

NUNDAH BANK THIRD TRACK ENVIRONMENTAL ASSESSMENT

SUBMISSIONS REPORT





Nundah Bank Third Track

Submissions Report

Australian Rail Track Corporation

May 2011





Nundah Bank Third Track

Submissions Report

Prepared for:
Australian Rail Track Corporation

Prepared By:

KMH Environmental
Level 12, South Tower
1-5 Railway Street
Chatswood NSW 2067

PO Box 5487
West Chatswood NSW 1515

Phone: (02) 9468 9300
Fax: (02) 8008 1600

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Glossary and Abbreviations

ARTC	Australian Rail Track Corporation
AS	Australian Standard
CEMP	Construction Environmental Management Plan
DEC	NSW Department of Environment and Community (former Department of Environment and Climate Change)
DECC	NSW Department of Environment and Climate Change (former Department of Environment, Climate Change and Water)
DECCW	NSW Department of Environment, Climate Change and Water (now NSW Office of Environment and Heritage)
DSEWPC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities
DoPI	NSW Department of Planning and Infrastructure
Down side	The side of the track on which trains travel away from Sydney
EA	Environmental Assessment
EP&A Act	The NSW <i>Environmental Planning and Assessment Act 1979</i> . Provides the legislative framework for land use planning and development assessment in NSW
ISO	International Organisation for Standardisation
NOW	NSW Office of Water
OEH	NSW Office of Environment and Heritage (former Department of Environment, Climate Change and Water)
Rail corridor	Land dedicated to the ARTC for rail purposes
RTA	Roads and Traffic Authority
The Project	The Nundah Bank Third Track Project
TMP	Traffic Management Plan
TSC Act	<i>Threatened Species Conservation Act, 1995</i>
UHVA	Upper Hunter Valley Alliance
Up side	The side of the track on which trains travel to Sydney



1. Introduction

A number of rail infrastructure improvements to the Hunter Valley Rail Network have been proposed by the Australian Rail Track Corporation (ARTC) to address the projected forecast increase in freight throughput at the Port of Newcastle.

The *2010-2018 Hunter Valley Corridor Capacity Strategy Consultation Document* (ARTC, 2009) (the Strategy) is the fourth annual update to the Strategy by the ARTC. The purpose of the annual Strategy is to identify constraints on the Hunter Valley Rail Network, the options to resolve these constraints and a proposed course of action to achieve the necessary increase in rail capacity to facilitate coal export from the region. The Strategy was recently updated to be the 2011-2020 Strategy (ARTC, 2011).

One of the improvement projects identified in both strategies is a proposed third track adjacent to the existing Main Northern Railway between Singleton and Camberwell known as the Nundah Bank Third Track Project (the Project). The Project concept and feasibility phases were completed as part of the 2010-2018 Strategy, whilst the remaining phases of the Project would be completed as part of the 2011-2020 Strategy.

The proposed third track is approximately 4 kilometres in length and is proposed within the Singleton Local Government Area. Figure 1.1 shows the regional location of the Project.

An Environmental Assessment (EA) of the Project has been prepared to seek Project approval from the Minister for Planning and Infrastructure (the Minister) under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and for that purpose demonstrates that the Environmental Assessment Requirements issued by the Director-General of the NSW Department of Planning and Infrastructure (DoPI) have been satisfied.

The EA was publically exhibited by DoPI between 30 March 2011 and 2 May 2011 in accordance with Section 75H (3) of the EP&A Act. During this period, submissions were invited from anyone with an interest in the Project including members of the community and government stakeholders. Nine submissions were received by DoPI and are addressed below.

1.1. Purpose of this Report

This report documents and considers the submissions received on the EA and outlines the ARTC's response to them, as required under Section 75H (6) of the EP&A Act.

This report also provides:

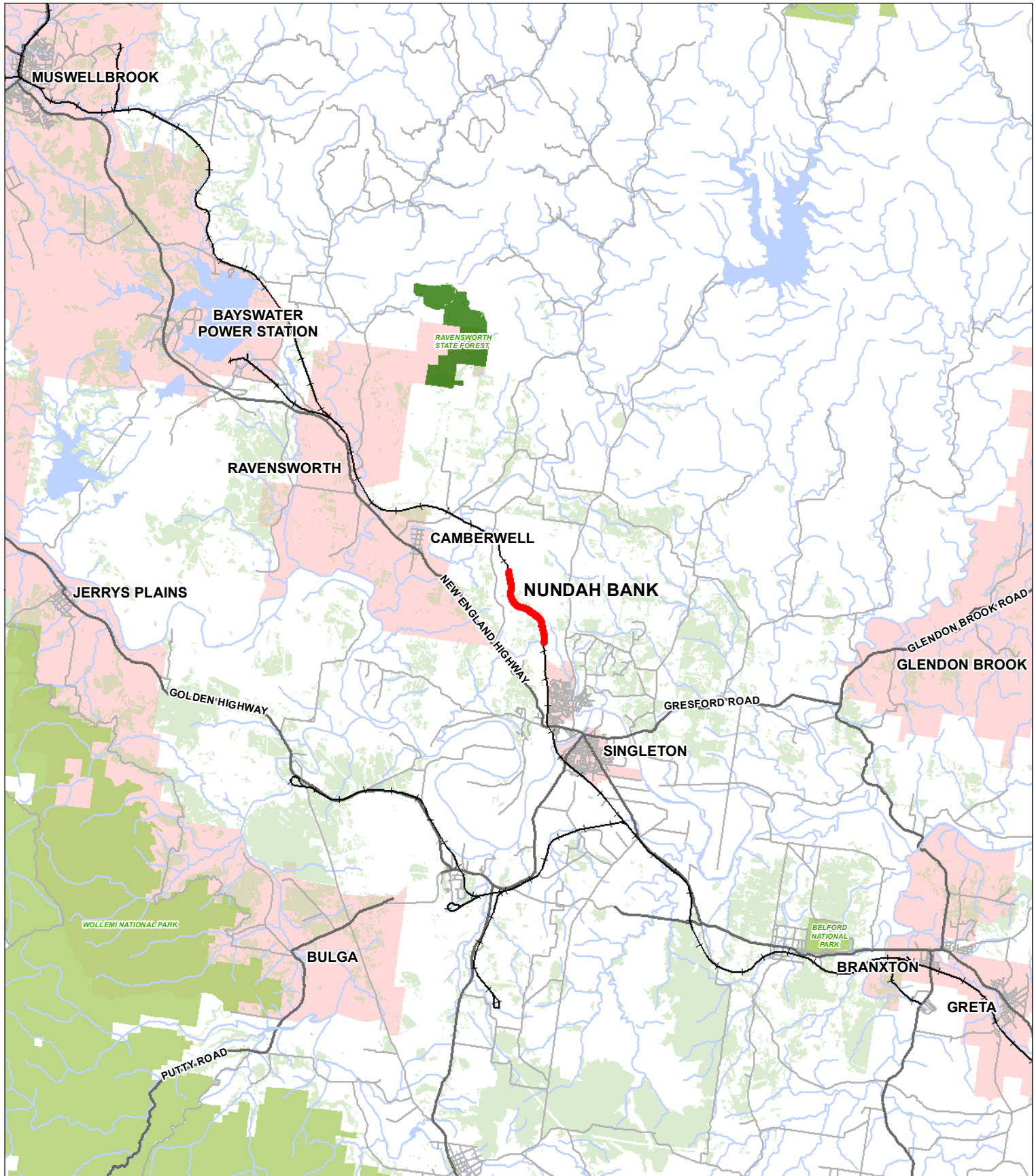
- An overview of the EA, consultation activities undertaken during preparation and statutory exhibition of the EA;
- A summary of issues raised in submissions;
- A response to the issues raised in submissions; and
- Details of project amendments that have been made since the exhibition of the EA.

1.2. Overview of Project and Environmental Assessment

The ARTC is seeking planning approval to construct, operate and maintain an approximately 4 kilometre section of a new third track and ancillary infrastructure adjacent to existing tracks on the Main Northern Railway between the towns of Singleton and Camberwell in the Hunter Valley.

Key features of the Project include:

- Provision of new maintenance vehicle access tracks on both sides of the rail corridor;



- Third Track
- National Park
- Water course
- Main Roads
- State Forest
- Watercourse Areas
- Major Roads
- Forest or Shrub
- Built Up Areas
- Rail Lines

A4 Original

0 2.5 5 10

Kilometres

GDA 1994 MGA Zone 56



ARTC
Nundah Bank

Job Number	2110501B
Revision	A1
Date	02.05.2011
Scale	1:250,000

Location Plan

Figure 1.1

- Relocation and installation of signalling infrastructure;
- Removal and extension of existing track drainage structures;
- Permanent acquisition of approximately 20 hectares of land from landowners resulting in a subsequent change in use of that land;
- Changes to the configuration of the Camberwell rail loop;
- Establishment of construction facilities including site compounds, accessways and ancillary facilities; and
- Establishment of a biodiversity offset to compensate for the residual effects of vegetation clearing resulting from the Project.

The Project would cost approximately \$44 million and be fully funded by the ARTC. Subject to planning approval, construction would commence in the 3rd quarter of 2011 and be operational by 2013.

If approved, the Project would maintain the economic prosperity of the region primarily through the continued employment of the 13,000 Australians employed directly or indirectly by the mining industry. As well, the strength of the State and National economies would be preserved.

The key potential construction and operational impacts that would occur if the Project was to proceed would include impacts to:

- Indigenous heritage;
- Ecology;
- Noise and vibration;
- Air quality;
- Surface and groundwater;
- Transport and land use;
- Non-Indigenous heritage; and
- Earthworks.

These impacts are assessed and measures to mitigate and manage the impacts are detailed in Section 7 of the EA (Volume 1, Main Document). These have been reviewed (where relevant) in light of the amendments to the Project design as described and discussed below.

1.3. Project Amendments

As a result of further consideration of project implementation, there are two amendments to the Project as described in Section 4 of the EA (Volume 1, Main Document).

