

STATEMENT OF ENVIRONMENTAL EFFECTS

Installation of Light Pole – Bullocks Flat Carpark

Lot 500 DP1171936, Alpine Way Crackenback

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1 INTRODUCTION

This statement of environmental effects has been prepared by Perisher Blue Pty Ltd to accompany a development application for the installation of a light pole in the Ski Tube carpark at Bullocks Flat, lot 500 DP1171936, Alpine Way Crackenback The application is being lodged by Perisher Blue, pursuant to Clause 4.12 of the Environmental Planning and Assessment Act 1979.

The proposal has been designed to achieve the relevant provisions of State Environmental Planning Policy (Precincts Regional) 2021, and Clause 4.15 of the Environmental Planning and Assessment Act 1979 (as amended).

This statement has been prepared having regard to the following documentation:

- Engineering Details Bullocks Flat Light Pole L Coot
- Light Pole Details GM Poles
- Location Plan
- Site Plan
- Geotechnical Inspection JK Geotechnics
- Light Details and Design Specifications SAL

1.1 Objectives of the project

To provide additional lighting in the Ski Tube carpark to improve safety and security of guests and staff utilising the area.

2 SITE DESCRIPTION

2.1 Subject Site and Surrounding Development

The subject site Lot 500 DP1171936 is within carpark A of the Ski Tube at Bullocks Flat. The property is a large 47-hectare site which is developed as the Ski Tube Terminal and associated infrastructure.

The Ski Tube railway provides direct access to Perisher Valley, the carpark is by both day and overnight visitors.

To the east of the site is the tourist accommodation development "Lake Crackenback Resort" which has direct access to the Ski Tube car park via a private access road. The balance of the land to the east is predominantly undeveloped, agricultural land with only minimal dwellings.

Kosciuszko National Park adjoins the property to the north, south and west.

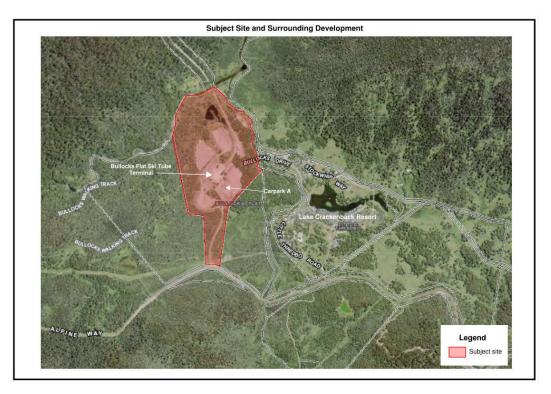


Figure 1 - Site location Plan.

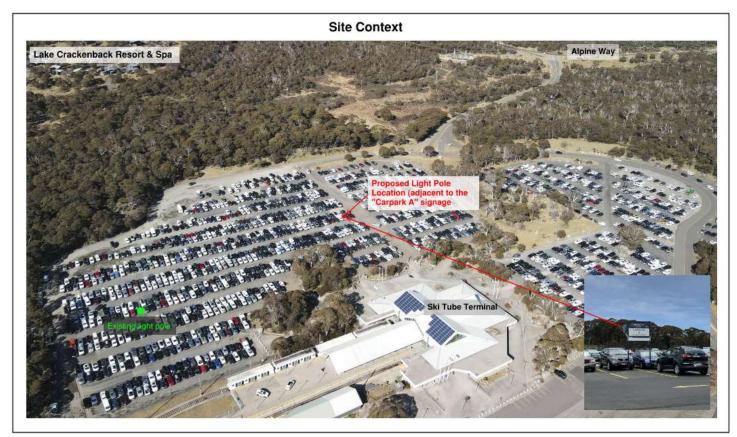


Figure 2 - Site Context Plan



Figure 3 - Existing Light Pole - Same type, size and height from from



Figure 4 - View toward the Bullocks Flat Terminal Building from the Light Pole location in carpark A

2.2 Suitability of the Site

The site is suitable for the development as the proposed light pole is infrastructure that is ancillary to the use of the area as a carpark associated with the Ski Tube terminal. The location of the pole within the carparking area has minimal impact on adjoining uses. It is a considerable distance from both the Lake Crackenback resort and the other dispersed surrounding development.

There have been no amenity or environmental impacts identified with the existing pole and the proposed will be of the same size, height, and light spread.

3 DETAILS OF THE PROPOSAL

3.1 Project Overview

Installation of a 20m light pole with three 400x750mm LED floodlights and associated ground works. The development will take place adjacent to the existing carpark A signage and will be constructed in one car parking space.

The mono pole is proposed to be power coated Woodland Grey.

All works are to occur in existing disturbed land within the carpark and paved areas.

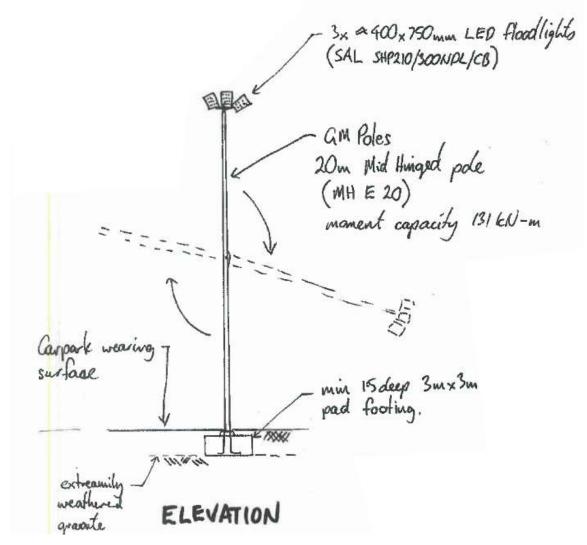


Figure 5 - Light Pole Details

3.2 Site Access, Construction Material Storage and Construction Timeframes

Access to the site is from the Alpine Way. Construction will occur in the summer season whilst the carpark is not in use which allows for construction material storage to occur within the car park.

The site will be security fenced.

3.3 Excavation

Minor excavation will be required for light pole footings (3mx3m pad footings) and approximately 50m of trenching for electricity and communication cables. This will all occur within the existing bitumen sealed carpark and paved areas adjacent to the terminal building.

Any fill required for the project will be sourced and transported from the existing stockpile in Ski Tube carpark D.

Appropriate sediment and erosion controls will be in place during construction and until areas are backfilled and patched with bitumen and paved areas made good.

A geotechnical assessment has been carried out and will be submitted with the development application.

3.4 Waste Management

Minimal waste will be generated by the development due to the minor nature of the works. All waste will be transported from site and disposed of at the Jindabyne Landfill.

3.5 Power and Communications

Power and communications cabling will be installed from the existing connections servicing the terminal building. Minor trenching will be required to take the electricity and communications infrastructure from the building to the light pole location. No augmentation of the existing electricity connection is required to facilitate the development. All works will be carried out in accordance with required standards by suitability qualified persons.

