PastTraces Heritage Consultants

Aboriginal Cultural Heritage Due Diligence Assessment

Mt Perisher Chairlift Redevelopment Perisher Ski Resort

Revised Report Prepared for Perisher Ski Resort

10 June 2020

NSW GOVERNMENT | Planning, Industry & Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 10115

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Signed MB

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CONTENTS

EXECUTIVE SUMMARY i

1 INTRODUCTION 1

1.1 PROJECT OBJECTIVES 2

1.2 ABORIGINAL CONSULTATION 2

2 DESKTOP ASSESSMENT RESULTS 5

2.1 AHIMS SEARCH 5

2.2 ABORIGINAL GROUPS WITHIN THE PROJECT AREAS 6

2.3 PREVIOUS HERITAGE STUDIES 6

2.4 PREDICTIVE MODEL 11

2.5 LANDFORM AND DISTURBANCE LEVEL ASSESSMENT 14

3 FIELD SURVEY RESULTS 16

3.1 GROUND SURFACE VISIBILITY 16

3.2 SOILS AND VEGETATION 16

3.2.1 Disturbance 18

3.2.2 Top Station 18

3.2.3 Chairlift Alignment/snowmaking lines/uphill safety LINE (SLOPES) 20

3.2.4 Bottom Station 25

3.3 HERITAGE FINDINGS 28

3.3.1 Aboriginal Heritage Sites 28

3.3.2 Areas of Potential Archaeological Deposit (PAD) 28

3.3.3 Summary 28

4 IMPACT ASSESSMENT 30

4.1 OVERVIEW 30

4.2 TOP STATION 31

4.3 MID SLOPE 31

4.4 BOTTOM STATION 31

4.5 SUMMARY 32

4.6 RECOMMENDATIONS 34

5 REFERENCES 35

FIGURES

Figure 1. Location of project area in regional context 3

Figure 2. Detail of proposed works 4

Figure 3. Location of AHIMS sites in vicinity of project area 8

Figure 4. NOHC 2000 predicted archaeological potential 13

Figure 5. Location of works Top Station 19

Figure 6. Location of works amidst slopes. 22

Figure 7. Location of works Bottom Station 27

Figure 8. Flowchart of Due Diligence process 33

ABBREVIATIONS

ADG – Australian Geodetic Grid

AHIMS – Aboriginal Heritage Information Management System

DECCW – Department of Environment, Climate Change and Water (now DPIE)

DPIE – Department of Planning, Industry and Environment (formerly OEH)

GDA –Geodetic Grid of Australia

LALC – Local Aboriginal Land Council

PAD – Potential archaeological Deposit

EXECUTIVE SUMMARY

This revised report provides Aboriginal heritage due diligence advice for the proposed replacement of the Mt Perisher double and triple chairlifts with a new detachable chairlift and associated upgrade works. The proposed alignment will generally follow the existing triple chair alignment, terminating 10m to the north, with a chair shed integrated into the new bottom station. A new top station is proposed to be located above the current double chairlift top station to provide increased connectivity options.

The area of the proposed works has been highly impacted by the construction of the current chairlifts, associated infrastructure, access roads and ongoing use of the mountain. The study area is shown on Figure 1 in a regional context with details of the proposed works in Figure 2 and Appendix A.

This Due Diligence Aboriginal heritage assessment has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010a).

The proposal would involve the following impacts:

- Removal of existing chairlift and towers
- Construction of new towers and installation of chairlift
- Connection to infrastructure, such as electricity
- Relocation of infrastructure, such as snowmaking and Eyre T-bar top station bullwheel
- Upgrading of access roads
- Construction of skier bridges at bottom station
- Construction of new bottom and top stations
- Construction of a culvert over Perisher Creek in existing roadway.
- Inclusion of an additional tower, adjoining previous Tower 9, making it a combined tower 9 & 10
- Extension of the chair shed 5m up-hill into the disturbed slope
- Removal of existing underground fuel tank at the base of the current triple chair bottom station.

No Aboriginal heritage sites or areas of Potential Archaeological Deposit (PAD) were identified within the project area based on a review of previous reports, predictive mapping for the Perisher Ski Fields and field survey of the project area.

Field survey was undertaken across the project area in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b). The field survey covered areas of access road, building envelopes (top and bottom stations), tower footings and skier bridges. Ground visibility was moderate to low at the time of field survey, with no heritage sites being identified. Based on degree of slope and prior levels of disturbance no areas of high or moderate potential for unrecorded sites were identified within the project area.

As a result of the field survey and background research completed for the project, the following recommendations have been developed:

- The development proposal should be able to proceed with no additional archaeological investigations. No areas of potential archaeological deposits or heritage sites have been identified within the development area based on the degree of prior impacts and the potential for Aboriginal heritage objects within the development area has been assessed as low.
- One area of deep subsurface deposits is located in the vicinity of the bottom station, where a skier bridge is to be located. No excessive soil movement is anticipated, but if required to provide a level footing would be minor, surficial, and will not affect the subsurface potential or deep soils in this area. As any potential impacts will not affect the deeper deposit, no further works are required.
- All Aboriginal objects are protected under the *NSW National Parks and Wildlife Act 1974*. It is an offence to disturb an Aboriginal site without a consent permit issued by the NSW Department of Planning, Industry and Environment (DPIE). Should any Aboriginal objects be encountered during works then works must cease and the find should not be moved until assessed by a qualified archaeologist.
- In the unlikely event that human remains are discovered during the construction, all work must cease. DPIE, the local police and the appropriate LALC should be notified. Further assessment would be required to determine if the remains are Aboriginal or non-Aboriginal.
- Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation.

1 INTRODUCTION

This revised report provides Aboriginal heritage due diligence advice for the proposed replacement of the Mt Perisher double and triple chairlifts with a new detachable chairlift and associated upgrade works. The proposed alignment will generally follow the existing triple chair alignment with a chair shed integrated into the new bottom station. A new top station is proposed to be located above the current double chairlift top station to provide increased connectivity options.

The area of the proposed works has been highly impacted by the construction of the current chairlifts, associated infrastructure, access roads and ongoing use of the mountain. The study area is shown on Figure 1 in a regional context with an overview of the proposed works in Figure 2. Detailed plans for the project are attached at Appendix A.

This Due Diligence Aboriginal heritage assessment has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010a).

The proposal would involve the following impacts:

- Removal of existing chairlift and towers
- Construction of new towers and installation of chairlift
- Connection to infrastructure, such as electricity
- Relocation of infrastructure, such as snowmaking and Eyre T-bar top station bullwheel
- Upgrading of access roads
- Construction of skier bridges at bottom station
- Construction of new bottom and top stations
- Construction of a culvert over Perisher Creek in existing roadway.
- Inclusion of an additional tower, adjoining previous Tower 9, making it a combined tower 9 & 10
- Extension of the chair shed 5m up-hill into the disturbed slope
- Removal of existing underground fuel tank at the base of the current triple chair bottom station.

These works are high impact and would have a negative impact on any Aboriginal heritage located within the project boundary. Aboriginal heritage sites may be located on the surface or subsurface in areas of high potential for the preservation of archaeological remains of past usage by Aboriginal groups.

To assess the potential impacts of the proposed works on Aboriginal heritage this Due Diligence Heritage Assessment has been undertaken.

This report, field survey and associated research has been conducted in accordance to the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a).

1.1 PROJECT OBJECTIVES

The due diligence assessment is being undertaken to complete the following objectives:

1. Review of the NSW Department of Planning, Industry and Environment (DPIE), Aboriginal Heritage Information Management System (AHIMS), to identify any recorded heritage sites within the project area.
2. Review of previous reports in area to develop predictive model of site location
3. Assess landforms present in project area against predictive model to determine potential for heritage sites and determine level of disturbance
4. Complete site visit to visually inspect impact areas or areas assessed as holding potential based on predictive model. The site visit will also document levels of disturbance within project area.
5. Complete due diligence report with management recommendations to avoid or minimise impacts within the project area.

1.2 ABORIGINAL CONSULTATION

Consultation with the Aboriginal community is not a requirement of the Due Diligence Code and this Due Diligence assessment has been undertaken without consultation with the local Aboriginal community or the Local Aboriginal Land Council (LALC). If impacts to Aboriginal heritage are found to occur as a result of the development then consultation will be undertaken with the LALC and the wider Aboriginal community as required by NSW Dept of Planning, Industry and Environment (DECCW 2010c).

Figure 1: Regional Context

Legend

Study Area

N

1:50,000

0 0.5 1 2

Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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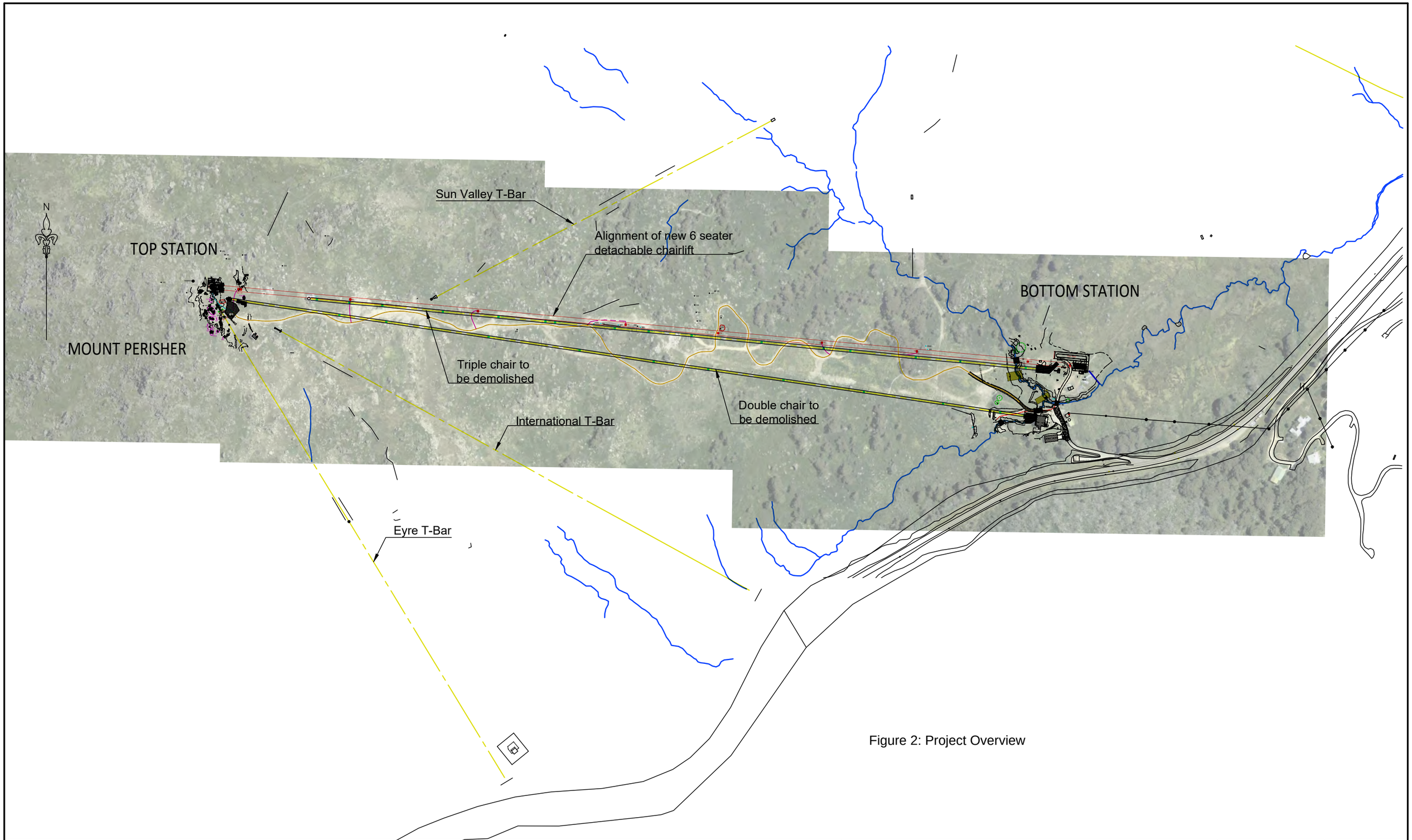

