



**Mount Lofty Golf Estate  
Environmental & Heritage Impact Assessment**

# Mount Lofty Golf Estate Environmental & Heritage Impact Assessment Report

13/12/2022

Version 4

Prepared by EBS Ecology for Trice - Project & Development Managers on behalf of Mount Lofty Estate Pty Ltd.

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## GLOSSARY AND ABBREVIATION OF TERMS

ASRIS	Australian Soil Research Information System
ASS	Acid Sulfate Soil
AGD – AAR	Attorney General’s Department – Aboriginal Affairs and Reconciliation
BAM	Bushland Assessment Method
BDBSA	Biological Databases of South Australia
CD	Consent Determination
CEMP	Construction Environmental Management Plan
CPTED	Crime Prevention Through Environmental Design
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DDA	Disability Discrimination Act
Declared Weed	A weed that is regulated under the <i>Landscape South Australia Act 2019</i> due to its threat to primary industry, the natural environment and/or public safety
DEW	Department for Environment and Water
EBS Ecology	Environmental and Biodiversity Services: Ecology
EBS Group	Environmental and Biodiversity Services Group
EBS Heritage	Environmental and Biodiversity Services: Heritage
EHIA	Environmental and Heritage Impact Assessment
EHIA R	Environmental and Heritage Impact Assessment Report
EPA	Environment Protection Authority (South Australian)
EP Act	<i>Environment Protection Act 1993</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
ILUA	Indigenous Land Use Agreement
km	kilometre(s)
KYAC	Kaurna Yerta Aboriginal Corporation
LMR	Landscape Management Region
LSA Act	<i>Landscape South Australia Act 2019</i>
m	metre(s)

MGCP	Mount George Conservation Park
Mount Lofty Estate	Mount Lofty Golf Estate Pty Ltd
MNES	Matters of National Environmental Significance
NPW Act	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>
NVC	Native Vegetation Council
PDI Act	<i>Planning, Development and Infrastructure Act 2016</i>
PIRSA	Primary Industries and Regions SA
PMR	Protected Matters Report
PMST	Protected Matters Search Tool
Project	The proposed redevelopment of the Stirling Golf Course at the Stirling Golf Club, by Mount Lofty Golf Estate Pty Ltd (Mount Lofty Estate)
SA	South Australia / South Australian
SCAP	State Commission Assessment Panel
SEB	Significant Environmental Benefit
SEDMP	Soil Erosion and Drainage Management Plan
sp.	Species (singular)
ssp.	Subspecies
STAM	Scattered Tree Assessment Method
TPZ	Tree Protection Zone
Trice	Trice – Project & Development Managers
UBS	Unit Biodiversity Score
WAA	Water Affecting Activities
WAAP	Water Affecting Activities Permit
WQRA	Water Quality Risk Assessment
WoNS	Weed of National Significance
WSUD	Water Sensitive Urban Design
°C	degrees Celsius

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# 1 INTRODUCTION

Mount Lofty Golf Estate Pty Ltd (Mount Lofty Estate) are proposing to redevelop the Stirling Golf Course at the Stirling Golf Club (The Project), located in Stirling, South Australia (SA). EBS Group (EBS Ecology and EBS Heritage) has been engaged by Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate to undertake an environmental and heritage impact assessment (EHIA) for the Project to identify potential environmental and heritage constraints and provide input into the design. An overview of the EHIA findings is provided below, while more information on the Project and the assessment of environmental and heritage impacts are provided in subsequent sections of this EHIA Report (EHIAR).

The potential impact of the Project on the following environmental and heritage aspects has been assessed:

- Vegetation;
- Fauna;
- Pest animals, plants and biosecurity;
- Water quality;
- Site contamination;
- Noise and vibration;
- Air quality;
- Land Use, Planning and Amenity;
- Sustainability;
- Waste management;
- Historical Heritage;
- Aboriginal Heritage; and
- Native Title.

## 1.1 Overview of EHIA report findings

The environmental impacts will be due to removal of native vegetation, including possibly threatened species and ecological communities and significant construction which has the potential to impact native fauna and associated habitat. There is also the potential that there will be impact to the conservation values of the Mount George Conservation Park (MGCP). Additionally, there will be potential impacts on the integrity and geomorphology of the watercourse and surface water storage structures (i.e., dam or lake and on downstream flows).

The Project will have a material impact on a local heritage place as it is proposed that there will be partial demolition, restoration, conservation, reuse, and new built form elements adjacent to the local heritage place. The Project may have impacts on heritage sites, objects, and remains of Aboriginal People.

A summary of (1) approvals, permits, licences and/or authorisations required; (2) completed and required technical investigations and assessments required; (3) recommendations for design development required; and (4) recommendations for construction, is provided below. However, refer to Section 3 Assessment of Environmental Impacts for more detailed information, including the various measures proposed to avoid, minimise, manage and/or mitigate potential environmental impacts associated with the Project.

#### ***1.1.1 Required approvals, permits, licences and/or authorisations***

A summary of approvals, permits and authorisations required to progress the Project to delivery (construction) is provided in Table 1. Refer to Appendix 1 for a summary of applicable environmental legislation and Appendix 2 for a summary of applicable heritage legislation.

**Table 1. Summary of required approvals / permits / licences / authorisations likely to be required.**

Approval / permit / licence / authorisation	Applicable	Legislation / policy	Approving authority	Timeframe	Reference
Vegetation removal approval (non-native vegetation)	Yes	Adelaide Hills Council policy.	Adelaide Hills Council	Consult with Council directly to understand timeframes.	Section 3.1 Vegetation
Vegetation removal approval (native vegetation)	Yes	Approval in accordance with the <i>Native Vegetation Regulations 2017</i> required to clear native vegetation protected by the <i>Native Vegetation Act 1991</i> .	Native Vegetation Branch within the Department for Environment and Water (DEW).	Allow approximately 10 weeks to obtain approval once clearance application submitted.	Section 3.1 Vegetation
Development Approval	Yes	<i>Planning, Development, and Infrastructure Act 2016</i> required for tree damaging activities (Regulated/Significant Trees)	Adelaide Hills Council	Consult with Adelaide Hills Council and/or SCAP to understand timeframes	Section 3.1 Vegetation
EPBC Act Referral	Potentially	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Allow approximately 6-12 weeks. Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Section 3.2 Fauna
Permit to transport Declared weed species on a public road	Likely	<i>Landscape South Australia Act 2019</i>	Hills and Fleurieu Landscape Board	Allow approximately 2 weeks to obtain permit.	Section 3.3 Pest plants, animals
Water Affecting Activities Permit (WAAP)	Possibly	<i>Landscape South Australia Act 2019</i>	Hills and Fleurieu Landscape Board	At least 2-3 months prior to construction.	Section 3.4 Water quality
Earthworks Drainage Licence (construction works)	Likely	<i>Environment Protection Act 1993</i>	Environment Protection Authority (EPA)	Unknown, contact the EPA.	Section 3.4 Water quality
Night Works	Possibly	<i>Environment Protection Act 1993</i>	EPA	Unknown, contact the EPA.	Section 3.6 Noise and vibration
Local, State or National Heritage Approval	Yes	<i>Heritage Places Act 1993</i>	Department of Agriculture, Water, and the Environment	Unknown, contact the South Australian Heritage Council	Section 4.1
Aboriginal Heritage	Possibly	<i>Aboriginal Heritage Act 1988</i>	Attorney General's Department – Aboriginal Affairs and Reconciliation (AGD-AAR)	Unknown	Section 4.2

Native Title	No	<i>Native Title Act 1994</i>	Attorney General's Department – Aboriginal Affairs and Reconciliation (AGD-AAR)	Not applicable	Section 4.3
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### 1.1.2 Completed and required technical investigations and assessments

A summary of completed and required technical investigations and assessments required to progress the Project to delivery (construction) is provided in Table 2.

**Table 2. Summary of completed and required technical investigations.**

Investigation / Assessment	Completed	Timing	Reference
Ecological assessment (including assessment of vegetation, fauna, pest plants and animals)	Yes	August/September 2022	Sections 3.1.1; 3.2.1; 3.3.1; 3.4.1  <i>Mount Lofty Golf Estate – Ecological Flora and Fauna Assessment (EBS Ecology 2022a)</i>
Native Vegetation Clearance approval	No	During design development	Sections 3.1.1; 3.2.1; 3.3.1; 3.4.1
Arborist assessment / advice	Yes	July 2022	Arborman Tree Solutions <i>Preliminary Tree Assessment and Arboricultural Impact Assessment and Development Impact Report</i> (Arborman Tree Solutions 2022a and 2022b)
Water Quality Risk Assessment (design phase)	No	During design development	Section 3.4.5
Groundwater Risk Assessment (can be included with Site Contamination Assessment below)	No	During design development	Section 3.4.5
Acid sulfate soil risk assessment (can be included with Site Contamination Assessment below)	No	During design development	Section 3.4.5; 3.5.5
Water Quality Risk Assessment (Construction phase)	No	Prior to construction	Section 3.4.5
Site Contamination Assessment (including groundwater and acid sulfate soil assessments)	No	Prior to construction	Section 3.5.5
Construction Noise and Vibration Assessment	No	Prior to construction	Section 3.6.5
Heritage assessment (Cultural Heritage Impact Statement and Management Plan Framework)	Yes	September 2022	Section 4 <i>Mount Lofty Golf Estate – Cultural Heritage Management Plan Framework and Mount Lofty Golf Estate – Heritage Impact</i>

			Statement (EBS Heritage 2022a and EBS Heritage 2022b)
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### **Ecological Assessment**

An ecological assessment has been completed for the Project by EBS Ecology (EBS Ecology 2022). It included a desktop assessment and field survey to identify potential ecological constraints, including any flora (vegetation) and fauna or ecological communities of national environmental significance protected by the *Environment and Biodiversity Conservation Act 1999* (EPBC Act) as well as State threatened flora and fauna species protected by the *National Parks and Wildlife Act 1972* (NPW Act). Please refer to the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more detail.

### **Heritage Assessment**

A cultural heritage desktop assessment has been completed for the Project by EBS Heritage (EBS Heritage 2022) to identify potential heritage constraints, including any important sites of significance protected by the *Aboriginal Heritage Act 1988*. Refer to the *Mount Lofty Golf Estates Cultural Heritage Desktop Assessment* (EBS Heritage 2021), *Mount Lofty Golf Estate Cultural Heritage Management Plan Framework* (EBS Heritage 2022a) and *Mount Lofty Golf Estate Heritage Impact Statement* (EBS Heritage 2022b) for more detail.

### **Community Engagement and Stakeholder Management Plan for Planning Studies**

Community Consultation and Engagement is critical for the project as the State’s economy and Adelaide Hills Community will likely be impacted during construction and operation which may result in immediate and long-term effects on residents, businesses and surrounding uses. The proposed development has the potential to significantly boost the local and state economy through local, regional, interstate and potentially international tourism as well as local job opportunities.

#### **1.1.3 Recommendations for design development**

A summary of recommendations for design development required to progress the Project to delivery (construction) is provided in Table 3.

**Table 3. Summary of recommendations for design development.**

<b>Aspect / Issue / Constraint</b>	<b>Required Mitigation / Recommendation for Design</b>	<b>Reference</b>
<b>Vegetation</b>	Review and adjust the design (where possible and practicable) to retain as much vegetation as possible and avoid clearance of vegetation, particularly vegetation considered important fauna habitat (i.e., Significant and/or Significant Regulated trees).	Section 3.1.5
<b>Fauna and fauna habitat</b>	Where possible, adopt the recommendations outlined within the <i>Mount Lofty Golf Estate Ecological Flora and Fauna Assessment</i> (EBS Ecology 2022a).	Section 3.2.5
<b>Water Quality</b>	Incorporate water sensitive urban design measures which seek to minimise the impacts of the Project, protect water quality and make more efficient use of water (e.g., stormwater drainage), where practicable.	Section 3.4.5

	Undertake a Water Quality Risk Assessment during the planning stage to assist in identifying appropriate management measures to avoid and/or manage the potential or likely impacts of operation of the Project (including use of the area, such as car parking) upon water quality.	Section 3.4.5
<b>Site Contamination</b>	Undertake a site contamination investigation to identify and understand the risk of encountering contaminated materials during construction works.  Consider undertaking further investigation and seeking specialist advice, for example from a soil contamination expert, on acid sulfate soil potential and risk during construction as well as potential management requirements during construction (if required).	Section 3.5.5
<b>Noise and vibration</b>	Consider engaging a suitably qualified consultant to undertake a noise and vibration assessment to identify likely noise and vibration levels and associated impacts.	Section 3.6.4
<b>Land use, planning, sustainability and amenity</b>	Implement good urban design principles and investigate opportunities for a bespoke approach to the design which will correlate to the scenic value and natural character of the area. Investigate and implement Crime Prevention through Environmental Design (CPTED) principles. Utilise appropriate accessibility to toilet facilities and carparking as per the <i>Disability Discrimination Act 1992</i> (DDA).	Section 3.8.5
<b>Historical Heritage</b>	Consider undertaking pre-construction dilapidation surveys/property condition assessments of the local heritage to assess potential for impact from vibration during construction.	Section 4.1.5
<b>Aboriginal Heritage</b>	If required, conduct a cultural heritage survey with participation of the Kurna People. Ensure appropriate approvals/permits are received prior to undertaking any excavation if required. Implement site inductions for personnel to provide an understanding of the Aboriginal heritage aspects associated with the Project site and construction activities.	Section 4.2.5

#### 1.1.4 Recommendations for construction

A summary of recommendations for construction is provided in Table 4.