These amendments include:

- A change to access arrangements to the down side of the rail corridor from Rixs Creeks Lane as a result of refinements to the construction methodology and Project operation. A second extension of Rixs Creek Lane has been identified as necessary for additional construction access to the rail corridor and for future maintenance access. This additional extension is shown in Figure 1.2A. The access route to the down side exhibited in the EA would be used for temporary construction access and the land rehabilitated following use.
- As part of further refinements to the construction methodology, the Project area has been expanded in five locations to the edge of water stores on the adjoining Integra Coal and Rixs Creek Mine properties. The stores are part of the water management systems of the mines. These

expansions are small in area and would enable water to be sourced for construction purposes as required.

- As a result of the above amendments, the amount of vegetation required to be cleared has changed from approximately 22.1 hectares as described in Section 7.2 of the EA (Volume 1, Main Document) to approximately 22.5 hectares. This includes an increase from 8.8 hectares to 9.1 hectares of Central Hunter Ironbark - Spotted Gum – Grey Box Forest, which is listed as a threatened ecological community under the *Threatened Species Conservation Act, 1995* (TSC Act).

The changes to the Project area as a result of these amendments are shown in Figures 1.2A-D. An assessment of these amendments is provided in Section 5 and Appendix A of this report.

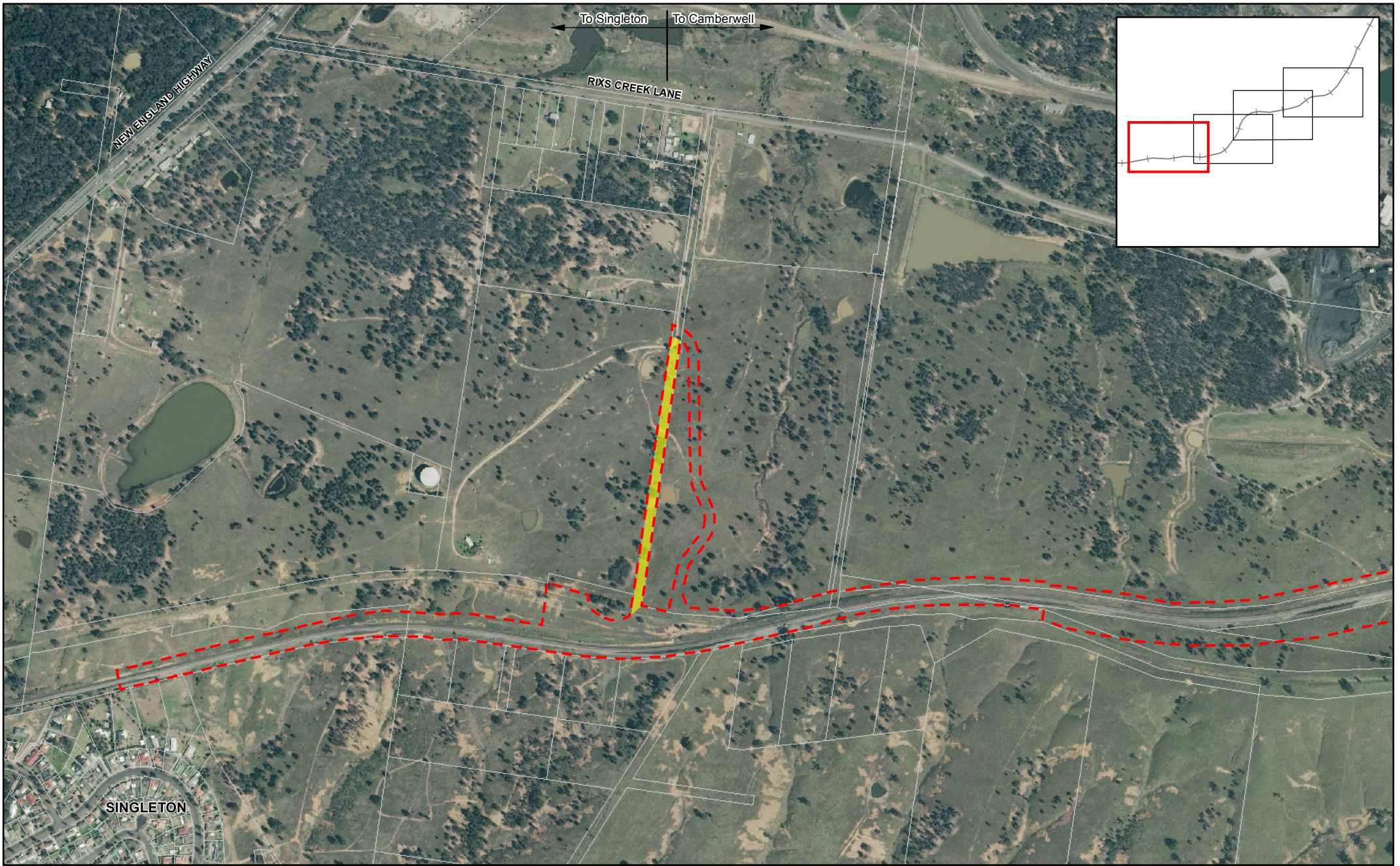
1.4. The Assessment and Determination Process

The Project has been assessed and will be determined in accordance with Part 3A of the EP&A Act.

Following the lodgement of this report DoPI will, on behalf of the Minister, review the EA, all submissions received and the report. Once DoPI has completed its assessment, a draft assessment report will be prepared for the consideration of the Director-General of DoPI. This report may include recommended Conditions of Approval (CoA) for the Project.

The assessment report will then be submitted to the Minister for formal determination. The Minister may then approve the Project with any appropriate conditions imposed, or may also choose to refuse the Project.

Immediately following the Minister's determination, copies of the determination and assessment report will be published on DoPI's website.



A3 Original

0 50 100 200

Metres

GDA 1994 MGA Zone 56



 Project Area

 Area additional to Environmental Assessment dated March 2011

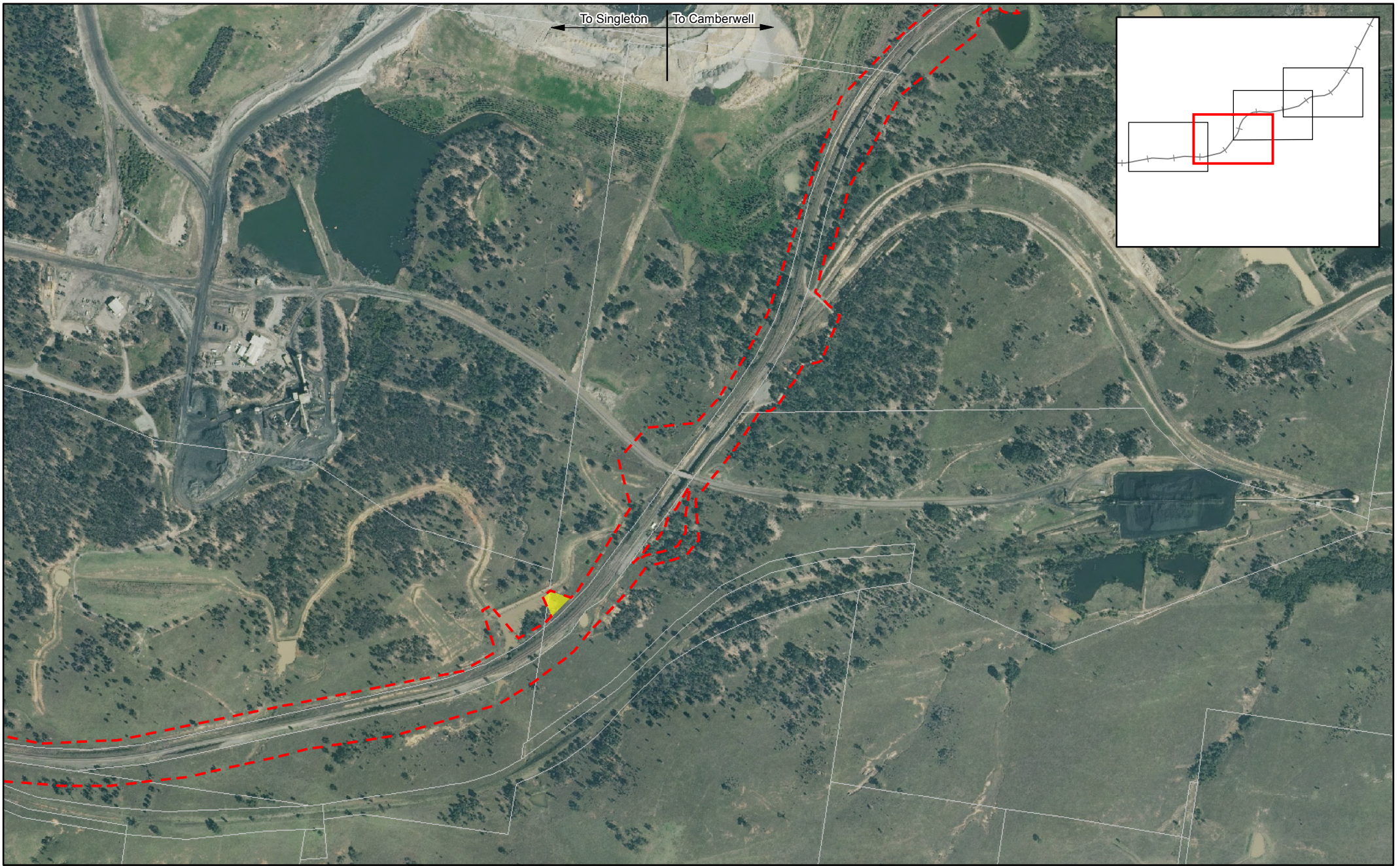
 Cadastre



ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A2
Date	04.05.2011
Scale	1:10,000

Project Area Figure 1.2A



A3 Original

0 50 100 200



Metres

GDA 1994 MGA Zone 56



Project Area

Area additional to Environmental Assessment dated March 2011

Cadastre



ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A2
Date	04.05.2011
Scale	1:10,000

Project Area Figure 1.2B



A3 Original

0 50 100 200

Metres

GDA 1994 MGA Zone 56



 Project Area

 Area additional to Environmental Assessment dated March 2011

 Cadastre



ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A2
Date	04.05.2011
Scale	1:10,000

Project Area Figure 1.2C



A3 Original

0 50 100 200

Metres

GDA 1994 MGA Zone 56



 Project Area

 Area additional to Environmental Assessment dated March 2011

 Cadastre



ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A2
Date	04.05.2011
Scale	1:10,000

Project Area Figure 1.2D

2. Exhibition and Consultation

2.1. Consultation Activities during Preparation of Environmental Assessment

A stakeholder and community involvement plan was developed and implemented for the Project. The plan included a variety of consultation and communication tools including:

- A letter regarding the Project, including a map of key features, issued to a number of key project stakeholders and State and Commonwealth government agencies;
- Meetings and discussions with DECCW (now Office of Environment and Heritage), Singleton Council, Rixs Creek Mine and Integra Coal;
- A letterbox drop and door-knocking of all residents along Bridgman Road, Middle Falbrook Road and Rixs Creek Lane; and
- Consultation with the Aboriginal community in accordance with DWECC's *Aboriginal Cultural Heritage Consultation Requirements for Proponents, 2010*.