Figure 2: Project Overview

CLM CiViL
CLM CiViL Engineering
40 Zanthus Drive
BROULEE NSW 2537
PH: 0427 886 623

dabyneplanning

perisher

JOB NAME:	Mount Perisher Chairlift Project	ISSUE:	DA
LOCATION:	Mount Perisher, Kosciuszko Road Perisher Valley NSW 2624	DATE: 30/10/2019	
DESCRIPTION:	New 6 seater detachable chairlift	JOB NUMBER	SHEET
DRAWING:	DA Plans - Location Plan	T-106	1 of 11

2 DESKTOP ASSESSMENT RESULTS

2.1 AHIMS SEARCH

A search of the DPIE AHIMS database was undertaken on the 9th April 2019 covering the 1km surrounding area centred on the project area. The extensive search revealed no previously recorded heritage sites within the project area with 12 sites within the wider search area. Five areas of Potential Archaeological Deposit (PAD) have been recorded within the extended search area, but none within the project area.

The sites located in the wider search area (PADS) conform to the wider site predictive model for the Perisher Ranges developed by Navin Officer Heritage Consultants (NOHC) in 2000. This model predicts a site location model of small sites located on level areas of crest or ridgeline or within low gradient slopes in sheltered positions in well drained contexts. Sites are usually in scattered woodland environments rather than heath vegetation. This predictive model is discussed in more detail in Section 2.4. The location of previously recorded sites and areas of PAD are provided in Table 1 and shown on Figure 3 in relation to the project area.

Table 1. AHIMS Site Details

Site ID	Site name	Datum	Zone	Easting	Northing	Site features	Report
61-3-0112	Perisher View PAD 1	GDA	55	626687	5969952	PAD	NSW Archaeology 2005
61-3-0008	Perisher Gap;	AGD	55	624800	5968700	Artefact : -	Flood 1971
61-3-0101	Perisher Blue 4	AGD	55	625140	5970350	Artefact : 10	NOHC 2000
61-3-0100	Perisher Blue 3	AGD	55	625300	5970320	Artefact : 3	NOHC 2000
62-1-0227	Perisher Blue 2	AGD	55	625490	5970110	Artefact : 12	NOHC 2000
61-3-0098	PRTL10 Perisher South, Rock Creek	AGD	55	626296	5969463	PAD	NOHC 2000
61-3-0113	Porcupine Walking Track	AGD	55	626330	5969150	Artefact : -	Mr.Edward Clarke
61-3-0099	PRTL11 Perisher South	AGD	55	626444	5969537	PAD	NOHC 2000
61-3-0094	PRTL3 Mount Pier South Spurline	AGD	55	626574	5970444	PAD	NOHC 2000

Site ID	Site name	Datum	Zone	Easting	Northing	Site features	Report
61-3-0074	The Perisher Range Test Location No.3	AGD	55	626700	5970500	Artefact : 6	NOHC 2000
61-3-0107	PRTL3	AGD	55	626750	5970600	Artefact : 11	Southern Cross Heritage 2003
61-3-0093	PRTL2 Pipers Gap Slope	AGD	55	626926	5970796	PAD	NOHC 2000

2.2 ABORIGINAL GROUPS WITHIN THE PROJECT AREAS

Three main Aboriginal language groups have been recorded within the Snowy Mountain ranges consisting of the Wolgal, Djilamatung and Ngarigo (Tindale 1974). Ethno historical records from the 19th century record these groups as having close social and cultural links and annual inter-tribal gatherings within the Highlands (Howitt 1904:512, 565). Groups from further afield and from the western areas also participated in some of these ceremonies (Flood 1980:72) including the annual Bogong Moth gatherings which focused on the high peaks and were accessed along broad ridgelines and spurlines.

2.3 PREVIOUS HERITAGE STUDIES

A number of heritage assessments have been undertaken for the Perisher Snowfields and Range. These studies have been commissioned due to the infrastructure required for the Perisher Snowfields and the surrounding villages. The studies most relevant for the current project are briefly summarised below to provide a context for the site predictive model and landform assessment for the project.

Jo Flood (1971, 1980) undertook for her PhD thesis the most comprehensive study of the NSW Alpine areas. Flood concentrated on the annual Bogong Moth gatherings, when Aboriginal people visited the peaks in numbers. She identified a number of small artefact scatters within the Perisher Valley which she interpreted as a trail of sites leading from Jindabyne to the Rams head range (1980:192). Flood concluded that Aboriginal people only inhabited the upper Alps during the summer months with larger sites at lower elevations such as the Snowy River Valley (1980:194).

Flood developed the following site locational model:

- Sites were located within one kilometre and most within 100m of a water source
- Sites will be located on well drained ground with generally easterly or northerly aspects for shelter
- Sites must be close to food resources, which was probably a major factor in campsite selection (1980:158)

Gerring (1982) completed surveys for the Skitube development along the banks of Perisher Creek and the Mt Piper spurline. No sites were identified, though thick vegetation and low visibility were noted. The area was considered to hold low potential for unrecorded sites.

Following from this, Paton and Hughes (1984) completed a survey of areas classified as holding potential based on predictive modelling (following Flood) that were to be disturbed by the development of the Mt Blue Cow Resort. The areas considered to hold potential were in high altitude locations, around granodiorite tors and possible Bogong Moth sites. No sites were found but low visibility was noted.

NOHC (1989) surveyed the ski slope development on the southern spurline of Mount Perisher. Low visibility with the heath vegetation was noted and no sites or areas of potential were located.

Kinhill (1997) completed a report for the Perisher Village Master Plan, which surveyed a wide range of landforms within a large area of 622ha. Only a small proportion of this area was ground truthed by foot survey. Low visibility was again noted and no sites or areas of potential were recorded.

Grinsbergs (1997) undertook a survey for the Perisher Valley Sewerage Treatment Plant augmentation works. No sites were located and it was considered that due to high levels of previous disturbance no areas of potential were present within the project area.

NOHC 2000 were engaged to develop a model of Aboriginal site location for the Perisher Ranges for the NSW National Parks and Wildlife Service. The modelling was based on a sampling strategy as not all areas were visited or tested, but were extrapolated from the testing data. Based on the results from a program of subsurface testing across different landform variables a predictive model based on contour and slope gradient was developed and sensitivity mapping provided. The sensitivity mapping utilised contours as the main determinant for landforms with archaeological potential.

NOHC found that most sites were low density, that they were present in scattered woodland contexts with grass understorey in sheltered positions from prevailing winds, on relatively level ground and in well drained contexts. Quartz was the predominant material for stone artefacts in all locations. They also concluded that heath vegetation or slopes held low potential for site locations. Larger sites would be located on ridge line crests or in valley floor contexts in sheltered positions.

Southern Cross Heritage (2001) completed an archaeological investigation at Perisher for the installation of a proposed domestic water supply augmentation works for the NPWS. Following on from NOHC 200 Barber found that the majority of the surveyed areas held low archaeological potential based on their topography and slope gradient. Two areas on the spur line crest were then subsurface tested but no cultural material was identified. One testing area was on the crest of a spurline, level and held woodland with heath understory. No cultural material was identified by the subsurface program. This landform is comparable to the current project area.

In 2002 Southern Cross Heritage undertook the assessment for the upgrade to the Perisher front valley chairlift. The project was found to have nil impacts with all works confined within the current disturbed areas, which were considered to have been impacted to the degree that no potential remained.