**Table 4. Summary of recommendations for construction.**

Aspect / Issue / Constraint	Required Mitigation / Recommendation for Construction	Reference
<b>Environmental Management</b>	Document and implement a Project specific Construction Environmental Management Plan (CEMP) prepared by a suitably qualified environmental consultant which identifies the potential environmental impacts of construction works and includes avoidance, minimisation, management and mitigation measures to be implemented during construction. The CEMP should also identify any regulatory/approval requirements applicable to the Project and include an appropriate environmental inspection, monitoring and corrective action response procedure. The CEMP should be prepared in accordance with the Environment Protection Authority (EPA) <i>Industry Guideline: Construction Environmental Management Plan</i> Guideline (EPA 2019a).	Various
<b>Vegetation</b>	Seek specialist arborist advice where encroachment into the Tree Protection Zone (TPZ) cannot be avoided.	Section 3.1

Aspect / Issue / Constraint	Required Mitigation / Recommendation for Construction	Reference
	Offset vegetation removal at a minimum ratio of 1:1, or as otherwise agreed with Alexandrina Council.	
<b>Fauna</b>	Engage a suitably qualified fauna specialist to complete a fauna check and relocate fauna if required, prior to clearing vegetation and/or impacting any other fauna habitat.	Section 3.2
<b>Pest plants, animals, and biosecurity</b>	Control Declared plants and other pest plant species prior to and during construction.	Section 3.3
<b>Water Quality</b>	Undertake a Water Quality Risk Assessment prior to construction to assist in identifying appropriate management measures to avoid and/or manage the potential or likely impacts of construction works upon water quality.	Section 3.4
	Implement a Water Quality Monitoring Plan during construction.	Section 3.4
	Implement a Soil Erosion and Drainage Management Plan during construction.	Section 3.4
<b>Site Contamination</b>	If required, document and implement a Contamination and Remediation Management Plan as part of the Project specific CEMP, which includes contingency procedures to identify and manage soil and/or groundwater contamination during construction activities	Section 3.5
<b>Noise and vibration</b>	Document and implement a Construction Noise and Vibration Management Plan (CNVMP) as part of the Project specific CEMP to avoid, minimise and manage noise and vibration impacts during construction. If required, document and implement a Night Works Management Plan as part of the CNVMP (if night works are to occur).	Section 3.6
<b>Air quality</b>	Document and implement a simple Air Quality Management and Monitoring Plan (as part of the Project specific CEMP) which includes effective air quality/dust monitoring (i.e., visual monitoring) and mitigation measures, such as use of a water cart, when required.	Section 3.7
<b>Land use, planning, sustainability and amenity</b>	Implement a Traffic Management Plan as part of advanced notification of potential delays to manage traffic during construction works.	Section 3.8
<b>Waste management</b>	Implement minimal resource usage as well as reusing any materials associated within construction works, where possible. Ensure waste is managed, contained, and disposed of in accordance with EPA guidelines. Investigate and document the materials used in construction and the possibility of utilising recycled materials and green waste provisions where it is possible.	Section 3.9
<b>Historical Heritage</b>	Consider undertaking pre-construction dilapidation survey/property condition assessment of the local heritage and contributory places to assess potential for impact from vibration during construction. Implement a Construction Noise and Vibration Management Plan as part of the Project CEMP. Implement a simple project Air Quality Management and Monitoring Plan as part of the CEMP.	Section 4.1
<b>Aboriginal Heritage</b>	If required, monitoring of ground-breaking activities by representatives of the Kaurna People. Implement a site discovery procedure as part of the Project CEMP.	Section 4.2
<b>Native Title</b>	Consult with the Native Title Claimants.	Section 4.3

## 2 PROJECT DETAILS

### 2.1 Background

The proposed Mount Lofty Golf Estate's new 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<sup>2</sup> function room.
  - A 212m<sup>2</sup> restaurant with 89 m<sup>2</sup> external terrace.
  - 186m<sup>2</sup> sports bar.
  - A 189m<sup>2</sup> gallery and cafe.
  - A 94m<sup>2</sup> wellness centre with 125m<sup>2</sup> 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 138m<sup>2</sup> clubhouse in new building.
  - New 97m<sup>2</sup> 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<sup>2</sup> together with a right of way 'A', comprising the hotel building and pods.
  - Allotment 533, with an approximate area of 5,056m<sup>2</sup> 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'.

The proponents additionally intend to rebrand the development as the Mount Lofty Golf Estate which was the original name of the course when it opened in 1925. The aim of the development will be to improve access to tourists and capitalise on the growing tourism market.

The development has been declared a major project by the Minister for Planning and Local Government (the South Australian Government Gazette 2020, p. 5848) and will be assessed by a state-run process. At the time of preparing this report, the development design has not been finalised and layout will be guided by the reports of numerous specialists.

## **2.2 Project location**

The Project is located at the Stirling Golf Club at 35 Golflinks Road, Stirling, approximately 15 km southeast of Adelaide. It is located adjacent to the Mount George Conservation Park (MGCP) as well as several residential properties (Figure 1).

## **2.3 Project Area**

The Project Area subject to this EHIAR is shown in Figure 1 and includes the current Stirling Golf Club.

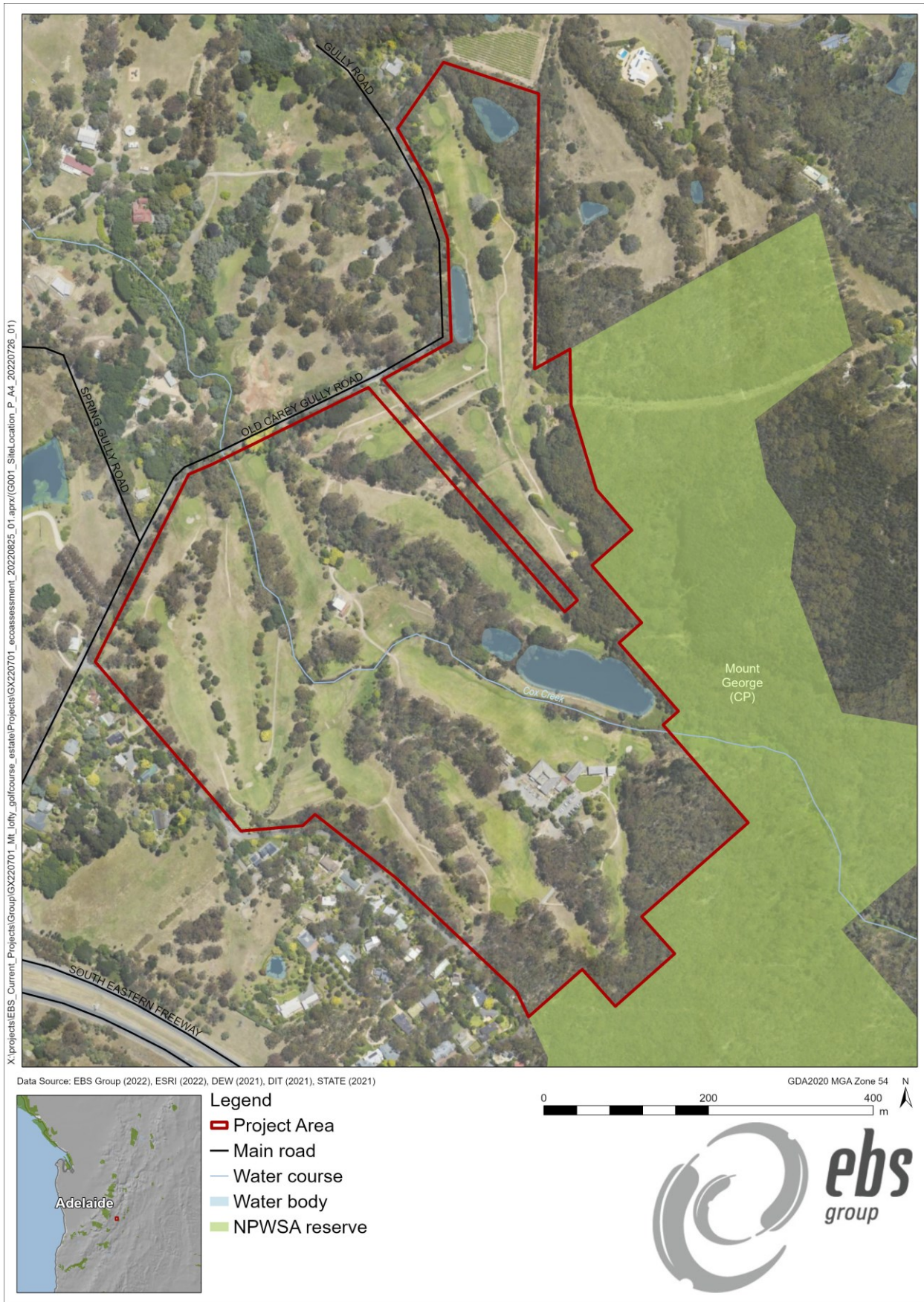


Figure 1. The Project Area at the Stirling Golf Club.

## 2.4 Project scope and design

The Project includes upgrades and works in the following key areas:

- Hotel with 70 suites and two penthouse apartments, function facilities and associated infrastructure;
- New clubhouse facility and pro-shop, administration areas and change rooms;
- Retention and improvements to the 18-hole golf course;
- Car parking in the order of 200 spaces across two parking areas;
- Restaurant;
- Nature Based Accommodation – 17 private retreat pods;
- Wellness Centre; and
- Amphitheatre.

At the time of preparing this report, the development design has not been finalised and the layout will be guided by the reports of numerous specialists. As such, no commencement date has been announced as development designs are likely to change.

## 2.5 Construction activities

Key construction activities for the Project are likely to include:

- Set-up of construction compound and/or laydown areas;
- Vegetation removal and/or pruning;
- Conservation works and adaptive reuse of a local heritage place for temporary clubrooms;
- Conservation works and adaptive reuse of a local heritage place to accommodate a multipurpose café, retail and function space;
- Tree removal and associated landscaping to develop a scent garden and orchard;
- Service location and relocation if required;
- General earthworks, including clearing and grubbing, excavation and/or placement of fill material; to reform road/carpark surfaces and paths where required;
- Asphalt and/or spray seal works;
- Paving and concrete works;
- Stormwater drainage works;
- Lighting and communications;
- Installation of signage, interpretation, and line marking;
- Building replacement works or upgrades;
- Landscaping;
- Furniture and fixtures; and
- Pack-up and removal of construction compound and/or laydown areas.

Key construction equipment to be used is likely to include:

- Scissor lifts and Elevated Work Platforms;

- Scaffolding;
- Hand-held equipment (drills, grinders, welders etc);
- Excavators;
- Profiler;
- Roller / compactor;
- Front end loader;
- Grader;
- Asphalt hopper;
- Kerbing machine;
- Small and large cranes;
- Tipper truck;
- Water truck;
- Water pump(s); and
- Light vehicles.

## **2.6 Administrative boundaries**

The Project Area is located within the Hills and Fleurieu Landscape Management Region (LMR) and the Adelaide Hills Council Local Government Area.

## **2.7 Climate and weather**

The Project Area is in the Mount Lofty Ranges and experiences dry, mild to warm summers and cool, wet winters. Climate data sourced from the Bureau of Meteorology (BoM) Mounty Lofty AWS (#23842) weather station indicates the greatest rainfall occurs in July, with an average of 147.9 millimetres (mm), while February is the driest month with only 37 mm recorded (Figure 2) (BOM 2022). July is the coolest month, with an average maximum temperature of 8.9°C and average minimum temperature of 5°C recorded. January is the warmest month, with an average maximum temperature of 22.7 degrees Celsius (°C) and an average minimum temperature of 12.5°C recorded (Figure 2) (BOM 2022).

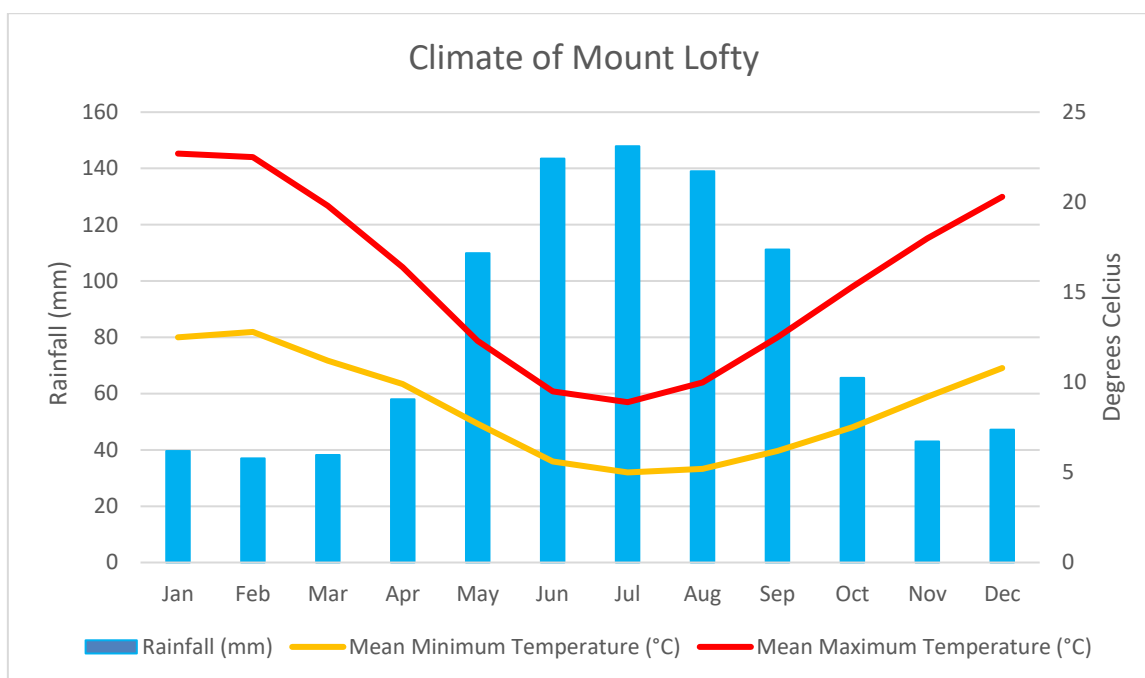


Figure 2. Climate data, including mean monthly rainfall as well as mean maximum and mean minimum temperature (BoM 2022).

