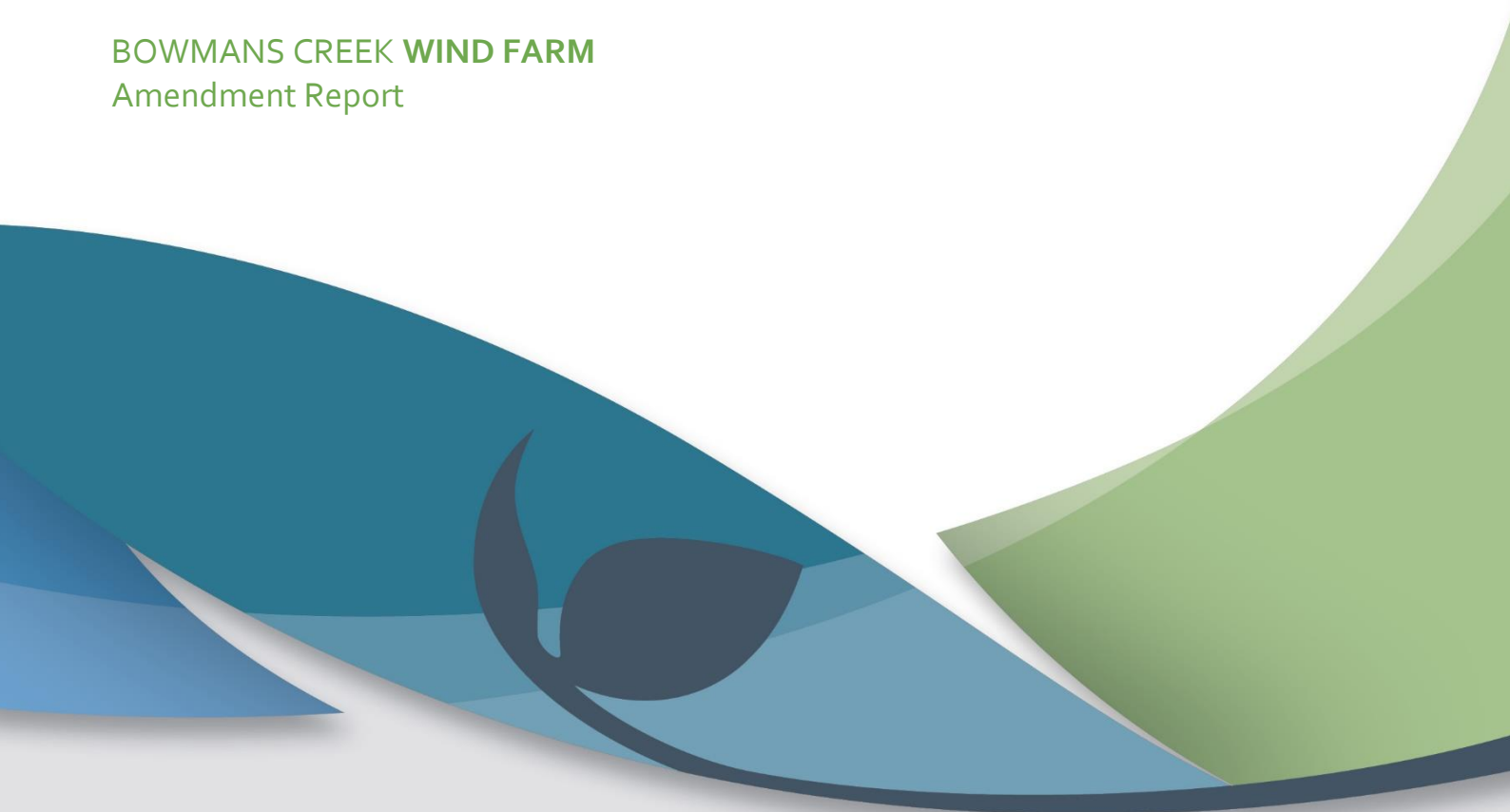


APPENDIX D5
HISTORIC HERITAGE IMPACT
STATEMENT
- TECHNICAL APPENDIX

BOWMANS CREEK WIND FARM
Amendment Report





View of Hilliers Creek-HS01.

APPENDIX TECHNICAL REPORT: HIS

BOWMANS CREEK WIND FARM AMENDED PROJECT

BOWMANS CREEK, NSW

SEPTEMBER 2021

Report prepared by
OzArk Environment & Heritage
for James Bailey & Associates
on behalf of
Epuron Projects Pty Ltd

OzArk

OzArk
Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

This page has intentionally been left blank.

DOCUMENT CONTROLS

Proponent	Epuron Projects Pty Ltd	
Client	Hansen Bailey	
Document Description	Appendix Technical Report: HIS. Bowmans Creek Wind Farm Amended Project	
File Location	OzArk Job No.	
James Bailey and Associates\Amended Bowmans Project 2021\report	3182	
Document Status: FINAL V3.0	Date: 14 September 2021	
Draft V1.0 Author to Editor OzArk	V1.0 BC author 4/9/21	
Draft V2.0 Draft report for release to client	V2.0 BC prepares for client release 11/9/21	
FINAL V3.0 Final report	V3.0 BC finalises 14/9/21	
Prepared for	Prepared by	
James Bailey Director James Bailey and Associates	Ben Churcher Principal Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 F: 02 6882 6030 ben@ozarkehm.com.au	
<p>COPYRIGHT</p> <p>© OzArk Environment & Heritage 2021 and © Epuron Projects Pty Ltd 2021</p> <p>All intellectual property and copyright reserved.</p> <p>Apart from any fair dealing for private study, research, criticism, or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission.</p> <p>Enquiries should be addressed to OzArk Environment & Heritage.</p>		

This page has intentionally been left blank.

