iterations included the development of accommodation known as 'pods'. However, the pods have since been removed from the scope of works due to the impact to native vegetation.

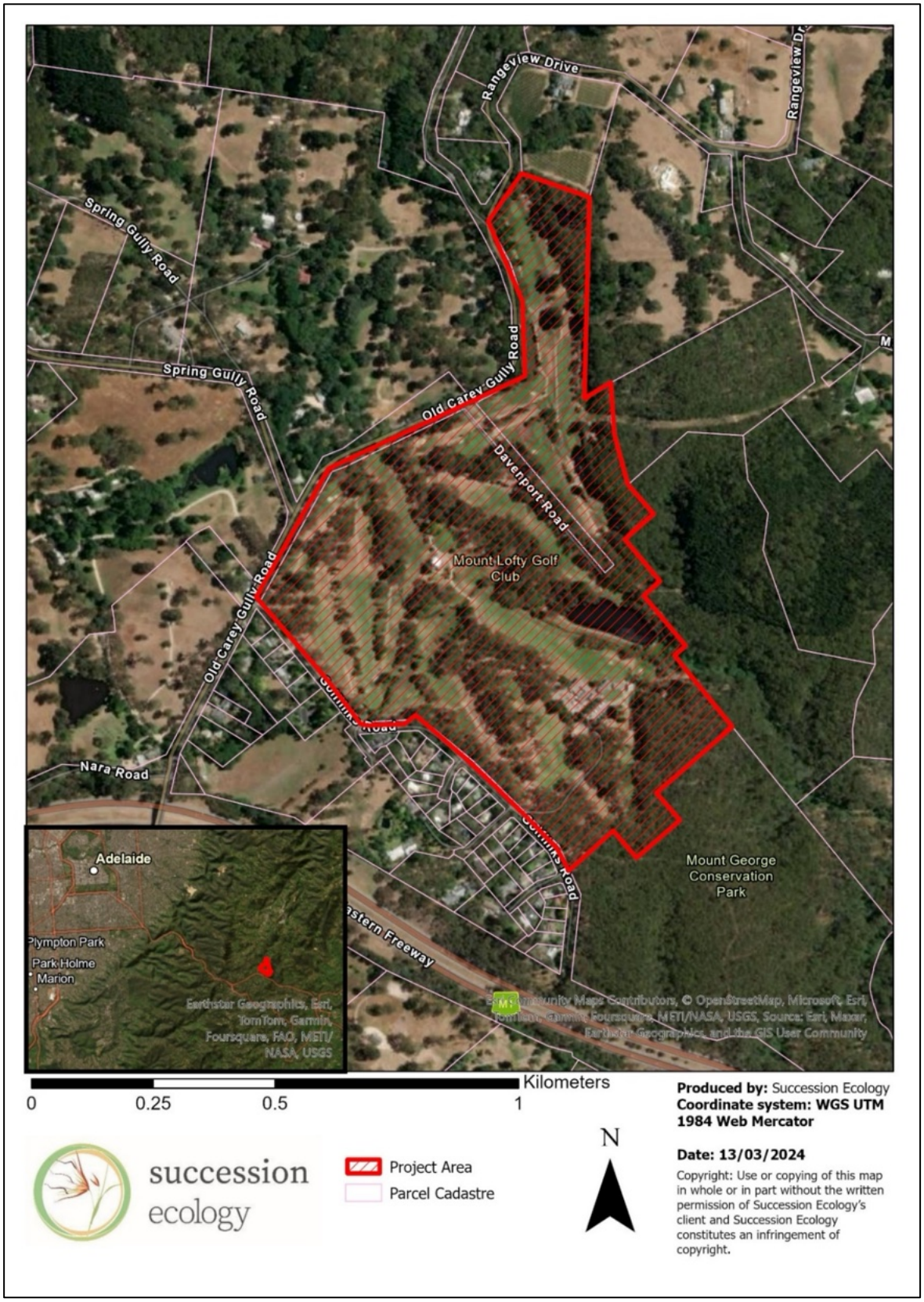


Figure 1: The Project Area (outlined and hatched in red).

2.4 Details of the proposal

This assessment relates to Stage 1 of the proposed development, which includes:

- Demolish the existing clubrooms and ancillary infrastructure.
- Construction of a new multi-story hotel (clearance calculations have included a 35 metre CFS buffer)
- Upgrades to the existing golf course
- Construction of two new carparking areas providing a total of approximately 200 car parking spaces.
- Adaptive reuse of the existing "Perfumery", an existing local heritage building.

The adaptive reuse of the perfumery will include a refurbishment, which will provide a multipurpose space for use as a café, retail, or function events. The extension of the Perfumery will include a covered outdoor dining area, the planting of garden species and the addition of an orchard. The Perfumery is set to temporarily house the golf club during the construction phase of the new hotel. The golf course will retain the 18-hole course, and undergo improvements, along with the facilities building and the refurbishment of the function facilities and golf cart storage areas. The redevelopment will also include a clubhouse in the new building, along with a new pro-shop, administration area, gym, change rooms and two new car parking areas.

Emergency vehicle access will be located via the western entrance from Golflinks Road, with the main access point located via Golflinks Road. A designated service bay for service vehicles and waste collection will be developed, along with a *porte cochere* and valet areas for buses and guests. This report has been developed in line with the scope above and the Landscape Site Masterplan Rev06 (28/03/2024) (Figure 2).

Project designs have gone through several iterations that have reduced the extent of impacts on the environment. These revisions included:

- Removal of accommodation pods. Early designs included as many as 50 free-standing accommodation 'pods', in addition to the multi-storey hotel, which would have had a substantial impact on native vegetation. The current design has eliminated the proposed accommodation pods.
- Retention of internal access roads. Early designs had included revisions of internal access roads, which may have had a substantial impact on native vegetation. The current design retains the current design of access roads, reducing the scope of environmental impact.
- Re-alignment of a car park. The car park to the north of the Perfumery has been moved to an open area to the north to avoid impacts to native vegetation.
- Re-alignment of the Perfumery Gardens and Orchard. This will be moved to the northwest to avoid native vegetation impacts and be-redesigned to integrate with existing amenity vegetation.
- Redesign of the hotel. The proposed multi-storey hotel has been subject to multiple design iterations to reduce the impact footprint and reduce native vegetation removal as far as possible.

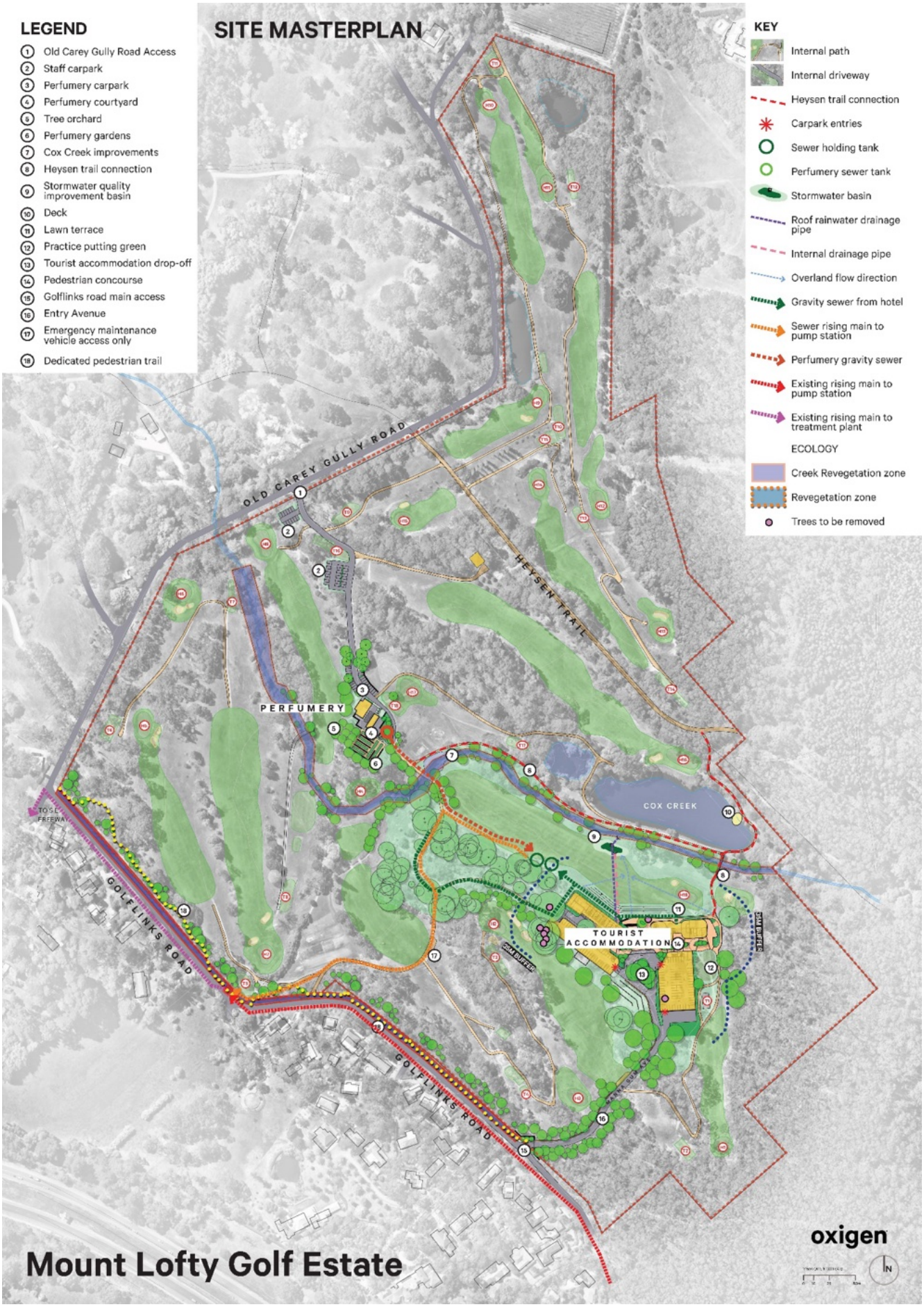


Figure 2: Masterplan of the Mount Lofty Golf Estate redevelopment (Rev06, 28/03/2024).

2.5 Approvals required or obtained

This Project is subject to the *Planning, Development and Infrastructure Act 2016 (PDI Act)*, and the *Native Vegetation Act 1991* (*NV Act*; Figures 3 and 4). An *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Self-assessment has been undertaken for the Project. It was determined that the Project will result in no significant impacts to Matters of National Environmental Significance (MNES). As such, the Project will not require referral under the *EPBC Act*.

2.6 Native vegetation regulation

The proposed clearance will be assessed under the *NV Regulations*:

- Schedule 1, Part 6 – other activities (Regulation 12), clause 27, Major projects

2.7 Development Application Information

A review of the South Australian Property and Planning Atlas (SAPPA) indicated the Project Area falls within the Recreation Zone, in which the Native Vegetation Overlay applies. The State Significant Native Vegetation partly applies to the Project Area, but not to the impact footprint. A Development Application (Performed Assessed) was lodged on the 9 August 2023 by Mount Lofty Golf Estate Pty Ltd (Application Number 473/D024/23) and is currently under assessment.

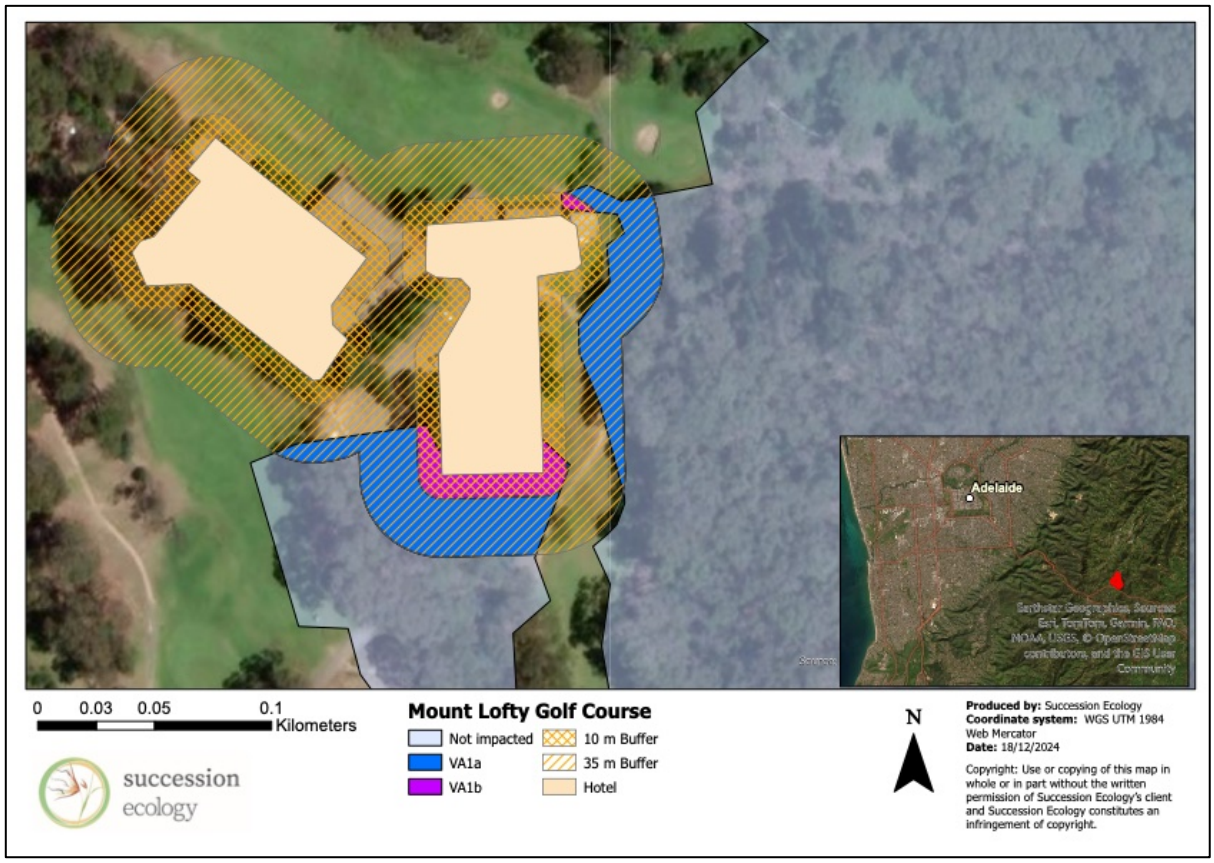


Figure 3: Locations of developmental footprint for the hotel infrastructure (indicated in peach), 10 m buffer indicated with cross hatch, 35-m County Fire Service (CFS) indicated with single hatch. VA1a, which is the area of direct impact on VA 1 is indicated in purple, whereas VA1b, the area of single-stratum impact, is indicated in royal blue.

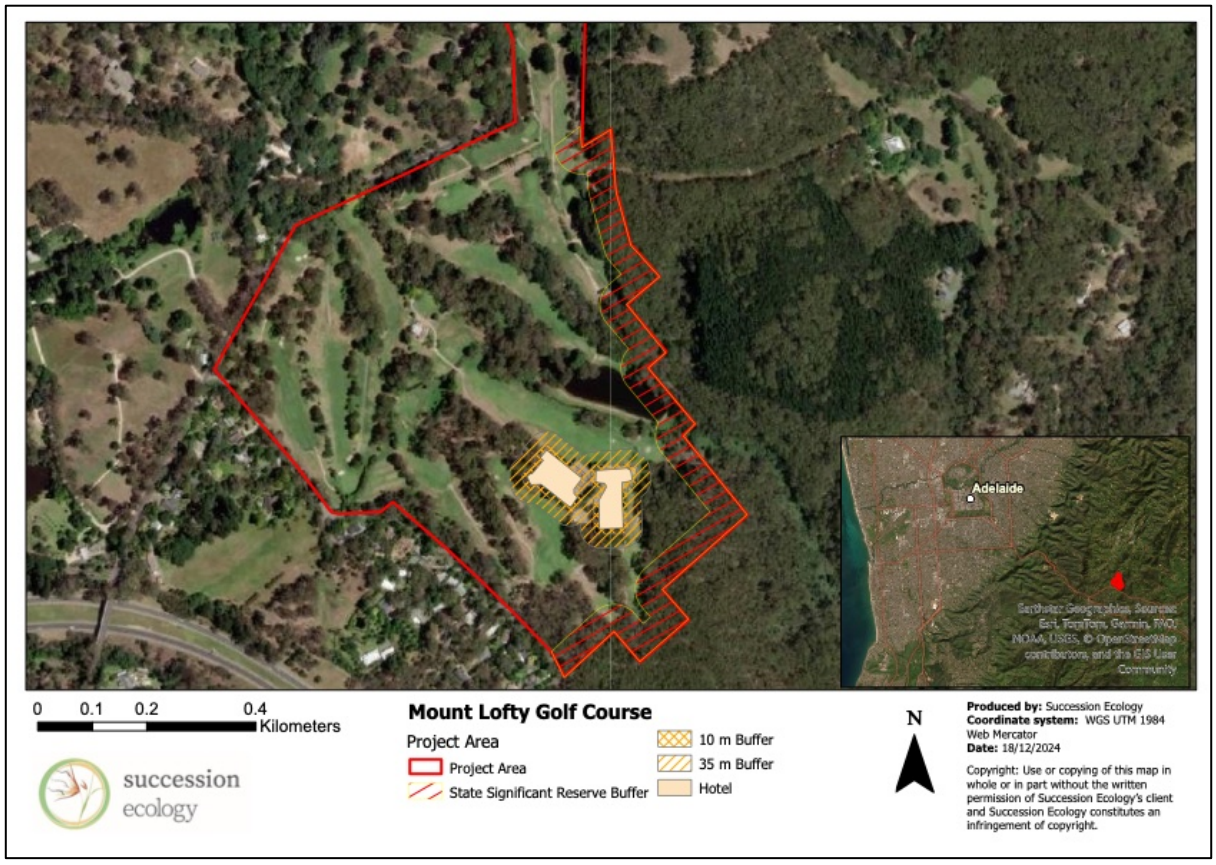


Figure 4: Project area is outlined in red, with a 50-m buffer around the State Significant Reserve Overlay shown in red hatching. The impact area (orange) lies narrowly outside the buffer around the State Significant Reserve Overlay.

3. Method

3.1 Flora and Fauna assessment

3.1.1 Desktop assessment

A desktop assessment was conducted to undertake preliminary mapping of native vegetation protected under the *NV Act* via the NatureMaps tool. This mapping was used to plan the assessment and inform the field methodology.

The desktop assessment was also undertaken to determine the threatened ecological communities, flora species, and fauna species that potentially occur in the area. Communities and species were evaluated as threatened if they were listed under the *National Parks and Wildlife Act 1972 (NPW Act)* and/or the *EPBC Act*, as outlined below:

- ***NPW Act***
  - Schedule 7 – Endangered Species
  - Schedule 8 – Vulnerable Species
  - Schedule 9 – Rare Species
- ***EPBC Act***

Part 13 – Species and communities – Division 1- Listed threatened species and ecological communities – Subdivision A – Listing – 178 Listings of threatened Species.

  - Section 178 (c) – Critically Endangered
  - Section 178 (d) – Endangered
  - Section 178 (e) – Vulnerable

Threatened communities and species were evaluated if they had been recorded within 5 km of the project site since 1995 or were considered 'known' to occur within the search area via the Protected Matters Search Tool.

Databases searched during the desktop assessment included:

- Protected Matters Search Tool (PMST): to identify Matters of National Environmental Significance (MNES) under the *EPBC Act,* including nationally threatened species and ecological communities, 'known' to occur in the search area.
- NatureMaps: to identify records of threatened flora and fauna listed under either the *NPW Act* or *EPBC Act*, recorded since 1995 within the search area.
- BDBSA data extract: a Biological Databases of South Australia (BDBSA) search was obtained from the Department of Environment and Water (DEW) to identify threatened flora and fauna species that have been recorded within 10 km for the Project Area (data extracted 14/02/2024). The BDBSA is comprised of an integrated collection if species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia, and the Australasian Wader Study Group. Only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.
- Atlas of Living Australia (AoLA): to identify threatened flora and fauna listed under either the *NPW Act* or *EPBC Act*, recorded since 1995 within the search area. Records from 'citizen science' initiatives are excluded from results.
- Appendices in the NVC Bushland and Scattered Tree Assessment Manuals: to determine scattered trees species that provide suitable habitat for threatened fauna and threatened ecological communities protected under *NPW Act*.

- DEH (in progress) unpublished and provisional list of Threatened Ecosystems: to identify threatened and rare ecosystems.

A likelihood of occurrence/habitat use assessment was carried out for threatened communities, fauna and flora species identified during the Desktop Assessment. The likelihood of these species using the site following the metric described in Table 1.

The distribution of vegetation associations was assessed using satellite imagery and vegetation community data obtained through NatureMaps. All maps were generated using ArcGIS Pro.

Table 1: Criteria for the likelihood of occurrence/habitat use of species within the survey area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provides limited habitat or feeding resources for the species. Recorded within 20–40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provides no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20–40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

3.1.2 Field Survey

Vegetation surveys were conducted on 13 February and 19 March 2024. Ground truthing of vegetation communities identified in the desktop assessment was carried out and the vegetation subject to clearance was surveyed using the Bushland Assessment Methodology (Native Vegetation Council 2020a) and Scattered Tree Assessment Methodology (Native Vegetation Council 2020b), as appropriate. Careful inspection was undertaken to identify any threatened flora and threatened fauna species known to occur in the region.

A formal fauna assessment was not undertaken for this site. However, an opportunistic observation-based survey was conducted to identify any fauna species using the vegetation as habitat. Opportunist observations included incidental records of non-target species observed while conducting the specified survey technique, or while walking to/from or around the project site.

4. Assessment outcomes

4.1 Vegetation assessment

4.1.1 General description of the vegetation, the site and matters of significance.

IBRA Regions

The Project Area falls within the IBRA Region of Flinders Lofty Block, Sub-Region of Mount Lofty and association of Uraidla (Table 2).

The Flinders Lofty Block bioregion is in the southeast of South Australia and also includes the Flinders and Olary Ranges. The climate within this region varies from north to south, with the northern section having a semi-arid to arid climate with hot dry summers, and cool mild winters. In comparison, the southern part of the bioregion hosts a Mediterranean climate with cool moist winters and warm to hot summers. The region in general receives 250 to 650 mm of rainfall per year, however areas in the higher parts of the Mount Lofty Ranges can receive over 1000 mm annually. Rainfall is most common in winter; it is more reliable in the south. Mountain ranges and wide flat plains largely make up this bioregion. Large areas in the south have been previously cleared for agriculture during the early days of European settlement. Vegetation types within the region vary, as they include chenopod and samphire shrublands, tussock grasslands, *Callitris and Eucalyptus* forests and woodlands, A*cacia* forests and woodlands, mallee woodlands and shrublands, and hummock grasses.

Table 2: Flinders Lofty Block Description.

Feature	Description
Land type	Erosional / depositional
Landscape	Low hills
Landform	Ranges and hills with extensive rock outcrop and shallow soils; stony pediments and small basin plains; some remnants of stony downs; narrow valleys, some with gorges. Ranges and hills in form of hogback ridges in quartzite
Geology	Bare rock; some alluvium & colluvium (sand, silt & clay); less common dune sand & some sand mantles. Calcreted gravels derived from silcreted deposits & probably equate with Ripon Calcrete. Younger Telford gravels (Middle Pleistocene).
Soil	Loamy soils with weak pedologic development; crusty loamy soils with red clayey subsoils.
Vegetation	Chenopod Shrub, Samphire Shrub and Forbland.
Climate	Semi-arid climate that is too dry to support field crops. Soil moisture tends to be greatest in winter.

Vegetation Overview

Vegetation present within the Project Area consists of pockets of remnant open forest vegetation scattered throughout the golf course, along with large native and non-native scattered trees. Planted exotic amenity vegetation is associated with the golf course and the clubhouse. Areas of remnant vegetation are dominated by species of *Eucalyptus obliqua (*Messmate Stringybark), *E. viminalis* ssp. *viminalis* (Manna Gum)*, Acacia melanoxylon* (Blackwood) and *Exocarpos cupressiformis,* with pockets of *Pteridium esculentum* ssp. *esculentum* (Bracken Fern). The areas of remnant vegetation within the Project Area, but not directly associated with the golf course, appeared to be heavily degraded with a dense understorey dominated by introduced flora species such as *Genista monspessulana* (Montpellier Broom), *Cytisus scoparius* (English Broom) and *Hedera helix* (English Ivy). Across the whole Project Area, the dominant weed species identified was *Rubus fruticosus* (Blackberry), a Declared Plant. No flora species listed under the *EPBC Act* were recorded during the field survey. Two species listed under the NPW Act as Rare (*Eucalyptus viminalis* ssp. *viminalis* and *Pultenaea graveolens*) were recorded within the Project Area. One vegetation association (VA) was identified and mapped within the Project Area, listed below:

- VA1 – *Eucalyptus obliqua* open forest over open shrub and sparse native grasses, tussocks and weed species. VA1 is stratified in this data report by the extent of impact that it will undergo. In VA1a, only one strata will be impacted, whereas all strata of VA1b will be impacted

A total of 35 scattered trees were surveyed. These trees included 23 *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum) listed as Rare under the *NPW Act,* seven *Eucalyptus obliqua* (Messmate Stringybark) and five *Acacia melanoxylon* (Blackwood). As a result of design changes since the field surveys, only seven scattered trees will be impacted by the construction of the new multi-story hotel. The remaining 28 trees will not be impacted. The seven scattered trees identified for impacts are summarised below and further detailed in the consecutive tables.

- T1 - Manna Gum (*Eucalyptus viminalis ssp. viminalis)* *NPW Act* Rare
- T2 – Manna Gum (*Eucalyptus viminalis ssp. viminalis*) *NPW Act* Rare
- T3 – Messmate Stringybark (*Eucalyptus obliqua*)
- T4 – Messmate Stringybark *(Eucalyptus obliqua*)
- T5 – Messmate Stringybark (*Eucalyptus obliqua*)
- T6 – Manna Gum (*Eucalyptus viminalis ssp. viminalis*) *NPW Act* Rare
- T7 – Manna Gum (*Eucalyptus viminalis ssp. viminalis)* *NPW Act* Rare

Landscape context.

The Project Area is situated in Stirling in the Adelaide Hills, amongst an undulating landscape. It features flat, modified landscapes as part of the golf course green and amenities, with the native vegetation remaining on gentle slopes. Cox Creek traverses throughout the Project Area to the north of the development footprint. Positioned adjacent to Cox Creek are two artificial dams. The Project Area abuts the Mount George Conservation Park along the eastern boundary. In the wider locality several other conservation reserves occur, including Cleland National Park (3 km west) and Kenneth Stirling Conservation Park (2.5 km east). The rainfall in the Project Area averages 918 mm annually.

4.1.2 Details of the vegetation associations and scattered trees proposed to be impacted

Vegetation Association	**VA1: *Eucalyptus obliqua* open forest over open shrub and sparse native grasses, tussocks and weed species.**

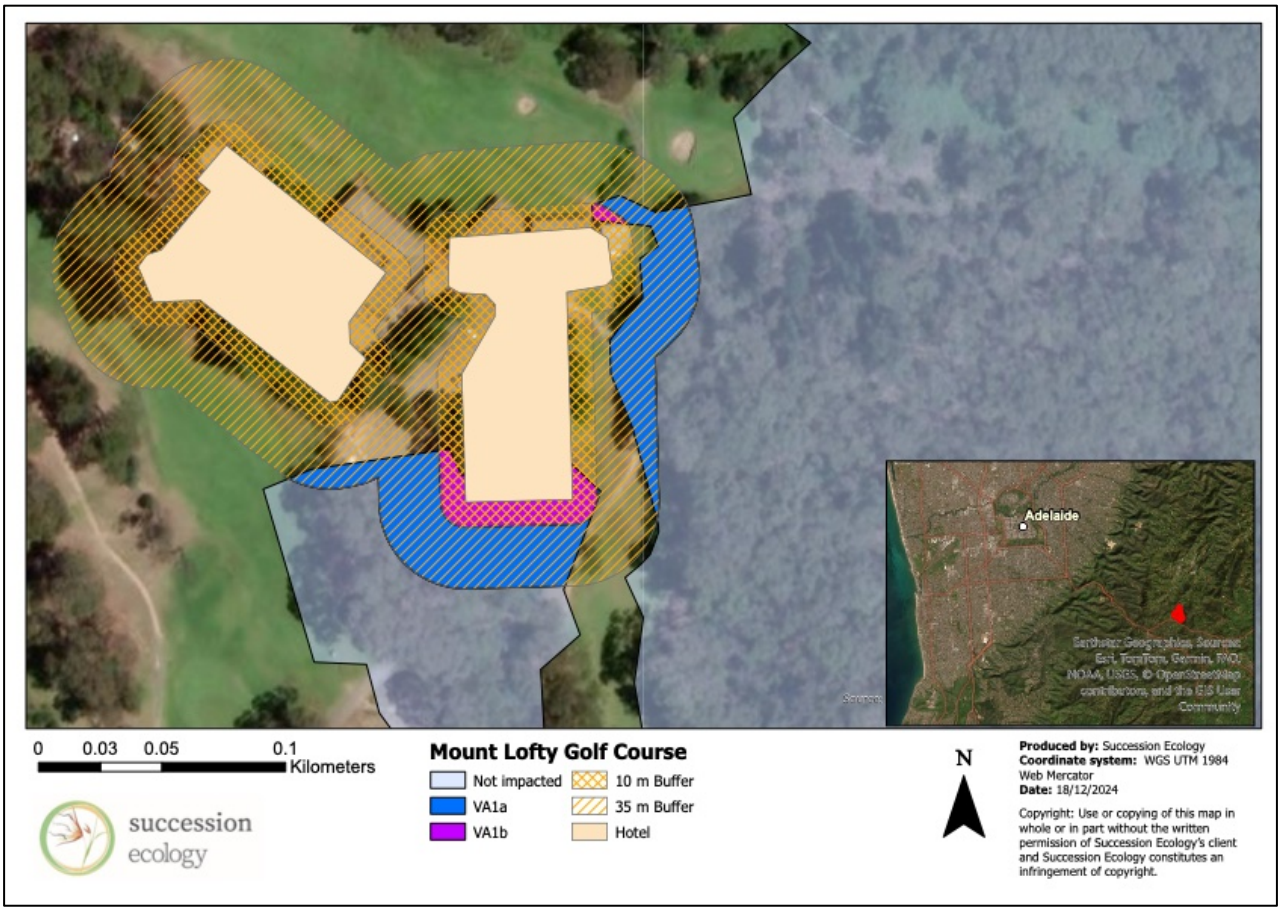


Figure 5: Bushland Assessment sites (VA1a and VA1b) within the proposed impact area are shown in royal blue and purple, respectively. The area of VA1 that is not impacted is indicated in pale blue.

A

B

Vegetation Association	**VA1: *Eucalyptus obliqua* open forest over open shrub and sparse native grasses, tussocks and weed species.**

Figure 6: Vegetation within VA1. Multiple Tall Eucalyptus obliqua *are present (Image A and B).* Cytisus scoparius*, a Declared Plant was observed throughout (Image D).* Exocarpos cupressiformis *scattered throughout VA1 (Image B and C) and* Vinca major *trailed throughout VA1 (Image C).*

General description	Vegetation within VA1 consists of an open forest of tall *Eucalyptus obliqua* and sparse *E. viminalis ssp. viminalis*, (Rare). The midstorey largely consisted of *Exocarpos cupressiformis* and *Acacia melanoxylon* and few scattered *Bursaria spinosa*, with an understorey of *Lomandra micrantha*, *Dianella revoluta*, *Pteridium esculentum* ssp. *esculentum* and sparse *Rytidosperma* sp. and *Austrostipa* sp. Other native species in VA1 include *Pultenaea graveolens* (*NPW Act: Rare*), *Acrotriche fasciculiflora* and *Hibbertia exutiacies*. Leaf litter was dense and continuous throughout, and some fallen timber and debris was observed. Fox Tail (*Alopecurus* sp.), Plantain (*Plantago* sp.), Blue Periwinkle (*Vinca major*), Flax-leaf Broom (*Genista linifolia*), and English Broom (*Cytisus scoparius*) were the dominant weeds recorded during the 2024 survey. Overall, VA1 was in good condition. VA1 provides dense tree canopy cover, fallen timber and tree hollows. However, Declared Plants and other weeds persist within the VA.
Threatened species or community	**Threatened Ecological Communities** No threatened ecological communities were identified within the Project Area during the desktop assessment, nor identified during the field visit. **Threatened Fauna** The desktop search identified 38 threatened fauna species listed under the *EPBC Act* and *NPW Act* as previously recorded within the search area. Of these, eight are considered Likely, Highly Likely or Known to occur within VA1. They include: • *Petroica boodang boodang (Scarlet Robin) NPW Act: (R)* – **Likely** • *Isoodon obesulus obesulus (Southern Brown Bandicoot) EPBC Act: (EN), NPW Act (V):* **Likely** • *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) *NPW Act:* (V) – **Known** • *Trichosurus vulpecula* (Common Brushtail Possum) *NPW Act:* (R) – **Highly Likely** • *Zoothera lunulata halmaturina* (Bassian Thrush*) EPBC Act: (EN), NPW Act (R)* – **Highly Likely** • *Pteropus poliocephalus* (Grey-headed Flying-fox) EPBC Act (VU), *NPW Act: (R)*- **Likely** • *Corcorax melanorhamphos* (White-winged Chough) *NPW Act: (R)* - **Likely** • *Antechinus flavipes* (Yellow-footed Antechinus) *NPW Act: (V)* - **Highly Likely**

Vegetation Association	**VA1: *Eucalyptus obliqua* open forest over open shrub and sparse native grasses, tussocks and weed species.**
	These species are discussed further in section 4.2.2. One threatened fauna species *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) was identified during the field surveys. **Threatened Flora** A desktop search identified 83 threatened flora species listed under the *EPBC Act* and *NPW Act* as previously recorded within the search area. Of these, six are considered Likely, Highly Likely or Known to occur within VA2. They include: • *Acacia gunnii* (Ploughshare Wattle) *NPW Act: (R)* **Likely** • *Deyeuxia densa* (Heath Bent grass) *NPW Act: (R)* **Likely** • *Gastrodia sesamoides* (Bell Orchid) *NPW Act: (R)* **Likely** • *Eucalyptus viminalis ssp. viminalis* (Manna Gum) - *NPW Act: (R)* **Known** • *Gleichenia microphylla* (Coral Fern) *NPW Act: (R)* **Likely** • *Pultenaea graveolens* (Scented bush Pea) *NPW Act: (R)* **Known** • *Rytidosperma tenuius* (Short-awn Wallaby-grass) - *NPW Act: (R)* **Likely** These species are discussed further in section 4.2.3. One threatened flora species (*Pultenaea graveolens)* was identified during the field survey.
Impacts	Impacts to this vegetation association will occur in two forms: VA1a – Only one strata of the association will be impacted in this area. VA1b – All strata in this association will be impacted.

VA1a (Loss factor 0.8)					
Landscape context score	1.18	**Vegetation Condition Score**	32.82	**Conservation significance score**	1.18
Unit biodiversity Score	45.70	**Area (ha)**	0.323	**Total biodiversity Score**	14.76
VA1b (Loss factor 1.0)					
Landscape context score	1.18	**Vegetation Condition Score**	32.82	**Conservation significance score**	1.18
Unit biodiversity Score	45.70	**Area (ha)**	0.108	**Total biodiversity Score**	4.94

NPW Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable

Figure 7: The seven scattered trees impacted by the Project are shown with green points.

Tree T1 (Site: Mount Lofty Golf Estate)	*Figure 8: Tree T1, Manna Gum (*Eucalyptus viminalis ssp. viminalis*), facing south.*
Manna Gum *(Eucalyptus viminalis ssp. viminalis)*	
Number of trees – 1	
Height (m) – 18.6	
Diameter (cm) – 83 (1 stem)	
Hollows – #S:0, #M:0, #L:0	
Canopy dieback (%) – 10	
Total Biodiversity Score – 4.24	

Description

Eucalyptus viminalis ssp. viminalis is listed as Rare under the *NPW Act*. This large tree appears to be in good condition, with minor dieback. Together with nearby trees, it would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting. In particular, *E. viminalis ssp. viminalis* provides a food resource for koalas (Nicolle 1997, pg. 135).

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T2 (Site: Mount Lofty Golf Estate)	*Figure 9: Tree T2, Manna Gum (*Eucalyptus viminalis ssp. viminalis*), facing south.*
Manna Gum (*Eucalyptus viminalis ssp. viminalis*)	
Number of trees – 1	
Height (m) – 28.2	
Diameter (cm) – 166 (1 stem)	
Hollows – #S:2, #M:2, #L:0	
Canopy dieback (%) – 5	
Total Biodiversity Score – 11.59	

Description

Eucalyptus viminalis ssp. viminalis is listed as Rare under the *NPW Act*. This large tree appears to be in good condition, with minor dieback. It contains a total of four hollows and together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting. *E. viminalis ssp. viminalis* provides a food resource for koalas (Nicolle 1997, pg. 135).

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T3 (Site: Mount Lofty Golf Estate)	*Figure 10: Tree 3, Messmate Stringybark (*Eucalyptus obliqua*), facing south.*

Messmate Stringybark (*Eucalyptus obliqua*) Number of trees – 1 Height (m) – 13.8 Diameter (cm) – 75 (1 stems) Hollows – #S:0, #M:0, #L:0 Canopy dieback (%) – 10 Total Biodiversity Score – 3.28	

Description

This tree appears to be in good condition, with minor dieback. While no hollows were recorded, together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting.

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T4 (Site: Mount Lofty Golf Estate)	*Figure 11: Tree T4, Messmate Stringybark (*Eucalyptus obliqua*), facing south.* 
Messmate Stringybark (*Eucalyptus obliqua*)	
Number of trees – 1	
Height (m) – 14.1	
Diameter (cm) – 75 (1 stem)	
Hollows – #S:0, #M:0, #L:0	
Canopy dieback (%) – 10	
Total Biodiversity Score – 4.06	

Description

This tree appears to be in good condition, with minor dieback observed. While no hollows were recorded, together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting.

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T5 (Site: Mount Lofty Golf Estate)	*Figure 12: Tree T5, Messmate Stringybark (*Eucalyptus obliqua*), facing south.*
Messmate Stringybark (*Eucalyptus obliqua*)	
Number of trees – 1	
Height (m) – 19.8	
Diameter (cm) – 84 (1 stems)	
Hollows – #S:0, #M:0, #L:0	
Canopy dieback (%) – 10	
Total Biodiversity Score – 4.57	

Description

This tree appears to be in good condition, with minor dieback. While no hollows were recorded, together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting.

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T6 (Site: Mount Lofty Golf Estate)	*Figure 13: Tree T7, Manna Gum (Eucalyptus viminalis ssp. viminalis), facing south.*
Manna Gum (*Eucalyptus viminalis ssp. viminalis*)	
Number of trees – 1	
Height (m) – 32.4	
Diameter (cm) – 141 (1 stems)	
Hollows – #S:3, #M:2, #L:1	
Canopy dieback (%) – 5	
Total Biodiversity Score – 10.69	

Description

Eucalyptus viminalis ssp. viminalis is listed as Rare under the *NPW Act*. This tree appears to be in good condition, with minor dieback. The tree contained a total of six hollows and together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting. *E. viminalis ssp. viminalis* provides a food resource for koalas (Nicolle 1997, pg. 135).

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Tree T7 (Site: Mount Lofty Golf Estate)	*Figure 14: Tree T10, Manna Gum (*Eucalyptus viminalis ssp. viminalis*), facing south.*
Manna Gum *(Eucalyptus viminalis ssp. viminalis)*	
Number of trees – 1	
Height (m) – 31.2	
Diameter (cm) – 142 (1 stems)	
Hollows – #S:2, #M:0, #L:0	
Canopy dieback (%) – 5	
Total Biodiversity Score – 9.71	

Description

Eucalyptus viminalis ssp. viminalis is listed as Rare under the *NPW Act*. This tree appears to be in good condition, 5% mistletoe dieback was observed. The tree contained a total of two small hollows and together with nearby trees, would provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting. *E. viminalis ssp. viminalis* provides a food resource for koalas (Nicolle 1997, pg. 135).

No Threatened Ecological Communities were present at the site. However, six fauna species listed as threatened under the *NPW Act* have been identified within 5 km since 1995 and the native scattered tree considered suitable for the threatened species including:

- *Petroica boodang boodang (Scarlet Robin) NPW Act: (R) – Likely*
- *Zanda funerea whiteae (Yellow-tailed Black Cockatoo) NPW Act: (V) – Known*
- *Trichosurus vulpecula (Common Brushtail Possum) NPW Act: (R) – Highly Likely*
- *Zoothera lunulata halmaturina (Bassian Thrush) EPBC Act: (EN), NPW Act (R) – Highly Likely*
- *Pteropus poliocephalus (Grey-headed Flying-fox) EPBC Act (VU), NPW Act: (R)- Likely*
- *Corcorax melanorhamphos (White-winged Chough) NPW Act: (R) - Likely*

Photo log

Photos of the vegetation community and scattered trees are provided in the descriptions above with additional photos provided within Appendix B.

4.2 Threatened species assessment

4.2.1 Threatened ecological communities.

No threatened ecological communities were present at this site.

4.2.2 Threatened fauna

The desktop search identified a total of 38 threatened fauna species within the search area. Seven species listed under the *EPBC Act 1999* as 'known, or have habitat known to occur' and 31 further species listed as threatened under the *NPW Act 1972*. The 38 species have been included in the likelihood of use assessment, using the metric described in Table 1. Species which likelihood of use was assessed as 'unlikely' are listed in Appendix C. One of the threatened fauna species (*Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) identified within the desktop search was observed within the Project Area at the time of the field surveys.