4 MATTERS FOR CONSIDERATION

4.1 Biodiversity and Impacts on Aquatic Ecosystems

There is no vegetation disturbance proposed to facilitate the installation of the light pole. The development is within and existing bitumen sealed carpark and paved area adjoining the terminal building.

There is an existing light pole in the general vicinity of the proposed development and there have been no recorded fauna impacts with respect to its operation.

The development is not adjacent to or adjoining a riparian area, no works are proposed which would impact on aquatic ecosystems.

It is therefore considered unlikely that the proposed development will have any adverse impacts on biodiversity or aquatic ecosystems.

4.2 Aboriginal Cultural Heritage

A search of the AHIMS database did not identify any recorded Aboriginal Cultural Heritage items in the area of the development. The land is not identified as "archaeologically sensitive land" on the State Environmental Planning Policy (Precincts-Regional) 2021 Kosciuszko Alpine Region Aboriginal Archaeological Heritage Map.

A due diligence assessment was carried out, and is attached in appendix C and based on the outcome of the assessment it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity, and the development can proceed with caution without applying for an Aboriginal heritage impact permit or the need to carry out further assessment via an Aboriginal Cultural Heritage Assessment Report.

The SEMP includes measures in the case of unexpected finds.

4.3 Historic Heritage

There is no historic heritage in the vicinity of the proposed development that would be adversely impacted by the installation of a light pole as proposed.

4.4 Construction Impacts

Due to the nature of the development, there will be limited construction impacts. Appropriate sediment and erosion control will be in place during construction and the areas made good prior to operation. Construction will occur at times where the limited noise and vibration can be managed appropriately to limit impacts on adjoining uses.

4.5 Geotechnical Considerations

The site is outside of the areas marked "G" on the Geotechnical Policy Map (see figure 6) and therefore does not require a geotechnical report, however a geotechnical inspection was carried out to assess the proposed footing design. The footings have been designed to reflect the comments in the inspection report. The inspection report is attached in Appendix D.

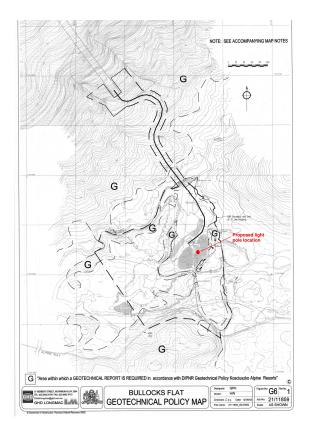


Figure 6 - Location of development on Geotechnical Policy Map

4.6 Visual Impacts

The light pole whilst 20m in height it has a narrow profile, is to be powder coated woodland grey as such it is not considered to be visually intrusive in the environment where it is to be installed. It is reasonably expected that a carpark will have infrastructure of this type erected. The LED lighting has been designed to comply with all required Australian Standards.

Due to the vegetation the boundaries of the property the visual impact of the new pole will be limited when viewed from the adjoining tourist accommodation.

4.7 Effects on Ski Resort Operation

The proposed development will have a positive impact on ski resort operation by providing additional lighting to an area of the carpark which is heavily used for guests and staff accessing Perisher via the Ski Tube.

4.8 Notification

The development will not require notification and or public exhibition as it is not within 50 metres of a tourist accommodation building.

4.9 Public Interest

It is in the public interest to provide a safe and secure environment for visitors and staff utilising the car park. The installation of additional lighting within the car park will allow for visitors and staff to locate and access their vehicles at night or at time of low light.

4.10 Social and Economic Impacts

It is considered that the social impact of the installation of additional lighting is a positive one. There are no outside economic impacts generated by the proposal.

5 STATUTORY CONSIDERATIONS

5.1 NSW Environmental Planning and Assessment Act 1979 – S4.15

Section 4.15 (1) of the Environmental Planning and Assessment Act lists the matters which must be taken into consideration by the consent authority when determining a development application. Table 6.1 lists these matters and provides a summary assessment of each of these matters including, where appropriate, a cross reference to the relevant sections in this report.

Table 1 - Environmental Planning and Assessment Act checklist

Matter	Impacts / comments
 (1)(a) the provisions of: (i) any environmental planning instrument (ii) any proposed instrument (iii) any development control plan (iiia) any planning agreement (iv) the regulations 	 (i) The development complies with the provisions of State Environmental Planning Policy (Precincts Regional) 2021 – Chapter 4 (ii) there are no proposed instruments applicable to the subject land. (iii) there are no adopted development control plans applicable to the subject land. (iiia) there are no know planning agreements relating to the subject land. (iv) The development application has been made in accordance with the requirements contained in the Environmental Planning and Assessment Regulation 2021.
(b) the likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	The likely impacts of the development have been outlined above.

(c) the suitability of the site for the development	The site is suitable for the development as proposed and matters concerning site suitability have been addressed above
(d) any submissions made in accordance with this Act or the regulations	As per the Community Participation Plan the development application will not be required to be placed on exhibition.
(e) the public interest	The assessment addresses the relevant requirements of Chapter 4 of SEPP (Precincts- Regional) 2021 and therefore considered to meet the public interest test.

5.2 State Environmental Planning Policy (Precincts Regional) 2021

The development is subject to the provisions of Chapter 4 – Kosciuszko Alpine Region, of the Precincts Regional SEPP.

ASSESSMENT OF THE RELEVANT PROVISIONS OF CHAPTER 4

PART 4.1 AIM AND OBJECTIVES OF CHAPTER

(1) The aim of this Chapter is to protect and enhance the Alpine Region by ensuring development is managed with regard to the principles of ecologically sustainable development, including the conservation and restoration of ecological processes, natural systems and biodiversity.

The proposed development will improve safety and security of persons accessing the Ski Tube at Bullocks Flat. The development is within an existing carpark and will cause no additional land disturbance minimising environmental impacts which can be further mitigated through the implementation of the Site Environmental Management Plan.

(a) to encourage the carrying out of a range of development to support sustainable tourism in the Alpine Region all year round, if the development does not result in adverse environmental, social or economic impacts on the natural or cultural environment of the Alpine Region, including cumulative impacts on the environment from development and resource use,

The provision of additional illumination in the Bullocks Flat carpark will support the safe use of the Ski Tube by guests and staff. The encouragement of use of the Ski Tube as a form of mass transit to Perisher is a key function in supporting the ongoing tourist development in the Perisher Range Resort area.

The construction of the light pole within an existing car parking area mitigates environmental impacts and has a positive social impact by improving safety for guests and staff.

The works will be managed appropriately to have regard for the principles of ecologically sustainable development.

The proposed development does not require any measures to mitigate environmental hazards that would impact on the conservation of the natural environment.