CONTENTS

1	INTRODUCTION	4
1.1	Description of the Project	4
1.2	Background	4
1.3	Proposed work.....	5
1.4	Study area	7
2	PREDICTIVE MODELLING	6
2.1	Conclusion.....	7
3	RESPONSES TO SUBMISSIONS.....	8
3.1	Submission from P14 (Former Roman Catholic Church)	8
3.1.1	Response	8
3.2	Submission from P14 (Loss of Heritage Value).....	9
3.2.1	Response	9
3.3	Submission from P84	10
3.3.1	Response	10
4	MANAGEMENT FOR THE AMENDED PROJECT.....	11
4.1	Existing management recommendations	11
4.2	Additional management recommendation	11
4.2.1	Requirement for further fieldwork	12
5	RECOMMENDATIONS.....	13

FIGURES

Figure 1-1:	Major additional areas not surveyed for the EIS.....	6
Figure 1-2:	Digital elevation model of Areas 1, 2 and 3.	1
Figure 1-3:	Digital elevation model of Area 4.....	2
Figure 1-4:	Digital elevation model of Areas 5 and 6.	3
Figure 1-5:	Digital elevation model of Area 7.....	4
Figure 1-6:	Digital elevation model of Area 8.....	5
Figure 3-1:	View of landscape near Strathclyde House.....	10

TABLES

Table 2-1:	Recorded historic heritage items.	6
Table 2-1:	Historic heritage potential of the unsurveyed areas.....	6

1 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT

Epuron Projects Pty Ltd is seeking approval for the construction, operation, maintenance and decommissioning of the Bowmans Creek Wind Farm (Project).

The Project is located at Bowmans Creek, approximately 10 kilometres east of Muswellbrook.

Epuron seeks State Significant Development (SSD) Development Consent approval under Division 4.7 of Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) for the Project (SSD 10315).

OzArk Environment & Heritage (OzArk) has been engaged by James Bailey & Associates Pty Ltd to provide specialist heritage assessment for the Project.

1.2 BACKGROUND

In April 2021, OzArk completed the Historic Impact Statement (HIS) for the Project that was included in the Environmental Impact Statement (EIS) prepared over the Project.

The HIS drew on a significant amount of survey for the Project that was completed concurrently for both Aboriginal and historic heritage assessments from November 2019 to February 2021 in four survey sessions. Each team of surveyors during Fieldwork Sessions 1 and 2 consisted of two archaeologists. In the first session of survey there were two teams working independently, and in the second session there was one team. Fieldwork Sessions 3 and 4 consisted of one archaeologist.

The EIS was placed on exhibition between 31 March 2021 and 11 May 2021. During this period 166 submissions were received from stakeholders, including 19 from government agencies and 148 from members of the public. A Submissions Report (James Bailey & Associates 2021) has been prepared to respond to the issues raised by these stakeholders.

In addition to this, in response to submissions and further detailed planning, several refinements are proposed to the Project layout (Amended Project). This includes removing four wind turbine generators (WTGs), relocating three others, as well as removing sections of access tracks and power reticulation infrastructure, along with the minor repositioning of other lineal infrastructure, to reduce ecological, visual, and other impacts.

The Amended Project design has resulted in an overall decrease in the extent of ground disturbance that will be associated with the Project. However, the Amended Project design includes some locations for Project components that were not surveyed as part of the preparation of the HIS.

This Appendix Technical Report to the HIS addresses those areas now proposed for impact that were outside of the Survey Boundary at the time the EIS was completed. It also addresses the few submissions that comment on historic heritage.

The HIS should be consulted for all information dealing with the environmental and archaeological context, survey results, and controls for the avoidance and minimisation of harm to historic heritage values associated with the Project.

1.3 PROPOSED WORK

The Amended Project impacts are similar to that set out in EIS. However, in the Amended Project redesign, the following changes have been made:

- Deletion of four WTGs, including WTG 10, 33, 60 and 61, hence a reduction from 60 WTGs to 56 WTGs
- Re-siting of WTG 8, 9, and 32
- Minor adjustments of several WTGs (micro siting up to 100 metres [m])
- Removal and relocation of site access tracks because of changes to the WTG layout and in response to individual landholder concerns
- A 10.4 kilometre (km) net reduction in underground power reticulation
- A 13.5 km net reduction in overhead power reticulation
- An overall reduction of project disturbance footprint of approximately 97.6 hectares (ha).

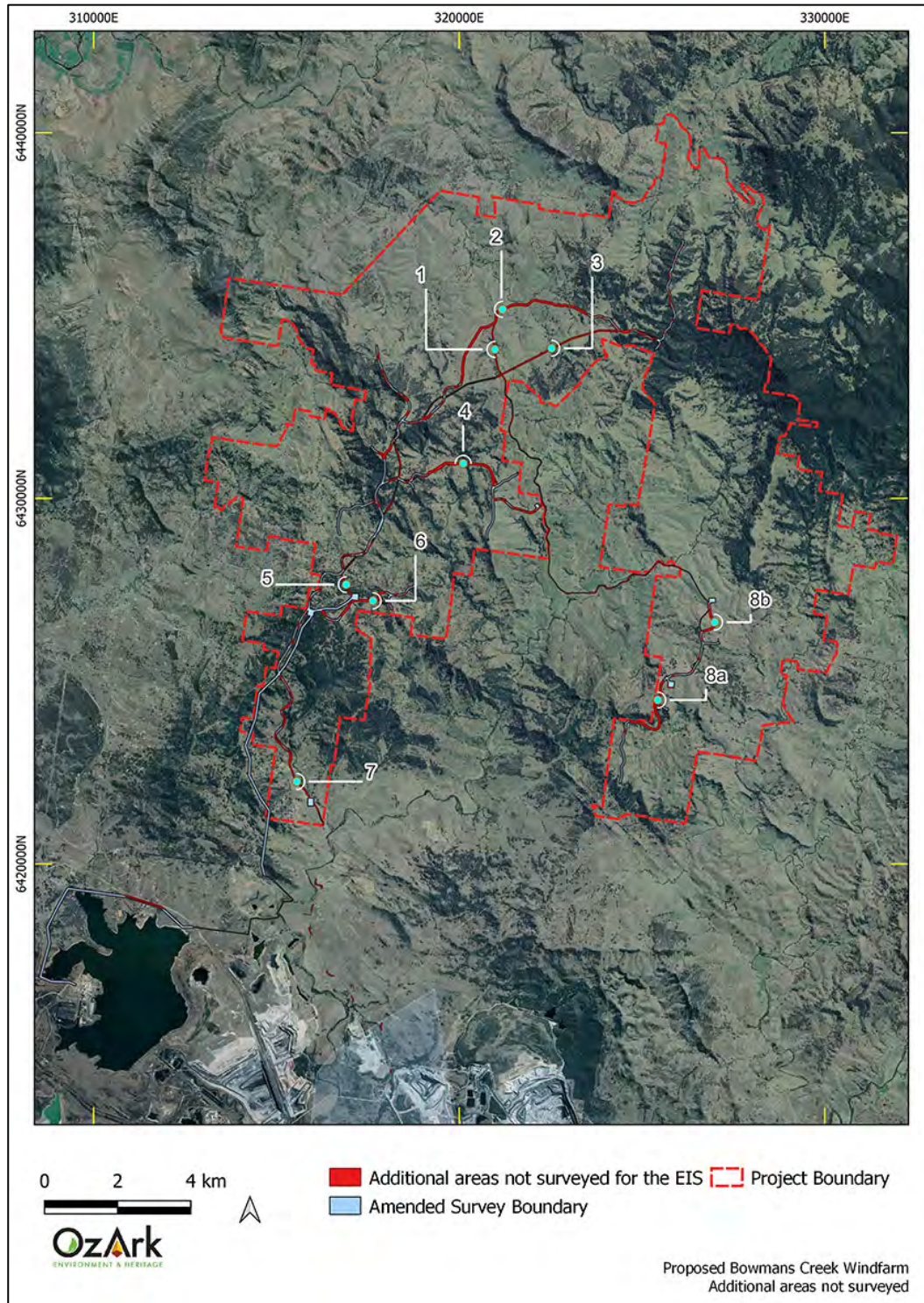
While the Amended Project has reduced the impact area, there are now areas that are proposed for impact that were not surveyed for the EIS. These areas are:

1. A 1.6 km portion of Albano Road in the north of the Project Boundary
2. A new access track in the north of the Project Boundary that extends for approximately 4.5 km
3. A new corridor for overhead electricity reticulation in the north of the Project Boundary that extends for approximately 3.6 km
4. A new access track in the centre of the Project Boundary that extends for approximately 2.2 km
5. A new corridor for overhead electricity reticulation in the centre of the Project Boundary that extends for approximately 650 m
6. A new access track in the centre of the Project Boundary that extends for approximately 760 m
7. A new access track to the north of the O&M facility that extends for approximately 1.3 km
8. A new portions of access track in the east of the Project Boundary that extend for a total of approximately 3 km.

All other additional areas are very close to areas previously surveyed and are not considered a major addition to the areas already surveyed.

Figure 1-1 shows the additional areas numbered according to the list above. Each of these areas will be discussed in more detail in this report.

Figure 1-1: Major additional areas not surveyed for the EIS.



1.4 STUDY AREA

The study area for this Appendix Technical Report to the HIS are areas associated with the Amended Project that were not surveyed for the HIS. The major areas outside of previously surveyed landforms are listed in **Section 1.3** and each of these areas will be described below following the numbering established in **Section 1.3** and shown on **Figure 1-1**.

Areas 1, 2, and 3 (Figure 1-2)

The additional areas are in steeply undulating landforms. Samples of this landform type were surveyed in nearby areas; however, the additional impacts are to the north and south of the areas previously surveyed. The landforms are cleared and have been used for long-term grazing. The additional impact areas cross several waterways that are within steep, V-shaped valleys without any evidence of creek flats or terraces.

Area 4 (Figure 1-3)

Area 4 consists of a new portion of access track. Rather than crossing a ridge as was surveyed for the EIS, the new alignment follows gentler gradients to the north. The new alignment is within cleared and grazed paddocks and is entirely contained within sloping landforms. The alignment crosses a seasonal waterway, better termed a gully, within a steep, V-shaped valley.

Areas 5 and 6 (Figure 1-4)

The additional areas include the alignment of an overhead electricity corridor (Area 5) and the alignment of access track (Area 6). Area 5 is within a steep, V-shaped valley where there is remnant vegetation due to the steepness of the terrain. Area 6 is within cleared, grazed paddocks and crosses slopes and a minor ridge line. Area 5 crosses a seasonal waterway, while Area 6 avoids any waterway crossings.

Area 7 (Figure 1-5)

Area 7 consists of a new alignment of access track that is entirely within clear, grazed paddocks. The new alignment crosses undulating landforms with some moderately steep slopes. The alignment crosses a seasonal waterway in an area that has relatively gentle gradients when compared to other landforms in the alignment.

Area 8 (Figure 1-6)

Area 8 consists of two portions of new access track. Area 8a crosses undulating landforms with some steep gradients. In the western portion the alignment is along a narrow ridge and steep V-shaped valley that contains some remnant vegetation. Elsewhere the alignment crosses cleared, grazed paddocks. Area 8b is a short section of track within steep slopes. Area 8b is entirely within cleared, grazed paddocks.

Figure 1-2: Digital elevation model of Areas 1, 2 and 3.