## 2.8 Interim Biogeographical Regionalisation of Australia (IBRA)

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation, and species information, which is used to assess and plan for the protection of biodiversity (Department of Climate Change, Energy, the Environment and Water - DCCEEW 2022). The bioregions are further refined into subregions and environmental associations.

The Project Area is located within the Flinders Lofty IBRA bioregion, the Mount Lofty Ranges IBRA subregion and the Uraidla IBRA environmental association. An environmental landscape summary of this bioregion, subregion and environmental association is provided in Table 5.

Table 5. IBRA bioregion, subregion, and environmental association environmental landscape summary.

Flinders Lofty Block IBRA bioregion
Temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi-arid to arid north supporting native cypress, black oak (belah) and mallee open woodlands, <i>Eremophila</i> and <i>Acacia</i> shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of <i>Eucalyptus obliqua</i> and <i>E. baxteri</i> on deep lateritic soils, and <i>E. fasciculosa</i> and <i>E. cosmophylla</i> on shallower or sandy soils.
Mount Lofty Ranges IBRA subregion
This subregion extends from north of the Fleurieu Peninsula to the Barossa Valley and is predominantly an undulating to low hilly upland with steeper marginal ranges and hills. The Barossa Valley is the lowest area in this subregion and represents a structural basin. The rest of the subregion consists of hilly uplands on sandstone and shale with northerly trending strike ridges and dissected lateritic tableland remnants. Low open woodland commonly dominated by <i>Eucalyptus obliqua</i> and <i>E. baxteri</i> are found in higher rainfall areas on deep, lateritic soils. Shallower or sandy soils support <i>E. fasciculosa</i> , <i>E. cosmophylla</i> and in the northern part of the region <i>E. goniocalyx</i> . <i>E</i>

<i>Ieucoxylon</i> dominates the woodlands on podzolised soils in the lower rainfall areas, <i>E. viminalis</i> ssp. <i>cygnetensis</i> dominate the wetter and cooler woodlands and <i>E. odorata</i> characterises drier sites. Eucalypts give way to drooping sheoak ( <i>Allocasuarina verticillata</i> ) in the most arid woodlands and in coastal situations on shallow rocky soils.	
Remnant vegetation	Approximately 15% (46342 ha) of the subregion is mapped as remnant native vegetation, of which 27% (12706 ha) is formally conserved.
Landform	Hills and valleys; alternating subparallel hilly ridges and valleys with a general N-S trend in north. In south, hilly dissected tableland.
Geology	Dissected lateritized surface in south.
Soil	Hard setting loams with red clayey subsoils, Highly calcareous loamy earths, Hard setting loams with mottled yellow clayey subsoil, Coherent sandy soils, Cracking clays.
Vegetation	Eucalyptus woodlands with a shrubby understorey.
Conservation significance	129 species of threatened fauna, 270 species of threatened flora. 4 wetlands of national significance.
<b>Uraidla IBRA environmental association</b>	
Remnant vegetation	Approximately 26% (3674 ha) of the association is mapped as remnant native vegetation, of which 20% (749 ha) is formally conserved.
Landform	Hilly uplands on sandstone and shale with long smooth slopes.
Geology	Sandstone, shale and alluvium.
Soil	Hard pedal or apedal mottled-yellow soils, red duplex soils on the slopes, grey-brown weakly structured sandy soils and bleached sands.
Vegetation	Open forest of messmate stringybark or brown stringybark on the slopes and crests, and open forests of mountain gum on the valley floors.
Conservation significance	29 species of threatened fauna, 96 species of threatened flora. 1 wetlands of national significance.

## 2.9 EHIA report timing

This EHIA Report has been prepared very early during the Project planning stage in order to identify the potential impacts of the Project, as well as options and recommendations for avoiding, minimising, managing and mitigating identified potential impacts, and any approvals, licences or permits that may be required in accordance with State and Commonwealth legislation. Several project approvals / permits or licences potentially may take up to three to six months to obtain, sufficient time should be added to project timelines before construction commences for this to occur. Updates to this EHIAR throughout the project may also be required.

## 2.10 Limitations

This EHIA Report and the findings and recommendations within it are based on assessment of Project information provided by Trice – Project & Development Managers on behalf of Mount Lofty Estate Pty Ltd as well as other information available via desktop assessment, such as online databases, at the time of assessment. The findings and conclusions expressed by EBS Group are based solely upon information in existence at the time of the assessment. It is possible that different conclusions and recommendations may be made with additional information and/or after further project development.

### 3 ASSESSMENT OF ENVIRONMENTAL IMPACTS

This section presents an assessment of potential impacts (both positive and negative) of the Project during construction and operation, as well as avoidance, minimisation, management and mitigation measures to address the impacts. As stated previously, the potential impact of the Project on the following environmental aspects has been assessed:

- Vegetation;
- Fauna;
- Pest animals, plants and biosecurity;
- Water quality;
- Site contamination;
- Noise and vibration;
- Air quality;
- Land Use, Planning, Sustainability and Amenity;
- Waste Management;
- Historical Heritage;
- Aboriginal Heritage; and
- Native Title.

#### 3.1 Vegetation

##### ***3.1.1 Technical investigations undertaken or required***

A vegetation assessment, including both desktop and site/field assessment, was undertaken for the Project by EBS Ecology in August/September 2022. Refer to the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more detail.

##### ***3.1.2 Assessment methodology***

The vegetation assessment included both desktop and field assessment, with the desktop assessment involving searches of the following information sources:

- The EPBC Act Protected Matters Search Tool (PMST), via the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW); and
- Biological Databases of South Australia (BDBSA), via the Department for Environment and Water (DEW).

The desktop assessment also involved an assessment of the likelihood of occurrence within the Project Area for threatened flora species and ecological communities identified via the above searches.

The field assessment was conducted on 26 August 2022 by EBS Ecology and involved a vegetation survey to record the following (where relevant):

Where time permitted, vegetation data was collected in accordance with the Bushland Assessment Method (BAM) (NVC 2020a) and Scattered Tree Assessment Method (STAM) (NVC 2020b). Detailed vegetation assessment is reported in the *Native Vegetation Clearance Mount Lofty Golf Estate Data Report* EBS Ecology (2022b *in preparation*).

For areas containing patches of native vegetation protected by the *Native Vegetation Act 1991* (NV Act), Vegetation Associations and condition were surveyed in accordance with the Bushland Assessment Method (BAM), which is outlined in the *Native Vegetation Council (NVC) Bushland Assessment Manual* (NVC 2020) and derived from the Nature Conservation Society of South Australia's *Bushland Condition Monitoring* methodology (Croft *et al.* 2005).

The BAM is used to assess areas of native vegetation requiring clearance and calculate the Significant Environmental Benefit (SEB) offset requirements.

For trees protected by the *Native Vegetation Act 1991* (NV Act), trees were surveyed in accordance with the STAM, which is outlined in the *NVC STAM Manual* (2020). The STAM is used to assess scattered trees/tree groups that require clearance and calculate the SEB offset requirements.

Refer to the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more detail.

### **3.1.3 Existing vegetation**

A total of 84 threatened flora species have been identified via desktop assessment as potentially occurring within the Project Area. The EPBC Act Protected Matters Report (PMR) identified 11 nationally threatened flora species protected by the EPBC Act (DCCEEW 2022e), while the BDBSA search identified 73 state threatened flora species protected by the NPW Act (DEW 2022). Of the 84 species identified, 47 are considered unlikely to occur within the Project Area as the suitable habitat or associated vegetation is not present or the Project Area is outside of the known range. 30 species possibly may occur within the area, six species are considered likely to occur in the area, whilst one is considered highly likely/known to occur in the Area: State Rare, *Eucalyptus viminalis ssp. viminalis* (Manna Gum).

Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. The understorey in areas of native vegetation not directly associated with the golf course was heavily degraded and introduced flora species such as *Fumaria capreolata* (White-flower Fumitory), *Iris sp.* (Iris) and *Rubus fruticosus aggregate* (Blackberry) were dominant in these areas. MGCP is directly adjacent (to the east and southeast) of the Project Area and supports a large assemblage of both nationally and State listed flora and fauna. Two vegetation associations and 71 scattered trees, of which 42 were Regulated/Regulated Significant trees, including three *Acacia melanoxylon* (Blackwood), 24 *Eucalyptus obliqua* (Messmate Stringybark) and 44 State Rare *Eucalyptus viminalis ssp. viminalis* (Manna Gum), were recorded within the Project Area.

No nationally threatened flora or Threatened Ecological Communities (TECs) were recorded within the Project Area during the field survey. One flora species of State Rare status was identified within the Project Area: *Eucalyptus viminalis ssp. viminalis* (Manna Gum).



All trees were categorised based on their Unit Biodiversity Score (UBS). A tree with a UBS of less than 4 was categorised as low in quality and should be retained as much as possible but may be removed. A tree with a UBS between 4 and 7 was categorised as moderate in quality and should be retained where possible and a tree with a UBS of greater than 7 was categorised as high in quality and should be avoided. All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.

A total of 60 flora species, including 31 introduced species were recorded within the Project Area. Timing of the survey likely influenced this result, with spring annual forbs and grasses only just beginning to flower or appear. Only one species of conservation significance was identified during the field survey: State Rare, Refer to the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more detail on any of the above.

### **3.1.4 Impacts to existing vegetation**

As outlined within the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a), the Project has potential for impact on both flora and fauna at the Mount Lofty Golf Estate site, based on the current design plans. The current design also appears to be minimising impact given the placement of new infrastructure largely already avoids established remnant vegetation.

Construction works also have the potential to damage retained vegetation, particularly if vegetation protection controls are not implemented during works.

### **3.1.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise negative impacts to vegetation:

- Where possible, adopt the recommendations outlined within the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a).
- Review and adjust the design (where possible and practicable) to retain as much vegetation as possible and avoid clearance of vegetation, particularly vegetation considered important for fauna habitat.
- Where impacts to vegetation cannot be avoided, ensure that they are minimised as much as possible in order to minimise impacts to flora, and fauna habitat. For example, there may be alternate design options available to minimise impacts and pruning may be a viable option in some situations.
- Where impacts to vegetation cannot be avoided, the degree of impact, such as removal or pruning, will need to be assessed and should be documented for planning and construction purposes, as well as approval purposes.
- Seek approval in accordance with the NV Act to impact native vegetation.
- If required, seek approval from the Adelaide Hills Council to impact (remove and/or prune as required) vegetation that cannot be retained.
- Notify Project stakeholders (such as local business operators) and the local community about vegetation impacts and proposed offsets (prior to impacting any vegetation).
- Prior to the commencement of construction works, including clearing and/or grubbing:

- Ensure that all site personnel complete a project specific induction and/or toolbox training session to understand their responsibility to avoid and minimise impacts to vegetation;
- Ensure that vegetation requiring removal and/or pruning is clearly marked on site and that plant/machinery operators understand the markings and what is approved for removal and/or pruning;
- Ensure that construction site layout, including the location of site access, construction site offices, and laydown areas avoid and minimise impacts to vegetation, as much as possible.
- Ensure that construction methods specifically avoid and minimise impacts to vegetation, as much as possible.
- Ensure that only vegetation approved for removal or pruning is impacted.
- Seek additional approval if additional vegetation clearance (i.e., not already approved) is required.
- If removal or pruning of trees is required, ensure that the works are undertaken by a suitably qualified arboricultural contractor and that all pruning is undertaken in accordance with AS 4373 *Pruning of Amenity Trees*.
- Record details of vegetation removed to assist with offsetting it after construction.
- Document vegetation protection, management and mitigation measures within the vegetation section of the project specific CEMP.

### ***Vegetation clearance remediation***

Offset the impact of vegetation removal by replacing vegetation at a minimum ratio of 1:1, or as otherwise agreed with Adelaide Hills Council, or as required by the native vegetation clearance approval and/or Development Approval (for Regulated/Significant Trees). If individual trees are required to be removed, replace them with advanced, semi-mature trees, of the same or similar species, where possible and practicable and as negotiated with Adelaide Hills Council.

#### ***3.1.6 Approvals, permits and authorisations***

The NV Act applies across the Project Area. If any native vegetation protected by the NV Act is required to be cleared for the Project, a native vegetation clearance application will need to be submitted to the Native Vegetation Council (NVC) via the Native Vegetation Assessment Branch within DEW.