Table 3: A summary of the fauna species observed on site or recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
AMPHIBIA						
Pseudophryne bibronii (Brown Toadlet)	R		3, 2	2009	Dry forest, woodland, shrubland and grassland. They shelter under leaflitter and other debris in moist soaks and depressions (Frogs of Australia, 2020).	**Possible –** Recorded previously within the past 20 years, with the nearest record of occurrence approximately <1 km from the Project Area. Limited suitable habitat is present.
AVES						
Anhinga novaehollandiae novaehollandiae (Australasian Darter)	R		3, 2	2018	Found in wetlands and sheltered coastal waters, mainly in the Tropics and Subtropics. Most often seen inland, around permanent and temporary water bodies. Prefer smooth, open waters for feeding, with tree trunks and branches for drying. Can be seen in calm seas near shore (Birdlife, 2022).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 2 km from the Project Area. Limited suitable habitat is present.
Aphelocephala leucopsis (Southern Whiteface)		VU	5		Lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands,	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence located approximately 5 km from the Project Area. Some suitable habitat is present.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					and plains (Birdlife Australia 2023).	
Cereopsis novaehollandiae novaehollandiae (Cape Barren Goose)	R		2	2022	Found on offshore islands, usually granite, in areas of pasture, tussock grass or low heathy scrub (Australian Museum, 2022).	**Possible** – Recorded previously within the past 5 years, with the nearest record of occurrence approximately 5 km from the Project Area (within a conservation park). Suitable habitat is limited, restricted to the golf greens.
Climacteris affinis (White-browed Treecreeper)	R		3	2021	Usually inhabit shrublands and woodlands in arid and semi-arid regions. Mostly occur in tall shrubland and low woodland dominated by acacias (Birdlife Australia 2022).	**Possible** – Recorded previously within the past 5 years, with the nearest record of occurrence approximately 3 km from the Project Area. Some suitable habitats such is shrublands and woodlands are present.
Corcorax melanorhamphos (White-winged Chough)	R		3, 2	2023	Woodland and tall mallee, with a preference for wetter areas with leaf-litter for feeding and mud for building nests (DEH, 2014).	**Likely** – Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1 km from the Project Area. Some suitable habitat is present such as woodlands and wetter areas with leaf litter.
Falco peregrinus macropus (Peregrine Falcon)	R		3	2006	Use a broad range of habitats from rainforest to arid. Need abundant prey and secure nest sites (DEH 2009).	**Possible –** Recorded previously within the past 20 years, with the nearest record of occurrence approximately 2 km from the Project Area. As this species uses a broad range of habitat, some suitable habitat may be present.
Hieraaetus morphnoides (Little Eagle)	V		3	2019	Seen over woodland, forested land and open country. Avoids heavy forest (Birdlife Australia, 2021).	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 5 km from the Project Area. Some suitable habitat is available.
Hirundapus caudacutus caudacutus (White-throated Needletail)	V	V	3, 2	2023	Almost exclusively aerial, however, certain preferences of habitat are exhibited by the species. Although they	**Possible –** Recorded previously within the last 2 years, with the nearest record of occurrence approximately 1 km from the

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					occur over most types of habitats, they are most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland (Australian Museum 2022).	Project Area. Surrounding records of occurrence predate 1995, however some suitable habitat is available.
Hylacola pyrrhopygia parkeri (Chestnut-rumped Heathwren	E	EN	5, 3, 2	2020	Inhabits heathlands and woodlands with dense shrub and ground-layer vegetation, most commonly found in rocky areas. (DEH Threatened Species Profile, 2008).	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 2 km from the Project Area. Some suitable habitat is available; however, majority of nearby occurrences are located within the surround Conservation Parks which offer suitable habitat.
Lophoictinia isura (Square-tailed Kite)	E		3, 2	2019	Mainly inhabits open eucalypt forests and woodlands, often dominated by stringybarks, peppermints or box-ironbark eucalypts. Also occur along edges of dense forests and along road verges with remnant or planted trees (Birdlife Australia, 2022).	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 5 km from the Project Area. Some suitable habitat is available.
Melithreptus gularis gularis (Black-chinned Honeyeater)	V		3	2002	Occupy dry Eucalypt woodland with an annual rainfall range of 400-700 mm, particularly associations containing ironbark and box. Favoured habitats incorporate a mixture of mature and regenerating woodland Eucalypts,	**Possible –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 4 km from the Project Area. Limited suitable habitat is available.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					although adjacent scattered paddock trees are also used (DEH, 2008).	
Microeca fascinans fascinans (Jacky Winter (MLR, SE))	R		3	2018	Prefers open woodland (Eucalypt and mallee) with an open shrub layer and bare ground. Often seen in farmland and Parks. Within the AMLR the preferred broad vegetation groups are Grassy Woodland and Mallee (DEH 2008a).	**Possible –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 4 km from the Project Area. Although some suitable habitat is available, occurrence records are very scarce.
Neophema elegans elegans (Elegant Parrot)	R		3	2019	Wide range of open habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh, and farmland (Birdlife Australia, 2021).	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1.5 km from the Project Area. Suitable habitat may be present due to the species using a wide range of habitats.
Petroica boodang boodang (Scarlet Robin)	R		3	2023	Eucalypt forests and woodlands (DEW, 2019).	**Likely –** Recorded previously within the past 2 years, with the nearest record of occurrence approximately <1 km from the Project Area. Suitable habitat is available, with numerous records of occurrences located nearby.
Strepera versicolor plumbea (Grey Currawong)	E		3	2023	Known to occur in the far NW corner of the State (Atlas of Living Australia, 2021).	Unlikely – Subspecies occurs only in far northwest of SA..
Zanda funerea whiteae (Yellow-tailed Black Cockatoo)	V		3, 2	2024	Inhabits a variety of habitats, favours eucalypt woodland and pine plantations. (Birdlife Australia, 2021)	**Known –** Observed during the field survey. Nearest record of occurrence approximately 1 km from the Project Area. Suitable habitat is available as this species uses a variety of habitats.
Zoothera lunulata halmaturina (Bassian Thrush)	R	EN	3	2022	Throughout its range, suitable habitat is mostly confined to creek lines or dune swales. Preferring areas of dense leaf litter. (DAWE, 2022).	**Highly Likely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately < 1 km from the Project Area. This species is found with the

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						Mount Lofty Ranges, with records observed in the adjacent Conservation Parks. The Project Area does not offer suitable nesting habitat; however, this species may be seen travelling through this area.
MAMMALIA						
Antechinus flavipes (Yellow-footed Antechinus)	V		3, 2	2022	Occupies a variety of habitats, including dry arid scrubland and sclerophyll forest (Menkhorst, 2001)	**Highly likely –** Recorded previously within the past years, with the nearest record of occurrence approximately < 1 km from the Project Area. This species has been recorded in adjacent Conservation Parks.
Isoodon obesulus obesulus (Southern Brown Bandicoot)	V	EN	3	2021	Prefers dense vegetation, including wetland fringes and heathland. (Woinarski, 2014)	**Likely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1 km from the Project Area. This species has been recorded in adjacent Conservation Parks.
Pteropus poliocephalus (Grey-headed Flying-fox)	R	VU	3, 2	2020	Typically roost in tall dense trees next to a water source. They will move up to 20km from their roost site to forage (DEW, 2020).	**Likely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately <1 km from the Project Area. There is limited suitable habitat present, however the area does have a permanent water source.
Trichosurus vulpecula (Common Brushtail Possum)	R		3, 2	2023	Inhabits woodland, forests, heath, and urban areas using trees with hollows for nesting (Australian Museum 2020).	**Highly Likely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 2 km from the Project Area. Suitable habitat is present for this species.
Sources 1- BDBSA, 2- AoLA, 3- NatureMaps, 4- Observed/recorded in the field, 5- Protected matters search tool, 6- Other *NPW Act*: E- Endangered, V- Vulnerable, R- Rare *EPBC Act*: Ex- Extinct, CR- Critically endangered, EN- Endangered, VU- Vulnerable						

Figure 15 depicts the location of threatened fauna records for Likely, Highly Likely and Known species within 5 km of the Project Area.

***Petroica boodang boodang* (Scarlet Robin) – Likely - Rare**

Scarlet Robin occurs in Australia as well as several islands of the south Pacific. This species occurs primarily in the central higher rainfall area of the Mount Lofty Ranges and is considered less common on the Adelaide Plains and eastern Flanks. This species is known to predominantly occur in woodlands and forests, where there is good leaf litter, and fallen logs as they are an important component of habitat for this species. They are known to breed in *Eucalypt* forests, however not in adjacent grasslands despite individuals occupying these areas during the non-breeding season. Within the Adelaide Mount Lofty Region, the preferred broad vegetation groups this species occupies includes heath woodlands and forests, and grassy woodlands.

The Project Area provides suitable habitat for this species, as both robin species forage extensively on *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum), which was observed during the field survey, however, this bird species was not identified at the time of the survey.

***Isoodon obesulus obesulus* (Southern Brown Bandicoot)- Likely – Vulnerable**

The AMLR distribution of the species is distinct, as it is isolated from other extant occurrences within South Australia. Within the AMLR, this species' relative area of occupancy is classified as 'Extremely Restricted'.

Southern Brown Bandicoot within the Adelaide Mount Lofty Ranges (AMLR) is 'known to occur' immediately north of the River Torrens, through the Adelaide Hills, and in the northern and southern Fleurieu Peninsula regions. This species occupies a range of woodlands, forest, scrubland, and heathland communities, as well as some grassland communities. Predominantly, they occur in open forests, tall shrublands and woodlands containing key flora species such as Eucalyptus obliqua (Messmate), E. fasciculosa (Pink Gum), Leptospermum juniperinum (Prickly Trea-tree), Leptospermum myrsinoides (Heath Tea-tree), Banksia marginata (Silver Banksia), Pultenaea daphnoides (Large-leaf Bush-pea), Pteridium esculentum (Bracken), Platylobium obtusangulum (Common Flat-pea), Xanthorrhoea semiplana (Yacca), Lepidosperma semiteres (Wire Rapier-sedge), and Acacia pycnantha (Golden Wattle). In accordance with known habitat preferences, the presence of dense vegetation, exotic or native, has been found to be a common attribute of corridors used by bandicoots. For example, in areas where native habitat has been degraded or diminish, exotic vegetation such as Rubus fruticosus (Blackberry) provides an alternative and important habitat for the Southern Brown Bandicoot can utilise thickets of Blackberry for nesting, travel corridors and protection from predators (Department of Sustainability, Environment, Water, Population and Communities 2011). Completely removing the blackberry all at once increases the risk of exposing the species to predators. Rubus fruticosus is a Weed of National Significance and a Declared Plant in South Australia, where Rubus fruticosus has been recorded in the Project Area it will need to be managed appropriately to minimise impact on potential Southern Brown Bandicoot habitat, while also meeting the Declared Plant Policy requirements.

***Trichosurus vulpecula* (Common Brushtail Possum) – Highly Likely - Rare**

The common Brushtail Possum is one of the most abundant, widely distributed and frequently encountered of all Australian marsupials. They are found in many types of habitats and have adapted well to living with humans, commonly encountered in urban areas, suburban backyards, campgrounds and sometimes in the ceilings of houses. *Eucalyptus* leaves are a significant part of the animal's diet. The Project Area provide suitable habitat such as hollows and foraging resources. However, at the time of the field surveys the species was not observed.

Zanda funerea whiteae (Yellow-tailed Black Cockatoo) – Known - Vulnerable

Yellow-tailed Black-Cockatoo is found in south-eastern Australia, from the Eyre Peninsula, South Australia to south and central Queensland. This species inhabits a variety of habitat types, but favours *Eucalypt* woodland and pine plantations. It is common for small to large flocks to be seen in these areas, either flying slowly or perched. In recent years there has been a rapid decline due to native habitat clearance, with a loss of nesting sites and food resources. The Project Area provides some suitable habitat for perching and potentially feeding, as this species was observed during the field survey.

Zoothera lunulata halmaturina (Bassian Thrush) – Highly Likely - Rare

The AMLR distribution of Bassian Thrush species is distinct, as it is isolated from other extant occurrences within South Australia. This subspecies has been described as 'probably declining' within the AMLR, with the relative area of occupancy classified as 'Very Restricted'.

The South Australian Bassian Thrush favours damp, densely forested areas and gullies, and areas which provide a thick canopy overhead and dense leaf-litter below. Within the AMRL the preferred broad vegetation habitat groups are heathy woodland and grassy woodlands.

The Project Area provides suitable habitat for this species, especially given the high density of leaf-litter, canopy cover, and flora species such as blackberry, which are known to be utilised by this species. However, this species was not identified during the field survey.

4.2.3 Threatened flora

The desktop search identified a total of 88 threatened flora species within the search area; seven listed under the *EPBC Act* as 'known', or 'have habitat known to occur' and 81 further flora listed as threatened under the *NPW Act*. No species listed under the *EPBC Act* or further species listed under the *NPW Act* have been excluded in the likelihood of use assessment. However, species which likelihood of use was assessed as 'unlikely' are listed in Appendix C.

Owing to the time of the year in which the survey was conducted, majority of the threatened orchid were not flowering. Suitable habitat for orchid species is limited by the presence of a dense weedy understorey. No threatened orchid species were identified during the field survey, however, this may be due to the field survey occurring outside of the species flowering period, as such, the species could possibly occur within the Project Area. owing to the time of year of study, difficult to rule out that orchids may be present within the Project Area.

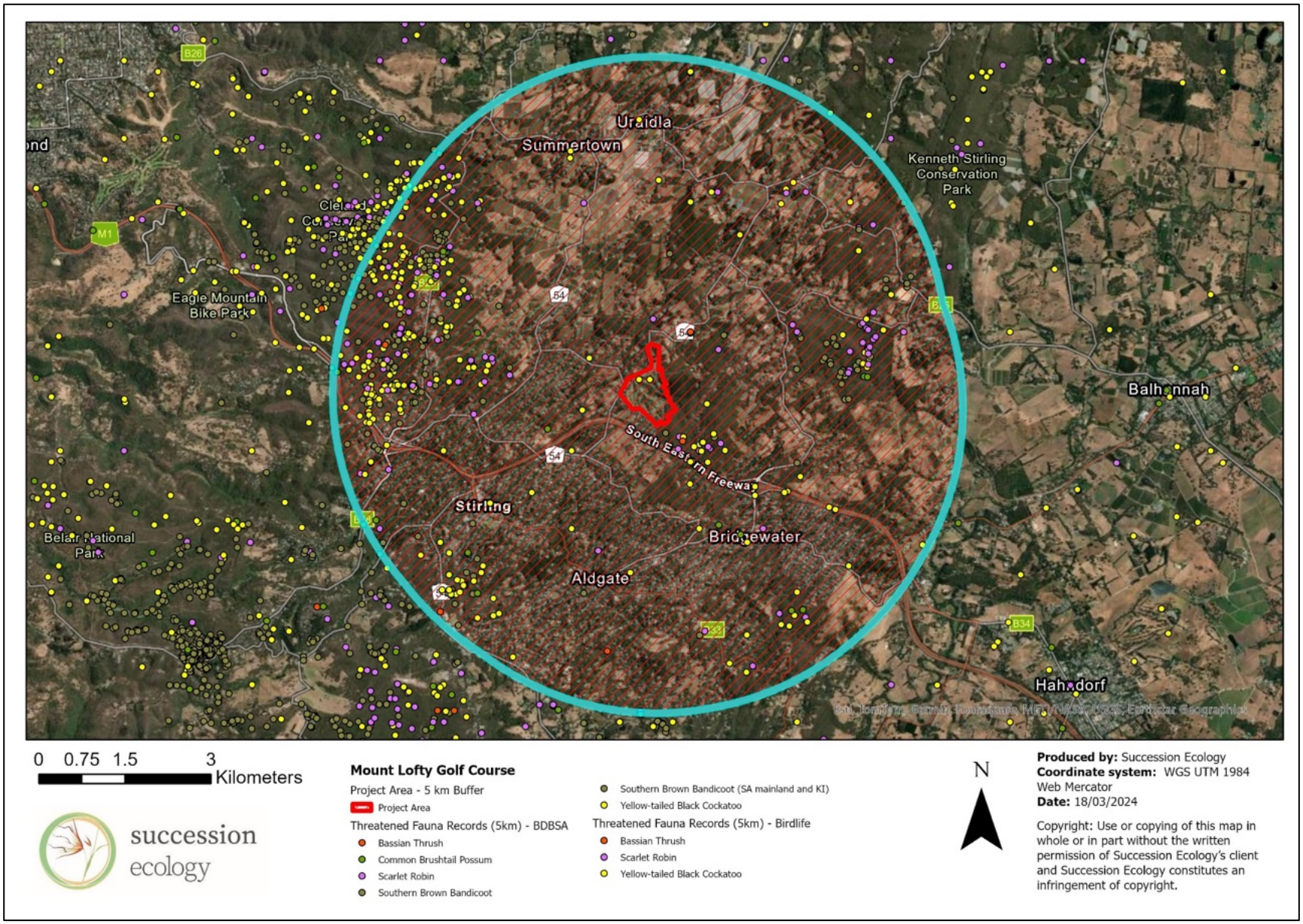


Figure 15: Threatened Fauna Records for Likely, Highly Likely and Known species within a 5 km buffer of the Project Area.

Table 4: A summary of the flora species observed on site or recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Acacia gunnii (Ploughshare Wattle)	R		3, 2	2022	In the Southern Lofty region mainly in the Adelaide Hills area. Usually on rocky hillsides and amongst rocky outcrops in open forest, associated with *Eucalyptus obliqua* and *Eucalyptus baxteri*.	**Likely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately <1 km from the Project Area. Limited suitable habitat is present, as *E. obliqua* is present within the Project Area, however, surrounding records occur within the adjacent Mount George Conservation Park.
Amphibromus archeri (Pointed Swamp Wallaby Grass)	R		2	2018	Occurs in damp areas such as lagoons, waterholes, and swamps, often on predominantly sandy soils (Weiller et al. 2022).	**Possible –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 2 km from the Project Area. Some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct impact area.
Boronia nana var. hyssopifolia (Dwarf Boronia)	R		3	2022	Occurs in scattered woodland and forest communities (Flora of Victoria 2023a).	**Possible –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1 km from the Project Area. Some suitable habitat is present for this species.
Caladenia behrii (Pink-lipped Spider-orchid)	E	EN	2	2010	Occurs on loamy soils in association with *Eucalyptus goniocalyx*, *E. obliqua*, *E. fasciculosa* or *E. microcarpa* woodland, usually on moderate slopes. Very sensitive to grazing by native and introduced herbivores and does not persist in weed infested areas (DEH 2008b).	**Possible –** The nearest record of occurrence is approximately 7.5 km from the Project Area, with majority of records located greater than 10 km from the Project Area. The Project Area falls within the known distribution of this species and suitable habitat is present including *E. obliqua*. However, suitable habitat is limited by the presence of a dense weedy understorey Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (August - September). Whereafter, it dies back to its perennial tuber. As such

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						the species could possibly have occur within the Project Area.
Caladenia pusilla (Tiny Fingers)	R		2	2013	Occurs in clumps or small groups in clay or gravel soils in exposed sites in open forest, often in soils which are boggy in winter but bake hard in summer (Electronic Flora of SA, 2022).	**Possible –** Recorded previously within the past 15 years, with the nearest record of occurrence approximately 4 km from the Project Area. Some suitable habitat is present for this species.
Caladenia rigida (Stiff White Spider-orchid)	E	EN	2	2020	Occurs in *Eucalyptus obliqua, E. fasciculosa, E. leucoxylon, E. goniocalyx, E. microcarpa* open forests with a relatively open shrub layer. This habitat type has been extensively cleared or degraded in the Southern MLR since European settlement, but intact tracts exist in native forest reserves, water reserves, and reserves in the Kersbrook area (DEH 2008c).	**Possible**. The nearest record of occurrence approximately 4 km from the Project Area. The Project Area falls within the known distribution of this species, some associated flora species are present, such as *E. obliqua*. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (August - October). Whereafter, it dies back to its perennial tuber. As such, the species could possibly occur within the Project Area.
Glycine latrobeana (Clover Glycine)	V	VU	5		*Eucalyptus viminalis* woodland and open woodland with *E. leucoxylon*, and understoreys ranging from mid-dense to very sparse and dominated by either *Leptocarpus brownii*, or *Acacia pycnantha*, *Leptospermum myrsinoides*, *Gonocarpus elatus*, and *Themeda triandra*; or *Pteridium esculentum*, *Acaena* sp., and *Ajuga* sp. and *Eucalyptus goniocalyx* grassy woodland, and *E. fasciculosa* low open forest (DEH 2008d).	**Possible**. Some suitable habitat is present within the Project Area for this species, as there is an associated species present within the Project Area, *Eucalyptus viminalis* ssp. viminalis. However, suitable habitat is limited by the presence of a dense weedy understorey. Nearest record of occurrence is <1 km from the Project Area, dated 1990. All other records occur greater than 7 km from the Project Area.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Cardamine paucijuga (Annual Bitter-cress)	R		2	2011	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in rich soils in most to dry habitats (Seeds of SA 2023a).	**Possible.** Recorded within the past 5 years, the nearest record of occurrence is approximately 2 km from the Project Area, dated 2011. Limited suitable habitat is present within the Project Area.
Deyeuxia densa (Heath Bent-grass)	R		2	2019	Endemic. Tas., Vic. and S.A. Commonly in heaths, sedgelands and on-stream banks in damp, open to lightly shaded sites, but in rocky sites at high altitudes in the Grampians, Vic. Flowers Oct.–Jan. (AusGrass, 2022).	**Likely –** The nearest record of occurrence is <1 km from the Project Area. Some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct Project Area.
Deyeuxia minor (Small Bent-grass)	V		2	2020	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower-South-east growing in damp areas under light *Eucalypt* cover or margins of wet sclerophyll forest (Seeds of SA 2023b).	**Likely –** The nearest record of occurrence is < 1 km from the Project Area, dated 2020. Some suitable habitat is present for this species such as permanent water sources and associated *Eucalyptus* species present in the Project Area.
Dianella longifolia var. grandis (Pale Flax-lily)	R		3	2022	Grassy woodland (Seeds of SA, 2021).	**Possible –** The nearest record of occurrence is approximately 3 km from the Project Area. Some suitable habitat is present.
Dipodium pardalinum (Spotted Hyacinth-orchid)	V		2	2014	Grows in wet forests with an open understorey, also heathy forest on well-drained soil. In AMLR, grows in loam and ironstone gravels, in stringybark woodland and with *Eucalyptus obliqua*, *Acacia myrtifolia*, *Xanthorrhoea semiplana* ssp. *tateana* and *Pteridium esculentum* (DEH 2008e).	**Possible –** The nearest record of occurrence is < 2 km from the Project Area. Some suitable habitat is present for this species such as permanent water sources and associated *Eucalyptus* species present in the Project Area.
Dipodium punctatum (Hyacinth Orchid)	E		2	2015	Occurs singly or in small groups in *Eucalyptus obliqua* or *E. baxteri* forest (DEH 2008f).	**Possible –** Recorded in the previous 20 years, the nearest record is < 2 km from the Project Area. Some suitable habitat is present, particularly where *E. obliqua* is

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						recorded within the Project Area, however associated understoreys species were not present.
Diuris behrii (Golden Cowslips)	V		2	2022	Occurs in native grassland, open woodland, and grassy forest; grows on more fertile soils, especially amongst Kangaroo Grass and *Triodia* on gentle slopes and flats (DEH, 2008).	**Possible –** The nearest record of occurrence is approximately 5 km form the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (September - November). As such, the species could possibly occur within the Project Area.
Diuris brevifolia (Late Donkey-orchid)	E		2	2020	Found in the southern Flinders Ranges and the Mount Lofty Ranges with a few records of the Eyre Peninsula, growing in native grassland, open woodland, and grassy forest; grows on more fertile soils; especially amongst Kangaroo Grass (DEH 2008g).	**Possible –** The nearest record of occurrence is approximately 3 km form the Project Area. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (October - December). As such, the species could possibly occur within the Project Area.
Drosera binata (Forked Sundew)	R		2	2017	Found in the southern Mount Lofty Ranges, on the western end on Kangaroo Island, and in the lower South-east in South Australia, growing in wet sand and sandy peat in swamps, on creek banks, and seepage lines in rock faces (Seeds of SA 2023c)	**Possible –** The nearest recent record occurs approximately 4 from the Project Area, dated 2017. Some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct impact area.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Eryngium vesiculosum (Prickfoot)	R		2	2009	Found scattered in South Australia, from the Lake Eyre region to the lower South-east, growing in sandy flats in low-lying damp areas (Seeds of SA 2023d).	**Possible –** Recorded in the past 20 years, the nearest recent record of occurrence is approximately 5 km from the Project Area. Some suitable habitat is present within the Project Area.
Eucalyptus dalrympleana ssp. dalrympleana (Candle bark Gum)	R		3	2021	Found in grassy or sclerophyll woodland or forest on loamy or sandy soils at higher elevations (NSW Flora Online, 2022).	**Possible –** Recorded previously within the past 5 years, the nearest record of occurrence is located within Mount George Conservation Park, approximately <1 km from the Project Area. Some suitable habitat and associated species are present within the Project Area.
Eucalyptus fasciculosa (Pink Gum)	R		3, 2	2021	Found in woodlands, low shrublands, in well-drained sandy soils (Seeds of SA, 2018).	**Possible –** A collection of this species was recorded in the past 20 years. The nearest record of occurrence is <1 km from the Project Area, dated 2017. Some suitable habitat is present within the Project Area.
Eucalyptus viminalis ssp. viminalis (Manna Gum)	R		3	2018	Found in the southern Mount Lofty Ranges in South Australia, growing in high rainfall areas on well-drained soils in open forest vegetation (Seeds of SA 2018a).	**Known –** A total of 24 individuals were recorded in the Project Area during the field survey. The habitat is present and falls within the known range of the species distribution.
Gastrodia sesamoides (Bell Orchid)	R		2	2023	Found growing in areas of high rainfall in wet sclerophyll forests, dry sclerophyll forests, woodlands and riparian areas (Seeds of SA 2023e).	**Likely –** Recorded in the past year, the nearest recent record is located approximately 3 km from the Project Area. Some suitable habitat is present and falls within the species known distribution. The species was not detected during the field survey; however, the field survey was not conducted during the species flowering period (October – November). As such, the species may have been present within the Project Area.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Gleichenia microphylla (Coral Fern)	R		2	2022	It can form dense thickets to 1.5 m tall in sclerophyll forest but occurs as dense low mounds in open swamps (Electronic flora of South Australia, 2022).	**Likely –** Recorded in the previous 5 years with records of occurrence approximately 2 km from the Project Area. The Project Area provides some suitable habitat and is within the known distribution of the species.
Juncus amabilis (Beautiful Rush)	V		3	2009	Found in the southern Mount Lofty Ranges and the south-east in South Australia, growing in damp sites (Electronic Flora of SA 2007).	**Possible –** The nearest recent record is <1 km from the Project Area, dated 2009. While some suitable habitat is present along permanent watercourses, this is not within the direct impact area.
Luzula flaccida (Pale Wood-rush)	V		2	2020	Found in the southern Mount Lofty Ranges and the South-east in South Australia, growing in moist rather shady sites in grassy woodland or open grassland (DEH 2008h).	**Possible –** Recorded in the past 5 years, the nearest recent record occurs approximately 3 km from the Project Area. The Project Area provide limited suitable habitat.
Mentha diemenica (Slender Mint)	R		2	2011	Grows in damp locations, clay to sandy soils in montane woodland and grasslands (Atlas of Living Australia 2023).	**Possible –** The nearest record of occurrence is approximately 4 km from the Project Area. Some suitable habitat is present within the Project Area.
Montia fontana ssp. *chondrosperma* (Waterblinks)	V		3	2022	Found mainly in the southern Mount Lofty Ranges in South Australia, growing in moist areas along stream margins and wetlands (Seeds of SA 2023f).	**Possible –** The nearest record of occurrence is approximately 3 km from the Project Area. Some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct impact area.
Prasophyllum pallidum *(*Pale Leek-orchid)	R	VU	2	2013	Fertile soils of woodland and well-grassed open forests (Seeds of SA, 2019).	**Possible –** Nearest record of occurrence is located approximately 9.5 km from the Project Area The Project Area is within the known distribution of this species. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						period (September - November). As such, the species could possibly occur within the Project Area.
Prasophyllum pruinosum (Plum Leek-orchid)	E	EN	5, 2	2012	Found in the Adelaide and Mount Lofty Ranges Region, recorded in a range of open woodland habitats, usually with an overstorey of Eucalyptus fasciculosa and/or Eucalyptus leucoxylon (DCCEEW 2010).	**Possible –** Nearest record of occurrence is approximately 3 km from the Project Area, with majority of records occurring greater than 10 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (September - November). As such, the species could possibly occur within the Project Area.
Pterostylis cucullata (Leafy Greenhood)		VU	2	2013	Occurs in Eucalyptus leucoxylon open forest, often with E. viminalis, E. camaldulensis, or E. obliqua. Within the AMLR, the preferred broad vegetation group is grassy woodland (DEH 2008i).	**Possible –** Limited suitable habitat is present for this species given the presence of *Eucalyptus obliqua* and *E. viminalis*, however the habitat is not an open forest, and a dense weedy understorey dominates the habitat. There are no recent records for this species within 10 km of the Project Area. This species may be present during its flowering period (August – December). As such, the species could possibly occur within the Project Area.
Pultenaea graveolens (Scented Bush-pea)	R		3, 2	2023	Dry sclerophyll woodland (Seeds of SA, 2021).	**Known –** This species was recorded within VA1. The nearest record of occurrence is < 1 km from the Project Area. The Project Area falls within the species known distribution. Suitable habitat is present.
Ranunculus glabrifolius (Shining Buttercup)	V		2	2000	occurs in damp ground in depressions or beside watercourses (Atlas of Living Australia 2024a).	**Possible –** Found only in Mount George Conservation Park in South Australia and only one record of occurrence.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
R*ytidosperma laeve* (Smooth Wallaby-grass)	R		2	2017	Grows in open woodland and grasslands, often in seasonally damp habitats (PlantNET NSW 2008).	**Possible –** Some suitable habitat present. Nearest records of occurrence approximately 3 km from the Project Area.
Rytidosperma tenuius (Short-awn Wallaby-grass)	R		3, 2	2022	Found in dry sclerophyll forest on sandy soils (National Herbarium of NSW, 2021).	**Likely –** Several records <500 m from the Project Area. Some suitable habitat present. The species is known to grow in disturbed sites.
Senecio pinnatifolius var. *pinnatifolius* (Variable Groundsel)	R		3	2015	Found in areas with moist soil such as around lakes and wetlands. Also forest, woodlands and grassy areas (B Wood 2022).	**Possible –** Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area. Nearest recent record of occurrence is approximately 4 km from the Project Area.
Thelymitra aristata (Scented Sun Orchid)	E		2	2008	Occurs singly or in small groups in clay or gravel soils in forest or scrubland or in the SE in damp sand around swamp margins. (Electronic Flora of South Australia, 2022)	**Possible –** Nearest record of occurrence is approximately 3 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (September - January). As such, the species could possibly occur within the Project Area.
Thelymitra batesii (Bates Sun-orchid)	R		3	2014	Heathy woodlands and heathy open forest on sandy and gravelly clay loam soils (Seeds of SA, 2021).	**Possible –** Nearest record of occurrence is <500 m from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						may be due to the field survey occurring outside of the species flowering period (September - December). As such, the species could possibly occur within the Project Area.
Thelymitra grandiflora (Great Sun Orchid)	R		2	2019	Occurs singly or in small groups, in clay or gravel soils in forest or scrubland, or in the SE in damp sand around swamp margins (Electronic Flora of SA, 2022).	**Possible –** Nearest record of occurrence is approximately 2.5 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (September - December). As such, the species could possibly occur within the Project Area.
Thelymitra inflata (Inflated Sun-orchid)	V		2	2008	Occurs only in the ranges, mostly on ridges and slopes, in woodland sites that may be wet in winter, especially along tracks and other disturbed sites (DEH 2008j).	**Possible –** Nearest record of occurrence is approximately 3 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (late September – early December). As such, the species could possibly occur within the Project Area.
Thelymitra ixioides (Dotted Sun Orchid)	E		2	2013	Occurs singly or in small numbers in sandy or gravelly loams in forest in areas receiving greater than 750 mm mean annual rainfall (Electronic flora of South Australia, 2022)	**Possible –** Nearest record of occurrence is approximately 4 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (August – January). As such, the species could possibly occur within the Project Area.
Thelymitra latifolia (Blue Star Sun-orchid)	R		2	2000	In South Australia, found from the southern Flinders Ranges southward through the Mount Lofty Ranges to the South-east. Occur in woodlands in various soil types, from leached pale sands to yellow gravelly clays and may occur near swamps (Atlas of Living Australia 2024b).	**Possible –** Nearest record of occurrence is approximately 4 km from the Project Area. The Project Area falls within the known distribution of this species. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. Despite this species not being identified during the field survey, this may be due to the field survey occurring outside of the species flowering period (mid-September – early November). As such, the species could possibly occur within the Project Area.
Xanthosia tasmanica (Southern Xanthosia)	R		2	2015	Found on Kangaroo Island and the southern Mount Lofty Ranges in South Australia, growing in shallow sand on rocky coastal heath and in woodland (Seeds of SA 2023g).	**Possible –** The Project Area falls within the distribution of the species. Some suitable habitat, nearest record of occurrence approximately 4.5 km from the Project Area.

Sources 1- BDBSA, 2- AoLA, 3- NatureMaps, 4- Observed/recorded in the field, 5- Protected matters search tool, 6- Other
NP&W Act: E- Endangered, V- Vulnerable, R- Rare
EPBC Act: Ex- Extinct, CR- Critically endangered, EN- Endangered, VU- Vulnerable

4.3 Cumulative impact

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must consider the potential cumulative impact, both direct and indirect, that is reasonably likely to result from a proposed clearance activity.

The cumulative impact of clearing is the gradual reduction of remnant vegetation in the area, a loss of connectivity between remnant patches and reduction of available habitat to threatened flora and fauna. Patches of remnant vegetation provide important habitat for native flora and fauna and are at high risk of degradation from clearance and other impacts such as weed incursion. This data report considers all sources of impact to native vegetation posed by the Project, including direct clearance for development of infrastructure, the potential impacts on root zones of vegetation due to compaction or construction, and any clearance required by the SA Country Fire Service. This report also considers the indirect impacts such as hydrological impacts, weed infestations, dust emissions, native vegetation pruning for path/road maintenance and development works, and any future planned works for this project.

A review of NatureMaps indicated the native vegetation remnancy within 5 km of the Project Area is 28 %. The Mount Lofty IBRA sub-region has 15 % remnancy. The proposed clearance will have minor impact on the vegetation within the Block, with clearance to be restricted to the direct footprint and CFS buffer. Within the 35 m CFS buffer, only understorey vegetation will be cleared. There is also the opportunity to manage the Declared Plants present at this site, to the benefit of the vegetation. While the proposed development will result in the direct clearance of seven large, scattered trees, through design the Project has successfully retained other remnant scattered trees and patches of native vegetation.

Potential indirect or offsite impacts of infrastructure construction projects can include the alteration of hydrological processes, weed invasion or spread, dust impacts on neighbouring vegetation, and contamination from waste. Weed species tend to be specialists at colonising disturbed soils. Any disturbance caused by construction activities is susceptible to weed invasion, which can impact habitat for fauna and flora, and may spread to neighbouring habitat. Management actions will be implemented to ensure no new weed infestations occur within the Project Area, and project activities do not cause a spread of weeds to neighbouring habitat.

Construction activities are likely to cause an increase in dust levels in the local area, for the duration of earthworks and vehicular travel on un-surfaced tracks. Dust can coat vegetation, potentially interfering with plant growth and reproduction. Dust emissions will be confined to construction activities only, and as such any impacts will be temporary. Further, dust suppression activities will be employed during all stages of construction to assist in limiting dust impacts on neighbouring vegetation.

Construction activities can generate waste products, both hazardous and non-hazardous, that can impact flora and fauna or their habitat within and adjacent to the Project Area. Such impacts may include soil contamination and smothering by litter or other waste materials. Management actions will be implemented to ensure all waste is appropriately managed on-site and disposed of in accordance with regulatory requirements.

4.4 Address the mitigation hierarchy

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations (NV) 2017, the NVC must have regard to the mitigation hierarchy. The NVC will also consider, with the aim to minimize, impacts on biological diversity, soil, water and other natural resources, threatened species or ecological communities under the EPBC Act or listed species under the NPW Act.

The following paragraphs describes how the Project has addressed the mitigation hierarchy with reference to the NV Regulations Section 5 – Mitigation hierarchy (a) – (d):

a) Avoidance – outline measures taken to avoid clearance of native vegetation

The Project has implemented design changes and realignments to reduce the area of impact to vegetation, specifically the removal of the proposed accommodation pods. The accommodation pods underwent several iterations including the reduction, and then removal of the proposed accommodation pods, which in early design phases included as many as 50 pods.

This has reduced impact and direct clearance of vegetation and scattered trees substantially, including retaining the vegetation that was previously expected to be impacted due to being within the CFS buffer zone clearance area. The proposed addition new vehicle access to the golf club, located in the southern part of the Project Area has been designed to utilise a partially cleared and existing unofficial walking entrance, which will avoid impacts to vegetation in this area. The majority of works for this project have been designed to fit within the current infrastructure footprint, or use open areas or areas of exotic/planted vegetation species for the development of the carparks and the refurbishment of the existing perfumery.

b) Minimisation – if clearance cannot be avoided, outline measures taken to minimize the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).

The Project's design leverages the current footprint of existing infrastructure, as well as utilising open areas or areas of exotic/planted vegetation species for the development of the carparks and the refurbishment of the existing perfumery. Impacts to the vegetation at the southeastern edge of the hotel building will be minimised by clearing just one vegetation stratum and retaining the trees. This will allow the retention of key habitat features utilised by many of the threatened species identified in Section 4.2.2.

Signage and exclusion fencing will be implemented to limit the impacts of clearing to vegetation and aid in minimising disturbance within the Project Area. Additionally, where practicable and feasible, measures to prevent the pollution of drainage lines and waterways in the areas located downstream of the proposed works will be implemented during the construction phases of the project.

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation.

Some areas that are proposed to be impacted by the clearance of native vegetation will undergo revegetation. Revegetation of the Project Area will have a preference for species that are endemic to the AMLR region. Due to CFS constraints, some areas will not be rehabilitated as they need to be maintained for specific bushfire attack level ratings. In conjunction with these efforts, a weed management plan will also be developed to maintain the Project Area to support natural regeneration of native species.

d) Offset – any adverse impact on native vegetation that cannot be avoided or further minimized should be offset by the achievement of a significant environmental benefit that outweighs that impact.

Mount Lofty Golf Estate Pty Ltd will contribute a SEB payment into the Native Vegetation fund to support restoration and conservation works in South Australia.

The NVC will only consider an offset once avoidance, minimization and restoration have been documented and fulfilled. The NVC *Policy for Significant Environmental Benefit* (Native Vegetation Council 2020c) explains the biodiversity offsetting principles that must be met.

4.5 Principles of clearance (*Schedule 1, Native Vegetation Act 1991*)

The NVC will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the NV Regulations. The NVC will consider all the principles of clearance of the *NV Act* as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act (PDI) 2016*.