(b) to establish planning controls

Not applicable

(c) to minimise the risk to the community of exposure to environmental hazards, particularly geotechnical hazards, bush fires and flooding, by—

(i) generally requiring development consent on land in the Alpine Region, and

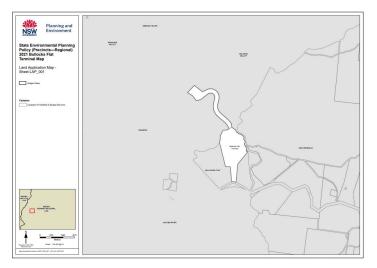
(ii) establishing planning controls for buildings to ensure the safety of persons using the buildings if there is a fire.

(c)(i) The application meets the intent of the objective as it is seeking development consent for the installation of a light pole.

(c)(ii) Not applicable as the objective relates to the preparation of planning controls.

4.2 Land to Which Chapter Applies.

The proposed development is within the Bullocks Flat Terminal Subregion.



4.3 Definitions

The proposed development is ancillary development to the operation of the Ski Tube, providing lighting to the carparking area servicing the train. The Ski Tube is defined in Schedule 4A – Dictionary to Chapter 4 as:

Skitube means the passenger train connecting Blue Cow Terminal, Bullocks Flat Terminal and Perisher Range Alpine Resort.

PART 4.2 PERMITTED OR PROHIBITED DEVELOPMENT

4.7 Land Use Table

The development proposed is ancillary to the operation of the Ski Tube which is a permissible use in the Land Use table and therefore is permitted development in the subregion.

Bullocks Flat Terminal

1 Permitted without consent

Nil

2 Permitted with consent

Advertising structures; Building identification signs; Business identification signs; Camping grounds; Car parks; Commercial premises; Community facilities; Depots; Emergency services facilities; Entertainment facilities; Environmental facilities; Environmental protection works; Fences; Helipads; Information and education facilities; Infrastructure facilities; Management trails; Medical centres; Monitoring stations; Places of public worship; Public utility undertakings; Recreation facilities (indoor); Recreation facilities (outdoor); Recreation infrastructure; Staff accommodation; Telecommunications facilities; **The Skitube**; Transport depots; Vehicle repair stations

3 Prohibited

Any development not specified in item 1 or 2

4.8 Subdivision

Not applicable

4.9 Demolition

Not applicable - No demolition is proposed to facilitate the development

4.10 Temporary Use of Land

Not applicable

PART 4.3 EXEMPT AND COMPLYING DEVELOPMENT

Not applicable - The development is neither exempt nor complying as such a development application has been lodged for approval.

PART 4.4 OTHER DEVELOPMENT CONTROLS

4.14 Development by Crown, public authorities, or Snowy Hydro

Not applicable

4.15 Development on land on Kosciuszko Road and Alpine Way

Not applicable – the development is not proposed on land identified in Schedule 16 of the National Parks and Wildlife Act 1974

4.16 Development near Kangaroo Ridgeline

Not applicable - this clause only applies to land identified as Kangaroo Ridgeline" on the State Environmental Planning Policy (Precincts—Regional) 2021 Charlotte Pass Alpine Resort Map. The proposed development is not on land identified in the subject map.

4.17 Classified roads

Whilst the subject lot does technically front a classified state road, being the Alpine Way, it is wholly within the lot and some 500m from the road. The objectives of the section are:

(a) to ensure that development does not compromise the effective and ongoing operation and function of classified roads,

(b) to prevent or reduce the potential impact of traffic noise and vehicle emissions on development adjacent to classified roads.

Due to the nature and scale of the development it will not compromise the effective or ongoing operation or function of the Alpine Way, nor will it generate traffic noise or vehicle emissions.

4.18 Bush fire hazard reduction

Not applicable

4.19 Public utility infrastructure

There is adequate provision of electricity supply to facilitate the development it will not require augmentation of any public utility infrastructure.

4.20 Conversion of fire alarms

Not applicable

4.21 Heritage conservation

Not applicable - There are no historic heritage items, aboriginal heritage items or places being impacted by this development. The SEE includes further information on Aboriginal Cultural heritage impact and historic heritage impact.

4.22 – 4.24 Conservation incentives, Eco-tourist facilities and Flood planning

Not applicable

4.25 Earthworks

Only minor ground disturbance is required for the installation of footings for the light pole and related trenching for electrical connections. All work is proposed to be performed in the existing bitumen sealed carpark and paved pedestrian areas.

The earthworks will not disrupt or have an adverse impact on drainage patters or the future development or redevelopment of the land.

The works will have no impact on adjoining properties, water courses or environmentally sensitive areas.

The soil for any backfilling will be sourced from and existing stockpile on the property.

Due to the location of the works and the extent proposed it is unlikely that there will be a likelihood of disturbing relics.

The SEMP will include the methods for erosion and sediment control proposed to mitigate any impacts from the works.

PART 4.5 DEVELOPMENT ASSESSMENT AND CONSENT

4.26 Master plans

The Snowy Mountains Special Activation Precinct Master Plan 2022 applies to the subject site.

4.27 Consultation with National Parks and Wildlife Service

Consultation will be carried out by the assessing officer in relation to this development application in accordance with these provisions.

4.28 Consideration of master plans and other documents

(1) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider the following—

(a) the aim and objectives of this Chapter set out in section 4.1

See consideration of the proposed development against the aim and objectives of Chapter 4 above

(c) a conservation agreement under the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth that applies to the land,

Not applicable there is no known conservation agreement applying to the subject land.

(d) the Geotechnical Policy — Kosciuszko Alpine Resorts published by the Department in November 2003,

A geotechnical inspection was undertaken, and recommendations made by JK Geotechnics (attached in appendix D).

(e) for development in the Perisher Range Alpine Resort—

(i) the Perisher Range Resorts Master Plan, published by the National Parks and Wildlife Service in November 2001, and

Bullocks Flat whilst referenced in the plan is outside of the immediate study area and is not subject to any specific provisions.

The plan however does acknowledge the significant role of the Ski Tube carpark in reducing the demand on parking in Perisher Valley. The further improvement by provision of additional lighting, of the guest and staff experience in the car park is considered to be consistent with the aims of the plan.

(e)(ii) the Perisher Blue Ski Resort Ski Slope Master Plan adopted by the National Parks and Wildlife Service in May 2002.

The proposed development is generally consistent with the Perisher Blue Ski Resort Ski Slope Master Plan.

(2) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider—

(a) a master plan approved by the Minister under section 4.26 that applies to the land,

Snowy Mountains Special Activation Precinct Master Plan 2022 applies to the land. The proposed development is consistent with the approved master plan (further consideration of the Master Plan is included in Appendix A).

4.29 Consideration of environmental, geotechnical, and other matters

(1) In deciding whether to grant development consent to development in the Alpine Region, the consent authority must consider the following—

(a) measures proposed to address geotechnical issues relating to the development,

The site is outside of the areas marked "G" on the Geotechnical Policy Map (see figure 6) and therefore does not require a geotechnical report, however a geotechnical inspection was carried out to assess the proposed footing design. The footings have been designed to reflect the comments in the inspection report. The inspection report is attached in Appendix D.