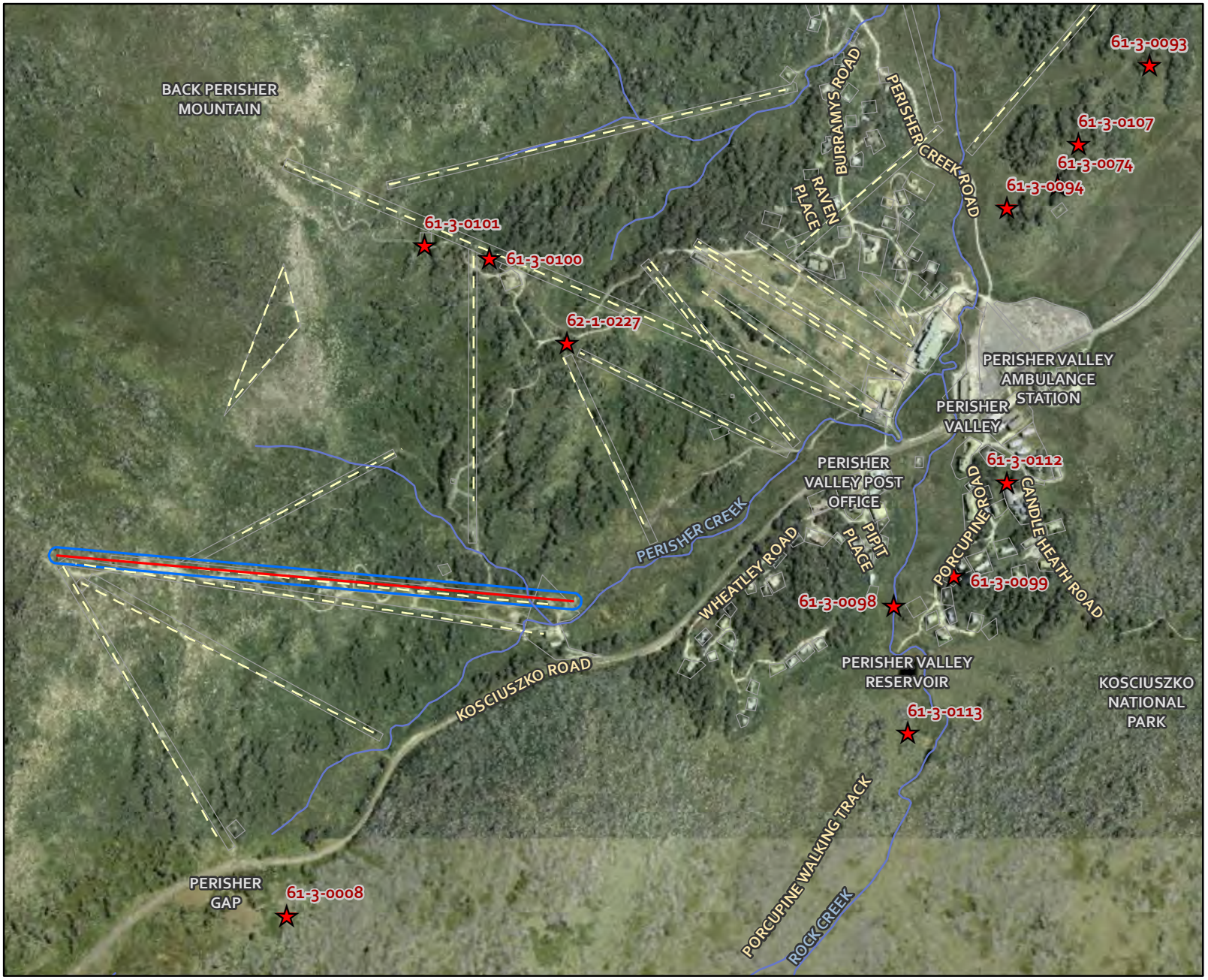

Figure 3: AHIMS

Legend

- AHIMS Sites
- Proposed Chairlift
- Watercourse
- Existing Chairlift
- Study Area
- Cadastre

N

1:14,000

0 175 350 700

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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In 2002 Southern Cross heritage also completed an assessment of the snowmaking upgrades within the Perisher Ski Resort (2002b). The proposed works included new snowmaking lines, fill lines, a ski school and new workshop as well as a water reservoir. The locations of the projects were spread across Perisher, Blue Cow and Smiggin Holes resorts. One new site, on the Roller Coaster ski run at Blue Cow was identified and the area of a recorded site (PB1) at Smiggin Holes was increased.

Following from the 2002 surveys, two sites, the Mount Piper ski school (located on a spurline descending from Mt Piper to Perisher Creek) and at the workshop location in a saddle at Mt Piper were also subject to test pitting (2002c, 2003). Test pits located on the level crest of the spur, that held artefacts were all no artefacts were found on the side or basal slopes. Barber concluded that the testing confirmed overall the model developed by NOHC in 2000 for the Perisher region, with local variables needing to be considered. The correlation between open woodland with grassy understorey rather than heath was noted, consistent with the NOHC 2000 study. Barber also targeted the assumption that locally sheltered areas on exposed slopes would hold deposits by testing several areas with nil results. He concluded that these areas did not hold moderate potential as theorised by NOHC (2003: 19).

NSW Archaeology (2003) completed the assessment for the rehabilitation of the sewerage works at Perisher Valley, Smiggin Holes and Guthega. This involved removal of the Eremo Lodge Reservoir, new sewer mains and water pipelines. Landforms in the project area were assessed to hold low potential based on prior disturbance and no sites were identified.

NOHC (2004) undertook a number of assessments for the upgrade of works within the Perisher Ski Resort Area. This included areas of Perisher Valley, Pleasant Valley, Link Unit, Mt Piper South and Smiggin Holes. Works were for the upgrade or installation of snowmaking lines, Electricity cabling, new ski lifts, ski slope runs and grooming and a building extension. No heritage sites were identified and ten areas of Potential were mapped. Due to previous disturbance several landforms were considered to no longer hold potential and in others, either the area of PAD or the potential was decreased substantially. This finding that prior disturbance decreased or removed potential had been applied previously by Southern Cross and NSW Archaeology and will be applied to future assessments.

The section of spur crest was identified as having high archaeological potential in the Navin Officer Heritage Consultants study (2000). However, closer inspection of the proposed route found that although the area in general did have high archaeological potential, the actual alignment of the proposed trench was within previously disturbed ground. The disturbance associated with these activities reduced the archaeological potential in this area to low (2004:19).

The same study also assessed a section of creekflats on Perisher Creek mapped as holding moderate potential. NOHC concluded that this section held wet grassland and transitional heath vegetation with poor drainage and was decreased to low potential (2004: 20). Other areas throughout the assessment had their potential downgraded or removed based on water logging and/or the presence of wet heath vegetation (2004:22).

NSW Archaeology (2004a) completed an assessment of the road works at Perisher Valley, Smiggin Holes and Guthega. The assessment did not identify any heritage sites or areas of potential.

NSW Archaeology (2004b) undertook an assessment of proposed water hydrant locations and various works at Perisher Valley and Smiggin Holes. These works are approximate 1.2km distant to the current project area. No heritage sites were identified and no areas of potential were recorded including several locations where the rating was downgraded due to levels of previous disturbance. This included an area along Perisher Creek assessed by NOHC as holding moderate potential and adjacent to high potential deep deposits but downgraded by Dibden based on the high levels of prior disturbance (2004: 18).

NSW Archaeology (2005) undertook an assessment of the Perisher View lodge relocation at Perisher Valley. The proposed site was located on a broad spurline within areas of high vegetation coverage affording nil visibility for surface survey which identified no sites. The spurline is a landform which according to NOHC 2000 holds moderate potential. NSW Archaeology followed this model and recommended a program of sub surface testing to determine presence of cultural deposits if development was to proceed.

NOHC (2007) undertook an assessment of the installation of snow making facilities at Perisher Valley. Stage 3 of this assessment covered the current study area and resulted in the installation of the current snowmaking facilities throughout the project area. This 2007 study completed desktop review, predictive modelling (based on NOHC 2000) and field survey. The assessment found that the area of Mt Perisher was low in potential and severe past impacts had occurred throughout the project area.

Ironbark Heritage (2014) undertook an assessment of the replacement of the Leichardt TBar with a double chairlift on the eastern slopes of Back Perisher Mountain. This alignment crossed areas of high potential based on NOHC 2000 mapping of landforms and a recorded artefact scatter was present on the shoulder of the descending spurline. Barber completed a review of predictive modelling and field survey concluding that

> *Based on the topographic assessment undertaken by NOHC (2000) for the Perisher area and the location of sites from surveys within the Perisher resort it is clear that sites are likely to be located on relatively level ground with woodland environments. Areas of moderate to steep slope are not conducive to Aboriginal occupation in this environment.*
>
> *It is assumed therefore that the study area is more likely to contain sites where the ground is level and undisturbed by modifications made through the process of ski slope grooming and infrastructure construction activities* (pg 13).

The designation of high potential mapped by NOHC in 2000 was questioned on the grounds of the high levels of prior disturbance across the spur shoulder. The assessment concluded that the area held low potential due to this high level of disturbance and that no further assessment was required prior to the works proceeding.

Ironbark Heritage (2015) undertook test excavations across the ridge line for snowmaking proposals at Smiggin Holes. The testing program recovered 51 artefacts from 13 of 25 test pits with low density of subsurface artefacts in each testpit. Barber concluded the site was seasonal in occupation and extended across the ridge crest. The study concluded that spurlines and ridges held potential for sites as shown by previous studies and subsurface testing studies.

Feary and Niemoeller (2017) completed an assessment for the Snowy Mountains Iconic Walk, which assessed 45kms of walking trails throughout Kosciusko National Park. They identified one small artefact scatter in a saddle location and concluded that the majority of landforms due to slope, lack of food or water resources hold low potential and that overall occupation would have been seasonal and the archaeological footprint of these visits, light and sparse through the wider landscape.

These previous assessments for the region have returned consistent results and confirmed the importance of level or low gradient slopes, spur lines and ridge crests for site location. The sites located in these areas contain low density sites, as opposed to low elevation valley locations that hold higher density sites. As a result areas of saddles, level spurline crests or sheltered ridgelines are considered to hold moderate potential (dependant of degree of disturbance) but sites should be small and consist of common materials.

The importance of the effects of disturbance and prior impacts are consistently returned throughout these studies with areas of high disturbance allocated low potential as deposits will be disturbed, removed or displaced, all of which remove the archaeological context and the resulting information that any recovered material may provide.

2.4 PREDICTIVE MODEL

The project area is located within the area modelled by NOHC (2000). As discussed previously this modelling has been shown by previous studies in the region to be a reliable indicator with modifications as refined by Southern Cross Heritage (2002, a b c and 2003).

NOHC (2000: 4) concluded the following in regards to impacts of potential developments:

- Developments within treeless valley floor and basal slope contexts (cold air drainage areas) are unlikely to impact Aboriginal archaeological sites.
- Development within poorly drained and/or moderate to steeply graded slopes is unlikely to impact Aboriginal archaeological sites.
- Development within closed heath vegetation communities are unlikely to impact on Aboriginal archaeological sites.
- Disturbance to locally sheltered, relatively level and well drained ground, within elevated grasslands or grassy woodland is likely to impact Aboriginal archaeological sites.

The resulting predictive model shows that site location will be:

- Situated on relatively level, well drained ground, in areas of undisturbed soils
- Provide shelter from prevailing weather patterns
- Avoid cold air drainage contexts
- Show a preference for terrain which facilitates pedestrian access and through travel
- Is in proximity to resources such as open woodland, grassland and herb fields and Bogong moth aestivation sites (NOHC 2000: 41).