In response to this consultation, letters were received from the Heritage Branch of the Department of Planning (now the Office of Environment and Heritage), the Mine Subsidence Board (MSB), the Roads and Traffic Authority (RTA), the Wanaruah LALC, Gidawaa Walang Cultural Heritage Consultancy, Cacatua Aboriginal Group, Rixs Creek Mine and Integra Coal. Approximately 10 face to face meetings were held with landowners. The following issues were raised during this consultation and have been addressed in the preparation of the EA:

- Potential impacts to Middle Falbrook Bridge listed on the State Heritage Register (located in Middle Falbrook over Glennies Creek);
- Interactions between adjoining mine developments and the Project, including access and sterilisation of mineral resources, and possible mine subsidence issues;
- The methodology for the air quality assessment;
- Commitment and details regarding the proposed biodiversity offset;
- The requirement to undertake a greenhouse gas emissions assessment;
- Increased rail noise experienced by residents of Singleton Heights;
- The upgrading of Singleton Council's bridge over Station Creek to support construction traffic;
- The impact of construction traffic on Bridgman Road; and
- Mitigation measures during construction for dust control in Rixs Creek Lane.

Comments were received from the Wanaruah LALC, Gidawaa Walang Cultural Heritage Consultancy and Cacatua Culture Consultants that are supportive of the assessment and recommendations of the Indigenous heritage assessment of the EA (Volume 2, Technical Paper 1). Support for the Project was also expressed by Rixs Creek Mine and Integra Coal.

2.2. Consultation during Statutory Exhibition

A notice was placed in the Newcastle Herald and the Hunter Valley News by DoPI on 30 March 2011 commencing the statutory exhibition period in accordance with Section 75H (3) of the EP&A Act.

The EA was exhibited by DoPI from the commencement of the exhibition period until 2 May 2011 during business hours at:

- Singleton Council Administration Centre, corner of Queen Street and Civic Avenue, Singleton;
- Singleton Council Library, 8-10 Queen Street, Singleton;
- DoPI, Information Centre, 23-33 Bridge Street, Sydney; and
- Nature Conservation Council, Level 2, 5 Wilson Street, Newtown.

The EA was also able to be viewed on DoPI's website during exhibition and will be available for viewing following a determination by the Minister.

Comments on the EA were able to be made by making a submission during the exhibition period, either in writing to DoPI or online by visiting DoPI's website. These submissions are discussed in Section 3 of this report.

The following communication activities were also undertaken by the Upper Hunter Valley Alliance (UHVA) as part of the exhibition of the EA:

- The establishment of the UHVA 1800 number to capture community enquiries. No calls were received.
- Exhibition display in Singleton Council customer service centre and library. The exhibition provided information on the Project, the EA, the approval process and details on how to make a submission.
- Advertisements were placed in the Newcastle Herald and Hunter Valley News on 20 April 2011 to highlight the Project and provide details of exhibition locations and submission requirements.
- A letterbox drop to highlight the Project and provide details of exhibition locations and submission requirements targeting nearby residents and the greater community, including the residents of Rixs Creek and Obanvale.

2.3. Future Consultation

Should the Project be approved, UHVA would continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phases of the Project. This commitment to ongoing stakeholder consultation is reflected in the Draft Statement of Commitments (SoCs) for the Project outlined in Section 9.1 of EA (Volume 1, Main Document) and the SoCs outlined in Section 6 of this report.

Prior to construction, a consultation strategy would be developed, which would include details on the following:

- Identification of stakeholders to be consulted as part of the strategy;
- Procedures and processes for regularly informing the local community and local and regional road network users on construction progress and environmental management;
- Procedures and processes for the community and stakeholders to provide feedback to UHVA on the environmental performance of the construction activities;
- Procedures and processes for providing responses to any community and stakeholder feedback on the environmental performance of the construction activities; and
- Procedures and processes for resolving any issues that arise between parties regarding environmental management and delivery of the Project.

3. Summary of Issues Included in Submissions and Response

During the exhibition period, DoPI received seven submissions from State agencies and two submissions from community organisations. Submissions were received from the following government agencies:

- Roads and Traffic Authority;
- NSW Office of Environment and Heritage – Conservation Team (previously the Heritage Branch of the former NSW Department of Planning);
- NSW Office of Environment and Heritage – Environment Protection and Regulation (previously the Department of Environment, Climate Change and Water);
- NSW Transport;
- NSW Office of Water;
- NSW Department of Trade and Investment, Regional Infrastructure and Services (a coordinated submission from Primary Industries, Resources and Energy and Forest divisions); and
- Singleton Council.

Submissions were also received from the Hunter Environment Lobby Inc and Two More Trains for Singleton (a campaign for two more daily passenger rail services from Newcastle to Singleton).

DoPI also advised that in recent correspondence to the Department, Railcorp had no comments in relation to the EA.

Table 3.1 summarises the issues raised in government agency submissions, listed most to least frequent based on the number of times an issue was raised (many submissions raised an issue multiple times).

Table 3.1 Summary of Issues from Government Agency Submissions

Issue Raised	Number of issues raised in submissions
Transport	13
Ecology	7
Surface and Groundwater	4
European Heritage	3
Indigenous Heritage	2
Primary Industries	1
Continuing consultation	1

Table 3.2 summarises the issues raised in the non-government submissions, listed most to least frequent based on the number of times an issue was raised. Both submissions raised an issue multiple times. None of the same issues were raised in both submissions.

Table 3.2 Summary of Issues from Non-Government Submissions

Issue Raised	Number of issues raised in submissions
Ecology	5
Land Use	1
Earthworks	1
Transport	1

Tables 3.3 and 3.4 below provide a detailed summary of each submission and issues raised, including where the issue is addressed in the EA (where applicable) and a response to the issues in submissions.

Table 3.3 Government Agency Submissions Received During Exhibition

Issue	Agency Issue	Response	Section of EA and this Report
Roads and Traffic Authority			
1	The RTA has no objection to the proposed development provided the following matters are addressed and included in the Minister's Conditions of Approval (CoA):	It is noted that the RTA has no objection to the Project.	N/A
2	<ul style="list-style-type: none"> A Construction Traffic Management Plan (TMP) shall be prepared. The TMP shall be submitted to the RTA and Singleton Council for acceptance prior to commencement of any works. 	<p>The mitigation and management measures for traffic within Section 7.6 of the EA (Volume 1, Main Document) and Technical Paper 4, Traffic and Transport (Volume 3) include the preparation of a TMP. The mitigation and management measures also include consultation in the preparation of the TMP with the RTA and Singleton Council as the relevant roads authorities. The TMP would form part of a Traffic and Transport Management Sub Plan to the Construction Environmental Management Plan (CEMP).</p> <p>The mitigation and management measures of the EA would form part of any approval for the Project and as such the TMP would be required as part of the CoA, along with consultation with the RTA and Council.</p> <p>A Statement of Commitment has also been included in Section 9.1 of the EA and Section 6 of this report requiring this consultation (Reference No. TA3). This commitment would also form part of any CoA.</p>	Sections 7.6.7 and 9.1 of EA, Section 7 of Technical Paper 4 and Section 6 of this report.
3	<ul style="list-style-type: none"> The RTA reserves the right to review the TMP at any stage and make changes in the interests of maintaining road safety and network efficiency on classified roads. 	Noted and agreed.	N/A
4	<ul style="list-style-type: none"> All works shall be undertaken at full cost to the developer and at no cost to the RTA or Council. 	<p>Noted and agreed.</p> <p>It is also noted that the SoCs outlined in Section 9.1 of the EA and Section 6 of this report (Reference No. TA1), state that any damage from construction (not wear and tear) would be repaired by the ARTC unless alternative arrangements are made with the existing road authority. These SoCs would form part of any approval for the Project and as such all road works necessary as a result of damage caused during construction would be required as part of the CoA, at full cost to the ARTC and at no cost to the RTA or Council.</p>	Section 9.1 of EA and Section 6 of this report.