(b) the extent to which the development will achieve an appropriate balance between-

(i) the conservation of the natural environment, and

(ii) taking measures to mitigate environmental hazards, including geotechnical hazards, bush fires and flooding,

The SEE and associated application documentation addresses impacts to the natural environment and associated mitigation measures. The project will not increase the risk of environmental hazards, including geotechnical hazards, bushfires and flooding.

No vegetation removal will be required to facilitate the development.

(c) the visual impact of the proposed development, particularly when viewed from the land identified as the Main Range Management Unit in the Kosciuszko National Park Plan of Management,

The site is not visible from land identified as the Main Range Management Unit. Due to the minor nature of the development, it is not considered to have a visual impact on the Kosciuszko National Park.

(d) the cumulative impacts of development and resource use on the environment of the Alpine Subregion in which the development is carried out,

The site is attached to the Perisher Range subregion and is referenced in the plan for its provision of extensive car parking servicing Perisher Valley. The proposal is minor in nature and therefore will have little to no impact on resource use and will not have a negative cumulative impact on the Alpine Environment.

(e) the capacity of existing infrastructure and services for transport to and within the Alpine Region to deal with additional usage generated by the development, including in peak periods,

Due to the nature of the development, it will not generate additional usage of existing infrastructure including transport services.

(f) the capacity of existing waste or resource management facilities to deal with additional waste generated by the development, including in peak periods.

The proposal will not impact upon waste or resource management facilities.

(2) For development involving earthworks or stormwater draining works, the consent authority must also consider measures to mitigate adverse impacts associated with the works.

The minor earthworks required for the installation of footings and trenching for electricity and communications will have no adverse impacts that cannot be mitigated by the measures included in the SEMP.

(3) For development the consent authority considers will significantly alter the character of an Alpine Subregion, the consent authority must also consider—

(a) the existing character of the site and immediate surroundings, and

(b) how the development will relate to the Alpine Subregion.

It is not considered that the development will significantly alter the character of the subregion due to the nature of the proposal.

4.30 Kosciuszko National Park Plan of Management

(1) Development consent may be granted to development in the Alpine Region even if the application has not established that the development is consistent with the Kosciuszko National Park Plan of Management.

(2) This section does not prevent the consent authority from refusing to grant consent to development on the basis that the development is not consistent with the Kosciuszko National Park Plan of Management.

The proposed development is consistent with the relevant provisions of the Kosciuszko National Park Plan of Management.

5.3 Snowy Mountains Special Activation Precinct Master Plan

The proposal is consistent with Master Plan, a full assessment against the relevant provisions of the Master Plan is included in Appendix A

5.4 Environment Protection and Biodiversity Conservation Act (EPBC Act)

The factors which need to be considered under the Commonwealth *Environment Protection and Biodiversity Conservation Act (EPBC Act)* are listed in *Table 5.3* together with an assessment of each of these factors. None of these factors are considered to result in impacts which would be considered significant under the guidelines applying to the *EPBC Act*.

Table 2 – Environment Protection and Biodiversity Conservation Act checklist

Factor	Impacts / comments	
Matters of National Environmental Significance		
Any environmental impact on a World Heritage Property?	No impact	

Any environmental impact on a National Heritage Place?	No impact on the Australian Alps National Heritage Place.
Any environmental impact on wetlands of international importance?	No impact
Any environmental impact on Commonwealth listed species or ecological communities?	No impact
Any environmental impact on Commonwealth listed migratory species?	No impact
Does any part of the proposal involve a nuclear action?	No nuclear action
Any environmental impact on a Commonwealth Marine Area?	No impact
Impact on Great Barrier Reef Marine Park?	No impact
Impact on Commonwealth land?	No impact
Impact on the environment, from action taken by the Commonwealth?	No impact
Commonwealth heritage places outside of Australian jurisdiction?	No impact

6 CONCLUSION

The proposal for the installation of a light pole at Bullocks Flat (Skitube carpark A) is considered to comply with all provisions of relevant legislation and will have minimal impact on surrounding properties and uses and as such the development should be approved as proposed.

7 APPENDICES

APPENDIX	Α	SAP Master Plan Assessment Table
APPENDIX	В	Site Environmental Management Plan
APPENDIX	С	Aboriginal Cultural Heritage Due Diligence Assessment
APPENDIX	D	Geotechnical Inspection
APPENDIX	C	Aboriginal Cultural Heritage Due Diligence Assessment

Appendix A – SAP Master Plan Assessment Table

Snowy Mountains Special Activation Precinct Master Plan 2022

PROVISION	RESPONSE		
10 ALPINE PRECINCT PROVISIONS			
10.1 LAND USE	10.1 LAND USE		
 A. Development is to be permissible and consistent with the: Master Plan Precincts—Regional SEPP Alpine Development Control Plan Kosciuszko National Park Plan of Management National Parks and Wildlife Act 	Complies The development is permissible under the Precincts Regional SEPP and complies with the relevant provisions of all documents listed (Excepting the Alpine DCP which is yet adopted and as such is not a matter for consideration for this application).		
B. In considering the suitability of the development, the consent authority must be satisfied that the development meets the performance criteria and development controls in this Master Plan and in the Alpine Development Control Plan.	 Complies The development complies based on an assessment against the performance criteria of the Master Plan is carried out below. There is currently no Alpine Development Control Plan. 		
 C. Development consent can only be issued for development in the Alpine Precinct where: the uses will support the diversification of the Alpine Precinct's tourism offering and year-round economic viability. the uses will not compromise the environmental, heritage and cultural values of the Alpine Precinct. the uses will not exceed the established carrying capacity of the Alpine Precinct. 	 Complies The development is not for a new use, but for the provision of infrastructure to support the Skit Tube. An assessment of the impact of the development on the environment, heritage and cultural values which has demonstrated that the development will not compromise any of these factors. The development has no impact on carrying capacity as it does not relate to the provision of additional tourist accommodation. 		
D. The location of future development should align with the relevant structure plan and be focused on land marked 'Development area'. Where development is proposed on land outside these areas, additional technical investigation may be required.	Not applicable – there is no specific structure plan that relates to Bullocks Flat		