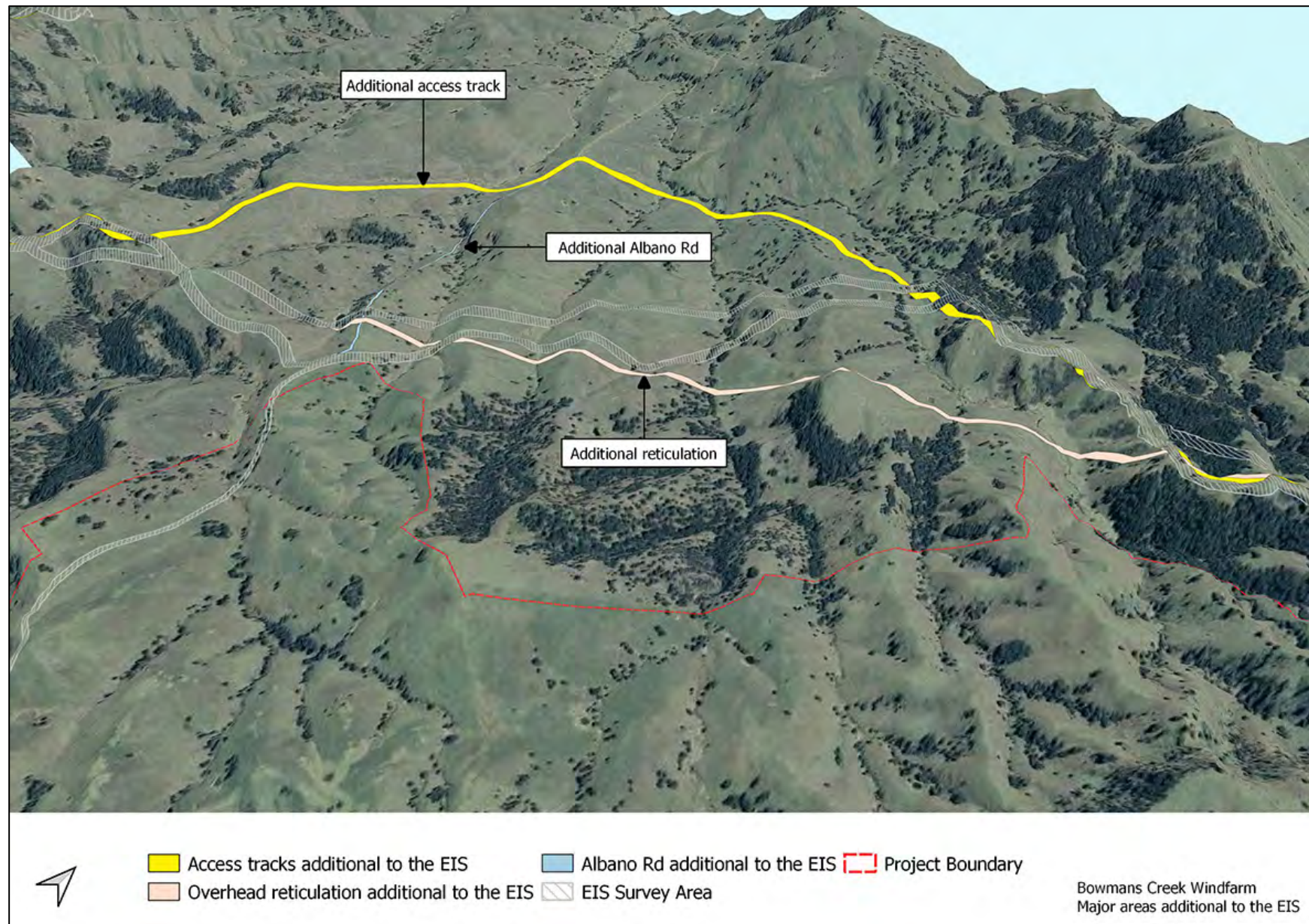


Figure 1-3: Digital elevation model of Area 4.

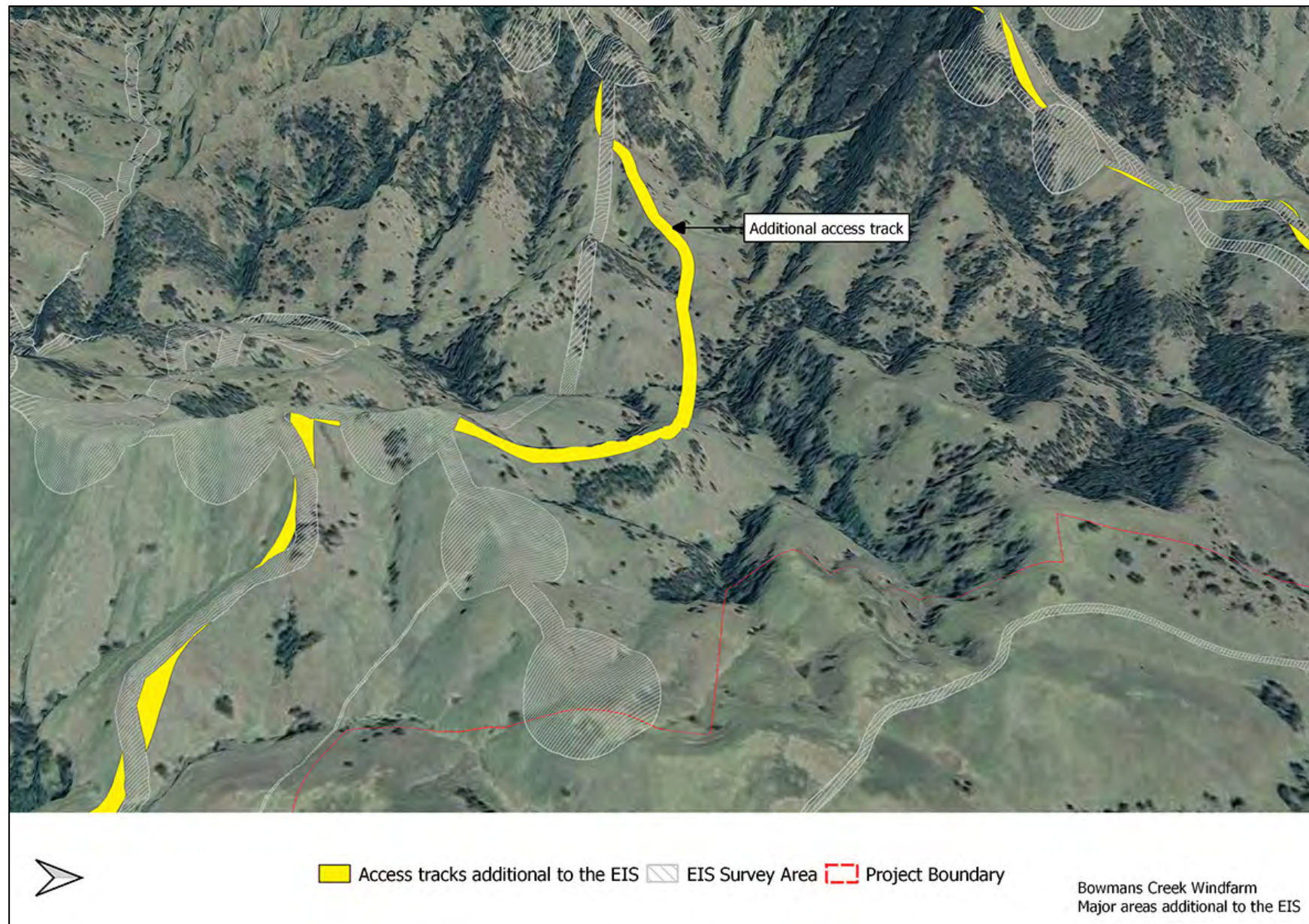


Figure 1-4: Digital elevation model of Areas 5 and 6.