Principle of clearance	**Considerations**
Principle 1(a) - it comprises a high level of diversity of plant species	Relevant information VA1 (a and b) has a total of 31 species. Of these, 14 are native and 17 introduced. Native Plant Diversity Score = 12
	Assessment against the principles At Variance – VA1a VA1b
	Moderating factors that may be considered by the NVC Only a very small area of vegetation will be impacted relative to the amount of vegetation in the local vicinity (approximately 0.00033% of the native vegetation within 5 km of the site).
Principle 1(b) - significance as a habitat for wildlife	Relevant information Threatened species identified in this area since 1995 that are likely, highly likely or known to use the site: • *Petroica boodang boodang* (Scarlet Robin) • *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) • *Zoothera lunulata halmaturina* (Bassian Thrush) • *Isoodon obesulus obesulus* (Southern Brown Bandicoot) • *Trichosurus vulpecula* (Common Brushtail Possum) • *Pteropus poliocephalus* (Grey-headed Flying-fox) • *Corcorax melanorhamphos* (White-winged Chough) • *Antechinus flavipes* (Yellow-footed Antechinus) Only one threatened species was observed within the Project Area, *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) and did not occur with VA1a / VA1b. Non threatened species observed within planted amenity vegetation included *Gymnorhina tibicen* (Australian magpie). Patch VA1a and VA1b: Threatened Fauna Score: = 0.1 Unit Biodiversity Scores: = 45.70 Scattered Trees Fauna Habitat Score: = 1.8 for all 7 scattered trees Total Biodiversity Scores: = T1 = 4.24 T2 = 11.59 T3 = 3.28 T4 = 4.06 T5 = 4.57 T6 = 10.69 T7 = 9.71

	Assessment against the principles Seriously at Variance VA1a, VA1b, T1, T2, T3, T4, T5, T6, T7
	Moderating factors that may be considered by the NVC The removal of this small area of bushland and removal of the seven scattered trees is not expected to have a significant impact on these fauna species as: • Records of occurrence of the species assessed within this report were largely located in nearby Belair National Park, Mount George Conservation Park, or Cleland Conservation Park, implying that the species are likely to preferentially utilise these areas of native vegetation and other undistributed areas in the region, rather than the relatively small and relatively disturbed Project Area. • Additionally, a number of other scattered trees and patches of remnant native vegetation within the Project Area will be retained and not impacted. These unaffected areas are likely to provide habitat corridors. The clearance is not expected to impact: • population size, extent, structure, continuity, or survivability • the area of occupancy of a species • habitat critical to the survival of a species • recovery of a species.
Principle 1(c) - plants of a rare, vulnerable or endangered species	Relevant information Threatened species identified in VA1a and VA1b since 1995 have been assessed as known, highly likely or likely to use the site: • *Acacia gunnii (Ploughshare Wattle)* • *Deyeuxia densa* (Heath Bent-grass) • *Deyeuxia minor* (Small Bent-grass) • *Gastrodia sesamoides* (Bell Orchid) • *Gleichenia microphylla* (Coral Fern) • *Senecio pinnatifolius* var. *pinnatifolius* (Variable Groundsel) • *Pultenaea graveolens* (Scented Bush-pea) • *Eucalyptus viminalis ssp. viminalis* (Known) VA1a and VA1b Threatened Flora Score = 0.08 Scattered trees Threatened Flora Score = All *Eucalyptus viminalis ssp. viminalis* (T1, T2, T6, T7) scored 0.3
	Assessment against the principles At Variance VA1a, VA1b, T1, T2, T3, T7, T8
	Moderating factors that may be considered by the NVC One individual *Pultenaea graveolens* was identified within VA1a / VA1b, no important populations occur within the area identified for clearance in VA1a / VA1b, records of this species occur mainly within the Mount George Conservation Park, Kenneth Stirling Conservation Park and Cleland Wildlife Park, with few scattered records in the wider MLR that provide patches of vegetation. A total of 24 *Eucalyptus viminalis ssp. viminalis* were surveyed and initially identified for impacts. However, through Project design reiterations, of these only five individuals will require complete clearance. The remaining 21 individuals will be retained. As such, clearance is not expected to impact: • population size, extent, structure, • continuity, or survivability • the area of occupancy of a species

	• habitat critical to the survival of a species • recovery of a species
***Principle 1(d) - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered*:**	Threatened communities. No threatened communities under the *EPBC Act* or threatened ecosystems under the DEW Provisional list of threatened ecosystems are present within VA1. Threatened Community Score = 1
	Assessment against the principles Not at Variance VA1a, VA1b and all seven scattered trees.
	Moderating factors that may be considered by the NVC. The EPBC PMST identified that two Threatened Ecological Communities (TECs) could potentially be present within the Project Area: • Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia. This TEC occurs within a small portion inside the buffer area only, approximately 9 km north from the Project Area. • Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and derived Native Grasslands of South-eastern Australia. This TEC occurs within the buffer area only within Cleland Conservation Park and Belair National Park (approximately 8 km from the Project Area). Neither of the TECs were identified during the field survey. As such the TECs were determined absent from the Project Area.
Principle 1(e) - it is significant as a remnant of vegetation in an area which has been extensively cleared.	Relevant information Remnancy % Uraidla IBRA Association = 26 % Mount Lofty Sub-region = 15 % Total Biodiversity Score VA1a = 14.76 Total Biodiversity Score VA1b = 4.94 Total Biodiversity Score Scattered Trees (inclusive of all seven) = 48.16
	Assessment against the principles At Variance VA1 and all seven scattered trees
	Moderating factors that may be considered by the NVC VA1a / VA1b is dominated a high percentage of weedy understorey which contributions to the degradation of this VA. The scattered trees are generally in good condition with dieback ranging from 5 % to 20 %.
Principle 1(f) – it is growing in, or in association with, a wetland environment.	Relevant information The vegetation is not associated with a wetland.
	Assessment against the principles Not at Variance.
	Moderating factors that may be considered by the NVC N/A
Principle 1(g) - it contributes significantly to the	Relevant information The Project Area is approximately 2.5 km north of Bridge and 2 km east of Stirling. The Stirling Golf Course is tucked besides the Mount George Conservation Park in which the tall forest towers in the backdrop to the Stirling Golf Course (north and east) The golf course is encapsulated by tall trees and non-native vegetation, which borders the perimeter of 35 Golflinks Road. The clearance

amenity of the area in which it is growing or is situated.	of VA1 and the seven scattered trees is unlikely to be a detriment to the amenity values in the area considering the prevalence of tall forest in the surrounding landscape.
	N/A
	Moderating factors that may be considered by the NVC Revegetation along Golflinks Road and Cox Creek may offset the visual impact from removing vegetation.

Principles of Clearance (h-m) will be considered by comments provided by the local Landscape Board or relevant Minister. The Data Report should contain information on these principles where relevant and where sufficient information or expertise is available.

4.6 Risk assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	7
	Area (ha)	0.431
	Total biodiversity Score	Total Biodiversity Score VA1a = 14.76 Total Biodiversity Score VA1b = 4.94 Total Biodiversity Score Scattered Trees (inclusive of all seven) = 48.16 Combined total: 67.86
Seriously at variance with principle 1(b), 1(c) or 1 (d)		VAs and Scattered Trees that are seriously are variance are: **1(b)** - VA1a, VA1b T1, T2, T3, T4, T5, T6, T7
Risk assessment outcome		Level 3

4.7 NVC guidelines

Provide any other information that demonstrates that the clearance complies with any relevant NVC guidelines related to the activity.

N/A

5. Clearance summary

Clearance area(s) summary table

Block	Site	Species diversity	Threatened Ecological community	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	VA1a	12	1	0.08	0.1	45.70	0.323	14.76	0.8	0	0	12.40	$16,987.32	$934.30
A	VA1b	12	1	0.08	0.1	45.70	0.108	4.94	0.1	0	0	5.18	$7,099.96	$390.50
						Total	**0.431**	**19.70**				**17.58**	**$24,087.28**	**$1,324.80**

Scattered trees summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (inc. Admin Fee)
T1	1	1.8	0.3	4.24	1.0	4.46	$6,439.78
T2	1	1.8	0.3	11.59	1.0	12.17	$17,594.93
T3	1	1.8	0.0	3.28	1.0	3.45	$4,984.99
T4	1	1.8	0.0	4.06	1.0	4.26	$6,160.82
T5	1	1.8	0.0	4.57	1.0	4.80	$6,933.82
T6	1	1.8	0.3	10.69	1.0	11.23	$16,231.89
T7	1	1.8	0.3	9.71	1.0	10.20	$14,741.19
TOTAL				**48.16**		**50.56**	**$73,087.42**

Fee breakdown *SEB Payment* *$69,277.17* *Admin Fee* *$3,810.24*

Total summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	67.86	65.74	$93,364.45	5,135.04	$98,499.49

Economies of Scale Factor	0.5
Rainfall (mm)	918

NOTE: The minimum payment for this clearance will be $500.

6. Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

ACHIEVING AN SEB

Indicate how the SEB will be achieved by ticking the appropriate box and providing the associated information:

☐ Establish a new SEB Area on land owned by the proponent.

☐ Use SEB Credit that the proponent has established. Provide the SEB Credit Ref. No. _____

☐ Apply to have SEB Credit assigned from another person or body. The application form needs to be submitted with this Data Report.

☐ Apply to have an SEB to be delivered by a Third Party. The application form needs to be submitted with this Data Report.

☒ Pay into the Native Vegetation Fund.

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Atlas of Living Australia. 2024b. Species Profile: Thelymitra latifolia (Blue Star Sun-orchid).
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DEH. 2008c. Threatened Species Profile: Caladenia rigida, Stiff White Spider-orchid.
DEH. 2008d. Threatened Species Profile: Glycine latrobeana, Clover Glycine.
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DEH. 2008f. Species Profile: Dipodium punctatum (Hyacinth Orchid).
DEH. 2008g. Threatened Species Profile: Diuris behrii, Behr's Cowslip Orchid.
DEH. 2008h. Luzula flaccida (Pale Wood-rush).
DEH. 2008i. Pterostylis cucullata ssp. sylvicola (Leafy Greenhood).
DEH. 2008j. Species Profile: Thelymitra inflata (Inflated Sun-orchid).
DEH. 2008k. Threatened Species Profile: Lewinia pectoralis pectoralis (Lewin's Rail (eastern)).
DEH. 2008l. Threatened Species Profile: Caladenia valida (Robust Spider-orchid). DEH.
DEH. 2008m. Species Profile - Caleana major (Duck orchid).
DEH. 2008n. Threatened Species Profile: Leionema hillebrandii, Mount Lofty Phebalium.
DEH. 2008o. Species Profile: Schizaea fistulosa (Narrow Comb-fern).
DEH. 2008p. Threatened Species Profile: Schoenus latelaminatus (Medusa Bog-rush).
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Seeds of SA. 2018f. Luzula ovata (Oval Wood-rush).
Seeds of SA. 2023a. Cardamine paucijuga (Annual Bitter-cress).
Seeds of SA. 2023b. Deyeuxia minor (Small Bent-grass).
Seeds of SA. 2023c. Species Profile: Drosera binata (Forked Sundew).
Seeds of SA. 2023d. Species Profile: Eryngium vesiculosum (Prostrate Blue Devil).
Seeds of SA. 2023e. Species Profile: Gastrodia sesamoides (Potato Orchid).
Seeds of SA. 2023f. Species Profile: Montia fontana ssp. chondrosperma (Waterblinks).
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Seeds of SA. 2023h. Species Profile: Caladenia parva (Small Spider-orchid). Seeds of SA.
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Seeds of SA. 2023j. Species Profile: Coronidium gunnianum (Pale Everlasting).
Seeds of SA. 2023k. Species Profile: Gonocarpus micranthus ssp. micranthus (Creeping Raspwort).
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8. Appendices & Attachments

Appendices

Appendix A: Complete species lists of species recorded during field surveys.

Appendix B: Additional site photos.

Appendix C: Threatened fauna and flora species excluded from assessment.

Attachments

Attachment 1: Bushland/Scattered tree assessment scoresheets associated with the proposed clearance.

Attachment 2: Site maps as shape files.

Appendix A – Complete list of flora and fauna species identified within the Project Area.

SPECIES NAME	COMMON NAME	SITE
Native Flora		**VA1 and the Project Area**
Acacia melanoxylon	Blackwood	
Acrotriche fasciculiflora	Mount Lofty ground berry	
Austrostipa sp.	Spear Grass	
Bursaria spinosa ssp.	Christmas Bush	
Dianella revoluta var.	Flax Lily	
Eucalyptus obliqua	Messmate Stringybark	
Eucalyptus viminalis ssp. viminalis	Manna Gum	
Exocarpos cupressiformis	Native Cherry	
Hibbertia exutiacies	Prickley Guinea Flower	
Lomandra micrantha ssp.	Small-flower Mat-Rush	
Lomandra sp.	Mat-Rush	
Pteridium esculentum ssp. esculentum	Bracken Fern	
Pultenaea graveolens	Scented Bush Pea	
Rytidosperma sp.	Wallaby Grass	
Exotic Flora		
Agapanthus praecox ssp. orientalis	Agapanthus	
Alopecurus sp.	Foxtail	
Chondrilla juncea	Skeleton weed	
Cotoneaster sp.	Cotoneaster	
Cupressus macrocarpa	Monterey Cypress	
Cytisus scoparius	English Broom	
Erica arborea	Tree Heath	
Genista linifolia	Flax-leaf Broom	
Genista monspessulana	Montpellier Broom	
Hedera helix	English Ivy	
Ilex aquifolium	Holly Bush	
Iris sp.	Iris	
Piptatherum miliaceum	Rice Millet	
Plantago sp	Plantain	
Rubus fruticosus	Blackberry	
Senecio pterophorus	African Daisy	
Ulex europaeus	Gorse	
Vinca major	Blue Periwinkle	
Native Fauna		
Zanda funerea whiteae	Yellow-tailed Black Cockatoo	

Appendix B: Additional site photos

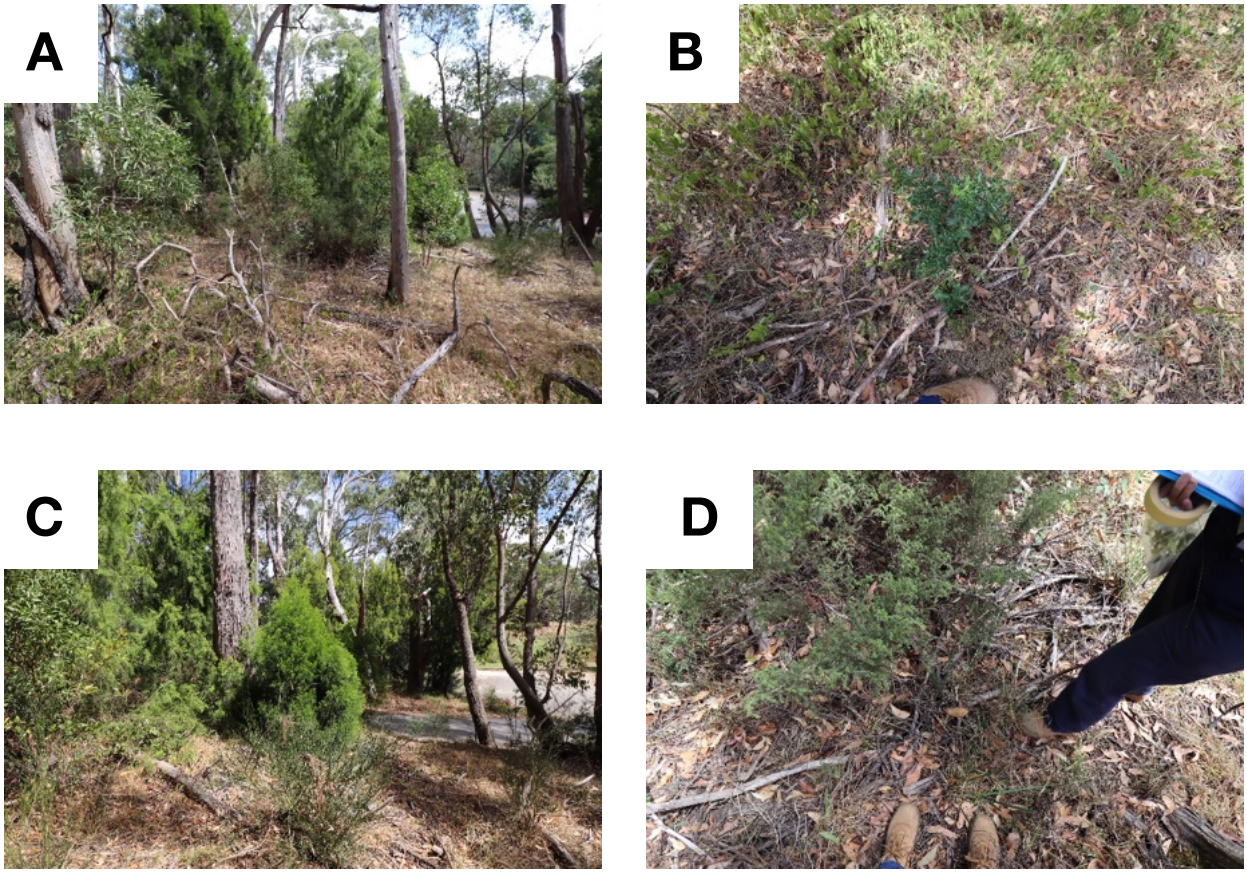

Figure 16: Vegetation Association 1 (VA1), structure and understorey.

Appendix C – Threatened fauna and flora species which likelihood of use was assessed as 'unlikely'.

Table 5: A summary of the fauna species observed on site or recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST which the likelihood of use was assessed as 'unlikely.'

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
AVES						
Falcunculus frontatus frontatus (Eastern Shrike-tit)	R		3, 2	2006	Found in a variety of habitats, including woodlands, scattered trees, forested gullies. Rarely feeds near the ground (Australian Museum, 2020).	**Unlikely –** Recorded previously within the past 20 years, with the nearest record of occurrence approximately 2 km from the Project Area. Although there is suitable habitat present on site, previous occurrence records predate 1995.
Gerygone olivacea olivacea (White-throated Gerygone)	R		2	2007	Its natural habitats are temperate forests and subtropical or tropical moist lowland forests (Australian Museum 2023).	**Unlikely –** Recorded previously within the past 20 years, with the nearest record of occurrence approximately 3 km from the Project Area. Previous record predates 1995, with limited suitable habitat available.
Lewin pectoralis pectoralis (Lewin's Rail)	V		3	2010	Inhabit permanent to ephemeral, fresh to saline wetlands with dense emergent or fringing vegetation. Also use artificial habitats with similar structural features (DEH 2008k).	**Unlikely** – Recorded previously within the past 20 years, with the nearest record of occurrence approximately 4 km from the Project Area. Limited suitable habitat is available.
Biziura lobata menziesi (Musk Duck)	R		3, 2	2015	Deep freshwater lagoons with dense reed beds (Australian Museum 2021).	**Unlikely** – Recorded previously within the past 10 years, with the nearest record of occurrence approximately 2.5 km from the Project Area. Limited suitable habitat is present.
Oxyura australis (Blue-billed Duck)	R		2	2018	Almost wholly aquatic, deep water in large permanent wetlands and swamps with dense aquatic vegetation (DEH, 2022)	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 3 km from the Project Area, in Cleland National Park.
Plectorhyncha lanceolata (Striped Honeyeater)	R		3, 2	2020	Found in forests and woodlands often along rivers (Birdlife Australia, 2021).	**Unlikely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 2 km from the Project Area. Limited suitable habitat is available, with scarce records of occurrence located nearby.
Podiceps cristatus australis (Great Crested Grebe)	R		3, 2	2023	Inhabits rivers, lakes, estuaries, and sheltered bays, but favours large, deep, open bodies of fresh water (Birdlife Australia, 2021).	**Unlikely –** Recorded previously within the past 2 years, with the nearest record of occurrence approximately 5 km from the Project Area. Despite there being a recent record of occurrence it is the only record within 5 km of the Project Area.
Stagonopleura guttata (Diamond Firetail)		VU	5		Occurs in a wide range of Eucalypt dominated habitat with a grassy understorey (DEW, 2019).	**Unlikely –** Recorded previously within the last 20 years, with the nearest record of occurrence 4 km from the Project Area. Limited suitable habitat is available for this species, with sparse records.
Stictonetta naevosa (Freckled Duck)	V		2	2014	Prefers permanent freshwater swamps and creeks with heavy growth of bullrushes, lignum or tea-tree. During drier times, it moves to waters such as lakes	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 3 km from the Project Area, in Cleland Conservation Park. Suitable habitat is not present for this species.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					and sewerage ponds. (Australian Museum, 2021).	
Turnix varius varius (Painted Buttonquail)	R		3	2018	Various Eucalypt habitats, with a preference for areas with leaf litter (DEW, 2019).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 4 km from the Project Area. Limited suitable habitat is present for this species as it is known to prefer dense canopies.
Zapornia tabuensis (Spotless Crake)	R		3	2010	Inhabits wetlands where there is dense vegetation surrounding the water (eBird, 2021).	**Unlikely –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 3 km from the Project Area. Limited suitable habitat is not present for this species.
MAMMALIA						
Antechinus agilis (Agile Antechinus)	E		2	2021	Inhabits wet or moist forest in the southeastern corner of Australia (Atlas of Living Australia 2024c).	**Unlikely –** Recorded previously within the past 5 years, with the nearest occurrence record approximately 4 km from the Project Area. Suitable habitat is not present for this species.
REPTILIA						
Egernia cunninghami (Cunningham's Skink)	E		3, 2	2017	Forests and Woodland with Rocky Outcrops (Australian Museum, 2021).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 2 km from the Project Area. Limited suitable habitat is present for this species.
Varanus rosenbergi (Heath Goanna)	V		3, 2	2014	Prefers sandy heathland, open woodland, or sclerophyll forest, although the species is known to occur in other vegetation types (Landscape SA, 2020)	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 1 km from the Project Area. There are only two recorded occurrences for this species within 5 km of the Project Area, with limited suitable habitat available.
Varanus varius (Lace Monitor)	R		3, 2	2013	Occurs in a wide range of habitats from temperate to semi-arid. Habitat preferences tend towards areas with sandy soils for burrowing (DEW, 2019).	**Unlikely –** Recorded previously within the past 15 years, with the nearest record of occurrence approximately 1 km from the Project Area. Suitable habitat is not available for this species.
Sources 1- BDBSA, 2- AoLA, 3- NatureMaps, 4- Observed/recorded in the field, 5- Protected matters search tool, 6- Other NP&W Act: E- Endangered, V- Vulnerable, R- Rare EPBC Act: Ex- Extinct, CR- Critically endangered, EN- Endangered, VU- Vulnerable						

Table 6: summary of the flora species observed on site or recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST which the likelihood of use was assessed as 'unlikely'.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Acacia iteaphylla (Flinders Ranges Wattle)	R		2	2022	Found in hills on rocky outcrops or in valleys along rocky creeks (Flora of Australia, 2021).	**Unlikely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 2 km from the Project Area. Limited suitable habitat is present for this species.
Acacia stricta (Hop Wattle)	R		2	2005	Found in a small, localised area in the South-east in South Australia. Grows with	**Unlikely –** Recorded preciously within the past 20 years, with the nearest record of occurrence approximately

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					Eucalyptus baxteri with heath understorey, often in damp areas (Seeds of SA 2024a).	2.5 km from the Project Area. This species is confined to the South-east.
Austrostipa tenuifolia (Long-awn Spear-grass)	R		2	2018	Found in sandy soils in grassland or grassy woodland associated with *Callitris* or *Allocasuarina* species (Seeds of SA, 2022).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 4 km from the Project Area. There is only one record of occurrence within 5 km of the Project Area since 1995, and suitable habitat is not present within the Project Area.
Baloskion tetraphyllum ssp. *tetraphyllum* (Tassel Cord-rush)	R		3	2012	Permanently moist peaty sand, near streams and the edges of lagoons, swampy places, riverbanks, in oligotrophic soils. Very limited occurrences in the lower South-east of South Australia (Flora of Australia 2021).	**Unlikely –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 3 km from the Project Area. Suitable habitat is not present for this species.
Bauera rubioides (Dog Rose)	R		2	2011	Found on Kangaroo Island and in the southern Mount Lofty Ranges in South Australia, growing in damp heathland and heathy forests (Seeds of SA 2024b).	**Unlikely –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 3 km from the Project Area. Limited suitable habitat is available for this species, however there is only one record of occurrence for this species within 5 km of the Project Area.
Baumea acuta (Pale Twig-rush)	R		2	2001	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in swamps and damp heath on open sandy soils (Seeds of SA 2024c).	**Unlikely –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 2 km from the Project Area. This species is confined to the lower South-east, and suitable habitat is not available.
Baumea gunnii (Slender Twig-rush)	R		2	2018	Found on Kangaroo Island, southern Mount Lofty Ranges, and the lower South-east in South Australia, growing in wet heathlands and swampy woodlands (Seeds of SA 2024d).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 1.5 km from the Project Area. Suitable habitat is not present for this species within the Project Area directly. Surrounding records occur in Cleland National Park.
Blechnum nudum (Fishbone Water Fern)	R		2	2022	Found on Kangaroo Island and southern Mount Lofty Ranges in South Australia, growing along stream banks in shaded gullies (Seeds of SA 2018b).	**Unlikely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1 km from the Project Area. Some suitable habitat is present, however not within the areas of proposed developmental impact.
Blechnum wattsii (Hard Water-fern)	R		2	2010	Often forms large colonies in deep moist soil and occasionally on rock faces in wet sclerophyll forest and rainforest (Atlas of Living Australia 2020a).	**Unlikely –** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 1 km from the Project Area. Some suitable habitat is present, however not within the areas of proposed developmental impact.

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
Boronia parviflora (Swamp Boronia)	R		2	2018	Found on the western on of Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heath and swampy areas (Seeds of SA 2018c).	**Unlikely –** Recorded previously within the past 10 years, with the nearest record of occurrence approximately 4 km from the Project Area. There is only one record within 5 km of the Project Area for this species.
Brachyscome diversifolia (Tall Daisy)	E		2	2010	Found in a few sites in the southern Mount Lofty Ranges in South Australia, growing in forests and along gullies (Seeds of SA 2018d).	**Unlikely –** Recorded previously within the past 15 years, with the nearest record of occurrence approximately 4 km from the Project Area. This is an isolated record.
Caladenia leptochila ssp. *leptochila* (Narrow-lip Spider Orchid)	R		2	2000	Occurs singly or in small groups in clay or gravelly soils in open to dense forest. Not uncommon in the Adelaide Hills. Vic. (very rare). (Electronic Flora of South Australia species, 2022)	**Unlikely –** Recorded previously within the past 25 years, with the nearest record of occurrence approximately 4 km from the Project Area. Records of this species occur in Cleland National Park.
Caladenia necrophylla (Late Spider-orchid)	R		2	2008	Occurs in the South-east of South Australia, growing in mallee woodland (Atlas of Living Australia 2020b).	**Unlikely –** Recorded previously within the past 20 years, with the nearest record of occurrence approximately 2 km from the Project Area. This is an isolated record of occurrence. This species is also confined to the South-east area of SA.
Caladenia parva (Small Greencomb Spider Orchid)	R		2	1997	Found in the southern Mount Lofty Ranges and the lower South-east in South Australia, growing in heath and heathy woodlands, often in damper sites (Seeds of SA, 2023).	**Unlikely –** Recorded previously within the past 30 years, with the nearest record of occurrence approximately 4 km from the Project Area. There are no new records of occurrence for this species.
Caladenia valida (Robust Spider-orchid)	E		2	2009	Mainly coastal in heathy forest and scrub. On various soil types including sand and laterite in scrubby woodland and heath, preferring small clearings, often in the protection of grass trees (*Xanthorrhoea* spp.). (DEH 2008l).	**Unlikely**. The nearest record of occurrence approximately 8.5 km from the Project Area and is an isolated record. It is the only record within a 10 km buffer of the Project Area. There is no suitable habitat present and no associated species are present.
Caleana major (Bee Orchid)	V		2	2017	Forms sparse vegetative colonies in open forest and heathland (*Eucalyptus baxteri* forest and often associated with *Banksia ornata*), usually on sandy or gravelly soils. (DEH 2008m).	**Unlikely**. The nearest record of occurrence approximately 4.5 km from the Project Area, all other records occur are greater than 7 km from the Project Area. There is limited suitable habitat present and no associated species are present.
Callistemon brachyandrus (Prickly Bottlebrush)	R		3	2019	Found along the Murray River in South Australia mainly between Swan Reach and Waikerie growing in the sandy soils of alluvial flats (Seeds of SA 2023i).	**Unlikely.** Recorded previously within the past 5 years, with the nearest record of occurrence approximately 4 km from the Project Area. This is an isolated record.
Coronidium gunnianum	E		2	2009	Southern Mount Lofty Ranges, Burra Gorge and a	**Unlikely.** There nearest record of occurrence is approximately 6.5 km

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
(Pale Swamp Everlasting)					single record from the lower South-east in South Australia, growing in grasslands and riverine woodlands on soils that are prone to inundation (Seeds of SA 2023j).	from the Project Area. The suitable habitat within the Project Area is restricted by the presence of a dense weedy understorey.
Dicksonia antarctica (Tree Fern)	E		2	2012	Occurring mostly in forested areas of high rainfall, particularly in shaded gullies and near streams and waterfalls, ranging from near sea-level to the sub alps (Flora of Victoria 2023b).	**Unlikely.** Nearest record of occurrence approximately 5 km from the Project Area, dated 1970. Only two other records exist within the wider locality (approximately 4 km and 11 km from the Project Area. Limited suitable habitat is provided.
Diuris chryseopsis (Snake Orchid)	E		2	2003	Presumed extinct in the Mount Lofty Ranges (but may have been rediscovered in Kuitpo Forest Reserve), and found only between Naracoorte and Mount Gambier in South Australia, growing in damper grassy patches in woodland and waterholes, along creeks, on cooler slopes in rich, most soils (Seeds of SA 2018e).	**Unlikely**. The nearest record of occurrence is approximately 10 km form the Project Area. All other records occur greater than 10 km from the Project Area. While some suitable habitat is present along permanent watercourses, this is not within the direct impact footprint. This species is generally confined to the southeast side of the State.
Drosera stricticaulis (Erect Sundew)	V		2	1998	Sandy clay loam along watercourses and granite outcrops (Seeds of SA, 2019).	**Unlikely**. Recorded in the previous 25 years, the nearest record of occurrence is located approximately 3 km from the Project Area. However, no suitable habitat is present.
Euphrasia collina subsp. osbornii (Osborn's Eyebright)		EN	5		Generally found in moist open habitat, in mallee scrub but also in woodlands and coastal heath (DEH, 2010).	**Unlikely.** While some suitable habitat is present, there are no recent records of occurrence.
Gonocarpus micranthus ssp. *micranthus* (Creeping Raspwort)	R		3	2018	Found on Kangaroo Island, southern Mount Lofty Ranges, and the lower South-east in South Australia, growing on wet, peaty soils (Seeds of SA 2023k).	**Unlikely**. The most recent record of occurrence is restricted to Cleland National Park, approximately 3.5 km from the Project Area. While the species distribution covers the Project Area, no suitable habitat is present.
Goodenia brunnea	R		3	2018	This *Goodenia* grows in rocky situations and near watercourses in the far north-west of South Australia (Atlas of Living Australia 2024d).	**Unlikely**. An isolated record of this species is located approximately 3.8 km from the Project Area. This species is generally confined to the far north-west of SA.
Grevillea aquifolium (Prickly Grevillea)	R		2	1997	On calcareous sand in sclerophyllous woodland, and in heath on sands, limestone pavements and sandstone outcrops (Flora of Victoria 2022)	**Unlikely**. Despite some suitable habitat present within the Project Area, the nearest record of occurrence is approximately 3.6 km from the Project Area, dated 1997.
Hypolepis rugosula ssp. rugosula (Ruddy Ground Fern)	R		2	2020	Found on Kangaroo Island, southern Mount Lofty Ranges, and the lower South-east in South Australia, growing	**Unlikely**. Recorded in the previous 20 years, the nearest recent record of occurrence is approximately 3 km from the Project Area. While some suitable habitat is present along

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					along shady streams or open wetter areas (VicFlora 2018a).	permanent watercourses, this is not within the direct impact footprint.
Leionema hillebrandii (Mount Lofty Phebalium)	R		2	2023	Endemic to South Australia and found only in the Southern Mount Lofty Ranges, growing in heathy woodland and forest gullies, often in open rocky habitat along steep gullies (DEH 2008n).	**Unlikely.** Recorded in the past year the nearest recent record occurs approximately 4 km from the Project Area. There is limited suitable habitat present.
Luzula ovata (Clustered Wood-rush)	R		3, 2	1996	Found in the Mount Lofty Ranges and the lower South-east in South Australia, growing in swampy areas (Seeds of SA 2018f).	**Unlikely**. The nearest record is approximately 1 km from the Project Area, dated 1996. While some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct Project impact footprint.
Lycopodiella lateralis (Slender Clubmoss)	R		2	2017	Found on Kangaroo Island and the southern Mount Lofty Ranges, growing in wet boggy areas (Seeds of SA 2024e).	**Unlikely**. The nearest recent record occurs approximately 4 km from the Project Area. While some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct Project impact footprint.
Lycopodium deuterodensum (Bushy Clubmoss)	E		2	2009	Found in the southern Mount Lofty Ranges in South Australia, growing on steep hill slopes over sandstone and quartzite on the edge of a gully swamp within open stringybark forest with a dense understorey of bracken, sedges, shrubs, herbs and grasses (Seeds of SA 2023l).	**Unlikely**. The nearest recent record occurs approximately 4 km from the Project Area. Some suitable habitat is present for this species; however, associated species are minimal.
Melaleuca armillaris ssp. *akineta* (Needle-leaf Honey-myrtle)	R		3	2008	Subspecies *akineta* is only found in the Gawler Ranges of South Australia (Atlas of Living Australia 2024e).	**Unlikely**. The nearest recent record occurs approximately 3 km from the Project Area. Suitable habitat does not occur within the Project Area and is not within the known distribution of the species.
Nymphoides crenata (Wavy Marshwort)	R		2	1995	Grows on floodplains, in swamps, lagoons, irrigation channels, and in temporarily inundated depressions, and in slow-flowing streams where the depth of the water is up to about 1.5 m deep (Atlas of Living Australia 2024f).	**Unlikely**. The nearest record of occurrence is approximately 2.5 km from the Project Area. This is an isolated record, dated 1995. Some suitable habitat is present for this species such as permanent water sources; however, this habitat is not located within the direct impact area.
Paracaleana minor (Small Duck-orchid)	V		3	2010	Found in the southern Mount Lofty and the South-east in South Australia, growing in a variety of habitats, in forested ridges and slopes, in coastal scrub and more open areas on sand and gravelly soil (Seeds of SA 2023m).	**Unlikely**. The nearest record is approximately 4 km from the Project Area from within the past 15 years. The first field survey was conducted during its flowering season (September – February), did not encounter the species. Suitable habitat is limited by the presence of a

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
						dense weedy understorey. As such, it is unlikely to occur at the Project Area.
Poa umbricola (Shade Tussock-grass)	R		2	2018	Grasslands, meadows, and open woodlands. Often straggling among rocks (Ausgrass2 2010).	**Unlikely**. The nearest record of occurrence is approximately
Pterostylis setifera (Bristly Greenhood)	E		2	2018	Grows in a variety of habitats including among rocks and in mallee vegetation (Atlas of Living Australia 2024g).	**Unlikely**. There is no mallee habitat present within the Project Area. No recent records.
Schizaea fistulosa (Narrow Comb-fern)	V		2	2008	Occurs on raised soil mounds in swamps or under vegetation in moist situations. Often found associated with Schizaea bifida (DEH 2008o).	**Unlikely**. The nearest record of occurrence is approximately 4.5 km from the Project Area. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation.
Schoenus latelaminatus (Medusa Bog-rush)	V		2	2012	Occurs in freshwater boggy, swampy areas, drainage lines, and temporarily wet places, including swampy valley sites under River Red Gum with *Myriophyllum amphibium* and damp depressions amongst *Juncus holoschoenus*, *Gratiola pumi*la and *Myriophyllum* sp. within the AMLR the preferred broad vegetation groups are wetland and riparian (DEH 2008p).	**Unlikely**. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation. Nearest record of occurrence is approximately 3 km from the Project Area, dated 2012.
Schoenus lepidosperma ssp. *Lepidosperma* (Slender Bog-rush)	R		3	2018	Usually on damp sandy soils, in heath or woodland (VicFlora 2018b).	**Unlikely**. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation. Nearest record of occurrence is approximately 4 km from the Project Area.
Scutellaria humilis (Dwarf Skullcap)	R		2	2021	Various habitats, often in moist sheltered areas, particularly along creeks or gullies (National Herbarium of NSW, 2021).	**Unlikely**. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation. Nearest record of occurrence is approximately 4.5 km from the Project Area. Limited records of occurrence occur within the Mount Lofty Ranges.
Sprengelia incarnata (Pink Swamp-heath)	R		2	2017	Found on Kangaroo Island, southern Mount Lofty Ranges, and the lower South-east in South Australia, growing in wet heathland, sedgeland and other swampy vegetation on	**Unlikely**. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation. Nearest record of

Species (common name)	NPW Act	EPBC Act	Data source	Year of last record	Species known habitat preferences	Likelihood of use
					peaty or sandy soils (Seeds of SA 2023n).	occurrence is approximately 4.5 km from the Project Area.
Swainsona behriana (Behr's Swainson-pea)	V		2	2013	Usually found in grassland and grassy woodland, in fertile soil (Royal Botanic Gardens of Victoria, 2021).	**Unlikely**. The nearest record of occurrence is approximately 7.5 km from the Project Area. While the Project Area falls within the species known distribution, it provides limited suitable habitat due to the weedy understory.
Thelymitra circumsepta (Naked Sun Orchid)	E		2	2018	Rediscovered in 2008 in Cleland CP. Recorded in perched swamps with Coral Fern, Tea Tree, and Cutting Grass. Found among low shrubs in open forest or in open rocky sites on well-drained and moisture retentive soils (DEH 2008q).	**Unlikely.** Nearest record of occurrence is approximately 4 km from the Project Area, this is a single isolated record. Some suitable habitat is present. However, suitable habitat is limited by the presence of a dense weedy understorey. The species was not observed during the field survey, which occurred just within its flowering period (December - February).
Thelymitra mucida (Plum Sun-orchid)	R		2	2000	Grows in moist to wet depressions, swamp margins and other low-lying sites in coastal and near coastal heathland, heathy forest and shrubland in dark sandy or peaty soils. In the AMLR, restricted to low heath in sandy peat swamp margins where (DEH 2008r).	**Unlikely**. Suitable habitat absence in the Project Area. Nearest record of occurrence approximately 30 km from the Project Area, all other records are confined to Kangaroo Island.
Thysanotus tenellus (Grassy Fringe-lily)	R		2	2015	Known to occur in heavier or sandy loamy soils, and among rocks in association with *Casuarina stricta* (Flora of Australia, 2022).	**Unlikely**. Nearest record of occurrence is approximately 4.5 km form the Project Area. Habitat within the Project Area is unsuitable.
Todea barbara (King Fern)	E		2	2018	Recorded habitat in the AMLR includes swamps, swampy gullies and creek beds. All extant populations occur adjacent to permanent water, springs, or soaks. Habitat is typically shrubland of *Leptospermum lanigerum* and *Acacia provincialis.* (DEH 2008s).	**Unlikely**. Some suitable habitat such as such as permanent water sources; however, this habitat is not located within the direct impact area and the riparian vegetation is infested with exotic vegetation. Nearest record of occurrence is approximately 4 km from the Project Area
Xyris operculata (Tall Yellow-eye)	R		2	2008	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathlands and swampy areas (Seeds of SA 2023o).	**Unlikely**. Absence of suitable habitat within the Project Area. Nearest record of occurrence is 5 km from the Project Area, all other records occur greater than 20 km from the Project Area.

Sources 1- BDBSA, 2- AoLA, 3- NatureMaps, 4- Observed/recorded in the field, 5- Protected matters search tool, 6- Other
NP&W Act: E- Endangered, V- Vulnerable, R- Rare
EPBC Act: Ex- Extinct, CR- Critically endangered, EN- Endangered, VU- Vulnerable

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Appendix N

Cultural Heritage Management Plan - EBS Heritage

ebs heritage

Mount Lofty Golf Estate

Cultural Heritage Management Plan Framework

Mount Lofty Golf Estate Cultural Heritage Management Plan Framework

30 November 2022

Version 3

Prepared by EBS Heritage for Mount Lofty Golf Estate Pty Ltd

Document Control					
Revision No.	Date issued	Authors	Reviewed by	Date Reviewed	Revision type
1	05/09/2022	L. Salisbury	Dr M Louter	05/09/2022	Draft
2	24/10/2022	L. Salisbury	-	-	Draft
3	30/11/2022	L. Salisbury	-	-	Final

Distribution of Copies			
Revision No.	Date issued	Media	Issued to
1	06/09/2022	Electronic	Sonia Mercorella, Trice
2	24/10/2022	Electronic	Sonia Mercorella, Trice
3	30/11/2022	Electronic	Sonia Mercorella, Trice

EBS Heritage Project Number: GX220701

CITATION: EBS Heritage (2022) Mount Lofty Golf Estate Cultural Heritage Management Plan Framework. Report to Mount Lofty Golf Estates Pty Ltd. EBS Heritage, Adelaide.

Cover photograph: Proposed site for orchard and garden (photo by EBS Ecology). .

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GLOSSARY AND ABBREVIATION OF TERMS

AAR	Aboriginal Affairs and Reconciliation
AH Act	*Aboriginal Heritage Act 1988*
CHMP	Cultural Heritage Management Plan
AGD-AAR	Attorney General's Department – Aboriginal Affairs and Reconciliation (formally DPC-AAR)
Guidelines	*Guidelines for the Preparation of a Development Report, Mount Lofty Golf Estate*
KYAC	Kaurna Yerta Aboriginal Corporation
m	meter(s)
Mount Lofty Golf Estate	Mount Lofty Golf Estate Pty Ltd
n.d.	no date

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1 INTRODUCTION

This Cultural Heritage Management Plan (CHMP) Framework has been prepared in response to the *Guidelines for the Preparation of a Development Report, Mount Lofty Golf Estate* (the Guidelines) (State Planning Commission 2022) to address the issues / impacts of the development, on the cultural heritage of First Nations People. It has been identified in the Guidelines that the proposed development has the potential to impact on sites and places of Aboriginal heritage through disturbance during construction.

The CHMP Framework document sets out in detail how the risk will be managed and the controls that will be implemented to ensure that no damage is caused to Aboriginal heritage during the construction and operational phases of the development.