Issue	Agency Issue	Response	Section of EA and this Report
NSW Office of Environment and Heritage – Conservation Team (Non-Indigenous Heritage)			
5	<p>In previous correspondence (from the former Department of Planning's Heritage Branch in January 2011), it was stated that the Draft SoCs (Section 9.1 of EA) were not adequate for the management of the identified heritage within the Project area and an additional SoC was necessary which required the adoption of recommendations 1-9 contained within Section 7.1 of Technical Paper 5, European Heritage (Volume 3). These recommendations have not been adopted.</p>	<p>Following receipt of comments from DoPI during adequacy review, it is noted that the Draft SoCs (Section 9.1 of EA, Volume 1) were reviewed in relation to the adoption of the recommendations in Section 7.1 of Technical Paper 5. The Draft SoCs are broader in their drafting than the recommendations of the technical paper but achieve the same objectives (Reference Nos. NA1-2).</p> <p>All of the recommendations (except one discussed in submission issue 6 below) are included in Section 7.7 of the EA (Non-Indigenous Heritage) as mitigation and management measures. The SoCs reference Section 7.7 of the EA and as such the recommendations of the technical paper are tied to the SoCs and any CoA.</p> <p>Two SoCs were also inserted into both the Non-Indigenous and Transport and Land Use sections of the SoCs (Reference Nos. NA4 and TA4) to reinforce that Middle Falbrook Bridge over Glennies Creek in Middle Falbrook (included on the State Heritage Register) would not be used by heavy construction vehicles. This addresses recommendation 8 of the technical paper.</p>	<p>Sections 7.7 and 9.1 of the EA, Section 7.1 of Technical Paper 5 and Section 6 of this report.</p>
6	<p>One of the recommendations in Section 7.1 of Technical Paper 5 has been removed, i.e.:</p> <p><i>Impacts related to vibration damage to the large sandstone culvert (Item 04-2) are not expected; however it is prudent as a precautionary principle to monitor impacts on a regular basis. A suggested monitoring regime would be once every three months.</i></p> <p>Section 7.1 of the technical paper now contains only 8 recommendations. All management recommendations in Section 7.1 of the technical paper must be included in the Draft SoCs to ensure adequate management of heritage within the Project boundaries.</p>	<p>Following further refinement of the construction methodology, a third access route to the up side, off Bridgman Road, was not considered necessary and removed from the Project area. The recommendation was originally included in the technical paper to ensure that construction vehicles using the third access route did not impact upon the culvert. Consequently, the recommendation was removed from both the EA and technical paper prior to exhibition of the EA.</p> <p>It is noted that the culvert is approximately 200 metres from the Project area. This distance separation is adequate to ensure that the item is not impacted upon by vibration during construction. A SoC (Reference No. NA2) is included to ensure that any impacts to heritage items are ameliorated following project construction, including the culvert.</p>	<p>Sections 7.7 and 9.1 of EA, Section 2.2 of Technical Paper 3 and Section 6 of this report.</p>
7	<p>The most recent correspondence by the former Heritage Branch on the final EA (January 2011) was not included in Section 5.1.5 of the EA and this is considered to be a misrepresentation of the branch's position on this Project and</p>	<p>The draft EA was reviewed to meet adequacy following the receipt of correspondence from DoPI outlining areas of the EA that were considered inadequate. This did not include correspondence received from agencies during adequacy review. Consequently, Section 5.1.5 could not be updated with the</p>	<p>Section 5.1.5 of EA.</p>

Issue	Agency Issue	Response	Section of EA and this Report
	<p>the impacts it would have on heritage within the Project area. This requires amendment to reflect the true timeline and comments provided.</p>	<p>former Heritage Branch's comments. Once the EA is exhibited, it is also not part of the assessment process to update the EA document.</p>	
<p>NSW Office of Environment and Heritage – Environment Protection and Regulation (Ecology and Indigenous Heritage)</p>			
<p>Biodiversity offsetting</p>			
<p>8</p>	<p>The OEH is unable to fully assess and provide comment on this proposal until a suitable biodiversity offset is provided which meets OEH's BioBanking requirements or Biodiversity offsetting principles.</p> <p>OEH notes that the proponent is considering using the BioBanking Assessment Methodology (in accordance with the <i>BioBanking Assessment Methodology</i> (DECC 2008) as defined under Section 127B of the <i>Threatened Species Conservation Act</i> (TSC), 1995 and the <i>BioBanking Assessment Methodology and Credit Calculator Operational Manual</i> (DECC 2009) as a guide to determine an offset package for this development. However, they plan on then following the <i>Principles for the use of Biodiversity offsets in NSW</i> (OEH 2011) for the final offset package, which, as per Section 8.2 of Technical Paper 3, Ecology (Volume 3), may be combined with the offset package for ARTC's third track project between Maitland and Minimbah which gained approval on 22 May 2009 but for which the offset package is still being finalised.</p>	<p>The ARTC is committed to the development an offset strategy to maintain or improve environmental outcomes. This biodiversity offset strategy is currently being developed. The development of offsets is considering, and being developed in accordance with, the <i>Principles for the Use Of Biodiversity Offsets in NSW</i> (DECC 2008) and the <i>NSW BioBanking Methodology and Credit Calculator</i> (DECC 2009).</p> <p>A meeting was undertaken with Emma Coombs and Mitchell Bennett from the Office of Environment and Heritage (then the Department of Environment, Climate Change and Water) in Newcastle on 24 November 2010. At the meeting, BioBanking was considered as the most appropriate pathway for developing an offset and agreeable to combining our offsets with the Hunter8 Project.</p> <p>The BioBanking tool was used to provide a calculation of the number and class of biodiversity credits required to ensure maintenance or improvement in biodiversity. A BioBanking Credit Report and BioBanking Assessment Report have been prepared for the Project and are provided at Appendix A of this report. Supporting maps, mapping layers and plot data have also been prepared.</p> <p>The ecosystem credit requirements for the Project are 1258 and should occur in:</p> <ul style="list-style-type: none"> • Hunter/Central Rivers Catchment Management Authority, Hunter subcatchment and consist of Spotted Gum - Ironbark - Grey Box Forest on hills of the Hunter Valley Sydney Basin (HU556); and • Northern Rivers CMA, Stanthorpe Plateau subregion and consist of New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213). <p>The offset strategy will incorporate offsets that meet the credit requirements. Additional details regarding the strategy are provided at Appendix A of this report.</p>	<p>Section 7.2.6 of EA and Appendix A of this report.</p>
<p>Threatened species survey methodologies and assessment</p>			

Issue	Agency Issue	Response	Section of EA and this Report
9	<p>OEH’s amphibian survey guidelines (DECC 2009) and draft threatened biodiversity and assessment survey guidelines (DEC 2004), as well as the Commonwealth Government’s threatened frog survey guidelines (DEWHA 2010) make reference to the importance in recording ambient weather conditions, particularly temperature during which biodiversity surveys were conducted. Technical Paper 3, Ecology (Volume 3) does not appear to include details of ambient weather conditions during the time of the biodiversity surveys.</p> <p>OEH requests that the proponent provide an assessment of the likely impact of the weather conditions during the time of biological survey and how it may have affected the survey results for threatened animal species.</p>	<p>Due to ambient temperatures at the time of survey, a precautionary approach was taken and the determination of the likelihood of occurrence of threatened species was based upon known ecological requirements of regional herpetofauna species (amphibians) and assessment of potential onsite habitat opportunities. Assessment of impacts was undertaken for species with moderate or higher likelihood of occurrence based on available habitats. The assessment is further detailed in a response to ecological issues raised in submissions at Appendix A of this report.</p>	Appendix A of this report.
10	<p>Section 5.2 of Technical Paper 3, has a reference to an area of Swamp Oak Forest (0.12 hectares) affected by the proposal which appears to occur near the northern limit of the Project area. However, this vegetation community is not described in Technical Paper 3 nor does its conservation significance appear to have been evaluated.</p> <p>OEH recommends that the proponent provide further details of Swamp Oak Forest on site (Particularly floristic composition, vegetation structure, an indication of the frequency and duration of water logging at the site, and an indication of the salinity of the groundwater), and if any of the 0.12 hectares to be affected by the proposal is EEC vegetation, and if so must be offset.</p>	<p>The Project would impact upon a small area of Swamp Oak Forest, totalling 1 hectare, and is unlikely to have a significant impact on this community.</p> <p>Offsets for this community have been included in the BioBanking assessment. However, since “for operational reasons, the minimum size of a vegetation zone is 0.25 hectares” for BioBanking assessments, these two patches have been combined with Grey Ironbark – Spotted Gum – Grey Box open forest on hills of the Hunter Valley, Sydney Basin, which is the only other vegetation zone within the study area and is closest in condition and percentage cleared. This follows the methodology outlined in the BioBanking assessment manual (Seidel & Briggs 2008) and following this methodology, impacts to this community have been included in the offsets assessment. Refer to Appendix A for more details in relation to this assessment.</p>	Appendix A of this report.
11	<p>Pine Donkey Orchids grow along Thomas Mitchell Drive, south Muswellbrook, in derived grassland with a high component of exotic pasture species approximately 29 kilometres North West of the centre of the Nundah Bank Project area.</p>	<p>Surveys of the study area were undertaken outside the appropriate survey time for <i>Diuris tricolor</i>. For this reason, a precautionary approach was taken and the study area assumed to provide potential habitat based on the habitat characteristics within the site.</p> <p>It is acknowledged that the species may occur in derived grassland areas with a</p>	Section 7.2 of EA, Section 3.2.3 and 7 of Technical Paper 2 and Appendix A

Issue	Agency Issue	Response	Section of EA and this Report
	<p>OEH recommends that the proponent conduct targeted surveys for this plant during the next flowering period between mid-September and mid-October (checked against the flowering for the populations near Muswellbrook).</p> <p>If adequate seasonal surveys for this species are not conducted, when determining biodiversity offsets the OEH will assume that those species with potential habitat on the site are in fact utilising the site.</p>	<p>high component of exotic pasture. However, the areas identified in Technical Paper 2 as “weed dominated” are not considered to be derived grassland with high exotic component. These areas generally occur where the soil profile has been modified (including fill and ballast) and are unlikely to contain a native soil seed bank or to regenerate naturally. Native species recorded in these areas were colonising species is likely to have germinated as a result of wind-dispersed seed (see Section 3.2.3 of Technical Paper 2). As such, these weed dominated areas are not considered to provide potential habitat for this species.</p> <p>Technical Paper 2 and this report include an assessment of the impacts of the clearing of 22.5 hectares of potential habitat identified for this species. This assessment concluded that the project and the removal of this habitat were unlikely to have a significant impact.</p>	<p>of this report.</p>
12	<p>Two additional woodland bird species, the Olive Whistler and the Varied Sittella were not considered in Technical Paper 3. OEH recommends that, for completeness, the impact of the proposed development is assessed against these two threatened woodland bird species.</p>	<p>An additional ecological assessment was undertaken in relation to the Olive Whistler and Varied Sittella. It has been assessed that the removal of vegetation as a result of the Project would not present a significant threat to the viability of the Varied Sittella or remove vegetation that would offer significant habitat opportunities for Olive Whistlers. This assessment is further detailed in Appendix A.</p>	<p>Appendix A of this report.</p>
13	<p>OEH requests advice as to whether specimens of <i>Drosera pygmaea</i>, <i>Austrostipa wakoolica</i> and Smooth Helicia (<i>Helicia glabriflora</i>) were sent to the NSW herbarium for identification confirmation. None of these species are listed as occurring in the Central Hunter Valley (Peak 2006: Appendix 9).</p>	<p>The species questioned were not sent to the NSW herbarium for identification confirmation. Information on the species identification is included in Appendix A of this report.</p>	<p>Appendix A of this report.</p>
14	<p>The fauna habitats described in Section 3.4.1 of the EA and Table 3-9 of Technical Paper 3 refer to the presence of mistletoe, particularly in the larger specimens of Grey Box (<i>Eucalyptus moluccana</i>). If mistletoe is present then OEH is of the opinion the assessment of significance carried out on the Painted Honeyeater would need to be revisited.</p>	<p>Mistletoe was observed to occur at a low density, generally not being recorded over much of the study area. Mistletoe was recorded outside the Project area and thus was not surveyed by botanists. As such, it was not identified to genus level and was excluded from the flora species list.</p> <p>Despite the presence of mistletoe in associated eucalypts this is not considered to represent a significant resource for Painted Honeyeaters occurring in the Hunter Region, particularly in reference to the Project area, due to the fragmented nature of the site and the propensity of local populations to favour mistletoe in acacias or allocasuarinas. This is further discussed in Appendix A of this report.</p>	<p>Appendix A of this report.</p>