E Development for a second second second second state	Not employed a The development does not involve any managed accommendation
E. Development for new or upgraded accommodation	Not applicable- The development does not involve new or upgraded accommodation.
will meet the indicative sub-precinct yields and visitor	
thresholds set out in the Kosciuszko National Park	
Plan of Management and leasing arrangements.	
10.2 Alpine Resorts	
A. Development should contribute to visitor attraction.	Complies
and village experience through:	The development will contribute to the visitor experience by providing a better guest and staff experience for
i. the prioritisation of infill development.	those utilising the Ski Tube either at night or in time of reduced light.
ii. improvements to pedestrian and active transport	The development is wholly within an existing developed area and improves pedestrian access to the Ski
connections.	Tube. better facilities for staff that service these guests.
iii. creation and implementation of active street	Due to the nature of the development active street frontage requirements are not relevant in this case.
frontages.	
B. Development should integrate public transport	Not applicable
opportunities and should create gateways and nodes	
to create a sense of place and community in Alpine	
Resort sub-precincts.	
C. Development should provide a range of tourist	Not applicable
accommodation offerings and seasonal worker	
accommodation.	
D. Development should be designed to reduce on-	Not applicable – due to the minor nature of the addition it will not have a material impact on site power
site power consumption and improve environmental	consumption.
performance	
E. Development should be designed to contribute to	Not applicable – due to the nature of the development it cannot be designed to have a specific alpine
the alpine character of the Alpine Resorts and reflect	character. It is however proposed to be powder coated Woodland Grey to blend with the surrounding
the alpine landscape and natural environment.	environment.
10.3 Alpine Accommodation	
A – E	Not applicable – the proposed development does not include accommodation.
10.4 Alpine Experience	
A. Public transport or mass transit connections	Not applicable – due to the nature of the development.
should be integrated into the design of new	
developments, particularly in Alpine Resort and	
Alpine Accommodation sub-precincts.	
B. Transport development must provide safe, reliable	Not applicable - due to the nature of the development.
and accessible connections into and around the	
Kosciuszko National Park.	
C. Development should be designed and staged to	Not applicable- due to the nature of the development.
support and enable the ultimate growth of	
accommodation and attractions in the Alpine Region.	
accommodation and attractions in the Apline Region.	I

D. Development of new and upgraded shared trails and paths should provide appropriate facilities and amenities.	Not applicable - The proposed development does not include the construction of new or upgraded shared trails or paths.
E. Development should provide adequate car parking as part of a range of transport solutions (including the provision of accessible parking spaces).	Not applicable - The development will not generate the need for new carparking
F. Visitor attractions must be supported by appropriate amenities, facilities and car parking and must minimise its impact to the natural environment.	Not applicable – the development is not a visitor attraction
G. Visitor attractions should be designed and staged to support and enable the ultimate growth of attractions in the Alpine Region.	Not applicable – the development is not a visitor attraction
CHAPTER 11 ENVIRONMENT AND SUSTAINABILIT	Y
11.1 Biodiversity	
A. All development is to apply the avoid, minimise, and offset methodology.	Complies – The development has taken regard of this methodology. Due to the site location, there will be no impact on biodiversity.
B. Development is to avoid threatened ecological communities and threatened species habitat; such vegetation should not be removed. Development may occur in these areas if it is for essential infrastructure.	Complies – The development has taken regard of this methodology. Due to the site location, there will be no impact on biodiversity.
C. Development should be focused on colocation and infill to minimise biodiversity impacts	Complies – the development is considered to be infill as it is to be constructed within an existing carpark.
D. Development should be concentrated in and around already disturbed areas. Where possible, development should provide a buffer between areas of high ecological value and buildings and structures.	Complies – the development is to be constructed on existing disturbed bitumen sealed carpark. The development is outside of the surveyed area shown in Figure 50 of the Masterplan.
E. Development should consider the biodiversity impacts of bushfire asset protection zones (APZ) and associated vegetation management.	Not applicable – due to the nature of the development.
F. Development must offset any impacts to biodiversity through direct management measures within Kosciuszko National Park and should be related to the biodiversity impacted.	Not applicable – the development does not trigger the Biodiversity Offsets Scheme due to its location and extent.
G. Riparian corridors must be preserved while ensuring consistency with the proposed Flooding and Drainage Strategy for the Precinct.	Not applicable – the development has no impact on riparian corridors

H. Any revegetation or planting within Kosciuszko National Park should follow the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park	Not applicable – no revegetation is required as no vegetation is to be disturbed to facilitate the development. The areas will be backfilled, and bitumen sealed.
11.2 Geotechnical	
A. Development must address the requirements of the Geotechnical Policy – Kosciuszko National Park (DPNIR, 2003).	Complies – The development has addressed the requirements of the policy and a site inspection carried out. Results are attached in Appendix D.
B. Development must include an assessment of geotechnical risks.	Complies – The development has been reviewed by a Geotechnical Engineer and a site inspection report is attached in Appendix D.
C. Buildings and structures must be designed to accommodate the specific geotechnical risks identified for the site.	Complies – The development has been reviewed by a Geotechnical Engineer and the Structural Engineering drawings have been prepared taking into consideration the results of the Geotech testing on site.
D. Excavations required for new developments must consider the potential to cause widespread slope instability and ensure appropriate mitigation measures are implemented to minimise and manage risk.	Complies – only minor excavation is required to facilitate the development, there will be no impact on slope stability.
11.3 Flood Risk Management	
A. The Flood Planning Level is the 1% AEP plus 500mm freeboard to ensure consistency across the Precinct. Development must generally occur outside the Flood Planning Level unless it can demonstrate that risks can be suitably managed. This allows for the maintenance of flood function and to avoid adverse effects on flood behaviour to the detriment of other properties or the environment of the floodplain.	Not applicable – the development is not on flood prone land or within the Flood Planning Level.
B. Development within the Flood Planning Level	Not applicable – the development is not within the Flood Planning Level
C. Development within the Probable Maximum Flood area	Not applicable – There are no plans indicating the PMF for Bullocks Flat and due to the location of the site it would be unlikely that it would be subject to flooding.
D. Development should mitigate the impacts of local overland flooding through the provision of adequate site drainage systems, where possible	Complies – the development will have no impact on overland flooding.
E. Development must consider and plan for emergency evacuation situations to ensure the safety of all areas within the Probable Maximum Flood extent.	Not applicable – Whilst there is no PMF mapping for Bullocks Flat it would be very unlikely that the site would be impacted by a flood event that would require emergency evacuation.
11.4 Water Quality	