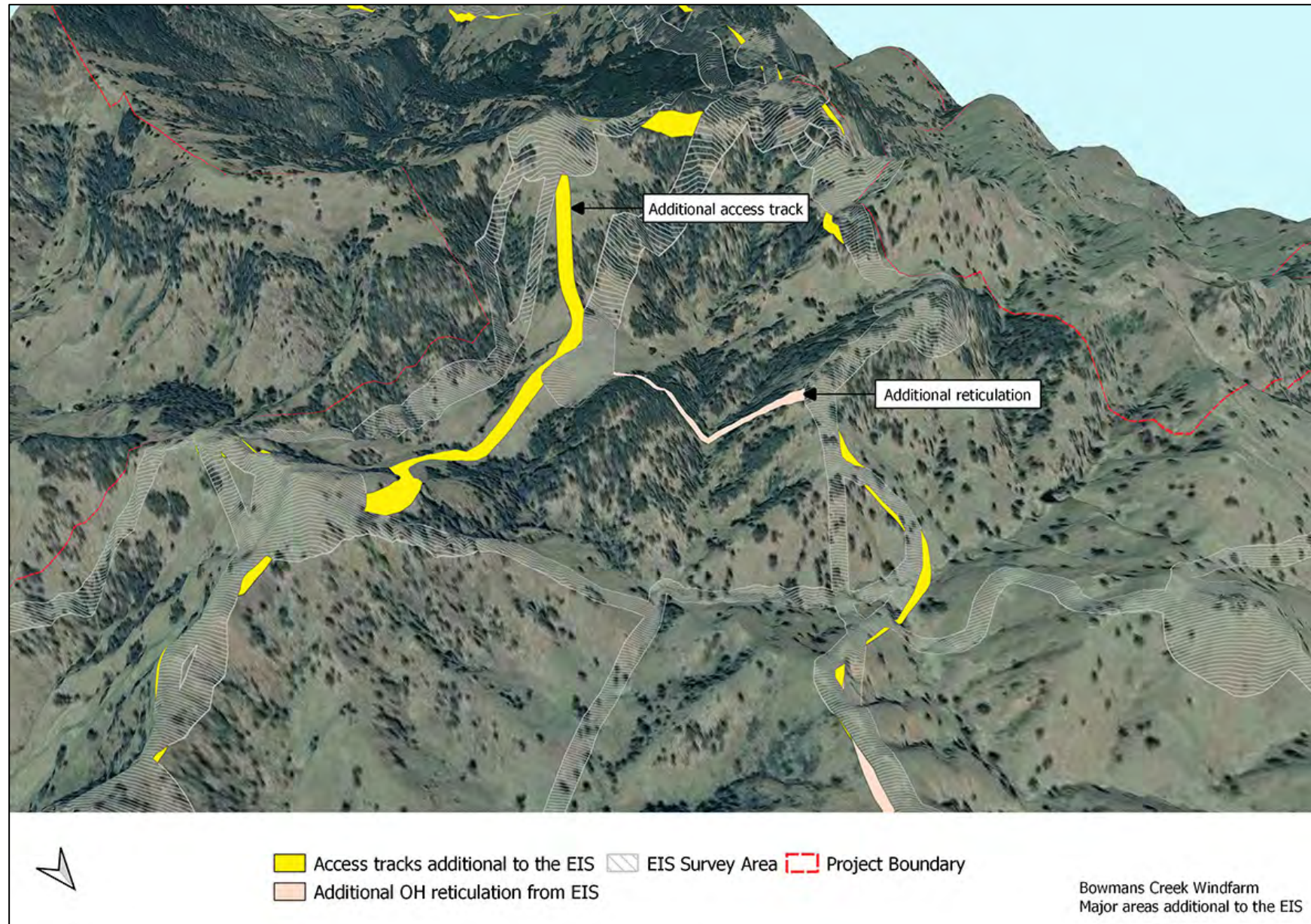


Figure 1-5: Digital elevation model of Area 7.