NOHC also identified variables which would reduce or preclude site placement. These include:

- Open contexts exposed to prevailing weather
- Grasslands and herbfields on treeless frost hollow valley floor sediments
- Predominant or closed heath vegetation
- Poorly drained ground
- Moderate or high gradients

NOHC recognised that as a result of the sampling strategy and limited nature of testing, there would exist areas that had been previously disturbed through construction projects that were likely to be captured by the sensitivity mapping and allocated high or moderate standing. To address this issue, NOHC specifically defined 'relatively undisturbed' as: "soil profiles which retain all or part of the natural vertical sequence from topsoil to subsoil" (NOHC 2001:49). This is important for the study area which has been subject to a high degree of modification and infrastructure development.

NOHC also noted that variants such as cold air drainage, prevailing exposure to winds, and vegetation type (i.e. heath v grass understorey) would not be identified through the contour mapping process and would require verification by visual inspection. These factors would all decrease from the mapped potential within these areas.

Work by Barber (2002 a,b,c,2003, 2014,2015) with Southern Cross Heritage and Ironbark have refined this model to show that slopes consistently return negative results, along with level areas in mid slopes or sheltered locations on exposed slopes in opposition to the NOHC model. Areas of potential were found to be confined to ridge crests and spur line shoulders. None of the testing undertaken by Barber tested the low level areas of creek frontages to hold large sites as predicted by NOHC.

Predictive mapping developed on the NOHC model shows within the project area, overall low potential due to slope gradient. The top station is located on the southern verge of a mapped area of high potential and then descending along the slopes crosses two areas of low-moderate potential on more level areas of midslopes before terminating in a low-moderate potential area on the creek flats overlooking perisher Creek. As discussed in the preceding sections, this model of potential is based on slope analysis and does not account for individual variables (vegetation, drainage, wind exposure, previous disturbance) within the project area. As these variables affect the rating of potential, the modelled rating requires to be verified by visual inspection and site survey. This model of potential from NOHC 2000 for the project area is shown in Figure 4.

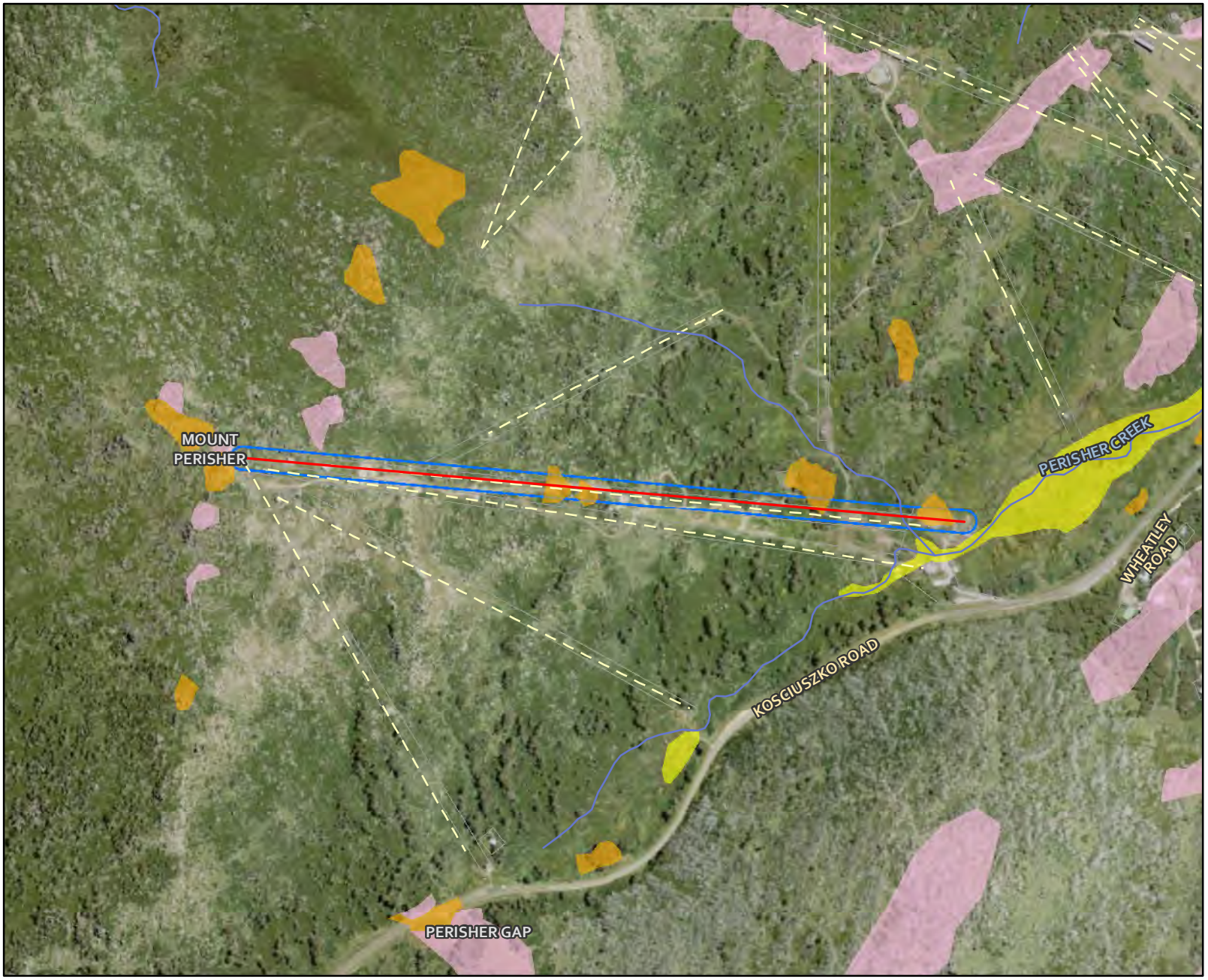

Figure 4: Archealogical Sensitivity

Legend

- Proposed Chairlift
- Watercourse
- Existing Chairlift

Archealogical Sensitivity

- High Sensitivity
- Low-Moderate Sensitivity
- Deep Subsurface Potential
- Study Area
- Cadastre

N

1:10,000

0 125 250 500

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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2.5 LANDFORM AND DISTURBANCE LEVEL ASSESSMENT

The following assessment of the landform potential and degree of previous disturbance of the project area has been undertaken by a review of current aerial photographs and topographic mapping.

Mount Perisher forms the highest summit at 2050m. The majority of the slopes are moderate to high gradient (low potential) with small areas of lower slope gradient (moderate potential), to which the current infrastructure impacts have been focused with footings for current chair lifts, snow making towers and buildings at top and bottom stations. Apart from these areas where impacts are classified as high, and may have removed all deposits, the entire slope has been trenched with snowmaking infrastructure and power lines, reducing potential. An access road winds up the slope from the base to the current top station. This road has also abraded and has suffered erosion with soil and sediment displacement across level areas and on turns.

The current vegetation of the project area appears to be dominated by heath and grassy understorey. Remnant or clusters of snow gum woodland are present in one or two locations within the project area. The bottom station location appears to consist of a treeless frost hollow dominated by heathland with grasses. The presence of heath would need to be verified by visual inspection.

As a result of the review of aerial photography of the project area, the areas of potential based on landform (NOHC 2000) appear to have been potentially reduced or removed due to the following factors:

- The bottom station locations are placed within a treeless frost hollow environment with heath vegetation and wet ground
- The top station location is amongst a low to moderate gradient slopes adjacent to the south of the high potential level area. The small areas of low grade to level areas appear to have been highly impacted by placement of current infrastructure. Disturbance in these sections appears extensive and will have impacted on potential for deposits.
- The proposed new chairlift tower footings are placed within the impacted area of the current chairlift and are mainly located on areas of moderate to high gradient assessed to hold low potential. The footings that are placed on level to low grade areas of the midslopes appear to be in wet heath communities.
- The project area is dominated by heath communities, not conducive to Aboriginal site location. No impacts are within the woodland remnant.
- The area is distant to any water sources and not in proximity to any known resources.
- The area has been highly impacted by road, power lines, current infrastructure and buildings.

As a result of the desktop assessment no areas of high or moderate potential have been identified within the project area. This follows from the findings of previous studies that high levels of impact reduces or removes the potential for deposits and the original definition of an area of potential as being 'relatively undisturbed' as defined by NOHC in their modelling and discussed in the previous section.

As a result of these desktop findings, the major aim of the field survey will be to determine the validity of findings through visual inspection of vegetation, landform, degree of previous disturbance, ground drainage and shelter from prevailing winds and frost occurrence. All of these factors will be noted in order to confirm the assessment of disturbance and low potential for deposits to remain.

3 FIELD SURVEY RESULTS

A site visit and field survey of the project area was undertaken on the 8th April 2019 to verify the findings of the desktop review of landforms and disturbance. The aim of the investigation was to identify heritage objects or places of potential archaeological Deposit (PAD). A primary aim was to rate the degree of prior disturbance, the presence of vegetation communities, water logging of soils and prevailing wind and frost conditions. To assess these variables, the entire project area was visually inspected by pedestrian survey, with particular attention to the areas of impact footprint from the proposed works.

All surveyed areas and items of interest were recorded on hand held GPS along with levels of visibility, erosion, vegetation, soil conditions, and evidence of land disturbance being noted on field maps and overlain on project area footprints.

The site visit resulted in the following findings.

3.1 GROUND SURFACE VISIBILITY

Ground surface visibility (GSV) is the percentage of ground surface that is visible during the field inspection through the current vegetation conditions. GSV increases in areas of exposures such as vehicle impact trails, roads, buildings, previous impacts and areas of erosion or vegetation clearance. As a result surveys undertaken in areas of high GSV and with high exposure rates result in a more effective survey coverage.

GSV over most of the study area was low due to heath/grass coverage across the slopes and basal valley contexts. Bare earth was visible only in exposures along the vehicle trail and areas of erosion on the high gradient slopes. This access road provided a length of exposure across all landforms from the basal slopes to the upper slopes. Across the project area the average GSV was estimated at 20%. Within the low GSV area at the top station location exposures were common at moderate frequency due to the large areas of disturbance associated with current infrastructure and vehicle trails. Within the low gradient areas at bottom stations near the buildings and chairlifts with their large areas of disturbance exposure rates were low but extensive in size.