Issue	Agency Issue	Response	Section of EA and this Report
Indigenous Heritage			
15	<p>Incomplete evidence of the Aboriginal community consultation process. Additional evidence is required from the registered Aboriginal Groups for the Project regarding their views on the outcomes of the Aboriginal cultural heritage assessment process. The OEH requests that the proponent provide comments/evidence from at least a majority of the registered Aboriginal Groups.</p>	<p>There are fourteen Aboriginal Groups registered for the Nundah Bank Project. Biosis Research (specialists engaged for the Project) endeavoured to consult comprehensively with all registered groups during preparation of the Indigenous heritage assessment (Technical Paper 1, Indigenous Heritage), following adequacy review, and during exhibition of the EA (refer to the consultation log provided in Appendix B).</p> <p>The following eight groups have responded by correspondence indicating their support for the Project (See Appendix C for copies of correspondence):</p> <ol style="list-style-type: none"> 1. <i>Gidawaa Walang Cultural Heritage Consultancy</i> – Correspondence received on 29/11/2010 during preparation of Indigenous heritage assessment. 2. <i>Wanaruah Local Aboriginal Land Council</i> – Correspondence received on 25/01/2011 during preparation of EA. 3. <i>Wattaka Wonnarua Cultural Consultants</i> – Correspondence received on 10/03/2011 following adequacy review. 4. <i>Yarrowalk Enterprises</i> – Correspondence received 16/03/2011 following adequacy review. 5. <i>Culturally Aware</i> - Correspondence received on 18/03/2011 following adequacy review. 6. <i>Wonnarua Nation Aboriginal Corporation</i> – Correspondence received on 18/03/2011 following adequacy review. 7. <i>Kayaway Eco Cultural & Heritage Services</i> – Correspondence received on 30/03/2011 during exhibition of EA. 8. <i>Ungooroo Aboriginal Corporation</i> – Correspondence received 8/04/2011 during exhibition of EA. <p>The following four groups responded verbally in support of the Project (two of these groups also provided written responses):</p> <ul style="list-style-type: none"> • <i>Cacatua Culture Consultants</i> – Verbal comments in support received 20/12/2010 during preparation of Indigenous heritage assessment (discussed in EA). • <i>Yarrowalk Enterprises</i> – Verbal comments in support received 16/03/2011 	<p>Sections 5.1 and 7.2, Technical Paper 1, Indigenous heritage (Volume 2) and Appendix B and C.</p>

Issue	Agency Issue	Response	Section of EA and this Report
		<p>following adequacy review.</p> <ul style="list-style-type: none"> • <i>Ungooroo Aboriginal Corporation</i> – Verbal comments in support received 18/03/2011 following adequacy review. • <i>Yinarr Cultural Services</i> – Verbal comments in support received 18/03/2011 following adequacy review. <p>The <i>Lower Hunter Wonnarua Council Incorporated, Aboriginal Native Title Consultants and Carrawonga Consultants</i> have not responded to requests for comments on the Indigenous heritage assessment report and recommendations.</p> <p><i>Ungooroo Cultural and Community Services Incorporated</i> has advised that it cannot provide comment on the Project as it was not involved in the survey.</p> <p>A consultation log provided in the EA is provided in Appendix B. This log, along with the correspondence provided in Appendix C, is evidence of successful consultation with ten of the fourteen registered Aboriginal Groups. This evidence includes comments from the local Aboriginal community in relation to the survey and assessment methodology for the Indigenous heritage assessment, the cultural significance of the site and the adequacy of the mitigation and management measures of the EA. No objections were received or additional mitigation and management measures requested.</p> <p>It is further noted that an Aboriginal Cultural Heritage Management Plan (ACHMP) is currently being prepared in consultation with the registered Aboriginal Groups for the Project in accordance to the DECCW's (now OEH's) <i>Consultation Requirements for Proponents 2010</i>. The preparation of this plan is required by one of the mitigation and management measures of the EA. The purpose of the plan is to ensure that Aboriginal cultural heritage is appropriately managed throughout the life of the Project. This plan would include the mitigation and management measures of the Indigenous heritage assessment and the EA, and give the registered groups another opportunity to review and provide comments on the Project and the management of their culture.</p>	
16	The Aboriginal cultural heritage assessment provided has not adequately addressed the cultural significance of the Aboriginal heritage identified within the Project area.	As outlined in the EA and Technical Paper 1, Aboriginal people are the primary determiners of their cultural heritage. Biosis Research specifically requested groups to describe the cultural significance of Aboriginal cultural heritage relevant to the Project Area (see Appendix B for examples of cover letters sent to registered groups along with the draft Indigenous Heritage Assessment Report).	Section 7.1 and Technical Paper 1, Indigenous Heritage (Volume 2).

Issue	Agency Issue	Response	Section of EA and this Report
		No comments in relation to the cultural significance of the area or identified sites were provided by the Aboriginal Groups in the preparation of the Indigenous Heritage assessment and in further correspondence received since adequacy review (discussed above). Continuing dialogue regarding cultural significance is being undertaken as part of the preparation of the ACHMP (See above).	
NSW Transport			
17	NSW Transport supports the Project and provided the following comments for the DoPI's consideration in the assessment of the application:	Support for the Project is noted.	N/A
18	<ul style="list-style-type: none"> The rail corridor is owned by the NSW Government's Country Rail Infrastructure Authority and is subject to a long term lease to the ARTC. 	Noted.	N/A
19	<ul style="list-style-type: none"> There are no operational railway stations on this section of line. 	Noted.	N/A
20	<ul style="list-style-type: none"> There are two relevant level crossings. <ul style="list-style-type: none"> At Camberwell (Glennies Creek Road) ID 447 – Main Northern Railway (chainage 253.733). At Oak Park Station (Dights Crossing Road) known as Nundah (Middle Falbrook Road) ID 446 – Main Northern Railway (chainage 251.500). <p>No action is required at this time for either crossing.</p>	Noted.	N/A
21	<ul style="list-style-type: none"> Consultation and agreement with the RTA needs to occur over any proposed changes to road infrastructure at both construction and operational stages of the Project. 	<p>Noted and agreed.</p> <p>As discussed above, mitigation and management measures for traffic within the EA and Technical Paper 4 include the preparation of a TMP. The TMP would form part of a Traffic and Transport Management Sub Plan to the CEMP. The mitigation measures include consultation with the RTA in the preparation of the TMP.</p> <p>The mitigation and management measures of the EA would form part of any approval for the Project and as such consultation with the RTA would be required as part of the CoA.</p>	Sections 7.6.7, 9.1, 9.2.3 and 9.2.6 of EA and Section 7 of Technical Paper 4.

Issue	Agency Issue	Response	Section of EA and this Report
		A new SoC has also been included in Section 9.1 of the EA and Section 6 of this report requiring this consultation (Reference No. TA3). This commitment would also form part of any CoA.	
22	<ul style="list-style-type: none"> The nearest operational receivers are 770 metres from the proposal and none of the receivers are predicted to experience noise levels exceeding relevant Interim Guidelines for the Assessment of Noise from Rail Projects (IGANRIP) trigger levels. 	Agreed.	Section 7.3 of EA and Technical Paper 3, Noise and Vibration.
NSW Office of Water			
23	NOW has no objection to Project approval and requests that the following conditions be addressed prior to project commencement:	It is noted that NOW has no objection to the Project.	N/A
24	<ul style="list-style-type: none"> Groundwater - All proposed groundwater works including bores for the purpose of investigation, extraction, dewatering, testing or monitoring be identified and approval obtained from NOW prior to installation. 	It is unlikely that groundwater would be impacted as there are no licensed bores in the study area or groundwater extraction proposed. However, any groundwater works found necessary during construction would be identified and appropriate approvals sought from NOW. A new SoC (Reference No. SG4) has been added to ensure that this is carried out where required.	Section 7.5 and 7.8 of EA and Section 6 of this report.
25	<ul style="list-style-type: none"> Surface water: <ul style="list-style-type: none"> Geomorphic assessment of stream sections where crossings are to be constructed be conducted prior to construction. 	<p>It is noted that there is only one creek within the study area (Station Creek). A bridge upgrade over the creek for construction vehicles using Middle Falbrook Road is part of the Project. A geomorphic assessment of Station Creek would be undertaken as part of the final detailed bridge design.</p> <p>Mitigation and management measures have been included in Sections 7.5 and 7.8 of the EA to ensure appropriate erosion and sedimentation controls are implemented during the bridge upgrade. An earthworks construction environmental management framework has also been provided in the EA to support these measures (Section 9.2). This includes the preparation of a Soil and Water Management Sub Plan for the CEMP. These mitigation and management measures, framework and sub plan form part of the SoCs (Reference No. SW1) in the EA and this report and would therefore form part of any CoA.</p>	Sections 7.5, 7.8, 9.1 and 9.2 and Section 6 of this report.