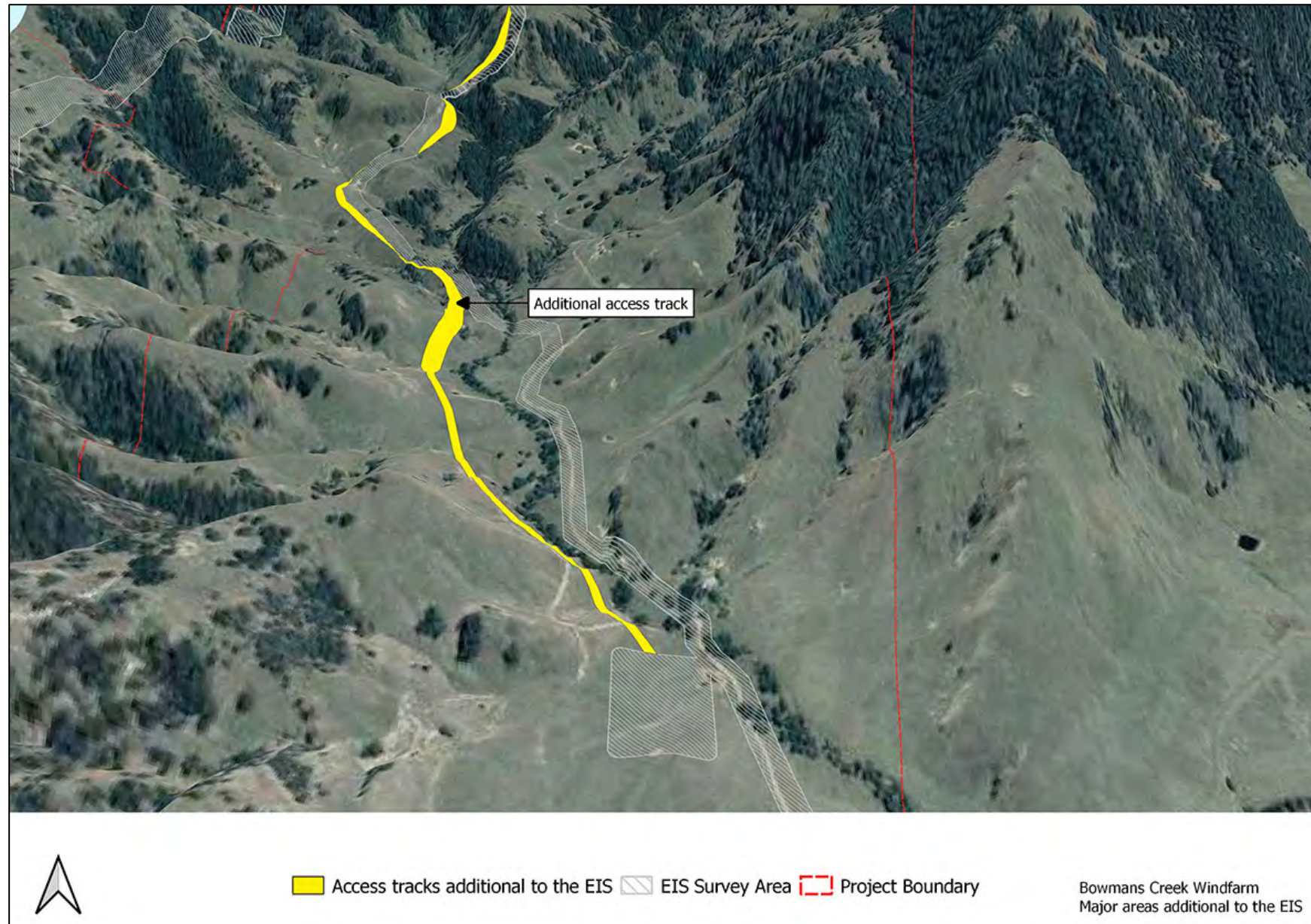
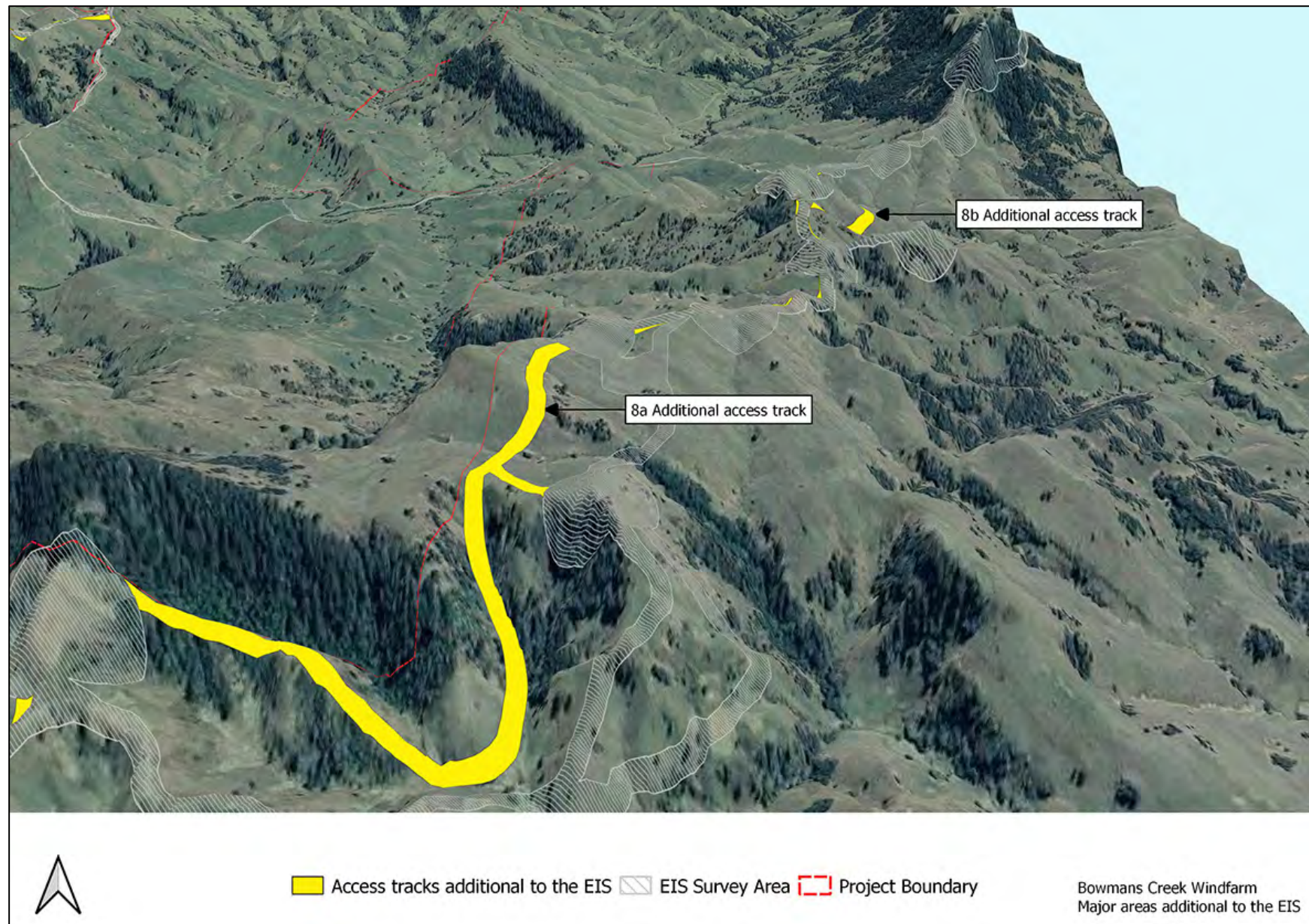


Figure 1-6: Digital elevation model of Area 8.



2 PREDICTIVE MODELLING

The assessment of the additional areas not surveyed for the EIS has been completed at a desktop level only. However, as extensive landforms near and around the additional areas were surveyed for the EIS, the potential for the additional areas to contain items of heritage significance can be confidently predicted.

The survey for the HIS consisted of a substantial survey effort that extensively sampled the landforms of the Survey Boundary. In the HIS (p. 29), the survey results were summarised as shown in **Table 2-1**.

Table 2-1: Recorded historic heritage items.

Site Name	GDA Zone 56 coordinates	Type of heritage item	Figure
Rock Lily Gully-HS01	316931E, 6428480N	Family burial plot	HIS Figure 5 4
Hilliers Creek-HS01	323003E, 6435229N	Farm house ruin	HIS Figure 5 5

Further, it was identified that the Project is located within a cultural landscape typified by small rural holdings containing a variety of structures such as homesteads that exemplify a long history of settlement over the past 150 years.

All the additional areas not surveyed for the EIS are in:

- Sloping or minor ridge line landforms. Slopes are generally steeper than 10 degrees
- Landforms distant to permanent or semi-permanent water
- Landforms that have undergone disturbances from vegetation clearing and long-term grazing.