3.2 SOILS AND VEGETATION

Soils when visible appeared thin with areas of bedrock and surface outcrops of granordiorite. Soils on level area on midslopes appear to be wet sinks with thick heath vegetation. Heath vegetation was also present at top station locations and along the perisher creek frontage area at Bottom Station. This section also appear to contain wet soils. Small stands of snow gums were present along the slopes but not within any areas of impact. Small areas of grassland mixed with heath appear present at the bottom station locations but have been impacted by the current use and infrastructure. The conditions at the time of the field survey are shown in plates 1 to 6.

Plate 1: current infrastructure top location

Plate 2. Looking along alignment

Plate 3: Footing location in areas of lower gradient, note thinness of soils

Plate 4: Footing location, rock outcrops present on mid slopes

Plate 5: Bottom location showing slope of alignment

Plate 6: valley context at bottom station showing previous impacts

3.2.1 *Disturbance*

The degree of disturbance varies across the project area, but at each of the proposed impact areas, due to the previous chairlift infrastructure, is generally considered to be high and extensive. The past impacts at each of the work locations, the proposed works and sensitivity mapping of landform potential are described in the following sections. The effect of these levels of disturbance for the project is discussed in the impact assessment section 4 along with full descriptions

3.2.2 *Top Station*

These works are located in an area, based on NOHC 2000, which holds negligible potential for deposits but is adjacent to an area of moderate potential on the crest to the south of a rock outcrop. This moderate potential area will not be impacted by the proposed works.

Within this medium gradient area of the top station, previous impacts have reduced the potential for site preservation and remnant intact deposits from Low-moderate to negligible (as defined by NOHC 2000). The degree of disturbance across the study area is considered high where previous infrastructure and buildings had been constructed. The landforms in these locations show disturbance from soil displacements from the time of construction evident. Soils have been removed, cut and benched at the triple and double chairlift locations, communications hut location and Tbar bull wheel. Soils have been moved and displaced by snowmaking lines, communication cables and vehicle access tracks. As a result, none of these areas retain the potential for insitu archaeological deposits.

The proposed top station will be located above the current triple chairlift stop in the location where the current communications hut is placed amidst a section of low lying rocks. Construction of the communications hut in the 1970s has removed the potential in this area.

Rock reduction ia required in the top station off load area to allow safe exit from the chairlift, these areas will be limited due to ecological considerations and in the area of building impact from the construction of the Communications Hut and the current vehicle impact track.

The Eyre T-Bar top station bull wheel is to be relocated downhill. The area of the bull wheel relocation is a moderate gradient amidst surface exposure of rock and thin soils. Heath vegetation covers the area. The potential for deposits in this area is also ranked as negligible.

The positioning of the proposed works in relation to the sensitivity are shown in detail in Figure 5.

The conditions at the top station at the time of the April 2019 survey are shown in Plates 7 to 10.

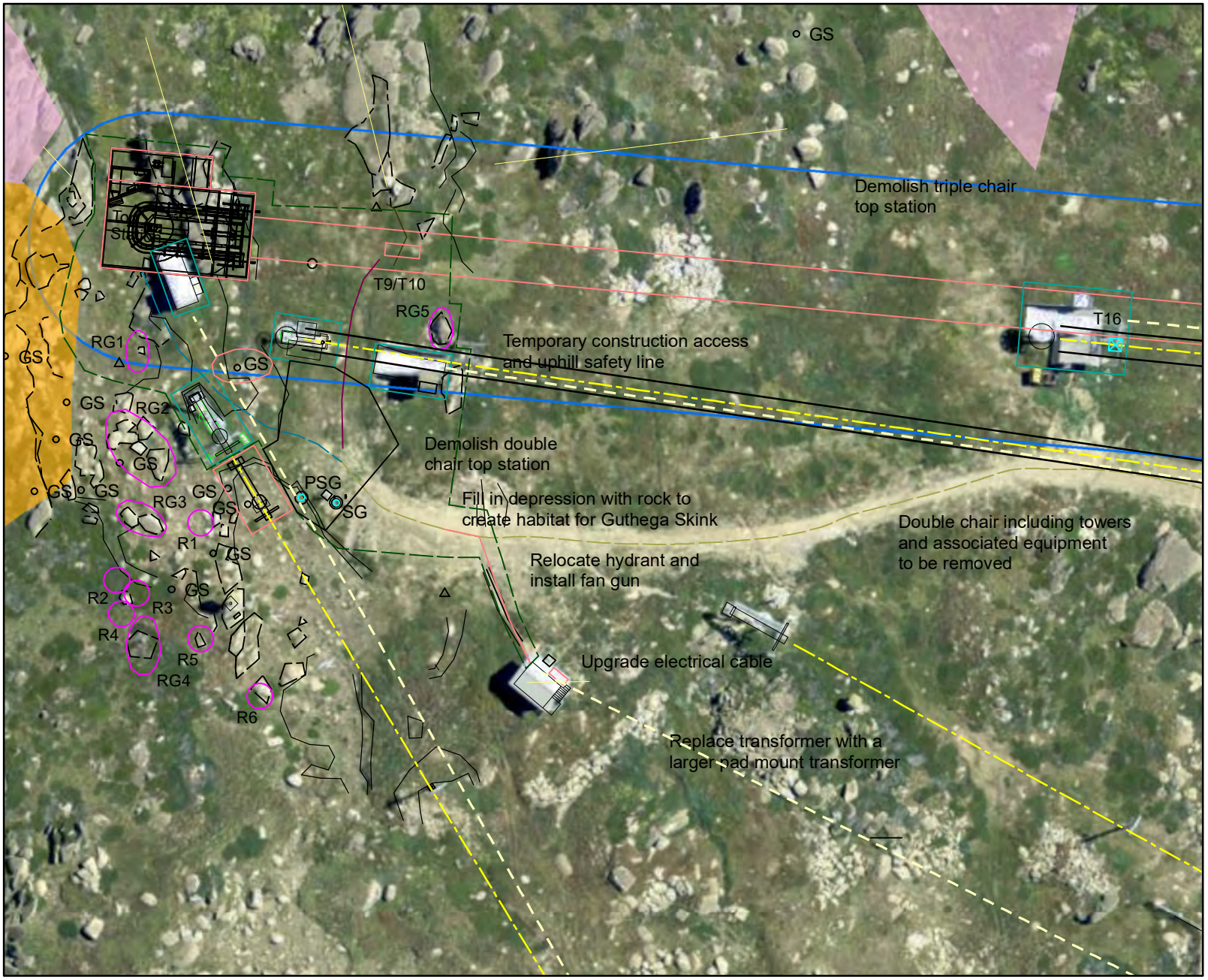

Figure 5: Archaeological Sensitivity - Top Station

Legend

Existing Chairlift

Archealogical Sensitivity

High Sensitivity

Low-Moderate Sensitivity

Study Area

N

1:900

0 10 20 40

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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Plate 7: Communications Hut

Plate 8: Chairlift, T Bar, access trail view

Plate 9: Earthworks and slope grooming exit triple chairlift

Plate 10: Eyre T Bar Bullwheel infrastructure

3.2.3 *Chairlift Alignment/snowmaking lines/uphill safety LINE (SLOPES)*

The new chairlift alignment follows the alignment of the current triple chairlift, diverging on the lower section to terminate at the new bottom station, located 10m to the north of the current bottom station. This results in the slight relocation of some towers along the route with the greatest divergence at the bottom station termination. A new communication line will utilise in part an existing conduit already installed for the Triple Chair and will require trenching between the existing line and new towers. Snow hydrants may be required to be moved to widen the ski run and allow safe usage.

The majority of the footings for the chairlift towers are located on the steep gradients held by modelling to hold negligible potential, which have also been impacted by the past construction of the current tower footings and trenching. Two areas of low-moderate potential (as shown of Figure 6) are present within the alignment, the northern of which will be impacted by the revised tower footings, relocated snow hydrants and underground cabling trenching. The lower section will not be affected except by the revised cabling between towers. These two sections of low-moderate potential

should not be described as level, but rather as less steep than the remaining slopes which descend from the crest quickly to the valley floor at Bottom Station.

Within these two areas of low-moderate potential, prior impacts have occurred from the current towers, snowmaking lines, hydrants and underground cabling installation. Also within these areas are sections of heath vegetation with water logged soils, rock outcrops and steeper gradients all considered by NOHC to reduce/decrease the potential for archaeological sites and deposits to be present. Thus the larger areas could be redefined as a series of smaller areas of potential.

The proposed relocations of infrastructure are confined within these areas of heath and steeper gradients and as a result are unlikely to impact on the areas with low-moderate potential and only impact a small area of the landform, confined to the current tower alignment which has been disturbed by the prior works. The location of proposed works through the slopes with the mapped zones of sensitivity are shown on Figure 6a,b,c.

The conditions throughout the slopes at the time of the field survey area shown in Plates 11 to 14.