1.1 Project description

Mount Lofty Golf Estate Pty Ltd (Mount Lofty Golf Estate) is proposing to redevelop the Stirling Golf Course. As part of the redevelopment, they are intending to undertake the following works:

- Hotel - 3-5 level hotel building comprising:
    - 56 hotel suites.
    - 15 x two bedroom serviced apartments.
    - 15 x three bedroom serviced apartments.
    - 2 penthouse serviced apartments.
    - Back of house, plant storage and maintenance areas.
    - A 537m^2 function room.
    - A 212m^2 restaurant with 89 m^2 external terrace.
    - 186m^2 sports bar.
    - A 189m^2 gallery and cafe.
    - A 94m^2 wellness centre with 125m^2 gym and spa/massage treatment rooms.
- Private retreats – ‘Pods’
    - 17 x one bedroom units.
    - 1 x back of house Service Pod.
- Adaptive reuse of the existing perfumery:
    - Refurbishment of the existing local heritage place to accommodate a multipurpose space for use as café, retail or functions.
    - Extension to the Perfumery to include a covered outdoor dining area.
    - Orchard and perfumery garden plantings to reimagine the former use of the building as a “Scent Factory”.
    - Note: the perfumery building will temporarily house the golf club whilst construction is occurring.
- Golf Course Facilities Building - 2-5 level building comprising:

  - Retention of 18-hole golf course with improvements.
  - Refurbished function facilities, cart storage and 138m2 clubhouse in new building.
  - New 97m2 pro-shop, administration areas, gym and change rooms.
- Car Parking, Access and Waste Management
  - A total of 200 car parking spaces in two car parking areas.
  - Emergency vehicle access via western entry from Golflinks Road.
  - Main access point via Golflinks Road.
  - Designated service bay for waste collection and service vehicles.
  - Porte cochere and valet area for guests and buses.
  - A separate entry from Old Carey Gully Road to provide maintenance vehicle access and public access to the perfumery building.
  - Designated waste storage areas.
- Subdivision – following construction of the proposed development, it is proposed to divide the site into three (3) allotments:
  - Allotment 532, with an approximate area of 9,924m2 together with a right of way 'A', comprising the hotel building and pods.
  - Allotment 533, with an approximate area of 5,056m2 together with a right of way 'B', comprising the golf club and facilities building.
  - Allotment 531, with an approximate area of 38.4 hectares, comprising the balance of the golf course, subject to easements 'A' and 'B'.

At the time of preparing this CHMP Framework, the design for the redevelopment had not been finalised. This CHMP framework document has been written with the intent that it will be valid, irrespective of the final design of the development.

1.2 Project location

The Stirling Golf Club is located at 35 Golflinks Road, Stirling South Australia in the Hundred of Onkaparinga, within the Local Government Area of the Adelaide Hills Council, the Landscape Management Region of the Hills and Fleurieu and the Native Title Determination of the Kaurna People.

The proposed redevelopment is situated on Certificate of Title 5891, Folio 805 (Allotment 53 in Deposited Plan 59212) and is boarded to the east by the Mount George Conservation Park and to the west by Old Carey Gully Road. Refer to Appendix 1 for a map of the project area.

1.3 Purpose of the CHMP Framework

The purpose of the CHMP Framework is to:

- Demonstrate the commitment by Mount Lofty Golf Estate to consulting and working with the Kaurna Yerta Aboriginal Corporation (KYAC), the registered native title body corporate for the Kaurna people.
- Ensure Mount Lofty Golf Estate meets its statutory obligations under the *Aboriginal Heritage Act 1988* (AH Act) in relation to the management and protection of Aboriginal cultural heritage.
- Demonstrate the measures that will be implemented to manage and protect Aboriginal cultural heritage in the pre-construction, construction, and operation phases of the project.
- Demonstrate the cultural heritage stop work / discovery and reporting procedures should Aboriginal heritage be identified during either the construction or operational phases of the project.

2 SCOPE OF WORKS

The redevelopment of the Stirling Golf Club and Golf Course is anticipated to be undertaken using a combination of traditional construction methods together with less invasive measures like the Surefoot™ concreate free footing system. The essential pre-construction, construction and operational phase activities are set out in sections 2.1, 2.2 and 2.3 respectively.

Mount Lofty Golf Estate acknowledge that despite best efforts to identify and avoid Aboriginal heritage sites, a risk remains that on-ground works could result in damage, disturbance or interference to Aboriginal heritage sites, objects and ancestral remains which are protected by the AH Act. To ensure protection of any Aboriginal cultural heritage, mitigation measures will be documented in the CHMP and be implemented by Mount Lofty Golf Estate staff, contractors and sub-contractors during all phases of the project.

2.1 Essential pre-construction activities

The AH Act does not mandate a requirement for a cultural heritage survey where there is a low likelihood of disturbance to Aboriginal heritage. The cultural heritage desktop assessment (EBS 2021) identified that there was a low likelihood of disturbance to unknown Aboriginal heritage, therefore a cultural heritage survey has not been undertaken at this stage of the project design.

The following preconstruction activities were undertaken prior to the development of this CHMP Framework:

- Geotechnical sampling,
- Flora and Fauna Survey, and
- Arborist Survey.

2.2 Essential construction activities

The following essential construction activities are anticipated to be undertaken during the redevelopment of the project area:

- Establishment of new roads and car parking facilities,
- Vegetation clearance and earthworks at new hotel building, 20 private retreats (pods) and one service pod,
- Pouring of concrete footings for new clubhouse facility and pro-shop, administration areas and change rooms,
- Upgrades to current 18-hole golf course,
- Land clearance and earthworks for the refurbishment, and expansion of the Local Heritage Place,
- Landscaping and establishing a perfumery garden and orchard,
- Establishment of associated temporary facilities,

- Establishment of fire protection infrastructure,
- Establishment of waste facilities,
- Storm water management,
- Clean up of waste materials and rehabilitation of temporary areas of disturbance,
- Repurposing dam for stormwater management, and
- Alteration on current electrical infrastructure and establishment of new onsite transformer.

2.3 Essential operational activities

The following essential operational activities are anticipated to be ongoing after completion of the redevelopment:

- Maintenance of the hotel building, private retreats and service pod,
- Maintenance of the golf course and gardens,
- Maintenance of fire protection infrastructure,
- Maintenance of roads and car parking facilities,
- Maintenance of onsite wastewater treatment,
- Maintenance of electricity transformer, and
- Continued refuse collection, deliveries and other hotel servicing.

3 ABORIGINAL CULTURAL HERITAGE

There is one Aboriginal site protected under the AH Act within 1000 metres (m) of the project area (Appendix 2). The registered site is on the western side of Carey Gully Road, opposite the northern end of the golf course near Hole 10 and therefore out of the project area. Given the distance of the site from the project area, construction during the proposed development will not disturb this known site.

There are no Aboriginal places listed in the Australian Heritage Database within, or near to the proposed project area.

3.1 Risk assessment

Given that many sites and objects have previously been recorded throughout the Adelaide Hills, it would normally be anticipated that construction works would pose a high likelihood that unknown Aboriginal sites or objects of Aboriginal significance would be disturbed during construction. Only one site of Aboriginal significance however was identified within 1000 m of the project area, and none recorded in the golf course.

Geotechnical sampling showed that there is a fill layer of between 0.20 m and 0.35 m across most of the site, meaning that it is unlikely that Aboriginal artefacts would be found within the project area, on the surface and in situ. Under the fill layer is topsoil which on average is a depth of between 0.10 m and 0.30 m. The layer directly under the topsoil and through to the bedrock, was predominately high plasticity clay which is generally heavy and difficult to dig into. These results reinforce that the likelihood of disturbing ancestral burials or other Aboriginal cultural items is low, as aboriginal artefacts are generally found in sandy or gravelly soils not in compacted clays.

During construction of the Mount Lofty Golf Course, groundwork activities however may inadvertently disturb previously undiscovered sites of Aboriginal cultural significance. Table 1 outlines mitigation and management controls that will be implemented to avoid and / or minimise impacts to Aboriginal cultural heritage values.

Table 1. Aboriginal cultural heritage mitigation and management controls.

Aspect	Detail
Objective	• Avoid or minimise the impacts of construction, operation, and maintenance of the project on Aboriginal sites, objects of significance or remains.
Management Strategy	• Minimise any heritage impacts within the construction footprint, and to avoid impacts outside of the construction footprint.
Legislation and other guidance	• *Aboriginal Heritage Act 1988* (SA) • Discovery of Aboriginal Sites and Objects Fact sheet (Department of Premier and Cabinet – Aboriginal Affairs and Reconciliation (DPC-AAR), n.d.) • Project Planning and Aboriginal Heritage Guide (DPC-AAR n.d.)
Potential impacts	• Damage, disturbance or interference with areas of Aboriginal cultural heritage significance. • Damage, disturbance or interference to identified or unidentified sites, objects or remains.

Mitigation and control measures	• Desktop assessment of registered and recorded sites via the Central Archive, including the Register of Aboriginal Sites and Objects, maintained by Attorney General's Department - AAR. • Utilise previously disturbed areas for infrastructure wherever practicable. • Induct all staff and contractors on cultural heritage prior to any onsite construction work. • Undertake a cultural heritage survey with native title claimants, if required. • Develop and implement a Cultural Heritage Management Plan detailing the procedures for the identification, management and protection of Aboriginal cultural heritage sites including monitoring of ground disturbance activities in agreed locations with relevant traditional owner representatives, if required.

3.2 Cultural heritage surveys – pre-construction phase

Given that the property has been operating as a golf course for 95 years and prior to that for at least 75 years it was used for mixed farming, dairying, iron mining and timber milling, suggests that there is a low likelihood of identifying or disturbing unknown surface Aboriginal sites or objects of significance as fill has been laid down across the site and the topsoil and subsurface layer have previously been disturbed.

The AH Act does not mandate a requirement for a cultural heritage survey where there is a low likelihood of disturbance to Aboriginal heritage therefore a cultural heritage survey was not undertaken prior to the pre-construction activities detailed in section 2.1.

3.3 Monitoring and cultural heritage surveys – construction phase

Following the completion of the detailed design for the project and additional geotechnical sampling, monitoring of ground disturbance activities in certain agreed locations, may need to be undertaken to ensure sites of Aboriginal heritage value are protected.

3.3.1 Monitoring

Although it is not a requirement under the AH Act, having Aboriginal Monitors present during ground works may be considered, as it is effective for the early detection of artefacts, objects and burial sites during works. Monitoring involves the continuous observation of earthmoving works to:

- Watch the sediments being excavated to see any change;
- Inspect and sieve the removed soil to ensure that no discoveries go unnoticed; and
- Ensure that harm to any cultural heritage that may be present is mitigated when and where it cannot be reasonably avoided.

Monitoring of earthworks is undertaken until the specified depth required for development is reached or until compact clay or bedrock is reached at which point the chance of encountering archaeological features is significantly reduced.

The requirement for an Aboriginal heritage monitoring program will be assessed once the final design for the project has been completed.

3.3.2 Cultural heritage survey

The AH Act does not mandate a requirement for an Aboriginal heritage survey unless there is a high likelihood of disturbance to unknown Aboriginal sites/objects. The risk assessment undertaken as part of the cultural heritage desktop assessment (EBS 2021) determined that there are no known Aboriginal sites within the project area and the likelihood of the project works disturbing unknown sites is low. A cultural heritage survey is therefore currently deemed unwarranted.

Following the completion of the detailed design for the project, the requirement for a cultural heritage survey will be reassessed.

3.4 Cultural heritage surveys – operations phase

It is unlikely further cultural heritage surveys will be required once the Mount Lofty Golf Estate is operational. Mount Lofty Golf Estate will however manage ongoing compliance with the AH Act in accordance with its operational heritage management system and in consultation with the KYAC.

4 CHMP FRAMEWORK

Mount Lofty Golf Estate does not currently intend to make any application for a Section 23 authority under the AH Act given that there is no known Aboriginal cultural heritage within the project area and the cultural heritage risk assessment has determined that the likelihood of disturbance to unknown Aboriginal cultural heritage is low. Nor does the proponent intend to undertake a cultural heritage survey prior to construction commencing, unless mandated in the Ministers Response Document.

Should any known Aboriginal sites be identified prior to construction or unknown Aboriginal heritage be identified during construction activities, a cultural heritage survey may be warranted and/or requested by the KYAC. A CHMP will then be developed that will include the following information and requirements in relation to the management and protection of Aboriginal cultural heritage during construction and operation of the:

- requirements and responsibilities for all employees, contractors and subcontractors,
- awareness training for all workers to understand cultural heritage considerations associated with the project,
- area-specific site inductions and training,
- protocols for discovery of Aboriginal sites, objects or remains and reporting requirements, in accordance with the AH Act,
- requirements to avoid sites of Aboriginal cultural heritage significance as determined from pre-construction surveys and in consultation with the KYAC,
- Stop work/site discovery procedure if any Aboriginal sites or objects are exposed during construction and engage a suitably qualified heritage consultant and / or appropriate authority to investigate. Work will not continue in that part of the project area until direction has been provided by a suitable authority, and
- exclusion areas to be implemented around sites of cultural heritage significance.

4.1 Pre-construction phase

The AH Act does not mandate a requirement for a cultural heritage survey where there is a low likelihood of disturbance to Aboriginal heritage therefore a cultural heritage survey was not undertaken prior to the pre-construction activities detailed in section 2.1.

4.2 Construction phase

During construction activities, Aboriginal heritage protection and management measures will include:

- ongoing heritage inductions to make all project personnel aware of Aboriginal heritage sites and appropriate management procedures in place to avoid impact,
- monitoring of construction works in higher sensitivity or higher risk locations by KYAC representatives,
- robust measures to address site discoveries during construction,

- where sites are identified during construction, Mount Lofty Golf Estate will aim to relocate works to avoid impact,
- If works are unable to be relocated, Mount Lofty Golf Estate will work closely with the KYAC and the contractor to find a suitable solution in accordance with the requirements of the AH Act,
- at the conclusion of construction Mount Lofty Golf Estate intends to undertake a compliance audit to ensure all heritage management conditions have been met and that that the mitigation measures and controls operated effectively.

4.3 Operations phase

Mount Lofty Golf Estate will manage ongoing compliance with the AH Act in accordance with its operational heritage management system, any CHMP, and in consultation with the KYAC.

5 BIBLIOGRAPHY

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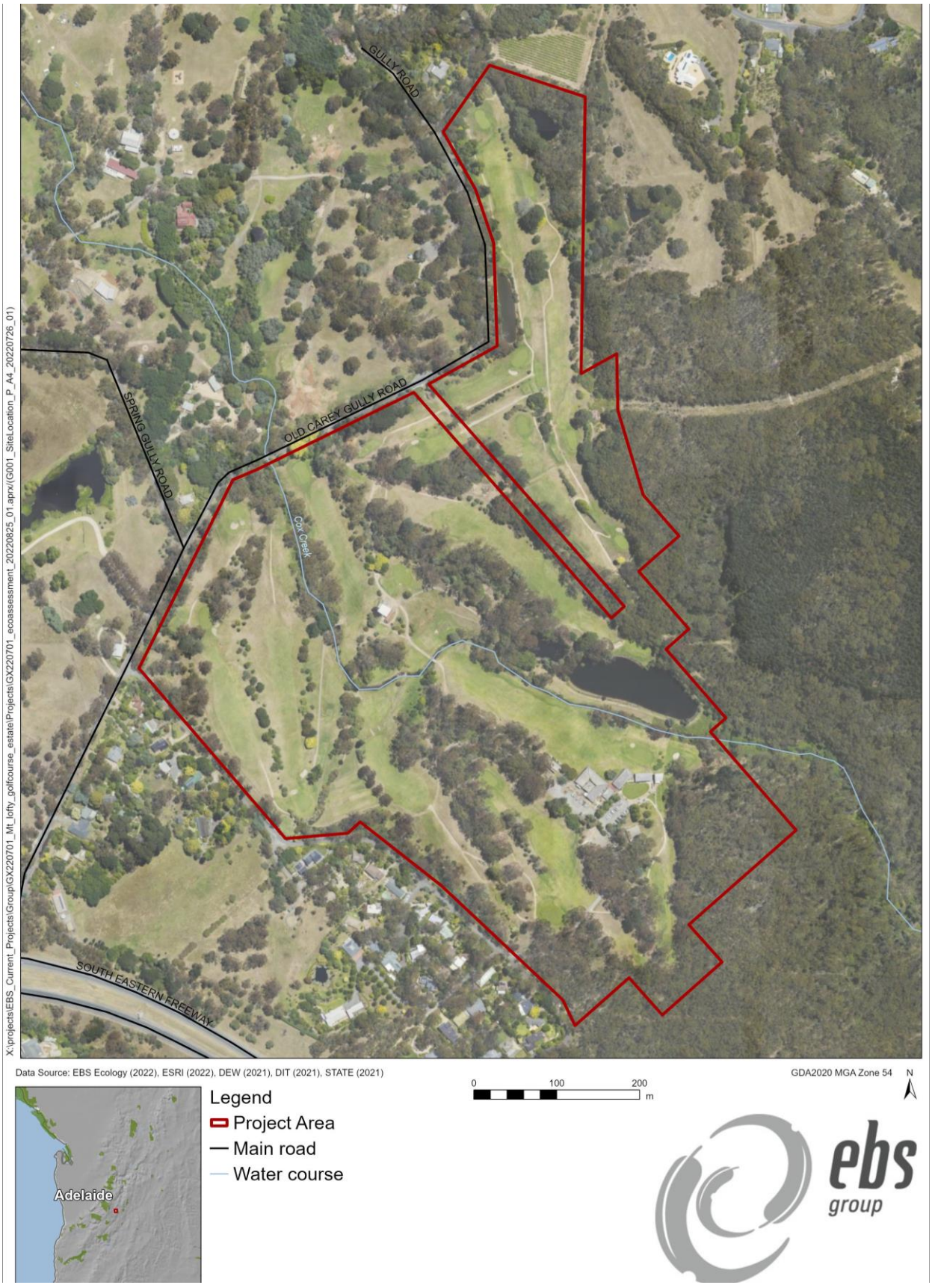
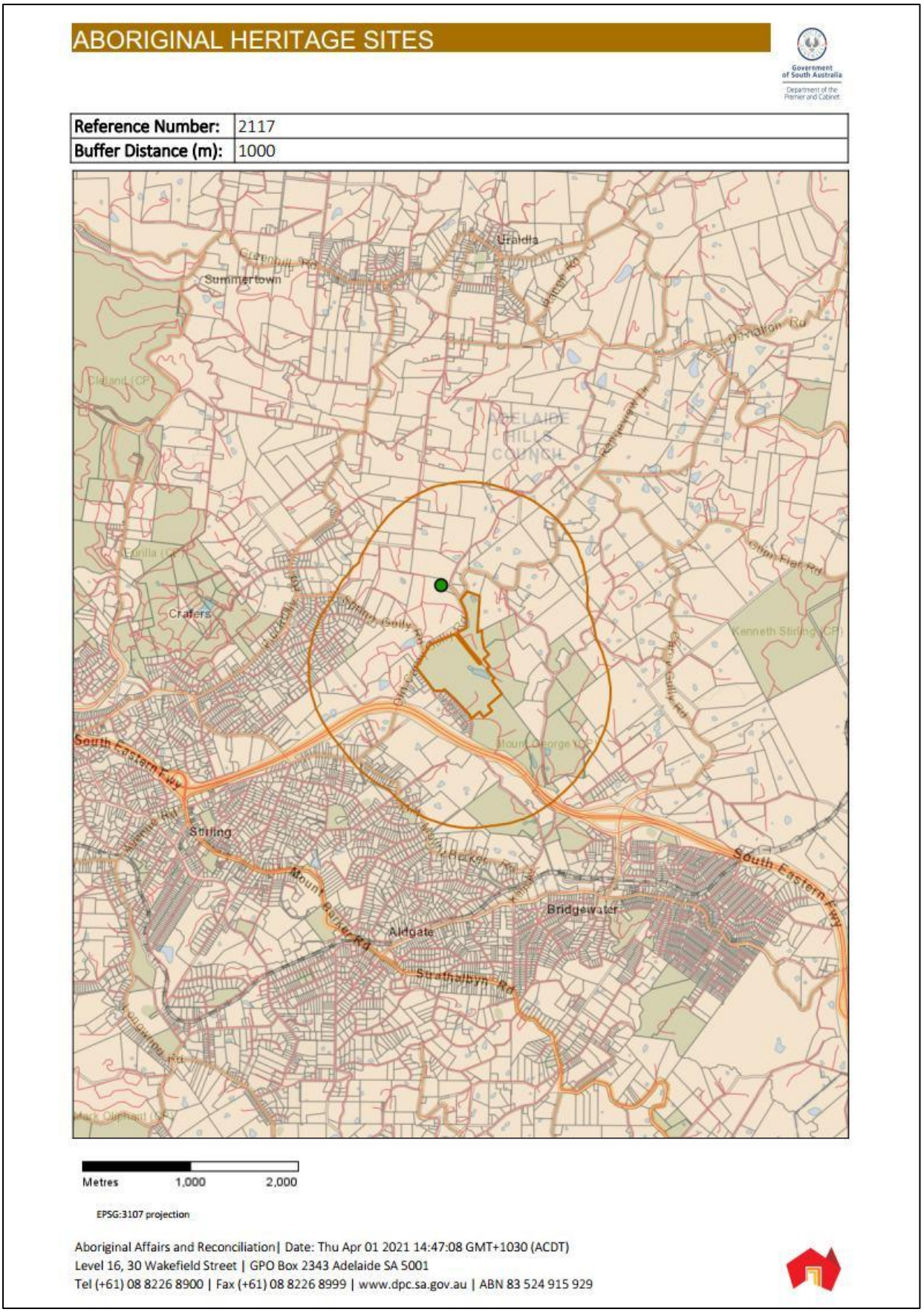
6 APPENDICES

Appendix 1 – Location of the project area.



Appendix 2 – Location of Aboriginal site in relation to project area.



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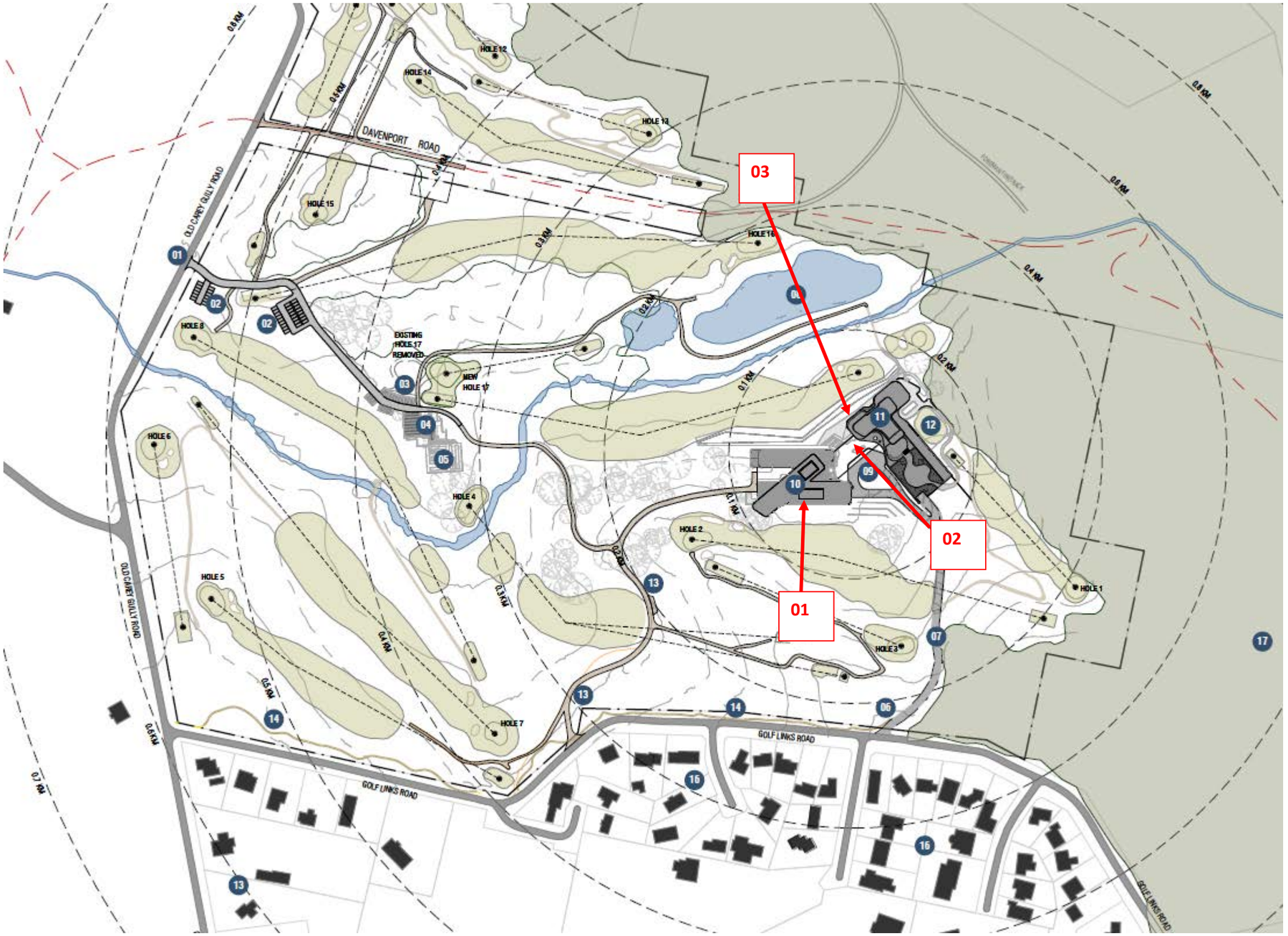
Appendix O

Nighttime Renders – RArchitecture

Night Time Renders



VIEW 1

VIEW 2

VIEW 3

Appendix P

Hazard Management Plan - Mount Lofty Golf Estate

RISK & HAZARD MANAGEMENT MANUAL

Mount Lofty Golf Estate Pty Ltd

September 2022

MOUNT LOFTY
Golf Estate

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CONTENTS

Disclaimer

This information is for guidance only and is not to be taken as an expression of the law. It should be read in conjunction with the relevant legislation.

This review represents an assessment of risk at a point in time. MLGE must conduct its activities in a changing environment due to the dynamics of both the strategic and organisational environments.

The information in this Guide is intended to provide golf course and groundskeeping employers and workers with an overview of the occupational health and safety requirements.

PART A: HAZARD MANAGEMENT & WHS ARRANGEMENTS

1. PURPOSE

The purpose of this Plan is to establish and maintain an effective health and safety management system.

The Mt Lofty Golf Estate (MLGE) is committed to implementing a structured approach to workplace health and safety to achieve a consistently high standard of safety performance.

This plan will assist MLGE in meeting its obligations in accordance with work health and safety legislation.

This plan applies to all officers and workers and to other persons at risk from work carried out at MLGE workplaces.

Please note, an operator for the Hotel has not been agreed. The Risk Hazard Management Plan will be revisited upon the appointment of an operator.

2. WORK HEALTH AND SAFETY (WHS) POLICY

The OHS Policy is a statement that defines the employer's commitment to a healthy and safe workplace. It determines the level of health and safety in the workplace in the same way that commitment to quality determines the quality of the end product or service. It must be communicated to all workers and updated every year for true impact.

The Statement of Commitment and the Implementation of Policy Commitment provide the overarching direction MLGE will follow in pursuit of workplace health and safety outcomes. These commitments are:

2.1. Statement Of Commitment

MLGE is committed to providing a workplace that enables all work activities to be carried out safely. We will take all reasonably practicable measures to eliminate or minimise risks to the health, safety and welfare of workers, contractors, visitors, and anyone else who may be affected by our operations.

We are committed to ensuring we comply with the Work Health and Safety Act 2011 (the Act). We will also comply with any other relevant legislation, applicable Codes of Practice and Australian Standards as far as possible.

This Hazard Management/ WHS Management Plan and MLGE's WHS Policies and Procedures set out the safety arrangements and principles which are to be observed by MLGE and its workers to ensure compliance with the WHS Act and to provide appropriate mechanisms for continuing consultation and management of WHS matters.

2.2. Implementation Of Policy Commitment

MLGE is committed to ensuring, so far as is reasonably practicable, the health and safety of its workers (employees, contractors, labour hire workers, outworkers, apprentices, students or volunteers) while they are at work, and that the health and safety of other persons (e.g. visitors) is not put at risk from our operations. This will be achieved by:

- providing and maintaining a healthy and safe work environment through the

implementation of safe work practices, safe systems of work and the provision of safe plant and equipment;

- ensuring that workplaces under the control of MLGE are safe, without risk to health, and have safe means of access and egress;
- routinely consulting in order to maintain effective and co-operative relationships between
- and its workers, and with other duty holders, on health and safety matters in the
- workplace; and
- reviewing, through appropriate mechanisms, the effectiveness of the safety measures taken.

MLGE's commitment to providing safe and healthy working environments for its workers includes:

- providing relevant, up-to-date WHS information to all workers on matters such as workplace safety and their responsibilities;
- providing expert assistance in WHS matters where necessary;
- providing instruction and/or training in work processes where appropriate;
- developing and implementing strategies which include workplace assessment, hazard identification, and appropriate remedial action to eliminate or control hazards; and
- implementing and maintaining appropriate information, reporting and statistical systems.

2.3. Health & Safety Program

An OHS Program is an organised, written action plan to identify and control hazards, define safety responsibilities, and respond to emergencies. The objective of a program is t integrate safety and health into all work practices and conditions.

Here are the components of an OHS program required for workplaces:

- Training and supervision
- Written work procedures
- Hazard identification system
- Workplace inspections
- Investigations of incidents and injuries
- Keeping records and monitoring effectiveness

3. DEFINITIONS

Terminology	Definition
Person Conducting a Business or Undertaking (PCBU)	A PCBU has the primary duty of care to ensure, so far as is reasonably practicable: • The health and safety of its workers while they are at work, and • That the health and safety of other persons is not put at risk from work carried out as part of the conduct of the PCBU. MLGE is a PCBU

Officer	It is an officer's duty to exercise due diligence to ensure that the PCBU complies with its health and safety obligations under the WHS Act. • The Members of the Board for MLGE will usually be Officers under the WHS Act. • The General Manager may be an Officer under the WHS Act Note: A person is an Officer under the WHS Act only if they "make, or participate in making, decisions that affect the whole, or a substantial part, of the business of the corporation; or who has the capacity to affect significantly the corporation's financial standing". Whether a person is an Officer or not under the WHS Act will depend on the facts of the particular situation.
Worker	Previously known as 'employee'. The term worker includes employees, contractors and sub-contractors and their employees, labour hire employees, outworkers, apprentices and trainees, work experience students and volunteers.
Health and Safety Representative (HSR)	A worker elected by members of their work group to represent them in health and safety matters.
Other persons	Includes any visitors

4. RESPONSIBILITIES

As the duty holder, MLGE, being the PCBU, must:

- ensure the health and safety of its workers and others in our workplace
- ensure the health and safety of other persons is not put at risk from work carried out as part of its operations
- provide and maintain a work environment that is without risks to health and safety
- provide and maintain safe plant and structures
- provide and maintain safe systems of work
- ensure the safe use, handling and storage of plant, structures and substances
- provide adequate facilities for the welfare of workers
- provide information, training, instruction and supervision
- monitor the health of workers and the conditions of our workplaces. Specific duties as a PCBU also include:
- record and notify Work safe authorities. of any notifiable incidents arising out of the conduct of the business or undertaking
- ensure authorisations are in place for any high risk work or plant
- consult so far as reasonably practicable with other PCBUs or persons who have a duty in regard to a work health and safety matter
- consult so far as reasonably practicable with workers, their representatives and Health and Safety Representatives on work health and safety matters.

4.1. The Chairperson and members of the Board

The Chairperson and members of the Board, as officers, are responsible for ensuring that complies with any duty or obligation under the WHS Act. This is achieved by these officers exercising due diligence, which means they:

- acquire and keep an up to date knowledge of work health and safety matters
- gain an understanding of MLGE's operations and the hazards and risks involved
- ensure that appropriate resources and processes are provided to enable hazards to be identified and risks to be eliminated or minimised
- ensure that information regarding incidents, hazards and risks is received, considered and responded to in a timely way
- ensure that MLGE has, and implements, processes for complying with its WHS duties and obligations
- verify the provision and use of the resources and processes listed above.

This may include:

- having work health and safety as a standing agenda item for each Board meeting
- integrating WHS laws into everyday business through consultation with Managers and all workers
- developing a work health and safety management system framework, which will be reviewed on a regular basis by the Chairperson and Board members
- ensuring that WHS risk management is incorporated into all business activities and that hazard identification, risk assessment and control is an on-going process, including:
- development and maintenance of a WHS risk register
- development and maintenance of WHS policies and procedures
- ensuring an effective injury/incident reporting procedure
- ensuring appropriate processes are in place for WHS issues relating to contractor management
- ensuring that the procurement of any equipment takes into account WHS matters
- ensuring that regular hazard inspections of the MLGE workplaces occur
- ensuring that WHS is a standing agenda item at all staff meetings
- incorporating WHS updates and information into regular reporting provided to the Board by General Managers
- ensuring that WHS issues are part of all training provided for staff, including induction
- ensuring that contractors and visitors to MLGE are provided with appropriate and reasonable WHS information at site entry, and
- ensuring that the work environment is a safe environment.

4.2. General Manager

The General Manager, (if an officer), is responsible for ensuring that WHS policies and procedures are implemented in the workplace and/or systems of work under their control. As an integral part of their normal duties, the General Manager will:

- consult with their workers on measures to protect their health and safety
- actively follow agreed safety practices and model positive attitudes towards health and safety matters
- arrange for their workers to be instructed in healthy and safe systems of work and procedures and supervise the practice of safe working procedures
- notify the Chairperson and/or other members of the Board of all incidents, hazardous situations, dangerous occurrences or immediate risks to health and safety of any workers
- ensure that all workers are informed of this policy

- undertake consultation with all managers and workers on change that may affect their health and safety
- ensure that WHS is a standing agenda item at all staff meetings
- communicate WHS matters to the Chairperson of the Board.

4.3. Managers and Leaders

Managers and leaders are responsible for providing a workplace that is, as far as reasonably practicable, safe and healthy workplace for workers and visitors, in particular in the areas of their control. This includes:

- modelling health and safety leadership
- demonstrating a commitment to good health and safety performance, by:
- talking about safety at regular meetings
- ensuring safe work procedures are followed
- reporting incidents, hazards and safety concerns promptly
- assessing task risk and not allowing an activity to continue until it can be controlled adequately
- fostering a strong work health and safety culture where worker input is valued
- promoting and implementing the MLGE Work Health and Safety Management System
- actively support the identification of hazards and risks and the management of these
- understand and monitor safety performance objectives
- proactively manage other duty holders (e.g. contractors), when required.

4.4. Workers

Workers must take reasonable care for their own health and safety while they are at work, and take reasonable care that their acts or omissions do not adversely affect the health and safety of other persons. They must comply, so far as they are reasonably able, with any reasonable instruction given by the General Manager, as well as co-operating with any reasonable policy or procedure which relates to workplace health and safety. On a day to day basis, this includes:

- to the extent of the worker's control or influence over working conditions and methods, take reasonable care to work safely
- making sure that the work area safe when leaving it
- make proper use of all appropriate safeguards, safety devices and personal protective equipment
- follow agreed safe working practices and rules
- report all known hazards, accidents and incidents as soon as possible.

It is acknowledged that, in accordance with the Act, a worker may cease, or refuse to carry out work if they have a reasonable concern the work would expose the worker to a serious risk to their health or safety. The Act requires workers who cease work to notify the relevant manager that they have ceased unsafe work as soon as practicable after doing so. It also requires workers to remain available to carry out 'suitable alternative work'. This would not however require workers to remain at any place that poses a serious risk to their health or safety.

4.5. Contractors

Contractors, sub-contractors and self-employed persons are defined as "workers" under the WHS Act if they carry out work in any capacity for MLGE. They are required to:

- comply with the requirements of the WHS legislation
- have in place any work health and safety policies and programs required under State or Territory safety legislation
- consult with MLGE about safety matters and comply with MLGE policies
- work safely and to include the safety of MLGE staff and visitors in their safety plans.

If any staff member believes that a contractor may be engaging in an unsafe work practice, they are required to report this issue to their manager.

4.6. Visitors

Visitors and other persons to MLGE also have responsibilities to abide by our workplace safety rules and procedures. These responsibilities include to:

- take reasonable care for their own health and safety and for the health and safety of other persons
- comply with, so far as they are reasonably able, all reasonable safety directions provided by MLGE staff
- report all safety related incidents to MLGE staff
- ensure the adequate supervision of any accompanying children
- not enter any restricted area without authorisation or escort
- not bring or consume alcohol or illegal drugs at MLGE workplaces
- not willfully or recklessly interfere with MLGE property.

Every individual in a workplace has a direct responsibility for creating a healthy and safe workplace. The responsibility is shared, from owners/ operators through a management team and to all workers.

Below is a sample of OHS responsibilities for quick reference, and states the duties of employees, workers, and other persons:

POSITION	OHS RESPONSIBILITIES
Owner/ Operator and Senior Manager	• Provide policy direction and planning • Review control information • Delegate responsibility and authority • Allocate budget • Cooperate with safety committees and representatives • Hold line managers accountable for safe production • Make sure line managers have adequate resources and support • Assist the health and safety committee or representative
Supervisors	• Train operators and others • Supervise workers to ensure safe work procedures are followed correctly • Communicate hazard information and control procedures • Consult with workers on matters of health and safety • Provide feedback to senior executive • Hold accountable those managers, supervisors, and workers reporting to them
All Workers	• Comply with company rules and procedures

	• Wear personal protective equipment as required • Use machinery, equipment, and materials only as authorised • Follow job procedures • Report hazards, unsafe conditions, or actions to your supervisor • Report incidents • Report all injuries for first aid, no matter how minor
Health & Safety Representatives	• Make recommendations on health and safety issues • Take worker health and safety concerns to management

The OHS responsibilities should be clearly stated to and understood by everyone to which they apply, and they must be set out in an OHS policy where a policy is required.

5. CONSULTATION AND COMMUNICATION ARRANGEMENTS

Open communication between workers and managers is important to ensuring a safe workplace. Therefore, workers are encouraged to:

- ask questions relating to WHS
- bring up safety concerns
- make recommendations regarding WHS
- give regular feedback
- become involved in evaluation of safety issues
- participate in any WHS related problem solving process.
- It is important that workers help shape decisions about WHS particularly when:
- identifying hazards and assessing risks
- making decisions about ways to eliminate or minimise those hazards or risks
- proposing business changes that may affect the health and safety of workers
- purchasing of new equipment or substances
- developing or changing job tasks or safety procedures.

All workers belong to a work group and are encouraged to raise any work health and safety concerns they may have with their manager and/or Health and Safety Representative. If the issue identified remains unresolved, it should be raised directly with the General Manager.

5.1. Health and Safety Representatives (HSR)

HSRs are elected by members of a work group in order to represent the interests of that work group in matters relating to work health and safety. HSRs must undertake approved training to exercise their powers, and may:

- consult with workers on a regular basis
- inspect a work area as required
- participate in workplace accident and incident investigations as required
- participate in any change management discussions that may affect the health and safety of workers
- provide advice to managers on the welfare of workers in their work group.

HSRs cannot exercise their powers under the Act unless they are trained. HSRs are not liable for acts or omissions that are undertaken in good faith. HSRs are not entitled to personal or

medical information about a worker without their consent unless that information is of a general form that does not identify workers specifically.

5.2. Health and Safety Committee

Health and Safety Committees provide the forum for the constructive discussion of measures to assure health and safety in the workplace. At the Health and Safety Committee will meet quarterly and:

- facilitate co-operation between the PCBU and workers in the instigation, development and implementation of WHS policies and procedures
- assist in developing standards, rules and procedures relating to health and safety
- consult with workers regarding their WHS concerns
- consult with management regarding worker WHS concerns including change that may influence WHS more broadly
- ensure the conduct of regular workplace inspections.
- ensure that the minutes of the latest Health and Safety Committee meeting will be made available for all workers to review.

6. TRAINING

The General Manager will conduct a training needs analysis and arrange for appropriate WHS training to be undertaken by workers as required.

Where required, MLGE workers are to demonstrate their competencies to perform required tasks safely. In tasks with a high potential for injury, a separate documented assessment of a person's competency may be undertaken.

As a guide, competency assessments should be signed and dated by the assessor/assessed and contain the following elements:

- task or equipment description
- information on licenses held (or other relevant qualifications)
- a checklist containing the essential competencies that were demonstrated, and
- comments or confirmation that the competency was met.

MLGE is committed to developing a suite of competencies to deal with all safety sensitive work tasks.

7. WHS RISK ASSESSMENT

The purpose of any WHS risk assessment is to ensure that, for any identified hazards, appropriate control measures are implemented in order to protect workers, contractors and visitors from risks to their health, safety and welfare.

Control measures for WHS hazards should be implemented as required using the following hierarchy of control, in order of preference these measures relate to:

- elimination (removal of the hazard)
- substitution (substitute the hazard for something which is less hazardous e.g. replace a hazardous chemical with one within is not hazardous)
- isolation (isolate the hazard from people e.g. place a noisy piece of equipment in another location)
- engineering (e.g. guarding on machinery)

- administrative (e.g. provision of training, policies and procedures, signage)
- personal protective equipment (e.g. use of hearing , eye protection, high visibility vests).

Outcomes of risk assessments will be documented and the control measures reviewed at least annually or earlier should a task or activity be the subject of a WHS incident or a change of process or requirement. Current risk assessments will ensure that MLGE achieves the goal of eliminating or minimising the risk workers may be exposed to.

8. RIGHT OF ENTRY

A WHS permit entry holder must also hold a current Fair Work Act 2009 entry permit. Their WHS entry permit and photographic identification must be available at all times for inspection. Where there is a suspected workplace WHS contravention, a permit holder is not required to give prior notice. However, as soon as reasonably practicable they must give notice of their entry and the suspected contravention to MLGE or the person with management or control of the workplace.
The permit holder may, in relation to the suspected contravention, inspect any work system, plant substance or structure; consult with MLGE and its workers; be allowed to inspect and make copies of relevant documents (unless to do so would contravene a State or Commonwealth law); and warn any person of a serious risk to health and safety if immediate or imminent.

Otherwise a permit holder is required to give at least 24 hours' notice (and no more than 14 days) to the MLGE before entering a workplace to consult on WHS matters or provide advice on those matters to relevant workers.

MLGE must not, without reasonable excuse, refuse or unduly delay a permit holder's entry into a MLGE workplace or obstruct them from exercising their rights under the WHS Act.

The permit holder must not intentionally and unreasonably delay, hinder or obstruct any person or disrupt any work at a workplace or otherwise act in an improper manner.

