



**BULLI SEAM OPERATIONS**

**APPENDIX Q**  
**ABORIGINAL HERITAGE SITE**  
**RISK ASSESSMENT**

APPENDIX Q

BULLI SEAM OPERATIONS  
ABORIGINAL HERITAGE SITE RISK ASSESSMENT



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## TABLE OF CONTENTS

Q1	INTRODUCTION	Q-1	Q6.5	REVIEW OF HISTORIC SUBSIDENCE IMPACTS AND CONSEQUENCES IN THE SOUTHERN COALFIELD	Q-7
Q2	FRAMEWORK AND ASSESSMENT APPROACH	Q-1	Q6.5.1	Consequences to Aboriginal Heritage Sites from other Underground Mines in the Southern Coalfield	Q-7
Q3	STEP 1 - MINE PARAMETERS AND LIKELY TYPES OF SUBSIDENCE IMPACTS	Q-2	Q6.6	RISK OF IMPACT RESULTING IN CONSEQUENCES	Q-7
Q3.1	MINE PARAMETERS	Q-2	Q6.6.1	Approach to Risk Identification and Assessment	Q-7
Q3.2	LIKELY TYPES OF SUBSIDENCE IMPACTS	Q-3	Q6.6.2	Risk Ranking of Consequence	Q-7
Q4	STEP 2 – IDENTIFICATION AND CHARACTERISATION OF ABORIGINAL HERITAGE SITES	Q-3	Q7	STEP 5 – RISK MANAGEMENT PLANS AND ACCEPTABILITY OF CONSEQUENCES	Q-9
Q4.1	IDENTIFICATION OF ABORIGINAL HERITAGE SITES	Q-3	Q7.1	MANAGEMENT AND MITIGATION MEASURES	Q-9
Q4.2	ABORIGINAL HERITAGE SITE CHARACTERISTICS	Q-4	Q8	REFERENCES	Q-11
Q4.2.1	Domain	Q-4			
Q4.2.2	Aboriginal Site ID	Q-4			
Q4.2.3	Site Description (ACHA Report)	Q-4			
Q4.2.4	Summary Description	Q-4			
Q4.2.5	Site Dimensions	Q-4			
Q4.2.6	Overhang is Block-fall Type	Q-4			
Q4.2.7	Overhang Volume	Q-4			
Q4.2.8	Archaeological Composition	Q-5			
Q4.2.9	Existing Water Seepage	Q-5			
Q4.2.10	Located in a Valley Bottom	Q-5			
Q4.2.11	Archaeological Significance	Q-5			
Q4.2.12	Particular Cultural Significance	Q-5			
Q5	STEP 3 – IDENTIFICATION OF ABORIGINAL HERITAGE SITES OF SPECIAL SIGNIFICANCE	Q-5			
Q6	STEP 4 – RISK IDENTIFICATION AND ASSESSMENT	Q-6			
Q6.1	RISK MANAGEMENT ZONES	Q-6			
Q6.2	DEPTH OF COVER	Q-6			
Q6.3	SYSTEMATIC SUBSIDENCE PREDICTIONS	Q-6			
Q6.4	NON-SYSTEMATIC SUBSIDENCE PREDICTIONS	Q-6			

### LIST OF TABLES

Table Q-1	Summary of Archaeological Significance for Aboriginal Heritage Sites
Table Q-2	Changes to Aboriginal Heritage Sites Observed During Archaeological Monitoring

### LIST OF ATTACHMENTS

Attachment QA	Aboriginal Heritage Site Matrix
Attachment QB	Aboriginal Heritage Site Risk Management Zones
Attachment QC	Photos of Recorded Impacts to Aboriginal Heritage Sites

## Q1 INTRODUCTION

The Bulli Seam Operations (the Project) is located approximately 25 kilometres (km) north-west of Wollongong in New South Wales (NSW). The Project involves the continuation of underground mining operations at the Appin Mine and West Cliff Colliery with development to extend to the north (Appin Area 7 and West Cliff Area 5), east (North Cliff), west (Appin West [Area 9] and Appin Area 8) and south (Appin Areas 2 and 3 Extended). A description of the Project is provided in Section 2 in the Main Report of the Environmental Assessment (EA).

As part of the Director-General's Environmental Assessment Requirements (EARs), the EA must include an assessment of potential impacts of the Project taking into consideration the findings and recommendations of the Southern Coalfield Inquiry (SCI). The findings of the SCI are documented in the report *Impacts of Underground Coal Mining on Natural Features in the Southern Coalfield - Strategic Review* (herein described as the Southern Coalfield Panel Report [SCPR]) (NSW Department of Planning [DoP], 2008).

In June 2009, the Minister for Planning released the NSW Planning Assessment Commission (PAC)'s *Metropolitan Coal Project Review Report* (May, 2009) (herein described as the Metropolitan PAC Report). The Metropolitan Coal Project was the first mining proposal in the Southern Coalfield to be assessed under Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) since the SCPR was published in 2008.

Of relevance to this Project, the Metropolitan PAC Report concludes (page 132):

*The Panel considers that it would be desirable if future proposals for mining in the Southern Coalfield were required to take account of the SCI recommendations as modified by this report in preparing the Project Application and the subsequent EA.*

Specifically, Recommendations 2 and 3 of the Metropolitan PAC Report state:

### **Recommendation 2**

*The Panel recommends that the concept of RMZs enunciated in the SCI report be incorporated into a broader risk framework that includes:*

- *Identifying natural features likely to be at risk of negative environmental consequences from subsidence impacts.*

- *Assessing the potential risk to those features from the mining proposal.*
- *Identifying the options for dealing with any significant risk.*
- *Determining which of these options will form part of the management plan.*
- *Monitoring the subsidence impacts, consequences for the feature, and outcomes from the management strategies.*
- *Contingency options and planning to deal with exceedances, and*
- *Auditing of the risk management process.*

### **Recommendation 3**

*The Panel recommends that the steps set out in Section 6.2 of this review for assessing risk be considered for inclusion in future requirements for the assessment of proposals for mining in the Southern Coalfield to ensure that appropriate information on risks to significant natural features is available in the EA.*

This Aboriginal Heritage Site Risk Assessment has been prepared based on data provided by Mine Subsidence Engineering Consultants (MSEC), Biosis Research and Gillespie Economics.

## Q2 FRAMEWORK AND ASSESSMENT APPROACH

The framework and assessment approach to Aboriginal heritage sites has been conducted in a manner consistent with the steps described in Section 6.2 of the Metropolitan PAC report (quoted below):

*The following steps are suggested as a means of ensuring that adequate relevant information is available to the decision maker. They should also assist the Proponent and the regulators to focus their attention early on key issues for preparation of proposals and the identification of problems.*

- Step 1. *Identify the mine characteristics and types of subsidence impacts likely to be experienced in the Project Area. Mine characteristics include depth, geology, mining method, mining height, mine layout and percentage extraction.*

**Step 2.** Identify significant natural features that might be at risk from the subsidence impacts that could be expected from the proposal. In the case of the Southern Coalfield, a checklist of features that require consideration could be developed based on the SCI Report. It should include at least rivers and significant streams, upland swamps, endangered ecological communities, threatened species habitat, major cliff lines and Aboriginal Heritage. A full description of these features is required, including any characteristics that may be relevant in assessing potential subsidence-related impacts and consequences for the feature or parts of the feature.

**Step 3.** Assess any features identified in Step 2 that warrant special significance status<sup>27</sup> in any proposed risk management plan.

**Step 4.** Using the criteria set out in the SCI Report for deriving RMZ boundaries, draw a Risk Management Zone around those features from Step 2 and Step 3 and assess the risk to the feature (or relevant part of the feature)<sup>28</sup>, and

**Step 5.** Proposed risk management plans will be required:

- For those features of special significance identified in Step 3 where a risk of impact is a real possibility.<sup>29</sup>
- For those features identified in Step 2 where a risk of significant impact is a real possibility.<sup>30</sup>

Risk management plans should identify:

- (i) the options for managing the risk based on one or a combination of avoidance, mitigation, remediation or tolerance and taking account of any assessment of special significance of the feature;
- (ii) where relevant, the potential costs of those options;
- (iii) a preferred option;
- (iv) where relevant, a monitoring regime that will detect impact, measure actual impact against predicted impact and measure the effectiveness of the management strategies adopted;
- (v) contingency plans for dealing with the situation where actual impact exceeds predicted impact; and
- (vi) auditing of the implementation and effectiveness of the risk management plan.

<sup>27</sup> 'Special Significance Status' is based on an assessment of a natural feature that determines the feature to be so special that it warrants a level of consideration (and possibly protection) well beyond that accorded to others of its kind. It may be based on a rigorous assessment of scientific importance, archaeological and cultural importance, uniqueness, meeting a statutory threshold or some other identifiable value or combination of values.

<sup>28</sup> The Panel notes that it would be desirable to develop a two-stage risk assessment process for Step 4 to ensure that those features from steps 2 and 3 that are unlikely to meet the risk and impact thresholds in Step 5 are not required to undergo a stage 2 detailed risk assessment.

<sup>29</sup> 'Real Possibility' in this context means that the risk of occurrence needs to be more than remote, but no so high as to require a finding of 'more likely than not'. A risk of occurrence of between 5 and 15 percent is probably an appropriate starting point for consideration.

<sup>30</sup> A lower level of acceptable impact will apply to features of special significance and the threshold for requiring preparation of a risk management plan will therefore also be lower.

### Q3 STEP 1 - MINE PARAMETERS AND LIKELY TYPES OF SUBSIDENCE IMPACTS

The Project mine parameters (depth/mining height, geology, mining method, mine layout and percentage extraction) and likely types of subsidence impacts are described below. Further detail is provided in Section 2 in the Main Report of the EA and the Subsidence Assessment (Appendix A of the EA).

#### Q3.1 MINE PARAMETERS

##### **Depth/Mining Height**

In the Project extent of longwall mining area, the Bulli Seam is located between approximately 300 metres (m) (in the south-east) and 850 m (in the north-west) below the surface and is the uppermost seam of the Illawarra Coal Measures.

##### **Geology**

Above the Bulli Seam, the stratigraphy of the area consists of a sequence of sandstone, shale and claystone units within the Narrabeen Group, which are in turn, overlain by the Hawkesbury Sandstone.

The Wianamatta Group is stratigraphically located above the Hawkesbury Sandstone and has been eroded for a significant portion of the Southern Coalfield. However, within the Project area the Wianamatta Group outcrops generally north-west of the Nepean River and Georges River and ranges in thickness up to greater than 150 m across the Razorback Range.

There are a number of known major structures (e.g. faults or fault systems) in the vicinity of the Project underground mining areas and their locations are provided in Appendix A of the EA.

### **Mining Method**

Longwall mining involves extraction of rectangular panels of coal defined by underground roadways constructed around each longwall panel. The longwall mining machine travels back and forth across the width of the coal face progressively removing coal in slices from the panel. Once each slice of coal is removed from the longwall face, the hydraulic roof supports are moved forward, allowing the roof and a section of the overlying strata to collapse behind the longwall machine (referred to as forming the 'goaf').

### **Mine Layout**

The Project general arrangement is shown on Figure 2-1 in the Main Report of the EA and for the purposes of focussing the environmental assessment herein has been divided into four domains corresponding with the location of each of the underground mining operations, namely:

- West Cliff Area 5 and Appin Area 7 (north domain - contiguous with the current operations);
- North Cliff (east domain);
- Appin West (Area 9) and Appin Area 8 (west domain); and
- Appin Areas 2 and 3 Extended (south domain).

The four domains are shown on Figures 2-8 to 2-11 in the Main Report of the EA. These general arrangements show the proposed future development of the mining operations.

### **Percentage Extraction**

The Bulli Seam varies from less than 1.5 m to approximately 3.6 m in thickness beneath the Aboriginal heritage sites within the Project extent of longwall mining area (increasing from the south to the north-west) and it is expected that its full thickness would be extracted during the Project.

## **Q3.2 LIKELY TYPES OF SUBSIDENCE IMPACTS**

Subsidence is the vertical and horizontal movement of the land surface as a result of the extraction of underlying coal. Likely types of subsidence impacts (i.e. any physical change to the fabric or structure of the ground, its surface, or man-made features) as a result of systematic (*conventional*) or non-systematic (*non-conventional*) subsidence effects include surface and sub-surface cracking, buckling, dilating and/or tilting.

The predicted systematic and non-systematic subsidence effects for Aboriginal heritage sites and associated risk of impact and environmental consequences are provided in Step 4 of the Metropolitan PAC Report framework (Section Q6). A detailed Subsidence Assessment is presented in Appendix A of the EA.

## **Q4 STEP 2 – IDENTIFICATION AND CHARACTERISATION OF ABORIGINAL HERITAGE SITES**

### **Q4.1 IDENTIFICATION OF ABORIGINAL HERITAGE SITES**

The SCPR recommended that EAs for project applications lodged under Part 3A of the EP&A Act identify and assess the significance of all natural features located within 600 m of the edge of secondary extraction (SCPR Recommendation 4). This approach has been taken for Aboriginal heritage sites. Aboriginal heritage sites located above the extent of longwall mining area and within 600 m of the edge of secondary extraction<sup>1</sup> (the study area) are identified in Attachment QA.

<sup>1</sup> For the purpose of this assessment, the edge of secondary extraction has conservatively been taken to be the "extent of longwall mining area" boundary as shown on Figures 2-8 to 2-11 in the Main Report of the EA.

A total of 623<sup>2,3</sup> Aboriginal heritage sites have been identified within the study area (Attachment QA). Aboriginal heritage sites were identified based on site surveys, a search of the NSW Department of Environment and Climate Change (DECC) Aboriginal Heritage Information Management System (AHIMS) database and review of the AHIMS database for duplicate sites (i.e. sites registered more than once on the database). The identification of Aboriginal heritage sites is described further in the Aboriginal Cultural Heritage Assessment (ACHA) (Appendix G of the EA).

## **Q4.2 ABORIGINAL HERITAGE SITE CHARACTERISTICS**

Key characteristics of each Aboriginal heritage site are provided in Attachment QA. The following sub-sections provide a description of the content of Attachment QA.

### **Q4.2.1 Domain**

The longwall mining domain for each Aboriginal heritage site within the study area is identified in Attachment QA as follows:

- NC = North Cliff;
- AA2 = Appin Area 2 Extended;
- AA3 = Appin Area 3 Extended;
- AA7 = Appin Area 7;
- AA8 = Appin Area 8;
- AA9 = Appin West (Area 9); and
- WC = West Cliff.

Where an Aboriginal heritage site is located within 600 m of the edge of the secondary extraction boundary of two domains, the domain with higher predicted domain-based systematic subsidence effects has been selected as the relevant domain for identification purposes.

<sup>2</sup> Sites 1373, 3504, 3505, 3506, 3508, 2228/3617 and 3533/3616 referenced in Appendix G of the EA were not assessed in this risk assessment as they are located outside the 600 m boundary. Sites 2041 and 2052 referenced in Appendix G of the EA were not assessed in this risk assessment as they were found to be duplicates of sites 2036 and 1922, respectively.

<sup>3</sup> Due to minor changes in the longwall layout an additional three Aboriginal heritage sites have been identified on the edge of the 600 m boundary. These sites (2723, 2725 and 2044) have not been assessed in this risk assessment as they are located on the edge of the 600 m boundary and are therefore predicted to be subject to very minor subsidence movements.

### **Q4.2.2 Aboriginal Site ID**

The Aboriginal heritage site identifier for all Aboriginal heritage sites within the study area is consistent with Appendix G of the EA (i.e. is based on the relevant DECC AHIMS site identifier or similar naming convention for new sites recorded by Project surveys) and is provided in Attachment QA.

### **Q4.2.3 Site Description (ACHA Report)**

A description of each Aboriginal heritage site consistent with Appendix G of the EA is provided in Attachment QA.

### **Q4.2.4 Summary Description**

The summary description includes the type/structure of the Aboriginal heritage sites (e.g. overhang, artefact scatter, open platform and scarred tree).

### **Q4.2.5 Site Dimensions**

Aboriginal heritage site dimensions provided in Attachment QA include the length/width/height (where relevant) of overhang and open platform sites based on information recorded on the relevant DECC AHIMS registered site cards<sup>4</sup> and/or information from Project surveys.

### **Q4.2.6 Overhang is Block-fall Type**

Overhangs susceptible to block-fall type erosion were determined from site cards and Project surveys.

### **Q4.2.7 Overhang Volume**

The estimated volume of each overhang (cubic metres [m<sup>3</sup>]) is provided in Attachment QA based on site dimensions.

<sup>4</sup> A site card is a recording form that has been designed to complement DECC's AHIMS data structure and to meet the professional standards for archaeological recording of Aboriginal heritage sites. Site cards also conform to legal standards necessary for recording potentially sensitive information and maintains DECC copyright provisions over information recorded while respecting the rights of Aboriginal people to control their information within the AHIMS database.

#### Q4.2.8 Archaeological Composition

The specific archaeological composition of each Aboriginal heritage site is provided in Attachment QA and indicates the presence of pictograms, petroglyphs, grinding grooves, potential archaeological deposits (PAD)<sup>5</sup>, deposits, artefacts and/or scarred trees.

#### Q4.2.9 Existing Water Seepage

Overhangs with existing water seepage were identified from site cards and information collected during Project surveys.

#### Q4.2.10 Located in a Valley Bottom

Aboriginal heritage sites located in drainage lines are identified. The site card and Project site inspection data was reviewed for all sites with co-ordinates that plot within 25 m of a drainage line and for all sandstone based sites (i.e. overhang and open platform sites) with co-ordinates that plot between 25 m and 50 m of a stream alignment. Based on the site information, sites were identified as being located in a drainage line or not. Where the site information did not provide sufficient detail for this determination to be made, the site was conservatively identified as being located in a drainage line.