Issue	Agency Issue	Response	Section of EA and this Report
	<ul style="list-style-type: none"> ○ The use of surface water from dams for construction may require a Licence under the relevant NSW water legislation. 	<p>There are no dams within or adjoining the Project area. There are water stores on adjoining properties used by Integra Coal and Rixs Creek Mine as part of their water management systems associated with mine operations.</p>	<p>Sections 4.5 and 7.8.</p>
26	<ul style="list-style-type: none"> • The CEMP is to be provided to NOW for review and include monitoring for impacts and mitigation measures for potential contamination of surface and groundwaters. 	<p>It is noted that mitigation and management measures for potential contamination of surface and groundwaters would be implemented as per Sections 7.8, 8.1 and 8.6 of the EA, including the preparation of a Soil and Water Management Sub Plan and a Hazard and Risk Management Sub Plan for the CEMP. An earthworks construction environmental management framework has also been outlined in the EA to support these measures (Section 9.2). These mitigation and management measures, sub plans and framework also form part of the SoCs in the EA and are detailed in this report (Reference Nos. SW1-SW4).</p> <p>It is anticipated that any approval granted for the Project would contain a condition requiring that, during the preparation of the CEMP, government agencies, including NOW, be consulted on relevant sections and sub plans.</p>	<p>Sections 7.8, 8.1, 8.3, 9.1 and 9.2 and Section 6 of this report.</p>
NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS)			
27	<p>The EA adequately addresses the issues raised by the former Industry and Investment NSW (now DTIRIS) in relation to the EA.</p>	<p>Noted.</p>	<p>Sections 3, 7, 8 and 10.</p>
28	<p>There is no objection to the Project provided consultation with coal title holders, DTIRIS, and the Mine Subsidence Board (MSB) continues.</p>	<p>Consultation would continue as detailed in Section 5 of the EA and SoCs detailed in this report (Reference Nos. CC1 and CC2). This includes consultation with adjoining coal title holders of Rixs Creek Mine and Integra Coal, members of the community, DTIRIS and the MSB.</p> <p>The Project borders the eastern edge of the Patrick Plains Mine Subsidence District and as such approval from the MSB is required prior to development within the identified subsidence district. A request for approval under Section 15 of the <i>Mine Subsidence Compensation Act, 1961</i> is being progressed.</p>	<p>Sections 2.8, 5.1, 5.2, 7.8, 9.1 and 9.2 and Section 6 of this report.</p>
Singleton Council			
29	<p>It is unclear in the EA the extent to which the heavy vehicle damage to the bridge over Station Creek has been</p>	<p>Station Creek is located along Middle Falbrook Road and is crossed by a small, single lane wooden bridge. Initial assessment of the bridge indicates that it would require a structural upgrade to carry the proposed construction loads, although the</p>	<p>Sections 4, 7.1, 7.2, 7.5, 7.7, 7.8 and 9.1 of the EA</p>

Issue	Agency Issue	Response	Section of EA and this Report
	addressed in the EA.	<p>current proposal is to span the existing structure using steel plates or girders so that the bridge is unaffected. Further assessment would be carried out as part of ongoing concept and detailed design to determine the exact scope of upgrade works required in consultation with Singleton Council.</p> <p>Consideration was given to the upgrade of the bridge in the EA. The Indigenous heritage and ecological surveys and assessments (Section 7.1 and 7.2 of EA respectively) included Station Creek and the bridge. No Aboriginal relics were found in or near the creek location.</p> <p>It is noted that Section 7.5 of the EA (Surface and Groundwater) states that where foundation works are required for the bridge upgrade, appropriate water quality controls would be implemented to protect the creek and dependent ecosystems.</p> <p>Section 7.7 of the EA (European Heritage) discusses the indicative local heritage significance of the bridge and includes mitigation and management measures requiring the ARTC to discuss the heritage implications of the upgrade with Council. This would include the preparation of a digital photographic record of the bridge where major changes are required.</p> <p>Section 7.8 of the EA (Earthworks) includes a mitigation measure to ensure that appropriate erosion and sedimentation controls are implemented for the bridge upgrade once the detailed design has been determined. Other Project wide environmental mitigation and management measures included in this section would also apply to the bridge upgrade.</p> <p>The SoC in Section 9.1 of the EA and Section 6 of this report also relate to the bridge upgrade.</p>	and Section 6 of this report.
30	Council requests that an agreement be put in place to ensure that the ARTC rectify any damage caused by the Project to road and bridge infrastructure as a consequence of the Project.	<p>The ARTC would rectify any damaged caused by the Project to road and bridge infrastructure and an agreement is not considered necessary.</p> <p>It is noted that the mitigation and management measures for traffic within the EA and Technical Paper 4, Traffic and Transport, include the undertaking of road dilapidation reports for Council owned roads. The undertaking of these reports would form part of a Traffic and Transport Management Sub Plan to the CEMP. A transport and access construction environmental management framework has also been provided in the EA to support the preparation of these reports (Section 9.2).</p> <p>The SoCs also require the reports to be undertaken and any damage resulting</p>	Sections 7.6, 91 and 9.2 of the EA and Section 6 of this report.

Issue	Agency Issue	Response	Section of EA and this Report
		from construction (not normal wear and tear) be repaired unless alternative arrangements are made with Council. The SoCs would form part of an approval granted by the Minister for the Project and as such any damage would have to be rectified by the ARTC to ensure it does not breach the CoA.	
31	Any work proposed within a road reserve would need an approval from Singleton Council under Section 138 of the Roads Act.	Noted.	N/A

Table 3.4 Public Submissions Received During Exhibition

Issue	Organisation Issue	Response	Section of EA and this Report
Hunter Environment Lobby Inc.			
1	<p>Inadequate information has been provided on the proposed amelioration measures taken for biodiversity impacts on the four listed threatened species directly impacted, plus other native species.</p>	<p>Detailed mitigation measures to minimise impacts to flora and fauna have been included in Section 7.2 of the EA and Technical Paper 2, Ecology (Section 6). These mitigation measures specifically target the threatened species and habitat to be impacted by the Project. The impacts have been reduced through careful siting of compounds and roads, and minimising the construction corridor as far as practical. In this way, the majority of the potential threatened species habitat within the locality has been avoided.</p> <p>The mitigation measures have been updated to include:</p> <ul style="list-style-type: none"> • Limit disturbance of vegetation to the minimum necessary to construct works. • Where appropriate mark the limits of clearing and install fencing around the construction footprint area prior to the commencement of construction activities to avoid unnecessary vegetation and habitat removal. • Install nest boxes to offset affected hollow trees where the threatened Squirrel Glider is located. • Implement clearing protocols, including: <ul style="list-style-type: none"> ○ Marking trees to be removed and preparing an inventory of trees and hollows to be removed; ○ Checking hollow-bearing trees for the presence of bird nests and arboreal mammals, such as possum, Squirrel Gliders and bats, prior to felling; ○ Safely removing and relocating, to nearby woodlands, animals found to be occupying trees before clearing; and ○ Providing nest boxes or salvaged tree hollows in nearby woodlands for each hollow felled. • Restrict equipment storage and stockpiling of resources to designated areas in cleared land. • Design all drainage structures to incorporate fauna movement capability by ensuring dry status under normal conditions apart from existing box drainage 	<p>Sections 7.2, 9.1 and 9.2 of EA, Section 6 of Technical Paper 2 and Appendix A of this report.</p>

Issue	Organisation Issue	Response	Section of EA and this Report
		<p>structures under the Camberwell junction.</p> <ul style="list-style-type: none"> • Reduce the median width to the minimum necessary for safe operation of the Project in potential fauna crossing zones. • During design include a crossing zone (with multiple gliding poles) in the area of the Integra Coal loop rail loop, to aid Squirrel Glider movement. <p>Additional measures have been included to minimise the potential impacts of weeds, aquatic disturbance as well as general measures for construction such as inductions and development of a CEMP. The CEMP would include a Flora and Fauna Management Sub Plan. The sub plan would expand on these measures and provide detailed site specific controls for different areas and ecological sensitivities within the Project area.</p>	
2	<p>A review of threatened species impacts cannot be adequately undertaken without knowing the species populations in the affected area and the locality, especially for key species such as the Squirrel Glider and Grey Crowned Babbler. Further assessment is required to fulfil the Director-General's requirements in this regard.</p>	<p>There is a relatively large amount of information and scientific literature available about the ecology of both the Squirrel Glider and Grey Crowned Babbler. Both these species occur in small family groups and each was recorded at only one location in the study area. Although the Project would remove some habitat, this removal would be linear in nature and the area of potential habitat to be removed would be relatively small in terms of the extent of similar or greater quality habitat available in the study area and surrounding landscape. With the implementation of mitigation measures including tree clearing protocols and installation of nest boxes, these family groups are likely to relocate to the adjacent habitat and are unlikely to be lost to the study area.</p> <p>Furthermore, the Grey Crowned Babbler was recorded in an area that would not be affected by the Project, occurring approximately 600 m to the north of the Project area. This species is not cryptic and would have been recorded if it occurred elsewhere in the study area.</p> <p>The survey and assessment for the Project followed the guidelines specified in the Director-General's requirements. All impacts of the Project on threatened species, including any adjacent areas that may be indirectly affected were assessed as required. As discussed above, this included identification and assessment of the Grey Crowned Babbler which was recorded in an area that would not be affected by the Project. As such, the impacts to threatened species have been adequately assessed as specified by the Director-General.</p> <p>This is further detailed in Appendix A of this report.</p>	<p>Section 7.2 of EA, Technical Paper 3, Ecology and Appendix A of this report.</p>