Regulated and Significant Tree controls associated with the PDI Act apply across the Project Area. As such, trees within the Project Area are subject to Regulated and Significant Tree controls.

## **3.2 Fauna**

### ***3.2.1 Technical investigations undertaken or required***

A fauna assessment, including both desktop and site/field assessment, was undertaken for the Project by EBS Ecology in August/September 2022 as part of the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a).

No other technical investigation into fauna is likely to be required.

### 3.2.2 *Assessment methodology*

The fauna assessment included both desktop and field assessment, with the desktop assessment involving searches of the following information sources:

- The EPBC Act Protected Matters Search Tool (PMST), via the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW); and
- Biological Databases of South Australia (BDBSA), via the Department for Environment and Water (DEW).

The desktop assessment also involved an assessment of the likelihood of occurrence within the Project Area for threatened fauna species and ecological communities identified via the above searches.

The field assessment was conducted on 26 August 2022 by EBS Ecology. All native and exotic fauna species opportunistically encountered (directly observed, or tracks, scats, burrows, nests and other signs of presence) during the field survey were recorded. Potential fauna refuge sites such as hollows were noted as an indication of availability of suitable habitat.

### 3.2.3 *Existing environment*

The EPBC Act PMST (DCCEEW 2022e) identified 10 Nationally listed threatened fauna species protected by the EPBC Act, including 8 birds and 2 mammals. The BDBSA search (DEW 2022) identified 30 species listed under the NPW Act including 24 avian species, three mammals and three reptiles. There are four EPBC Act listed species identified as likely to occur within the Project Area:

- Bassian Thrush (*Zoothera lunulata halmaturina*) - Nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – Nationally Endangered and State Endangered;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Nationally Vulnerable and State Rare; and
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – Nationally Endangered and State Vulnerable;

One additional nationally listed threatened species was assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat:

- White-throated Needletail (*Hirundapus caudacutus*) – nationally Vulnerable and migratory and State Vulnerable.

A total of eleven species are listed as threatened under the NPW Act and likely or highly likely/known to occur within the Project Area

- Beautiful Firetail (*Stagonopleura bella*) – State Rare;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;

- Little Eagle (*Hieraaetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable.

Additionally, sixteen species under the NPW Act are possible to occur within the Project Area.

A total of 22 fauna species were observed and recorded during the field survey. Apart from the NPW Act Rare *Trichosurus vulpecula* (Common Brushtail Possum), all of the fauna species recorded during the field survey are considered to be quite common and none are threatened. Majority of the fauna species recorded during the field survey were observed to be using the trees within the Project Area, particularly the many *Eucalyptus viminalis ssp. viminalis* (Manna Gum) trees and other Eucalyptus species trees. As such, these trees are considered to provide useful habitat for fauna within the Project Area.

Vegetation within the Project Area provides habitat for local fauna species. Given the wide array of vegetation of different height classes, forms, species diversity and spatial distribution, the remnant woodland vegetation of the Project Area is an area of considerable fauna habitat. The site therefore provides resources for fauna and areas for habitat use.

Refer to the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more information.

### **3.2.4 Impacts to existing environment**

The Project has the potential to impact on fauna and fauna habitat via clearance of vegetation, particularly if areas of vegetation are required to be removed or pruned to enable construction of the design. Whilst impacts to existing vegetation (fauna habitat) required for the Project are not yet known (designs yet to be finalised), impacts on fauna and fauna habitat are expected to be limited to localised, minor habitat loss associated with vegetation clearance and/or pruning, and temporary habitat disturbance (such as noise) during construction.

Construction works also have the potential to damage retained fauna habitat (vegetation), particularly if vegetation (fauna habitat) protection controls are not implemented during works.

Increased human disturbance and vehicle traffic due to increased visitation to the area may have the potential to impact fauna species moving within the project area e.g., injury or roadkill.

### **3.2.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise negative impacts to fauna and fauna habitat:

- Collate additional information to determine if a referral under the EPBC Act (i.e., undertake an EPBC Self-assessment of MNES, conduct targeted threatened species surveys), is required.
- Implement all alternatives, avoidance, minimisation and management measures for vegetation outlined above in Section 3.1.5, where possible.
- Where possible, adopt the recommendations outlined within the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a).
- Prior to the commencement of construction works, including clearing and/or grubbing, ensure that all site personnel complete a project specific induction and/or toolbox training session to understand their responsibility to avoid and minimise impacts to native fauna and fauna habitat.
- Engage a suitably qualified fauna specialist to complete a fauna check and relocate fauna if required, prior to clearing vegetation and/or impacting any other fauna habitat, particularly if individual trees are required to be removed.
- Minimise vegetation clearance during construction, to minimise impacts to fauna habitat and fauna.
- Ensure all construction works are undertaken in a manner to minimise disturbance to existing vegetation and fauna habitats, including aquatic fauna and habitats.
- Undertake daily checks for any fauna that are trapped within the site (e.g., within but not limited to pits, trenches, excavations) before any works commence.
- If any fauna is present and likely to be impacted by the works, either wait for it to move away on its own accord and undertake work elsewhere until it has moved on, encourage it to move away (without harming any fauna), assist it to move away by providing a ramp or way of climbing out, or have a suitably qualified fauna specialist relocate it to a similar habitat.
- Implement all reasonably practicable measures to prevent injury to fauna.
- Contact Fauna Rescue SA, the RSPCA or a veterinarian for advice if any injured fauna is found on site during construction (as appropriate).
- Notify the Contract Manager if any injured or dead native fauna is found on the site.
- Document fauna protection, management and mitigation measures within the fauna section of the project specific CEMP.
- Consider increased road signage about potential fauna movement within the area to decrease the impact from vehicle movement. Speed humps could also be considered to slow down travel speeds.

### **3.2.6 Approvals, permits and authorisations**

The following approvals, permits and/or authorisations may be required:

- Permits to 'take' and 'release' fauna in accordance with the NPW Act (Sections 53(1)(d) and 55 respectively) from the DEW Fauna Permit Unit.
- Permit to 'Destroy Wildlife' in accordance with the NPW Act (Sections 53(1)(c) and 53(1)(d)).

A suitably qualified fauna specialist is likely to be able to obtain these permits as part of their work.

### 3.3 Pest plants, animals and biosecurity

#### 3.3.1 Technical investigations undertaken or required

The *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) included assessment of pest plants and animals.

No other technical investigation into pest plants and animals is likely to be required.

#### 3.3.2 Assessment methodology

Pest plants and animals were assessed during the vegetation and fauna assessments, which as outlined previously in Section 3.1.2 and Section 3.2.2 respectively, included both desktop and field assessment. Refer to Section 3.1.2 and Section 3.2.2 as well as the *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) for more detail.

#### 3.3.3 Existing environment

A total of 31 pest plant species were recorded within the Project Area during the vegetation assessment field survey as listed in Table 6.

**Table 6. Exotic flora species recorded within the Project Area (EBS Ecology 2022).**

Scientific Name	Common Name	Declared	WoNS
<i>Acacia mearnsii</i>	Black Wattle		
<i>Agapanthus praecox ssp. orientalis</i>			
<i>Anagallis sp.</i>			
<i>Asphodelus fistulosus</i>	Onion Weed		
<i>Briza maxima</i>	Large Quaking-grass		
<i>Cenchrus clandestinus</i>	Kikuyu		
<i>Cytisus scoparius</i>	English Broom	Yes	Yes
<i>Dactylis glomerata</i>	Cocksfoot		
<i>Freesia cultivar</i>	Freesia		
<i>Fumaria capreolata</i>	White-flower Fumitory		
<i>Galium aparine</i>	Cleavers		
<i>Genista monspessulana</i>	Montpellier Broom	Yes	Yes
<i>Hakea sp.</i>	Hakea/Needlewood		
<i>Hedera helix</i>	English Ivy		
<i>Hypochaeris glabra</i>	Smooth Cat's Ear		
<i>Iris sp.</i>	Iris		
<i>Narcissus sp.</i>			
<i>Oxalis pes-caprae</i>	Soursob		
<i>Oxalis purpurea</i>	One o'clock		
<i>Pinus radiata</i>	Radiata Pine		
<i>Pittosporum undulatum</i>	Sweet Pittosporum	Yes	
<i>Plantago lanceolata var.</i>	Ribwort		
<i>Quercus ilex</i>			
<i>Rhamnus alaternus</i>	Blowfly Bush	Yes	
<i>Romulea sp.</i>	Onion-grass		
<i>Rubus fruticosus aggregate</i>	Blackberry	Yes	Yes

Scientific Name	Common Name	Declared	WoNS
<i>Senecio pterophorus</i>	African Daisy		
<i>Sonchus sp.</i>	Sow-thistle		
<i>Sporobolus africanus</i>	Rat-tail Grass		
<i>Ulex europaeus</i>	Gorse	Yes	Yes
<i>Vinca major</i>	Blue Periwinkle		

Six of these are Declared under the *South Australia Act 2019* (LSA Act): *Cytisus scoparius* (English Broom), *Genista monspessulana* (Montpellier Broom), *Pittosporum undulatum* (Sweet Pittosporum), *Rhamnus alaternus* (Blowfly Bush), *Rubus fruticosus aggregate* (Blackberry) and *Ulex europaeus* (Gorse) and four are Weeds of National Significance (WoNS): *Cytisus scoparius* (English Broom), *Genista monspessulana* (Montpellier Broom), *Rhamnus alaternus* (Blowfly Bush), *Rubus fruticosus aggregate* (Blackberry) and *Ulex europaeus* (Gorse). Introduced flora species which were dominant in the Project Area include *Fumaria capreolata* (White-flower Fumitory), *Iris sp.* (Iris) and *Rubus fruticosus aggregate* (Blackberry).

The nearest records of Phytophthora to the Project Area are in MGCP approximately 600 metres away, although neither of the two records have been confirmed via a soil test (DEW 2022a).

Phytophthora dieback as a result of the plant pathogen *Phytophthora cinnamomi* poses a significant threat to the environment. This pathogen is easily spread and can cause severe disease and death of plant species. Any activity that moves soil, water or plant material can spread Phytophthora (DCCEEW 2021).

No pest animal species were observed or recorded within the Project Area during the field survey for the vegetation and fauna assessments. However, it is possible that pest animal species such as, but not limited to, feral Cat (*Felis catus*), Brown Hare (*Lepus capensis*), House Mouse (*Mus musculus*), European Rabbit (*Oryctolagus cuniculus*), Brown Rat (*Rattus norvegicus*), Black Rat (*Rattus rattus*), Fallow Deer (Dama Dama) and Red Fox (*Vulpes vulpes*) may occasionally occur within the Project Area.

### 3.3.4 Impacts to existing environment

Construction works, particularly excavation and other earthworks, have the potential to increase the occurrence and coverage of the thirty-one pest plant species known to occur within the Project Area. The use of construction plant and machinery also has the potential to introduce additional pest plant species into the Project Area, particularly if standard weed hygiene measures are not implemented during construction works.

Generally, the Project is considered unlikely to result in any change to the potential for pest animal species to occur within the Project Area. However, construction site facilities, such as site offices and lunchrooms, have the potential to provide food resources and/or shelter for pest animal species such as House Mouse (*Mus musculus*), Brown Rat (*Rattus norvegicus*), Black Rat (*Rattus rattus*) and Red Fox (*Vulpes vulpes*) temporarily during construction works, particularly if pest animal controls are not implemented.

### 3.3.5 Alternatives, mitigation and opportunities

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for pest plant and animal issues:

- Control, transport and dispose of Declared plants, including *Cytisus scoparius* (English Broom), *Genista monspessulana* (Montpellier Broom), *Pittosporum undulatum* (Sweet Pittosporum), *Rhamnus alaternus* (Blowfly Bush), *Rubus fruticosus aggregate* (Blackberry) and *Ulex europaeus* (Gorse), in accordance with LSA Act requirements, prior to and during construction works. Waste material from Declared Weeds is usually required to be disposed of at a licensed waste depot. Advice can be obtained from Landscape South Australia (<https://statewide.landscape.sa.gov.au>), particularly the Hills and Fleurieu Landscape Board and / or Primary Industries and Regions SA (PIRSA) BiosecuritySA (<https://www.pir.sa.gov.au/biosecurity>);
- Control other pest plant species prior to and during construction works (to prevent an increase in their occurrence and/or coverage within the Project Area).
- Ensure that pest plant control activities do not harm native vegetation, planted amenity vegetation or fauna and fauna habitat.
- Ensure effective hygiene practices are used on all vehicles, plant and equipment during construction (to avoid spreading and/or introducing weed species within the Project Area).
- Ensure imported fill (if required) is sourced from a registered quarry, clean and free of weed material (to reduce the risk of weed introduction).
- Ensure appropriate pest animal management measures, such as securing and regularly disposing of food waste are implemented during construction (to avoid causing pest animal issues).
- Ensure pest plant and animal species management and mitigation measures are documented in a project specific CEMP and implemented during construction.
- The potential spread of Phytophthora will need to be addressed throughout the Project. Specific management measures will need to be implemented to prevent the potential spread of Phytophthora.

### **3.3.6 Approvals, permits and authorisations**

The following approvals, permits and/or authorisations may be required:

- A permit (likely to be a written exemption from the Hills and Fleurieu Landscape Board) is likely to be required to transport Declared plants on a public road, in accordance with the LSA Act.