#### Q4.2.11 Archaeological Significance

Archaeological significance refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. The assessment of archaeological significance is described in detail in Appendix G of the EA and was conducted in accordance with the DECC (2006) *Guidelines for Aboriginal Heritage Impact Assessment*. In summary, the assessment included consideration of general site factors (e.g. site intactness or integrity, connectedness, chronological potential), representativeness, rarity and aesthetic values.

The archaeological significance of each Aboriginal heritage site is provided in Attachment QA and a summary is provided in Table Q-1.

**Table Q-1**  
**Summary of Archaeological Significance for Aboriginal Heritage Sites**

Archaeological Significance	Number <sup>^</sup>	Percentage of Total Number of Sites
High	13	2%
Moderate	62	10%
Low	444	71%
N/A*	27	5%
PAD	77	12%
<b>Total</b>	<b>623</b>	<b>100 %</b>

\* Limited information was available to allow archaeological significance assessment. See Appendix G of the EA for further information.

<sup>^</sup> Table Q-1 presents refined numbers from Appendix G of the EA after removal of some sites not considered in this risk assessment. See footnotes 2 and 3 in Section Q4.1.

#### Q4.2.12 Particular Cultural Significance

Aboriginal heritage sites identified through statements or comments made by registered Aboriginal stakeholders during the Project field surveys have been identified as having particular cultural significance. The assessment of Aboriginal heritage sites of particular cultural significance is described in Appendix G of the EA. Seven of the 623 Aboriginal heritage sites were identified as being of particular cultural significance, namely sites 281, 496, 973, 1006, 695, 282/982 and BS 40.

## Q5 STEP 3 – IDENTIFICATION OF ABORIGINAL HERITAGE SITES OF SPECIAL SIGNIFICANCE

In relation to 'special significance' the Metropolitan PAC Report provides the following (page 42):

*'Special Significance Status' is based on an assessment of a natural feature that determines the feature to be so special that it warrants a level of consideration (and possibly protection) well beyond that accorded to others of its kind. It may be based on a rigorous assessment of scientific importance, archaeological and cultural importance, uniqueness, meeting a statutory threshold or some other identifiable value or combination of values.*

<sup>5</sup> PADs generally comprise stable deposits or landforms that are highly likely to contain intact sub-surface archaeological evidence of use or occupation (Appendix G of the EA). PADs can be in either a closed or open context, and have no archaeological evidence visible at the site.



Eighteen Aboriginal heritage sites were assessed in Appendix G of the EA as having either high archaeological significance or particular cultural significance. One of these sites (i.e. Site 854) is considered to be more archaeologically significant than all other sites in the study area.

Site 854 is located in North Cliff upslope of a minor tributary of the Woronora River. This site is not located in a valley bottom and therefore is not expected to be subject to significant non-systematic subsidence movements. Notwithstanding, a Risk Management Plan (RMP) would be prepared for this site in accordance with Section 6.2 of the Metropolitan PAC Report (Section Q7).

## **Q6 STEP 4 – RISK IDENTIFICATION AND ASSESSMENT**

### **Q6.1 RISK MANAGEMENT ZONES**

As shown on Figures 1 and 2 in Attachment QB, a Risk Management Zone (RMZ) has been applied to each Aboriginal heritage site<sup>6</sup> identified in Step 2 as having high or moderate archaeological significance and/or having particular cultural significance (Sections Q4.2.11 and Q4.2.12).

The RMZ boundary is based on the definition prescribed in the SCPR (i.e. 400 m surface lateral distance from the outside extremity of the site or by a 40 degree angle from the vertical down to the coal seam which is proposed to be extracted, whichever is greater).

### **Q6.2 DEPTH OF COVER**

The minimum depth of cover between each Aboriginal heritage site and the Bulli Seam is provided in Attachment QA. The depth of cover for Aboriginal heritage sites above the Project extent of longwall mining area ranges from approximately 345 m to 665 m.

### **Q6.3 SYSTEMATIC SUBSIDENCE PREDICTIONS**

Systematic subsidence predictions for each Aboriginal heritage site based on the EA Base Plan Longwalls are provided in Attachment QA, including:

- total maximum subsidence (millimetres [mm]);
- total maximum tilt (millimetres per metre [mm/m]);
- total maximum curvatures (per kilometre [1/km]); and
- estimated average tensile and compressive strains for individual sites and mining domains as a whole (based on a relationship of 15 times curvature).

### **Q6.4 NON-SYSTEMATIC SUBSIDENCE PREDICTIONS**

Non-systematic subsidence predictions for each Aboriginal heritage site based on the EA Base Plan Longwalls are provided in Attachment QA, including:

- maximum predicted upsidence (mm); and
- maximum predicted closure (mm).

The method for calculation of upsidence and closure is closely related to the equivalent valley height for each Aboriginal heritage site. As a result, Aboriginal heritage sites located in more incised valleys are generally subject to more upsidence and closure movements than a site located in a broader valley. The maximum equivalent valley heights (MEVHs) for each Aboriginal heritage site are provided in Attachment QA.

<sup>6</sup> For the purpose of the Aboriginal Heritage Site Risk Assessment, the study area as defined in Section Q4.1 equates to the "Study Area – Proposed Extent of Longwall Mining (including buffer) and Stage 4 Coal Wash Emplacement", excluding the Stage 4 Coal Wash Emplacement, as labelled on Figures 1 and 2 in Attachment QB.

## **Q6.5 REVIEW OF HISTORIC SUBSIDENCE IMPACTS AND CONSEQUENCES IN THE SOUTHERN COALFIELD**

### **Q6.5.1 Consequences to Aboriginal Heritage Sites from other Underground Mines in the Southern Coalfield**

To date 152 Aboriginal heritage sites in the Southern Coalfield subject to mining-induced subsidence effects have been subject to monitoring (Kayandel Archaeological Services, 2008; Sefton, 2000; and records held by Biosis Research). Of the 152 Aboriginal heritage sites that have been monitored, 11 (7% of monitored sites) had recorded consequences at the same time as being subject to mining induced subsidence and as such the consequences are attributed to mining. One of these 11 Aboriginal heritage sites has exhibited an impact to the archaeological features present, being the fracturing of an art panel (Appendix G of the EA).

Table Q-2 summarises the 11 Aboriginal heritage sites considered to have been subject to impacts from mining induced subsidence. Available photos of the recorded consequences are provided in Attachment QC.

## **Q6.6 RISK OF IMPACT RESULTING IN CONSEQUENCES**

### **Q6.6.1 Approach to Risk Identification and Assessment**

The Metropolitan PAC Report indicates (page 7):

*Aboriginal heritage sites are most at risk of subsidence impacts where they are located in cliff lines and/or rock overhangs. The SCI Panel was not made aware of any significant impacts having occurred on Aboriginal heritage features in the Southern Coalfield since the 1980s.*

Section Q6.6.2 describes the approach taken in Appendix G of the EA to determine the risk of impact for those Aboriginal heritage sites identified as having high or moderate archaeological significance and/or having particular cultural significance.

### **Q6.6.2 Risk Ranking of Consequence**

Previous studies have identified the following factors as important determinates in the potential and likelihood of a shelter site being impacted by mine subsidence (Sefton, 2000; Biosis Research, 2007a):

- overhang size (particularly volume);
- presence of existing water seepage;
- topographic location in relation to a valley bottom;
- location above the goaf; and
- block-fall weathering as the main shelter formation process.

Appendix A of the EA reports that differential subsidence movement may be dissipated through existing fractures and joints (either within a site or in the landscape surrounding a site), rather than through cracking or other damage caused by tensile and compressive strains.

Appendix A of the EA also reports that the depth of cover at any potential surface location is one of the factors that contributes to the scale of subsidence movements (including subsidence, tilts and strains) experienced at that location. Generally, the greater the depth of cover, the less the subsidence movements. As the longwall design is subject to change, the depth of cover has been used as an indicative additional factor in the risk assessment. Appendix A of the EA indicates that at depths of cover of greater than 400 m the risk of impact would be reduced. As provided in Section Q6.2 and Attachment QA, the depth of cover at Aboriginal heritage sites above the Project extent of longwall mining area ranges from approximately 345 m to 665 m with approximately 90% of sites above 400 m depth of cover.

**Table Q-2**  
**Changes to Aboriginal Heritage Sites Observed During Archaeological Monitoring**

Site Name	Site Type	Observed changes / impacts	Plates	Reference
FRC 4	Sandstone Shelter with Art	Opening of existing open bedding plane at roof/rear wall and minor roof fall	Plate 1 in Attachment QC	Kayandel Archaeological Services(2008)
FRC 10	Sandstone Shelter with Art	Cracks in rear wall, potential for altered seepage to impact art mitigated with artificial drip-line	Plate 2 in Attachment QC	Kayandel Archaeological Services(2008)
FRC 11	Sandstone Shelter with Art	Exfoliation and block-fall at rear wall	Plate 5 in Attachment QC	Kayandel Archaeological Services(2008)
FRC 49	Sandstone Shelter with Art	Minor block-fall from rear wall and ceiling	Plates 3a and 3b in Attachment QC	Kayandel Archaeological Services(2008)
FRC 57	Sandstone platform with engraving and grinding grooves	Crack in sandstone platform	Plate 4 in Attachment QC	Kayandel Archaeological Services(2008)
FRC 152	Sandstone Shelter with Art	Cracking and minor block-fall at rear wall	No photos available	Sefton (2000) and Kayandel Archaeological Services(2008)
BR 4	Sandstone Shelter with Art	Cracking and block-fall at rear wall	No photos available	Sefton (2000)
P 3	Sandstone Shelter with PAD	Minor block-fall from rear wall	No photos available	Sefton (2000)
989*	Sandstone Shelter with Art	Cracking and minor block-fall at rear wall	No photos available	Sefton (2000)
990 <sup>^</sup>	Sandstone Shelter with Art	Cracking in floor and rear wall	Plates 6a and 6b in Attachment QC	Sefton (2000)
D 4	Sandstone Shelter with Art	Opening of crack in back wall	Plates 7a and 7b in Attachment QC	Biosis Research (2008)

\* Referred to as WR 1 in the ACHA (Appendix G of the EA).

<sup>^</sup> Referred to as WR 2 in the ACHA (Appendix G of the EA).

The method described by Biosis Research (2007b) simply considers risk factors as being present or not, and 'sums' these to produce an overall risk category (described below). The more risk factors exhibited by a site then the greater the determined risk category. In particular, the following reasoning has been used to formulate the risk assessments for the sites of high or moderate archaeological significance or sites of particular cultural significance, where sites are considered to be at risk if:

- the shelter size is >50 m<sup>3</sup>;
- the shelter has existing water seepage;
- the site is located near the valley bottom; or
- the shelter is a block-fall type shelter.

The highest category generally achieved by the risk of impact assessment is "moderate". This recognises the results of previous monitoring that indicate consequences to sites are rare (occurring in approximately 7% of monitored cases which have generally focused on sites with higher risk of impact) and that when consequences have been recorded they have been relatively minor (rarely impacting art surfaces for example).

The other categories generally used to describe risk (i.e. "low" [impacts are unlikely], "very low" [impacts are highly unlikely] and "negligible" [impacts are highly unlikely and would likely be indistinguishable from the natural background environment and natural deterioration process]) include sites whose features, size and landscape position have not previously shown to exhibit negative consequences during or after mining induced subsidence.

Open stone artefact sites and scarred trees in all cases are highly unlikely to be impacted by mine subsidence, and hence they are attributed a negligible risk assessment.

Based on the above, Attachment QA details the risk of impact from subsidence to sites of high or moderate archaeological significance or sites of particular cultural significance. Attachment QA indicates that of the 76 sites of moderate or high archaeological significance or sites of particular cultural significance, 26 (34%) sites were assessed as having a Negligible risk, 31 (41%) sites a Very Low risk, 12 (16%) sites a Low risk and 7 (9%) sites a Moderate risk. No sites were assessed as having a High risk. This is consistent with previous observations within the Southern Coalfield during monitoring programmes (Appendix G of the EA). Although considered highly unlikely, the complete collapse of a shelter of high archaeological significance or particular cultural significance could be considered as a significant impact. The evidence at hand suggests that Project related subsidence does not pose a significant risk of impact to Aboriginal heritage sites within the study area.

## **Q7 STEP 5 – RISK MANAGEMENT PLANS AND ACCEPTABILITY OF CONSEQUENCES**

Section 6.2 of the Metropolitan PAC Report provides a framework for RMPs, as follows:

*Risk management plans should identify:*

- (i) *the options for managing the risk based on one or a combination of avoidance, mitigation, remediation or tolerance and taking account of any assessment of special significance of the feature;*
- (ii) *where relevant, the potential costs of those options;*
- (iii) *a preferred option;*
- (iv) *where relevant, a monitoring regime that will detect impact, measure actual impact against predicted impact and measure the effectiveness of the management strategies adopted;*
- (v) *contingency plans for dealing with the situation where actual impact exceeds predicted impact; and*
- (vi) *auditing of the implementation and effectiveness of the risk management plan.*

A RMP would be prepared for each Aboriginal heritage site of moderate or high archaeological significance or particular cultural significance either separately, or combined with the Aboriginal Heritage Plan (AHP) recommended in Appendix G of the EA. The AHP would also detail and schedule for the life of the Project the mitigation and management measures presented in Appendix G of the EA and described below.

### **Q7.1 MANAGEMENT AND MITIGATION MEASURES**

Appendix G of the EA recommends that the AHP include the following:

1. A protocol for the involvement of the Aboriginal community in all Aboriginal cultural heritage related works conducted under the AHP.
2. A programme for regularly updating site information for the study area, including regular searches of the DECC AHIMS database. Such a programme could be incorporated into the pre-clearance survey and subsidence impact monitoring programme activities.
3. A programme setting out the requirements for pre-clearance surveys (on a progressive basis) for new Project surface developments that are outside of the existing pit tops, existing ventilation shafts and the West Cliff Stage 3 and Stage 4 Coal Wash Emplacement areas.
4. A programme for the verification of Aboriginal heritage site data in the study area including accurately relocating sites for which global positioning system (GPS) co-ordinates are not available, updating condition assessments and collection of baseline monitoring data for sites deemed to be of high or moderate archaeological significance or particular cultural significance.
  - 4.1. Updating the site recordings for sites of particular cultural significance would be prioritised where specifically requested by the Aboriginal community (Sites 281 and 1006 for example).
  - 4.2. Obtaining more detailed information for sites with limited information would also be prioritised.

5. A programme describing the requirements for management and representative salvage works for sites that would be impacted by the West Cliff Stage 4 Coal Wash Emplacement. In these cases the management measures would seek to be of a scale commensurate with the sites' archaeological and cultural significance.
6. A protocol for the development of site specific Conservation Plans where pre-mining mitigation works are proposed, or where post-mining mitigation and conservation works are required and agreed to by the Aboriginal community and landowners.
7. A protocol for the consideration of whether pre-mining engineering measures (e.g. stress relief slots) for sandstone platforms containing sites of high archaeological significance or particular cultural significance could be implemented, if strongly advocated by the Aboriginal community. Prior to any deployment of this type of mitigation, careful consideration would need to be given to the impact the works could have on the heritage values of the site and surrounding area, site accessibility, the level of potential damage associated with installing the measures and a consideration the appropriateness of the costs involved (Pearson and Sullivan, 1999). Any works would need to be undertaken in consultation with and approval of the landowner.
8. A subsidence impact monitoring programme to be implemented progressively for the study area as part of future Extraction Plan applications. The monitoring programme would include all sites of moderate or high archaeological significance and/or sites of particular cultural significance. The programme would seek to include (where practicable) a selection of other sites with features that could assist to inform and further refine the impact assessment model currently used. The monitoring programme would include the following:
  - 8.1. A schedule for undertaking the monitoring.
  - 8.2. A protocol for determining Aboriginal stakeholder involvement.
  - 8.3. Appropriately detailed baseline and archival site recordings directed by a suitably experienced rock art recorder including high resolution digital photographic coverage of shelters. The detailed recording would include the following:
    - 8.3.1. Scale plans and sections of each shelter.
    - 8.3.2. On-site sketch interpretations of motifs or petroglyphs.
    - 8.3.3. Metrical and qualitative descriptions of art panels and any motifs or petroglyphs.
    - 8.3.4. Varied distance and aspect context photographs of the shelter and art panels.
    - 8.3.5. Single frame coverage of each panel and if required, set distance scale photography for montage of the panel with International Federation of Rock Art Organisation (IFRAO) scales.
    - 8.3.6. Single frame coverage of individual motifs and if required, set distance scale photography for montage of individual motifs with IFRAO scales.
    - 8.3.7. Varied distance and angle photography of informative features of the rock art and panels as required (e.g. superimposition of motifs or media) and its context (e.g. joints, cracks, seepage, mineral or organic accretions) with IFRAO scales.
    - 8.3.8. Spherical photographic coverage of selected sites using high resolution digital photography and appropriate image stitching techniques.
    - 8.3.9. Elevation plans of shelter walls recording structural and surface features including but not limited to art, graffiti, joints, bedding planes, exfoliation scars, cracks, mineral and micro-organism growth, dripline and water seepage locations.
    - 8.3.10. The identification and recording through digital photography of specific monitoring points, informed by previous work undertaken by Sefton, Kayandel Archaeological Services and Biosis Research, generally being pre-existing cracks, joints, areas of seepage located on or adjacent to art panels, or in other parts of the shelter.