9. WHS ISSUE RESOLUTION

Wherever possible, any WHS concerns will be resolved through consultation between workers, their representatives and/or their manager. If the concern cannot be resolved, then it can be referred to the General Manager for resolution. Ultimately any issue remaining unresolved may be referred to the Board. Where the issue remains unresolved the default procedure for issue resolution set out in the WHS Regulations must be followed.

If reasonable efforts have been made to resolve an issue and it remains unresolved, any party to the issue can ask Work safe authorities to appoint an inspector to assist in resolving the matter.

PART B: GENERAL WHS INFORMATION

1. EMERGENCY PROCEDURES

An emergency evacuation plan has been developed and this plan, together with a list of emergency contacts, is displayed in the following locations:

- office/ reception
- common areas
- workshops
- sheds
- male toilets
- female toilets

The Emergency Contacts List is at *Attachment 1*. All fire emergency equipment, such as horns, sirens, and fire extinguishers, will be tested by an approved provider every 12 months.

2. HAZARD/INJURY/ INCIDENT REPORTING

How to Report a Hazard or Injury or Incident:
All managers and workers including contractors are required to complete an incident form if a hazard/ injury/ incident occurs, and:

- Advise the Department Manager of the incident or injury or hazard
- For recording purposes complete a Hazard/ Injury/ Incident Report Form
- Complete the relevant sections of the form giving details of the incident. The form should be completed even when an injury has not occurred, that is, in the event of a near miss
- All hard copy forms should be signed by the relevant parties
- The Department Manager or their delegate must record all injuries on the injury register

The Hazard/ Injury/ Incident Report form is at ***Attachment 2***.

3. REPORTING OF NOTIFIABLE INCIDENTS

Any serious incidents or illness must be notified immediately to your Department Manager. After becoming aware that any such incident has occurred, it is the Department Manager's responsibility to report 'notifiable incidents' to the GM and ensure work safety authorities are notified. If you want to claim work compensation you must lodge a claim for work related injury or stress. By law, the club can't refuse your claim and can't dismiss you for making a claim.

Definition of "notifiable incident": 'Notifiable incidents' include the following:

- the death of a person
- a serious injury or illness of a person

Serious injury or illness includes immediate treatment as an in-patient in a hospital; immediate treatment for certain serious injuries; or medical treatment within 48 hours of exposure to a substance

- a dangerous incident

A 'dangerous incident' means any incident in relation to a workplace that exposes a worker or any other person to a serious risk to a person's health or safety caused by incidents such as uncontrolled escape, spillage or leakage of a substance, an uncontrolled implosion, explosion, fire; or uncontrolled

escape of gas or steam.

HAZARD/INCIDENT/INJURY REPORTING—SUMMARY FOR THE DEPARTMENT MANAGER

- Ensure that the manager or worker has completed a hazard/incident/injury form.
- Review the incident with the manager or worker to determine if any actions need to be taken to eliminate or minimise the risk of the incident or hazard recurring.
- Complete the injury register.
- If the incident results in a death, serious injury or illness or a dangerous incident, notify Work Safety authorities immediately.
- Maintain records of all the above.

4. FIRST AID

Definitions:

- First aid is the immediate treatment or care given to a person suffering from an injury or illness until more advanced care is provided or the person recovers.
- First aid officer is a person who has successfully completed a nationally accredited training course or an equivalent level of training that has given them the competencies required to administer first aid.

MLGE has in place the following first aid procedures, as required by First Aid in the Workplace Code of Practice

- The appointment and training of First Aid Officers (FAO)
- The provision of first aid kits within the workplace
- Clear signage with the name of the FAO and the location of the first aid kits
- The provision of a suitable first aid kit in all MLGE vehicles. It is the FAO's responsibility to ensure that the contents of all first aid kits are maintained

First Aid Officer Training:

- The minimum level of training for a FAO is the Senior First Aid Certificate (or equivalent)
- Refresher training should be undertaken every three years.

First Aid Officer Responsibilities:

- The FAO is approved to render first aid assistance in the workplace.
- The FAO should ensure that they do not administer first aid services beyond their level of training.

> A record of any first aid treatment given should be kept by the FAO and reported to the Department Manager on a regular basis to assist with reviewing first aid arrangements.

Contact details for MLGE FAOs are displayed on all noticeboards.

FIRST AID—SUMMARY FOR THE DEPARTMENT MANAGER

- Ensure that a First Aid Officer (FAO) has been appointed and trained.
- Keep a copy of the FAO's qualifications.
- Ensure that a first aid kit is provided and maintained by the FAO.
- Advise all managers and workers of the name of the FAO and the location of the kit.
- Place a sign on the wall where the kit is located.

- First Aid in the Workplace Code of Practice [link here] available on the Work safe authorities. website.

5. WHS TRAINING AND INDUCTION

5.1. Training

MLGE is committed to providing appropriate training to ensure workers have the skills and knowledge necessary to fulfil their WHS obligations. WHS training is a fundamental requirement for MLGE to achieve a safe workplace. The WHS training needs for MLGE will be determined in consultation with managers and workers, as well as through review of the WHS Risk Register, however it can be generally categorised into three kinds:

- Generic WHS Training—skills and knowledge which is commonly required, e.g. induction training, WHS risk management training, evacuation procedures.
- Risk Specific WHS Training—training required for those persons conducting activities with a specific risk to health and safety or a verification activity, e.g. first aid training, hazardous substances training, manual handling training, confined spaces training, working from heights.
- Task Specific WHS Training—skills and licensing which are required depending on the specific hazards and risk, e.g. any farm equipment operation, high risk work licenses such as for driving forklifts, cranes.

5.2. Documentation for Training

Training records shall be maintained as evidence of training delivery and assessment of competence.

5.3. WHS Induction

All new managers and workers are required to be provided with WHS information regarding the workplace as part of their overall induction and introduction to MLGE. A thorough WHS induction process assists new staff to feel welcome, become integrated into the organisation and ensure that they are able to work safely.

The WHS Induction Checklist at ***Attachment 3*** should be used in conjunction with the general induction training program for land workers to ensure that all new workers are aware of the WHS systems, policies and procedures in place within MLGE.

5.4. Procedure

The Department Manager must ensure a WHS induction is provided on the new team leader or worker's first day. If the Department Manager is not available, he or she should organise for a replacement to conduct the induction. The Department Manager must:

- use the attached WHS Induction Checklist (Attachment 3) to ensure that all WHS issues are covered
- on completion of the induction, sign the checklist and ensure that the new worker also signs
- file a copy of the induction checklist on the worker's file
- provide the new worker with access to this WHS Management Plan and the WHS Policies and Procedures Manual. A new Department Manager will be inducted by the outgoing Manager or a Board Member.

5.5. WHS Induction for Contractors/ Visitors

All contractors/ visitors should be provided with a Safety Briefing prior to entering the MLGE premises.

All contractors/ visitors must sign in and be provided with a copy of the MLGE Safety Briefing Handout to read, and to then sign, acknowledging that they have read and understood the information. These documents are included at ***Attachment 4***.

5.6. Detailed WHS Induction for Contractors

For contractors (e.g., trade persons) the requirements for induction will depend on the work to the undertaken and the duration of their stay at the workplace. At a minimum, contractors should be advised of emergency procedures and location of facilities. Refer to Attachment 5. All WHS training provided to managers, workers and contractors should be recorded in the WHS Training Register (Attachment 6). Alternatively, this training register can be incorporated into the overall Staff Development and Training Register which details all professional development and training undertaken by MLGE managers and workers.

6. RISK MANAGEMENT AND THE RISK REGISTER

WHS risk management is a systematic process of hazard identification, risk assessment, and risk control with the aim of providing healthy and safe conditions for managers, workers, visitors and contractors at MLGE.

As required by the WHS Act, MLGE has adopted a risk management approach to underpin its WHS Management System. This approach involves all managers and workers in identifying hazards, assessing and prioritising risks, implementing control measures and reviewing how effective the control measures are.

All workers are responsible for assisting in managing the particular risks associated with their specific work environment. Risk management strategies used by MLGE include:

- regular hazard inspections of the MLGE environment
- a comprehensive risk register detailing all WHS risks associated with the operation and activities of the
- documented WHS policies and procedures
- risk assessments of newly purchased equipment
- risk assessments for any change to work processes
- hazard, injury, incident reporting procedures
- incident investigations (at the direction of the Department Manager)

Definitions:

- WHS Hazard: Anything which has the potential to cause injury or illness.
- WHS Risk: A WHS risk is the chance of someone becoming injured or ill as a result of a workplace hazard. This significance of the risk is determined by considering the likelihood of it happening and the consequences if it does happen.
- WHS Risk Control: WHS risk control is action taken to eliminate or reduce the likelihood that exposure to a hazard will result in injury or illness to people or damage to property and the environment.

6.1. The Risk Management Process

WHS risk management should be undertaken for all activities where there is the potential for harm including:

- before activities commence;
- before the introduction of new equipment, procedures or processes;
- when equipment, procedures or processes are modified.

Step 1: Identify the Hazard

A hazard is a source or potential source of injury, ill health or disease. Hazard identification is the process of identifying all situations and events that could cause injury or illness by examining a work area/task for the purpose of identifying all threats which are 'inherent in the job'. Tasks can include, but may not be limited to using tools, hazardous chemicals, dealing with people, and lifting/moving items.

Step 2: Assess the Risk

Assessing the risk from a hazard determines its significance. Firstly, consider the consequences should something happen; will it cause a serious injury, illness or death or a minor injury. Secondly, consider how likely is this to occur—very likely, not likely at all or somewhere in between? Some of the things to think about include:

- how often is the task undertaken
- how frequently are people near the hazard
- how many people are near the hazard at a particular time
- has an incident happened before
- have there been any 'near misses'

Use the table below to determine how significant the risk is.

Where a manager, worker, contractor, or visitor to the workplace identifies a hazard, MLGE requires that it is eliminated or reduced in consultation with the relevant stakeholders.

- Step 1: identify the Consequences—or how severely could it hurt someone
- Step 2: identify the Likelihood—or how likely is it for an injury to occur
- Step 3 & 4: identify the Risk Priority Score—to prioritise your actions
- Step 5: apply the hierarchy of hazard control
- Step 6: identify who, how and when the effectiveness of controls will be checked and reviewed

Step 1—CONSEQUENCES How severely could it hurt someone? or How ill could it make someone?— Circle it		Step 2—LIKELIHOOD How likely is it for an injury to occur?—Circle it			
		Very likely, could happen frequently	Likely, could happen occasionally	Unlikely, could happen, but rare	Very unlikely, could happen, probably never will
		L1	L2	L3	L4
Kill or cause permanent disability or ill health	C1	Very high risk (1)	Very high risk (1)	High Risk (2)	Substantial Risk (3)

Long term illness or serious injury	C2	Very high risk (1)	High Risk (2)	Substantial Risk (3)	Moderate Risk (4)
Medical attention and several days off work	C3	High Risk (2)	Substantial Risk (3)	Moderate Risk (4)	Acceptable Risk (5)
First Aid needed	C4	Substantial Risk (3)	Moderate Risk (4)	Acceptable Risk (5)	Low Risk (6)

Step 3: Risk Priority Score Identifies the Necessary Action and Response

Step 3—RISK PRIORITY SCORE	Step 4—ACTION AND RESPONSE
1 = Very High Risk	Stop the activity—immediate action is required to ensure safety—safety measures applied must be cleared by the Department Manager before any activity recommences. Proceed with caution—immediate reporting of emerging or ongoing risk exposure at this level to the Department Manager for decision is mandatory.
2 = High Risk	
3 = Substantial Risk	Be aware—action required as soon as possible to prevent injury or illness. Report these risks to the responsible Manager during the current shift or before the next shift.
4 = Moderate Risk	
5 = Acceptable Risk	Do something when possible. Manage by routine procedures.
6 = Low Risk	These risks should be recorded, monitored and controlled by the responsible Manager.

Step 4: Control The Hazards

Control the hazards—the aim is to implement the most reliable controls to create a safe workplace rather than simply relying on people to behave safely, following processes or using protective equipment. In many cases, a combination of several control strategies may be the best solution.

Hierarchy of control strategies (in order of preference):

- eliminate the hazard; remove the equipment from use, dispose of unwanted chemicals
- substitute; use a non-hazardous chemical, use a different machine that can do the same task
- isolation; contain noisy machinery within a booth
- engineering controls; design equipment differently, providing lifting devices to minimise manual handling
- administrative processes; task variation, job rotation, training
- personal protective equipment; gloves, hearing protection, eye protection

Step 5: Review the Process

Continuously review to monitor and improve control measures and find safer ways of doing things.

6.2. Documentation for Risk Assessment

The documentation required for a WHS risk assessment will depend on the operation or activity being assessed. The appropriate WHS Risk Assessment Form must be used when undertaking a risk assessment of the various activities of the MLGE. The WHS Risk Assessment Proforma and procedure for conducting an assessment is at ***Attachment 7***.

6.3. The Risk Register

The risk assessment data collected from identifying, assessing and controlling risks should be documented on a centralised risk register for MLGE. The risk register holds a list of MLGE key risks that need to be monitored and managed. The risk register is to be managed by the Department Manager who should be notified if new hazards are identified and controls implemented so that the risk register can be amended.

The General Manager is responsible for overseeing the Risk Register, and for ensuring that effective control measures are implemented and that risks are monitored and reviewed on a regular basis.

7. WORKPLACE HAZARD INSPECTIONS

MLGE is required by WHS legislation to be proactive in identifying hazards in the workplace which may affect the health and safety of its workers and eliminating or minimising the risks arising from those hazards.

In order to ensure a safe and healthy workplace, the Department Manager and/or nominated manager/s accompanied by Health and Safety Representatives (HSRs) should undertake WHS hazard inspections of the workplace regularly and at any other times as required. The hazard inspection should be undertaken by following the principles of WHS risk management and using the attached information and checklists (***Attachments 8 and 9***).

If any hazards are identified through the hazard inspection process, controls must be implemented to ensure that the risk to health and safety is eliminated or minimised.

In addition to these regular inspections, all managers should also conduct weekly hazard inspections of their work sites in conjunction with HSRs. Any hazards noted during these inspections should immediately be reported to the Department Manager and appropriate remedial action taken.

All hazard inspection documentation should be filed by the Department Manager.

8. PURCHASING

Prior to purchasing any goods or services for the workplace, they should be assessed to determine if there are any associated health and safety hazards. This includes the purchase of equipment such as machinery, tools, furniture, chemicals, as well as contracted services such as maintenance.

9. RECORD KEEPING

The General Manager should see the retention of all WHS and workers compensation documents. These documents are required to be filed for 30 years in safe storage accessible only to authorised personnel in accordance with the Privacy Amendment (Enhancing Privacy Protection) Act 2012 (Cth).

10. DOCUMENTS TO BE DISPLAYED

- Emergency contacts page (Attachment 1)
- Emergency Evacuation Plan
- Return to Work Policy
- Work Health and Safety Policy
- Accident/Incident Notification details
- Compensation and Return to Work information

11. IMPORTANT CONTACT NUMBERS

Contact details to be provided upon the appointment of an operator.

PART C: SPECIFIC WHS REQUIREMENTS

1. ASBESTOS

It is highly likely that the premises to be occupied by MLGE were built before 31 December 2003 and therefore, there is a requirement for MLGE To comply with these measures outlined including an asbestos management plan and asbestos register. Do not repair or conduct work on any building without first checking the asbestos register. A sample register is included at ***Attachment 10***.

2. INAPPROPRIATE BEHAVIOUR

Bullying, harassment, discrimination and violence of any form will not be tolerated at MLGE.

MLGE undertakes to investigate all complaints formally made and will take action to resolve the complaint. If the complaint is found to be valid, action may include any combination of the following:

- Asking for an apology
- Creating an agreement with the offender that will stop the behaviour of concern
- Conciliation/ mediation conducted by an independent/ impartial third party to seek a mutually acceptable solution
- Disciplinary action in the form of verbal, written or final warning or dismissal
- All violence will be reported to the police.

In determining the action to be taken, the following factors will be considered:

- Severity and frequency of the behaviour
- Whether there have been previous incidents or prior warnings.

3. CONTRACTORS

MLGE is committed to ensuring that all workers under its control, including contractors and sub-contractors have a safe and healthy environment in which to perform their duties.

Contractors are likely to be workers employed by MLGE to undertake a specific task; the delivery/ pickup of goods, tradespeople undertaking repair or maintenance work within the MLGE workplace. In order to achieve this objective, it is recognised that contractors need to be:

- suitably experienced to perform the tasks
- in possession of all necessary licenses, permits, registrations and insurance required to perform the works safely and in compliance with appropriate regulations
- notified of any potential hazards associated with the location or use of the area where the works are to be carried out
- made aware of MLGE emergency procedures

If reasonable, and if the work will involve high risk tasks, have completed the Detailed WHS Induction Checklist for Contractors (***Attachment 5***).

All contractors must abide by WHS requirements which will be advised to them before engagement.

4. DANGEROUS GOODS AND HAZARDOUS SUBSTANCES

Hazardous substances are chemicals, organic matter and other substances which pose a health risk when people are exposed to them. These may include glues, paints, solvents, corrosives, adhesives, thinners, cleaning solutions, chemicals, flammable and Dangerous Goods. Dangerous goods are hazardous substances that are also explosive or flammable in nature with storage required that is fit for purpose.

All chemicals will be included in the hazardous substances register and have their current Safety Data Sheet (SDS) present for each chemical on the register. All workers shall have access to information about the chemicals in the event of a spillage or exposure, even where MLGE workers would not normally use the chemicals directly. Quantities of hazardous substances stored for use shall be kept to a minimum.

A hazardous substances register will be developed to record any substances purchased or used by the MLGE (see ***Attachment 11***). This will be reviewed on a regular basis.

5. ELECTRICAL SAFETY

Failure to maintain electrical equipment in a safe condition, or to use equipment in accordance with manufacturer's instructions may result in injury or death to workers or other parties.

All electrical equipment must be protected from damage, used safely and checked regularly. In addition, there are other requirements that must also be implemented for 'specified electrical equipment'. These requirements include combinations of testing and recording and connection to safety switches.

Regular inspection and testing of in-service electrical equipment by a competent person is a way to ensure this safety duty is met. The WHS legislation requires that electrical equipment is inspected and tested in accordance with Australian Standard 3760: 2010 In-service safety inspection and testing of electrical equipment. Only authorised electrical personnel are to perform installation, inspection, testing and labelling activities.

5.1. Testing Frequency

The frequency of inspections that are outlined in Section 2 of the Standard, AS/NZS 3760:2010 are recommended but can be varied subject to a risk assessment. The Australian standard includes a table that sets out testing and inspection intervals for various types of equipment from 3 months (for equipment that is high use, high risk, or hire equipment) to up to 5 years (for equipment that is not open to abuse, flexing of cords, etc). In addition to the regular testing and inspection, the standard specifies that electrical equipment is to be inspected and tested:

- before return to service after a repair or servicing, which could have affected the electrical safety of the equipment, and
- before return to service from a second-hand sale, to ensure equipment is safe.

Generally, the following should be followed:

- tools and leads: every 12 months (low use)
- Safety Switches: monthly
- Offices: every 3 to 5 years

5.2. Residual Current Devices

The fitting of Residual Current Devices (RCD) on certain equipment can considerably reduce the risk of electrocution. An RCD (also known as a safety switch) works by detecting a current leakage. When RCD detects this current leakage, it turns the power off almost immediately. Whilst an electric shock may still be received, the duration will be shortened reducing the risk of serious injury.

5.3. Unsafe Equipment

Equipment that may be unsafe should be withdrawn immediately from service and have a label attached warning against further use. Arrangements should be made, as soon as possible, for such equipment to be disposed, destroyed, or repaired by an authorised repair agent or competent person.

The MLGE Electrical Safety Policy provides further information in relation to this workplace hazard and its management. This Policy is included in the WHS Policies and Procedures Manual.

6. CONFINED SPACES

All confined spaces are placarded with access strictly controlled. Entry requires the issue of a confined spaces permit on each occasion. No employee or contractor will be issued a permit to work in any confined space on the property unless they are trained and supervised. When working in a confined space a trained bystander must be present at all times. A register of identified confined spaces and entry permits is maintained at the office.

7. FALLS FROM HEIGHT

There is a risk of serious injury from falling when working above ground height. No worker will work at height without ensuring that ladders, steps and handrails are secure or fall prevention/arrest harnesses are in place. These structures include, but are not limited to:

- Overhead fuel, water tanks and windmills
- Buildings and roofs
- High machinery; cherry pickers, trucks and trailers.

MLGE will ensure that:

- Workers working at height are made aware of the hazards and risk management procedures
- Fall arrest or fall prevention harnesses are provided and used
- Workers are instructed in the correct use of fall prevention or fall arrest harnesses. Contractors will ensure that they:
- Observe and apply risk management procedures when working at heights
- Use the required personal protective equipment (PPE) where indicated.

8. MANUAL HANDLING

Manual handling is any task that requires you to push, pull, lift, carry, move, hold or lower any object, person or animal. Manual tasks include tasks that have repetitive actions, sustained postures and may involve exposure to vibration. The types of injuries related to manual handling include repetitive strain injuries, muscle injuries, tendon and ligament injuries, bone injuries and injuries from falling objects.

Manual handling hazards are managed at MLGE by a risk management process in order to prevent or minimise the risk of injuries caused by manual tasks.

The process involves conducting a risk assessment on manual tasks carried out in the workplace, working out how to address any problems, choosing and implementing appropriate solutions, and following up to check that the solutions work.

Examples of manual handling tasks in the MLGE environment include:

- lifting and moving equipment
- general repairs

Preventing Manual Handling injuries

- decide what changes can be made to reduce the risks of injury. If possible, select permanent changes (such as workplace layout, tools and equipment)
- avoid double handling of items
- provide mechanical aids (hoists)
- redesign the task (such as rotating workers)
- identify changes that are possible immediately, and those that may take time to implement
- document your risk control decisions for each task assessed, and set timelines for changes
- trial the changes in consultation with workers before making them permanent
- provide training if new equipment is introduced.

When loading/unloading vehicles

- use lift equipment wherever practicable, otherwise
- prepare by stretching and warming up, especially after prolonged sitting in the vehicle
- slide the item as close as possible to you before lifting
- keep you back straight and bend your knees when lifting
- put loads down in the same manner in which they were picked up
- where possible store frequently used items at a suitable height; between waist and shoulder height, which reduces the need for forward bending when lifting, and
- whenever possible use trolleys for moving larger and heavy items

9. PLANT AND EQUIPMENT

The definition of plant encompasses hand tools either powered or non-powered (electric drills, hammers) and extends to farm machinery, office furniture and any other equipment used for work purposes.

9.1. Risk Management

A risk management process is a systematic method for making plant as safe as possible and can also be incorporated into other workplace risk management systems. This risk management approach should be undertaken before purchasing of, or alterations to plant, changing the way it is used, relocating it, or if additional health and safety information becomes available.

9.2. Maintenance and repair

Plant must be maintained and cleaned following the procedures recommended by the designer or manufacturer or by a competent person. Only a competent person may inspect

and repair damaged plant.
Unsafe and/or malfunctioning plant and equipment can be identified by any manager, worker or contractor by a number of methods such as:

- equipment inspections;
- verbal reporting of equipment malfunction to the appropriate manager
- hazard and incident reporting.

Once identified, the unsafe or malfunctioning plant/equipment should be reported to the appropriate manager in order for repair to be organised. Plant/equipment which has been identified as unsafe should be disconnected from the power supply and clearly labelled as unsafe and not be used. If possible the plant/equipment should be moved to a location where it is not accessible.

9.3. Record Keeping

Records of inspection, testing and monitoring are required to be maintained by . As a minimum, records should include details of inspections, maintenance, repair, calibration and alteration of plant.

10. PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) may be required to protect managers and workers during general, specific and hazardous tasks. PPE is the least effective way to control risk and is always the last resort to protect workers. The types of PPE used at MLGE might include:

- respirators and masks
- foot protection (safety shoes and boots)
- body protection (high visibility clothing, long sleeves, wide brimmed hats, gloves)
- helmets
- any substance used to protect health, for example, sunscreen.

If required, workers are obliged to use PPE when required and when reasonably practicable. Other requirements include:

- workers should be fully trained in the safe use, storage and maintenance of PPE
- PPE must be checked before use for the correct type, fit and undamaged
- do not reuse disposable, contaminated or damaged PPE
- store PPE correctly.

11. SLIPS, TRIPS AND FALLS

Slips, trips and falls are one of the major types of accidents in workplaces and may be due to poor housekeeping practices such as water or oil spilt. Material placed untidily or using walkways for storage can also be a cause of these types of incidents. When assessing the potential for slips, trips and falls, make sure you look at out of sight areas such as storage rooms, stairways and workshops.

11.1. Prevention

Reduce the risk of injury by following these guidelines:

- avoid walking on slippery floors
- keep floors free of water and grease

- clean floors regularly
- post warning signs around spills or wet floors
- install non-slip tiling or other non-slip floor products
- use rubber mats in areas where the floors are constantly wet
- use non-slip footwear
- clean up spills immediately
- install adhesive strips and slip resistant paint to improve slip resistance. The best method will depend on the existing floor surface.
- use floor cleaning products to remove oil and grease.
- agree on written standards with contract cleaners to ensure that any cleaning agents leave the floor in a non-slip condition.
- use storage areas for equipment and be alert to the dangers of leaving boxes, rubbish, bags and furniture in walkways, entrances and exits.

12. DRUGS AND ALCOHOL

maintains the right to refuse work to any worker or contractor who, in the opinion of MLGE management, is in an unfit state to perform their work in a safe manner. To assist in these requirements, workers, contractors and visitors shall observe that:

- No alcohol may be consumed or permitted on property at any time unless expressly authorised by management and only when work is completed for the day
- No illegal drugs shall be consumed or permitted on property at any time or under any circumstance
- If, in the opinion of management, a worker is unfit to work safely, they will be sent/taken home
- Workers who are taking prescription medication that may affect their safety at work (that cause drowsiness), are to inform management of the circumstances so that appropriate duties may be assigned.
- MLGE encourages all employees not to smoke. Please do not smoke in any vehicle, tractor or building.

13. UV RADIATION

Ultraviolet radiation (UV) exposure can cause sunburn, skin and eye damage and skin cancer. UV protective clothing, hats, sunglasses and SPF 30 sunblock will be provided as PPE and are required to be worn for outdoor tasks.

14. VEHICLES

14.1. Alcohol and Drugs

MLGE managers and workers must not drive a personal or MLGE vehicle on work related business in circumstances where that member would breach applicable road transport law by driving under the influence of alcohol or drugs.

14.2. Licenses

MLGE managers and workers who are required to drive a vehicle on work related business must hold a current valid driver's license of the appropriate class and notify the Department Manager if the license is suspended or revoked. A copy of the current driver's license must be provided to the Department Manager or their delegate to be retained on file.

14.3. Mobile Phones

The use of a hand-held mobile telephone while driving is a safety risk and is against the law. MLGE managers and workers are not to use a hand-held mobile telephone while driving a motor vehicle or other motorised equipment at a MLGE workplace.

14.4. Seat Belts

It is a legal and MLGE requirement that seat belts are worn at all times in a moving vehicle. The driver is responsible for ensuring that all passengers wear a seat belt when the vehicle is in motion on a public road or at an MLGE workplace.

14.5. Smoking

Smoking in any MLGE vehicle by either drivers or passengers is prohibited.

14.6. Load Restraint in Vehicles

- All equipment in vehicles must be restrained firmly in order to avoid the risk of the items becoming airborne and causing missile injuries in the case of a vehicle collision
- The tension in the load restraining straps should be checked regularly during the journey
- Distribute the load evenly within the vehicle
- Ensure no loose items are within the passenger area as they may become projectiles in the event of an accident. Do not exceed load/ weight capacity of the vehicle.

15. WORKING ALONE

The risk of injury or harm for people who work alone may be increased because of difficulty contacting emergency services when they are required. Emergency situations may arise because of the sudden onset of a medical condition, accidental work-related injury or disease, attack by an animal, exposure to the elements, or by becoming stranded without food or water.

The consequences of an incident arising when working alone may be very serious so MLGE managers and workers shall implement the following for each alone work task:

- a telephone call to home base on arrival and departure at a remote work site
- development and approval of trip itineraries for extended trips and adherence to the itinerary
- pre-trip agreement on departure and arrival times and accommodation arrangements
- for travel in remote areas an emergency location beacon should be carried in the vehicle
- pre-arranged mobile/ satellite phone calls at scheduled times
- appropriate first aid kit
- sufficient water for emergency purposes.

16. HAZARDOUS SUBSTANCES

Golf course and groundskeeping workers can be exposed to a wide range of hazardous substances in the course of their work, including:

- Fuel, oil, and grease
- Pesticides, fertilizers
- Cleaning materials and disinfectants

- Paint and wood preservatives
- Dust and vapors, including fumes, from engine exhausts, battery charging and welding
- Contact with dead animals or animal waste
- Contact with poisonous plants

These substances may have an adverse effect on health, rather than affect general safety. Some of those effects include skin irritation, asthma, loss of consciousness, cancer, and infection.

To protect workers from these hazardous substances, the employer must:

- Make workers aware of these types of hazards as they exist in the workplace
- Eliminate the hazard if possible
- Instruct workers on how to best protect themselves if the hazard cannot be eliminated, including the appropriate personal protective equipment (PPE)

16.1. First Aid

To save precious seconds in an injury emergency, adequate first aid supplies and trained workers should be readily available. Ensure that your workplace meets the first aid requirements to help treat workers in the event of minor or major injuries on the job.

16.2. Keeping records

Record keeping may not be foremost in the mind of an employer or worker during an emergency, but it is important. Here are some items to consider recording:

- ☐ Date and time the injury/ illness occurred and when it was reported
- ☐ Where the injury occurred
- ☐ The cause of the injury/ illness
- ☐ The worker's full name, age, and position
- ☐ A brief description of the injury/ illness and first aid rendered (if any)
- ☐ Transportation arrangements made (if any) to treat the worker
- ☐ Names of any witnesses
- ☐ Name and signature of the first aid attendant

16.3. First Aid - Communication

It is critical that workers know where to go for first aid in case they suffer an injury or illness. Signs showing the location of first aid supplies and services must be posted in conspicuous areas of the workplace.

Ensure your workers are aware of the:

- Location of first aid kits (and first aid rooms, if any)
- Names and locations of certified first aid attendants
- Emergency procedures
- Emergency phone numbers

Post this information in a conspicuous area such as break room, cafeteria, or restrooms, and follow up with verbal communication as often as is necessary.

16.4. In summary

1. Ensure that the appropriate number of workers hold valid emergency, standard, or advanced first aid certificates from recognised training agencies.
2. Keep a record of all injuries - even minor and note any first aid care that was given.
3. Ensure that First Aid service is accessible to all workers during all working hours.
4. Ensure that transportation is always available to transport an injured worker.
5. Ensure workers understand the need for first aid kits; that the kit is adequate for the number of workers and located in the current work area.

17. EQUIPMENT

Golf course and groundskeeper workers may use a wide range of equipment in the course of work, including:

- Golf cars
- Commercial mowing equipment, push mowers
- Leaf blowers, edgers, trimmers
- Chainsaws
- Aeration and irrigation equipment
- Powered and non-powered tools

Powered machinery and equipment are often designed to move fast and be powerful enough to cut, crush and alter many kinds of materials. Naturally, the human body is no match for this type of machinery and equipment. Workers need to know the hazards and be trained to recognize and avoid the dangers for each piece of equipment and machinery.

17.1. Employers need to ask the following questions:

- Are workers aware of hazards of all equipment and machinery they are using?
- Is all equipment and machinery maintained in safe working condition, and are all safety features working properly?
- Do workers inspect the tools, equipment, or machinery before each use?
- Do I have safe work procedures in place and are they being followed an enforced?
- Are workers trained in the safe operation of the equipment and machinery and can they demonstrate their knowledge?
- Do workers report any concerns regarding defective or unsafe tools, equipment, or machinery?

17.2. What about ROPS?

ROPS (Roll Over Protective Structure) is a cab or frame that provides a safe environment for the driver of a vehicle or other powered mobile equipment (i.e., Tractor) in the event of a rollover. ROPS must pass a series of crush tests and meet standards*. Having a homemade bar attached to the vehicle's axle, or simple sunshades, is not adequate to protect the operator if the vehicle overturns.

ROPS are required for the following equipment:

Agricultural, construction, earthmoving, forestry, and industrial machines including:

- Crawler tractors, loaders, tree harvesters, skidders, and forwarders;
- Wheeled dozers, loaders, skidders, and forwarders;
- Motor graders, tandem rollers, and compactors;

- Self-propelled wheeled scrapers;
- Agricultural and industrial tractors; and
- Off-highway equipment;
- Any other equipment designated by the Director of OHS as requiring ROPS.

17.3. Seatbelts

Additionally, any vehicles or equipment in your workplace that is required to have ROPS must also be equipped with seatbelts for operators and passengers that meet relevant standards.

However, it is not enough to simply equip the vehicles – seatbelts must be worn! This further ensures that operators and passengers are fully protected in the event of a rollover.

17.4. Cages

When workers are exposed to the danger of being struck by airborne golf balls, the employer is required to provide appropriate protective equipment. Oftentimes, the most appropriate protective equipment is a caged barrier around the operator of equipment that is being used on the fairway. The cage must be designed so that a speeding golf ball will not pass through, yet without affecting the operator's visibility.

17.5. Mechanical Safety

Unintended contact with moving machinery continues to cause terrible injuries in the workplace. Do not underestimate the power behind a machine or equipment such as mowing equipment, a chainsaw, or trimmer. Section 30 of the Occupational Health & Safety General Regulations outlines requirements with respect to mechanical safety in the workplace, including:

- Safeguarding the moving parts of machinery, properly and always. Do not tamper with the safeguards!
- Ensuring the operator is competent in operating the machinery or equipment.
- Ensuring workers do not wear loose-fitting clothing or jewelry which can become entangled in moving equipment.

Always know and follow the **manufacturer's specifications** of any tool, equipment, or machine, with respect to proper use, training, PPE, and service and maintenance requirements. Be able to provide evidence of training for individual workers and produce a copy of the operator's manual if asked by an OHS Officer.

17.6. Personal Protective Equipment (PPE)

When it is impossible to eliminate a hazard entirely (this is always the desired course of action), an employer needs to ensure workers are well protected with appropriate Personal Protective Equipment (PPE). It is the responsibility of the employer to assess each task to determine the correct PPE to be worn by workers. It is then the worker's responsibility to follow the employer's directive and wear the required PPE. Examples of PPE include:

- Hearing protection
- Eye/ face protection
- Head protection
- Hand and foot protection
- Respiratory protection

Workers using PPE must be given pre-job instruction by the employer to understand its use,

limitations, and its maintenance requirements. Always refer to the operator's manual for equipment and machinery to be sure. Workers wearing or using PPE need to test/ inspect the equipment before each use and must not wear it if it is defective.

Here are some general guidelines to follow (refer to the OH&S Act & Regulations for specific requirements):

- Properly fitting, long- or short-sleeved shirts and long pants are best to prevent injury from the sun as well as scratches and bites.
- High-top, lace-up shoes and boots with traction soles and steel-reinforced toes provide support and protection to the workers' toes, feet, and ankles.
- Face shields or goggles protect eyes from dust and flying particles when using chainsaws or brush cutters.
- Wraparound sunglasses with UVA and UVB protection to reduce the risk of cataracts from sun exposure.
- Appropriate hearing protection devices (earmuffs, ear plugs) provide protection from noise produced by equipment.
- Proper respiratory protection may be necessary in extremely dusty conditions or when working with or around chemicals.
- Appropriate head protection is indicated when working under low branches or where there may be a hazard from falling objects (e.g., Cages around mowing equipment to protect from airborne golf balls)
- Gloves should be selected based upon the task to be performed. Various glove styles provide hand protection from hazards such as cuts, scrapes, chemical/ thermal burns, and vibrating equipment.

18. HEARING CONSERVATION

According to the World Health Organization, noise-induced hearing impairment is the most common irreversible (and preventable) occupational hazard world-wide. Additionally, Noise creates other safety concerns. It interferes with communication, can mask the sound of alarms (e.g., back-up alarms, smoke alarms), and can increase fatigue and decrease mental alertness especially during prolonged exposure.

The Occupational Health and Safety General Regulations require employers to implement a noise conservation program where its workers are exposed to excessive noise levels*. If the employer cannot eliminate the noise hazard entirely, efforts must first be made to reduce the noise hazards as much as possible, and finally to provide CSA-approved hearing protection to exposed workers. Be sure to train workers on proper use and care of PPE and appropriately supervise workers to ensure PPE is being properly used.

- The hearing conservation program must consider:
    - how noise levels will be measured
    - how workers will be educated and trained in the program and safe work procedures
    - what types of engineering control are considered and/or used
    - what areas in the workplace are at risk and therefore require warning signs
    - annual hearing tests for workers at risk; how administered and by whom
    - an annual review of the program for changes/ updates.

19. ENVIRONMENTAL CONDITIONS

Working outdoors may expose a worker to serious hazards that are not normally considered in an indoor work area.

19.1. Hot weather work – Heat stress and sun safety

Heat stress - Although the human body is very resilient and adaptable, working in a hot work environment can be dangerous. Heat, humidity, and physical exertion are factors that, when combined, can create a hazard to workers. Heat cramps, heat exhaustion, and heat stroke can result.

Sun safety - Workers need to protect themselves from sunburn and possible skin cancer by covering up with lightweight clothing and using sunscreen. Also wearing sunglasses with UVA/ UVB protection is important.

19.2. Bites and stings

Working outdoors in the summer months means having to fend off bees, wasps, stinging ants, mosquitoes, and other pests on occasion. While most of these creatures can be simply a nuisance, a few can deliver painful and even fatal stings or bites. Wearing protective clothing or insect repellent will help prevent stings and bites from insects. Take every precaution possible if a worker is especially sensitive to stings and bites, and ensure that all incidents get reported, no matter the severity of a worker's reaction.

Additionally, there are biological hazards that exist for workers who come in contact with animals. Animal bites or attacks can cause injury and transfer bacteria from the animal to a worker. If a worker is required to remove a dead animal or bird from the workplace, the employer must ensure that safe and non-hazardous removal procedures are in place and that they are properly followed.

19.3. Lightning

Severe weather can be a safety risk to workers who work outdoors. When you see lightning, or think a thunderstorm is on the way, get indoors. If you can't get inside a building quickly enough, find a low spot and crouch down. Never take shelter under a tall tree.

Victims struck by lightning get a bad electrical shock and maybe burns, but they carry no electrical charge and can be moved safely. A person struck by lightning can often be revived by prompt administration of CPR (Cardiopulmonary Resuscitation) and oxygen. Employers must ensure their workers receive lightning safety training.

PART D: FORMS AND CHECKLISTS

ATTACHMENT 1 - Emergency Contacts List

(To be displayed in appropriate location/s)

CONTACTS		PHONE
POLICE (local Department)		
EMERGENCY SERVICES (police, fire and RFDS)		000 Using Land Line 112 Using Mobile UHF Band
UTILITIES - Electrical		
UTILITIES - Gas		
UTILITIES – Sewerage and stormwater		
Doctor's surgery address:		
Physical site address:		
Adjacent Occupants Contacts:		
First Aid Officer/s: (TBA)		

ATTACHMENT 2 - Hazard/ Injury/ Incident Report Form

Notifiable incidents must be reported to Work Safe Authorities

PART A: HAZARD/ INJURY/ INCIDENT REPORT (to be completed by the involved worker or manager)		
Is this a ☐Hazard report ☐Injury report ☐Incident (i.e. near miss) report?		
Is this a Notifiable Incident? ☐No ☐Yes Date Reported to Work safe authorities.:		
Workplace Location:		
Date of Incident:	Date Reported:	Time of Incident: am
Name of person reporting the incident/ hazard/ near miss (print name):		
Name of person injured (if applicable):		
Nature of injury (if applicable):		
Part of body injured (if applicable):		
Treatment Outcome (If applicable): ☐Nil Required ☐First Aid ☐Medical treatment from GP ☐Hospital		
Location of the hazard/ injury/ incident:		
Description of hazard/ injury/ incident:		
How did the hazard/ injury/ incident occur (contributing factors)?		

PART B: CORRECTIVE ACTIONS (to be completed by the Department Manager)		
What needs to happen? *(to ensure that similar incidents do not occur in the future or to minimise the risk from the hazard)*	By when?	Person Responsible

PART C: SIGN OFF	
Person Reporting (print name):	Department Manager (print name):
Signature:	Signature:
Date:	Date:
Contact Phone Number:	Contact Phone Number:

ATTACHMENT 3 - WHS Induction Checklist For New Workers

Worker's Name		Position/ Job Title	
Start Date		Supervisor Name	

Introduction		Date completed
	Introduce other staff and the supervisor	
	Introduce the first aid officer and show location of first aid supplies	
	Explain and demonstrate emergency procedures	
	Show location of exits and equipment	
	Show the work area, toilet, drinking water and eating facilities	
	Show how to safely use, store and maintain equipment (tools etc) and hazardous substances (if applicable)	
Work Health and Safety		
	WHS Induction Training Program for Land Workers (complete copy)	
On completion of Safety Induction Training Program confirm the following:		
	Roles and responsibilities of people in the workplace regarding WHS	
	Hazards in the workplace and how they are controlled	
	How to report hazards	
	How to report an injury and the importance of immediate reporting of serious injuries.	
	Consultation about WHS—how they will be kept informed about health and safety issues	
	Injury and Return to Work Procedures	

WHS Induction conducted by:

Person providing the induction (print name):	
Signature:	Date:
Worker's Signature:	Date:

ATTACHMENT 4 - Induction For Contractors/ Visitors

Welcome to Mount Lofty Golf Estate Safety Briefing for Contractors and Visitors

Mount Lofty Golf Estate (MLGE) is committed to ensuring the health and safety of our managers, workers, contractors and all other visitors.