Issue	Organisation Issue	Response	Section of EA and this Report
3	<p>A draft of the Fauna and Flora Management Sub Plan referred to in the assessment should have been included as part of the proposal, together with full details of the proposed biodiversity offsets that are foreshadowed.</p>	<p>Detailed mitigation measures to minimise impacts to flora and fauna have been recommended in Section 6 of Technical Paper 2. These mitigation measures provide an outline of key aspects to be included in the Flora and Fauna Management Sub Plan of the CEMP. The sub plan would expand on these measures and provide detailed site specific controls for different areas and ecological sensitivities within the Project area.</p> <p>The ARTC is committed to developing biodiversity offsets for the Project. A biodiversity offset strategy is currently being developed in consultation with the OEH and DoPI. As part of the development of the offset strategy, a BioBanking Assessment Report has been completed and is included at Appendix A. The report outlines the offset requirements for the Project and provides a BioBanking Credit Report.</p> <p>The SoCs proposed to form part of the CoA detailed in the EA and Section 6 of this report require a biodiversity offset package to be developed in consultation with OEH, DoPI and other relevant government agencies.</p>	<p>Sections 7.2, 9.1 and 9.2 of EA, Section 6 of Technical Paper 2 and Section 6 of this report.</p>
4	<p>Engineering measures/structures should be included as part of the design of the Project to allow threatened species and other native fauna to be able to effectively cross the railway line at a minimum of 1km intervals along the new section of track. This may include above ground fauna bridges or suitably designed culverts. This must be complemented by suitable habitat restoration.</p>	<p>The Project proposes to provide a third track adjacent to existing rail tracks that have provided a hostile barrier to fauna movement for decades. The Project is within a highly disturbed area affected by land clearing for agriculture and open cut mining. The highly fragmented vegetation within the study area provides only disconnected connectivity or stepping stones between isolated patches for highly mobile species such as birds and is unlikely to be significantly fragmented by the Project.</p> <p>Where appropriate, engineering structures would be included in the Project to improve connectivity for threatened and other species to cross the railway line. For example, it has been recommended (in Section 6 of Technical Paper 3) that:</p> <ul style="list-style-type: none"> • During design a crossing zone (with multiple gliding poles) is included in the area of the Integra Coal rail loop, to aid Squirrel Glider movement. • All drainage structures be designed to incorporate fauna movement capability by ensuring dry status under normal conditions apart from existing box drainage structures under the Camberwell junction. • The median width be reduced to the minimum necessary for safe operation 	<p>Section 7.2 of EA, Section 6 of Technical Report 2 and Appendix A of this report.</p>

Issue	Organisation Issue	Response	Section of EA and this Report
		<p>of the Project in potential fauna crossing zones.</p> <ul style="list-style-type: none"> Waterway crossings are designed and constructed in accordance with the DPI's <i>Why do fish need to cross the road? Fish passage requirements for waterway crossings</i> (Fairfull & Witheridge 2003). <p>Given the lack of significant fauna habitat or corridors within the vicinity of the Project, limited ground-dwelling fauna and the existing barrier to fauna movement, the provision of additional fauna crossings such as fauna over or underpasses (e.g. culverts or bridges) is not considered necessary.</p>	
5	<p>Biodiversity offset areas to be acquired and protected must be sufficient to provide for a minimum of 10:1 offset ratio, with the land identified before the Project is approved. It is inadequate to say in the environmental assessment report that a biodiversity offset plan "will be developed".</p>	<p>The ARTC is committed to developing an offset strategy to maintain or improve environmental outcomes. A biodiversity offset strategy for the Project is currently being developed in consultation with the OEH and DoPI. The development of offsets is being developed in accordance with the <i>Principles for the Use of Biodiversity Offsets in NSW</i> (DECC, 2008) and the <i>NSW BioBanking Methodology and Credit Calculator</i> (DECC, 2009). The use of the BioBanking methodology provides a qualitative assessment of offsets and development impacts, provides a transparent and rigorous method to determine offset needed and ensures that the "maintain or improve" policy requirements are met. As discussed above, a BioBanking Credit Report and a BioBanking Assessment Report has been developed and is provided at Appendix A of this report.</p>	<p>Section 7.2 and Appendix A of this report.</p>
6	<p>As evidenced by the aerial photographs, the soils and landscapes in the vicinity of the Project area are highly erodible. Particular attention must be paid to the rehabilitation of batters, gullies and disturbed areas, and any approval must provide for stabilisation and rehabilitation of these areas to be monitored and restored for at least a period of 5 years following the completion of construction.</p>	<p>Appropriate design would maximise stability and restoration opportunities to ensure the stability of soils associated with earthworks. Temporary environmental controls and subsequent long term engineered controls would ensure the stability of soils. Progressive restoration would ensure that long term controls are in place and effective as soon as practical.</p> <p>Following the restoration and stabilisation of the site, the ARTC would maintain the site as per the rest of the rail network to ensure safety and stability of the asset, maintain controls and prevent environmental impact.</p> <p>It is noted that mitigation and management measures to achieve the above would be implemented as per Sections 7.5 and 7.8 of the EA, including the preparation of a Soil and Water Management Sub Plan for the CEMP. An earthworks construction environmental management framework has also been outlined in the EA to support these measures (Section 9.2). These mitigation and management</p>	<p>Section 7.8, 9.1 and 9.2 and Section 6 of this report.</p>

Issue	Organisation Issue	Response	Section of EA and this Report
		measures would form part of any CoA.	
Two More Trains For Singleton			
7	The provision of additional track capacity is supported, provided that it enables additional passenger rail services to be provided to Singleton and the Upper Hunter Valley in the future as well as increased coal trains.	The Project would increase the operational capacity of the rail corridor at Nundah Bank and improve the efficiency and flexibility of train operations in the area. This would enable additional passenger rail services to be provided to Singleton and the Upper Hunter Valley in the future along with coal trains.	Executive Summary and Sections 3.1 and 3.2 of EA.
8	<p>The EA fails to recognise relevant proposals in the <i>Singleton Land Use Strategy 2008</i>. The strategy identifies a proposal for a future road crossing of the Main Northern Railway at the southern (Singleton) end of the proposed additional track, and also a potential future Singleton Heights Railway Station location.</p> <p>The EA must review the implications of the third track on these proposals and ensure that the new track makes provision for the future road crossing and station to be constructed in future. Consideration should be given to undertaking earthworks and drainage for a railway station as part of the present proposal.</p>	<p>The third track would be located between approximate chainage 245 kilometres at the Singleton end and approximate chainage 249 kilometres at the Camberwell end. The proposed road crossing of the Main Northern Railway and Singleton Heights Railway Station under the <i>Singleton Land Use Strategy 2008</i> are located at approximate chainage 244 kilometres. This is approximately 1 kilometre from the Singleton end of the proposed third track.</p> <p>Signalling works for the Project are proposed from approximate chainage 243 kilometres at the Singleton end and approximate chainage 252 kilometres at the Camberwell end. Signalling works are therefore in the vicinity of the proposed crossing and station at chainage 244 kilometres.</p> <p>It is noted that the proposed crossing and station are included within the strategy for further investigation. However, if the proposed crossing and station were to be constructed in the future, the Project would not prevent either due to the distance of the third track from the crossing and station location. Further, signalling is considered a lightweight construction activity and hence it would be able to be relocated and/or redesigned to make way for the proposed crossing and station.</p>	Section 4.1, 4.2 and Figures 4.1A-E of EA.



4. Project Amendments

As a result of further consideration of Project implementation, there are two amendments to the Project as described in Section 4 of the EA.

These amendments include:

- A change to access arrangements to the down side of the rail corridor from Rixs Creeks Lane as a result of refinements to the construction methodology and Project operation. A second extension of Rixs Creek Lane has been identified as necessary for additional construction access to the rail corridor and for future maintenance access. This additional extension is shown in Figure 1.2A. The access route to the down side exhibited in the EA would be used for temporary construction access and the land rehabilitated following use.
- As part of further refinements to the construction methodology, the Project area has been expanded in five locations to the edge of water stores on the adjoining Integra Coal and Rixs Creek Mine properties. The stores are part of the water management systems of the mines. These expansions are small in area and would enable water to be sourced for construction purposes as required.
- As a result of the above amendments, the amount of vegetation required to be cleared has changed from approximately 22.1 hectares as described in Section 7.2 of the EA to approximately 22.5 hectares. This includes an increase from 8.8 hectares to 9.1 hectares of Central Hunter Ironbark - Spotted Gum – Grey Box Forest, which is listed as a threatened ecological community under the *Threatened Species Conservation Act, 1995* (TSC Act).

A review of the above amendments against the potential environmental issues and mitigation measures described in the EA has been undertaken below in Section 5.



5. Further Environmental Assessment

UHVA has undertaken a review of the submissions discussed in Section 3 of this report and the amendments to the Project described in Section 4 against the potential environmental issues and mitigation measures described in the EA placed on exhibition. This has included undertaking and considering the potential for additional environmental impacts and mitigation measures for the following key environmental issues:

- Ecology;
- Indigenous heritage;
- Indigenous Heritage; and
- Surface and Groundwater.

5.1. Ecology

An additional ecological assessment was undertaken for the amendments to the Project area. This additional assessment is included at Appendix A. The additional access route and expansion of the Project area to the edges of five of the adjoining mine water stores (shown in Figures 1.2A-D of this report) was surveyed during the ecology surveys undertaken for Technical Paper 2 of the EA. Additional survey of the area was therefore not required as part of the additional assessment.

Tables 5.1 and 5.2 below provide the results of the survey of these areas in relation to the results provided in the EA for the Project area without the amendments.

Table 5.1 Impacts of the Two Down Side Construction Access Routes from Rixs Creek Lane

Impacts		Route assessed in EA	Additional access route	Total for the two access routes
Vegetation clearing	Derived Grassland	0.9 ha	1.2 ha	2.1 ha
	Central Hunter Spotted Gum Grey Box Forest	0.3 ha	0.1 ha	0.4 ha
	Total	1.2 ha	1.3 ha	2.5 ha
Fauna habitat clearing	Dry open forest	0.3 ha	0.1 ha	0.4 ha
	Cleared land	0.9 ha	1.2 ha	2.1 ha
	Aquatic habitat	The existing dam would be drained and built over	None	The existing dam would be drained and built over
	Hollow bearing trees (see Figure 3-1E of the Technical Paper 2)	None	Up to 13 hollow-bearing trees	Up to 13 hollow-bearing trees

Source: Parsons Brinckerhoff, 2011

Table 5.2 Comparison of Impacts of the Previous and Revised Project Area

Vegetation community/Fauna habitat	Vegetation clearing (hectare)	
	Revised Project Area	Increase in Project Area
Vegetation	65.8	1.7
Central Hunter Spotted Gum – Ironbark – Grey Box Forest	9.1	0.3
Central Hunter Spotted Gum – Ironbark – Grey Box - Derived grassland	14.3	0.9
Weed dominated areas	40.6	-0.4
Aquatic vegetation along drainage lines and dams	0.4	0.1
Plantation	1.0	-0.2
Total area of EEC clearing	22.5	0.4
Fauna habitats		
Dry open forest	10.5	1.1
Aquatic habitat	0.4	0.1
Cleared land	54.9	0.5

Source: Parsons Brinckerhoff, 2011

The overall refinement of the Project area (including the access route and expansion to the edges of the water stores) has resulted in the additional clearing of approximately 1.7 hectares, including approximately 0.3 hectares of Central Hunter Spotted Gum – Ironbark – Grey Box Forest endangered ecological community. This increase in impacts to ecology is not considered significant and is unlikely to alter the conclusion of Technical Paper 2 or the impact assessment. However, a greater area of offsets will be required and the provision of extra nest boxes or salvaged tree hollows to mitigate the removal of additional hollow-bearing trees.