9. A protocol for determining whether proposed management actions are appropriate (e.g. installation of an artificial dripline) in the event of an observed subsidence related impact to a monitored site. The protocol would seek advice from the Aboriginal community and DECC and be cognisant of the potential impacts that can be caused to the site by implementing invasive techniques. Any works would be undertaken in consultation with and the approval of the landholder.
10. A protocol for the management and reporting of unknown Aboriginal heritage sites that may be identified during the life of the Project, including, in particular, Aboriginal ancestral remains.
11. A review process to retain flexibility throughout the Project's life to incorporate learnings from all aspects of work conducted under the AHP.
- Planning and Assessment Commission (2009) *The Metropolitan Coal Project Review Report*. May 2009.
- Sefton, C. (2000) *Overview of the Monitoring of Sandstone Overhangs for the Effects of Mining Subsidence Illawarra Coal Measures*. Report for Collieries Division, BHP Coal.

## Q8 REFERENCES

- Biosis Research (2007a) *Appin Colliery Longwall 302 End of Panel Report Cultural Heritage*. Report for BHP Billiton Illawarra Coal.
- Biosis Research (2007b) *Dendrobium Area 3 Archaeological and Cultural Heritage Assessment*. Report for BHP Billiton.
- Biosis Research (2008) *Monitoring of site D4 (AHIMS #52-2-2252) under Consent #2583 at Dendrobium Area 2*. A report to BHP Billiton Illawarra Coal.
- Department of Environment and Climate Change (2006) *DECC Guidelines for Aboriginal Heritage Impact Assessment*.
- Department of Planning (2008) *Impacts of Underground Coal Mining on Natural Features in the Southern Coalfield - Strategic Review*. Southern Coalfield Panel Report.
- Kayandel Archaeological Services (2008) *Aboriginal Cultural Heritage Assessment, Metropolitan Coal Project, Metropolitan Colliery, Helensburgh, NSW*. Report for Helensburgh Coal Pty Ltd.
- Pearson and Sullivan (1999) *Looking after Heritage Places. The Basics of Heritage Planning for Managers, Landowners, and Administrators*. Melbourne University Press, Melbourne.

ATTACHMENT QA  
ABORIGINAL HERITAGE SITE MATRIX

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
AA3	11	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	20	7	1.5	Yes	210	Pictogram	No	No	Moderate	No	Refer Figure 1
AA3	12	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	30	2.1	2.8	No	176	Pictogram, artefact, deposit	No	Yes	Low	No	N/A
AA7	14	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	61	1	15	*	915	Pictogram	*	No	Low	No	N/A
WC	21	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	102	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	3	2	Yes	60	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
NC	228	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	238	Sandstone Platform with Grinding Groove / Engraving	Open Platform	9	3.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	242	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	243	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	15	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	244	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	267	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	3	4.3	*	194	Artefact, deposit	*	No	Low	No	N/A
WC	270	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Pictogram	*	No	Low	No	N/A
WC	278	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	46	8	5.1	Yes	1877	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	279	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	3	4	Yes	192	Pictogram	Yes	No	Low	No	N/A
NC	280	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	3	2	Yes	90	Pictogram, artefact, deposit	No	No	High	No	Refer Figures 1 and 2
NC	281	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	30	3.5	4.5	No	473	Pictogram	No	No	Moderate	Yes	Refer Figure 1
NC	287	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	288	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	289	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	290	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	293	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	3	2	Yes	30	Pictogram	Yes	No	Low	No	N/A
NC	294	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	3.5	1.5	*	63	Pictogram	*	No	Low	No	N/A
NC	295	Sandstone Shelter with Deposit only	Overhang	20	4	2.2	*	176	Artefact, deposit	*	No	Low	No	N/A
NC	296	Sandstone Platform with Grinding Groove / Engraving	Open Platform	75	40	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	299	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2	2.1	*	34	Pictogram	*	No	Low	No	N/A
NC	300	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	301	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3	2.2	*	46	Pictogram	*	No	Low	No	N/A
NC	303	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	1.5	2.2	*	30	Pictogram	*	No	Low	No	N/A
NC	304	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	2	1.5	*	39	Pictogram	*	No	Low	No	N/A
NC	311	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	318	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	331	Sandstone Platform with Grinding Groove / Engraving	Open Platform	85	42	N/A	N/A	N/A	Petroglyph, Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	348	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	4	2	*	128	Pictogram	*	No	Low	No	N/A
NC	349	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	1	*	8	Pictogram	*	No	Low	No	N/A
NC	358	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	359	Sandstone Platform with Grinding Groove / Engraving	Open Platform	75	40	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	360	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	361	Sandstone Shelter with Deposit only	Overhang	15	2.8	1.4	Yes	59	Artefact, deposit	No	No	Low	No	N/A
NC	364	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	390	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	3.4	2.2	*	82	Pictogram	*	Yes	Low	No	N/A
NC	410	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	7	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	411	Sandstone Shelter with Deposit only	Overhang	35	4.5	5	*	788	Artefact, deposit	*	No	Low	No	N/A
WC	417	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Pictogram	*	No	N/A	No	N/A
WC	419	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	2.2	Yes	40	Artefact, deposit	No	No	Low	No	N/A
NC	426	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	30	4.5	2	*	270	Pictogram	*	No	Low	No	N/A
NC	429	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Pictogram	*	Yes	N/A	No	N/A
NC	431	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	432	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	433	Sandstone Platform with Grinding Groove / Engraving	Open Platform	60	4	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	434	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	435	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	436	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	437	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	438	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
NC	439	Sandstone Platform with Grinding Groove / Engraving	Open Platform	25	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	440	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	2.1	1.6	*	40	Pictogram	*	No	Low	No	N/A
NC	442	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	8	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	443	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	20	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	444	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	2	*	36	Pictogram	*	No	Low	No	N/A
NC	445	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3.4	2.8	Yes	57	Pictogram	*	No	Low	No	N/A
NC	446	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	447	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	9	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Moderate	No	Refer Figure 1
NC	448	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	449	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Pictogram	*	No	Low	No	N/A
NC	467	Sandstone Shelter with Deposit only	Overhang	*	*	*	*	*	Artefact, deposit	*	No	N/A	No	N/A
NC	468	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
NC	469	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	N/A	No	N/A
AA2	479	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	1.5	1.2	Yes	13	Pictogram, artefact, deposit	*	No	Moderate	No	Refer Figure 1
AA2	494	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	11	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Moderate	No	Refer Figure 1
AA2	495	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	496	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	2.7	7	Yes	189	Pictogram	No	No	Low	Yes	Refer Figure 1
AA2	502	Sandstone Platform with Grinding Groove / Engraving	Open Platform	3	1.75	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	503	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	25	1.6	1.5	*	60	Pictogram	*	No	Low	No	N/A
AA2	504	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	3	6	*	198	Pictogram	*	No	Low	No	N/A
AA2	505	Sandstone Shelter with Deposit only	Overhang	17	4.5	3.5	*	268	Artefact, artefact, deposit	*	No	Low	No	N/A
AA2	506	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2.5	2.5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	507	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	508	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A