The potential for each additional area not surveyed for the EIS to contain significant historic values is shown in **Table 2-1**.

Table 2-2: Historic heritage potential of the unsurveyed areas.

Area	Proposed impact	Landform type	Likelihood to contain significant historic items
1	Road widening	Slopes. No waterway crossings	Very low likelihood to contain historic objects as the area is either side of Albano Road in moderately steep landforms.
2	Access track	Undulating moderately steep. No level areas. Some crossings of minor waterways	Very low likelihood to contain historic objects due to the nature of the landforms. While the alignment crosses a minor waterway, this landform was assessed for the HIS and historic site Hilliers Creek-HS01 was recorded associated with the waterway. There are no other waterways in this additional area.
3	Overhead electricity reticulation	Undulating moderately steep. No level areas. Some crossings of minor waterways	Very low likelihood to contain historic objects due to the nature of the landforms. While the alignment crosses the same waterway associated with Hilliers Creek-HS01, aerial imagery shows no structures at this location within the overhead reticulation alignment.
4	Access track	Minor ridge and slopes. One crossing of a minor waterway	Very low likelihood to contain historic objects due to the nature of the landforms. While the alignment crosses Fish Hole Creek, aerial imagery shows no structures at this location within the access track alignment.

Area	Proposed impact	Landform type	Likelihood to contain significant historic items
5	Overhead electricity reticulation	Steep V-shaped valley	Very low likelihood to contain historic objects due to the steep nature of the landforms. The waterway crossing has no associated creek flats or terraces, and aerial imagery shows no structures at this location within the overhead reticulation alignment.
6	Access track	Ridge, steep slopes. No waterway crossings	Very low likelihood to contain historic objects due to the steep nature of the landforms. The termination of the ridge, both to the east and to the west was surveyed for the EIS and no historic items were recorded. Aerial imagery shows no structures within the access track alignment.
7	Access track	Slopes	Very low likelihood to contain historic objects due to the sloping nature of the landforms. Identical landforms on the eastern side of the valley were surveyed for the EIS and no historic sites were recorded, even in flatter landforms near Cedar Creek. Aerial imagery shows no structures within the access track alignment. Historic settlement is located in the gentler gradients to the east of Cedar Creek (Strathclyde House).
8	Access track	Slopes and minor ridges	Very low likelihood to contain historic objects due to the sloping nature of the landforms. Identical landforms to the east were surveyed for the EIS and no historic sites were recorded. Aerial imagery shows no structures within the access track alignment.

2.1 CONCLUSION

The survey for the HIS comprehensively sampled similar landforms of the Project Boundary within which the major additional areas are located. This region consists of slopes, sometimes very steep, narrow localised ridges, and V-shaped valleys. The landforms are largely cleared and have been grazed for many years. While remnant vegetation is located on the steepest slopes, this does not consist of old-growth vegetation but areas that have probably been cleared, or at least logged, in the past. Waterways are best described as headwaters and would generally only hold water on a seasonal basis. Waterways in this region generally lack creek flats, terraces, or other areas suitable for historic occupation.

The extensive survey within the Survey Boundary failed to record many historic sites in these slope and ridge landforms. This was entirely due to the nature of the landforms being generally too steep for occupation and distant to reliable sources of water.

Given the knowledge gained for the survey that has taken place, the observed landform characteristics of the additional areas seen from digital elevation models (**Figure 1-2** to **Figure 1-6**), and the information gained from aerial imagery, it is assessed that the additional areas have a very low potential to contain items of historic heritage significance.

3 RESPONSES TO SUBMISSIONS

The public exhibition of the EIS raised two submissions to the HIS P14 ad P84). Both will be responded to below.

3.1 SUBMISSION FROM P14 (FORMER ROMAN CATHOLIC CHURCH)

In the submission from P14, the following was received:

Oz Ark states road works will be 45m from my front door of my home; this is incorrect as shown in attached site plan of my home that states it is 37m to road corridor.

Oz Ark incorrectly assumes “the development will not affect views from the heritage item”, I disagree.

Oz Ark incorrectly assumes that “road-widening works will not affect the heritage item”, I disagree.

Oz Ark incorrectly assumes “the development will not dominate the heritage item,” I disagree.”

“I request a detailed study to be done on my property regarding the heritage impacts and other issues that will impact my home. It is not sufficient to look at it from the road corridor, display an incorrect photo when it was not listed as heritage and ask associated stakeholders about the history. I really am surprised the lack of information and misinformation regarding this unique property within very close proximity to Turbines and road alterations.

3.1.1 Response

The heritage curtilage of the ‘Former Roman Catholic Church’ is located immediately outside the Survey Boundary and therefore will not be directly physically impacted by the Amended Project. The proponent will ensure there are no direct physical impacts within the lot containing the item, including vehicle movements and the storage of materials.

A Statement of Heritage Impact (SOHI) was completed for the ‘Former Roman Catholic Church’ and concludes that there will be no impact to the item’s heritage values. The SOHI is included in Section 5.7 of the HIS.

The Survey Boundary is located 20 m from the closest point to the listed heritage curtilage and 45 m from the item ‘Former Roman Catholic Church’.

OzArk notes the information supplied by P14 in their submission and appreciates the research P14 has completed for the ‘Former Roman Catholic Church’ including P14’s family ties to the building. This constitutes a significant body of research that justifies the item’s inclusion on the Singleton LEP. However, the works for the Amended Project will not directly impact the building

and as the works constitute road works within an existing road corridor, visual impacts from the road works will not alter views to or from the item and will not visually dominate the item or distract from its heritage values. OzArk therefore believe that the SOHI presented in Section 5.7 of the HIS remains valid.

3.2 SUBMISSION FROM P14 (LOSS OF HERITAGE VALUE)

In the submission from P14, the following was received:

There will be a loss of local historic heritage in the Bowmans Creek area, such as wool sheds, dance hall, Blacksmiths shop, Local land Heritage listed Church and federation homesteads.

3.2.1 Response

The HIS was undertaken for the Project by OzArk, in accordance with the SEARs and Heritage Council's *Historical Archaeology Code of Practice* (Heritage Council 2006).