A. Maintain or improve the ecological condition of waterbodies and their riparian zones in catchments over the long term.	Not applicable – the development will have no impact on riparian environments.
B. Development in the Alpine Precinct should implement on-site water management and water quality systems through: i. the capture and re-use of water on-site. ii. the treatment of water on-site with any water discharged back into catchments having a neutral or beneficial effect on water quality. iii. incorporating water sensitive urban design principles into the development's-built form and landscaping, where possible	Not applicable - due to the size and nature of the development proposed.
C. The quality of stormwater discharged into receiving catchments must be pre-development quality or better in relation to pH, total suspended solids, total phosphorus, total nitrogen and gross pollutants.	Not applicable – due to the nature of the development there will be no stormwater required to be managed. Existing overland flow of the car park will not be impacted by the construction of the light pole.
D. The quality of water discharged into receiving catchments should maintain electrical conductivity levels. Water quality should aim to maintain an electrical conductivity below the 30 μ S/cm ANZG 2018 Guideline value for upland rivers of South-East Australia.	Not applicable – due to the nature of the development.
E. Monitor macroinvertebrates to ensure they are consistently within Band A of the NSW AUSRIVAS model	Not applicable - due to the scale of the proposed development
F. Erosion and sediment control should be managed during construction to ensure impacts to waterways are minimised in accordance with Managing Urban Stormwater Soils and Construction, also known as the Blue Book (current edition).	Complies – Sediment and erosion control measures will be in place in accordance with the SEMP for the minor ground disturbance associated with the development.
G. Discharge of wastewater and/or contaminated stormwater to watercourses or waterways is not permitted unless other specified in an environmental protection licence issued under the Protection of the Environment Operations Act 1997. Development must obtain the appropriate water licenses in accordance with the Water Act 1912 and the Water	Not applicable – due to the nature and scope of the development there will be no wastewater or contaminated stormwater generated.

Management Act 2000 and consider the relevant	
Water Sharing Plan	
11.5 Bushfire	
A. Development is to: i. minimise perimeters exposed	Not applicable – due to the nature of the development
to the bushfire hazard. ii. minimise vegetated	
corridors that permit the passage of bushfire towards	
development. iii. provide for the siting of future	
development away from ridge-tops and steep slopes,	
within saddles and narrow ridge crests. iv. ensure	
capacity of existing infrastructure (such as roads and	
utilities) can accommodate the increase in demand	
during emergencies as a result of the development.	
B. Asset Protection Zones are to be provided and	
maintained between a bushfire hazard and future	
development and are designed to address the	
relevant bushfire attack mechanisms.	
C. Adequate access is to be provided from all	
properties to the wider road network for park users	
emergency services and to provide access to hazard	
vegetation to facilitate bushfire mitigation works and	
fire suppression.	
D. Development is to minimise levels of radiant heat,	
localised smoke and ember attack through	
development design and siting.	
E. The subdivision of land and location of	
developments should consider the future uses of land	
and the inclusion of roads into Asset Protection Zones.	
11.6 Sustainability and Climate Change	
A. Development must be inclusive and sustainable	Not applicable – due to the particulars of the development proposed
and promote year-round use.	
B. Development should preserve the Precincts	Complies – the development will have minimal impact. Impact on biodiversity, landscape and cultural values
landscape, cultural, heritage and biodiversity values	have been addressed in the body of the SEE.
by avoiding and minimising impact.	
C. Development should support sustainable and	Not applicable – due to the scale and particulars of the development proposed
active transport opportunities and integrate open	
space.	

D. Development should comply with applicable sustainability tools and programs for design, construction and operation.	Complies – The development has been designed to use low energy light fixtures and complies with all relevant standards.
E. Consideration must be given to climate responsiveness and resilience. Climate change risks, hazard and opportunities must be considered in the design, construction and operation of development within the Precinct	Complies – Due to the nature of the development it will have little to no impact on climate responsiveness and resilience.
F. Operators, lessees and licensees within the Precinct must prepare and maintain an Environmental Management System in accordance with ISO14001:2015 – Environmental management systems and the requirements of the Plan of Management for Kosciuszko National Park	Not applicable – the EMS as described has yet to be finalised. The EMS is being prepared currently by NPWS to meet this standard as such the this requirement is currently not applicable.
12. PLACE AND LANDSCAPE	
12.1 Aboriginal Cultural Heritage	
A. Areas of Aboriginal cultural heritage (included as part of the environmentally sensitive areas map) should not be developed. Development may occur in these areas if it is for essential infrastructure and where further Aboriginal cultural heritage assessment will be undertaken to appropriately mitigate and manage any impacts to Aboriginal cultural heritage items, places or areas.	Complies –The land is not identified as "archaeologically sensitive land" on the State Environmental Planning Policy (Precincts-Regional) 2021 Kosciuszko Alpine Region Aboriginal Archaeological Heritage Map. A search of the AHIMS database did not identify any recorded Aboriginal Cultural Heritage items in the area of the development. A due diligence assessment was carried out, and is attached in appendix D and based on the outcome of the assessment it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity, and the development can proceed with caution without applying for an Aboriginal heritage impact permit or the need to carry out further assessment via an Aboriginal Cultural Heritage Assessment Report. The SEMP includes measures in the case of unexpected finds.
B. Aboriginal culturally significant places and sites should be integrated with areas of environmental significance and green space (where appropriate) across the Precinct. This may continue to evolve as greening opportunities across the Precinct are established	Not applicable - there are no aboriginal cultural significant places and sites impacted by the development.

C. Development is to be assessed	Not applicable – Bullocks Flat is not included as a mapped area in the Master Plan.
against the mapped zones of archaeological potential	
as required by the following:	
i. development within areas identified as 'disturbed	
land' do not require any further investigation beyond	
considering the potential for subsurface	
archaeological deposits. If current disturbances are considered to cover intact archaeological deposits,	
further investigation should take place that may	
include test excavation. Should development	
encounter any unexpected finds during construction,	
the procedures under the relevant unexpected finds	
protocol should be followed.	
ii. works within areas identified as "moderate ACH	
potential' or 'high ACH potential' should be avoided.	
Where development will impact these areas, further	
Aboriginal cultural heritage assessment must be	
undertaken. This assessment should include a visual	
inspection, possibly test excavation if warranted, and	
participation from the Aboriginal community.	
D. Development planned on land in which an	Not applicable – AHIMS search, and due diligence process undertaken and concluded that there were no
Aboriginal object is located should be supported by a	likely impacts and as such an ACHAR was not required for this development.
heritage impact assessment which should be	
prepared to assess the extent to which a proposed	
development would harm Aboriginal objects.	
E. If impact to an Aboriginal object is unavoidable, an	Not applicable – no AHIP required.
Aboriginal Heritage Impact Permit (AHIP) under Part	
6 of the National Parks and Wildlife Act 1974 would	
be required.	
12.2 Historic Heritage	Net employed a Dulley le Elet is not included on a many set anno is the Master Disc
A. Development in areas defined as 'disturbed land'	Not applicable – Bullocks Flat is not included as a mapped area in the Master Plan.
can occur without further historic heritage	
investigation however must consider neighbouring	
heritage items and broader heritage values.	Nat applicable — no listed items of historia baritage are leasted on the site
B. Development on land where a heritage item is situated, that is a heritage item or is on land adjacent	Not applicable – no listed items of historic heritage are located on the site
to a heritage item must prepare a statement of	
heritage impact.	
nemaye impaci.	1