**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
NC	555	Sandstone Platform with Grinding Groove / Engraving	Open Platform	32	21	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	556	Sandstone Platform with Grinding Groove / Engraving	Open Platform	9.5	7.3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	557	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	558	Sandstone Shelter with Deposit only	Overhang	4.6	1.5	0.6	Yes	4	Artefact, deposit	No	No	Low	No	N/A
NC	559	Sandstone Platform with Grinding Groove / Engraving	Open Platform	60	60	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	560	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	2	1.5	*	39	Pictogram	*	No	Low	No	N/A
NC	561	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	1.5	2.25	Yes	30	Pictogram	*	No	Low	No	N/A
NC	562	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	1.7	1.5	*	23	Pictogram	*	No	Low	No	N/A
NC	563	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	564	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	6	N/A	N/A	N/A	Petroglyph	N/A	No	High	No	Refer Figures 1 and 2
NC	565	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	6	2.7	*	194	Pictogram	*	No	Low	No	N/A
NC	566	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	1.3	1	*	21	Pictogram, petroglyph, artefact, deposit	*	No	Low	No	N/A
NC	568	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	569	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	571	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	572	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	573	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	578	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	1.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	579	Sandstone Platform with Grinding Groove / Engraving	Open Platform	1	2	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	580	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	581	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	4	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	582	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	1.5	*	12	Pictogram	*	No	Low	No	N/A
NC	583	Sandstone Platform with Grinding Groove / Engraving	Open Platform	70	20	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Moderate	No	Refer Figure 1
NC	584	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	586	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	591	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	28	3	3	*	252	Pictogram	*	Yes	Low	No	N/A
NC	592	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	1	1.25	*	5	Pictogram	*	No	Low	No	N/A
NC	593	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2	3	*	36	Pictogram	*	No	Low	No	N/A
NC	594	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	5	5.5	Yes	303	Pictogram, grinding groove	*	No	Low	No	N/A
NC	595	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3	2.8	*	76	Pictogram	*	No	Low	No	N/A
NC	596	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	597	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	4	3	Yes	108	Pictogram	No	No	Low	No	N/A
NC	598	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2	2	*	20	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	599	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	600	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	3	3	*	72	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
NC	601	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	602	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2	2	No	20	Pictogram	No	No	Moderate	No	Refer Figures 1 and 2
NC	604	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3	2.25	No	61	Pictogram	No	No	Low	No	N/A
NC	605	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2	1.5	*	18	Pictogram	*	No	Low	No	N/A
NC	606	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3	2.25	Yes	61	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	607	Sandstone Shelter with Deposit only	Overhang	12	3	1.5	Overhang	54	Artefact, deposit	*	No	Low	No	N/A
NC	608	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	2.25	3	*	81	Pictogram	*	No	Moderate	No	Refer Figures 1 and 2
NC	609	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	4	5	*	240	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	610	Sandstone Platform with Grinding Groove / Engraving	Open Platform	20	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	652	Sandstone Platform with Grinding Groove / Engraving	Open Platform	25	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	661	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	662	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	2	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	663	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	10	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	664	Sandstone Platform with Grinding Groove / Engraving	Open Platform	1.5	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	666	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	667	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2.7	2.2	No	36	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	668	Sandstone Shelter with Deposit only	Overhang	9	2	1.2	*	22	Artefact, deposit	No	No	Low	No	N/A
NC	669	Sandstone Platform with Grinding Groove / Engraving	Open Platform	20	10	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	670	Sandstone Platform with Grinding Groove / Engraving	Open Platform	46	10	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	671	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	3.5	2	Yes	70	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	672	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	673	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	4.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	693	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	7	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	694	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	695	Sandstone Platform with Grinding Groove / Engraving	Open Platform	200	50	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	Yes	Refer Figures 1 and 2
NC	696	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	2	1.5	Yes	27	Pictogram	Yes	No	Low	No	N/A
NC	697	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	4	3	Yes	144	Pictogram	Yes	No	Low	No	N/A
NC	698	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2.5	3	Yes	45	Pictogram	No	No	Low	No	N/A
NC	699	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3	3	2	No	18	Pictogram	Yes	No	Low	No	N/A
NC	700	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2.6	3.8	No	79	Pictogram	No	No	Low	No	N/A
NC	701	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	702	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2.5	1.2	No	18	Pictogram	Yes	No	Low	No	N/A
NC	703	Sandstone Platform with Grinding Groove / Engraving	Open Platform	22	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	704	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	4.4	3	Yes	106	Pictogram	Yes	No	Low	No	N/A
NC	705	Sandstone Platform with Grinding Groove / Engraving	Open Platform	35	9	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	706	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	20	2	2	Yes	80	Pictogram	*	No	Low	No	N/A
NC	707	Sandstone Platform with Grinding Groove / Engraving	Open Platform	27	12	N/A	N/A	N/A	Grinding Groove	N/A	No	High	No	Refer Figures 1 and 2
NC	708	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3	4	Yes	84	Pictogram	No	No	Low	No	N/A
NC	709	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	17	2.5	3.5	Yes	149	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	710	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	711	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	15	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	712	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	2	3	*	66	Pictogram	*	No	Low	No	N/A
NC	713	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	3.5	3	Yes	84	Pictogram	*	No	Low	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
NC	714	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	3	3	*	72	Pictogram	*	No	Low	No	N/A
NC	715	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	23	6	6	*	828	Pictogram	*	No	Moderate	No	Refer Figures 1 and 2
NC	716	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	1.5	1.5	Yes	9	Pictogram	*	No	Low	No	N/A
NC	717	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2.5	2	*	20	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	718	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3.25	2.25	1.6	Yes	12	Pictogram	No	No	Moderate	No	Refer Figures 1 and 2
NC	719	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	3	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	720	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	1.5	Yes	12	Pictogram	*	No	Low	No	N/A
NC	748	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	1	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	759	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	761	Sandstone Platform with Grinding Groove / Engraving	Open Platform	9.5	7.3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	762	Sandstone Shelter with Deposit only	Overhang	4.6	1.5	0.6	*	4	Artefact, deposit	*	No	Low	No	N/A
NC	763	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	3.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	765	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	No site card	N/A	No	N/A	No	N/A
NC	767	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
NC	768	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
NC	769	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
NC	779	Sandstone Platform with Grinding Groove / Engraving	Open Platform	20	12.5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	N/A	No	N/A
NC	780	Sandstone Platform with Grinding Groove / Engraving	Open Platform	29	12.5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Moderate	No	Refer Figures 1 and 2
NC	781	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2	2	No	24	Pictogram	No	No	Low	No	N/A
NC	782	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3	1.5	1.75	*	8	Pictogram	*	No	Low	No	N/A
NC	783	Sandstone Platform with Grinding Groove / Engraving	Open Platform	100	25	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	786	Sandstone Platform with Grinding Groove / Engraving	Open Platform	100	60	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	787	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	5	3.5	Yes	263	Pictogram	No	No	Moderate	No	Refer Figures 1 and 2
NC	789	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	1.5	1	Yes	14	Pictogram	*	No	Low	No	N/A
NC	791	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2	1.75	Yes	18	Pictogram	*	No	Low	No	N/A
NC	793	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	20	4	2	*	160	Pictogram, artefact, deposit	*	No	Moderate	No	Refer Figures 1 and 2
NC	795	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	1	*	8	Pictogram	*	No	Low	No	N/A
NC	797	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	4	2	*	128	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	798	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4.5	2	2.5	Yes	23	Pictogram	*	No	Low	No	N/A
NC	799	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	2	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	808	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	22	3	3	Yes	198	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	809	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4.5	1.5	0.9	No	6	Pictogram	No	No	Low	No	N/A
NC	810	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3	4.5	*	95	Pictogram	*	No	Low	No	N/A
NC	811	Sandstone Platform with Grinding Groove / Engraving	Open Platform	25	12	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	812	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	5	N/A	N/A	N/A	Grinding Groove	N/A	No	High	No	Refer Figure 1
NC	813	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	18	2.7	1.5	No	73	Pictogram, artefact, deposit, grinding groove	Yes	No	Moderate	No	Refer Figure 1
NC	814	Sandstone Platform with Grinding Groove / Engraving	Open Platform	20	10	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	815	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	15	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	816	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	7	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	817	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	5.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	818	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	819	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	845	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	846	Sandstone Platform with Grinding Groove / Engraving	Open Platform	40	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	849	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	2	No	16	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	854	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	6	2.73	No	229	Pictogram, artefact, deposit	No	No	High	No	Refer Figures 1 and 2
AA3	884	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14.5	4	1.7	*	99	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	907	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8.8	2.5	2.5	Yes	55	Pictogram	No	No	Low	No	N/A
NC	908	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	3	Yes	54	Pictogram	*	No	Moderate	No	Refer Figures 1 and 2
NC	920	Sandstone Platform with Grinding Groove / Engraving	Open Platform	80	30	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	921	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	3	4	*	144	Pictogram	*	No	Low	No	N/A
NC	922	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3	2	*	42	Pictogram	*	No	Low	No	N/A
NC	923	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	1.2	1.75	No	11	Pictogram	*	No	Low	No	N/A
NC	924	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	3	2.2	Yes	92	Pictogram, artefact, deposit, grinding groove	No	No	Moderate	No	Refer Figures 1 and 2
AA2	925	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	25	3	1.75	*	131	Artefact, deposit	*	No	Low	No	N/A
AA2	929	Sandstone Shelter with Deposit only	Overhang	7	2	1.8	*	25	Artefact, deposit	*	No	Low	No	N/A
AA2	930	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	19	3	4	*	228	Pictogram	*	No	Low	No	N/A
AA2	931	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figure 1
AA2	932	Sandstone Platform with Grinding Groove / Engraving	Open Platform	3	35	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	936	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	940	Sandstone Platform with Grinding Groove / Engraving	Open Platform	19	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	941	Sandstone Platform with Grinding Groove / Engraving	Open Platform	6	3.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	942	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	943	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	50	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	945	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	3	3	*	108	Pictogram	*	No	Low	No	N/A
AA2	946	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	2	No	36	Pictogram, artefact, deposit	No	No	Moderate	No	Refer Figure 1
AA2	949	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	3	5	*	225	Pictogram	*	No	Low	No	N/A
AA2	950	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	3	5	*	150	Pictogram	*	No	Low	No	N/A
AA2	951	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	21	2	1.8	*	76	Pictogram	*	No	Low	No	N/A
AA2	952	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	6	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	953	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	7	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA8	967	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	4	3.5	No	154	Pictogram	No	No	Low	No	N/A
NC	969	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	4	5	Yes	200	Pictogram	Yes	No	Low	No	N/A
NC	970	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2.3	2	Yes	37	Pictogram	No	No	Low	No	N/A
NC	971	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2	2	No	20	Pictogram	No	No	Low	No	N/A
NC	972	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	1.75	1.75	No	15	Pictogram	No	No	Low	No	N/A
NC	973	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	2	2	Yes	52	Pictogram	Yes	No	Moderate	Yes	Refer Figures 1 and 2
NC	977	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
NC	978	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	979	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	980	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	981	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
WC	989	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	3	2	Yes	48	Pictogram	Yes	No	Low	No	N/A
WC	990	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	50	9	6	Yes	2700	Pictogram	Yes	No	Low	No	N/A
WC	993	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	35	2.5	1.5	Yes	131	Pictogram	No	No	Low	No	N/A
AA2	995	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	996	Sandstone Platform with Grinding Groove / Engraving	Open Platform	20	5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	997	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	3	3	Yes	36	Pictogram	Yes	No	Low	No	N/A
AA2	998	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3.7	1.5	2.2	No	12	Pictogram	No	No	Low	No	N/A
AA2	1000	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3	1.7	0.9	No	5	Pictogram	No	No	Low	No	N/A
AA2	1001	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3	2	1	Yes	6	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA2	1002	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	2.3	2.2	1.5	No	8	Pictogram	No	No	Low	No	N/A
AA2	1003	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2	5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1006	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	35	6	9	No	1890	Pictogram	No	No	High	Yes	Refer Figures 1 and 2
AA2	1007	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	18	3.3	1.8	Yes	107	Artefact, deposit	Yes	No	Low	No	N/A
AA3	1063	Sandstone Shelter with Deposit only	Overhang	15	4.2	3.5	Yes	221	Artefact, deposit	No	No	Low	No	N/A
NC	1065	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	20	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA3	1072	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2.3	2	*	18	Pictogram	*	No	Low	No	N/A
AA3	1073	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	3.7	2	*	74	Pictogram	*	No	Low	No	N/A
AA3	1074	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	4.2	1.7	*	43	Pictogram	*	No	Low	No	N/A
AA3	1075	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	1.7	1.75	No	21	Pictogram	No	No	Low	No	N/A
NC	1106	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	4.5	3.5	Yes	236	Pictogram	No	No	Low	No	N/A
NC	1109	Sandstone Platform with Grinding Groove / Engraving	Open Platform	3	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA3	1110	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	2	1.6	*	13	Pictogram	*	No	Low	No	N/A
NC	1124	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Pictogram	*	No	Low	No	N/A
NC	1125	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	1126	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA3	1130	Sandstone Platform with Grinding Groove / Engraving	Open Platform	12	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	1148	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	3	2.5	*	30	Pictogram	*	No	Low	No	N/A
AA2	1165	Sandstone Platform with Grinding Groove / Engraving	Open Platform	130	15	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figure 1
NC	1173	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	24	7.3	3	Yes	526	Pictogram, deposit, grinding groove	No	Yes	Moderate	No	Refer Figure 1
NC	1174	Sandstone Platform with Grinding Groove / Engraving	Open Platform	18	12	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1175	Sandstone Platform with Grinding Groove / Engraving	Open Platform	17	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1176	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2	1	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	1177	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2.5	2.2	Yes	28	Pictogram	*	No	Low	No	N/A
AA3	1185	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	5.4	3	Yes	259	Pictogram, grinding groove	No	No	Moderate	No	Refer Figure 1
AA3	1190	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	3	2.5	No	38	Pictogram	No	No	Low	No	N/A
AA3	1193	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4	1.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA3	1194	Sandstone Platform with Grinding Groove / Engraving	Open Platform	40	10	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA3	1199	Sandstone Shelter with Deposit only	Overhang	7	2.5	3.5	No	61	Pictogram, artefact, deposit	No	No	Low	No	N/A
WC	1202	Sandstone Platform with Grinding Groove / Engraving	Open Platform	9	1.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1209	Sandstone Platform with Grinding Groove / Engraving	Open Platform	25	9	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	1210	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	2.5	1.3	Yes	20	Pictogram	*	No	Low	No	N/A
NC	1211	Sandstone Platform with Grinding Groove / Engraving	Open Platform	28	8	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1212	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	7.2	1.2	Yes	95	Pictogram	*	No	Low	No	N/A
AA7	1213	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA7	1214	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1220	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3.8	2	*	53	Pictogram	*	No	Low	No	N/A
AA3	1227	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4.5	2.8	1.7	No	21	Pictogram	No	No	Low	No	N/A
AA3	1228	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	2.2	0.85	No	13	Pictogram	No	No	Low	No	N/A
AA3	1229	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6.5	3	3.3	Yes	64	Pictogram	No	No	Low	No	N/A
AA3	1230	Sandstone Shelter with Deposit only	Overhang	4.6	3	1.8	No	25	Artefact, deposit	No	No	Moderate	No	Refer Figure 1
AA3	1231	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3.25	2.1	Yes	61	Pictogram	*	No	Low	No	N/A
AA3	1232	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	4.1	3.5	Yes	187	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA3	1233	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11.6	3.6	3.5	Yes	146	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA3	1234	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	4	3.5	Yes	126	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA3	1235	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	4.3	3.5	Yes	241	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	1237	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	3	1.5	Yes	32	Pictogram	No	No	Low	No	N/A
AA3	1243	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3	0.9	Yes	24	Pictogram	*	No	Low	No	N/A
AA3	1244	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	2.3	2.7	Yes	87	Pictogram, artefact, deposit	No	No	Low	No	N/A
AA3	1246	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	5	2.3	Yes	104	Pictogram	No	No	Low	No	N/A
AA3	1260	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7	2.6	1.6	Yes	29	Pictogram	No	No	Low	No	N/A
AA3	1261	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4	3	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA3	1270	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	2.8	3.7	Yes	135	Pictogram	No	No	Low	No	N/A
AA2	1272	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	33	2.9	3.3	Yes	316	Pictogram	Yes	No	Low	No	N/A
AA2	1273	Sandstone Platform with Grinding Groove / Engraving	Open Platform	9	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figure 1
AA2	1274	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA2	1275	Sandstone Shelter with Deposit only	Overhang	16	3.5	3.5	Yes	196	Pictogram, artefact, deposit	No	No	High	No	Refer Figure 1
AA3	1281	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	3.8	5.4	Yes	287	Pictogram	No	No	Low	No	N/A
AA3	1282	Sandstone Shelter with Deposit only	Overhang	15.5	6.1	3	Yes	284	Pictogram	No	No	High	No	Refer Figure 1
AA3	1284	Sandstone Shelter with Deposit only	Overhang	11	4.7	4	Yes	207	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
AA3	1312	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	50	6	4	Yes	1200	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA3	1313	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	40	8	12	Yes	3840	Pictogram	*	No	Low	No	N/A
AA3	1314	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	17	4	12	Yes	816	Pictogram	No	No	Low	No	N/A
AA3	1315	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	21	5	3	Yes	315	Pictogram, artefact, deposit	No	No	Moderate	No	Refer Figure 1
AA3	1317	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	29	4	2	Yes	232	Pictogram	*	No	Low	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
AA3	1318	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	5	1	Yes	50	Pictogram	Yes	No	Low	No	N/A
AA3	1319	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	17	3	2.5	Yes	128	Pictogram	*	No	Low	No	N/A
NC	1365	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1366	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA8	1379	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	5	3.5	No	175	Pictogram	Yes	No	Low	No	N/A
NC	1381	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2.3	1.8	Yes	33	Pictogram	*	No	Low	No	N/A
NC	1384	Sandstone Platform with Grinding Groove / Engraving	Open Platform	21	5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1385	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4.5	3	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1386	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	3	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	1387	Sandstone Platform with Grinding Groove / Engraving	Open Platform	13	1.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1389	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	1.3	0.9	1.1	No	1	Pictogram	No	No	Low	No	N/A
AA3	1491	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	21	7	3.3	Yes	485	Pictogram	*	No	Low	No	N/A
AA3	1497	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	35	4.5	6.5	Yes	1024	Pictogram	*	No	N/A	No	N/A
AA3	1498	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	1.8	4	Yes	58	Pictogram	*	No	Low	No	N/A
NC	1516	Sandstone Platform with Grinding Groove / Engraving	Open Platform	17	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1517	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	3.4	1.3	Yes	57	Pictogram	*	No	Low	No	N/A
AA8	1518	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	2	*	36	Pictogram	No	No	Low	No	N/A
AA8	1519	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	4	2	*	64	Pictogram	*	Yes	Low	No	N/A
AA2	1594	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	2	0.8	Yes	18	Pictogram	*	No	Low	No	N/A