## **3.4 Water quality**

### **3.4.1 Technical investigations undertaken or required**

The *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022) identified water bodies relevant to the Project Area. However, no specific water quality investigations have been undertaken as it is not known at this early planning stage if any construction works will impact upon any waterways. Further investigation into potential water quality impacts should be undertaken as part of the detailed design process.



### **3.4.2 Assessment methodology**

Various layers available on NatureMaps (DEW 2022a) that provide information on water have been reviewed as part of this EHIAR report to identify existing water conditions and potential constraints applicable to water quality.

Additional databases including WaterConnect (DEW 2022b), and the Australian Soil Resource Information System (ASRIS) (ASRIS 2014) have also been reviewed to obtain groundwater well information and acid sulfate soil information respectively.

### **3.4.3 Existing environment**

The *Mount Lofty Golf Estate Ecological Flora and Fauna Assessment* (EBS Ecology 2022a) identified that the Project Area is located within the Hills and Fleurieu LMR. It also identified (via desktop assessment involving use of the EPBC Act Protected Matters Search Tool) that the Project Area is not located immediately near an EPBC Act listed waterbody.

Cox Creek runs through the Project Area from the adjacent Mount George Conservation Park. There are also three artificially constructed lakes or dams to the north of the Stirling Golf Club clubhouse and in the northern section of the Project Area.

Naturemaps suggests that there may possibly be dams as well as groundwater wells within the northern extent of Project Area:

- Unit number: 662806695, Drillhole number: 53664, Status: Operational (OPR)
- Unit number 662813442, Drillhole number 604111, Status: Abandoned (ABN)
- Unit number 662806696, Drillhole number: 53665, Status: Operational (OPR)
- Unit number: 662806445, Drillhole number: 53414, Status: Abandoned (ABN)
- Unit number: 662811601, Drillhole number 58570, Status: Operational (OPR)
- Unit number: 662806446, Drillhole number: 53415, Status: Abandoned (ABN)

However, WaterConnect information on these wells is very limited. Whilst the depth to groundwater is unknown, the Onkaparinga River Surface water Basin, Western Mount Lofty Ranges Prescribed Water Resources Area and Cox Creek Ground Water Management Zone is located within the Project Area and as such it is possible that groundwater may be encountered during excavation works as part of construction.

### **3.4.4 Impacts to existing environment**

There is likely to be a minor increase in non-permeable surface area via the sealing and extension of car parks and infrastructure construction. However, this is likely to be an insignificant increase and is not expected to impact the surrounding catchment.

The Project has the potential to impact upon water quality, particularly if stormwater drainage during construction is not controlled or managed appropriately to prevent pollution.

There is a minor risk of pollution, including hydrocarbon spills, during construction works and operation of the Project (i.e., via use of the area, particularly vehicles). However, the risk is not expected to increase from the current level of risk.

There is a very minor risk of erosion and sedimentation during construction works, particularly during earthworks.

Review of ASRIS data and NatureMaps (DEW 2022a) suggests that there are listings for the occurrence of acid sulfate soils (ASS) nearby the project site (ASRIS 2022). These records are listed as both Negligible ASS risk (DEW 2022a) and Extremely Low Probability for ASS (ASRIS 2022).

Water is likely to be required during construction works for construction activities. It is not known if recycled water is available nearby, for use during construction.

### ***Water Affecting Activities***

Water Affecting Activities (WAAs) are “*activities that can potentially have adverse impacts on the health and condition of water resources, other water users and ecosystems that depend on water resources*” (DEWNR undated). WAAs outlined in the LSA Act which may require a permit, which is referred to as a Water Affecting Activities Permit (WAAP), include but are not limited to:

- the erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse;
- draining or discharging water directly or indirectly into a watercourse or lake;
- depositing or placing an object or solid material in a watercourse or lake;
- obstructing a watercourse or lake in any other manner;
- depositing or placing an object or solid material on the floodplain of a watercourse or near the bank or shore of a lake to control flooding from the watercourse or lake;
- destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse;
- excavating or removing rock, sand or soil from—
  - a watercourse or lake or the floodplain of a watercourse; or
  - an area near to the banks of a lake so as to damage, or create the likelihood of damage to, the banks of the lake.

#### ***3.4.5 Alternatives, mitigation and opportunities***

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for impacts to water quality:

- If required, contact the Hills and Fleurieu LMR to confirm if a WAAP is required during construction works and any other subsequent requirements and timeframes.
- Incorporate water sensitive urban design (WSUD) measures which seek to minimise the impacts of the Project, protect water quality and make more efficient use of water (e.g., stormwater drainage), where practicable. More information on water sensitive urban design can be found at: <https://www.watersensitivesa.com>.

- Undertake a Water Quality Risk Assessment (WQRA) during the planning stage to assist in identifying appropriate management measures to avoid and/or manage the potential or likely impacts of operation of the Project (including use of the area, such as car parking) upon water quality.
- Consider investigating the depth to groundwater prior to construction works to better understand and manage the risk of encountering groundwater during construction works.
- If required, ensure groundwater management and contingency measures are implemented, with consideration of and in accordance with *Environment Protection Act 1993* (EP Act) and *Environment Protection (Water Quality) Policy 2015* requirements, during construction works to avoid impacts (such as pollution) to groundwater.
- Ensure drainage is designed to meet relevant standards for achieving containment from storm events and potential spillages, thereby reducing the risk of discharge of pollutants into Cox Creek.
- Consider undertaking further investigation and seeking specialist advice, for example from a soil contamination expert, on acid sulfate soil potential and risk during construction as well as potential management requirements during construction (if required). Refer to *EPA Guidelines: Site contamination – acid sulfate soil materials* (EPA 2007) for management measures required if acid sulfate soils are encountered.
- Undertake a WQRA prior to construction to assist in identifying appropriate management measures to avoid and/or manage the potential or likely impacts of construction works upon water quality. If during completion of the WQRA it is determined that the need for any on site water quality monitoring is required during construction (due to the possibility of sediment laden runoff entering the stormwater system or adjacent waters) the following should be used as a guideline:
  - The nature of the threat from a discharge;
  - The level of protection for the environment: and
  - The environmental value of the waters, as prescribed in the South Australian *Environment Protection (Water Quality) Policy 2015* and the Hills and Fleurieu Landscape Region Management Plan.
- As a minimum, a simple water quality monitoring plan should be documented in the Project's CEMP and implemented during construction (for example during weekly inspections and during/immediately after rainfall events), including:
  - Visual inspection of site erosion and drainage management measures;
  - Visual inspection of drainage discharge points;
  - Photo points; and
  - Temperature and rainfall from nearest Bureau of Meteorology weather station.

Records of results/findings of water quality monitoring should be documented and made available for future reference, if required.

- Document and implement a simple, site specific, Soil Erosion and Drainage Management Plan (SEDMP) as part of the Project specific CEMP, to manage the risk of erosion and sedimentation during construction. It is recommended that the SEDMP is prepared in accordance with the EPA's *Stormwater Pollution Prevention Code of Practice for Local, State and Federal Government* (EPA

1998), which identifies strategies for the collection, treatment, storage and disposal of stormwater during construction and is available at: [https://www.epa.sa.gov.au/files/47791\\_govcop1.pdf](https://www.epa.sa.gov.au/files/47791_govcop1.pdf).

- Ensure construction plant and equipment is in good working order, well maintained and inspected regularly for loose or deteriorating hoses and fittings.
- Ensure a spill kit (including for aquatic environments) is available on-site during construction to clean up any spills and ensure that workers know how to use it.
- Ensure an emergency response procedure for spills (including into aquatic environments) is documented within the Project CEMP and implemented if required.
- Investigate the potential to use recycled water or non-mains water during construction.
- Refer to the *Environment Protection (Water Quality) Policy 2015* which specifies that several pollutants cannot be discharged into any waters, including the stormwater system, or onto land from where they are reasonably likely to enter waters.
- Ensure water quality protection, management and mitigation measures are documented in a project specific CEMP and implemented during construction.
- Prior to the commencement of construction works, ensure that all site personnel complete a Project specific induction to understand their responsibility to avoid and minimise impacts to water quality during construction works.

#### **3.4.6 Approvals, permits and authorisations**

The following approvals, permits and/or authorisations may be required:

- **WAAP:** Consult with the Hills and Fleurieu Landscape Board regarding the Project and associated construction works to determine if a WAAP is required. Note that it may take 2-3 months for a WAAP application to be assessed and a permit issued (DEWNR undated).
- **Earthworks Drainage Licence:** The EP Act and associated *Water Quality Policy 2015* require dewatering to be carried out in a manner that does not cause environmental harm. Large earthworks activities that involve dewatering may require an authorisation in the form of a licence, referred to as an '**earthworks drainage**' licence. The threshold for an earthwork's drainage licence is stated in Schedule 1 of the EP Act as:

*the conduct of earthworks operations in the course of which more than 100 kL of wastewater containing suspended solids in a concentration exceeding 25 mg/L is discharged directly or indirectly to marine waters or inland waters.*

Note that *wastewater* includes stormwater from a construction site. As such, consider obtaining an earthworks drainage licence from the EPA prior to construction works (if considered required in accordance with Schedule 1 of the EP Act). Refer to the EPA Guideline *Environmental management of dewatering during construction activities* (EPA 2021a) for more information.

- **Dredging Licence:** Any dredging works, for example within Cox Creek, may require an authorisation in the form of a licence, referred to as a '**dredging**' licence. Schedule 1 of the EP Act defines dredging as:

*...removing solid matter from the bed of any marine waters or inland waters by any digging or suction apparatus, but excluding works carried out for the establishment of a visual aid to navigation and any lawful fishing or recreational activity.*

Note that *solid matter* includes but is not limited to sand, sediment, organic matter and rocks and *the bed of inland waters* is the portion of substrate within waters, including the substrate of a water body which confines the flow of waters but does not include the bank of a water body which confines water as they rise out of the bed. As such, if any construction works are required in Cox Creek, a dredging licence may possibly be required from the EPA prior to construction works (if considered required in accordance with Schedule 1 of the EP Act). Refer to the EPA *Dredge guideline* (EPA 2020) for further information on what is and is not considered dredging and associated requirements.

### **3.5 Site contamination**

#### ***3.5.1 Technical investigations undertaken or required***

EBS is not aware of any specific site contamination investigation undertaken for the Project. However, a site contamination investigation, which classifies soil for reuse and/or disposal is likely to be required if material is proposed to be re-used on site or disposed offsite.

#### ***3.5.2 Assessment methodology***

Desktop assessment has been undertaken as part of this EHIA report to identify potential site contamination issues. Aerial imagery available on NatureMaps (DEW 2022a) has been reviewed and knowledge of the site obtained from the field survey for vegetation and fauna assessment has also contributed to the assessment.

The EPA site contamination index has been searched to identify site contamination information received by the EPA (EPA 2021b). As part of this process, 'Groundwater Prohibition Area' and 'Section 83A Notification' layers available on LocationSA MapViewer (Government of South Australia 2022) have been reviewed to identify existing known or potentially contaminated areas.

#### ***3.5.3 Existing environment***

No site contamination or potentially contaminating activity within the Project Area is listed in the EPA site contamination index (EPA 2021b). No 'Groundwater Prohibition Area' or 'Section 83A Notification' applies within or adjacent to the Project Area (Government of South Australia 2021).

#### ***3.5.4 Impacts to existing environment***

Construction works are likely to involve excavation of soil and other materials that are potentially contaminated, which may require offsite disposal.

As stated previously in Section 3.4.4, review of ASRIS data suggests that there is low probability of occurrence of acid sulfate soils within the project site (ASRIS 2022). These records are listed as both Negligible ASS risk (DEW 2022a) and Extremely Low Probability for ASS (ASRIS 2022). As such any potential excavation works within the Project Area may present a low risk for acid sulfate soils.

There is a risk of spills or leakage of hazardous materials (such as diesel and other hydrocarbons) from construction plant and equipment during construction. It is also likely that construction works, and use of a site office will require disposal of waste, including hydrocarbons and other chemical substances.

There is also a minor risk of hydrocarbon spills during operation of the Project (i.e., via use of the area, particularly by vehicles). However, the risk is not expected to increase from the current level of risk.

### **3.5.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to avoid, minimise and/or mitigate the potential for contamination impacts:

- Prior to construction, undertake a site contamination investigation to identify and understand the risk of encountering contaminated materials during construction works, particularly if disposal of excess soil / fill material is likely to be required during construction. The assessment of site contamination should be undertaken in accordance with the framework provided in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (as amended 2013). Refer to *EPA Guidelines for the assessment and remediation of site contamination* (EPA 2019b) for more detail. If site contamination exists, the provisions of Part 10A of the EP Act apply.
- Ensure any contamination investigation report(s) meet the requirements of the EP Act. Note that the EPA is a referral body for site contamination assessment under the *Planning, Development and Infrastructure Act 2016*.
- As stated previously in Section 3.4.5, consider undertaking further investigation and seeking specialist advice, for example from a soil contamination expert, on acid sulfate soil potential and risk during construction as well as potential management requirements during construction (if required). Refer to *EPA Guidelines: Site contamination – acid sulfate soil materials* (EPA 2007) for management measures required if acid sulfate soils are encountered.
- If required, document and implement a Contamination and Remediation Management Plan as part of the Project specific CEMP, which includes contingency procedures to identify and manage soil and/or groundwater contamination during construction activities.
- Ensure all work is undertaken in accordance with the following (as a minimum):
  - EP Act;
  - *Environment Protection (Water Quality) Policy 2015*;
  - *Work Health and Safety Act 2012*; and
  - *Work Health and Safety Regulations 2012*.
- Ensure that any reuse of fill material is undertaken in accordance with the EPA *Standard for the production and use of Waste Derived Fill* (EPA 2013). Standards and specifications under clause 4 of the *Environment Protection (Waste to Resources) Policy 2010*, specify how and when certain materials can be reused and cease to be considered waste. Refer to [https://www.epa.sa.gov.au/environmental\\_info/waste\\_recycling/waste-management](https://www.epa.sa.gov.au/environmental_info/waste_recycling/waste-management) for more information (if required).
- If required, consult with the EPA regarding re-use of materials and any licence or authorisation required.