C. Development in areas defined as 'high risk' or	Not applicable – Bullocks Flat is not included as a mapped area in the Master Plan.
'moderate risk' requires further heritage assessment	
where the development is likely to materially have a	
major affect on a heritage item or its value.	
D. Development in areas defined as 'high risk' or	Not applicable – Bullocks Flat is not included as a mapped area in the Master Plan.
'moderate risk' requires further heritage assessment	
where the development is likely to materially have a	
minor affect on a heritage item or value.	
E. Where development is likely to materially have a	Not applicable – provisions B, C & D do not apply to the development therefore consideration of this
major effect on a heritage item or value, further	provision is not required.
heritage assessment is required.	
F. Where development will have minor effect on a	Not applicable – provisions B, C & D do not apply to the development therefore consideration of this
heritage item or value, a heritage assessment may	provision is not required.
be required.	
G. Development that is likely to have a materially	Not applicable – provisions B, C & D do not apply to the development therefore consideration of this
major or minor effect on a heritage item or its value	provision is not required.
H. Development adjacent to a heritage item should	Not applicable – there are no heritage items in proximity of the site that would be impacted by the
ensure impacts to the heritage item are minimised,	development.
including through the provision of appropriate	
curtilages. There may be opportunities to reduce the	
curtilage to some heritage items if it can be	
demonstrated the development will not have a	
significant impact on the heritage item or its value.	
I. Heritage items must be used for purposes that are	Not applicable – the site does not include a heritage item
appropriate to their heritage significance, including	
adaptive re-use where appropriate.	
J. Development is to ensure long-term heritage	Not applicable – the site does not include a heritage item
conservation outcomes are retained or interpreted to	
reflect the history of heritage items and places.	
K. Development should through redevelopment or	Not applicable – the site does not include a heritage item
upgrades remove inappropriate or unsympathetic	
alterations and additions to heritage items and	
reinstate significant missing details and building	
elements, where possible.	
12.3 Landscape, Character and Open Space	
A. Development should be designed to sensitively	Complies – Due to the nature of the development it must meet specific height and size requirements
integrate into the landscape and should respond	however it is proposed to be a colour that responds to the surrounding environment

appropriately to the topography and climate of the Alpine Precinct.	
B. Development should protect, conserve and enhance the Alpine Precinct's natural environment and create a green infrastructure network, where possible.	Not applicable - due to the scale, size, and nature of the proposed development
C. Landscaping and public open spaces should include plantings of native species found in surrounding plant communities, which aim to achieve the re-establishment of biodiversity in addition to aesthetic appeal and enhancement of the functionality of an area.	Not applicable - no landscaping is proposed due to the location of the development within an existing car park.
D. Revegetation and new plantings should follow the Rehabilitation guidelines for the Resort Areas of Kosciuszko National Park	Not applicable – no revegetation is required as no vegetation will be impacted by the development.
E. Development should integrate stormwater management infrastructure with open spaces, where possible.	Not applicable - due to the scale, size, and nature of the proposed development
12.4 Built Form	
General criteria for all development in the Alpine Region	n
A. Buildings should be efficient, well designed, and successfully integrated with the surrounding landscape.	Not applicable – the development is not a building but a structure.
B. Site earthworks must respond to local topography and geotechnical characteristics and be appropriate for the intended land use	Complies – the footings proposed respond to the geotechnical characteristics of the site
For village centres and public domain	
A. Development should create an integrated streetscape where active frontages promote movement between the private and public realms.	Not applicable - due to the nature and scale of the development
B. Building entries should connect to an accessible (providing equitable access to all pedestrians) pedestrian network through design features, wayfinding, and landscape treatments	Not applicable - due to the nature and scale of the development
C. Development should integrate and provide public seating, shelter and lighting to contribute to increased activity and safety in the public realm.	Not applicable - due to the nature and scale of the development

 D. Development should provide human-scale buildings ensuring building envelopes allow adequate solar access and views, including ensuring significant views to natural features are protected. E. Development should provide for year-round weather protection that reduces the impacts of wind 	
solar access and views, including ensuring significant views to natural features are protected. E. Development should provide for year-round	
views to natural features are protected. E. Development should provide for year-round	
E. Development should provide for year-round	
weather protection that reduces the impacts of wind	Not applicable - due to the nature and scale of the development
weather protection that reduces the impacts of white	
and snow accumulation in winter and provides	
adequate shade in summer.	
F. Development should provide clearly defined and	Not applicable - due to the nature and scale of the development
separate pedestrian and vehicle entries to minimise	
conflicts.	
G. Development should allow for snow clearing and	Complies – the development will not impact on the ability to clear snow.
adequate interface with oversnow vehicles, where	
appropriate.	
13. TRANSPORT AND INFRASTRUCTURE	
13.1 Transport network	
A. Transport infrastructure should integrate the public	Not applicable - due to the nature and scale of the development
transport network with the existing road network.	
B. Development must provide operational access and	
egress for emergency services and occupants	
C. Development should integrate active transport	
connections that promote movements between the	
Alpine resorts, where possible.	
D. New development must provide and integrate new	
technologies, such as electric vehicle charging and	
electronic checkpoints, where possible.	
13.2 Utilities, services and infrastructure	
A. Development within the site must have access to	Complies – The development will be connected to existing electricity and communications infrastructure.
water, wastewater, digital connectivity and	
water, wastewater, digital connectivity and	
telecommunications, energy and drainage	
telecommunications, energy and drainage	Complies – the development will connect to existing services at the Ski Tube Terminal.
telecommunications, energy and drainage infrastructure. B. Utilities and services must be integrated with existing infrastructure and services, where possible	Complies – the development will connect to existing services at the Ski Tube Terminal.
telecommunications, energy and drainage infrastructure. B. Utilities and services must be integrated with	Complies – the development will connect to existing services at the Ski Tube Terminal. Not applicable – no additional utility or service connections are required to facilitate the development.
telecommunications, energy and drainage infrastructure. B. Utilities and services must be integrated with existing infrastructure and services, where possible	
 connections that promote movements between the Alpine resorts, where possible. D. New development must provide and integrate new technologies, such as electric vehicle charging and electronic checkpoints, where possible. 13.2 Utilities, services and infrastructure A. Development within the site must have access to 	

D. Infrastructure and services must be designed to provide for the ultimate growth and development in Alpine Resorts.	Not applicable - due to the nature and scale of the development.
E. Development should provide and integrate water cycle management and renewable energy solutions into the design of buildings and structures, where possible	