AA2	1595	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	7.6	2.7	2	Yes	41	Pictogram	Yes	No	Low	No	N/A
AA7	1597	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	1607	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1654	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	1655	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	1.5	1.2	Yes	9	Pictogram	Yes	No	Low	No	N/A
NC	1657	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	2	1.6	Yes	29	Pictogram	*	No	Low	No	N/A
NC	1658	Sandstone Platform with Grinding Groove / Engraving	Open Platform	14	15	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	1659	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1660	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1661	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1662	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1663	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1664	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	1680	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	N/A	No	N/A
AA7	1681	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	1682	Sandstone Shelter with Deposit only	Overhang	*	*	*	*	*	No site card	*	Yes	N/A	No	N/A
NC	1798	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA3	1876	Sandstone Shelter with Deposit only	Overhang	10	5	3.3	Yes	165	Artefact, deposit	No	No	Moderate	No	Refer Figure 1
AA7	1878	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	3.4	2.2	No	60	Pictogram	*	No	Low	No	N/A
AA7	1921	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9	3.4	1.4	Yes	43	Pictogram	No	No	Low	No	N/A
AA7	1922	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3.8	1.7	Yes	39	Pictogram	No	No	Moderate	No	Refer Figure 1
AA7	1924	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	7	1.6	Yes	146	Artefact, deposit	*	No	Low	No	N/A
WC	2034	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	3	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
WC	2036	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	2064	Sandstone Platform with Grinding Groove / Engraving	Open Platform	3	4	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA7	2094	Sandstone Shelter with Deposit only	Overhang	14	3	3	Yes	126	Artefact, deposit	Yes	No	Low	No	N/A
AA7	2095	Sandstone Shelter with Deposit only	Overhang	8	4	4.5	Yes	144	Artefact, deposit	Yes	No	Low	No	N/A
AA7	2096	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	Moderate	No	Refer Figure 1
AA7	2097	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	24	7.2	3	No	518	Artefact, deposit	Yes	No	Low	No	N/A
AA7	2098	Sandstone Shelter with Deposit only	Overhang	36	10	8	Yes	2880	Artefact, deposit	Yes	No	Low	No	N/A
AA7	2099	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	4.8	1.6	Yes	77	Pictogram, artefact, deposit	No	No	Moderate	No	Refer Figure 1
AA3	2110	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
WC	2234	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2.8	1.8	Yes	40	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
WC	2235	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	2236	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	26	4	2	Yes	208	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
WC	2237	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	5	3.4	No	272	Pictogram, artefact, deposit	No	No	Low	No	N/A
AA7	2238	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	2.4	6	3.3	Yes	48	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
AA7	2239	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	2240	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
WC	2241	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	19	3.2	3.2	Yes	195	Pictogram	Yes	No	Low	No	N/A
WC	2242	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	4	2	No	128	Pictogram	Yes	No	Low	No	N/A
WC	2243	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	26	5	8	Yes	1040	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
WC	2244	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	2250	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	4.8	1.5	Yes	94	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
WC	2264	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	2265	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	2266	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	2267	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA9	2268	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	2292	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	28	7	10	Yes	1960	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	2294	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	35	4.5	4	Yes	630	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
NC	2299	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	23	6	3	Yes	414	Pictogram, artefact, deposit	Yes	No	Low	No	N/A
NC	2300	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11.5	3.5	2	No	81	Pictogram, artefact, deposit	*	No	Low	No	N/A
NC	2321	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9.8	3.8	3	No	112	Pictogram	*	No	Low	No	N/A
NC	2325	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	No	Low	No	N/A
NC	2326	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2330	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2409	Potential Archaeological Deposit	Overhang	17	3	1.5	Yes	77	PAD	*	No	PAD	No	N/A
NC	2410	Potential Archaeological Deposit	Overhang	9	1	1	No	9	PAD	*	No	PAD	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
NC	2411	Potential Archaeological Deposit	Overhang	3	2	1	No	6	PAD	*	No	PAD	No	N/A
NC	2413	Potential Archaeological Deposit	Overhang	9	3	1.6	No	43	PAD	*	No	PAD	No	N/A
NC	2414	Potential Archaeological Deposit	Overhang	5	2	1	No	10	PAD	*	No	PAD	No	N/A
NC	2415	Potential Archaeological Deposit	Overhang	15	5	1.5	No	113	PAD	*	No	PAD	No	N/A
NC	2432	Potential Archaeological Deposit	Overhang	12	3.5	1.8	No	76	PAD	*	No	PAD	No	N/A
NC	2433	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	3	1.5	Yes	54	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	2435	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	7	7	Yes	539	Pictogram	No	No	Low	No	N/A
NC	2458	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2	2	N/A	N/A	N/A	Petroglyph	N/A	No	Low	No	N/A
NC	2459	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	10	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Moderate	No	Refer Figures 1 and 2
NC	2460	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5.1	2.4	2	No	24	Pictogram	No	No	Low	No	N/A
NC	2462	Potential Archaeological Deposit	Overhang	7	4	1.7	No	48	PAD	No	No	PAD	No	N/A
NC	2463	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	2464	Potential Archaeological Deposit	Overhang	4	1.8	1.9	No	14	PAD	No	No	PAD	No	N/A
NC	2490	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	2500	Potential Archaeological Deposit	Overhang	5	4	2.6	No	52	PAD	*	No	PAD	No	N/A
NC	2503	Potential Archaeological Deposit	Overhang	25	1	1	No	25	PAD	*	No	PAD	No	N/A
NC	2602	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	2615	Potential Archaeological Deposit	Overhang	4	3	1	No	12	PAD	*	No	PAD	No	N/A
NC	2616	Potential Archaeological Deposit	Overhang	18	4	2.5	No	180	PAD	*	No	PAD	No	N/A
NC	2617	Potential Archaeological Deposit	Overhang	1.3	1.8	1.8	No	4	PAD	*	No	PAD	No	N/A
NC	2618	Potential Archaeological Deposit	Overhang	8	2	1.5	No	24	PAD	*	No	PAD	No	N/A
NC	2619	Potential Archaeological Deposit	Overhang	16	2.5	1.5	No	60	PAD	*	No	PAD	No	N/A
NC	2620	Potential Archaeological Deposit	Overhang	*	*	*	*	*	PAD	*	No	PAD	No	N/A
NC	2621	Potential Archaeological Deposit	Overhang	*	*	*	*	*	PAD	*	No	PAD	No	N/A
NC	2670	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	2682	Sandstone Platform with Grinding Groove / Engraving	Open Platform	82	82	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	2684	Potential Archaeological Deposit	Overhang	10	2	1.6	No	32	PAD	*	No	PAD	No	N/A
NC	2687	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2699	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2700	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2716	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	No site card	N/A	Yes	N/A	No	N/A
NC	2721	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2722	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2724	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2767	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2770	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2773	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2775	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2778	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	No site card	N/A	Yes	N/A	No	N/A
NC	2780	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2781	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	No	N/A	No	N/A
NC	2782	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2786	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	N/A	No	N/A
NC	2789	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
NC	2797	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	N/A	No	N/A
NC	2800	Potential Archaeological Deposit	Overhang	13	2.5	2.3	No	75	PAD	*	No	PAD	No	N/A
NC	2819	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	56	7	10	Yes	3920	Pictogram	Yes	No	Low	No	N/A
NC	2820	Potential Archaeological Deposit	Overhang	3	1.5	1.8	No	8	PAD	*	No	PAD	No	N/A
NC	2821	Potential Archaeological Deposit	Overhang	6	2	1.6	No	19	PAD	*	No	PAD	No	N/A
NC	2822	Potential Archaeological Deposit	Overhang	15	4	3.5	No	210	PAD	*	No	PAD	No	N/A
NC	2823	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	35	6.5	10	Yes	2275	Pictogram	Yes	No	Low	No	N/A
NC	2827	Potential Archaeological Deposit	Overhang	12	5	5	No	300	PAD	No	No	PAD	No	N/A
NC	2830	Potential Archaeological Deposit	Overhang	8	1.5	1.2	Yes	14	PAD	No	No	PAD	No	N/A
NC	2831	Potential Archaeological Deposit	Overhang	8	5	2.5	Yes	100	PAD	*	No	PAD	No	N/A
NC	2832	Potential Archaeological Deposit	Overhang	65	8	2	No	1040	PAD	*	No	PAD	No	N/A
NC	2833	Potential Archaeological Deposit	Overhang	4	1.2	1.65	Yes	8	PAD	*	No	PAD	No	N/A
NC	2834	Potential Archaeological Deposit	Overhang	7	8	9	Yes	504	PAD	*	No	PAD	No	N/A
NC	2835	Potential Archaeological Deposit	Overhang	13	2	4	Yes	104	PAD	*	No	PAD	No	N/A
NC	2836	Potential Archaeological Deposit	Overhang	10	1	1.2	Yes	12	PAD	*	No	PAD	No	N/A
NC	2837	Potential Archaeological Deposit	Overhang	10	4.5	2.4	Yes	108	PAD	*	No	PAD	No	N/A
NC	2838	Potential Archaeological Deposit	Overhang	21	4.5	7	No	662	PAD	*	No	PAD	No	N/A
NC	2839	Potential Archaeological Deposit	Overhang	2.5	2.5	1.65	Yes	10	PAD	*	No	PAD	No	N/A
NC	2840	Potential Archaeological Deposit	Overhang	7	1.5	1	No	11	PAD	*	No	PAD	No	N/A
NC	2841	Potential Archaeological Deposit	Overhang	5	1.35	1.3	No	9	PAD	*	No	PAD	No	N/A
NC	2842	Potential Archaeological Deposit	Overhang	3	1	1.3	Yes	4	PAD	*	No	PAD	No	N/A
NC	2843	Potential Archaeological Deposit	Overhang	15	1.5	3.5	No	79	PAD	*	No	PAD	No	N/A
NC	2844	Potential Archaeological Deposit	Overhang	11	2	3.75	No	83	PAD	*	No	PAD	No	N/A
NC	2845	Potential Archaeological Deposit	Overhang	15	2.5	3	No	113	PAD	*	No	PAD	No	N/A
NC	2846	Sandstone Shelter with Deposit only	Overhang	24	7	4	Yes	672	Artefact, deposit	*	No	Low	No	N/A
NC	2847	Potential Archaeological Deposit	Overhang	33	11	10	No	3630	PAD	*	No	PAD	No	N/A
NC	2848	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	2	2.3	3	Yes	14	Pictogram	No	No	Low	No	N/A
NC	2849	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	100	10	20	Yes	20000	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	2850	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	50	7	5	Yes	1750	Pictogram, artefact, deposit	No	No	Low	No	N/A
NC	2852	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	3	8	Yes	288	Pictogram	No	No	Low	No	N/A
NC	2857	Potential Archaeological Deposit	Overhang	3	1.4	2	No	8	PAD	*	No	PAD	No	N/A
NC	2859	Potential Archaeological Deposit	Overhang	12	3	1.4	No	50	PAD	*	No	PAD	No	N/A
NC	2863	Potential Archaeological Deposit	Overhang	7	2.7	2.3	No	43	PAD	*	No	PAD	No	N/A
NC	2865	Potential Archaeological Deposit	Overhang	11	5.5	3	No	182	PAD	*	No	PAD	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape						Overhang is Block-fall Type						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)	Overhang Volume (m3)							
NC	2900	Potential Archaeological Deposit	Overhang	5.3	2.2	1.2	No	14	PAD	*	No	PAD	No	N/A
NC	2902	Potential Archaeological Deposit	Overhang	8.9	2.3	1.3	Yes	27	PAD	*	No	PAD	No	N/A
NC	2904	Potential Archaeological Deposit	Overhang	12.2	3.3	1.1	No	44	PAD	*	No	PAD	No	N/A
NC	2951	Potential Archaeological Deposit	Overhang	14	4	4	No	224	PAD	*	No	PAD	No	N/A
NC	2952	Potential Archaeological Deposit	Overhang	7.6	3	1.5	No	34	PAD	*	No	PAD	No	N/A
NC	2953	Potential Archaeological Deposit	Overhang	14	3	2.5	No	105	PAD	*	No	PAD	No	N/A
NC	2954	Potential Archaeological Deposit	Overhang	7	3	1.5	No	32	PAD	*	No	PAD	No	N/A
NC	2974	Potential Archaeological Deposit	Overhang	15	1.5	2.6	No	59	PAD	*	No	PAD	No	N/A
AA7	3021	Potential Archaeological Deposit	Open Site	N/A	N/A	N/A	N/A	N/A	PAD	N/A	No	PAD	No	N/A
AA7	3022	Potential Archaeological Deposit	Open Site	N/A	N/A	N/A	N/A	N/A	PAD	N/A	No	PAD	No	N/A
AA7	3023	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3026	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	17	5	2.5	Yes	213	Artefact, grinding groove, deposit	*	No	Low	No	N/A
AA8	3027	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	17	5	4	Yes	340	Pictogram	*	No	Moderate	No	Refer Figure 1
AA8	3028	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	Yes	N/A	No	N/A
AA8	3029	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	No	N/A	No	N/A
AA8	3030	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	Yes	N/A	No	N/A
AA8	3031	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
AA8	3032	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3033	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3034	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3035	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
AA8	3036	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
AA8	3037	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
AA8	3038	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
AA3	3039	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
AA7	3053	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
AA7	3054	Potential Archaeological Deposit	Open Site	N/A	N/A	N/A	N/A	N/A	PAD	N/A	No	PAD	No	N/A
AA7	3056	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3070	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8.5	3	3	Yes	77	Pictogram	*	No	Moderate	No	Refer Figure 1
AA8	3071	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	4	2	Yes	120	Pictogram, artefact, deposit	*	No	Low	No	N/A
AA3	3072	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	30	4	4	Yes	480	Pictogram	*	No	Low	No	N/A
NC	3073	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	9	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	3094	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	15	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	3136	Sandstone Platform with Grinding Groove / Engraving	Open Platform	4	2	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA7	3190	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3191	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3192	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3193	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3194	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3195	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3212	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3213	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3214	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3215	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3216	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3217	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3218	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	3219	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	Moderate	No	Refer Figure 1
AA8	3220	Potential Archaeological Deposit	Open Site	N/A	N/A	N/A	N/A	N/A	PAD	N/A	No	PAD	No	N/A
AA7	3224	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3226	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3227	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3228	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3229	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3230	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3231	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3232	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3234	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
AA7	3235	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3236	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	Yes	Low	No	N/A
AA7	3242	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	Moderate	No	Refer Figure 1
AA7	3251	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
AA7	3269	Potential Archaeological Deposit	Open Site	N/A	N/A	N/A	N/A	N/A	PAD	N/A	No	PAD	No	N/A
AA8	3302	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
NC	3468	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	7	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	3470	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	2	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	3474	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	No	Low	No	N/A
AA7	3525	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	N/A	No	N/A
AA7	3571	Potential Archaeological Deposit	Overhang	*	*	*	*	*	No site card	*	No	PAD	No	N/A
AA8	3572	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	Low	No	N/A
AA8	3573	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	18	5	1.5	No	135	Pictogram	*	No	Low	No	N/A
AA8	3574	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3578	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3579	Scarred Tree	Scarred Tree	N/A	N/A	N/A	N/A	N/A	Scarred Tree	N/A	No	Moderate	No	Refer Figure 1
AA7	3580	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA7	3581	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA7	3582	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	3583	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Characterisation							Archaeological Composition	Existing Water Seepage	Located in Valley Bottom	Archaeological Significance	Site of Particular Cultural Significance	Site Within Risk Management Zone
		Shape					Overhang is Block-fall Type	Overhang Volume (m3)						
		Description (ACHA Report)	Summary Description	Length (m)	Width (m)	Height (m)								
AA7	3584	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA3	3585	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA3	3586	Potential Archaeological Deposit	Overhang	48.3	15	2	Yes	1449	PAD	*	No	PAD	No	N/A
AA3	3587	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	1122; 1129	Sandstone Platform with Grinding Groove / Engraving	Open Platform	*	*	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA3	1311; 3588	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	50	4	4	Yes	800	Pictogram, artefact, deposit	No	No	Low	No	N/A
WC	2061; 2102	Sandstone Shelter with Deposit Only	Overhang	3	1.2	1	Yes	4	Artefact, deposit	*	No	Low	No	N/A
WC	2062; 2104	Sandstone Shelter with Deposit Only	Overhang	7	1.8	0.9	Yes	11	Artefact, deposit	*	No	Low	No	N/A
WC	2063; 2105	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	11	2.9	2	Yes	64	Pictogram, artefact, deposit	Yes	No	Moderate	No	Refer Figure 1
WC	2065; 2106	Sandstone Platform with Grinding Groove / Engraving	Open Platform	24	11	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figure 1
WC	2066; 2113	Sandstone Shelter with Deposit only	Overhang	5	2	1.9	Yes	19	Artefact, deposit	*	No	Low	No	N/A
AA2	074; 2075; 209	Sandstone Shelter with Deposit only	Overhang	10	1.8	1.3	Yes	23	Artefact, deposit	*	No	Moderate	No	Refer Figure 1
NC	239; 334; 365	Sandstone Platform with Grinding Groove / Engraving	Open Platform	72	25	N/A	N/A	N/A	Grinding Groove	N/A	No	Moderate	No	Refer Figures 1 and 2
NC	282; 982	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	38	N/A	N/A	N/A	Grinding Groove	N/A	No	High	Yes	Refer Figure 1
NC	312; 784	Sandstone Platform with Grinding Groove / Engraving	Open Platform	40	15	N/A	N/A	N/A	Grinding Groove	N/A	No	High	No	Refer Figures 1 and 2
NC	313; 790	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	4.5	3	Yes	216	Pictogram, artefact, deposit	Yes	No	Moderate	No	Refer Figures 1 and 2
NC	314; 785	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	4	1.25	No	60	Pictogram, artefact, deposit	Yes	No	High	No	Refer Figures 1 and 2
NC	316; 788	Sandstone Platform with Grinding Groove / Engraving	Open Platform	50	20	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	351; 794	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	20	3	2	No	120	Pictogram	Yes	No	Moderate	No	Refer Figures 1 and 2
NC	362; 567	Sandstone Platform with Grinding Groove / Engraving	Open Platform	23	6	N/A	N/A	N/A	Grinding Groove	N/A	No	High	No	Refer Figures 1 and 2
NC	441; 1382	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	22.5	7	4.5	*	709	Pictogram	*	No	Low	No	N/A
AA3	48-2-0005	Sandstone Shelter with Deposit only	Overhang	17	3	2.5	No	128	Artefact, deposit	*	No	Low	No	N/A
AA8	48-2-0006	Sandstone Shelter with Deposit only	Overhang	16	3	3.5	Yes	168	PAD	Yes	No	Low	No	N/A
AA3	8-2-0007; 3584	Sandstone Shelter with Deposit only	Overhang	14.3	2.5	2.5	Yes	89	Artefact, deposit	*	No	Low	No	N/A
AA8	48-2-0008	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	44	4	4	Yes	704	Artefact, deposit	*	No	Low	No	N/A
AA8	48-2-0009	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	22	5	3	Yes	330	Pictogram	*	No	Low	No	N/A
AA8	48-2-0010	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	10	3	3	Yes	90	Pictogram	*	No	Low	No	N/A
AA8	48-2-0011	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Moderate	No	Refer Figure 1
NC	52-3-0291	Sandstone Platform with Grinding Groove / Engraving	Open Platform	11	4	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	52-3-0293	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	Illegible site card	*	No	N/A	No	N/A
NC	52-3-0524	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	*	*	*	*	*	No site card	*	No	Moderate	No	Refer Figures 1 and 2
AA3	576; 743	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	40	10	12	Yes	4800	Pictogram	No	No	Moderate	No	Refer Figure 1
NC	62; 796	Sandstone Platform with Grinding Groove / Engraving	Open Platform	100	50	N/A	N/A	N/A	Grinding Groove	N/A	No	High	No	Refer Figures 1 and 2
AA3	BS 1	Sandstone Platform with Grinding Groove / Engraving	Open Platform	7	3	N/A	N/A	N/A	Grinding groove	N/A	Yes	Low	No	N/A
WC	BS 10	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	BS 11	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA8	BS 12	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	90	9	6.5	Yes	5265	Pictogram	No	No	Low	No	N/A
NC	BS 13	Sandstone Platform with Grinding Groove / Engraving	Open Platform	30	20	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	BS 14	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	0.5	1.8	No	5	Pictogram	No	No	Low	No	N/A
NC	BS 15	Sandstone Platform with Grinding Groove / Engraving	Open Platform	2	2	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	BS 16	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2	1.5	Yes	24	Pictogram	Yes	No	Low	No	N/A
NC	BS 17	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	BS 18	Sandstone Platform with Grinding Groove / Engraving	Open Platform	25	10	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	BS 19	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	6.5	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA8	BS 2	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	3	3	Yes	54	Pictogram	Yes	No	Low	No	N/A
NC	BS 20	Sandstone Shelter with Deposit only	Overhang	5	2.6	2.5	Yes	33	Artefact, deposit	No	No	Low	No	N/A
NC	BS 21	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	BS 22	Sandstone Platform with Grinding Groove / Engraving	Open Platform	10	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	BS 23	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	13	3.5	3	Yes	137	Pictogram	Yes	No	Low	No	N/A
NC	BS 24	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	3	3	No	135	Pictogram	Yes	No	Low	No	N/A
NC	BS 25	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	6	1.5	2.5	Yes	23	Pictogram	Yes	No	Low	No	N/A
AA8	BS 26	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	3.5	3	Yes	147	Pictogram	Yes	No	Low	No	N/A
AA2	BS 27	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA2	BS 28	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	12	1.5	2.5	Yes	45	Pictogram	Yes	No	Low	No	N/A
NC	BS 29	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	30	3	1.8	Yes	162	Pictogram	Yes	No	Low	No	N/A
AA7	BS 3	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	BS 30	Sandstone Platform with Grinding Groove / Engraving	Open Platform	5	3	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
NC	BS 31	Sandstone Platform with Grinding Groove / Engraving	Open Platform	15	5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA2	BS 32	Sandstone Platform with Grinding Groove / Engraving	Open Platform	1	0.5	N/A	N/A	N/A	Grinding Groove	N/A	Yes	Low	No	N/A
AA3	BS 33	Sandstone Shelter with Deposit only	Overhang	25	4.5	1.6	Yes	180	Artefact, deposit	Yes	Yes	Low	No	N/A
AA2	BS 34	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4	1	3	No	12	Pictogram	No	No	Moderate	No	Refer Figure 1
NC	BS 35	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	4.2	1.5	1.4	No	9	Pictogram	No	No	Low	No	N/A
NC	BS 36	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	8	2	1.8	No	29	Pictogram	No	No	Moderate	No	Refer Figures 1 and 2
NC	BS 37	Sandstone Platform with Grinding Groove / Engraving	Open Platform	18	7	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
NC	BS 38	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	9.6	2.6	0.8	Yes	20	Pictogram	No	No	Low	No	N/A
NC	BS 39	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	3.1	0.3	2	No	2	Pictogram	No	No	Low	No	N/A
AA7	BS 4	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	BS 40	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	14	3.5	2.5	No	123	Pictogram	No	No	Moderate	Yes	Refer Figure 1
AA2	BS 41	Sandstone Platform with Grinding Groove / Engraving	Open Platform	8	6	N/A	N/A	N/A	Grinding Groove	N/A	No	Low	No	N/A
AA3	BS 42	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	5	2.5	2	Yes	25	Pictogram	No	No	Low	No	N/A
AA3	BS 43	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	16	3	1	No	48	Pictogram	No	No	Low	No	N/A
AA3	BS 44	Sandstone Shelter with Art / Grinding Groove / Engraving / Deposit	Overhang	15	3	6	No	270	Pictogram	No	No	Low	No	N/A
AA8	BS 5	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
WC	BS 6	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	BS 7	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
AA7	BS 8	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A
NC	BS 9	Stone Artefact(s)	Artefact Scatter	N/A	N/A	N/A	N/A	N/A	Artefact	N/A	No	Low	No	N/A