- Ensure that any asbestos materials are managed in accordance with the *How to safely remove asbestos Code of Practice (Safe Work Australia 2018)* and Safework SA requirements.
- Ensure construction plant and equipment is in good working order, well maintained and inspected regularly for loose or deteriorating hoses and fittings.
- Ensure a suitable spill kit (including for aquatic environments) is available on-site during construction to clean up any spills and that workers know how to use it.
- Ensure an emergency response procedure for spills (including into aquatic environments) is documented within the Project CEMP and implemented if required.
- Ensure that all potentially contaminating materials used during construction are listed in a Hazardous Materials Register, including storage location details, proper usage, safe handling procedures and appropriate disposal.
- Ensure site contamination management and mitigation measures are documented in the Project specific CEMP and implemented during construction.
- Prior to the commencement of construction works, ensure that all site personnel complete a Project specific induction to understand their responsibility to avoid, minimise and/or manage impacts caused by contamination.

### **3.5.6 Approvals, permits and authorisations**

As stated above, it is recommended that the EPA is consulted regarding re-use of materials and any licence or authorisation required. An approval, permit and/or authorisation from the EPA may be required for the following activities:

- Hot Mix Asphalt Preparation: the conduct of works at which crushed or ground rock aggregates are mixed with bituminous or asphaltic materials (by heating in a furnace, kiln or other fuel fired plant) for the purposes of producing road building mixtures;
- Waste transport: the conduct of: a waste transport business, being the collection or transport for fee or reward of: waste soil containing a listed waste in a concentration above that naturally occurring in soil in the area) (refer to Schedule 1, Part A of the EP Act).

## **3.6 Noise and vibration**

### **3.6.1 Technical investigations undertaken or required**

EBS is not aware of any specific noise and/or vibration assessment undertaken for the Project. However, as explained further below, a noise and vibration assessment, potentially may be required.

### **3.6.2 Assessment methodology**

Aerial imagery available on NatureMaps (DEW 2022a) has been reviewed as part of this EHIA report to identify potential noise and/or vibration sensitive receivers surrounding the Project Area and associated potential noise/and or vibration impacts. Knowledge of the site obtained from the field survey for vegetation and fauna assessment has also contributed to this process.

### **3.6.3 Existing environment**

The Project Area is located near a number of noise and vibration sensitive receivers (residential properties) located adjacent to the Project Area along St Andrews Avenue, Hoylake Avenue, Murfield Avenue and Old Carey Gully Road. These properties are located adjacent to and within 200m of the Project Area.

Impacts to existing environment

#### *Operational noise*

Operation of the Project (i.e. golf course, restaurant, private pods etc) is not expected to cause noise levels that might impact surrounding noise sensitive receivers. However, it is unknown how the amphitheatre will be used and whether this may cause noise levels that might impact surrounding noise sensitive receivers.

#### *Operational vibration*

Operation of the Project (i.e. golf course, restaurant, private pods etc) is not expected to cause vibration levels that might impact surrounding vibration sensitive receivers.

#### *Construction noise*

The use of construction plant and equipment during construction works will produce levels of noise which have the potential to impact on noise sensitive receivers located adjacent to and within approximately 200m of the Project Area. However, any potential noise impact will be temporary and limited to construction works.

#### *Construction vibration*

Similarly, the use of construction plant and equipment during construction works will produce levels of vibration which may have the potential to impact on vibration sensitive receivers located within and/or adjacent to the Project Area.

### **3.6.4 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for impacts from noise and/or vibration:

- Consider engaging a suitably qualified consultant to undertake a noise and vibration assessment to identify likely noise and vibration levels and associated impacts.
- Document and implement a Construction Noise and Vibration Management Plan (CNVMP) as part of the Project specific CEMP to avoid, minimise and manage noise and vibration impacts during construction.
- If required, document and implement a Night Works Management Plan as part of the CNVMP (if night works are to occur).
- Ensure that all potential noise and/or vibration sensitive receivers are notified and informed of potential impacts during construction works.
- Ensure that all construction works are undertaken in accordance with the *Environment Protection (Noise) Policy 2007*.



- Prior to the commencement of construction works, ensure that all site personnel complete a Project specific induction to understand their responsibility to avoid and minimise impacts caused by noise and vibration.

### **3.6.5 Approvals, permits and authorisations**

The following approvals, permits and/or authorisations may be required:

- Approval from the EPA to undertake construction work outside of the *restricted hours of operation* (construction noise that causes an adverse impact on amenity is only permitted between 7 am and 7 pm, Monday to Saturday). Refer to the EPA *Noise Information Sheet: Construction Noise* (EPA 2017) for more information.

## **3.7 Air quality**

### **3.7.1 Technical investigations undertaken or required**

No specific air quality investigation has been undertaken for the Project, nor is it considered necessary.

### **3.7.2 Assessment methodology**

Aerial imagery available on NatureMaps (DEW 2022a) has been reviewed as part of this EHIA report to identify potential air quality sensitive receivers surrounding the Project Area and associated potential air quality impacts. Knowledge of the site obtained from the field survey for vegetation and fauna assessment has also contributed to this process.

### **3.7.3 Existing environment**

Several air quality sensitive receivers (residential properties) are located adjacent to and within 200m of the Project Area.

### **3.7.4 Impacts to existing environment**

#### *Operational emissions*

Operation of the Project (i.e. golf course, restaurant, private pods etc) is not expected to cause air quality issues that might impact surrounding air quality sensitive receivers.

#### *Construction emissions*

The use of construction plant and equipment will produce exhaust emissions and it is likely that construction works, including earthworks, may generate small amounts of dust. However, these impacts are only temporary and are expected to be very minor or insignificant. Construction materials need to be stored appropriately to prevent scattering of material by wind.

### **3.7.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for impacts to air quality:

- As no significant increase in emissions is expected during operation of the Project, an air quality assessment (which considers operational emissions) is not required.
- Ensure construction works comply with the *Environment Protection (Air Quality) Policy 2016*.
- Document and implement a simple Air Quality Management and Monitoring Plan (as part of the Project specific CEMP) which includes effective air quality/dust monitoring (i.e., visual monitoring) and mitigation measures, such as use of a water cart, when required.
- Prior to the commencement of construction works, ensure that all site personnel complete a Project specific induction to understand their responsibility to avoid and minimise impacts to air quality during construction.

### ***3.7.6 Approvals, permits and authorisations***

No approval, permit and/or authorisation has been identified.

## **3.8 Land Use, Planning, Sustainability and Amenity**

### ***3.8.1 Technical investigations undertaken or required***

No specific investigations have been undertaken for the Project, nor is it considered necessary.

### ***3.8.2 Assessment methodology***

The South Australian Planning and Design Code and the South Australian Property and Planning Atlas (land use zoning and policy) has been reviewed as part of this EHIA report.

### ***3.8.3 Existing environment***

The Project Area is zoned Recreation/ Reserves. Development in this area has several policies which will apply.

### ***3.8.4 Impacts to existing environment***

As outlined in Section 2.4, the Project includes upgrades and works including installation of a hotel and two penthouse apartments, function facilities, clubhouse facility and pro-shop, 200 space carpark, restaurant, private retreat pods, wellness centre, amphitheatre and upgrades to the 18-hole golf course.

The proposed development will have an impact on surrounding highly valued rural landscape where environmental sustainability is important.

Construction works and the use and transportation of construction equipment to the site are likely to impact upon amenity and traffic. However, this will only be temporary during construction.

Construction works are unlikely to involve night works or the use of temporary lighting which may affect amenity values. There is however a potential for minor traffic delays adjacent to the Project Area during construction works as the location is located near residential properties from a local road to the golf course.

### **3.8.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for impacts:

- If required, seek advice from a planning consultant regarding any approvals required for the Project in accordance with the PDI Act and/or any other legislation.
- Crime Prevention through Environmental Design (CPTED) principles should be investigated for the operational phase of the project. Smart lighting, CCTV, digital and smart signage could all be integrated into the Project design and be located in key locations.
- In addition, DDA (*Disability Discrimination Act 1992*) compliance requirements should be outlined for the Project. Access to toilet facilities and car parking and should be investigated.
- A Traffic Management Plan should be implemented which would include advance notification of potential delays to manage traffic during construction works.
- Ensure signage and safe access for all areas of works is provided for construction and that the public and local residents are aware of potential parking and path closures during works.
- The provision of (or futureproofing for) consumer utility services e.g., water, power and communications should be considered in the design.
- Consider integrating the infrastructure with the landscape to minimise the impact of the architectural response to the land.
- Rehabilitate impacted areas as much as possible to allow vegetation to regenerate and provide amenity again. Undertake replanting / landscaping of any disturbed areas.
- Integrate good urban design principles and investigate opportunities for a bespoke approach to the design which will correlate to the scenic value and natural character of the area.
- The proponent should showcase the Project's sustainability ambitions in a bold and distinctive manner.

### **3.8.6 Approvals, permits and authorisations**

If required, seek development approval for the Project, in accordance with the PDI Act.

## **3.9 Waste Management**

### **3.9.1 Technical investigations undertaken or required**

No specific waste management investigation has been undertaken for the Project, nor is it considered necessary.

### **3.9.2 Assessment methodology**

The *Environment Protection (Waste to Resources) Policy 2010* and the *Green Industries Act 2004* has been reviewed as part of this EHIA report to identify potential waste management measures which could be implemented for the Project.

### **3.9.3 Existing environment**

The Project Area currently consists of limited waste management provisions beside rubbish bins.

### **3.9.4 Impacts to existing environment**

#### *Operational issues*

The Project is likely to cause small increases in sewage, grey water, and food waste as a result of the installation of hotel and pod accommodation and associated infrastructure (i.e., toilets and restaurant).

#### *Construction issues*

Construction works are likely to generate waste, such as excess fill materials, which may require management, removal, transport and disposal. A small amount of waste including food waste, sullage (grey water) and sewage will be generated by workers daily during occupancy of the site office. Construction waste entering the environment may present a choking hazard for mammals and birds.

### **3.9.5 Alternatives, mitigation and opportunities**

The following alternatives, avoidance, minimisation and management measures are recommended to minimise the potential for impacts to waste management:

- Opportunities for recycling and green waste provisions on site should be investigated for the Project;
- Minimise the number of resources, such as fuel, which are consumed during construction works;
- Reuse all excavated fill materials or retain within construction works, where possible;
- Any material from vegetation removal and/or pruning works (excluding tree hollows and salvageable timber) should be mulched (if possible) and re used / retained onsite if suitable;
- Ensure general onsite waste and site office waste are adequately contained and disposed of in accordance with EPA guidelines;
- Disposal of waste to a licenced waste depot for placement in landfill should only occur if reuse or recycling is not possible;
- Ensure waste is managed to limit attraction of introduced invasive fauna foraging for food e.g. sealed bins;
- Investigation into the materials used in construction and the possibility of utilising recycled materials and green waste provisions where it is possible.
- Include waste and resource management measures within the Project specific CEMP.

Follow the waste management hierarchy for the management of waste in order, in which avoidance of the production of waste, minimisation of the production of waste, reuse of waste, recycling of waste, recovery of energy and other resources from waste, treatment of waste to reduce potentially degrading impacts and disposal of waste in an environmentally sound manner, are pursued in order with, first, avoidance of the production of waste, and second, to the extent that avoidance is not reasonably practicable, minimisation of the production of waste, and third, to the extent that minimisation is not reasonably practicable, reuse of waste.

### **3.9.6 Approvals, permits and authorisations**

As stated in Section 3.5, it is recommended that the EPA is consulted regarding re-use of materials and any licence or authorisation required. An approval, permit and/or authorisation from the EPA may be required for the following activities:

- Waste transport: the conduct of: a waste transport business, being the collection or transport for fee or reward of: waste soil containing a listed waste in a concentration above that naturally occurring in soil in the area) (refer to Schedule 1, Part A of the EP Act).

## 4 ASSESSMENT OF HERITAGE IMPACTS

### 4.1 Historical Heritage

#### 4.1.1 *Technical investigations undertaken or required*

A cultural heritage desktop assessment was undertaken for the Project by EBS Heritage in May 2021. Refer to the *Mount Lofty Golf Estate Environmental & Heritage Impact Assessment Report* (EBS Heritage 2021) for more detail.

#### 4.1.2 *Assessment methodology*

The historical heritage assessment was undertaken as a desktop study involving searches of the following information sources:

- Australian Heritage Database, via the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW); and
- South Australian Heritage Places Database, via the Department for Environment and Water (DEW).

The desktop assessment also involved an assessment of the likelihood for unknown historical heritage to occur within the Project Area.

#### 4.1.3 *Existing historical heritage*

- There are no historic places listed in the Australian Heritage Database within the proposed project area (DCCEEW 2021).
- There are no State heritage places listed in the SA Heritage Places Database within the proposed project area (DEW 2021).
- There is one local heritage place (ID 15127) listed in the SA Heritage Places Database within the proposed project area (DEW 2021).