Appendix B Site Environmental Management Plan

PROJECT & EMERGENCY CON	тастя			
Project Name	Installation of Light Pole – Bullocks Flat			
Perisher Project Manager	David Rowson – 02 6459 4407	-	6 761	
Perisher Operations	Mountain Office - 02 6459 4408		ent Act	
Perisher Environmental Manager	Rhia Martin – 02 6459 4487	- 	lss ess m	
Perisher HSE Officer	Tilka Hassing – 02 6459 4504	anning astructur	g and A 122	
Emergency	000	F Pl	Planning and 24/2122	470
DPIE	Sarah Collum – 02 6450 5543	ent of and In	n No	20 May 2024
EPA	131 555	Dep artm Housing	Environ olicatio	. 5
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ENVIRONMENTAL MANAGEME	NT MEASURES		ssued under the Environmenta Approved Application No	Signed
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ENVIRONME			
PRIOR TO CON			
Induction	• All project staff to be made aware of disturbance footprint and environmental safeguards prior to works commencing.		
Access	 Fence off all approved construction areas Machinery from offsite to be cleaned prior to accessing site All access to site via the Alpine Way to the Bullocks Flat Car Park 		
Flora & Fauna	• All works are to be contained within the carpark with no impact on adjoining vegetated or landscaped areas.		
Storage	• All equipment to be stored in the bitumen sealed car park, no storage of equipment or machinery under trees or on native vegetation.		
Disturbance to Soil	Sedimentation and erosion controls to be installed in areas likely to experience soil loss into the surrounding environment		
DURING CONS	TRUCTION		
Unexpected finds	 Should any relic be uncovered during excavation, works are to cease and contact be made with NSW Heritage and NSW National Parks and Wildlife. Instructions will be provided by the appropriate authority prior to works recommencing on site. Should human remains be found all works are to cease and contact made with the police. 		
Disturbance to Soil	 For erosion control, sediment fencing is to be used Erosion and sedimentation controls shall be monitored & maintained daily and immediately following a rainfall event 		
Flora & Fauna	 No unapproved removal or disturbance of native vegetation Refuel away from areas of native vegetation No storage of material beneath the canopy of trees or on native vegetation Any excavations left open overnight will be left such that any fauna are able to escape easily 		
Machinery / Fuel	 Spill kits shall be readily accessible Spills of any liquids shall be controlled and cleaned up immediately No maintenance other than emergency repairs shall be undertaken on site. 		
Work Hours	Limit work to approved hours only (daylight)		

Waste	All litter and waste to be contained and removed from site regularly		
FOLLOWING CONSTRUCTION			
Stabilisation & revegetation	 All disturbance to be stabilised immediately as works cease. All disturbed areas to be filled and surface to be reinstated as previously constructed. No excavated areas are to remained open and unsealed upon completion of works. 		
Disturbance to Soil	All erosion and sedimentation controls to be removed from site once ground has stabilised		

Appendix C Archeological Due Diligence

Project: Bullocks Flat – Light Pole Installation

The due diligence assessment below is taken from the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, DECCW 2010. The assessment was undertaken by Sophie Ballinger, Mountain Planning Manager for Perisher Resort, Feburary 2024

Generic Due Diligence Process

Step 1 - Will the activity disturb the ground surface?

Whilst minimal there will be ground disturbance to facilitate the development. The disturbance will be limited to 3x3x1.5m footing excavation and 50m of trenching through existing paved areas and carpark. There are no culturally modified trees within the development site.

Step 2a - Search of AHIMS database

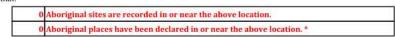
An AHIMS search was undertaken on the subject lot which has shown, no aboriginal sites or places are recorded or declared in or near the location. A copy of the search result is reproduced below:

AHIMS Web Service search for the following area at Lat. Long From : -36.4453. 148.4386 - Lat. Long To : -36.441. 148.4463. conducted by Sophie Ballinger on 17 August 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:



2b – Is the activity in an area where there are landscape features which indicate the presence of Aboriginal objects.

The activity is not within 200m of waters, and the land on which the light pole is proposed to be erected and where trenching is to occur is within an existing bitumen sealed carpark. As such is considered to be works undertaken on "disturbed land".

Conclusion

Based on the outcomes of steps 2a and 2b it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity, and the development can proceed with caution without applying for an AHIP.

Appendix D – Geotechnical Assessment



Date: 13 February 2020 Ref: 32997RH SR

Site Report

Perisher Blue Pty Ltd

Attention: Mr David Rowson Email: <u>David.Rowson@perisher.com.au</u>

GEOTECHNICAL INSPECTION PROPOSED 20m HIGH LIGHT TOWER BULLOCKS FLAT CAR PARK, KOSCIUSZKO NATIONAL PARK, NSW

As requested, our Senior Associate Geotechnical Engineer, Mr Adrian Hulskamp, visited the above site on 11 February 2020, to inspect the drilling of one borehole at the proposed light tower location. The location of the light tower, which was towards the middle of the car park, was marked out by others prior to our arrival on site.

From an email sent to us on 24 January 2020 by Mr Linden Coot of John Skurr Consulting Engineers, we understand that the proposed light tower is to be supported by a bored pier.

The borehole was drilled using a 450mm diameter pendulum auger fitted to a small excavator. A summary of the subsurface conditions encountered in the borehole is tabulated below:

0.4	Asphaltic Concrete surfacing (20mm thick) over
	roadbase over FILL: Sandy gravel, fine to coarse grained, grey. Dry.
0.8	RESIDUAL Silty CLAY (CH): high plasticity, brown. Very Stiff strength. w >PL Hand Penetrometer readings, 350kPa, 300kPa.
3.0	Extremely Weathered granite: Sandy CLAY, medium plasticity, light orange brown and light grey, fine grained sand, with silty CLAY bands. Very Stiff to Hard strength. Hand Penetrometer readings, 380kPa, 400kPa, 450kPa. No increased drilling resistance noted END OF BOREHOLE AT 3.0m DEPTH (Effectively the limit of reach). 'DRY' during, and on completion of, drilling



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We note that extremely weathered granite had weathered to such an extent that it had soil properties, despite the mass structure and material texture appearance of the original rock still being visible.

Based on the subsurface conditions encountered in the borehole, construction of a bored pier would be appropriate, and we recommend that the design of the bored pier be based on the following:

- An undrained shear strength (S_U) of 150kPa below 1.5m depth, due potential shrink-swell effects. The upper 1.5m of embedment should be ignored.
- Ultimate and allowable end bearing pressures of 1,350kPa and 450kPa, respectively, provided the length to diameter ratio of the pier is greater than 4, and the founding depth of the pier is greater than 2.0m below existing surface levels.
- Ultimate and allowable shaft adhesion values of 60kPa and 20kPa, respectively, in compression, below 1.5m. For uplift, these adhesion values should be halved.

We note that if a pier deeper than 3.0m is required, then further geotechnical advice should be sought to discuss the footing design, in case higher strength granite bedrock is encountered, as there may be potential drilling difficulties achieving the required pier depth and strain incompatibility with the overlying soils and extremely weathered rock.

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If you require further information, please do not hesitate to contact the undersigned.

Regards For and on behalf of JK GEOTECHNICS

Adrian Hulskamp Senior Associate I Geotechnical Engineer

Reviewed by:

Nick Smith

Senior Associate | Geotechnical Engineer

32997RH SR

JKGeotechnics