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
AA3	11	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	Moderate	
AA3	12	455	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	15.0	25.0	N/A	
AA7	14	500	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
WC	21	510	1025	-	2.5	0.02	0.02	0.4	0.3	1.4	2.1	N/A	-	N/A	
NC	102	500	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	228	455	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	15.0	< 20	N/A	
NC	238	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	242	515	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	243	495	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	25.0	N/A	
NC	244	515	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	< 20	N/A	
NC	267	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
WC	270	520	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	278	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
NC	279	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	280	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	281	410	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Moderate	
NC	287	460	350	-	2.3	0.02	0.02	0.2	0.3	1.5	2.9	N/A	-	N/A	
NC	288	455	100	-	1.1	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	289	450	100	-	0.9	0.02	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	290	410	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	293	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	294	455	250	-	2.0	0.03	< 0.01	0.5	0.2	1.5	2.9	N/A	-	N/A	
NC	295	455	200	-	1.5	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	296	355	< 20	100	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	150.0	N/A	
NC	299	470	1250	-	2.4	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	300	510	1050	-	2.2	0.06	0.02	0.9	0.3	1.5	2.9	N/A	-	Negligible	
NC	301	515	1175	-	1.8	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	303	435	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	304	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	311	495	1000	-	2.6	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	318	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	331	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	348	475	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	349	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	358	355	50	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	359	355	< 20	100	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	150.0	N/A	
NC	360	460	50	-	0.7	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	361	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	364	450	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	15.0	< 20	N/A	
NC	390	445	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	25.0	< 20	N/A	
NC	410	515	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	< 20	N/A	
NC	411	415	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
WC	417	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	419	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
NC	426	385	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	429	405	175	150	2.1	0.03	< 0.01	0.4	0.2	1.5	2.9	40.0	375.0	N/A	
NC	431	415	850	-	2.1	0.04	0.09	0.7	1.3	1.5	2.9	N/A	-	N/A	
NC	432	395	525	175	1.4	0.04	0.02	0.7	0.3	1.5	2.9	15.0	275.0	N/A	
NC	433	385	600	275	2.9	0.03	0.02	0.5	0.4	1.5	2.9	25.0	450.0	N/A	
NC	434	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	435	415	850	-	2.4	0.04	0.09	0.7	1.3	1.5	2.9	N/A	-	N/A	
NC	436	440	775	-	4.1	0.05	0.02	0.8	0.3	1.5	2.9	N/A	-	N/A	
NC	437	385	900	-	3.9	0.06	0.18	0.9	2.7	1.5	2.9	N/A	-	N/A	
NC	438	400	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
NC	439	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	440	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	442	425	75	-	0.5	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	443	355	< 20	100	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	150.0	N/A	
NC	444	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	445	470	850	-	2.6	0.03	0.02	0.5	0.3	1.5	2.9	N/A	-	N/A	
NC	446	435	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	447	360	900	400	5.7	0.06	0.13	1.0	1.9	1.5	2.9	25.0	250.0	Very Low	
NC	448	365	325	-	1.4	0.09	0.01	1.3	0.2	1.5	2.9	N/A	-	N/A	
NC	449	455	75	-	0.8	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	467	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	468	365	125	-	2.0	0.03	0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	469	365	50	75	0.5	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	100.0	N/A	
AA2	479	410	200	-	2.4	0.03	< 0.01	0.5	0.2	2.4	5.3	N/A	-	Very Low	
AA2	494	425	300	200	4.1	0.05	< 0.01	0.7	0.2	2.4	5.3	20.0	225.0	Negligible	
AA2	495	425	400	75	4.1	0.08	0.02	1.3	0.4	2.4	5.3	10.0	50.0	N/A	
AA2	496	410	350	-	4.0	0.04	0.03	0.6	0.4	2.4	5.3	N/A	-	Low	
AA2	502	425	850	150	4.7	0.08	0.02	1.2	0.4	2.4	5.3	15.0	175.0	N/A	
AA2	503	435	75	-	1.1	0.02	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	504	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	505	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	506	410	< 20	100	0.3	< 0.01	< 0.01	0.2	0.2	2.4	5.3	35.0	200.0	N/A	
AA2	507	405	50	125	0.5	< 0.01	< 0.01	0.2	0.2	2.4	5.3	35.0	300.0	N/A	
AA2	508	425	675	-	1.6	0.06	0.01	0.8	0.2	2.4	5.3	N/A	-	N/A	