Plate 11: low gradient slope area

Plate 12: View downslope

Plate 13: Section of heath vegetation

Plate 14: Heath vegetation in tower location

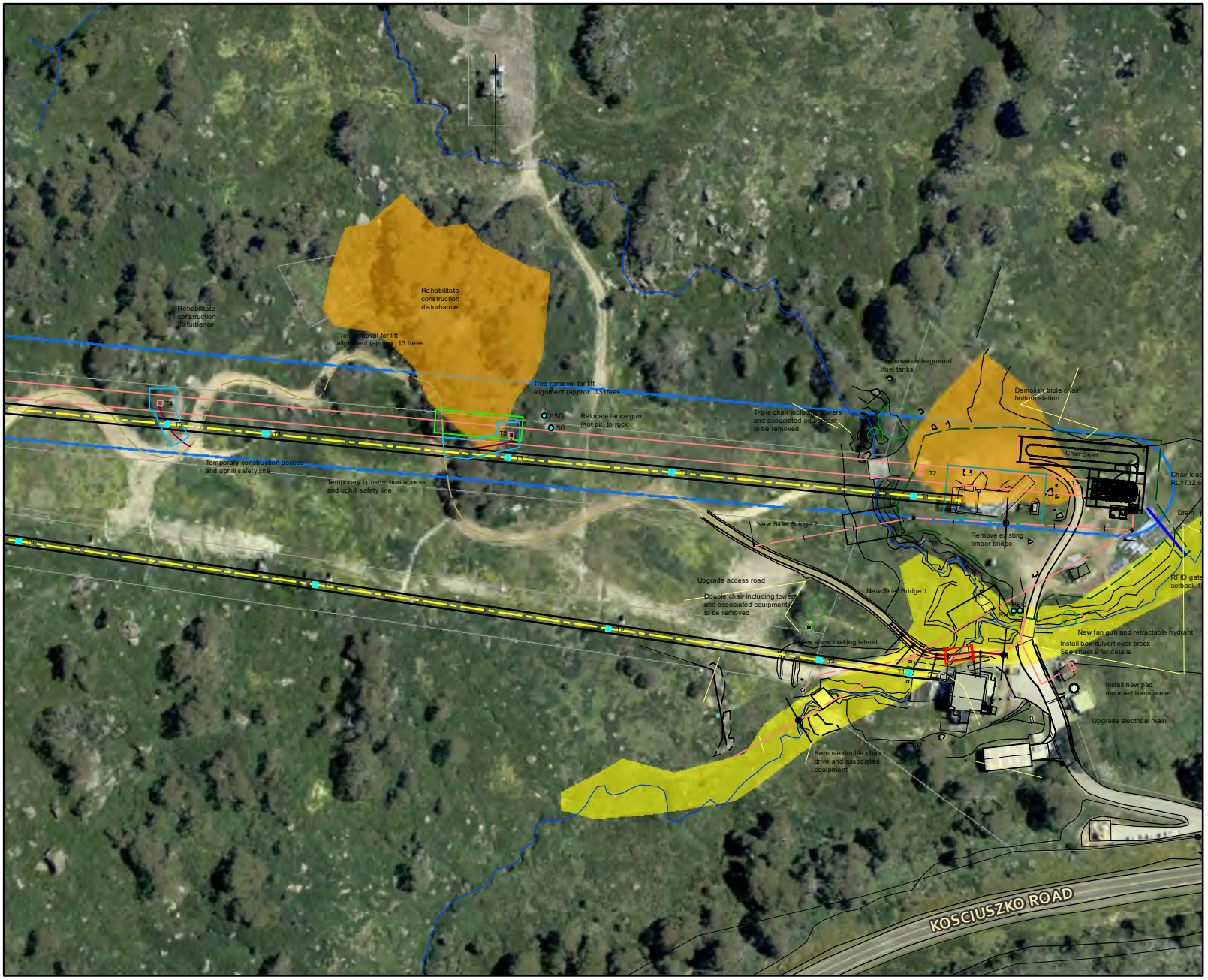

Figure 6a: Archaeological Sensitivity - Lower Lift Alignment

Legend

Archealogical Sensitivity

- Low-Moderate Sensitivity
- Deep Subsurface Potential
- Study Area
- Cadastre

N

1:2,250

0 25 50 100

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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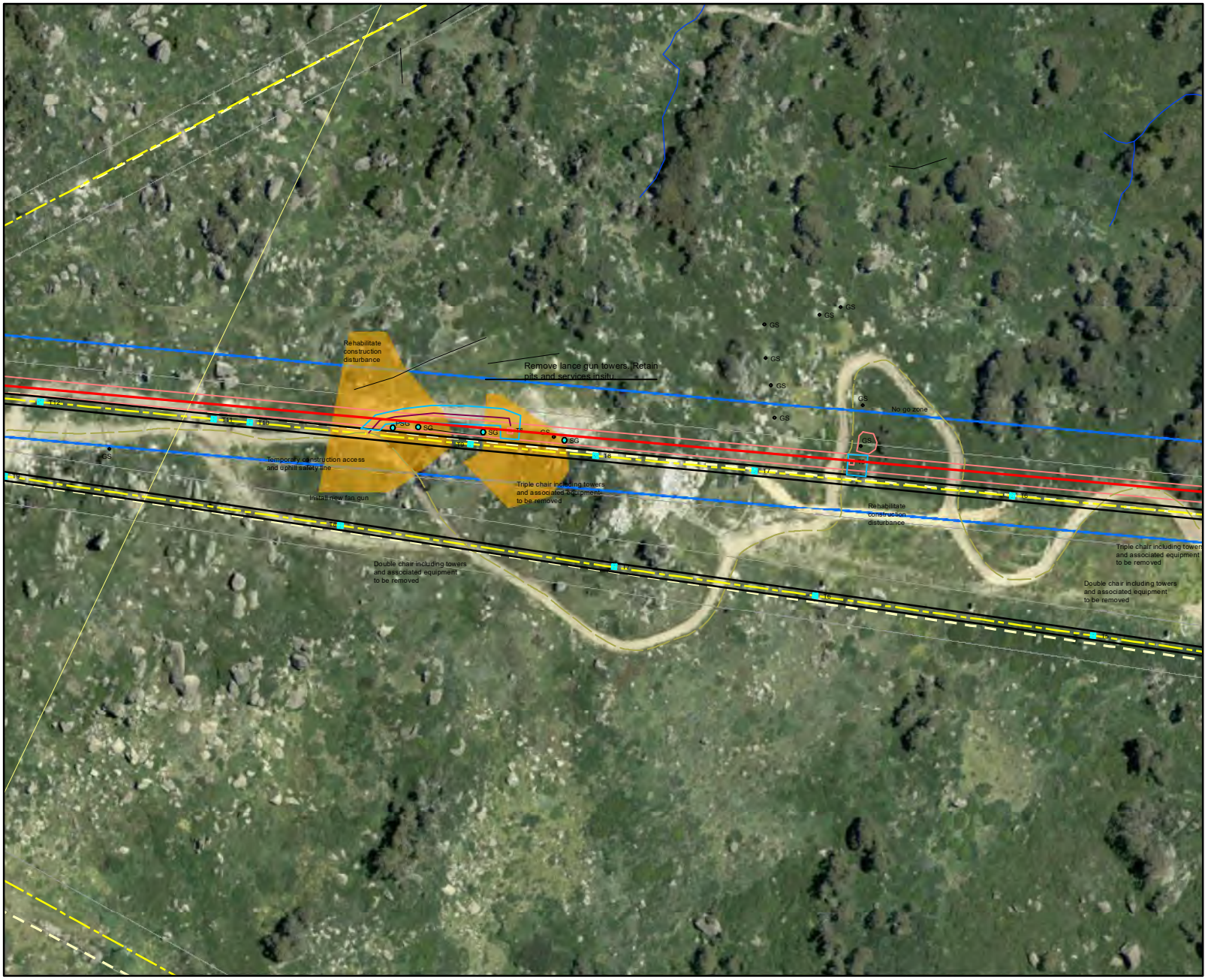

Figure 6b: Archaeological Sensitivity - Mid Lift Alignment

Legend

Proposed Chairlift

Existing Chairlift

Archealogical Sensitivity

Low-Moderate Sensitivity

Study Area

Cadastre

N

1:2,250

0 25 50 100

Meters

Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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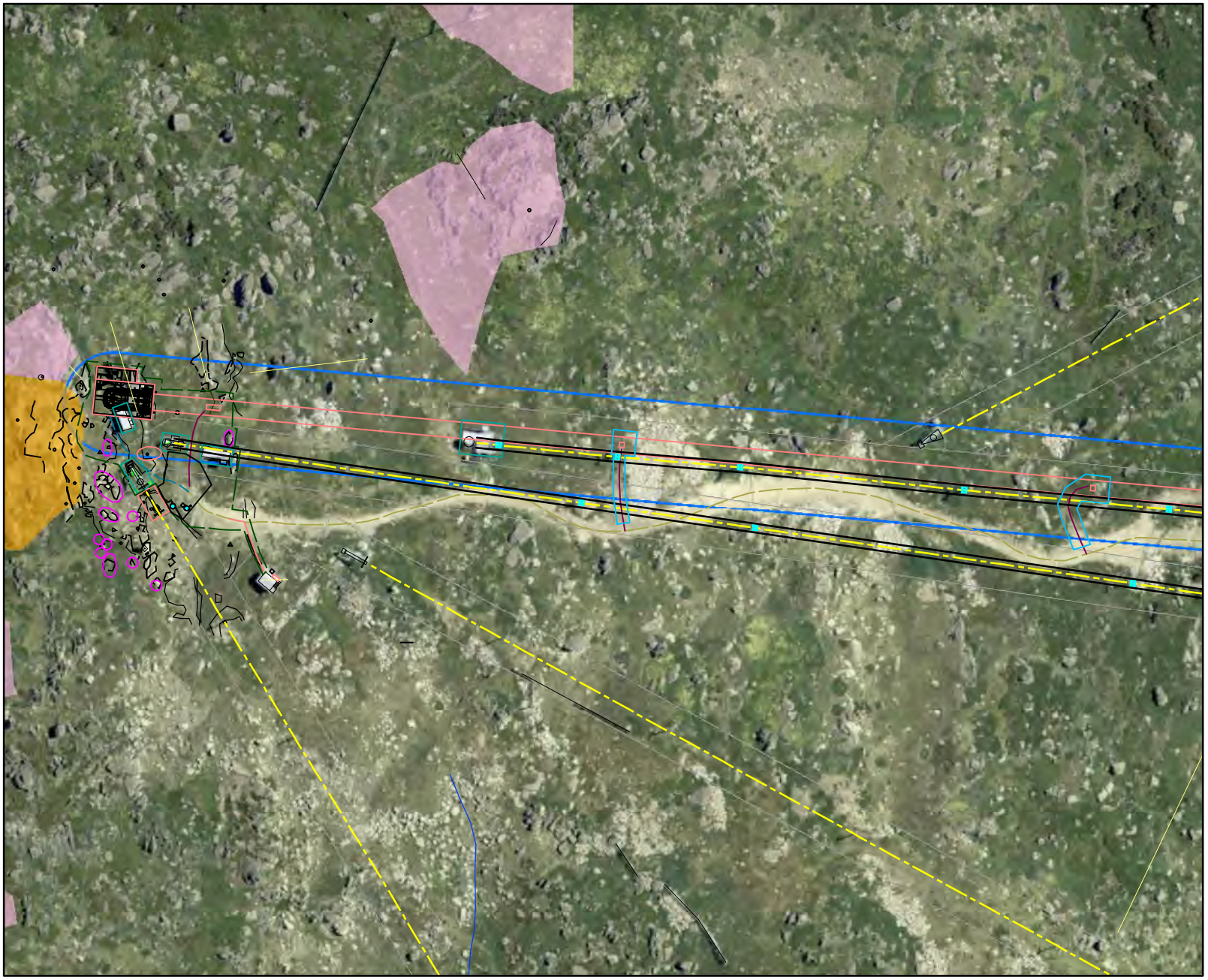

Figure 6c: Archaeological Sensitivity - Upper Lift Alignment

Legend

Archealogical Sensitivity

- High Sensitivity
- Low-Moderate Sensitivity
- Study Area
- Cadastre

N

1:2,250

0 25 50 100

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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3.2.4 *Bottom Station*

The proposed new Bottom Station will be located within the area of the current bottom triple chairlift and entry/exit station. This provides a large and open highly disturbed area, level and setback a distance from Perisher Creek. This location provides a greater area for skiers to reduce speed, congregate and queue for the chairlift. This area has been levelled for the chairlift construction with chairlift infrastructure, groomed slope for access, vehicle access tracks and chair storage and areas. Electricity cables have been trenched and located across the landform. Soils have been removed and displaced and this degree of disturbance is considered to have removed all potential within this area.