As detailed in the HIS, two historic heritage places were recorded during the survey (although not listed on a LEP). These included Rock Lily Gully (HS01), which is a family burial plot, and Hilliers Creek (HC01), which is a farmhouse ruin. Although neither place would satisfy the criteria to be considered to have local heritage values, the loss of either item would be regretful, and as such both items will be retained in the landscape.

The assessment further concluded that the Project is occurring within a cultural landscape typified by small rural holdings containing a variety of structures such as homesteads that exemplify a long history of settlement over the past 150 years. The Project will not directly impact any buildings, structures, churches, or homesteads. There may be visual impacts in some places, however, this will not adversely impact the fundamental values of the cultural landscape.

Notwithstanding this, several mitigation and management measures will be implemented, including locating electricity reticulation and tracks more than 20 m and 10 m respectively from Hillier's Creek and temporary fencing to Rock Lily Gully.

The proponent will also commission a community community-based heritage study that will document and archivally record any items held to be significant by the local community.

Consultation occurred with landholders in relation to the Blacksmith workshop as discussed in the HIS.

'Fairview' and 'Hillcrest' homesteads are located outside the Survey Boundary and will not be impacted by the Project.

The LEP listed 'Former Roman Catholic Church' is discussed in Section 5.7 of the HIS.

In conclusion, the Amended Project will not directly impact any known historic item or item of identified heritage significance. Any works associated with the Amended Project that may be near known items of historic heritage will not alter views to or from the items and will not visually dominate the items or distract from their heritage values.

3.3 SUBMISSION FROM P84

In the submission from P84, the following was received:

Why is Strathclyde House not included in the EIS as an historical home? According to the article quoted above it was built in 1850.

3.3.1 Response

Strathclyde House is outside of the Survey Boundary and is occupied the Clydesdale family.

As the house is located outside the Survey Boundary it was not visited during the survey and was not included in the HIS.

Works associated with the Amended Project are located on the other side of Cedar Creek and are screened from Strathclyde House by plantings of substantial trees (**Figure 3-1**).

It is therefore assessed that the Amended Project will not directly impact Strathclyde House and that views to and from the item are also unlikely to be impacted.

Figure 3-1: View of landscape near Strathclyde House.



4 MANAGEMENT FOR THE AMENDED PROJECT

The changes to the Survey Boundary for the Amended Project have not resulted in changes to the likely impacts arising from the Amended Project and, therefore, the management required to ensure that historic values are appropriately considered have not altered from those presented in Section 7 of the HIS.

4.1 EXISTING MANAGEMENT RECOMMENDATIONS

In summary, the HIS considered three items and the recommendation for each item is set out below.

- Rock Lily Gully-HS01 is located outside of the Survey Boundary, although there will be impacts from the construction of access tracks within 40 m of the graves. The following management recommendations are made regarding this place:
 - The proponent will undertake to restore the fence surrounding the graves and install plantings to shield the graves from the nearby proposed access tracks
 - The grave site at GDA Zone 56 316931E, 6428480N should be fenced with a high visibility barrier during construction of the Project to avoid inadvertent impacts.
- Hilliers Creek-HS01 located at GDA Zone 56 323003E, 6435229N is within the Survey Boundary and liable to be impacted. Although the assessment of heritage significance in Section 5.4.2 of the HIS concluded that the place does not have local or state heritage values, it is, nonetheless, highly desirable for the place to remain within the landscape. As such, the following management recommendations should be followed:
 - The location of Hilliers Creek-HS01 should be considered when the design of the overhead electricity reticulation line is finalised to ensure that the place is avoided by not constructing an electricity pole within 20 m of the place
 - No access tracks for the construction of the overhead electricity reticulation line should be designed to be within 10 m of the place.
- 'Former Roman Catholic Church' will not be impacted, either physically or visually as demonstrated in the SOHI presented in Section 5.7 of the HIS.
 - As there is no proposed work within the defined heritage curtilage of the 'Former Roman Catholic Church' (Lot 1 DP1167323), there are no management recommendations beyond ensuring that there are no impacts within the lot containing this item including vehicle movement and the storage of materials.

4.2 ADDITIONAL MANAGEMENT RECOMMENDATION

With reference to Section 7 of the HIS, the following recommendation is added to consider the altered Survey Boundary for the Amended Project.

4.2.1 Requirement for further fieldwork

It is recommended that all additional areas shown on **Figure 1-2** to **Figure 1-6** require survey prior to impacts associated with the Amended Project. Although these areas were assessed in **Section 2** as having low potential to contain significant historic items, this predicative modelling requires testing in the field as there may be significant historic items that are not noticeable at a desk-top level.

5 RECOMMENDATIONS

These recommendations supersede those presented in Section 7 of the HIS.

1. Before works commence, the portions of the Survey Boundary not surveyed will require survey by an archaeologist. See **Section 4.2.1** for further details.
2. All land-disturbing activities must be confined within the assessed Survey Boundary. Should project impacts change such that the area to be impacted is outside of the assessed Survey Boundary, then additional assessment may be required.
3. The grave site (Rock Lily Gully-HS01) at GDA Zone 56 316931E, 6428480N should be fenced with a high visibility barrier during construction of the Project to avoid inadvertent impacts. To mitigate visual impacts from the access roads, the proponent will restore the fence surrounding the graves and install plantings to shield the graves from the nearby proposed access tracks.
4. The location of Hilliers Creek-HS01 located at GDA Zone 56 323003E, 6435229N should be considered when the design of the overhead electricity reticulation line is finalised to ensure that the place is avoided. No access tracks for the construction of the overhead electricity reticulation line should be designed to be within 10 m of the farm house ruin. No electricity pole associated with the overhead electricity reticulation line should be designed to be within 20 m of the farm house ruin.
5. There should be no impacts within Lot 1 DP1167323 that contains the 'Former Roman Catholic Church' (Item I156 on the Singleton LEP).
6. In terms of the cultural landscape surrounding the Survey Boundary, particularly along Albano (Bowmans Creek) Road, the proponent will commission a community-based heritage study that will document and archivally record any items held to be significant by the local community. This study will provide a record of the cultural landscape prior to any impacts associated with the Project commencing.
7. Procedures for the unexpected discovery of historic items and/or human skeletal material during the construction and/or use of the Amended Project will be set out in an approved Historic Heritage Management Plan (HHMP) that will be developed following project approval. Normally, no construction work associated with the Project can commence until the HHMP has been approved by the Department of Planning, Industry and Environment.