**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
NC	555	455	125	-	1.7	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	556	445	400	-	4.0	0.03	0.01	0.5	0.2	1.5	2.9	N/A	-	N/A	
NC	557	460	250	150	3.1	0.04	0.01	0.7	0.2	1.5	2.9	15.0	100.0	N/A	
NC	558	510	700	-	4.1	0.02	0.02	0.3	0.4	1.5	2.9	N/A	-	N/A	
NC	559	465	325	-	3.2	0.03	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	560	440	125	-	1.0	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	561	435	75	-	1.0	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	562	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	563	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	564	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
NC	565	495	150	-	1.8	0.03	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	566	450	725	-	5.1	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	568	445	900	-	5.2	0.04	0.09	0.6	1.3	1.5	2.9	N/A	-	N/A	
NC	569	505	150	-	1.2	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	571	515	250	-	2.0	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	572	510	675	-	2.8	0.02	0.04	0.4	0.7	1.5	2.9	N/A	-	N/A	
NC	573	505	225	-	1.9	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	578	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	579	425	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	25.0	N/A	
NC	580	440	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	581	400	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	25.0	50.0	N/A	
NC	582	410	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	583	405	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	25.0	Very Low	
NC	584	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	586	435	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	591	395	< 20	150	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	65.0	200.0	N/A	
NC	592	470	650	-	5.2	0.05	0.03	0.8	0.5	1.5	2.9	N/A	-	N/A	
NC	593	495	650	-	2.7	0.03	0.06	0.4	0.9	1.5	2.9	N/A	-	N/A	
NC	594	455	775	-	3.9	0.07	0.02	1.0	0.2	1.5	2.9	N/A	-	N/A	
NC	595	490	1075	-	1.9	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	596	460	775	450	1.6	0.08	0.02	1.2	0.3	1.5	2.9	25.0	600.0	N/A	
NC	597	510	950	-	1.9	0.05	0.02	0.7	0.3	1.5	2.9	N/A	-	N/A	
NC	598	500	850	-	1.9	0.09	0.02	1.4	0.3	1.5	2.9	N/A	-	N/A	
NC	599	480	1175	-	2.0	0.03	0.05	0.5	0.8	1.5	2.9	N/A	-	N/A	
NC	600	475	975	-	3.8	0.07	0.02	1.0	0.2	1.5	2.9	N/A	-	N/A	
NC	601	495	1025	-	2.1	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	602	475	1100	-	2.6	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	Negligible	
NC	604	465	1050	-	2.8	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	605	450	1375	-	4.6	0.04	0.15	0.6	2.2	1.5	2.9	N/A	-	N/A	
NC	606	455	1150	-	3.0	0.04	0.03	0.6	0.4	1.5	2.9	N/A	-	N/A	
NC	607	460	1250	-	2.8	0.04	0.03	0.6	0.4	1.5	2.9	N/A	-	N/A	
NC	608	470	1325	-	2.6	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	Low	
NC	609	485	1150	-	1.8	0.03	0.06	0.5	1.0	1.5	2.9	N/A	-	N/A	
NC	610	480	900	375	2.1	0.08	0.02	1.3	0.2	1.5	2.9	30.0	775.0	N/A	
NC	652	495	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	661	475	850	-	2.3	0.08	0.02	1.2	0.2	1.5	2.9	N/A	-	N/A	
NC	662	475	1175	550	4.8	0.04	0.10	0.6	1.5	1.5	2.9	25.0	500.0	N/A	
NC	663	475	850	450	1.4	0.07	0.02	1.0	0.3	1.5	2.9	30.0	600.0	N/A	
NC	664	500	675	-	2.0	0.02	0.02	0.3	0.4	1.5	2.9	N/A	-	N/A	
NC	666	480	850	-	3.0	0.07	0.01	1.0	0.2	1.5	2.9	N/A	-	N/A	
NC	667	495	825	-	1.9	0.05	0.02	0.8	0.3	1.5	2.9	N/A	-	N/A	
NC	668	495	975	-	2.4	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	669	500	750	-	1.8	0.06	0.02	0.9	0.2	1.5	2.9	N/A	-	N/A	
NC	670	490	1000	-	5.2	0.07	0.02	1.0	0.3	1.5	2.9	N/A	-	Very Low	
NC	671	500	1150	-	2.3	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	672	495	800	-	1.9	0.02	0.04	0.3	0.6	1.5	2.9	N/A	-	Very Low	
NC	673	500	500	-	3.4	0.02	0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	693	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	694	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	695	485	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	696	480	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	697	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	698	415	50	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	699	435	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	700	465	25	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	701	435	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	702	480	600	-	5.4	0.02	0.09	0.3	1.4	1.5	2.9	N/A	-	N/A	
NC	703	480	50	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	704	460	400	-	3.3	0.02	0.03	0.3	0.4	1.5	2.9	N/A	-	N/A	
NC	705	420	1000	675	3.4	0.04	0.08	0.6	1.1	1.5	2.9	45.0	825.0	N/A	
NC	706	460	225	-	1.8	0.03	< 0.01	0.5	0.2	1.5	2.9	N/A	-	N/A	
NC	707	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
NC	708	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	709	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	710	445	< 20	75	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	40.0	150.0	N/A	
NC	711	445	325	175	4.2	0.05	0.02	0.7	0.4	1.5	2.9	25.0	100.0	N/A	
NC	712	400	200	-	2.5	0.03	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	713	435	50	-	0.5	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
NC	714	400	225	-	2.6	0.03	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	715	445	650	-	2.9	0.03	0.06	0.5	0.8	1.5	2.9	N/A	-	Very Low	
NC	716	435	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	717	430	100	-	1.1	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	718	415	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
NC	719	405	< 20	75	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	35.0	200.0	N/A	
NC	720	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	748	480	50	-	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	759	460	125	150	1.4	0.02	< 0.01	0.3	0.2	1.5	2.9	15.0	100.0	N/A	
NC	761	460	250	-	2.8	0.04	0.01	0.6	0.2	1.5	2.9	N/A	-	N/A	
NC	762	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	763	425	25	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	765	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	767	440	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	768	440	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	769	460	225	-	2.4	0.03	< 0.01	0.5	0.2	1.5	2.9	N/A	-	N/A	
NC	779	515	350	250	1.8	0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	250.0	N/A	
NC	780	530	775	75	5.2	0.02	0.10	0.4	1.5	1.5	2.9	5.0	50.0	Very Low	
NC	781	515	1225	-	5.3	0.05	0.09	0.8	1.4	1.5	2.9	N/A	-	N/A	
NC	782	520	1000	-	3.1	0.09	0.02	1.3	0.2	1.5	2.9	N/A	-	N/A	
NC	783	495	1000	-	3.7	0.09	0.02	1.3	0.3	1.5	2.9	N/A	-	N/A	
NC	786	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	787	485	1075	-	2.3	0.04	0.15	0.6	2.3	1.5	2.9	N/A	-	Very Low	
NC	789	475	1300	-	1.6	0.04	0.14	0.6	2.0	1.5	2.9	N/A	-	N/A	
NC	791	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	793	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	795	455	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	797	470	175	-	2.2	0.03	0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	798	465	1000	-	2.0	0.03	0.06	0.5	0.9	1.5	2.9	N/A	-	N/A	
NC	799	475	1300	700	1.7	0.04	0.12	0.6	1.8	1.5	2.9	35.0	875.0	N/A	
NC	808	375	825	-	6.4	0.06	0.12	0.9	1.9	1.5	2.9	N/A	-	N/A	
NC	809	375	625	-	6.6	0.05	0.04	0.8	0.6	1.5	2.9	N/A	-	N/A	
NC	810	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	811	395	575	225	2.9	0.03	0.02	0.5	0.4	1.5	2.9	20.0	350.0	N/A	
NC	812	420	700	-	4.3	0.04	0.10	0.5	1.5	1.5	2.9	N/A	-	Very Low	
NC	813	420	575	-	4.1	0.06	0.02	1.0	0.3	1.5	2.9	N/A	-	Low	
NC	814	395	800	-	4.7	0.04	0.13	0.6	2.0	1.5	2.9	N/A	-	N/A	
NC	815	400	750	-	3.2	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	N/A	
NC	816	405	775	-	2.9	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	N/A	
NC	817	415	400	-	1.2	0.05	0.01	0.7	0.2	1.5	2.9	N/A	-	N/A	
NC	818	425	450	-	2.6	0.05	0.01	0.8	0.2	1.5	2.9	N/A	-	N/A	
NC	819	440	150	-	2.2	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	845	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	846	390	50	50	0.8	0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	50.0	N/A	
NC	849	450	675	-	4.1	0.03	0.05	0.4	0.7	1.5	2.9	N/A	-	N/A	
NC	854	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
AA3	884	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	907	480	450	-	5.9	0.06	0.01	1.0	0.2	1.5	2.9	N/A	-	N/A	
NC	908	465	900	-	2.5	0.08	0.02	1.1	0.3	1.5	2.9	N/A	-	Very Low	
NC	920	450	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	25.0	50.0	N/A	
NC	921	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	922	480	475	-	4.1	0.02	0.03	0.3	0.4	1.5	2.9	N/A	-	N/A	
NC	923	445	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	924	480	325	-	4.2	0.06	< 0.01	0.9	0.2	1.5	2.9	N/A	-	Moderate	
AA2	925	360	625	-	2.5	0.03	0.13	0.4	2.0	2.4	5.3	N/A	-	N/A	
AA2	929	430	575	-	2.7	0.04	0.02	0.6	0.3	2.4	5.3	N/A	-	N/A	
AA2	930	385	50	-	0.8	0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	931	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Negligible	
AA2	932	370	450	275	6.3	0.07	0.02	1.1	0.3	2.4	5.3	40.0	625.0	N/A	
AA2	936	320	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	940	355	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	941	360	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	942	360	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	943	340	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	945	360	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	946	340	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Low	
AA2	949	415	1000	-	3.1	0.05	0.16	0.7	2.4	2.4	5.3	N/A	-	N/A	
AA2	950	415	600	-	2.9	0.07	0.02	1.1	0.2	2.4	5.3	N/A	-	N/A	
AA2	951	370	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	952	410	725	150	2.5	0.04	0.08	0.6	1.1	2.4	5.3	15.0	150.0	N/A	
AA2	953	350	1200	-	9.3	0.10	0.31	1.5	4.7	2.4	5.3	N/A	-	N/A	
AA8	967	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
NC	969	465	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	970	455	775	-	0.8	0.03	0.05	0.4	0.8	1.5	2.9	N/A	-	N/A	
NC	971	460	425	-	3.3	0.02	0.03	0.3	0.5	1.5	2.9	N/A	-	N/A	
NC	972	455	350	-	3.1	0.03	0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	973	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Moderate	
NC	977	435	875	-	3.0	0.04	0.07	0.6	1.1	1.5	2.9	N/A	-	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
NC	978	470	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	979	460	625	-	3.4	0.04	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	980	480	50	-	0.7	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	981	455	100	150	1.0	0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	200.0	N/A	
WC	989	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	990	440	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	993	440	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
AA2	995	400	450	-	2.9	0.09	0.01	1.3	0.2	2.4	5.3	N/A	-	N/A	
AA2	996	295	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	997	290	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	998	320	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	1000	360	425	-	4.2	0.07	0.02	1.1	0.2	2.4	5.3	N/A	-	N/A	
AA2	1001	345	425	-	2.6	0.09	0.02	1.4	0.3	2.4	5.3	N/A	-	N/A	
AA2	1002	430	750	-	4.2	0.05	0.05	0.8	0.8	2.4	5.3	N/A	-	N/A	
AA2	1003	435	825	-	4.3	0.04	0.13	0.5	2.0	2.4	5.3	N/A	-	N/A	
NC	1006	500	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
AA2	1007	320	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA3	1063	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1065	495	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	20.0	25.0	N/A	
AA3	1072	355	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1073	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1074	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1075	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1106	425	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1109	400	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	1110	400	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1124	440	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1125	475	25	25	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	25.0	N/A	
NC	1126	455	700	-	3.2	0.05	0.03	0.7	0.5	1.5	2.9	N/A	-	N/A	
AA3	1130	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA2	1148	360	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	1165	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Very Low	
NC	1173	425	< 20	25	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	15.0	25.0	Negligible	
NC	1174	450	400	-	4.2	0.02	0.03	0.3	0.5	1.5	2.9	N/A	-	N/A	
NC	1175	445	750	-	4.4	0.03	0.05	0.5	0.7	1.5	2.9	N/A	-	N/A	
NC	1176	475	25	75	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	15.0	75.0	N/A	
NC	1177	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	1185	440	1125	-	2.2	0.04	0.12	0.6	1.8	1.7	2.9	N/A	-	Low	
AA3	1190	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1193	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1194	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1199	420	100	-	1.5	0.02	< 0.01	0.3	0.2	1.7	2.9	N/A	-	N/A	
WC	1202	475	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
NC	1209	410	425	275	2.2	0.03	0.02	0.4	0.3	1.5	2.9	15.0	250.0	N/A	
NC	1210	405	475	-	3.6	0.03	0.05	0.4	0.7	1.5	2.9	N/A	-	N/A	
NC	1211	410	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1212	400	50	-	0.9	0.02	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	1213	545	1350	-	5.5	0.07	0.05	1.1	0.8	1.4	2.3	N/A	-	N/A	
AA7	1214	515	1075	-	3.9	0.03	0.03	0.4	0.4	1.4	2.3	N/A	-	N/A	
NC	1220	435	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	1227	450	975	-	4.9	0.06	0.02	0.9	0.3	1.7	2.9	N/A	-	N/A	
AA3	1228	450	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1229	460	925	-	7.3	0.04	0.15	0.6	2.2	1.7	2.9	N/A	-	N/A	
AA3	1230	450	275	-	3.5	0.05	< 0.01	0.8	0.2	1.7	2.9	N/A	-	Very Low	
AA3	1231	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1232	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1233	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1234	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1235	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1237	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	1243	400	975	-	3.7	0.04	0.03	0.6	0.5	1.7	2.9	N/A	-	N/A	
AA3	1244	455	1075	-	2.4	0.04	0.04	0.6	0.5	1.7	2.9	N/A	-	N/A	
AA3	1246	380	1100	-	6.2	0.08	0.15	1.1	2.2	1.7	2.9	N/A	-	N/A	
AA3	1260	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1261	410	25	75	0.3	< 0.01	< 0.01	0.2	0.2	1.7	2.9	20.0	125.0	N/A	
AA3	1270	390	750	-	5.4	0.04	0.06	0.6	0.9	1.7	2.9	N/A	-	N/A	
AA2	1272	395	50	-	1.0	0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	1273	400	50	-	0.4	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Negligible	
AA2	1274	390	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	1275	400	50	-	0.7	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Low	
AA3	1281	440	100	-	1.5	0.02	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1282	445	200	-	2.7	0.04	0.01	0.5	0.2	1.7	2.9	N/A	-	Low	
AA3	1284	455	175	-	2.1	0.04	< 0.01	0.6	0.2	1.7	2.9	N/A	-	N/A	
AA3	1312	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1313	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1314	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1315	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	Very Low	
AA3	1317	450	25	-	0.3	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
AA3	1318	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1319	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1365	410	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1366	410	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA8	1379	470	75	-	1.4	0.02	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
NC	1381	370	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1384	435	700	-	2.8	0.04	0.02	0.6	0.3	1.5	2.9	N/A	-	N/A	
NC	1385	435	875	-	3.7	0.04	0.13	0.6	2.0	1.5	2.9	N/A	-	N/A	
NC	1386	440	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	15.0	< 20	N/A	
NC	1387	505	825	-	1.4	0.06	0.02	0.9	0.2	1.5	2.9	N/A	-	N/A	
NC	1389	470	1275	-	2.0	0.04	0.03	0.6	0.4	1.5	2.9	N/A	-	N/A	
AA3	1491	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1497	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	1498	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1516	440	875	-	2.3	0.04	0.13	0.6	2.0	1.5	2.9	N/A	-	N/A	
NC	1517	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA8	1518	470	450	-	3.2	0.02	0.07	0.3	1.1	1.2	2.0	N/A	-	N/A	
AA8	1519	470	450	75	3.0	0.02	0.03	0.3	0.4	1.2	2.0	10.0	25.0	N/A	
AA2	1594	415	400	-	1.4	0.08	< 0.01	1.2	0.2	2.4	5.3	N/A	-	N/A	
AA2	1595	400	800	-	3.9	0.02	< 0.01	0.3	0.2	2.4	5.3	N/A	-	N/A	
AA7	1597	585	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	1607	570	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
NC	1654	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1655	360	300	-	2.6	0.07	0.02	1.0	0.3	1.5	2.9	N/A	-	N/A	
NC	1657	385	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1658	500	1050	-	2.5	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	Negligible	
NC	1659	420	125	-	2.2	0.05	< 0.01	0.7	0.2	1.5	2.9	N/A	-	N/A	
NC	1660	405	75	-	0.8	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1661	430	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1662	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1663	405	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	1664	445	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	1680	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	1681	495	25	-	0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	1682	490	< 20	50	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	20.0	50.0	N/A	
NC	1798	410	50	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	1876	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	Moderate	
AA7	1878	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	1921	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	1922	500	250	-	2.4	0.02	< 0.01	0.3	0.2	1.4	2.3	N/A	-	Low	
AA7	1924	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
WC	2034	460	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	20.0	25.0	N/A	
WC	2036	475	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2064	475	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	15.0	25.0	N/A	
AA7	2094	480	125	-	1.5	0.02	< 0.01	0.3	0.2	1.4	2.3	N/A	-	N/A	
AA7	2095	480	225	-	2.0	0.03	< 0.01	0.4	0.2	1.4	2.3	N/A	-	N/A	
AA7	2096	505	975	-	2.3	0.04	0.03	0.6	0.4	1.4	2.3	N/A	-	Negligible	
AA7	2097	480	125	-	1.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	2098	490	150	-	1.3	0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	2099	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	Very Low	
AA3	2110	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	Negligible	
WC	2234	470	25	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2235	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
AA7	2236	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
WC	2237	495	825	-	3.1	0.06	0.02	0.9	0.3	1.4	2.1	N/A	-	N/A	
AA7	2238	490	< 20	-	0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	2239	500	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
WC	2240	480	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	Negligible	
WC	2241	475	200	-	2.3	0.03	< 0.01	0.5	0.2	1.4	2.1	N/A	-	N/A	
WC	2242	475	100	-	0.9	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2243	470	25	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2244	470	50	-	0.3	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2250	430	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2264	475	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2265	510	1050	-	4.2	0.03	0.10	0.5	1.5	1.4	2.1	N/A	-	N/A	
WC	2266	485	200	-	1.4	0.02	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
AA7	2267	665	50	-	0.3	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA9	2268	665	375	-	4.1	0.05	< 0.01	0.7	0.2	1.1	1.7	N/A	-	N/A	
NC	2292	465	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2294	455	75	-	0.8	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2299	455	1150	-	6.1	0.04	0.14	0.5	2.1	1.5	2.9	N/A	-	N/A	
NC	2300	575	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2321	470	700	-	3.0	0.07	0.04	1.0	0.6	1.5	2.9	N/A	-	N/A	
NC	2325	510	950	-	1.6	0.03	0.10	0.4	1.4	1.5	2.9	N/A	-	N/A	
NC	2326	525	50	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2330	480	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2409	465	850	-	2.1	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	2410	465	825	-	2.6	0.03	0.03	0.4	0.4	1.5	2.9	N/A	-	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
NC	2411	475	900	-	2.6	0.03	0.03	0.4	0.4	1.5	2.9	N/A	-	N/A	
NC	2413	475	625	-	5.9	0.02	0.08	0.3	1.2	1.5	2.9	N/A	-	N/A	
NC	2414	460	175	-	2.4	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2415	470	100	-	0.8	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2432	485	900	-	2.3	0.09	0.02	1.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2433	495	1075	-	3.5	0.03	0.04	0.4	0.6	1.5	2.9	N/A	-	N/A	
NC	2435	500	1100	-	3.6	0.03	0.09	0.4	1.4	1.5	2.9	N/A	-	N/A	
NC	2458	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2459	475	575	800	6.5	0.06	0.03	1.0	0.5	1.5	2.9	60.0	675.0	Negligible	
NC	2460	535	225	-	2.6	0.04	< 0.01	0.6	0.2	1.5	2.9	N/A	-	N/A	
NC	2462	560	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2463	575	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2464	530	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2490	545	75	-	1.0	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2500	445	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2503	525	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2602	500	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2615	450	150	-	1.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2616	495	925	-	4.8	0.02	0.06	0.3	0.8	1.5	2.9	N/A	-	N/A	
NC	2617	455	1150	-	3.8	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	N/A	
NC	2618	500	725	-	4.5	0.05	0.04	0.8	0.6	1.5	2.9	N/A	-	N/A	
NC	2619	500	1275	-	4.5	0.03	0.12	0.4	1.8	1.5	2.9	N/A	-	N/A	
NC	2620	495	1250	-	1.9	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2621	475	1200	-	2.2	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2670	515	925	-	1.9	0.07	0.02	1.0	0.3	1.5	2.9	N/A	-	N/A	
NC	2682	490	1150	-	2.8	0.03	0.12	0.5	1.8	1.5	2.9	N/A	-	N/A	
NC	2684	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2687	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2699	515	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2700	470	1250	-	5.1	0.03	0.13	0.5	1.9	1.5	2.9	N/A	-	N/A	
NC	2716	475	1200	600	5.0	0.05	0.09	0.7	1.4	1.5	2.9	30.0	625.0	N/A	
NC	2721	540	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2722	495	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2724	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2767	470	1250	-	2.1	0.04	0.08	0.5	1.2	1.5	2.9	N/A	-	N/A	
NC	2770	475	1225	-	4.7	0.03	0.12	0.5	1.8	1.5	2.9	N/A	-	N/A	
NC	2773	455	1100	-	2.4	0.04	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2775	495	1250	-	4.6	0.03	0.14	0.5	2.0	1.5	2.9	N/A	-	N/A	
NC	2778	465	1225	775	2.2	0.03	0.03	0.5	0.4	1.5	2.9	45.0	1200.0	N/A	
NC	2780	500	1225	-	2.0	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2781	495	1275	-	1.7	0.03	0.12	0.5	1.8	1.5	2.9	N/A	-	N/A	
NC	2782	500	1275	-	4.5	0.03	0.11	0.4	1.6	1.5	2.9	N/A	-	N/A	
NC	2786	425	250	-	1.9	0.03	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	2789	435	750	-	6.6	0.06	0.08	0.9	1.2	1.5	2.9	N/A	-	N/A	
NC	2797	445	1100	-	3.9	0.04	0.04	0.5	0.5	1.5	2.9	N/A	-	N/A	
NC	2800	445	1075	-	3.5	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2819	460	1250	-	2.3	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2820	435	575	-	6.0	0.07	0.02	1.0	0.2	1.5	2.9	N/A	-	N/A	
NC	2821	435	575	-	6.4	0.07	0.03	1.1	0.5	1.5	2.9	N/A	-	N/A	
NC	2822	435	550	-	6.2	0.07	0.05	1.1	0.8	1.5	2.9	N/A	-	N/A	
NC	2823	505	100	-	0.9	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2827	505	100	-	0.8	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2830	495	1275	-	2.6	0.03	0.13	0.5	2.0	1.5	2.9	N/A	-	N/A	
NC	2831	475	1050	-	2.5	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2832	490	75	-	0.8	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2833	475	1100	-	2.4	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2834	480	1000	-	2.1	0.07	0.02	1.1	0.3	1.5	2.9	N/A	-	N/A	
NC	2835	475	1250	-	2.1	0.03	0.03	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2836	485	1300	-	2.0	0.03	0.12	0.5	1.9	1.5	2.9	N/A	-	N/A	
NC	2837	490	1000	-	2.1	0.03	0.02	0.4	0.4	1.5	2.9	N/A	-	N/A	
NC	2838	490	175	-	2.0	0.03	< 0.01	0.5	0.2	1.5	2.9	N/A	-	N/A	
NC	2839	495	1050	-	1.7	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	2840	500	1075	-	1.7	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	2841	450	725	-	6.4	0.05	0.04	0.8	0.6	1.5	2.9	N/A	-	N/A	
NC	2842	450	1075	-	5.2	0.04	0.10	0.5	1.5	1.5	2.9	N/A	-	N/A	
NC	2843	470	1300	-	2.0	0.04	0.11	0.5	1.6	1.5	2.9	N/A	-	N/A	
NC	2844	485	1225	-	2.1	0.03	0.02	0.5	0.4	1.5	2.9	N/A	-	N/A	
NC	2845	495	200	-	2.5	0.04	< 0.01	0.6	0.2	1.5	2.9	N/A	-	N/A	
NC	2846	485	1100	-	2.1	0.03	0.02	0.4	0.3	1.5	2.9	N/A	-	N/A	
NC	2847	495	175	-	1.1	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2848	500	125	-	1.0	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2849	495	75	-	0.8	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2850	455	150	-	2.3	0.02	< 0.01	0.4	0.2	1.5	2.9	N/A	-	N/A	
NC	2852	495	75	-	0.9	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2857	500	225	-	1.7	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2859	480	150	-	1.9	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2863	475	375	-	5.1	0.04	0.02	0.7	0.3	1.5	2.9	N/A	-	N/A	
NC	2865	480	775	-	5.2	0.03	0.10	0.4	1.5	1.5	2.9	N/A	-	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
NC	2900	485	1175	-	5.0	0.05	0.09	0.7	1.3	1.5	2.9	N/A	-	N/A	
NC	2902	480	1000	-	4.6	0.09	0.01	1.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2904	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2951	470	1250	-	2.1	0.04	0.14	0.6	2.1	1.5	2.9	N/A	-	N/A	
NC	2952	460	925	-	2.5	0.09	0.02	1.3	0.2	1.5	2.9	N/A	-	N/A	
NC	2953	395	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	2954	465	800	-	2.3	0.05	0.03	0.7	0.4	1.5	2.9	N/A	-	N/A	
NC	2974	515	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	3021	545	1100	-	1.4	0.07	0.02	1.1	0.2	1.4	2.3	N/A	-	N/A	
AA7	3022	555	1200	-	1.9	0.02	0.02	0.4	0.3	1.4	2.3	N/A	-	N/A	
AA7	3023	590	1200	-	1.5	0.06	0.01	0.9	0.2	1.4	2.3	N/A	-	N/A	
AA8	3026	455	600	-	3.0	0.02	0.02	0.4	0.3	1.2	2.0	N/A	-	N/A	
AA8	3027	460	275	-	1.4	0.02	< 0.01	0.3	0.2	1.2	2.0	N/A	-	Very Low	
AA8	3028	455	775	375	2.3	0.03	0.09	0.4	1.4	1.2	2.0	25.0	325.0	N/A	
AA8	3029	450	775	-	2.1	0.03	0.10	0.4	1.4	1.2	2.0	N/A	-	N/A	
AA8	3030	445	600	425	2.3	0.05	0.01	0.7	0.2	1.2	2.0	30.0	550.0	N/A	
AA8	3031	460	100	-	0.7	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA8	3032	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA8	3033	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA8	3034	475	575	-	1.2	0.06	0.01	0.8	0.2	1.2	2.0	N/A	-	N/A	
AA8	3035	455	450	-	3.4	0.02	0.03	0.3	0.5	1.2	2.0	N/A	-	Negligible	
AA8	3036	480	750	-	1.7	0.02	0.03	0.3	0.4	1.2	2.0	N/A	-	Negligible	
AA8	3037	450	775	-	1.9	0.03	0.10	0.4	1.5	1.2	2.0	N/A	-	N/A	
AA8	3038	460	75	-	0.7	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA3	3039	480	750	-	1.8	0.02	0.02	0.4	0.3	1.7	2.9	N/A	-	N/A	
AA7	3053	590	1300	-	3.5	0.07	0.01	1.0	0.2	1.4	2.3	N/A	-	N/A	
AA7	3054	605	1225	-	0.8	0.03	0.02	0.4	0.2	1.4	2.3	N/A	-	N/A	
AA7	3056	590	1175	-	1.0	0.06	0.01	0.9	0.2	1.4	2.3	N/A	-	N/A	
AA8	3070	465	100	-	0.7	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	Low	
AA8	3071	460	875	-	1.4	0.03	0.10	0.4	1.5	1.2	2.0	N/A	-	N/A	
AA3	3072	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	3073	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	3094	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	3136	490	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	10.0	25.0	N/A	
AA7	3190	580	1375	-	3.5	0.02	0.09	0.3	1.3	1.4	2.3	N/A	-	N/A	
AA7	3191	555	1375	-	2.3	0.03	0.10	0.4	1.6	1.4	2.3	N/A	-	N/A	
AA7	3192	595	1250	-	1.4	0.02	0.02	0.3	0.2	1.4	2.3	N/A	-	N/A	
AA7	3193	595	1450	-	1.3	0.02	0.09	0.3	1.3	1.4	2.3	N/A	-	N/A	
AA7	3194	595	1225	-	1.1	0.03	0.01	0.5	0.2	1.4	2.3	N/A	-	N/A	
AA7	3195	560	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA8	3212	480	725	-	2.0	0.02	0.02	0.3	0.3	1.2	2.0	N/A	-	N/A	
AA8	3213	470	675	-	2.1	0.03	0.02	0.4	0.3	1.2	2.0	N/A	-	N/A	
AA8	3214	470	700	-	2.2	0.02	0.02	0.3	0.3	1.2	2.0	N/A	-	N/A	
AA8	3215	485	625	-	2.4	0.06	< 0.01	0.8	0.2	1.2	2.0	N/A	-	N/A	
AA8	3216	475	900	-	1.9	0.03	0.06	0.4	0.9	1.2	2.0	N/A	-	N/A	
AA8	3217	480	725	-	2.2	0.02	0.02	0.3	0.3	1.2	2.0	N/A	-	N/A	
AA8	3218	480	725	-	3.6	0.05	0.01	0.7	0.2	1.2	2.0	N/A	-	N/A	
AA8	3219	480	850	-	2.1	0.03	0.02	0.4	0.3	1.2	2.0	N/A	-	Negligible	
AA8	3220	480	700	-	2.1	0.02	0.02	0.3	0.2	1.2	2.0	N/A	-	N/A	
AA7	3224	620	1300	-	1.0	0.02	0.02	0.3	0.2	1.4	2.3	N/A	-	N/A	
AA7	3226	660	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	3227	650	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	3228	635	750	-	3.7	0.02	0.06	0.2	0.9	1.4	2.3	N/A	-	N/A	
AA7	3229	605	1150	-	0.9	0.04	0.01	0.5	0.2	1.4	2.3	N/A	-	N/A	
AA7	3230	605	1400	-	2.6	0.02	0.09	0.3	1.3	1.4	2.3	N/A	-	N/A	
AA7	3231	605	1100	-	2.6	0.06	0.01	0.8	0.2	1.4	2.3	N/A	-	N/A	
AA7	3232	600	1325	-	3.7	0.03	0.08	0.5	1.2	1.4	2.3	N/A	-	N/A	
AA7	3234	625	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	Negligible	
AA7	3235	635	25	-	0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	3236	640	200	25	1.9	0.02	< 0.01	0.4	0.2	1.4	2.3	5.0	25.0	N/A	
AA7	3242	635	50	-	0.3	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	Negligible	
AA7	3251	625	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	Negligible	
AA7	3269	500	25	-	0.4	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA8	3302	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
NC	3468	530	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	3470	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	3474	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	3525	625	225	-	2.3	0.03	< 0.01	0.5	0.2	1.4	2.3	N/A	-	N/A	
AA7	3571	495	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA8	3572	440	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA8	3573	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA8	3574	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA7	3578	510	150	-	1.3	0.01	< 0.01	0.2	0.2	1.4	2.3	N/A	-	N/A	
AA7	3579	510	550	-	3.2	0.02	0.02	0.3	0.3	1.4	2.3	N/A	-	Negligible	
AA7	3580	480	850	450	2.4	0.07	0.02	1.1	0.2	1.4	2.3	30.0	550.0	N/A	
AA7	3581	480	850	450	2.5	0.07	0.02	1.1	0.2	1.4	2.3	30.0	550.0	N/A	
AA7	3582	515	975	-	2.1	0.05	0.02	0.8	0.3	1.4	2.3	N/A	-	N/A	
AA7	3583	485	350	175	4.3	0.06	< 0.01	0.9	0.2	1.4	2.3	25.0	250.0	N/A	