This area is classified as holding negligible potential based on NOHC 2000 and is located to the northwest of the area of deep subsoils with potential along Perisher Creek (Figure 4). This area of Perisher Creek is waterlogged and marshy and not conducive to any infrastructure and no proposed impacts will occur within this landform and at this location. The area of proposed impact is shown in detail in Figure 7.

The current restaurant and bar and the public toilets which are located at the base of the double chairlift are planned to be retained in their current location. The current access road which connects the two chairlift locations, the restaurant and toilet facilities and then crosses Perisher Creek and ascends the Mountain will be retained in its current location.

Disturbance across the remainder of the project area between the sections of the two chairlift locations, building footings, cabling, restaurant and public toilets is moderate, present in the form of prior vegetation and tree removal, vehicle access road, and power line trenching.

A skier crossing is currently located across Perisher Creek which is not adequate to the increased patronage of the ski runs. This bridge is proposed to be replaced, in the same location, with a wider bridge to accommodate more skiers and provide a straighter run across the creek to the bottom station. The new bridge being wider and longer will be secured with footings further back from the sensitive creek edge (which will not be impacted) to the impacted areas adjacent to the current restaurant and current bottom station locations. The skier's bridge consists of a metal grid which is placed on the slope edges to form a platform across the lower slopes and creekline. No subsoil deposits will be affected. An example of a ski bridge is shown in Plate 17.

This area of the proposed ski bridge is located within the area of deep subsurface potential mapped by NOHC (2000). The proposed bridge will have nil or minor surficial impacts at confined footing locations, within currently impacted areas and will not impact the deeper deposits or potential in this area.

The location of the proposed works at the bottom station area are provided in Figure 8 with photos of the current conditions provided in Plates 15 to 17.

Plate 15: View southwest to Restaurant and buildings. Area in foreground has disturbed soils, cabling and vehicle impacts.

Plate 16: View north to current ripple chairlift station.

Plate 17: view east to current bottom station showing area where soils have been removed and levelled for construction

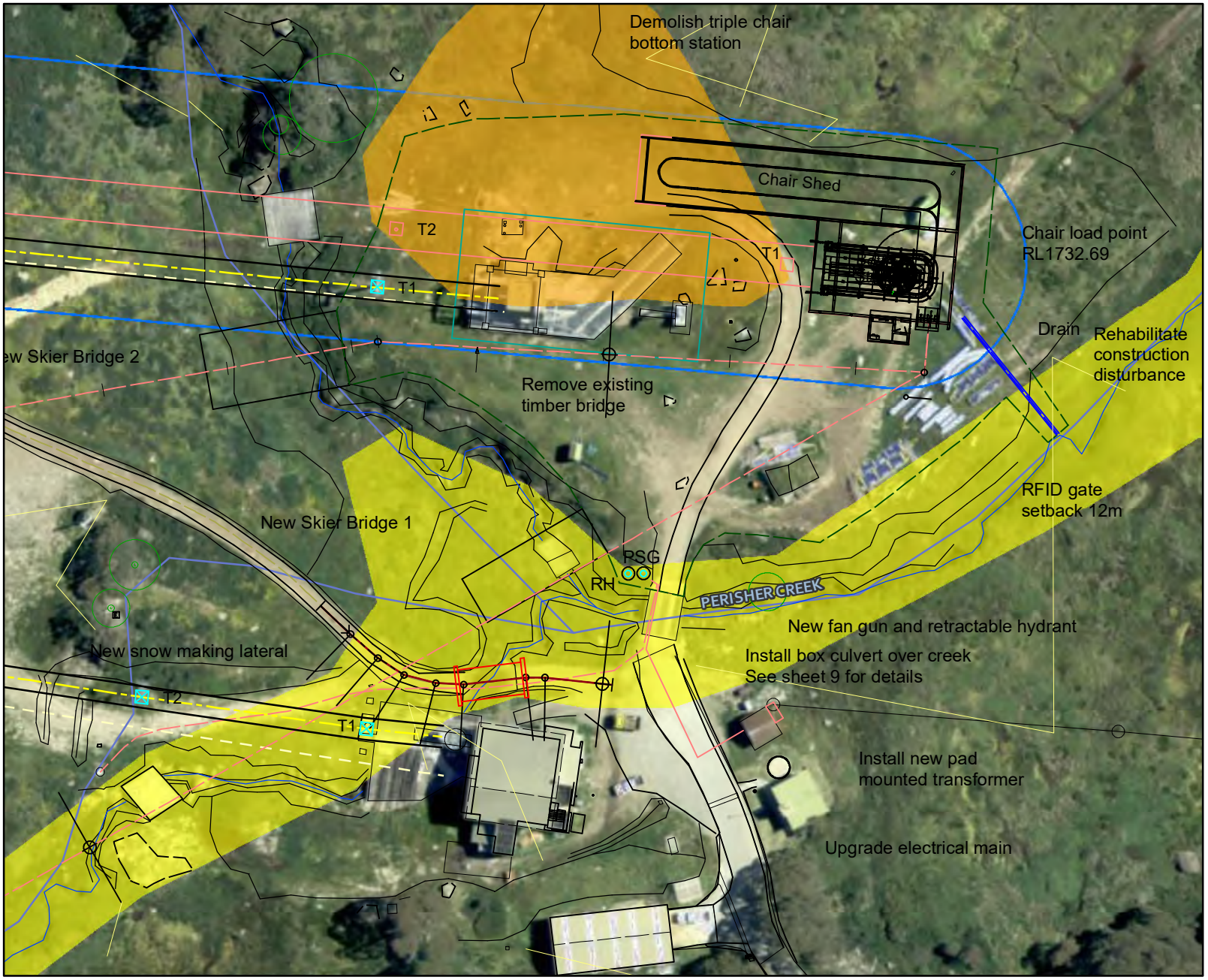

Figure 7: Archaeological Sensitivity -Bottom Station

Legend

Watercourse

Archealogical Sensitivity

Low-Moderate Sensitivity

Deep Subsurface Potential

Study Area

N

1:900

0 10 20 40

Meters

Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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3.3 HERITAGE FINDINGS

3.3.1 *Aboriginal Heritage Sites*

No registered or recorded Aboriginal heritage sites are present within the project area. No heritage sites were identified during the field survey despite moderate rate of exposures, present at top, bottom and mid slope contexts in the areas of prior construction. A large linear exposure (access road and the cabling trenching) were present across all landforms which provided high levels of ground surface visibility.

As a result of the assessment no known heritage sites will be affected by the proposed upgrade of the current infrastructure.

3.3.2 *Areas of Potential Archaeological Deposit (PAD)*

Areas of PAD are defined as landforms that hold higher potential than their surrounds to contain subsurface deposits of past Aboriginal occupation. Based on a review of the landform designations of sensitivity and mapping provided in NOHC 2000, the landforms within the project area have been assessed as containing:

- One area of deep subsurface potential along Perisher Creek
- two small areas of low- moderate potential being impacted in limited areas within the midslopes region.
- All other areas of works are located in areas mapped as holding nil/negligible potential for heritage site location.

In addition impacts have been high to moderate over the majority of the project area due to the previous cycles of construction, upgrade, maintenance and ongoing use of the area for recreational purposes. NOHC 2000 stated that these types of impact reduce potential and that potential exists in 'relatively undisturbed' deposits.

As a result, the midslopes area has been assessed to currently hold nil-low potential due to this degree of impact and no areas of PAD have been identified within the main project area.

The area of Perisher Creek will not be impacted by the main project, except in the placement of the ski bridge crossing. This construction consists of placement of a metal grate bridge across the landform sitting on the surface. As no subsoil impacts are anticipated, this area of PAD will not be impacted by the proposed works.

3.3.3 *Summary*

Following completion of the field survey of alignments, background research and predictive mapping, it is considered that:

- No Aboriginal heritage sites or areas of PAD were recorded or identified as a result of the assessment for the chairlift alignment and upgrade. The previous assessment of

these landforms as not containing areas of high or moderate sensitivity (NOHC 2000) was confirmed by the field survey with a decrease in potential noted in areas, due to the high levels of prior disturbance

- An area of deep potential deposits is located at Perisher Creek which will be the location of the proposed Ski Bridge. This placement is surficial and will not impact on these deposits and the potential to impact on the heritage deposits is considered to be low.
- The confined nature of works impacts only small sections of landforms and the works areas are confined within areas of high prior impact.
- The majority of the landforms are considered to hold low or negligible potential with the exception of the deeper deposits at Perisher Creek. These deposits are not anticipated to be impacted by the proposal.

The assessment has found that due to the confined nature of works and prior impacts from infrastructure construction, the project is considered to hold low potential to impact on recorded and/or unrecorded Aboriginal heritage sites or areas of PAD, as a result of the proposed upgrade.

4 IMPACT ASSESSMENT

4.1 OVERVIEW

The proposed upgraded chairlift alignment will generally follow the existing triple chair alignment diverging to the proposed new bottom station, located 10m north of the current bottom station. The proposed new location for the bottom station is located within the current area of impacts associated with the construction, and ongoing use of the current triple chairlift infrastructure.

A new top station is proposed to be located above the current double chairlift top station at the location of the current communications building to provide increased connectivity options and to remain within the current impacted footprint of works. The communication building will be remodelled into the new top station. Various other works, such as removal of redundant infrastructure, relocation of the bull wheel and cabling will also be undertaken.

The area of the proposed works has been highly impacted by the construction of the current chairlifts, associated infrastructure, access roads and ongoing use of the mountain. The works will all be located within these areas of prior impacts.