For your safety and the safety of others, it is a condition of entry to this Worksite that you take a few minutes to read this briefing.

General Safety Information

- All visitors are required to report to the main office on arrival.
- Observe any posted speed and parking restrictions.
- Obey all safety signs and barricades.
- Violent, threatening or other unacceptable behaviour is not tolerated.
- Smoking, alcohol and illegal drugs are not permitted on MLGE premises.
- Weapons, including knives, are not permitted on MLGE premises.
- Visitors and contractors intending to bring dangerous goods and/or hazardous substances onto the worksite must declare these at the main office prior to entering the site.
- All hazards, incidents and injuries must be reported to the main office. Injuries will be recorded in the Register of Injuries.
- First Aid treatment is available on site.

Emergency Procedures

In a life threatening emergency DIAL 000 for Fire, Police and Ambulance. In all cases advise a MLGE staff member. Follow directions of MLGE staff in the event of an evacuation.

Evacuation Procedures

When the evacuation alarm sounds:

- Evacuate the building and proceed to the assembly area identified on the site map.
- Remain in the assembly area until advised otherwise.

Contractors

All contractors are to report to the main office to:

- Indicate the location and duration of the job
- Sign in/ out of MLGE Visitor Register
- Advise of the status of the job before leaving the site
- Remove all job and personal rubbish

Additionally, the contractor may be required to:

- Produce a copy of their Safety Management Plan, including use of personal protective equipment and controls for site specific hazards, including signage and removal of job and personal rubbish.
- Produce Public Liability Insurance documentation before work is commenced.
- Complete a Prohibited Employment Declaration concerning tasks requiring specific training or licenses.

CONTRACTORS/ VISITORS/ SIGN IN SHEET

IN			CONTRACTOR/ VISITOR DETAILS						OUT	
DATE	TIME		NAME	ADDRESS/ ORGANISATION	PERSON VISITED (or purpose of visit if Supplier or Contractor)	Safety Briefing Information provided	Signature of Contractor/ Visitor/ acknowledging Safety Briefing	INSERT SHORT ORG NAME HERE representative signature	TIME	
		am/pm								am/pm
		am/pm								am/pm
		am/pm								am/pm
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CONTRACTORS/ VISITORS SIGN IN INSTRUCTIONS

All contractors and visitors must be provided with a Safety Briefing prior to coming onto the worksite. Upon arrival to the front office, ensure that:

- a laminated copy of the MLGE Safety Briefing is given to any contractors or visitors who will be coming onto the site.
- verbal advice is given regarding evacuation procedures.
- an extra map of the worksite is provided to the contractor/ visitor, showing the facilities (e.g., toilets), evacuation routes and assembly points.
- the contractor/ visitor is advised to report any hazards, incidents, or injuries to the front office immediately.
- the contractor/ visitor is advised where they can seek first aid treatment, if required.

The contractor/ visitor is required to sign the Sign In sheet acknowledging that they have read and understood the MLGE Safety Briefing.

ATTACHMENT 5 - Detailed Whs Induction Checklist For Contractors

1. Contract Details

Contract Name:
Contract Duration Dates: to
Contractor Name:
Contact:
Contractor Representative:
Work area to be Inducted:

2. Information Checklist

Contractor qualification/ license:	
Contractor qualification/ license and public liability/workers compensation cover provided	Yes
Safe Work Method Statement (SWMS):	
Safe Work Method Statement (SWMS) document/s with risk assessment and detailed controls (may be detailed in an attachment) sighted and discussed with the Department Manager	Yes (work will not commence until sighted)
Site Induction:	
Provided with MLGE contact numbers: Emergencies	Yes
First aid requirements discussed	Yes
Accident/ incident & hazard reporting procedures for MLGE discussed	Yes
Emergency procedures at MLGE discussed	Yes
Discuss building access requirements/ hours of work	Yes
Identification of restricted access areas	Yes
Discuss vehicle access to work site	Yes
Advised of MLGE Alcohol/ Drugs and Smoking policies	Yes
Consultation - discussion and agreement reached with contractor regarding:	
Asbestos management plan viewed	Yes
Location of any barricades to be erected	Yes
Access to electricity/ use of extension leads	Yes
Contractors tools tested & tagged	Yes
Delivery/ Storage/ Removal of building waste	Yes
Storage of building material	Yes
Excavation sites	Yes
Lock out procedures for plant and equipment	Yes
Disconnection of utilities	Yes
Impact on fire alarm/smoke detection systems	Yes
Noise control measures	Yes
Chemicals (If Applicable)	
Will chemicals be used on the job?	Yes
Safety Data Sheets for the chemicals being used are provided?	Yes
Hot Work (If applicable) A hot works permit is required for welding, soldering, or other related heat or spark producing operations.	
Is the fire alarm system isolated or turned off?	Yes
Is a hot work permit required and supplied to the worksite?	Yes
Will additional firefighting equipment be located next to the work site?	Yes

Working at heights (if applicable)	
Has a contractor completed a working at height safety training?	Yes
Are procedures detailed in the safe work method statement?	Yes
Working in a confined space (if applicable)	
Has the contractor completed confined space safety training?	Yes
Are procedure detailed in the safe work method statement	Yes

3. Sign-Off

By signing this form I, the undersigned, agree that:

- I have participated in and understood the WHS Induction.
- I agree to abide by the safety policies and procedures identified above whilst working for MLGE

Responsible MLGE staff member		Date	
Contractor Representative		Date	

ATTACHMENT 6 - WHS Training Register

Publication: August 2022
Revision: September 2022

This training register records the work health and safety (WHS) training undertaken by managers and workers, as required by the WHS Act 2011. Training can take place by a supervisor on-the-job, or by an instructor outside of the workplace. WHS training will provide workers with the information and skills they need to perform their duties without risk to their health and safety.

Recognises that WHS training may be required when:

- a new person starts work—induction, on the job training
- new machinery/ equipment or hazardous chemicals, products or other things are introduced to the workplace
- a worker's job change
- there are new work health and safety regulations that affect our industry
- there has been an incident/ near miss or injury at work.

To ensure the training was successful, MLGE will annually review WHS training to ensure that our managers and workers:

- understand what is required of them
- have the knowledge and skills needed to work safely and without risk to their health and safety
- are actually working as they have been trained.

Additionally, MLGE will use this register as part of regular overall reviews of the WHS management system with the goal of determining if:

- there has been any improvement in health and safety performance
- the feedback from people who have been trained
- further information and/or training needed
- whether the most suitable training method was used
- improvements that can be made.

Training records will be monitored so that refresher training can be given when needed.

WHS TRAINING REGISTER

Who was trained/ job title	Reason for training	Duration of training	Who provided training	Method of training e.g. on the job, theory, practical	Location of training	Scheduled date	Date completed

ATTACHMENT 7 - WHS Risk Assessment Proforma

Workplace location:	
Name and position of person/s conducting assessment:	
Date:	

Serial	Hazard Identification		Risk Assessment		Risk Control			Review	
	What is the Hazard?	What injury, illness or consequence could occur?	List any Control Measures already implemented	Risk Level	Describe what can be done to reduce the harm further	Whom Responsible	When By	Are the Controls Effective? (Revised Risk Score*)	Date Finalised

Conducting A Risk Assessment

Step 1: Identify the Consequences - or how severely could it hurt someone
Step 2: Identify the Likelihood - or how likely is it for an injury to occur
Steps 3 & 4: Identify the Risk Priority Score - to prioritise your actions
Step 5: Apply the hierarchy of hazard control
Step 6: Identify who, how and when the effectiveness of controls will be checked and reviewed

Step 1 - CONSEQUENCES How severely could it hurt someone?		Step 2 - LIKELIHOOD			
		Very likely, could happen frequently	Likely, could happen occasionally	Unlikely, could happen, but rare	Very unlikely, could happen, probably never will
		L1	L2	L3	L4
Kill or cause permanent disability or ill health	C1	Very high risk (1)	Very high risk (1)	High Risk (2)	Substantial Risk (3)
Long term illness or serious injury	C2	Very high risk (1)	High Risk (2)	Substantial Risk (3)	Moderate Risk (4)
Medical attention and several days off work	C3	High Risk (2)	Substantial Risk (3)	Moderate Risk (4)	Acceptable Risk (5)
First Aid needed	C4	Substantial Risk (3)	Moderate Risk (4)	Acceptable Risk (5)	Low Risk (6)

Step 3 - RISK PRIORITY SCORE	Step 4 - ACTION AND RESPONSE
1 = Very High Risk 2 = High Risk	Stop the activity - immediate action is required to ensure safety—safety measures applied must be cleared by the Department Manager before any activity recommences. Proceed with caution - immediate reporting of emerging or ongoing risk exposure at this level to the Department Manager for decision is mandatory.
3 = Substantial Risk 4 = Moderate Risk	Be aware - action required as soon as possible to prevent injury or illness. Report these risks to the responsible Manager during the current shift or before the next shift.
5 = Acceptable Risk	Do something when possible. Manage by routine procedures.
6 = Low Risk	These risks should be recorded, monitored and controlled by the responsible Manager.

CONTROLLING THE RISKS—THE HIERARCHY OF CONTROL

Once the risk assessment process has been completed, those hazards identified as being a VERY HIGH RISK or HIGH RISK should be addressed as a matter of priority. In considering options for controlling the identified risks, the hierarchy of controls helps to ensure that the most effective controls are implemented.

Risk Control Hierarchy
Elimination: this is the best control measure. e.g. remove a trip hazard.
Substitution: e.g. substitute a hazardous chemical with a less hazardous substance.
Isolation: e.g. barricade off the area where the hazard is present.
Engineering: e.g. re-design of tools and equipment, provision of load shifting equipment (trolleys etc.).
Administrative: e.g. written procedures, training, warning signs.
Personal Protective Equipment (PPE): Introduce PPE only when other control measures cannot be implemented or as a supplement.

ATTACHMENT 8 - WHS Hazard Inspection Procedure

Identify hazards in MLGE workplaces by:

- Conducting regular systematic inspections of the workplace
- Observe what hazards exist in the workplace and ask "what if?"
- Listen to feedback from people working with the task
- Maintain records of processes used to identify hazards

Frequency

Location	Frequency	By whom?
Buildings	Ongoing	The relevant manager, HSR or worker
	Formally - annually	The relevant manager accompanied by a HSR
Workshops and Yards	Ongoing	The relevant manager, HSR or worker
	Formally – quarterly - location or task based	The relevant manager accompanied by a HSR
	Formally – annually - complete	The relevant manager accompanied by a HSR

Check

- Air quality - extraction systems and ventilation
- Amenities - ventilation, slip/ trip hazards, cleaning and hygiene
- Asbestos - register, management plan, condition
- Chemicals/ dangerous goods - storage, labeling, spills, safety data sheets, PPE
- Electrical - leads, loading, testing and tagging
- Fire/ emergency/ first aid - communication, fire extinguishers, first aid kits
- Office/ buildings - cleanliness, equipment serviceability, space, ergonomics
- Workshops - walkways, waste, storage, tools
- Lighting - adequacy, glare, cleanliness, repair
- Storage - adequacy, compatible materials, design, repair
- Machinery - guarding, maintenance, calibration
- Manual or mechanical handling - loads, equipment, training
- Noise - noise levels, designated zones, use of PPE
- PPE - availability, purpose, repair
- Premises security - adequacy, lighting
- Miscellaneous issues

At the end of the inspection a report should be drafted detailing all of the safety hazards identified. The report should provide a description of the risk assessment undertaken for each of these items and the risk rating allocated to each. This is done by considering the following:

- The frequency of persons exposed to the hazard - days per week, times per day.
- What the consequences might be - personal injury, environmental damage, associated costs or losses to replace or repair - how severe the outcome.
- What systems are currently in place, how effective are they or what other information is required.

ATTACHMENT 9 - WHS Hazard Inspection Quick Checklist

Work Health and Safety Hazard Inspection Summary							
Location details:					Date of Inspection:		
Inspection undertaken by:			Accompanying Manager: Accompanying HSR:				
Reference Number	Identified Hazard/ Issue	Location	Recommended Control Measure	Priority	To be endorsed by Department Manager		
					To be actioned by:	Completion Date:	Review Date:

Quick Hazard Inspection Checklist	
Area Assessed:	
Date:	
ITEM	COMMENTS
Are the following safe and fit for purpose? Answering "No" will require corrective action stated in Comments	
1. Buildings > air-conditioning > ventilation > adequate lighting > glare problems > ergonomics > amenities clean > amenities serviceable > slip/trip hazards > electrical testing/tagging > smoke alarms > fire extinguishers > safety signage/ information	
2. Chemicals > appropriately stored > excess quantities beyond immediate use > decanted materials labelled > Safety Data Sheets available > spills procedure > first aid > PPE	
3. All Electrical > leads, plugs, switches in good condition > leads safely positioned; any temp leads; tagged > tagging current > RCD testing	
4. Fire & Emergencies > fire extinguishers/hoses checked and serviceable > exit signage > exits clear > signage of HSRs, FAOs, Fire Wardens > designated assembly areas	
5. First Aid > first aid kits adequately stocked > first aid kits clearly located > first aid room adequately stocked > FAO appointed and trained	
6. Workshops > machine guarding in place > safety lockout procedures observed > walkways clear > waste disposal > housekeeping > storage > maintenance	

Quick Hazard Inspection Checklist	
Area Assessed:	
Date:	
ITEM	COMMENTS
Are the following safe and fit for purpose? Answering "No" will require corrective action stated in Comments	
> electrical > battery recharging area > designated noise zones > PPE	
7. Walkways, stairs & landings > surface in good condition > no clutter, trip hazards > rails stable	
8. Storage & manual handling > adequate for needs; items appropriately stored > safe work method statements for hazardous tasks > loads configured to reduce risk > lift equipment provided and serviceable > training in manual tasks	
9. Specific wok	
10. Noise PPE available for designated noise zones	
11. Security > visitor procedures > signage > lighting	
12. Miscellaneous (list)	

ATTACHMENT 10 - Suggested Asbestos Register

Site			Competent Person	
Identification Date	Type of Asbestos	Condition of Asbestos	Location (specific)	Is this an inaccessible area?

ATTACHMENT 11 - Hazardous Substances Register

Name of Substance	Supplier	Location of Substance	Is it Hazardous? Yes/ No	Current SDS i.e. less than 5-yrs old/ date of issue	Risk Assessment Yes/ No	Uses

WORKPLACE HAZARDS AND THEIR CONTROL

UNSAFE ACTS

Unsafe Acts occur when employees do not conform or depart from an established standard, rules or policy. These often happen when an employee has improper attitude, physical limitations or lacks knowledge or skills. Examples include improper posture when lifting, not using appropriate gloves when handling chemicals or reporting to work under the influence of liquor or drugs.

UNSAFE CONDITIONS

Unsafe Conditions are the physical or chemical properties of a material, machine or the environment which could possibly cause injury to people, damage to property, disrupt operations or other forms of losses. These conditions could be guarded or prevented. For example, the lack of safety guards on machinery or the presence of slippery and wet floors.

Accidents and diseases in the workplace can be prevented by identifying the risks and then taking the appropriate preventive measures. Employers are required to conduct risk assessments to evaluate how work is organized and performed and to identify potential hazards. After identifying potential hazards:

- Assess the risks to workers
- Eliminate or minimize the risks
- Educate and train workers in safe work practices and procedures.

The common workplace hazards in hotels and the preventive measures possible are described in this section.

	HAZARD	CONTROL
1	**Cuts** Cuts are among the major risks in the hotel industry. They may occur from the use of knives and machinery in kitchens, laundry shops and engineering workshops. You may be injured while using or cleaning machinery/ equipment as a result of coming into contact or being trapped between moving parts. Cuts may also arise from handling broken glass or porcelain by room attendants. Machinery used in the kitchens and laundries like mincers, food mixers, meat slicers and ironing machines should be properly guarded. Where this is not feasible, sensors or two-hand controls can be used. A guard that is provided but not put in position would not serve its intended purpose. Regular maintenance would also reduce accidents that result from faulty machinery. Staff should be encouraged to maintain good housekeeping at the workplace.	**Use Machinery with care** • Do not wear loose or frayed clothing or jewellery that could get caught between moving parts. • Ensure that safety guards are in place before operating any machinery. • Follow the operating instructions from the manufacturer or supplier. • Do not try to reach into any moving parts of the machinery with your fingers. Use a pusher/tool to avoid contact. • Make sure equipment is switched off prior to cleaning. **Use Knives with care** • Use the right knife for the job. • Always use a proper cutting board. • Make sure the knife is sharp. • Store knives in proper racks with the blade pointing down in a visible place. • Cut away from your body when cutting, trimming or de-boning. • Use protective gear such as mesh gloves.

		• Wash and clean sharp tools separately from other utensils.
2	**Struck by Objects** Injuries can occur when persons are hit by hard, heavy or sharp objects. When materials are not properly stacked they may collapse, causing injuries to persons nearby. Narrow and cluttered passageways can contribute to the risk of such accidents. When trolleys and carts are not handled with care, accidents may also arise.	**Prevent being Struck** • Ensure goods and materials are stacked properly. • Make use of the appropriate personal protective equipment. • Do not rush through swing doors, especially with trolleys.
3	**Burns & Scalds** The use of ovens and deep fryers without due care can cause burns and scalds. A blast of heat or steam can be released when opening hot oven doors, saucepan lids, etc. Staff should know the possible hazards and the preventive measures when handling such appliances or hot liquids.	**Handle Hot Items with Care** • Organize your work area to prevent contact with flames and hot objects. Don't reach across hot surfaces. • Keep the floors clear. • Use gloves for handling hot objects. • Ensure safe temperature levels for hot liquid like oil or boiling water. • Ensure that the handles of pots and pans do not stick out from the counter or stove. • Do not open cookers and steam ovens that are still pressurized. • Open lids towards the direction away from you. • Open hot water and hot liquid faucets slowly to avoid splashes
4	**Slips, Trips & Falls** Many workplace injuries also result from workers slipprery floors, tripping over physical obstructions or falling from height. This could be due to insufficient lighting, poor housekeeping, wet and slippery floors, and lack of handrails on platforms or staircases, unsafe use of ladders or carelessness.	**Preventing Slips, Trips and Falls** • Avoid creating obstacles in work areas and floors. • Keep floors and stairs dry and clean. • Wear footwear appropriate to the type of floor surface like non-slip working shoes or make use of anti-slip flooring. • Ensure carpets and rugs are free of holes and loose edges. • Create and maintain proper lighting. • Hang power cords over aisles or work areas to prevent tripping accidents. • Ensure elevated platforms are guarded against the fall of persons. Provide alternatives like safety harnesses where physical guards are not feasible. **Safe use of ladders** • Inspect the ladder before and after each use.

		• Do not use defective ladders e.g. broken or missing rungs: loose hinges, or missing screws or bolts • Set ladders on a stable and level surface using slip-resistant heels or have someone hold the ladder. • Maintain three points of contact when using ladders. "Three points of contact" means two feet and one hand or two hands and one foot are always in contact with the ladder. • Face the ladder when standing on it and when climbing up or down, gripping two sides with both hands to maintain a three-point contact. • Stay within the side rails. Do not stretch the body to reach spots on either side of the ladder. Move the ladder to the preferred position instead. • Use barricades and warning signs to keep vehicle and foot traffic away from ladders.
5	Noise Hazard The hotel environment is generally quiet but there are certain areas where staff may be exposed to a noise hazard (i.e. engineering workshops, boiler rooms and disco). Hearing loss may result from long-term exposure to hazardous noise levels. According to the Occupational Safety and Health Standards of the Department of Labor and Employment, a person should not be exposed to noise levels exceeding 90dBA for 8 hours a day to prevent hearing loss. Where the permissible noise exposure level is exceeded, measures should be taken to lessen the noise exposure.	Some Noise Control solutions • Replace noisy machinery. • Keep sources of noise away from hard walls or corners. • Isolate or enclose sources of noise. • Construct suitable noise barriers. • Line interior surfaces with sound absorbing materials. • Maintain machinery and equipment at regular intervals. • Wear PPEs such as ear plugs or ear muffs.
6	Extreme Temperature Kitchen, boiler room and laundry staff may be subjected to heat stress from the machinery or equipment used in their workplace. This can cause headaches, fatigue and discomfort. It may also result in heat related illnesses such as prickly heat, heat exhaustion (fainting) or heat stroke. Staff can also be exposed to cold temperatures while retrieving or storing items in cold storage rooms. Freezing of the	Avoid suffering a Heat Related illness • Wear appropriate clothing. • Drink water and rest in a cool area. • Improve the ventilation in the workplace. • Be aware of emergency / first aid procedures associated with heat related illnesses.

	tissues results in frost nip or frost bite. They should wear warm clothing while working in such cold environments.	
7	**Electrocution** Electrocution occurs when the human body becomes part of an electric circuit through which current passes. Electrical hazards include electrical shock, burns sustained at the point of contact, and injuries due to muscle spasm causing, for example, a fall from a ladder. Electrical equipment and appliances should be regularly inspected by a qualified electrician to ensure good working condition.	**Handle Electrical Appliances with Care** • Report any damaged plugs, wires, electrical equipment. • Ensure faulty equipment is taken out of use until repaired (label as faulty or remove the plug to prevent use). • Keep power cords away from heat, water and oil. • Do not clean electrical equipment with flammable or toxic solvents. • Do not overload electrical points. • Pull the electrical plug, not the cord. • Establish a set of lockout-tagout procedures for the repair and maintenance of electrical equipment.
8	**Fire & Explosion** Workplaces which use flammable substances (i.e. LPG) or high-pressure applications, like kitchens, laundries and boiler rooms are at risk for fire and explosion. The main hazards are gas leakage followed by ignition (when mixed with air it is highly flammable and potentially explosive). Improper usage or faulty electrical installations could also result in fires. Some hotels use pressure vessels like steam boilers for supplying their laundries and guests with steam and hot water. These steam boilers are usually located in specially designated boiler rooms. Air receivers are also used in the tool rooms and workshops. These pressure vessels should be inspected regularly as required by law. Regular maintenance should also be carried out by the boiler attendants. Staff, especially those working in the kitchens, should be taught on how to detect gas leakage.	**LPG/Gas Safety** • Know where the gas shut off valve is and how to use it. It should be located in a safe area (away from cookers and heat) with proper signage. • Store all cylinders (full or empty) in an upright position externally in a secure well ventilated area. Do not store below ground level, or adjacent to openings of buildings or drains. • Keep storage areas clear of combustible materials and ignition sources and clearly mark with warning such as no smoking and fire procedure signs. • Provide and maintain suitable fire fighting equipment, e.g. dry powder extinguishers, and ensure it is readily accessible • In rooms where LPG appliances are used, ensure plenty of high and low level ventilation and provide a readily accessible isolation point to switch off the supply quickly in case of an emergency. • Turn off cylinder valves at the end of each working day. **In Case of Fire** • Do not panic. Be calm, but act quickly. • Know the types of fire extinguishers and how to use them.

		• Take note of the location of the fire extinguishers and alarms. • If the fire is small and localized, put it out with a fire extinguisher. If the fire is large, don't risk your safety. Don't attempt to fight it with a fire extinguisher. • Sound the alarm to inform other staff and customers. Make sure that people are leaving the building. Do not allow anyone to go back into the building. • Don't use elevators. Use the stairs. Fire Extinguishers - Types & Usage • Fire extinguishers are designed to put out small fires, not large ones. • Extinguishers are labeled A, B, C, or D or a combination of these letters to indicate what type of fire it can be used on. A - use for fires from burning paper, wood, drapes, or upholstery . B - use for fires from burning gasoline, solvents, cooking shortening, or grease. C - use for fires from burning wiring, fuse boxes, or electrical sources. • Fire extinguishers must be recharged/refilled professionally after any use. A partially used one is as good as an empty one. • Fire extinguishers are to be serviced and checked semi-annually by an authorized agent. • Extinguishers should be installed away from potential fire hazards and near an escape route.
9	Chemical Hazard Some chemicals are hazardous and may be flammable, toxic, corrosive or carcinogenic. The most common risks are through contact with the skin or eyes, breathing in or swallowing. Many cleaning chemicals are hazardous because they are corrosive and can cause burns or rashes from allergy or irritation from direct skin contact. Volatile chemicals such as solvents can be inhaled. Chemical spills and splashes may harm the eyes. High concentrations of vapor or gas can accumulate particularly in poorly ventilated	Safe work practices when working with Hazardous Chemicals • Make sure every chemical has a Material Safety Data Sheet and all containers are properly labeled. • Always instructions and information in the use of cleaning chemicals. • When handling substances, especially concentrates (if unavoidable), always wear PPE, e.g. rubber gloves. If there is any danger of splashing, wear eye protection suitable for splash risks, e.g. goggles or visors.

	and confined areas. It is therefore important that employees who work with chemicals are aware of the hazards.	• Ensure that rubber gloves are free from holes, tears or thin patches. If any of these faults are present ask for replacements immediately. • Never mix cleaning chemicals. • When diluting always add the concentrated liquid to water, not the water to the concentrate. • If cleaning chemicals are accidentally splashed onto your skin or eyes, flush the infected area with running water. Seek medical advice if irritation persists and tell your employer. • If you are dispensing powders, always use a scoop; never use your hand. • Open windows or air vents for proper ventilation. A suitable fume mask and goggles may also be required depending on manufacturer's instructions. • Always store chemicals as manufacturers advise, for example away from heat, sunlight, foodstuffs and humans, especially children. • Check chemical containers regularly for damage or leakage. • Ensure chemicals are disposed of properly by following the instructions given in the safety data sheet.
10	Biological Hazards Staff can be exposed to blood and other body fluids through needlestick and other sharps injuries. They may accidentally get in contact with used needles between bedsheets, under beds, in garbage containers, and hidden in washrooms. These items could be contaminated with blood and body fluids infected with micro-organisms that can cause diseases. These are known as bloodborne pathogens. The bloodborne pathogens of most concern are the human immunodeficiency virus (HIV) and the hepatitis B and C viruses. These viruses cause diseases that can lead to death.	Preventing exposure to HIV/AIDS, and Hepatitis B and C • Wash your hands frequently. • Never handle broken glass with your bare hands. Use tongs or pliers or a broom and dustpan to pick up the glass. Place the broken glass in a separate and secure container. • Don't compress garbage or reach into garbage containers with your bare hands. Remove the contents by lifting out the bag or liner. • Hold garbage bags away from the body. • Sheets, bedspreads, towels or linens contaminated with blood or other body fluids should be handled with care. • Contaminated laundry should be appropriately identified. • Always wear rubber or latex gloves when handling used linen or cleaning the bathroom. For protection from

		blood spatters or splashes into the eyes or mouth eye and face protection should be worn. • Always discard the gloves after use or after a contamination incident. Remove gloves in a way that prevents your unprotected skin from contacting the outside, or contaminated portion of the gloves. After removing the gloves, wash your hands with an anti-bacterial soap. • If the mucous membranes of the eyes, nose, or mouth are affected, flush with lots of clean water at a sink or eyewash station. • If there is a wound, allow it to bleed freely. Then wash the area thoroughly with non-abrasive soap and water. • If an area of non-intact skin is affected, wash the area thoroughly with non-abrasive soap and water.
11	Workplace Violence Workplace violence is a situation in which a a person is abused, threatened, intimidated or assaulted in his or her employment. Workplace violence includes threatening behavior, verbal or written threats, harassment, verbal abuse and physical attacks.	Dealing with Irate Customers • Avoid escalating the situation. Remain calm and polite, and try to calm the other person. • Once you think the customer has remained his calm, you can ask polite questions to gather more information on the incident. This will help you resolve the problem better and effectively. • If you cannot calm the person, ask for help. • Work towards the best potential solution to the customer's problem. If resolving the problem is not in your scope of powers, escalate the issue to the appropriate colleague who can handle it.
12	Ergonomic Stresses Musculoskeletal injuries are injuries and disorders that affect the human body's movement or musculoskeletal system (i.e. muscles, tendons, ligaments, nerves, etc.). It could be due to a single incident such as lifting a very heavy load or slipping and falling. However, it is more often due to gradual wear and tear from frequent and repetitive activities.	•

	The chance of sprains and strains increases with the effort and frequency of lifts, and with the awkwardness of postures required to access and move these materials. Slips and falls can also cause serious strains and sprains. Risks for slips and falls include uneven or slippery floor surfaces, the presence of spilled materials, and excessively worn footwear soles.	
13	Awkward Postures Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system. Awkward postures are deviations of body parts from their neutral position. Awkward body posture leads to exhaustion, discomfort and increased risk of injury. Poor workstation design fosters an awkward body posture. Awkward body posture hinders breathing and blood circulation and contributes to musculoskeletal injuries. Examples of awkward postures include bending the back during bed making, reaching overhead during cleaning and improper posture while sitting.	Preventing disorders from Awkward Postures • Use tools that will allow you to work in neutral postures.Don't overstretch yourself. Reach only as high as is comfortable for you. • Use height-adjustable workbenches and chairs. • Avoid bending over by using lift devices to hold items at waist-height. • Use step stools or ladders to avoid reaching overhead. • Use long-handled tools to decrease reaching and stooping. • Store heavier or frequently used items at a height between workers' hips and chest to reduce awkward postures when handling these items. • Perform work at the proper heights :Above the elbows with elbow support for precision work such as cleaning or sorting. • At the elbows for light work such as peeling and cutting vegetables. • Between the waist and elbows for heavy work demanding downward forces such as cutting or slicing meat. • When awkward postures cannot be avoided: Take regular breaks • Perform a variety of jobs to change postures • Complete forceful actions closer to neutral posture Avoid Awkward Sitting Positions • Avoid bending forward and to the sides. • Do not slouch. • Make sure the height of your chair is just right. Avoid chairs that are too high or too low.

		• Ensure proper height for your work table. Do not work with shoulders and arms raised to prevent neck and shoulder pain.
14	**Manual Handling** Strains and sprains to the lower back and even the neck and limbs, may occur among hotel staff involved in manual materials handling activities. Improper lifting may cause painful back injuries and muscle strain. Manual Handling involves moving or supporting objects by one or more employees. It includes lifting, putting down, pushing, pulling, carrying objects.	**Preventing injuries from Manual Handling** • Assess the weight. Make sure you can lift the load without over-exertion. • Do not lift objects beyond your physical strength. Get help. • Use mechanical aids such as trolleys, pushcarts, hoists or conveyors if available. • Push rather than pull. • Prepare for the lift by warming up the muscles. • Use the muscle power of the legs, not the back when lifting. Stand over the object and bend your knees. • Use a wide stance to gain balance. • Keep the load as close to the body as possible. Keep your back comfortably straight. • Hold the object securely and check for slipping. • Make sure you can see over the object while carrying it. • Avoid sudden movements or jerking. • Avoid twisting and bending to the side while lifting. • Do not bend over when setting a load down. • Small steps are best when walking with a load. • Don't store heavy items in small, confined areas where the worker may not be able to use proper lifting techniques. • Wear proper gloves or other personal protective equipment when handling objects with sharp edges, or objects that are very hot or cold. • Wear safety shoes to protect your feet.
15	**Prolonged Standing** Most jobs in the hotel involve standing work for many hours. Standing for a long period of time can contribute to aches and pain in the lower limb.	**Preventing disorders from Prolonged Standing** • Use foot rails or footrests to be able to shift body weight from one leg to the other to reduce stress on your back and legs. • Change working positions frequently.

		• Controls and tools should be positioned so the worker can reach them easily without twisting or bending. Avoid overreaching. • Wear shoes with well-cushioned insteps and soles to relieve the stress on your knees and back • Wear shoes that allow your toes to move freely. • DO NOT wear shoes with heels higher than 5 cm (2 inches).
16	Repetitive Movement Repetitive use of the hands and upper limb may cause pain in wrist, elbow and shoulder. Persons at risk include room attendants, laundry operators and kitchen staff.	Preventing disorders from Repetitive Movements • Position hand and wrist comfortably. • Reduce repetition as much as possible by pacing your work at a comfortable rate. Vary your tasks and take a few minutes to do something that uses different muscles. • Use ergonomically designed tools. • Maintain tools in good working condition to avoid the need to exert excessive force. • Take “micro pauses”. Let muscles rest by pausing for 5 to 10 seconds. • Once in a while, return to an upright posture and let your arms hang loosely by your sides.
17	Handling Luggage Particularly when loading and unloading from vehicles, carts, and hotel rooms, can cause fatigue, discomfort, and risk of injury. Awkward body postures increase the stress on ligaments and joints. This can lead to strain and injury to the back, shoulders and hands if the load or frequency is excessive or if incorrect lifting methods are used. Proper equipment and training in the proper lifting and carrying techniques should be provided to prevent back strain and injury.	• Use ramps rather than stairs. • • Use a trolley for heavy luggage or when carrying over long distance. • Push rather than pull trolleys. • Ensure trolleys are properly maintained. eg tyres are fully inflated and wheels aligned. • Wear proper shoes. • Plan your lift before doing it. • Use the muscle power of the legs, not the back when lifting. Don’t twist or bend your body to the side. Move your feet to face the load. • When lifting bags from a car trunk, face the trunk squarely with both feet firmly on the ground. Use a wide stance to gain balance. • Keep the load as close to the body as possible. Pull luggage that are in the back of the trunk close to you first before lifting.

		• Bend your knees, not your back. • Do not bend over when setting a load down.
18	Front Desk Staff Front desk staff spend many hours standing to serve customers at the reception counter. They work with visual display units, answer phone calls and handle payment. This may involve repetitive work, awkward postures and prolonged standing. Excessive bending of the neck and back during writing, keyboard work or using the calculator when the height of the desk is too low can cause neck and back aches. The monitor height may be also too low for the standing position and there may also be glare problems if not positioned properly. Prolonged standing with high heel shoes may contribute to aches and pain in the legs and feet and the back. Sprains and strains can be prevented by proper workstation design and placement of equipment and adopting proper work postures.	• Do not overstretch yourself. Avoid bending and twisting to reach the telephone or keyboard. • Avoid bending your back. Make sure the computer monitor is neither too low nor too high. • Hold the telephone receiver while writing or typing. Don't clip it between your ear and shoulder. • Put one foot on a step or rail to reduce stress on your back and legs when standing for long periods. From time to time, alternate the foot you have on the rail. • Wear shoes with enough cushioning to relieve the stress on your knees and back when standing for long periods. • Vary your working position often.
19	Room Attendants Room attendants are prone to strains from bending, pushing, repeated lifting and reaching when making beds, cleaning bathrooms, vacuuming carpets, wiping furniture and pushing carts. Awkward postures, repetitive forceful movements and manual materials handling can lead to strains and injuries to the back, shoulder, arm and hand. Strains and injuries can be prevented by working correctly. Room attendants should be given appropriate equipment and training in proper work methods and postures to reduce the risk of strains and injuries.	Housekeeping • Bend your knees when changing pillow covers or duvet covers. Avoid bending your back. • Use a tool with long handles or use a step ladder to reach high furniture or lighting. • Kneel when cleaning low furniture. • Use light-and easy to use vacuum cleaners. • Kneel when vacuuming under furniture to avoid bending the back. • Carts should not be overloaded and obstruct the vision. They should be stable and easy to move. • Push carts rather than pull. • Maintain good working condition of the carts. Wheels should be aligned and turn smoothly. • Kneel next to the bath tub to avoid excessive back bending and arm reaching when cleaning the tub. • Use tools with long handles for cleaning hard to reach areas.

20	**Chefs and other kitchen staff** Chefs and other kitchen staff are involved in food preparation (cutting, grinding, mixing, arranging), baking or cooking, food transfer and dishwashing. Working in the kitchen involves prolonged standing, awkward postures, manual handling and repetitive hand motions. These can increase the risk of sprains and injuries involving the hands, shoulders, back and neck.	• Use trolleys whenever possible for heavy items. • Provide tables, counters and trolleys of the same height to enable items to be slid across. • Use a work surface that is waist level for forceful tasks (e.g. chopping). • Use a work surface that is elbow height for finely detailed work (e.g. creaming cakes). • Stand close and use the front of the work surface to avoid over-reaching. • Position frequently used items close to your work area and at a convenient height • Select utensils designed to reduce awkward postures and force (eg good grip). • Avoid twisting or bending back. • Hold the rinse nozzle at mid-body height. • Use a platform to reduce depth of deep sink to reduce bending.
21	**Waiters and Servers** Waiters and servers often carry trays of dishes or glasses; bend and reach to clear, wipe, set tables and serve customers at tables. They also carry heavy tables, chairs and other equipment when setting up function rooms. Repetitive heavy lifting and awkward postures can put a lot of strain on the neck, back, shoulder, arms and hands. Training in proper lifting, use of appropriate equipment such as trolleys and proper work practices are important	• Balance the load and keep the tray dry and clean. • Place heavy items close to the center of the tray. • Carry most of the load over the shoulder. • Keep the shoulder, elbow and wrist in neutral posture whenever possible. • Carry reasonable number of plates at a time. • Carry the tray as close to your body as possible. • Balance the tray on both your arm and hand when carrying small trays of drinks. • Use both hands for support and balance when carrying large trays. • When pouring, move the glass or cups as close to you as possible to avoid over-reaching. • Move around the table to serve guests. • Use trolleys when carrying tables and chairs whenever possible. • Ensure a good grip when carrying. • Avoid bending or twisting the back.

		• Limit the number of chairs stacked together when lifting. • Have two or more people carry heavy or bulky items.
22	Laundry Operations Laundry Operations in a hotel include sorting, washing, drying, folding of linens as well as washing, drying and ironing of uniforms and guests' laundry. Handling laundry requires force and some tasks may be repetitive and involve awkward postures and prolonged standing which can be stressful on the hands, wrists, back, shoulders and lower limbs. Proper work design and automation of certain processes as well as training in proper work methods and postures can help to reduce the risk of strains and injuries. Job rotation and scheduled rest b	• Reduce manual handling of laundry through design of work flow or automation. • Reduce bending to retrieve laundry from the bottom of the bins by using bins with a self-elevating base. • Reduce pulling and pushing forces by using lighter bins with wheels designed for hard floors. • Make sure the bins are serviced regularly with particular attention to the wheels. • Use a foot bar to be able to switch the weight of the body from one foot to the other. • Use anti-fatigue mats and shoes with good insoles to reduce discomfort due to prolonged standing. • Practice job rotation or vary job tasks during the shift. • Hangers should be at a lower position (i.e. shoulder level) to reduce excessive reaching and working overhead. • Take regular breaks and perform stretching exercises.
23	Golf Training – Students Injury to student/s including • Cuts & Abrasions • Bruising • Asthma • Broken Limbs	Warm up / Cool down • Explanation & Modelling of correct golf techniques. • Question & Answer session on golf skills, techniques & ettiquette • • Student dress, including footwear, must comply with the requirements of the • golf club or facility being used • Students are encouraged to have their own set of golf clubs, sufficient golf • balls & tees; teachers are to ensure that equipment used is in good • condition; clubs with smooth grips, loose heads & shaft irregularities must be • repaired or replaced • Individual programs based on age & sequential development

		• Supervision of students whilst undertaking task • Staff with knowledge of first aid and /or first aid qualifications • A well-equipped medical kit with Epipen available
24	Biological material •Bodily fluids (e.g. blood, sweat, saliva)	• Comply with HLS-PR-004: Infection Control and Management of Prescribed Contagious Conditions and Infection Control Guidelines. Students with open cuts and abrasions are to be removed from the activity and treated immediately. If bleeding cannot be controlled completely, the participant should not be allowed to return the activity. All clothing, equipment and surfaces contaminated by blood should be treated as potentially infectious. • •Have sufficient and suitable containment material (bandages, etc) available • •Ensure that personal items are not shared.
25	Animal bites/ diseases •Insects •Dangerous/ poisonous organisms	• Check area for ant nests if conducted outside • •Activity is conducted in an area free from poisonous plants and vegetation • •Constant assessment for snakes if conducted outside
26	Environmental conditions •Weather •Surfaces •Surrounds •Temperatures	Ensure students wear appropriate clothing & sun protection • •Assess weather conditions before and during activity (e.g. temperature, storms) • •Check and assess surrounds for loose items, debris and hazards and suitability for participants. • •Consider hazards associated with types of fencing material, gates and other infrastructure for windy conditions • •In poor weather conditions, Golf activity will be conducted either inside or in a suitable undercover area outside
27	Physical Injury •Spinal •Falls •Slips & trips	• Ensure trip hazards are not present in the activity area • •Communicate and demonstrate 'safe areas' 'hitting areas' and danger areas for activities

		• •Communicate and demonstrate correct technique to minimise risk of injury • •Warmup stretching/games conducted prior to Golf activity • •Closed in footwear to be worn at all times
28	Physical exertion •Strains and sprains •Cramps •Exhaustion and fatigue	• Ensure the suitability and competency of students participating in the activity • •Ensure regular consumption of water appropriate to the activity intensity and duration •Constantly monitor students for fatigue and exhaustion •Follow a programme of graded development in Basic physical fitness & Skills of the activity
29	Students •Special needs •High risk behaviours •Medical conditions •Student numbers	Obtain relevant medical information • •When students with medical conditions are involved, ensure that relevant medical/emergency plans and medications are readily available (insulin, Ventolin, Epipen etc…) • •Where necessary, obtain advice from relevant advisory visiting teachers or specialist teachers • •Ensure there is adequate adult supervision • •Ensure all students adhere to safe areas and danger areas at all times • •Jewellery can be a serious hazard when undertaking many activities. All forms of jewellery should be considered in terms of the risk it presents for each activity. Procedures are in place the dissuade or protect (e.g. tape) the wearing of jewellery accordingly.
30	Being struck by a ball hit offline by a player on another part of the golf course/ Personal injury to other course users, spectators and equipment	All players must remain alert at all times. • Players who have played an offline shot must immediately shout “FORE” to alert all surrounding players. • Staff are provided with appropriate PPE in the form of a hard hat and safety visor, work boots, gloves, overalls and waterproof clothing. Safety glasses and ear defenders are available on site too. • Staff must be aware of golfers on the course and move to allow play to pass

		them safely before returning to work task.
31	Being struck by the swinging club of a playing partner.	• Players must stand at least 2 metres away from the arc of the swinging club.
32	Tripping on uneven, sloping, or slippery ground.	• Tripping hazards should be removed by & Green keeping staff. • Course inspection routinely and closed when weather is poor
33	Slipping when entering or exiting a tee block	• Trolleys & motorised buggies are not to be taken on to these slopes in dry or wet conditions
34	Slipping on an undulated wet part of ground.	• All golfers should ensure they have golf shoes which are adequate & suitable for the ground/weather conditions on the day of play.