#### 4.1.4 *Impacts to existing historical heritage*

As outlined within the *Mount Lofty Golf Estate Heritage Impact Statement* (EBS Heritage 2022b), the Project has potential for impact on the local heritage listed former Scent Factory (ID 15127). The redesign for the local heritage place has not been finalised and no plans, elevations or materials schedule are currently available. The impacts to the local heritage place are therefore currently unknown.

Construction works are not expected to damage the fabric of the building nor the heritage values. Instead, adaptive reuse will aid its preservation and enhance the heritage values, with building repairs and the establishment of a perfumery garden and orchard next to the former Scent Factory improving the area's heritage significance through its connection back to the building's original purpose as a perfumery.

It is possible that this heritage place may be impacted directly or indirectly through dust and vibration from construction equipment during works.

#### **4.1.5 Alternatives, mitigation, and opportunities**

Appropriate risk mitigation measures should be undertaken to address the impact from dust and vibrations as a result of constructions equipment during construction works:

- As there is potential for vibration impacts to heritage places during construction, consider undertaking pre-construction dilapidation surveys/property condition assessments of the local heritage and contributory places to understand their current condition and potential for impact from vibration during construction.
- Implement a Construction Noise and Vibration Management Plan as part of the Project CEMP.
- Implement a simple project Air Quality Management and Monitoring Plan as part of the CEMP, which includes effective dust monitoring (i.e., visual monitoring) and mitigation during construction, such as use of a water cart, when required.

#### **4.1.6 Approvals, permits, and authorisations**

*The Heritage Places Act 1993* applies to the local heritage place. As the heritage place is to be partially demolished, restored, conserved, reused or new built form elements installed, a Heritage Impact Statement will be required on the works that will affect the heritage place. Associated design plans, materials palette and documentation will be required prior to any approval being granted by the State Planning Commission for this component of works.

## **4.2 Aboriginal Heritage**

### **4.2.1 Technical investigations undertaken or required**

A cultural heritage desktop assessment was undertaken for the Project by EBS Heritage in May 2021. Refer to the *Mount Lofty Golf Estate Environmental & Heritage Impact Assessment Report* (EBS Heritage 2021) for more detail.

### **4.2.2 Assessment methodology**

The Aboriginal heritage assessment was undertaken as a desktop study involving searches of the following information sources:

- Australian Heritage Database, via DCCEEW;
- Register of Aboriginal Sites and Objects, via the Attorney General's Department – Aboriginal Affairs and Reconciliation (AGD-AAR); and
- South Australian Museum database, via the South Australian Museum.

The desktop assessment also involved an assessment of the likelihood for unknown Aboriginal heritage to occur within the Project Area.

### **4.2.3 Existing Aboriginal heritage**

The project area is within the Native Title Determination of the Kurna People. The Kurna Yerta Aboriginal Corporation (KYAC) is a registered native title body corporate under the *Native Title Act 1993* and manages native title rights and interests across the Adelaide Region following the Consent Determination (CD) of

the Kurna native title claim. The CD recognises KYAC's right to maintain and protect places of importance under traditional laws, customs and practices on the land and waters within the determination.

There are no Aboriginal places listed in the Australian Heritage Database within, or near to the proposed Project area (DAWE 2020).

There is one Aboriginal site protected under the AH Act within 1000 metres (m) of the project area. 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.

#### **4.2.4 Impacts to Aboriginal heritage**

It is unlikely that the Project will impact upon any Aboriginal heritage sites and/or objects, as the Project area is located within an area which would have been subject to significant disturbance during previous activities and developments, including construction works for the existing golf course and clubrooms. Furthermore, the subsoil consists of high plasticity clay which is heavy and difficult to dig into and it appears the depth from surface to bedrock is minimal. Therefore, the risk of encountering Aboriginal sites and/or objects during construction works is expected to be low.

#### **4.2.5 Alternatives, mitigation, and opportunities**

- A cultural heritage survey undertaken with the participation of the Kurna People may be deemed a requirement by the State Planning Commission as part of the Development Approval;
- Monitoring of ground-breaking activities by representatives of the Kurna, may be deemed a requirement by the State Planning Commission as part of the Development Approval;
- A Cultural Heritage Management Plan may be deemed a requirement by the State Planning Commission as part of the Development Approval;
- Mitigation measures to minimise any potential impacts to Aboriginal heritage should be documented in the Project CEMP, including (but not limited to):
  - Ensuring appropriate approvals/permits are received prior to undertaking any excavation (if required);
  - Inducting site personnel to provide an understanding of the Aboriginal heritage aspects associated with the Project site and construction activities; and
  - Implementation of a site discovery procedure.

#### **4.2.6 Approvals, permits and authorisations**

Note that in the unlikely event that an Aboriginal heritage site and/or object is found during construction works, a permit/approval in accordance with the *Aboriginal Heritage Act 1988* is likely to be required to 'damage, disturb or interfere' with the site and/or object.



## 4.3 Native Title

### 4.3.1 Technical investigations undertaken or required

A cultural heritage desktop assessment was undertaken for the Project by EBS Heritage in May 2021. Refer to the *Mount Lofty Golf Estate Environmental & Heritage Impact Assessment Report* (EBS Heritage 2021) for more detail.

### 4.3.2 Assessment methodology

The native title assessment was undertaken as a desktop study involving searches of the following information sources:

- Register of Applications and Determinations, via the National Native Title Register; and
- Register of Indigenous Land Use Agreements, via the National Native Title Register.

### 4.3.3 Existing native title

The search of the National Native Title Register identified the Kurna Peoples as native title holders for the lands within and surrounding Stirling (Table 7). The Kurna Yerta Aboriginal Corporation (KYAC) is a registered native title body corporate under the *Native Title Act 1993* and manages native title rights and interests across the Adelaide Region following the Consent Determination (CD) of the Kurna native title claim.

**Table 7. Native Title Claim relevant to project area.**

Name	Tribunal No.	Status	Determination Outcome	Registered Native Title Body Corporate
Kurna Peoples Native Title Claim	SCD2018/2000	Determined	Native title exists in parts of the determination area	Kurna Yerta Aboriginal Corporation

Source: Register of Native Title Claims.

The Kurna Peoples have an Indigenous Land Use Agreement (ILUA) which is a voluntary agreement between the native title group and The Attorney-General for the State of South Australia regarding the use and management of the determination land and waters (Table 8).

**Table 8. Registered Indigenous Land Use Agreement.**

Name	Tribunal file no	Status
Kurna People Native Title Settlement ILUA	SI2018/004	ILUA registered 19 November 2018

Source: Register of Indigenous Land Use Agreements.

### 4.3.4 Approvals, permits and authorisations

As a courtesy and out of respect for the Traditional Owners, notify the Kurna Yerta Aboriginal Corporation of the proposed works.

## 5 REFERENCES

Arborman Tree Solutions (2022a) *Preliminary Tree Assessment (ATS6360-035GoIRdPTA)*. Report to Trice – Project & Development Managers. Arborman Tree Solutions, Adelaide.

Arborman Tree Solutions (2022b) *Arboricultural Impact Assessment and Development Impact Report Site: Stirling Golf Club, 35 Golflinks Road, Stirling (ATS6360-035GoIRdDIR)*. Report to Trice – Project & Development Managers. Arborman Tree Solutions, Adelaide.

Australian Soil Research Information System (ASRIS) (2014) Australian Soil Research Information System Map Portal, Acid Sulfate Soils (ASS) layer. Available at <http://www.asris.csiro.au/mapping/viewer.htm> [Accessed 01/09/2022].

BoM (2022) Climate Data Online. Mount Lofty AWS (#23842). Retrieved from: [http://www.bom.gov.au/climate/averages/tables/cw\\_023842.shtml](http://www.bom.gov.au/climate/averages/tables/cw_023842.shtml) [Accessed 30/08/2022].

Croft, S. J., Pedlar, J. A., & Milne, T. I. (2005) *Bushland Condition Monitoring Manual - Southern Mount Lofty Ranges Region*. Adelaide: The Nature Conservation Society of South Australia Inc., Adelaide, South Australia.

Department for Environment and Water (DEW) (2022a) NatureMaps (Data Layers searched include: Administrative Boundaries; Cadastral Information; Fauna and Flora; Heritage; Landscapes; Native Title; Protected Areas; Soils; Vegetation; Water; Wetlands etc). Version 3.4.1. Available at <https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx> [Accessed August/September 2022].

Department for Environment and Water (DEW) (2022b) WaterConnect Groundwater Data. Available at: <https://www.waterconnect.sa.gov.au> [Accessed September 2022].

Department of Environment, Water and Natural Resources (DEWNR) (undated) Water affecting activities (fact sheet). Available at: [https://www.landscape.sa.gov.au/files/sharedassets/adelaide\\_and\\_mt\\_lofty\\_ranges/water/water\\_allocation\\_plans\\_docs/waa-fact-2.pdf](https://www.landscape.sa.gov.au/files/sharedassets/adelaide_and_mt_lofty_ranges/water/water_allocation_plans_docs/waa-fact-2.pdf) [Accessed 18/08/2022].

Department of the Environment (DoE) (2013) *Matters of National Environmental Significance Significant Impact Guidelines 1.1*. Department of the Environment, Canberra. Available at: [http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines\\_1.pdf](http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf) [1/09/2022].

EBS Ecology (2022a) *The Mount Lofty Golf Estate Ecological Flora and Fauna Assessment*. Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate. EBS Ecology, Adelaide.

EBS Ecology (2022b). *Native Vegetation Clearance Mount Lofty Golf Estate Data Report*. Report to Mount Lofty Estate Pty Ltd. EBS Ecology, Adelaide.

EBS Heritage (2021) *Mount Lofty Golf Estate Cultural Heritage Desktop Assessment*. Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate. EBS Heritage, Adelaide.

- EBS Heritage (2022a) Mount Lofty Golf Estate Cultural Heritage Management Plan Framework. Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate. EBS Heritage, Adelaide.
- EBS Heritage (2022b) Mount Lofty Golf Estate Heritage Impact Statement. Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate. EBS Heritage, Adelaide.
- EPA (2021a) Water quality guideline: Environmental management of dewatering during construction activities. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/files/12275\\_guide\\_dewatering.pdf](https://www.epa.sa.gov.au/files/12275_guide_dewatering.pdf). [Accessed September 2022].
- EPA (2021b) Site contamination index. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/public\\_register/site\\_contamination\\_index](https://www.epa.sa.gov.au/public_register/site_contamination_index). [Accessed September 2022].
- EPA (2020) Dredge guideline. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/files/14712\\_dredge\\_guideline\\_2020.pdf](https://www.epa.sa.gov.au/files/14712_dredge_guideline_2020.pdf). [Accessed September 2022].
- EPA (2019a) Industry Guideline, Construction Environmental Management Plan (CEMP). Environment Protection Authority, South Australia. Available at: [http://www.epa.sa.gov.au/files/12330\\_guide\\_cemp.pdf](http://www.epa.sa.gov.au/files/12330_guide_cemp.pdf). [Accessed 20/08/2022].
- EPA (2019b) Guidelines for the assessment and remediation of site contamination. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/files/13544\\_sc\\_groundwater\\_assessment.pdf](https://www.epa.sa.gov.au/files/13544_sc_groundwater_assessment.pdf) [Accessed August 2022].
- EPA (2017) Noise Information Sheet: Construction noise. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/files/4773\\_info\\_noise\\_construction.pdf](https://www.epa.sa.gov.au/files/4773_info_noise_construction.pdf) [Accessed August 2022].
- EPA (2013) Standard for the production and use of Waste Derived Fill. Environment Protection Authority, South Australia. Available at: [http://www.epa.sa.gov.au/files/4771359\\_standard\\_wdf.pdf](http://www.epa.sa.gov.au/files/4771359_standard_wdf.pdf) [Accessed August 2022].
- EPA (2007) EPA Guidelines: Site Contamination – Acid Sulfate Soil materials. Environment Protection Authority, South Australia. Available at: [https://www.epa.sa.gov.au/files/8371\\_guide\\_sc\\_acid.pdf](https://www.epa.sa.gov.au/files/8371_guide_sc_acid.pdf) [Accessed August 2022].
- EPA (1998) Stormwater Pollution Prevention: Code of practice for local, state and federal government. Environment Protection Authority, Department for Environment, Heritage and Aboriginal Affairs, Government of South Australia. Available at: [https://www.epa.sa.gov.au/files/47791\\_govcop1.pdf](https://www.epa.sa.gov.au/files/47791_govcop1.pdf) [Accessed August 2022].
- NVC (2020a) *Native Vegetation Council (NVC) Bushland Assessment Manual*. Native Vegetation Council, Government of South Australia.
- NVC (2020b) *Native Vegetation Council (NVC) Scattered Tree Assessment Manual*. Native Vegetation Council, Government of South Australia.

Standards Australia (2010) Australian Standard 4970-2009 Protection of trees on development sites.

Standards Australia, Sydney, NSW, Australia.

State Planning Commission (2022). *Guidelines for the preparation of a Development Report Mount Lofty Golf Estate*. Report to Mount Lofty Golf Estate Pty Ltd.

## 6 APPENDICES

### 6.1 Appendix 1. Applicable environmental legislation

Table 9. Summary of applicable environmental legislation.