The proposal would involve the following impacts:

- Removal of existing chairlift and towers
- Construction of new towers and installation of chairlift
- Connection to infrastructure, such as electricity
- Relocation of infrastructure, such as snowmaking and Eyre T-bar top station bullwheel
- Upgrading of access roads
- Construction of skier bridges at bottom station
- Construction of new bottom and top stations
- Construction of a culvert over Perisher Creek in existing roadway.
- Inclusion of an additional tower, adjoining previous Tower 9, making it a combined tower 9 & 10
- Extension of the chair shed 5m up-hill into the disturbed slope
- Removal of existing underground fuel tank at the base of the current triple chair bottom station.

The impacts from each of these works are discussed in the following sections.

4.2 TOP STATION

These works in the top station areas are located in a landform, based on NOHC 2000, which holds negligible potential for deposits but is adjacent to an area of moderate potential on the crest to the south of a rock outcrop. This moderate potential area will not be impacted by the proposed works.

Within this medium gradient area of the top station, previous impacts have reduced the potential for site preservation and remnant intact deposits to low/negligible. As the proposed works are confined within these areas (as shown on figure 6) and no recorded heritage sites are present, the known impact from these works is assessed as nil with the potential for impact assessed as low.

4.3 MID SLOPE

Through the project area, the chairlift alignment crosses steep gradients with two small areas of lesser slope in the mid slope regions. Except for these two areas which are classified as holding low-moderate potential, the alignment is classed as negligible for the potential to contain unrecorded heritage sites. Within these two small areas of lesser slope (as shown on Figure 7) the works are within areas of heath and water logging, and with prior impacts from current infrastructure, specifically the current snowmaking lines and water hydrants. The relocation of infrastructure in these areas is limited and confined in nature and the majority of the area will not be impacted. Due to the prior impacts in the area, the landform is considered to be downgraded to negligible potential within the impact areas.

In areas of grassland within this landform, away from prior impacts, the designation of low-moderate potential is supported.

No known heritage impacts will occur within this section and the potential for impacting on unrecorded heritage sites is considered to be low.

4.4 BOTTOM STATION

The works at the bottom station are the most extensive and are located within the impact footprint of the current triple chairlift and chair storage at the base location. This area has been classified as holding negligible potential based on the ranking criteria following NOHC 2000. The location of works is shown in Figure 7.

The works are contained within this landform and the areas of high prior disturbance which extend across the landform, which has been levelled prior the chairlift construction. Access roads to the restaurant and public toilet locations, cross this area as well as underground electricity and communications cabling. The area of impacts does not extend south to the area of high potential mapped along the Perisher Creek frontage, as this area is low-lying, marshy and not conducive to any construction or infrastructure placement.

A skier crossing is currently located across Perisher Creek which is not adequate to the increased patronage of the ski runs. This bridge is proposed to be replaced, in the same location, with a wider bridge to accommodate more skiers and provide a straighter run across the creek to the bottom station. The new bridge being wider and longer will be secured with footings further back from the

sensitive creek edge (which will not be impacted) to the impacted areas adjacent to the current restaurant and current bottom station locations. The skier's bridge consists of a metal grid which is placed on footings to form a platform across the lower slopes and creekline

This area of the proposed ski bridge is located within the area of deep subsurface potential mapped by NOHC (2000). The proposed bridge will have nil or minor surficial impacts at confined footing locations, within currently impacted areas and will not impact the deeper deposits or potential in this area.

No known heritage impacts will occur within this section and the potential for impacting on unrecorded heritage sites is considered to be low. Location of works in relation to sensitivity in this section is shown in detail in Figure 7.

4.5 SUMMARY

The potential impact of the proposed works have been assessed against a review of previous reports, landform/slope and the predictive mapping undertaken for the Perisher Ski Fields (NOHC 2000). A field survey was then undertaken to confirm the findings of the desktop review and refine the modelling based on individual variables, such as vegetation, soils, prior disturbance and prevailing wind patterns.

No heritage sites were identified as present within the project area based on recorded sites or the results of the field survey. The moderate to steep gradients along most of the route are considered to hold negligible potential for unrecorded heritage sites or subsurface deposits.

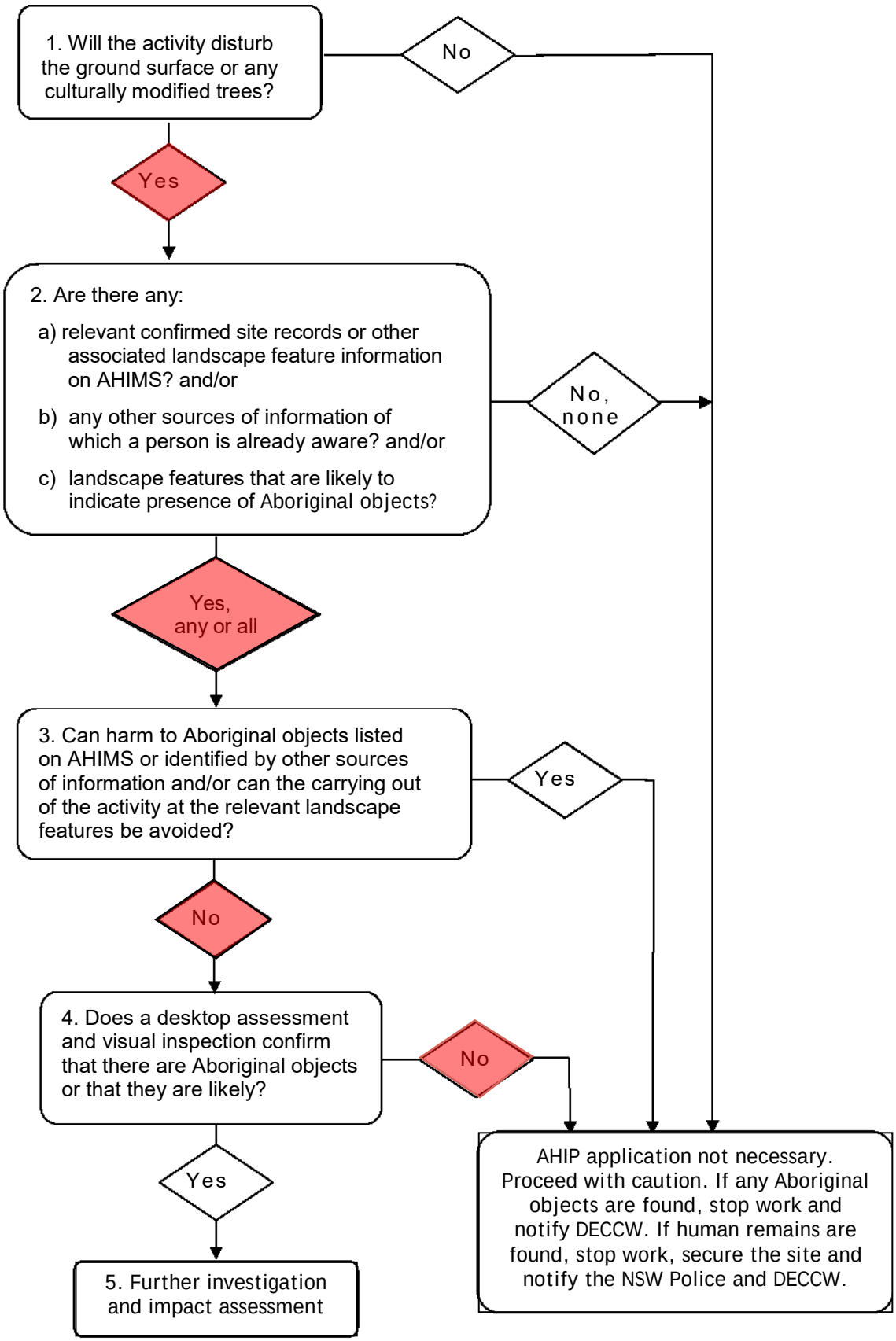
Within areas of lower gradient that might have held potential, the project area has a high to moderate degree of disturbance and soils appear to be thin with rock outcrops. These areas appear to be exposed to winds and to contain an original heath environment. These variables have been discussed in the previous section 2.4 which detailed how the ranking of potential for each section of works has been developed.

Based on the assessment the impacts from the project are as follows:

- No known Aboriginal objects or places will be impacted by the proposed works.
- No known Aboriginal objects or places are present in the project area.
- One area of high potential is mapped in the location of Perisher Creek but will not be affected by the proposed works, as these works are surficial and within the current area of impact.

The Code provides a flowchart of six questions to identify the presence of and potential harm to Aboriginal heritage. These questions and their applicability to the project are shown in Figure 8. The responses to these questions determine if further heritage investigations are required.

Figure 8. Due Diligence Flow Diagram (OEH 2010:10 – Due Diligence Code of Practice)



4.6 RECOMMENDATIONS

Based on this due diligence assessment the following actions are recommended for the project.

Recommendation 1: Works to proceed without further heritage assessment with caution.

The proposed works can proceed without further assessment as no Aboriginal heritage sites (objects or places) are present within the project area. The potential of impacting unrecorded sites within these areas during the proposed works is assessed as extremely low, based on landform analysis and field survey.

Recommendation 2: Ski Bridge Area – Subsurface potential

One area of deep subsurface deposits is located in the vicinity of the bottom station, where a skier bridge is currently located, which requires upgrade. No excessive soil movement is anticipated, but if required to provide a level footing would be minor, surficial, and will not affect the subsurface potential or deep soils in this area. As any potential impacts will be in areas of current impact and not affect the deeper deposit, no further works are required.

Recommendation 3: Discovery of Unanticipated Aboriginal cultural material.

All Aboriginal places and objects are protected under the *NPW Act 1977*. This protection extends to Aboriginal material that has not been previously identified, but might be unearthed during construction activities. In the event that Aboriginal material is discovered during construction the following steps should be undertaken:

- Works must cease in the vicinity of the find and a fenced buffer zone of 10m around the find be erected.
- The office of DPIE must be notified of the find.
- A qualified heritage consultant should be engaged to assess and record the find in accordance with the legislative requirements and DPIE guidelines. If the find is Aboriginal in nature, consult with DPIE in regards to appropriate steps and management. This would usually involve consultation with the Aboriginal community and may require application for an Aboriginal Heritage Impact Permit.

Recommendation 4: Discovery of Human Remains

In the unlikely event that human remains are discovered during the construction, all work must cease. DPIE, the local police and the appropriate LALC should be notified. Further assessment would be required to determine if the remains are Aboriginal or non-Aboriginal.

Recommendation 4: Alteration of impact footprint

Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation.

Implementation of the above management recommendations will result in low potential for the project to impact on Aboriginal heritage values or result in damage to heritage sites

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Appendix A. Detailed Design Plans