Appendix Q

Bushfire Survival Plan - BSP Design

Bushfire Survival Plan checklist

Extreme Heat as per Club policy

Heat Policy:

"Should the forecast temperature predicted for Mt George at 4.00pm on the evening before the day of competition be 38 degrees or more the competition times for that day will be adjusted such that start time will be 7.00 am to 8.50 am only."

No competition entries will be accepted outside these times.

The course will remain open for members' play but not in the competition if outside the 8.50 am closing time

- The General Manager, and in his/her absence the Pro Shop will inform the members of the modified competition times at or after 4.00 pm on the day prior to the competition.
- Time sheet bookings will remain so that all members who have booked will be assured of their game if they have a time within the modified competition times. Otherwise to play in the competition you will need to phone and make a booking within the limited time available. (should provide for approximately 136 players)
- Sunday tee times will be limited due to Social Group bookings.
- Should the event for the day be of a significant nature eg. Medal, the event will be transferred to a date to be determined.
- Should the forecast temperature at 4.00pm as above be 42 degrees or more the course will be closed.

This Bushfire Survival Plan is for: The Stirling Golf Club

Our Fire Ban District is: 2. Mt Lofty Ranges

Important phone numbers	
Fire, Police, Ambulance: 000 (TTY 106)	
Bank: ANZ (13 13 14)	
Insurance Broker: Phil Kennihan 0414 331 489	
Water Supplier: SA Water 1300 729 283	
Local Council: Adelaide Hills 08 8408 0400	
Electricity Supplier: Momentum 1300 212 657	
Gas Supplier: Elgas 13 11 61	

Staff			
Name	*Number*	*Name*	*Number*
Warwick Hazel 0403 213 992		Chris Salter 0419 032 414	
Clea Vetch 0418 818 048		Jasmine Patrick 0434 330 457	
James Lethlean 0408 494 333			
Daniel Schultz 0418 597 525			

Staff			
Name	*Number*	*Name*	*Number*
Kadin Mewett 0458 213 003			
Oscar Baulderstone 0416 491 084			

Information Hotline 1800 362 361 (TTY 133 677)

Frequency of our local ABC or other radio station broadcasting emergency warnings:

Other ways we will stay informed:

- checking the weather forecast
- ringing neighbours to share facts and opinions
- ringing the Information Hotline on 1800 362 361 about what is happening in your area
- going outside and looking for smoke every 30 minutes
- performing the actions that will allow you more time as the fire front approaches
- performing the actions that are part of your local community strategies, for example, checking on a vulnerable neighbour.

Our nearest Bushfire Safer Place is: Stirling Town Centre

Our nearest Bushfire Last Resort Refuge (if all plans fail) is: Stirling Town Centre

Leave early – Who is going to leave early? (list names and complete the leave early plan)	
Name	*Phone*
EFM Gym	
Motel Guests	

Stay and defend – Who will stay and defend? (list names and complete the stay and defend plan) Anyone staying to defend must be involved in completing the plan so that they know what to do	
Name	*Phone Number*
Warwick Hazel	0403 213 992
Daniel Schultz	0418 597 525
Kadin Mewett	0458 213 003
Oscar Baulderstone	0416 491 084

Pre-season checklists

Knowing our risk:

- ☐ I know the bushfire risk and history of the area
- ☐ I know the bushfire risk of the property (you can use the Household self-assessment tool)
- ☐ I have read this season's *Your guide to Bushfire Safety* or attended a community meeting with the CFS

Preparing our property:

CFS Recommends:

- ☐ Check that trees and shrubs still have space between them (horizontally and vertically) so they don't form a continuous canopy. Prune if needed.
- ☐ Remove dead vegetation from around your buildings and prune lower limbs of trees.
  Check with your council to see if a permit is required to burn off garden waste, or dispose of the material through mulching or at a council rubbish dump
- ☐ Remove bark, heavy mulch, wood piles and any other flammable materials close to our home and sheds.
- ☐ Ember-proof buildings: seal gaps and areas, verandahs or balconies; repair any loose tiles or gaps in your roof; cover windows, crevices and vents with fine wire mesh or flywire; repair or fill nooks and crannies where leaves or embers could gather.
- ☐ Slash or mow long grass and remove cut material (unless it can rot down before summer).
- ☐ Remove fallen branches and other debris.
- ☐ Remove leaves from gutters.
- ☐ Check and service all mechanical equipment, including grass cutters, water pumps, sprinkler systems and fire extinguishers.
- ☐ Check insurance is still adequate
- ☐ Prepare / check your emergency kit (see kit section)
- ☐ Check your fire clothes still fit (see clothing section)
- ☐ Review, update and practise your Bushfire Survival Plan.

Preparing our emergency kits

General items - *location of kit:*

CFS Recommends:

- ☐ Battery powered AM/FM radio plus spare batteries
- ☐ Waterproof torch
- ☐ Woollen blankets
- ☐ Clothing to protect you during a bushfire (see below)
- ☐ First aid kit with manual
- ☐ Emergency contact numbers

Before we leave, we will add:

CFS Recommends:

- ☐ Money, key cards and credit cards
- ☐ Special requirements for infants, elderly, injured, or those with disabilities
- ☐ Important documents (e.g. Insurance)
- ☐ drinking water (three litres per person per day) and food for at least 72 hours
- ☐ A change of clothes for everyone
- ☐ Mobile phone & charger
- ☐ Blankets

Equipment to stay and defend - *located:*

CFS Recommends:

- ☐ buckets and mops
- ☐ drinking water
- ☐ mobile phone chargers
- ☐ fire extinguishers
- ☐ hoses and spare hose fittings
- ☐ knapsack sprayer / weed sprayer / large water gun
- ☐ shovel
- ☐ ladder
- ☐ towels
- ☐ medications
- ☐ gutter bungs or other equipment for blocking downpipes.

Clothing - *located:*

CFS Recommends everyone has /wears:

- ☐ Natural fabrics such as cotton, denim or wool (synthetics can melt or burn).
- ☐ A long sleeved shirt to prevent burns to the upper body and arms.
- ☐ A pair of heavy cotton pants or overalls to shield your legs.
- ☐ Sturdy leather work boots and a pair of wool socks to prevent burns to the feet.
- ☐ A wide brimmed hat to stop embers from dropping on your head or down your back.
- ☐ Work gloves to protect your hands.
- ☐ A pair of goggles to safeguard your eyes against smoke, embers and debris in the air.
- ☐ A smoke mask or moist cloth to cover your nose and mouth to protect you from inhaling smoke and embers

Leaving Early Plan

It is recommended that you leave early if:

- ☐ There is a Catastrophic Fire Danger Rating.
- ☐ There is an Extreme Fire Danger Rating and The Stirling Golf Club has not been specially designed and constructed.

We will follow this plan when:

The declared Fire Danger Rating is:

☐ Extreme (Total Fire Ban) ☐ Catastrophic (Total Fire Ban)

When to go

(The plan to leave early enough to avoid being caught in smoke, the fire or on congested roads. e.g. the night before or morning of a fire danger day, a fire in the area, the smell of smoke)

Where we will go and how we will get there:

(Choose places of relative safety within a Bushfire Safer Place. Consider friends, relatives or activities in low fire danger areas. Plan several routes in case the road is blocked)

Location 1: Stirling Hotel	*Route*: Golflinks Rd, Old Carey Gully Rd, Old Mt Barker Rd, Gould Rd, Mt Barker Rd
Location 2: Foodland Stirling	*Route*: Golflinks Rd, Old Carey Gully Rd, Old Mt Barker Rd, Pomona Rd, Merrion Tce, Johnston St
Location 3: Lobethal Bakery	*Route*: Golflinks Rd, Old Carey Gully Rd, Old Mt Barker Rd, Pomona Rd

We will tell: (before and after)

Staff, members, visitors, gym personnel, hotel guests.

We will come back when:

When the area is declared safe, when a lower Fire Danger Rating is released

Back-up plan if we don't get out before a fire:

Lily Waite Building on premises

Stay and Defend Plan

Anyone who is not going to leave early must be involved in completing this stay-and-defend plan to ensure they know what to do. Every plan will be different depending on your circumstances.

It is recommended that you do not stay and defend if:

- ☐ there is a Catastrophic Fire Danger Rating.
- ☐ there is an Extreme Fire Danger Rating and your home has not been specially designed and constructed.

Other triggers that mean we will not stay and defend are:

(e.g. family members home alone, house guests, power failure, etc.)

We will follow this plan when:

The declared Fire Danger Rating is:

☐ High ☐ Extreme (Total Fire Ban) ☐ Catastrophic (Total Fire Ban)

Other triggers (e.g. a fire in the area, the smell of smoke)

The night before or early the morning of a fire danger day, we will (choose when to follow plan)

CFS Recommends:

- ☐ Check the Fire Danger Rating
- ☐ Remind everyone of the plan and check that they understand their role
- ☐ Check your kit
- ☐ Let members and visitors know what you intend to do
- ☐ Check your pump and generators
- ☐ Water course via sprinklers
- ☐ Block down pipes and fill gutters with water
- ☐ Move flammable items away from the buildings; shut off gas at meter or bottle
- ☐ Prepare water buckets, a torch and ladder ready to check the ceiling space
- ☐ Prepare for the possibility that no power and/or no phone lines will be available
- ☐ Fill up dams

Fire starts in the area (before the fire approaches):

CFS Recommends:

- ☐ Call members, committee members,
- ☐ Get into fire clothes
- ☐ Turn on sprinklers
- ☐ Shut doors / windows
- ☐ Put tape across the inside of windows so they remain in place if broken
- ☐ Watch out for embers

As the fire approaches:

- ☐ Fight spot fires
- ☐ Wet vegetation near your house with a hose or sprinkler (now that the fire is closer)
- ☐ Shut all windows and doors and place wet blankets and towels around windows and door edges to keep out smoke and embers
- ☐ Prepare inside buildings (e.g. remove curtains, move furniture away from windows)
- ☐ Stay close to the house, drink water and check welfare of others
- ☐ Patrol the inside of the buildings as well as the outside for embers or small fires

As the fire front approaches (fire about to arrive):

(when will you move inside to shelter? Stay safe by monitoring the fire from inside your home, check for embers, etc.)

CFS Recommends

- ☐ Take all firefighting equipment inside such as hoses and pumps as they may melt during the fire
- ☐ Move inside the house until the fire front passes. If possible shelter in a room that it is on the opposite side of the house to the approaching fire and has two exits
- ☐ Patrol the inside of the home - including checking the ceiling space - for embers or small fires
- ☐ Continue to drink water

After the fire has passed:

(patrol your property to extinguish burning embers. You may need to do this for several hours. Outline what actions you will take)

CFS Recommends:

- ☐ Remember to put on any protective clothing you removed while inside
- ☐ Go outside and extinguish small spot fires and burning embers
- ☐ Hose down buildings, paying special attention to the roof space, window frames and under-floor areas
- ☐ Patrol the property inside and out, including the ceiling space and extinguish any fires. Sparks and embers will continue to fall and smoulder, so keep checking for several hours
- ☐ Let everyone know that you are okay
- ☐ Monitor the radio for updates
- ☐ Stay within safe building until you are sure the surrounding area is clear of fire.

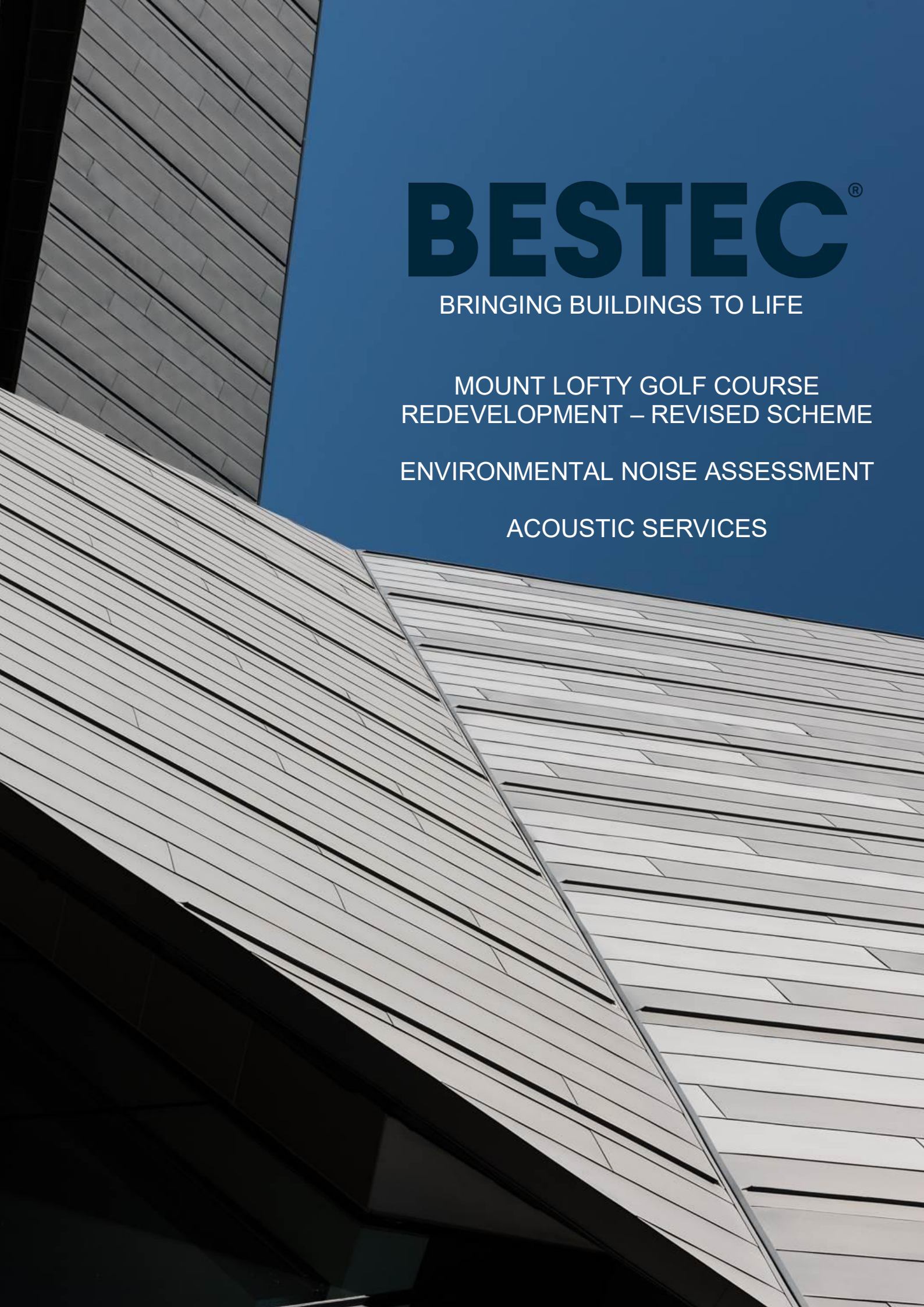
Contingency plan:

Signage stating Course Closed will be put in front of entrance gates and advertising signs.

Other notes:

Appendix R

Environmental Noise Assessment Report – BESTEC



BESTEC®

BRINGING BUILDINGS TO LIFE

MOUNT LOFTY GOLF COURSE REDEVELOPMENT – REVISED SCHEME

ENVIRONMENTAL NOISE ASSESSMENT

ACOUSTIC SERVICES

BESTEC

ABN 43 909 272 047

Building Engineering
Services Technologies
Consulting Engineers

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Adelaide SA 5000

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Adelaide SA 5000

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W. bestec.com.au

IVD:OZH
57366/6/1
28 March 2024

Trice - Project & Development Managers
225 Fullarton Road
EASTWOOD SA 5063

Attention: Ms T Della Putta

Dear Madam

MOUNT LOFTY GOLF COURSE REDEVELOPMENT – REVISED SCHEME
ENVIRONMENTAL NOISE ASSESSMENT
ACOUSTIC SERVICES

As requested, we enclose a copy of the report on the Acoustic Services 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
Yours faithfully
BESTEC PTY LTD

IVAILO DIMITROV
ASSOCIATE / PRINCIPAL ACOUSTIC CONSULTANT

Encl

REPORT ISSUE REGISTER

REVISION	DATE	REVISION DESCRIPTION
00	28.03.2024	Initial Issue

CONTENTS

Introduction

BESTEC Pty Ltd has been engaged to assess the environmental noise impact to the nearest noise sensitive receivers resulting from operational activities, including functions, in the proposed new development at the existing Stirling Golf Club, which includes:

- Construction of a new tourist accommodation – a new hotel (3 to 5 levels) comprising 56 units, 15 two bedrooms serviced apartments, 15 three bedrooms serviced apartments and 2 penthouse apartments.
- Adaptive repurposing of the existing local heritage Perfumery building as a retail, café and multipurpose function space.
- 2-5 level golf course facilities building comprising function facilities, cart storage and club house, pro-shop, administration areas, gym and change rooms.
- Retention of the existing 18-hole golf course with improvements.
- Car parking for 200 cars in two parking areas.

This document presents a review of the proposed acoustic design criteria, the results of the conducted continuous environmental noise survey, calculated noise levels at the nearest noise sensitive receivers resulting from functions, using the venue and the results of our assessment.

Executive Summary

In summary:

- A continuous noise survey was conducted over 5-day period at the boundary of the nearest noise sensitive receiver. The survey results are presented in Appendix A.
- The architectural concept drawings of the proposed development have been reviewed.
- Appropriate acoustic design criteria were nominated.
- The noise impact to the nearest residential developments associated with the operation of the proposed development has been assessed against the nominated environmental noise criteria, including:
  - Music noise resulting from functions taking place in the function area;
  - Patron noise;
  - Noise associated with the use of the carpark, deliveries and rubbish collection;
  - Acoustic design recommendations in order to comply with the selected acoustic design criteria and recommendations for construction of the building envelope were provided.

Acoustic Analysis

References

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

[1] SA Environment Protection (Noise) Policy 2007.

[2] SA Planning and Design Code.

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

[4] 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.

[5] Architectural drawings provided by R Architecture, dated December 2021.

[6] AS ISO 140.4–2006 “Acoustics – Measurement of sound insulation in buildings and of building elements. Part 4: Field measurements of airborne sound insulation between rooms”.

[7] Laurence Nicol and Paul Johnson “Prediction of parking area noise in Australian conditions” Report, Proceedings of Acoustics, Australia, 2011.

[8] Upated Masterplan (prepared by Oxigen).

[9] Updated Project Description (Prepared by URPS).

Proposed Development

The Stirling golf club is bounded by Golflinks Road, Old Carey Gully Road and Devenport Road. Adjacent to the southern-western boundary are residential properties (highlighted on Figure 1).

The proposed development is summarised as follows:

- Hotel - 3-5 level hotel building comprising:
  - 56 hotel suites.
  - 15 x two bedroom serviced apartments.
  - 15 x three bedroom serviced apartments.
  - 2 penthouse serviced apartments.
  - Back of house, plant storage and maintenance areas.
  - A 537m^2 function room.
  - A 212m^2 restaurant with 89 m^2 external terrace.
  - 186m^2 sports bar.
  - A 189m^2 gallery and cafe.
  - A 94m^2 wellness centre with 125m^2 gym and spa/massage treatment rooms.
- Adaptive reuse of the existing Perfumery:
  - Refurbishment of the existing local heritage place to accommodate a multipurpose space for use as café, retail or functions.
  - Extension to the Perfumery to include a covered outdoor dining area.
  - Orchard and perfumery garden plantings to reimagine the former use of the building as a “Scent Factory”.

- Note: the perfumery building will temporarily house the golf club whilst construction is occurring.

- Golf Course Facilities Building - 2-5 level building comprising:
  - Retention of 18-hole golf course with improvements.
  - Refurbished function facilities, cart storage and 138m^2 clubhouse in new building.
  - New 97m^2 pro-shop, administration areas, gym and change rooms.
- Car Parking, Access and Waste Management
  - A total of 200 car parking spaces in two car parking areas.
  - Emergency vehicle access via western entry from Golflinks Road.
  - Main access point via Golflinks Road.
  - Designated service bay for waste collection and service vehicles.
  - Porte cochere and valet area for guests and buses.
  - A separate entry from Old Carey Gully Road to provide maintenance vehicle access and public access to the perfumery building.
  - Designated waste storage areas.
- Subdivision – following construction of the proposed development, it is proposed to divide the site into three (3) allotments:
  - Allotment 532, with an approximate area of 9,924m^2 together with a right of way 'A', comprising the hotel building and pods.
  - Allotment 533, with an approximate area of 5,056m^2 together with a right of way 'B', comprising the golf club and facilities building.
  - Allotment 531, with an approximate area of 38.4 hectares, comprising the balance of the golf course, subject to easements 'A' and 'B'.

Continuous Noise Survey

A continuous noise survey was conducted between 01 September and 05 September 2022 with an automatic noise logger located near the boundary between The Stirling Golf Course and the property where the nearest noise sensitive receiver is located (indicated with a star on Figure **1** in order to establish the existing ambient and background noise levels. The survey was conducted using an automatic noise logger Norsonic Nor139.

The logger was set to continuously measure and average A-weighted equivalent continuous noise levels over 15-minute intervals ($L_{Aeq,15min}$), A-weighted maximum noise levels (L_{Amax}) and statistical noise descriptors (L_{A10}, L_{A90}) using 1/3-octave bands (25Hz – 10,000Hz) using Fast time weighting.

The detailed survey results are presented in Appendix A.

Figure 1: Site location

The analysis of the collected data revealed:

- The measured lowest background noise levels (L_{A90}) during the proposed hours of operation is 31 dBA
- The lowest ambient noise level (L_{Aeq}) measured during the proposed hours of operation is 34 dBA.

Conditions

SA Planning and Design Code

The SA Planning and Design Code [1] sets the desired outcome for developments, which might affect the 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.

The following requirements (performance outcomes) of the SA Planning and Design Code are relevant to the design and siting of the proposed developments (Section Interface Between Land Uses):

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.

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

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 4.2 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.

Design Criteria

Environmental Noise

The SA Planning and Design Code refers to the Environment Protection (Noise) Policy 2007 in regards to environmental noise emissions from non-residential buildings and therefore, the criteria below are derived in accordance with the Policy.

Continuous Noise

This criterion will be relevant to noise emitted from the proposed development resulting from operational noise, including patron noise, mechanical plant, carpark movements, deliveries etc.

- The Environment Protection (Noise) Policy 2007 [1], sets 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 [2], we note that The Stirling Golf Club is located within a land zoned "Rural Neighbourhood" and the nearest noise sensitive receiver is located within the same zone. Therefore, the criteria derived in accordance with the Environment Protection (Noise) Policy 2007 should be based on the average of the indicative noise levels for different land categories.

Based on the "Residential" land use category, the applicable indicative noise factors for day and night times are:

- Day time (7:00 a.m. to 10:00 p.m.): 47dBA
- Night time (10:00pm to 7:00am): 40dBA

We note that for planning purposes, the predicted noise level (continuous) for a new development (in this case the proposed development) should not exceed the relevant indicative noise level, minus 5dBA. Therefore, the environmental noise criteria for assessment of the noise impact from the proposed development become:

- Day-time (7:00 a.m. to 10:00 p.m.): 42dBA
- Night-time (10:00 p.m. to 07:00 a.m.): 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, such as slamming of car doors, car horns sounding, etc. We recommend the use of the World Health Organisation (WHO) Guidelines for Community Noise, which recommends a maximum A-weighted noise level L_{Amax}, of 45dBA in a bedroom, which is equivalent to approximately 55dBA to 60dBA at the façade of the residential building with windows partially open.

In addition, the EPP 2007 provides assessment criterion of L_{Amax} of 60dBA for night-time for the proposed development (for application for development authorisation), which agrees with the criterion stipulated by the WHO.

Music Noise to the Nearest Noise Sensitive Receivers

This criterion will be relevant to music noise emitted from the proposed development resulting live or pre-recorded music being played inside the function area during functions.

The pre function and function rooms may be used to accommodate functions with live or pre-recorded music such convention events, weddings, corporate events etc. Therefore, an assessment against the EPA Guidelines for Music Noise **[3]** and SA Planning and Design Code requirements is warranted.

EPA provides guidelines for assessment of music emissions from entertainment venues, which is used for acoustic assessment for development approval purposes as well as for acoustic design of residential developments in the vicinity of existing entertainment venues. The criterion is set as follows:

> *"The music noise ($L_{10,15min}$) from an entertainment venue when assessed externally at the nearest existing noise sensitive location should be:*
>
> - *less than 8 dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum"*

In addition, SA Planning and Design Code Performance Outcome 4.6 (refer Section [3] which stipulates Designated Performance Feature 4.6 as follows

> *"Development incorporating music includes noise attenuation measures that will achieve the following noise levels:*
>
> - *less than 8 dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum"*

Based on the above EPA Guidelines for music noise and SA Planning and Design Code, to control music noise emissions from the proposed multi-purpose function space, we derived the music noise criteria based on the lowest background noise levels (L_{A90}) measured within the stipulated hours of operation during the most recent continuous noise survey[1], presented in Table 1 below along with the calculated music noise criterion. Therefore, the calculated music noise criteria relevant to the neighbouring residential noise sensitive receivers will be as detailed below.

[1] The lowest background noise level was measured at 23:45 on 04 September 2022.

	Octave band sound pressure level dB re 20µPa							
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Background noise level $L_{90,\ 15min}$	44	38	30	29	30	26	17	15
Maximum allowable exceedance	8	8	8	8	8	8	8	8
Maximum allowable music noise level, $L_{10,15min}$ at the nearest noise sensitive boundary	52	46	38	37	38	34	25	23

Table 1: Criteria for music noise at the nearest sensitive receiver

Building Acoustics

The level of background and transient/intermittent noise, the speech privacy rating and the intelligibility of speech define the quality of the acoustics within a building. The criteria presented in Table 2 and below are based on AS/NZS 2107:2016 “Acoustics – Recommended design sound levels and reverberation times for building interiors” as well as on our experience in acoustic design of similar facilities. Please refer to each individual section below for interpretation of the criteria.

Type of occupancy/activity	**Background Noise dBA**	**Reverberation Time Secs**	**Speech Privacy D_w**	**Weighted Sound Reduction Index with Spectrum Adaptation Term R_w+C_{tr}**
Amenities	< 55	N/A	40 – 45	
Kitchen	< 55	Minimise as practical	40 – 45	
Function spaces	35 – 40	0.7 – 1.0	45 – 50	
Restaurant	45 – 50	Minimise as practical	N/A	
Dining/Kitchen	40 – 45	Minimise as practical	N/A	
Office	40 – 45	0.4 – 0.6	40	
Hotel Suites	30 – 40			45
Admin	40 – 50	< 0.7	35 – 40	
Car park	<65	N/A	N/A	

Table 2: Recommended Acoustic Design Criteria for the hotel development

Type of occupancy/activity	**Background Noise dBA**	**Reverberation Time Secs**	**Speech Privacy D_w**
Sleeping Areas	30 – 35	N/A	N/A
Living Areas	35 – 40	N/A	N/A

Table 3: Recommended Acoustic Design Criteria for the accommodation pods

Background Noise

AS 2107-2016 [6] sets out the design criteria for steady state noise such as from air-conditioning systems and road traffic depending on the type/use of the different rooms. Recommendations for each space are provided in Table 2 in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}).Table 4 details the subjective response of individuals to the proposed sound levels for interpretation of the recommendations.

Average Sound Pressure Levels (dBA)	Subjective Rating
35 - 40	Audible but unobtrusive
40 - 45	Moderate but unobtrusive
45 - 50	Unobtrusive with low levels of surrounding activities
50 - 55	Unobtrusive with high levels of surrounding activities

Table 4: Subjective ratings for various average sound pressure levels.

Sound Insulation

For enclosed spaces, the noise from activities in the adjacent rooms transmitted through walls, floors, ceilings etc. increases the background noise level similarly to the noise intrusion from any outside sources. The level of noise transmitted from the adjacent rooms and the level of sound insulation/speech privacy is controlled by the design of building elements and providing adequate level of sound attenuation through specifying appropriate construction types for walls, floors, doors, ceilings etc.

There are no recommended Australian or International Standards for sound insulation ratings for adjoining spaces. Recommendations are based on experience from previous projects, with these recommendations reflecting user expectations. The privacy rating is dependent on the sound absorption and background noise level in the adjoining space as well as the area and acoustic performance of the dividing partition.

The proposed criteria for speech privacy between the spaces separated by partitions (extending either to the ceiling level or to the roof structure above are presented in terms of Weighted Sound Level Difference (D_W) as defined by AS ISO 140.4–2006, which is related to the sound level difference between two spaces and are detailed in Table 2. The criteria are based on our experience in the acoustic design of similar facilities. Table 5 details the subjective response of individuals to the proposed privacy ratings for interpretation of the recommendations.

D_W Rating	Subjective Rating
50-55	Confidential privacy
45-50	Very good privacy. Speech inaudible unless raised
40-45	Good privacy. Speech audible but unintelligible
35-40	Normal privacy. Neighbouring conversations are audible and may be understood
< 35	Privacy not required

Table 5: Subjective perceptions for various privacy ratings

Room Acoustics

AS/NZS 2107:2016 sets out the design criteria for reverberation times within occupied spaces. The reverberation time defines the time taken for sound to decay within a space and thus the degree of intelligibility of both unassisted speech and sound reinforcement systems. The criterion for a given space depends on the volume of the space, with Table 7 outlining the subjective impression for spaces with varying volume. Criteria considered appropriate for the spaces listed in Table 2.

Reverberation Time (sec)			Subjective Rating
Small (100m3)	Medium (1,000 m3)	Large (10,000m3)	
<0.3	0.3-0.5	0.6-0.8	Dead
0.3-0.5	0.5-0.7	0.8-1.0	Medium dead
0.5-0.7	0.7-1.0	1.0-1.5	Average
0.7-1.0	1.0-1.5	1.5-2.5	Medium live
1.0-2.0	1.5-2.5	2.5-4.5	Live

Table 6: Subjective response to various reverberation times and room volumes

Music Noise to the Hotel Suites and Accommodation Pods

As the Deemed-to-Satisfy/Designed Performance Feature (DTS/DPF 4.6) sets criteria for music noise based on the background noise levels, we propose the internal noise levels resulting from music entertainment in the function centre be based on the background noise level (L_{90}) measured in Room 1012 of the Mayfair Hotel in Adelaide (4.5-star rating), during the commissioning of the development as a basis to determine the music noise criterion inside the proposed accommodation pods. The measured background noise level and the derived music noise criterion are presented in Table 7 below.

	Octave band sound pressure level dB re 20µPa								Overall level, dBA
	63	125	250	500	1000	2000	4000	8000	
Background noise level $L_{90,\ 15min}$ measured in Room 1012 at The Mayfair Hotel (4.5-star) with the AC on	47	39	35	26	24	19	14	15	30
Maximum allowable exceedance	8	8	8	8	8	8	8	8	5
Maximum allowable music noise level, $L_{10,15min}$	55	47	43	37	32	27	22	23	35

Table 7: Background noise level $L_{90,15min}$ measured in 4.5-star hotel room with only the air-conditioning on and the derived relevant internal criteria for music noise in the accommodation pods

Understanding and Assumptions

We have based our assessment on the following understanding and assumptions:

- Music sound levels in the function centre – the function areas may be used for weddings, parties, corporate events etc., which might include live or pre-recorded music. Based on that, the following reverberant sound levels was used (previously measured in a similar venue):

Type of Activity	Octave band sound pressure level (L_{10}) dB re 20µPa								Overall level L_{10}, dBA
	63	125	250	500	1000	2000	4000	8000	
Music	88	90	87	86	87	80	80	78	90

Table 8: Reverberant music sound level (L_{10}) used in the assessment

- Delivery and rubbish collection vehicles will be accessing the site via Golflinks Rd;
- All deliveries and rubbish collection will be taking place during day time, i.e., after 7:00 and before 22:00.
- The functions taking place in the function centre will cease at 0:00.
- Construction of the function centre and accommodation pods building envelope elements:
  - Façade – framed construction consisting of profiled steel cladding to the external side of steel structural frame and flush plasterboard internal lining with fibrous cavity infill;
  - External glazing – laminated glass;
  - Roof/ceiling structure – conventional steel roof cladding over foil faced fibrous insulation on 150mm deep purlins with perforated plasterboard ceiling overlaid with 75mm, 32kg/m^3 polyester for reverberation control suspended on RONDO steel ceiling grid forming 400mm deep ceiling cavity.
- Typical function with 300 guests in total.

Assessment and Recommendations

General Recommendations

Acoustic Sealants

We note that for the acoustic integrity of building elements to be maintained, all gaps and interfaces along the junctions and joints of linings must be sealed with an appropriate acoustic grade sealant. Penetrations for mechanical or electrical services must be properly caulked and sealed around the ductwork and cabling to ensure the intended acoustic rating of the partition is retained.

Appropriate acoustic caulking products include:

- Bostik Firemastic.
- Bostik Seal-n-flex 2637.
- Pyropanel Multiflex.
- Trafalgar Fyreflex.
- Dow-Corning 790 Silicone.
- Dow-Corning 795 Silicone.
- Sika Sikaflex-11 FC.
- Fosroc Flamex 3.

Cavity Infill

Where a cavity infill is recommended, equivalent alternatives are:

- Fibreglass – 50mm, 12kg/m^3.
- Rockwool – 50mm, 38kg/m^3.
- Polyester – 900gsm.

Ceiling Overlay

Where a ceiling overlay is recommended, equivalent alternatives are:

- Glasswool – 100mm, 12kg/m^3.
- Rockwool – 100mm, 38kg/m^3.
- Polyester – 100mm, 32kg/m^3.

Where higher durability and/or water resistance is required, 6mm compressed fibre cement sheeting could be used in lieu of the 13mm fire-rated plasterboard and 9mm compressed fibre cement in-lieu of 16mm fire-rated plasterboard.

Building Envelope

Function Centre

We calculated the music noise levels at the nearest noise sensitive receiver (approximately 200m from the function centre) resulting from music being played in the function centre under the assumptions above and considering the distance. The following constructions of the building envelope elements are required for the selected music noise criterion to be achieved (minimum requirements):

- Solid façade – the architectural drawings indicate the following façade constructions:
  - precast walls and we recommend 150mm precast concrete[2] panels. The sound transmission loss provided by 150mm precast concrete will be sufficient, however, internal lining and fibrous insulation might be required for thermal insulation reasons.
  - slate shingles and we recommend 15mm thick shingles installed to 1 layer of 9mm fibre cement to the external side of 92mm steel studs and 1 layer of 13mm plasterboard to the internal side with cavity infill of 75mm, 14kg/m^3 glasswool.
  - timber cladding and we recommend 12mm thick timber cladding installed to 1 layer of 9mm fibre cement to the external side of 92mm steel studs and 1 layer of 13mm plasterboard to the internal side with cavity infill of 75mm, 14kg/m^3 glasswool.
- Roof – roof steel cladding (0.48mm BMT) with Anticon 100 HP, R2.5 insulation blanket on 300mm deep purlins and 2 layers of 13mm fire rated plasterboard fixed to the underside of the purlins.
- Glazing –minimum 10.38mm laminated glass

Any operable glazing should be fitted with appropriate compressible acoustic seals (Raven or Schlegel ranges). Please note that the above glazing construction is sufficient from acoustic point of view, however it may be subject to change to satisfy structural and thermal requirements.

In order to control the music sound level inside the function centre, 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 performers/DJ's should use only the sound system and amplifier provided by the function centre;
- The sound system should be tuned and commissioned by an acoustic engineer once the function centre is completed and the sound limiter is installed. The measured sound level at 1m from each speaker should not exceed the C-weighted sound pressure levels detailed in Table 9 below when pink noise is fed into the system.

C-Weighted Sound Pressure Level (dB re 20µPa) from each Speaker at Octave Band Centre Frequency, Hz (measured at 1m)								**Overall, dBC**
63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	
93	96	93	92	93	86	85	81	100

Table 9: Sound Pressure Levels measured at 1m from the speakers (based on assumed 4 speakers in the function centre)

  Please note that the above sound pressure levels are based on the assumption that the function centre sound system will have four speakers and have to be re-assessed if different number of speakers is proposed.

- Once the system is tuned:

[2] The sound transmission loss of the construction would be sufficient from acoustic point of view; however, internal lining of 1 layer of 13mm plasterboard and fibrous insulation might be required for thermal insulation reasons.

- The noise levels at the nearest residential receivers should be measured and the sound system settings adjusted if required to ensure the noise levels at the residential properties complies with the maximum allowable music noise levels detailed in Table 1.
- The noise levels in the nearest hotel suits and accommodation pods should be measured with the windows and doors closed and the sound system settings adjusted if required to ensure the noise levels in the accommodation pod is below the maximum allowable values for music noise detailed in Table 7.

When the nominated noise levels are achieved, the sound limiter and main amplifier should be locked by the system engineer to prevent the settings being adjusted by staff of performers.

Hotel

- Façade:
  - precast walls and we recommend 150mm precast concrete[3] panels. The sound transmission loss provided by 150mm precast concrete will be sufficient, however, internal lining and fibrous insulation might be required for thermal insulation reasons.
  - timber cladding and we recommend 12mm thick timber cladding installed to 1 layer of 9mm fibre cement to the external side of 92mm steel studs and 1 layer of 13mm plasterboard to the internal side with cavity infill of 75mm, 14kg/m^3 glasswool.
- Glazing - minimum 6.38mm laminated glass.
- Roof - roof steel cladding (0.48mm BMT) with Anticon 100 HP, R2.5 insulation blanket on 300mm deep purlins and 1 layer of 13mm fire rated plasterboard fixed to the underside of the purlins.

Accommodation Pods

- Façade:
  - 0.48mm BMT profiled steel cladding to the external side of minimum 92mm deep structural steel studs and 1 layer of 13mm plasterboard to the internal side with cavity infill of 50mm 11kg/m^3 glasswool.
  - The architectural drawings indicates that timber cladding is proposed and we recommend 3mm thick timber cladding with a layer of fibre cement to the external side of 92mm steel studs and 1 layer of 13mm plasterboard to the internal side with cavity infill of 75mm, 14kg/m^3 glasswool.
- Glazing – minimum 6mm annealed glass. Operable glazing should be fitted with acoustic seals (Raven or Schlegel ranges).
- Roof – 0.48mm BMT steel roof cladding roof over Anticon 100 HP, R2.5 foil faced insulation blanket on minimum 150mm deep steel purlins and ceiling of 13mm flush plasterboard.

Noise associated with Mechanical Service Plant

The engineering services design is currently being developed and detailed recommendation will be provided when it is sufficiently developed, however, we note that airborne noise emissions from all plant and equipment will be assessed against the nominated environmental and internal noise criteria and engineering noise controls will be designed to ensure compliance. In order to limit vibration emissions and structure borne noise, vibrations will be designed for all plant units.

Noise associated with Carpark

We have calculated the noise impact to the nearest residential receiver from the development associated with the use of the carpark assuming the following activity durations and measured noise levels from similar activities [7]:

- Vehicle movement through car parking spaces

[3] The sound transmission loss of the construction would be sufficient from acoustic point of view; however, internal lining of 1 layer of 13mm plasterboard and fibrous insulation might be required for thermal insulation reasons.

- Vehicle Ignition
- Vehicle door slamming
- Vehicle idle and take off from car parking and drop off zones

A time weighted averaged approach was implemented, based on the above breakdown of noise generating activities.

To calculate the noise levels from the carpark operation over a 15 minutes period, we assumed 30 vehicles either entering or exiting the carpark during the period. We note that the impact noise level at the nearest receiver is within the 47dBA limit suggested by EPA at the façade of the nearest receivers and meets the criteria for the development.

Noise associated with Deliveries

We note that there would be a loading bay located on level 1 on the north east side of the building and calculated the A-weighted Equivalent Continuous Noise Level over a typical 15-minute interval (LAeq,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) – 30 seconds, 70dBA at 5m.
- Loading/unloading activities including noise from refrigeration unit on the delivery vehicle – 10 minutes, 76dBA at 5m.
- Delivery vehicle departing – 30 seconds, 73dBA at 5m.
- The balance of a 15-minute interval – 4 minutes, 54dBA (ambient noise level).

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

Based on the above we predicted incident noise levels of 42 dBA at the nearest residential noise sensitive receiver (residents on Golflinks Road). We note that the noise emissions due to the delivery vehicle activities achieves the day-time environmental noise criteria and would not affect the amenity of the adjacent residential area. However, it is recommended that delivery be restricted to the EPA stipulated day time only (i.e., after 7:00 am and before 10:00pm) Monday to Friday and after 9:00 am on Saturday and Sunday (if applicable).