Legislation/Policy	Details
<b>Commonwealth</b>	
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	<p>The Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places, defined in the Act as 'Matters of National Environmental Significance' (MNES). There are nine MNES protected under the Act:</p> <ol style="list-style-type: none"> <li>1. World Heritage properties;</li> <li>2. National Heritage places;</li> <li>3. Wetlands of international importance (listed under the Ramsar Convention);</li> <li>4. Listed threatened species and ecological communities;</li> <li>5. Migratory species protected under international agreements;</li> <li>6. Commonwealth marine areas;</li> <li>7. The Great Barrier Reef Marine Park;</li> <li>8. nuclear actions (including uranium mines); and</li> <li>9. a water resource, in relation to coal seam gas development and large coal mining development.</li> </ol> <p>Any action (for example a project or development) that has, will have, or is likely to have a significant impact on any MNES requires referral to seek approval under the EPBC Act. The EPBC Act Significant Impact Guidelines (DOE 2013) provide overarching guidance on determining whether an action is likely to have a significant impact on a matter of national environmental significance.</p>
<b>South Australian</b>	
<i>Environment Protection Act 1993</i>	<p>The <i>Environment Protection Act 1993</i> (EP Act) is the primary pollution control legislation in South Australia. Section 25 of the Act requires a 'general environmental duty' of all persons undertaking an activity that may pollute to take all reasonable and practicable measures to prevent or minimise any resulting environmental harm. Specific offences also exist under the Act including for:</p> <ul style="list-style-type: none"> <li>• Causing serious or material environmental harm or an environmental nuisance by polluting the environment;</li> <li>• Failing to inform the Environment Protection Authority (EPA) of an incident that has caused, or threatens to cause, serious or material environmental harm as soon as reasonably practicable; and</li> <li>• Failing to notify the EPA of site contamination that threatens or affects groundwater.</li> </ul> <p>Section 36 of the EP Act outlines the requirement for a licence to undertake a prescribed activity of environmental significance. Schedule 1 of the EP Act lists prescribed activities of environmental significance, including the following which are relevant to the project:</p> <p><i>recreational activity;</i></p> <ul style="list-style-type: none"> <li>• (7)(6) Earthworks Drainage <i>The conduct of earthworks operations in the course of which more than 100 kilolitres of wastewater containing suspended solids in a concentration exceeding 25 milligrams per litre is discharged directly or indirectly to marine waters or inland waters;</i></li> </ul>
<i>Environment Protection (Water Quality) Policy 2015</i>	<p>The <i>Environment Protection (Water Quality) Policy 2015 (Water Quality Policy)</i> prohibits the pollution of stormwater systems and the state's natural waters. Clause 17 of the Water Quality Policy states that a person must not discharge or deposit a pollutant listed in Schedule 4 of the Policy into any waters or onto land where it might enter waters. The pollutants listed in Schedule 4 specific to this Project include:</p> <ul style="list-style-type: none"> <li>• cleaning agents</li> <li>• detergents and their by-products</li> </ul>

Legislation/Policy	Details
	<ul style="list-style-type: none"> <li>• fuel dispensing area wash water</li> <li>• wash down water from cleaning vehicles, plant or equipment</li> <li>• oil, grease, lubricants and petroleum products</li> <li>• rubbish</li> <li>• solvents</li> </ul> <p>In addition, clause 11 of the <i>Water Quality Policy</i> states that a person who is undertaking an activity, or is an occupier of land, must take all reasonable and practicable measures (not being measures that themselves cause environmental harm) to avoid the discharge or deposit of waste from that activity or land into any waters; or onto land in a place from which it is reasonably likely to enter any waters.</p>
<i>Environment Protection (Air Quality) Policy 2016</i>	<p>The <i>Environment Protection (Air Quality) Policy 2016</i> states that an occupier of a premises at which a process referred to in Schedule 1 of that Policy is carried out must not cause or permit air pollution from that process beyond the maximum pollution levels set out in Schedule 1 or otherwise in contravention of a requirement.</p>
<i>Environment Protection (Noise) Policy 2007</i>	<p>The <i>Environment Protection (Noise) Policy 2007</i> sets out procedures for measuring noise to determine compliance, to fix noise goals for most noise sources compliance with which will satisfy the general environmental duty under section 25 of the Act and to set out criteria for determining what requirements (if any) the Authority or another administering agency will impose to deal with noise sources not complying with applicable noise goals under this policy.</p> <p>Although Section 22 of the <i>Environment Protection (Noise) Policy 2007</i> specifically excludes road, rail and public infrastructure construction work from Division 1 of the Policy (which deals with construction noise), DPTI and its contractors still have a responsibility under Section 25 of the <i>Environment Protection Act 1993</i> to have a “duty of care” to not pollute the environment through noisy activities:</p> <p style="text-align: center;"><i>“a person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.”</i></p>
<i>Environment Protection (Waste to Resources) Policy 2010</i>	<p>The <i>Environment Protection (Waste to Resources) Policy 2010</i> objective is to achieve sustainable waste management by applying the waste management hierarchy consistently with the principles of ecologically sustainable development set out in Section 10 of the Act.</p> <p>In order to meet the waste management objective, waste management in SA should also promote best practice and accountable waste management, taking into account regional differences within the State. It will also include effective recording, monitoring and reporting systems with respect to waste transport, resource recovery and waste disposal and promote environmental responsibility and involvement in waste avoidance, waste minimisation and waste management within the community.</p>
<i>Green Industries SA Act, 2004</i>	<p>An Act to continue the statutory corporation Zero Waste SA as Green Industries SA, to build on the waste management reforms effected by Zero Waste SA, to promote innovation and business activity in the waste management, resource recovery and green industry sectors in the State; and for other purposes.</p>
<i>Landscape South Australia Act 2019</i>	<p>The <i>Landscape South Australia Act 2019</i> (LSA Act) repealed the <i>Natural Resources Management Act 2004</i>. Under the LSA Act, new regional landscape boards have been established. The aim is to deliver landscape related services to regional communities, including effective water management, pest plant and animal control, soil and land management and support for broader sustainable primary production programs. Invasive weed species are listed as Declared plants under the LSA Act and landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation.</p> <p>The LSA Act defines provisions for the management and protection of water resources, including <i>water affecting activities</i>. The following requirements within the LSA Act, may be applicable to this Project:</p> <p><i>Part 8—Management and protection of water resources</i></p> <p><i>Division 2—Control of activities affecting water</i></p> <p><i>Subdivision 3—Control of activities</i></p> <p style="text-align: center;"><i>104—Water affecting activities</i></p>

Legislation/Policy	Details
	<p>(4) <i>Subject to this Act, a person must not undertake any of the following activities contrary to a water allocation plan or a water affecting activities control policy that applies or makes provision in relation to the region or area in which the activity is to be undertaken:</i></p> <ul style="list-style-type: none"> <li>(b) <i>the erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse;</i></li> <li>(d) <i>depositing or placing an object or solid material in a watercourse or lake</i></li> <li>(g) <i>destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse;</i></li> <li>(h) <i>excavating or removing rock, sand or soil from–</i> <ul style="list-style-type: none"> <li>(i) <i>a watercourse or lake or the floodplain of a watercourse;</i></li> </ul> </li> </ul> <p>Approval, in the form of a Water Affecting Activities Permit (WAAP), is usually required from the relevant Landscape Management Board to undertake a Water Affecting Activity.</p>
<p><i>National Parks and Wildlife Act and Regulations 1972</i></p>	<p>The <i>National Parks and Wildlife Act 1972</i> (NPW Act) allows for the protection of habitat and wildlife through the establishment of parks and reserves (both on land and in State waters); the protection of native flora and fauna; identifies flora and fauna species considered to be of conservation significance (under Schedules 7, 8, and 9 of the Act); and provides for the taking of plants (s.49) and use of approved wildlife through a system of permits allowing certain actions, i.e. keeping and selling (s.58), harvesting (s.60G), farming (s.60C), hunting (s.68A), releasing (s.55) and undertaking scientific research (s.53) on/of native fauna species.</p> <p>A person must not “take” a native plant, protected animal or the eggs of a protected animal without approval (s.48A). Significant penalties apply. To take a native plant means to remove the plant or part of the plant, from the place in which it is growing; or to damage the plant. To take a protected animal means to remove, hunt, catch, restrain, kill or injure an animal, or attempt to do so. A person may take non-prescribed plant species from private land with the consent of the owner; however, these species may also be covered under the <i>Native Vegetation Act 1991</i>.</p>
<p><i>Native Vegetation Act 1991</i></p>	<p>Native vegetation that is present within the Project Area is subject to the <i>Native Vegetation Act 1991</i> (NV Act). This legislation is principally in place to provide incentives and assistance for the preservation and enhancement of native vegetation and to control the clearance of native vegetation.</p> <p>Native vegetation refers to any naturally occurring local plant species that is indigenous to South Australia, from small ground covers and native grasses to large trees and water plants. It also includes naturally occurring regrowth and in certain circumstances, dead trees.</p> <p>The <i>Native Vegetation Regulations 2017</i> outline the circumstances where clearing native vegetation is permitted, outside of the clearance controls in the NV Act. The Regulations allow clearance for certain activities, such as mining and exploration, building homes, upgrading infrastructure (e.g. power lines) and road maintenance.</p>
<p><i>Planning, Development and Infrastructure Act 2016</i></p>	<p>The <i>Planning, Development and Infrastructure Act 2016</i> (PDI Act) repealed the <i>Development Act 1993</i> and was brought into operation in stages over a five-year implementation program to reform and modernise the State’s planning system. The PDI Act, along with the <i>Planning, Development and Infrastructure (General) Regulations 2017</i> (PDI Regs) and <i>Planning and Design Code</i>, provide the legislative framework for carrying out planning and development works within the state. The <i>Planning and Design Code</i> is the cornerstone of the new system and has replaced all council development plans to become the single source of planning policy for assessing development applications. No development can be undertaken without an appropriate Development Approval being obtained from the relevant authority after an application and assessment process.</p> <p><i>Development</i> is defined by the PDI Act and PDI Regs and includes building work and any work that could materially affect the heritage value of the place (DEW 2020a).</p> <p>The PDI Act and the PDI Regs provide provision for the protection of ‘regulated trees’ and ‘significant trees’, while the PDI Act considers any tree damaging activity in relation to a regulated tree as <i>development</i>.</p>

**Note: This summary is not intended to be a substitute for particular legal advice and does not address the legal implications of every set of circumstances.**

## 6.2 Appendix 2. Applicable heritage legislation

Legislation/Policy	Details
<b>Commonwealth</b>	
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Refer to Appendix 1 for detail.
<b>South Australian</b>	
<i>Planning, Development and Infrastructure Act 2016</i>	<p>The <i>Planning, Development and Infrastructure Act 2016</i> (PDI Act) repealed the <i>Development Act 1993</i> and was brought into operation in stages over a five-year implementation program to reform and modernise the State's planning system. The PDI Act, along with the <i>Planning, Development and Infrastructure (General) Regulations 2017</i> (PDI Regs) and <i>Planning and Design Code</i>, provide the legislative framework for carrying out planning and development works within the state. The <i>Planning and Design Code</i> is the cornerstone of the new system and has replaced all council development plans to become the single source of planning policy for assessing development applications. No development can be undertaken without an appropriate Development Approval being obtained from the relevant authority after an application and assessment process.</p> <p>In accordance with the PDI Act, any <i>development</i> within a State Heritage Area (declared under the <i>Heritage Places Act 1993</i>) must be approved by the relevant (planning) authority. <i>Development</i> is defined by the PDI Act and PDI Regs and includes building work and any work that could materially affect the heritage value of the place (DEW 2020a).</p> <p>The PDI Act and the PDI Regs provide provision for the protection of 'regulated trees' and 'significant trees', while the PDI Act considers any tree damaging activity in relation to a regulated tree as <i>development</i>.</p>
<i>Aboriginal Heritage Act 1988</i>	<p>The <i>Aboriginal Heritage Act 1988</i> (AHA) Act repealed and replaced the <i>Aboriginal and Historic Relics Preservation Act 1965</i>, which was the first state legislation to protect Aboriginal Australian heritage in Australia. The AHA Act is the principal South Australian legislation and preserving the state's Aboriginal heritage. The Aboriginal Affairs and Reconciliation Division of the South Australian Department of the Premier and Cabinet has responsibility for managing this legislation, so ensuring that South Australia's Aboriginal heritage is protected, preserved, and transmitted into the future. Within South Australia it is a criminal offence to:</p> <ul style="list-style-type: none"> <li>• Excavate land uncovering Aboriginal sites, objects or remains without the Minister's authority;</li> <li>• Damage Aboriginal sites, objects or remains without authority;</li> <li>• Fail to report the discovery of an Aboriginal site or object or remains to the Minister;</li> <li>• Fail to comply with directions the responsible Minister may give (in the form of a notice to interested parties) prohibiting or restricting access to Aboriginal sites, objects or remains.</li> </ul>
<i>Heritage Places Act 1993</i>	<p><i>The Heritage Places Act 1988</i> is in place to make provision for the identification, recording and conservation of places and objects of non-Aboriginal heritage significance;</p> <ul style="list-style-type: none"> <li>• Historical towns and areas;</li> <li>• Buildings, artefacts and objects;</li> <li>• Archaeological artefacts;</li> <li>• Geological specimens and paleontological areas.</li> </ul> <p>The Act also serves to establish the South Australian Heritage Council.</p>





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