**Attachment QA  
Aboriginal Heritage Site Matrix**

Domain	Aboriginal Site ID	Depth of Cover (m)	Predicted Subsidence Effects										Risk Assessment		
			Systematic Subsidence Parameters (Base Plan)	Non-Systematic Subsidence Parameters (Base Plan)	Systematic Subsidence Parameters (Base Plan)					Systematic Subsidence Parameters (Domain Based)		Equivalent Valley Height (MEVH) (m)		Non-Systematic Subsidence Parameters (Base Plan)	Risk Of Impact - ACHA Report
					Total Maximum Subsidence Predicted (mm)	Maximum Predicted Upsidence (mm)	Total Maximum Predicted Tilt (mm/m)	Total Maximum Predicted Curvature (Hogging) (1/km)	Total Maximum Predicted Curvature (Sagging) (1/km)	Estimated Average Tensile Strains (mm/m)	Estimated Average Compressive Strains (mm/m)				
AA7	3584	510	350	-	4.3	0.06	< 0.01	0.9	0.2	1.4	2.3	N/A	-	N/A	
AA3	3585	455	350	-	3.8	0.04	0.02	0.5	0.3	1.7	2.9	N/A	-	N/A	
AA3	3586	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	3587	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
NC	1122; 1129	460	< 20	< 20	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	25.0	50.0	N/A	
AA3	1311; 3588	455	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
WC	2061; 2102	490	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2062; 2104	465	50	-	0.5	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
WC	2063; 2105	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	Moderate	
WC	2065; 2106	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	Negligible	
WC	2066; 2113	465	50	-	0.5	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
AA2	074; 2075; 209	400	650	-	3.5	0.02	< 0.01	0.4	0.2	2.4	5.3	N/A	-	Low	
NC	239; 334; 365	485	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	282; 982	435	75	-	1.1	0.02	< 0.01	0.3	0.2	1.5	2.9	N/A	-	Very Low	
NC	312; 784	500	1225	-	2.9	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	Very Low	
NC	313; 790	460	1275	-	2.4	0.04	0.03	0.6	0.5	1.5	2.9	N/A	-	Very Low	
NC	314; 785	490	475	-	4.2	0.07	0.01	1.0	0.2	1.5	2.9	N/A	-	Very Low	
NC	316; 788	460	875	550	2.3	0.03	0.02	0.4	0.4	1.5	2.9	45.0	675.0	N/A	
NC	351; 794	465	150	-	1.0	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Very Low	
NC	362; 567	495	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
NC	441; 1382	385	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA3	48-2-0005	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA8	48-2-0006	455	775	-	2.6	0.02	0.10	0.4	1.5	1.2	2.0	N/A	-	N/A	
AA3	48-2-0007; 358	450	50	-	0.5	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA8	48-2-0008	450	775	-	1.9	0.03	0.10	0.4	1.5	1.2	2.0	N/A	-	N/A	
AA8	48-2-0009	460	775	-	2.1	0.03	0.10	0.4	1.4	1.2	2.0	N/A	-	N/A	
AA8	48-2-0010	450	550	-	1.0	0.05	0.01	0.7	0.2	1.2	2.0	N/A	-	N/A	
AA8	48-2-0011	465	150	-	1.0	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	Negligible	
NC	52-3-0291	480	75	-	0.6	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	52-3-0293	430	700	-	2.1	0.03	0.02	0.4	0.4	1.5	2.9	N/A	-	N/A	
NC	52-3-0524	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Negligible	
AA3	576; 743	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	Moderate	
NC	62; 796	515	775	-	3.3	0.03	0.01	0.5	0.2	1.5	2.9	N/A	-	Very Low	
AA3	BS 1	450	50	75	0.5	< 0.01	< 0.01	0.2	0.2	1.7	2.9	20.0	125.0	N/A	
WC	BS 10	495	1025	-	3.8	0.03	0.10	0.5	1.4	1.4	2.1	N/A	-	N/A	
WC	BS 11	475	1150	-	4.5	0.03	0.11	0.5	1.7	1.4	2.1	N/A	-	N/A	
AA8	BS 12	445	150	-	1.9	0.03	< 0.01	0.5	0.2	1.2	2.0	N/A	-	N/A	
NC	BS 13	475	25	-	0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 14	485	475	-	5.7	0.06	< 0.01	0.9	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 15	470	1150	675	2.3	0.03	0.03	0.5	0.4	1.5	2.9	40.0	1125.0	N/A	
NC	BS 16	505	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 17	510	1075	-	4.1	0.08	0.01	1.1	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 18	525	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 19	525	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA8	BS 2	450	825	-	2.8	0.03	0.02	0.4	0.3	1.2	2.0	N/A	-	N/A	
NC	BS 20	465	25	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 21	420	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 22	425	50	150	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	35.0	125.0	N/A	
NC	BS 23	420	75	-	0.9	0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 24	415	725	-	3.4	0.05	0.02	0.7	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 25	390	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA8	BS 26	455	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
AA2	BS 27	440	650	-	2.5	0.06	0.02	0.8	0.2	2.4	5.3	N/A	-	N/A	
AA2	BS 28	405	650	-	7.2	0.07	0.03	1.0	0.5	2.4	5.3	N/A	-	N/A	
NC	BS 29	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	BS 3	550	625	-	3.6	0.04	0.01	0.5	0.2	1.4	2.3	N/A	-	N/A	
NC	BS 30	415	< 20	50	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	25.0	100.0	N/A	
NC	BS 31	405	< 20	75	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	40.0	200.0	N/A	
AA2	BS 32	430	700	175	5.5	0.03	0.06	0.5	0.9	2.4	5.3	15.0	150.0	N/A	
AA3	BS 33	460	150	75	1.7	0.03	< 0.01	0.4	0.2	1.7	2.9	20.0	150.0	N/A	
AA2	BS 34	365	25	-	0.4	< 0.01	< 0.01	0.2	0.2	2.4	5.3	N/A	-	Low	
NC	BS 35	465	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 36	495	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	Low	
NC	BS 37	475	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 38	460	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
NC	BS 39	480	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	
AA7	BS 4	550	1075	-	2.4	0.03	0.02	0.4	0.4	1.4	2.3	N/A	-	N/A	
AA7	BS 40	510	1300	-	2.5	0.03	0.10	0.5	1.5	1.4	2.3	N/A	-	Very Low	
AA2	BS 41	355	625	-	6.1	0.08	0.04	1.3	0.6	2.4	5.3	N/A	-	N/A	
AA3	BS 42	450	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	BS 43	440	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA3	BS 44	430	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.7	2.9	N/A	-	N/A	
AA8	BS 5	470	25	-	0.5	< 0.01	< 0.01	0.2	0.2	1.2	2.0	N/A	-	N/A	
WC	BS 6	470	< 20	-	< 0.2	< 0.01	< 0.01	0.2	0.2	1.4	2.1	N/A	-	N/A	
AA7	BS 7	535	1050	-	2.0	0.07	0.01	1.1	0.2	1.4	2.3	N/A	-	N/A	
AA7	BS 8	535	1250	-	4.4	0.06	0.03	0.9	0.5	1.4	2.3	N/A	-	N/A	
NC	BS 9	425	50	-	0.4	< 0.01	< 0.01	0.2	0.2	1.5	2.9	N/A	-	N/A	

## **Attachment QA**

### **Aboriginal Heritage Site Matrix**

Note: Sites 1373, 3504, 3505, 3506, 3508, 2228; 3617 and 3533; 3616 were not specifically assessed in this risk assessment and have been removed as they are not located in the study area (i.e. sites are located at West Cliff pit top and have been previously undermined).

Note: Sites 2041 and 2052 were not specifically assessed in this risk assessment and have been removed as they were found to be duplicates of sites 2036 and 1922, respectively.

Note: \* denotes insufficient information on site cards to determine characteristic.

Note: Aboriginal heritage sites in drainage lines (i.e. within 10 m of a drainage line) are identified as 'Located in Valley Bottom'. The status of Aboriginal heritage sites between 10 m and 50 m of a drainage line were determined from site cards and site inspections. Aboriginal heritage sites within 10 m and 50 m of a drainage line but unable to be determined as located in a drainage line from site cards and site inspections were assumed to be in a drainage line.

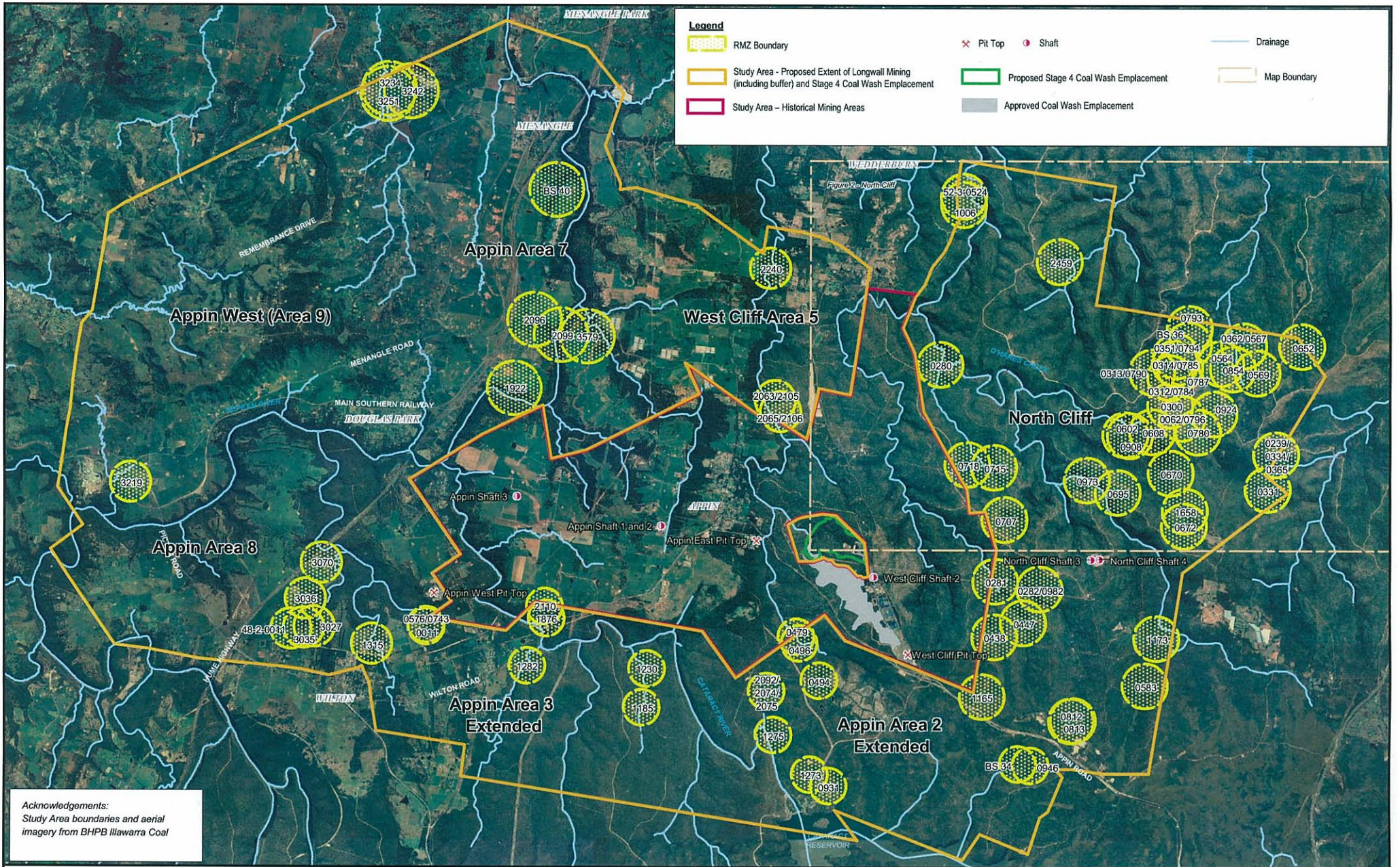
Note: Site 2849's site card indicated a height of 20 m, however, it is unknown if this is the height of the overhang or whether it includes the cliff/slope above. This site was not inspected as part of Project surveys so the height of 20 m has been retained as a nominal entry.

Note: Sites 2294 and 3026 were incorrectly identified in Appendix G of the EA as artefact scatters. These two sites are overhangs and their characteristics are provided in this matrix accordingly.



ATTACHMENT QB

ABORIGINAL HERITAGE SITE RISK MANAGEMENT ZONES



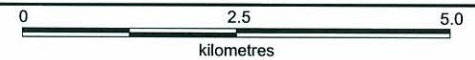
**Acknowledgements:**  
 Study Area boundaries and aerial imagery from BHPB Illawarra Coal

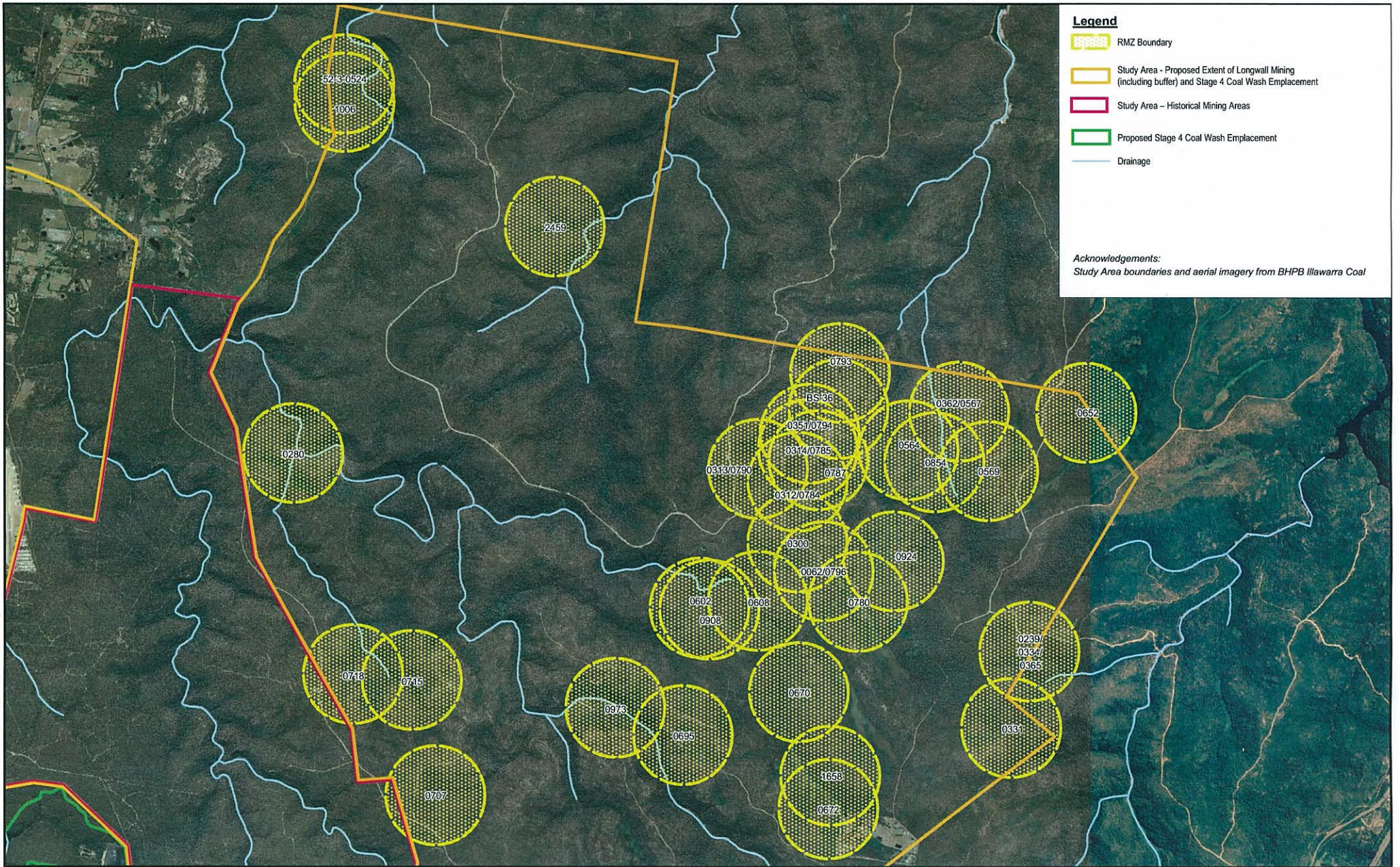


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Figure 1: RMZ Boundaries for Aboriginal Heritage sites of Moderate or High Archaeological Significance, and/or sites of Particular Cultural Significance

Date: 10 August 2009  
 Checked by: JR File number: S4660  
 Location: -.40004600s4660Mapping\4660 RMZ F1\_overview.WOR

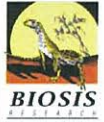




**Legend**

- RMZ Boundary
- Study Area - Proposed Extent of Longwall Mining (including buffer) and Stage 4 Coal Wash Emplacement
- Study Area - Historical Mining Areas
- Proposed Stage 4 Coal Wash Emplacement
- Drainage

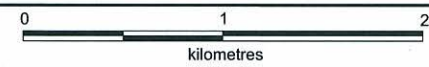
*Acknowledgements:  
Study Area boundaries and aerial imagery from BHPB Illawarra Coal*



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Figure 2: RMZ Boundaries for Aboriginal Heritage sites of Moderate or High Archaeological Significance, and/or sites of Particular Cultural Significance - North Cliff (north and centre domain)

Date: 10 August 2009	
Checked by: JR	File number: S4660
Location: -40004600s4660\Mapping\S4660 RMZ_F2_northcliff.WOR	



ATTACHMENT QC  
PHOTOS OF RECORDED IMPACTS TO ABORIGINAL HERITAGE SITES



Plate 1: Site FRC 4 - Opening of Existing Bedding Plane at Rear Wall and Minor Roof Fall



Plate 2: Site FRC 10 - Cracks in Rear Wall

**BULLI SEAM OPERATIONS**

**Plates 1 and 2**

Photos of Previous Impacts at  
Sites FRC 4 and FRC 10





Plate 3a: Site FRC 49 - Cracking and Block Fall from Rear Wall and Ceiling



Plate 3b: Site FRC 49 - Cracking in Rear Wall

**BULLI SEAM OPERATIONS**

**Plates 3a and 3b**  
Photos of Previous Impacts at  
Site FRC 49





Plate 4: Site FRC 57 - Crack in Sandstone Platform



Plate 5: Site FRC 11 - Exfoliation and Block Fall from Rear Wall

**BULLI SEAM OPERATIONS**

**Plates 4 and 5**

Photos of Previous Impacts at  
Sites FRC 57 and FRC 11





Plate 6a: Site 990 - Cracking in Rear Wall



Plate 6b: Site 990 - Cracking in Floor of Shelter

**BULLI SEAM OPERATIONS**

**Plates 6a and 6b**

Photos of Previous Impacts at Site 990







Plate 7a: Site D4 - Opening of Existing Crack in Rear Wall



Plate 7b: Site D4 - Cracking in Soil outside Shelter

**BULLI SEAM OPERATIONS**

**Plates 7a and 7b**

Photos of Previous Impacts at Site D4