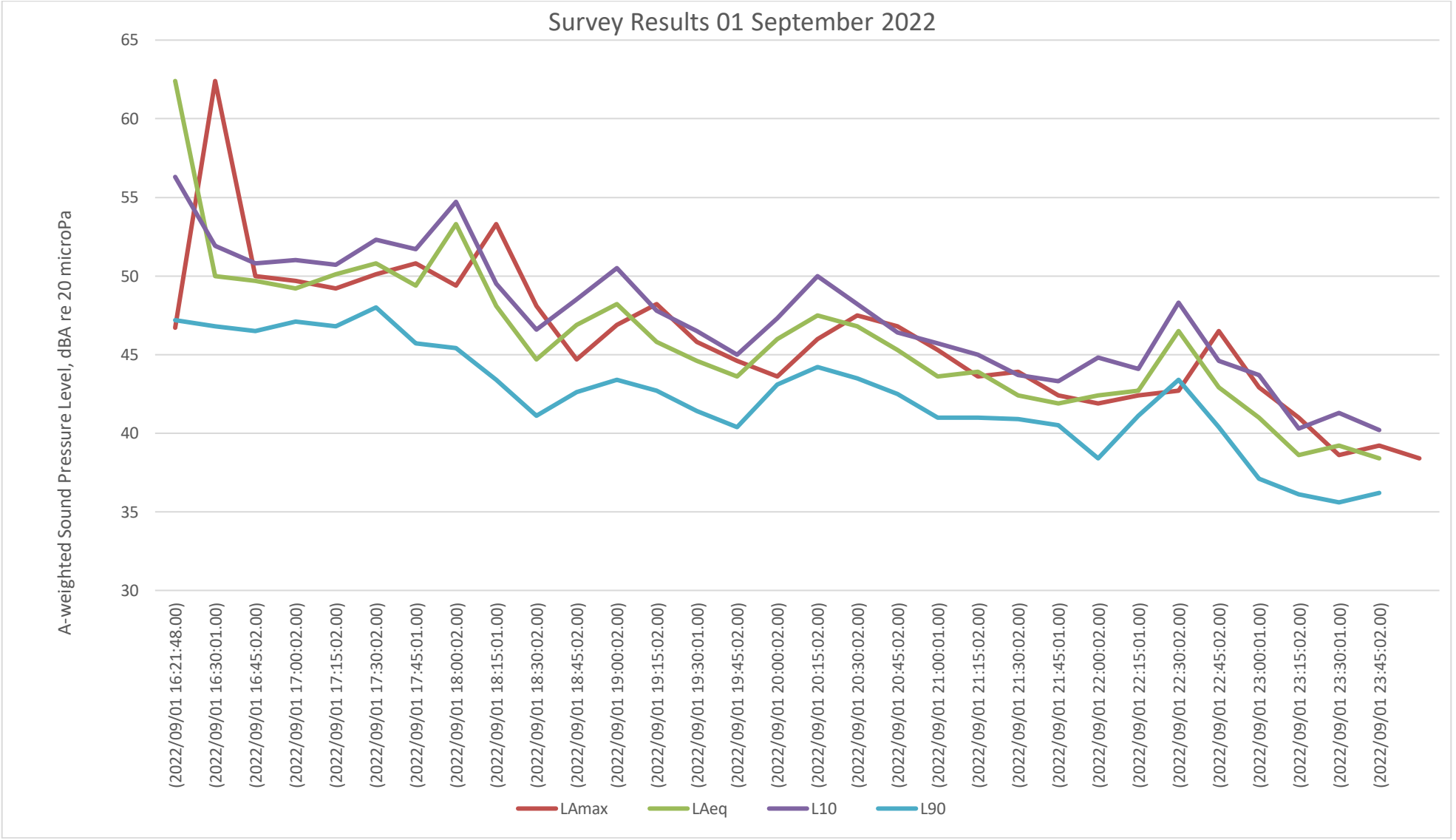
Conclusion

An assessment of the music and patron noise resulting from a typical function taking place at proposed development was conducted against relevant environmental noise criteria derived in accordance with the SA Planning and Design Code and SA EPA Environment Protection (Noise) Policy 2007. The results of the assessment revealed:

- The predicted music noise levels at the nearest noise sensitive receiver will achieve the selected criteria under worst case meteorological conditions provided the sound pressure levels from each speaker is limited to 90dBA at 1m based on 4 speakers being used.
- The continuous noise levels at the nearest noise sensitive boundary resulting from patrons at the terrace and inside the function hall will achieve the selected continuous noise criteria under worst case meteorological conditions.

APPENDIX A

Detailed Survey Results


Survey Results 01 September 2022
A-weighted Sound Pressure Level, dBA re 20 microPa
65
60
55
50
45
40
35
30
(2022/09/01 16:21:48.00)
(2022/09/01 16:30:01.00)
(2022/09/01 16:45:02.00)
(2022/09/01 17:00:02.00)
(2022/09/01 17:15:02.00)
(2022/09/01 17:30:02.00)
(2022/09/01 17:45:01.00)
(2022/09/01 18:00:02.00)
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(2022/09/01 23:30:01.00)
(2022/09/01 23:45:02.00)
LAmax
LAeq
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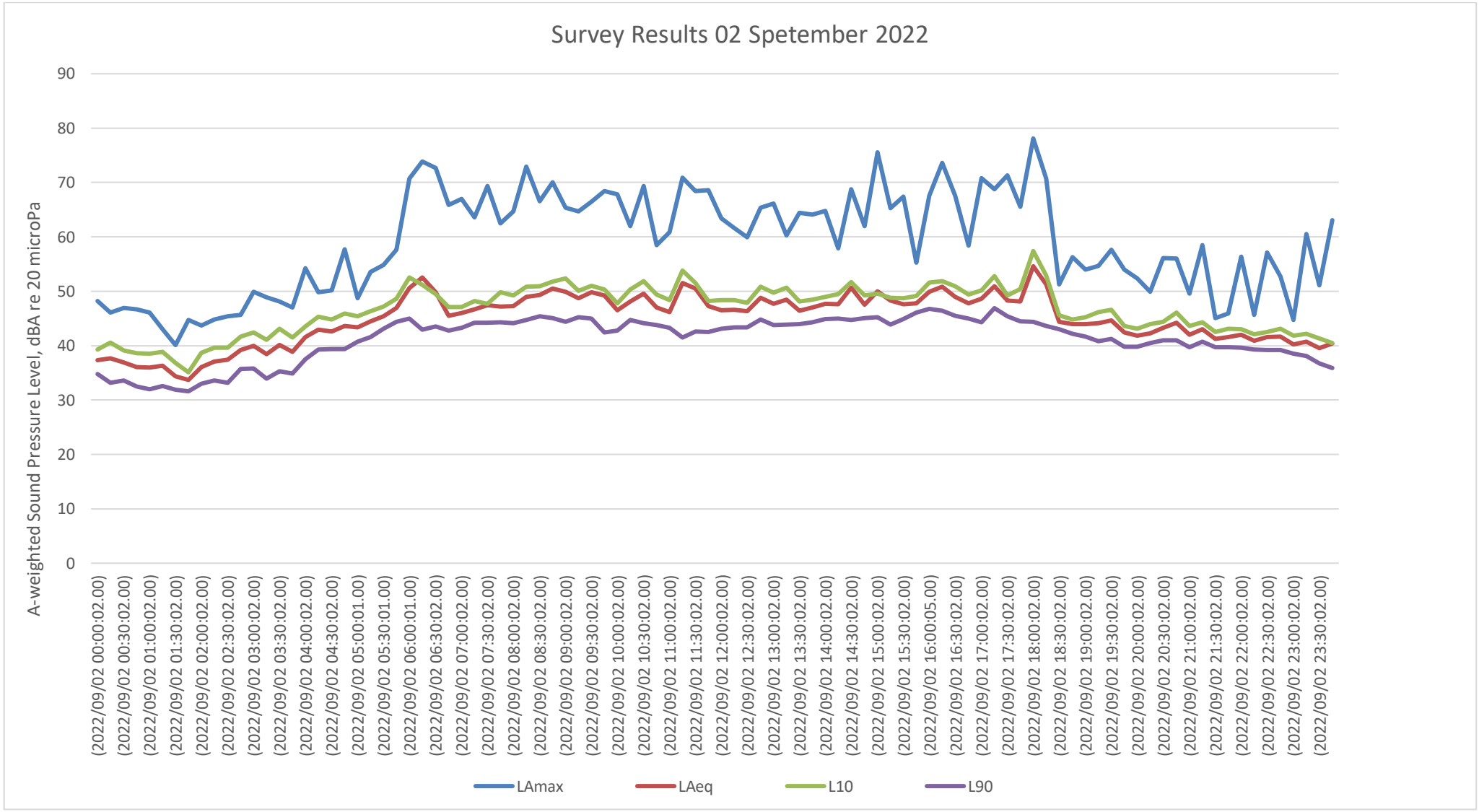
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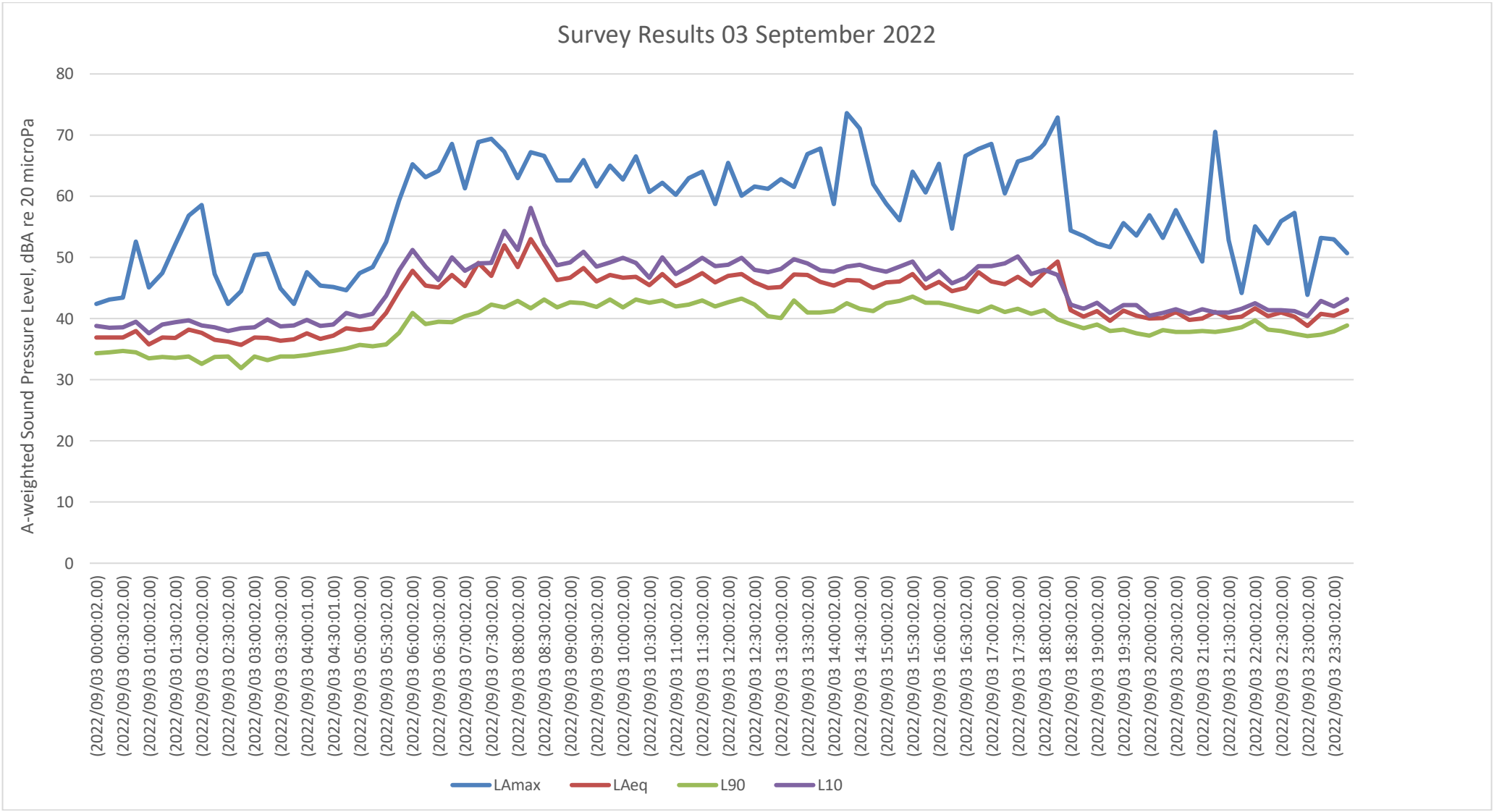
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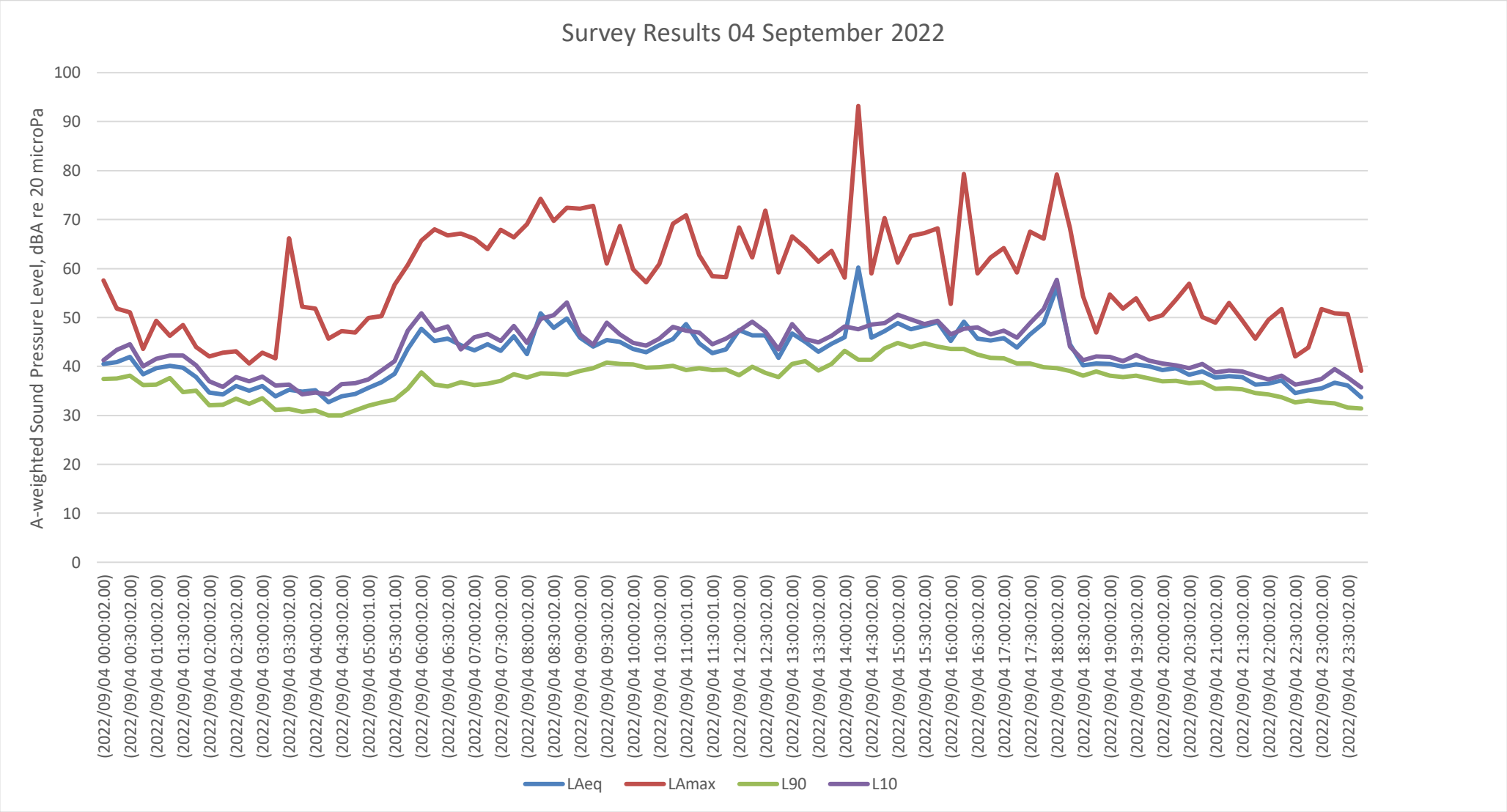
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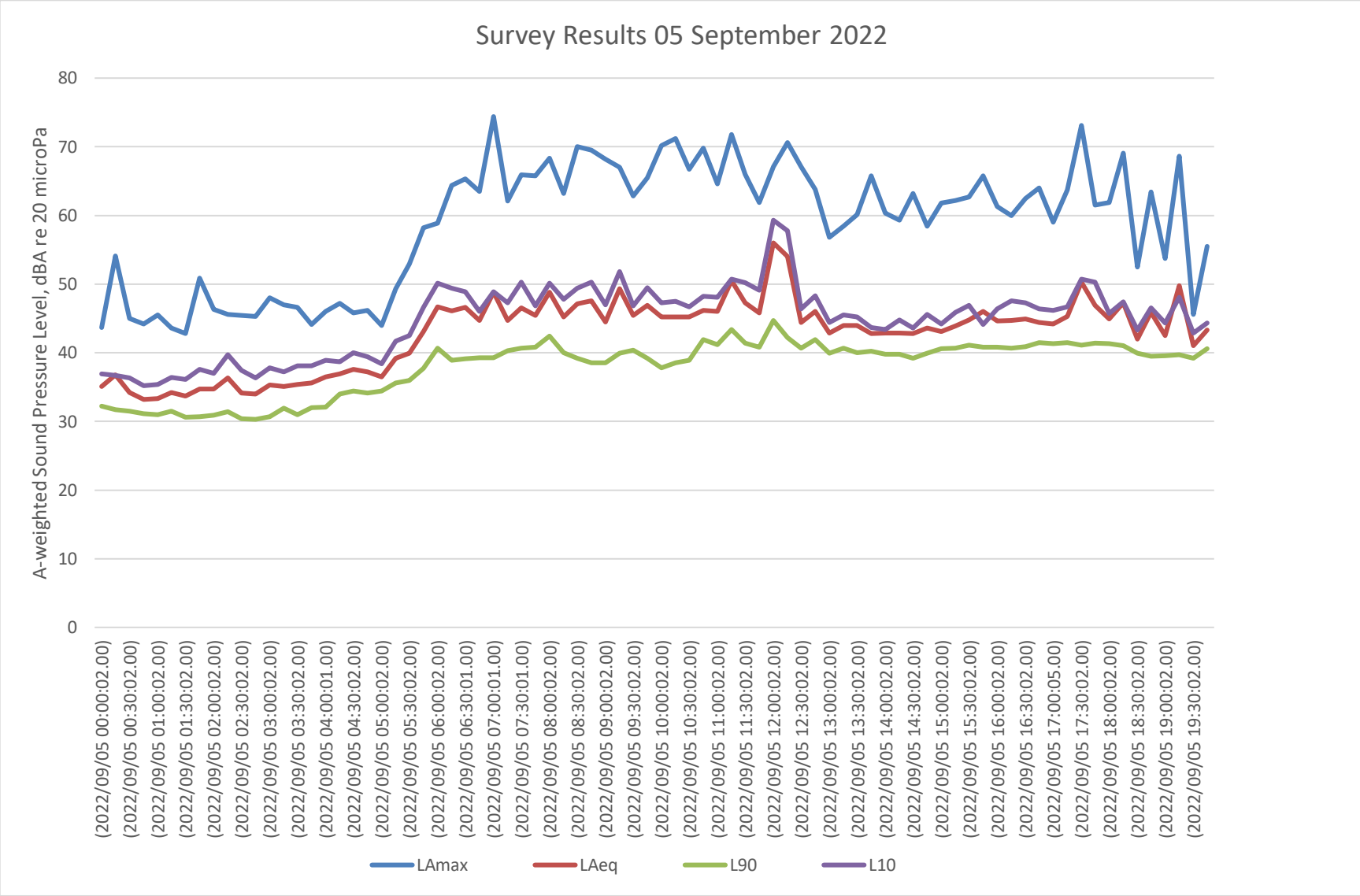
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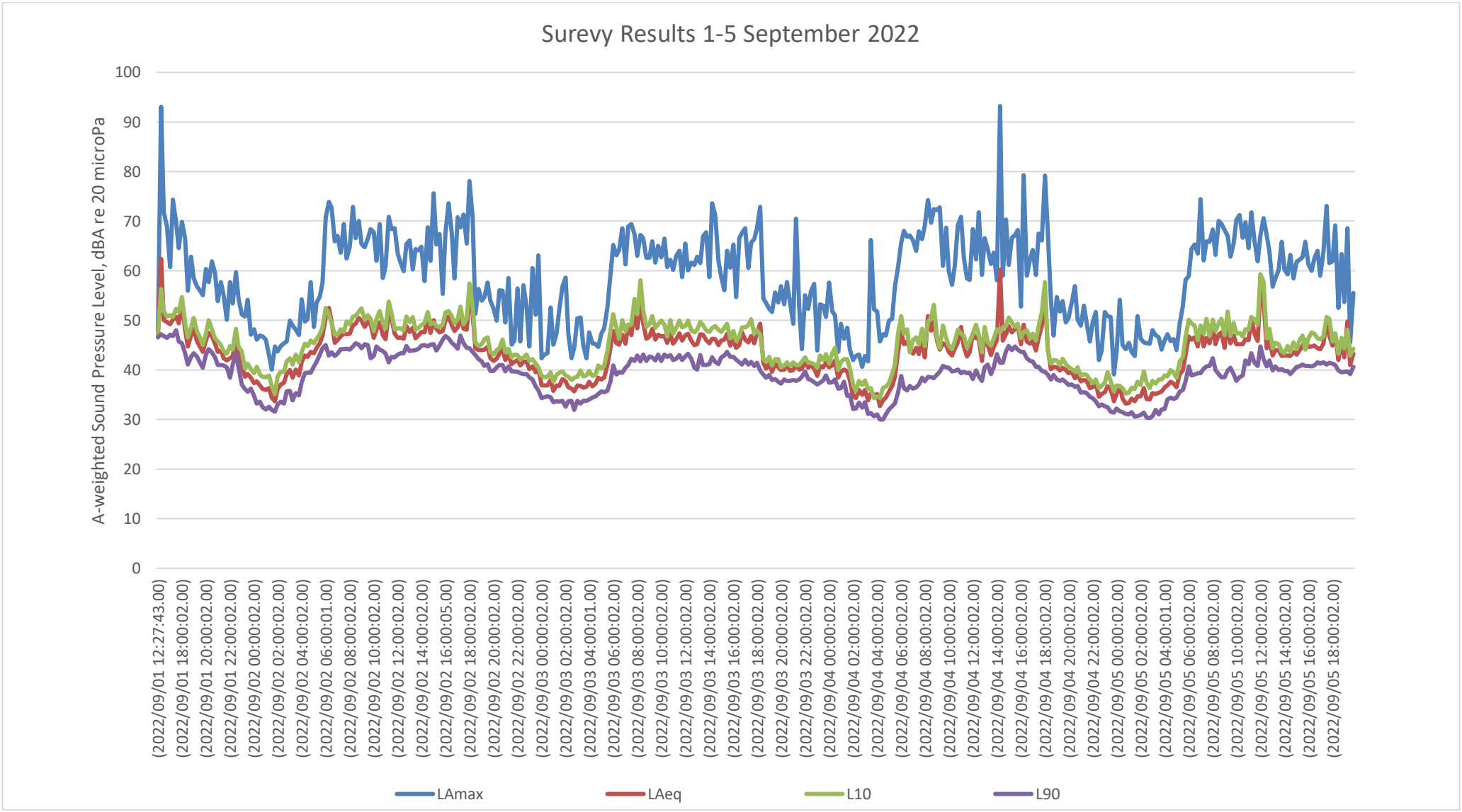
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APPENDIX B

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.

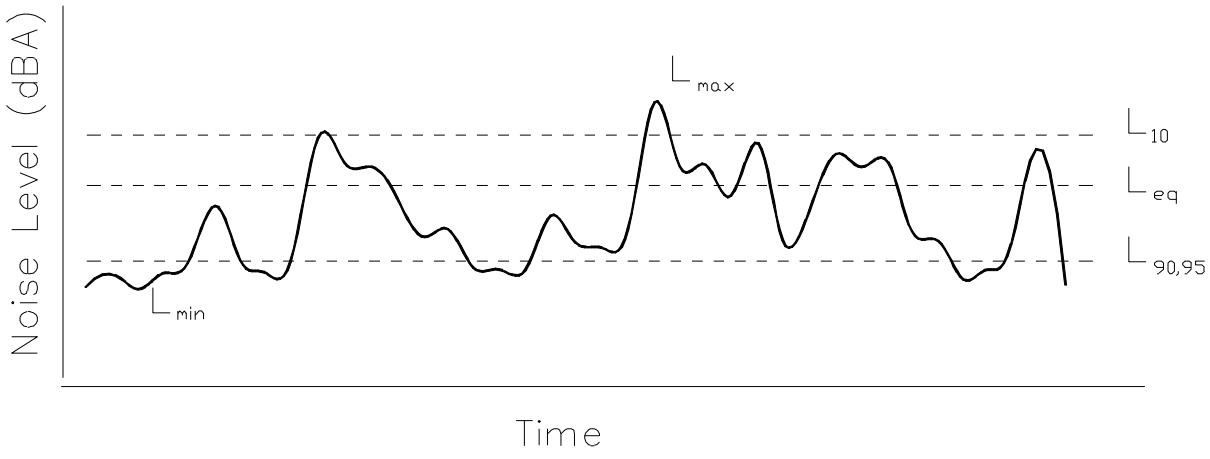
L_1 The noise level which is equalled or exceeded for 1% of the measurement period. L_1 is an indicator of the impulse noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).

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.

Appendix S

Services Infrastructure Summary – LUCID

MEMORANDUM

To:	Trice Project Management		
Attention:	Tiana Della Putta		
From:	Trevor Todd	Reference:	LCE21360-005B
Project Name:	Mt Lofty Golf Course Estate Redevelopment		
Subject:	Services Infrastructure Summary	Date:	31/05/2024

INTRODUCTION

For the purposes of informing the projects planning application Lucid Consulting have prepared the following summary of the potential building services provisions services anticipated for the development located at Golflinks Road Stirling, South Australia. The area of the proposed new development site currently contains the existing golf course club rooms and associated buildings which are understood to be removed as part of the development. The proposed development is summarised as follows:

- Hotel - 3-5 level hotel building comprising:
  - 56 hotel suites.
  - 15 x two-bedroom serviced apartments.
  - 15 x three-bedroom serviced apartments.
  - 2 penthouse serviced apartments.
  - Back of house, plant storage and maintenance areas.
  - A 537m2 function room.
  - A 212m2 restaurant with 89 m2 external terrace.
  - 186m2 sports bar.
  - A 189m2 gallery and cafe.
  - A 94m2 wellness centre with 125m2 gym and spa/massage treatment rooms.
- Adaptive reuse of the existing perfumery:
  - Refurbishment of the existing local heritage place to accommodate a multipurpose space for use as café, retail or functions.
  - Extension to the Perfumery to include a covered outdoor dining area.
  - Orchard and perfumery garden plantings to reimagine the former use of the building as a "Scent Factory".
  - Note: the perfumery building will temporarily house the golf club whilst construction is occurring.
- Golf Course Facilities Building - 2-5 level building comprising:
  - Retention of 18-hole golf course with improvements.
  - Refurbished function facilities, cart storage and 138m2 clubhouse in new building.
  - New 97m2 pro-shop, administration areas, gym and change rooms.
- Car Parking, Access and Waste Management
  - 200 formalised car parking spaces and a porte cochère (set-down/pick-up) facility at the tourist accommodation and golf club facilities building.

    - 20 spaces adjacent to the Perfumery Building accessible from Old Carey Gully Road.
    - 37 spaces for staff only adjacent to the circulation road connecting from Old Carey Gully Road with further informal parking opportunities within the site.
- Subdivision – following construction of the proposed development, it is proposed to divide the site into three (3) allotments:
    - Allotment 532, with an approximate area of 9,924m2 together with a right of way 'A', comprising the hotel building.
    - Allotment 533, with an approximate area of 5,056m2 together with a right of way 'B', comprising the golf club and facilities building.
    - Allotment 531, with an approximate area of 38.4 hectares, comprising the balance of the golf course, subject to easements 'A' and 'B'.

Lucid consulting has been engaged to provide engineering consulting services during the planning and concept phase to assist in determination of the required Building Services; consisting of Mechanical, Electrical, Communications, Hydraulic, Fire and Vertical Transport Services, to inform the buildings design and spatial representation of major services and infrastructure. It should be noted wastewater (sewer) systems are to be designed by others.

INFRASTRUCTURE SUMMARY

The following provides a summary of the existing and proposed services infrastructure provisions.

SEWER SERVICES

Refer to FMG Integrated Water Management Plan.

GAS SERVICES

There is currently no utility towns mains gas supply available within the area, as such a natural gas supply shall not be provided to the building and infrastructure systems are typically proposed to be electric. Should minor gas supplies may be required for kitchen equipment, as such if required shall be provided via local onsite external LPG cylinders.

DOMESTIC WATER SUPPLY

The existing site is serviced via 2 off 100mm SA Water Corporation towns mains within Golflinks Road and Old Cary Gully Road. There is currently no authority recycled water mains within the local area of the site.

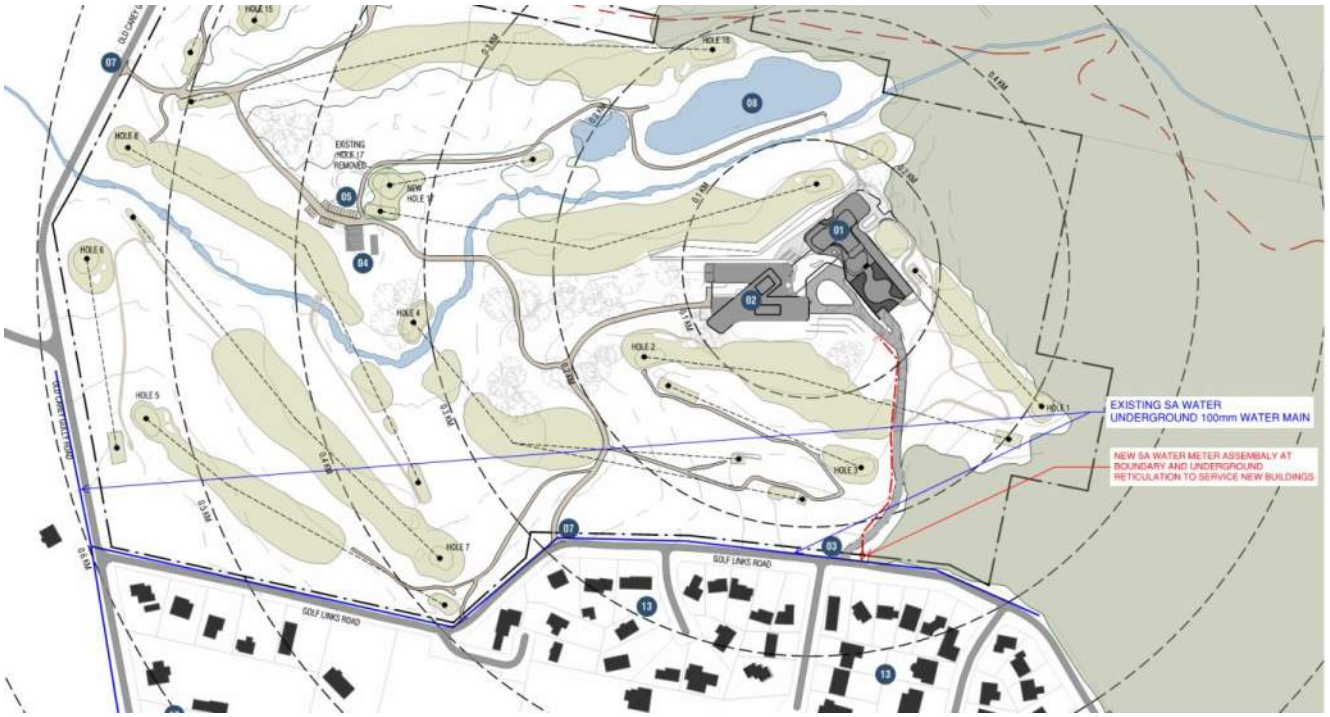


Image 1 – SA Water Corporation Water Infrastructure

Preliminary assessments undertaken to evaluate the required water demand for the proposed development, it is anticipated onsite domestic water storage tanks and pressure pumpset will be required and is intended to be incorporated within the main resort building envelope within the lower ground level plant rooms.

BUILDING FIRE WATER

The latest architectural documents indicate the main building fire protection services will require as a minimum fire hydrants and sprinkler protection. Similar to the domestic water supply a preliminary assessment was undertaken to determine the anticipated requirements for onsite water storage and pumping systems. The anticipated building fire water demand will require on site water storage and pump systems to supplement the available capacity from the SA Water Corporation infrastructure. It is anticipated onsite fire water storage tanks and pumps consisting of 2 off tanks of approximate capacity of 150-200kL each and a fire pump facility containing 2 off fire pumps, both are required to be co-located and in close proximity to the sites main vehicle entry to facilitate the Country Fire Service operational response, as such are currently proposed to be incorporated internally within the building envelope adjacent the carpark at level 1.

In addition to the fire water storage and pumps a booster assembly is required for the attending fire brigade to connect to the system, this is to be located adjacent the main entry driveway on the approach to the buildings to facilitate the Country Fire Service operational requirements.

BUSHFIRE FIRE WATER

It is understood the development is within a bushfire risk area and through consultation with the Country Fire Service it has been agreed in lieu of dedicated individual bushfire tanks to each building a consolidated "community" bush fire water storage strategy is proposed and combine the Bushfire water storage and the building's fire water storage tanks. The current recommendations from the Country Fire Service indicate a recommended water storage quantity in the order of 400-500kL for the precinct including the main building.

To enable access to the bushfire water it is proposed to have external hydrants to the perimeter of the buildings supplied from the tanks and pumps.

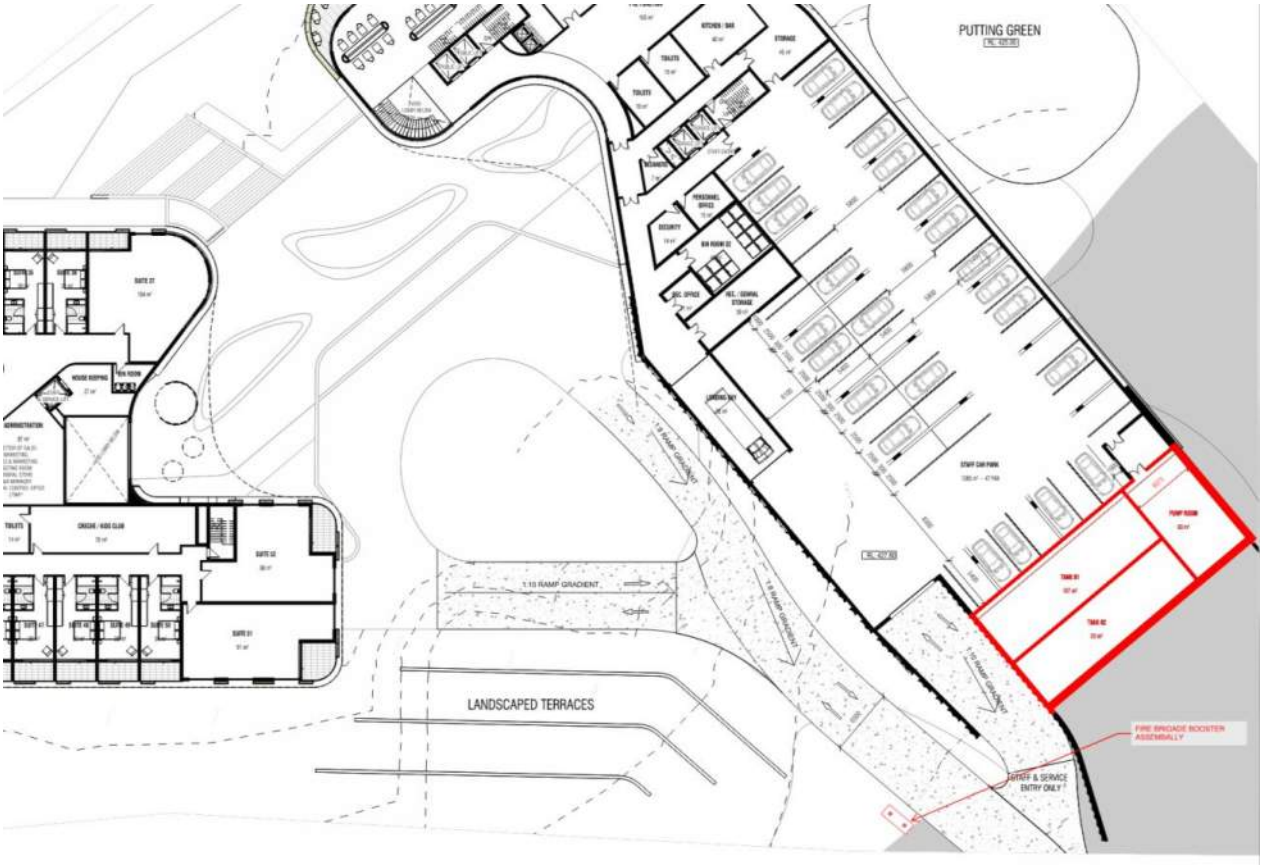


Image 2 – Combined Building Fire and Bushfire Fire Water Infrastructure

ELECTRICAL INFRASTRUCTURE

The development area has access to existing SA Power Networks overhead high voltage lines which currently serve the local transformer providing power to the golf course facilities. The existing supply enters the site from Old Carey Gully Road via underground high voltage cabling before transitioning to overhead high voltage cabling within the site.

Preliminary consultation with SAPN indicates the existing high voltage infrastructure is required to be altered/upgraded to service a new larger capacity transformer located local to the main building to suit the electrical demand of the proposed buildings and removing the existing transformer. Current advice from SAPN indicates the power supply is likely to enter from Old Cary Gully Road however a second option is available to enter the site from Golf Links Drive. Both Golf Links Drive and Old Cary Gully Road have existing overhead high voltage infrastructure.

Consideration is being given to diverting the existing overhead SAPN power lines below ground, however this will be resolved as part of the detailed design as the project progresses.

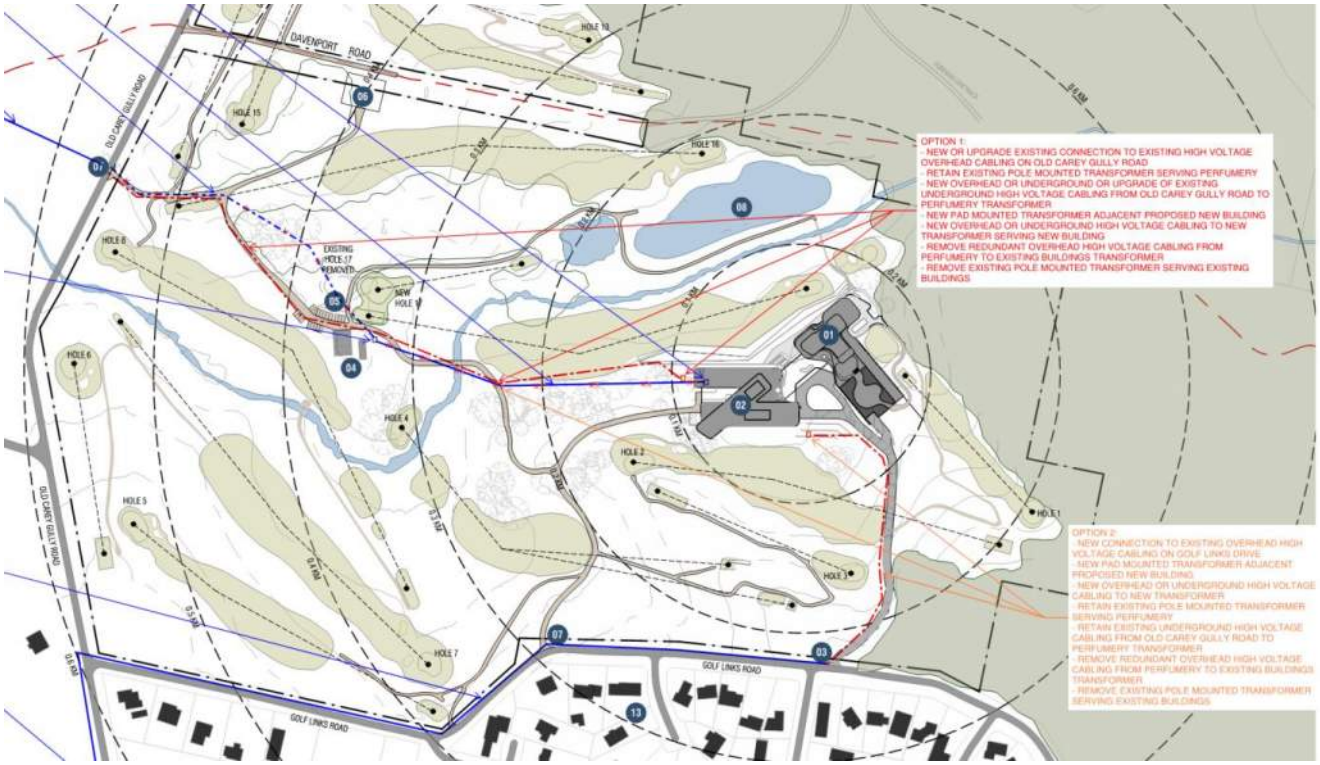


Image 3 – SA Power Networks Electrical Infrastructure
(Refer attached full size drawing for clarity)

We trust the above is satisfactory. Please do not hesitate to contact the undersigned should you require further information.

Regards,
LUCID CONSULTING ENGINEERS

TREVOR TODD
Associate