Mitigation and management measures are included in Section 7.2 of the EA and the SoCs in 9.1 of the EA and Section 6 of this report for the above impacts. No additional mitigation or management measures are considered necessary.

5.2. Indigenous Heritage

The additional access route and expansion of the Project area to the edges of the mine water stores on adjoining land (shown in Figures 1.2A-D) was surveyed during the Indigenous heritage surveys undertaken for Technical Paper 1, Indigenous Heritage. Additional survey of the areas was therefore not required.

As shown on Figure 7.1E of the EA and Figure 9d of the Indigenous Heritage assessment (Technical Paper 1), there are two sites to the immediate north of the additional access road. These sites are described as RCLEO01 and RCLEO03 within Technical Paper 1. Three relics were found at these sites.

These relics would be managed as per the sites and relics found elsewhere within the Project area, i.e. as per the mitigation and management issues included in Section 7.1 of the EA and Technical Paper 1. As discussed above, this includes the preparation of an Aboriginal Cultural Heritage Management Plan in consultation with the registered Aboriginal Groups for the Project. The purpose of the plan is to ensure that Aboriginal cultural heritage is appropriately managed throughout the life of the Project. This plan would include the remaining mitigation and management measures of the EA and technical paper, and give the registered groups another opportunity to review and provide comments on the Project, including the additional access route, and the management of their culture.

The expansion of the Project area to the edge of the water stores would have no impact on any of the sites or relics identified in the EA and Technical Paper 1.

There would be a minimal increase to the impact of the Project to Indigenous heritage as a result of the additional access route. No additional mitigation or management measures are considered necessary.

5.3. Non-Indigenous Heritage

The additional access route and expansion of the Project area to the edges of the mine water stores on adjoining land (shown in Figures 1.2A-D) was surveyed during the non-Indigenous heritage survey undertaken for Technical Paper 5, Non-Indigenous Heritage. Additional survey of the areas was therefore not required.

The additional access route would not be located near any of the items identified within the EA and Technical Paper 5 (Refer to Section and Figure 7.7 of the EA) and would therefore have no impact on non-Indigenous heritage within the Project area. It is noted that the EA, technical paper and SoCs in Section 6 of this report include mitigation measures where unexpected heritage items are uncovered during construction and that these measures are considered adequate for the additional access route.

5.4. Surface and Groundwater

Following refinements to the construction methodology and to enable water to be sourced for construction purposes where required, the Project area has been expanded in five locations to the edge of water stores on the adjoining Integra Coal and Rixs Creek Mine properties. As a result of these refinements, the following additional mitigation and management measures would be implemented to reduce the potential for impacts to the environment from the Project:

- The quantity and source of surface water for construction purposes would be identified during detailed design; and
- Any licences required to permit the use of surface water for construction purposes would be identified and applied for prior to water being extracted.



6. Statement of Commitments

Section 9 of the EA presented the draft SoCs based on mitigation and management measures proposed to address the various environmental issues. One change is considered necessary to the draft SoCs as a result of issues raised in submissions received during exhibition of the EA. No changes were necessary as a result of Project amendments described above.

NOW requested that all proposed groundwater works including bores for the purpose of investigation, extraction, dewatering, testing or monitoring be identified and approval obtained from NOW prior to installation. It is unlikely that groundwater would be impacted upon as there are no licensed bores in the study area or groundwater extraction proposed. A new SoC has been added to ensure that this is carried out where required (Reference No. SG4).

Table 6.1 presents the finalised Statement of Commitments.

Table 6.1 Statement of Commitments

Objective	Reference No.	Key action	Timing	Reference documents
Environmental management				
Compliance and continuous improvement in environmental management.	EM1	The UHVA Alliance Environment and Community Management Plan (AECMP) will be implemented on the Project.	Pre-construction and construction.	ISO 14001:2004 Environmental Management Systems – requirements with guidance for use. ISO 19011:2003 Guidelines for Quality and/or Environmental Management Systems Auditing.
	EM2	A Project Construction Environmental Management Plan (PCEMP) will be developed and implemented by suitably qualified and experienced personnel and will incorporate as a minimum the mitigation and management measures in the EA and other measures in the AECMP.	Pre-construction and construction.	<i>Guideline for the Preparation of Environmental Management Plans</i> (DIPNR 2004).
Create awareness and a strong foundation to manage environmental issues.	EM3	Environmental management tools such as environmentally sensitive area maps will be developed, demarcated and signposted where necessary. Maps will be made available during all on site inductions to construction personnel.	Pre-construction and construction.	
	EM4	All construction personnel will receive inductions and toolbox training regarding environmental management.	Pre-construction and construction.	
	EM5	The PCEMP will be developed using the Construction Environmental Management Framework provided in the Environmental Assessment.	Pre-construction and construction.	Volume 1, Section 9.2.
	EM6	The PCEMP will contain an Aspect and Impact Register and include Environmental Management Sub Plans (EMSP) as required.	Pre-construction and construction.	
Community consultation				
The community is kept informed by various	CC1	The community will be kept informed with measures such as: <ul style="list-style-type: none"> Letter box drops, media releases and community updates 	Pre-construction and construction.	

Objective	Reference No.	Key action	Timing	Reference documents
means about the Project.		<ul style="list-style-type: none"> An internet site established and maintained for the duration of the Project. Variable message signs. Targeted consultation with affected individuals or groups. <p>Information to be provided will include:</p> <ul style="list-style-type: none"> Details of future work programs. General construction progress. 		
Ensure effective management of community enquiries or complaints.	CC2	<p>Communication management will include:</p> <ul style="list-style-type: none"> Toll free project information and complaints line Directions on how to register a complaint or make an inquiry Acknowledgement of complaints within 48 hours A complaint recording and tracking system 	Pre-construction and construction.	Alliance Environmental Communication Management Plan (AECMP).
Indigenous heritage				
Manage impacts on Indigenous heritage.	IH1	Any Aboriginal heritage items will be managed in accordance with the Aboriginal Cultural Heritage Assessment Report (CHAR), which identifies mitigation measures developed in consultation with Aboriginal stakeholders and OEH.	Pre-construction and construction.	
	IH2	Aboriginal sites identified to be conserved will be managed as environmentally sensitive areas.	Pre-construction and construction.	Volume 1, Section 7.3 of the Environmental Assessment and Volume 2, Technical Paper.
	IH3	If human skeletal material is encountered at any time during the Project, work in the vicinity will cease immediately and the [site manager] notified. The following organisations will be notified: the ARTC, police, state coroner, OEH, the Heritage Branch, Aboriginal stakeholders and the Project archaeologist. If the find is determined to be a historical burial, consultation with the appropriate stakeholders (Heritage Branch, ARTC, Land owner)	Construction.	<i>NPW Act 1974 Skeletal remains – Guidelines for the management of human skeletal remains under the Heritage Act 1977 (NSW Heritage Office 1998).</i>

Objective	Reference No.	Key action	Timing	Reference documents
		will determine the most appropriate action.		
Ecology				
Manage impacts on flora and fauna.	FF1	Areas of vegetation identified to be retained will be managed as environmentally sensitive areas.	Pre-construction.	Volume 1 Section 7.2 of the Environmental Assessment and Volume 2 Technical Paper 2.
	FF2	A suitably qualified and experienced ecologist will conduct pre-clearing fauna surveys, including an inspection of tree hollows immediately prior to tree felling. Fauna with the potential to be harmed during clearing activities will be relocated into suitable adjacent habitat.	Pre-construction and construction.	Department of Environment and Conservation 2004, <i>Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)</i> , Department of Environment and Conservation, Hurstville.
	FF3	A two-stage clearing process will be adopted for all felling of hollow-bearing trees.	Construction.	
Manage the spread of weeds.	FF4	Weed control will be carried out, and techniques will vary depending on the species targeted and the area to be treated. This will be in consultation with Singleton Council.	Pre-construction and Construction.	<i>Noxious Weeds Act 1993.</i>
Enhance existing habitat.	FF5	Natural and artificial habitat features and resources (such as felled logs and nest boxes) will be placed in suitable areas to provide alternative habitat for displaced fauna.	Pre-construction and Construction.	
Offset loss of vegetation and fauna habitat.	FF6	A biodiversity offset package will be developed in consultation with OEH and other relevant government agencies.	Pre-construction and Construction.	<i>Department of Environment and Climate Change 2008, Principles for the use of Biodiversity Offsets in NSW.</i> <i>Department of Environment Climate Change 2009, BioBanking Assessment Methodology and Credit Calculator Operational Manual.</i> <i>Department of Sustainability, Environment, Water, Population and Communities, Draft Policy Statement: Use of environmental</i>

Objective	Reference No.	Key action	Timing	Reference documents
				<i>offsets under the EPBC Act.</i>
Noise and vibration				
Minimise construction noise impacts.	CN1	<p>Standard mitigation and management measures will be used to reduce construction noise at sensitive receivers including:</p> <ul style="list-style-type: none"> All mechanical plant will be silenced by best practical means using current technology. Noise suppression devices will be maintained to the manufacturer's specifications. Internal combustion engines will be fitted with a suitable muffler in good working order. Construction vehicles and equipment will be well maintained and operated in a manner such that noise emissions are minimised. 	Pre-construction and construction.	<p>Volume 1 Section 7.3 of the Environmental Assessment and Volume 2 Technical Paper 3. <i>NSW Interim Construction Noise Guideline</i> (DECC 2009). <i>NSW Government's Environmental Criteria for Road Traffic Noise</i> (EPA 1999) AS 2436-1981 Guide to noise control and construction, maintenance and demolition sites.</p>
	CN2	<p>Out of hours construction activities will be undertaken in accordance with DECCW's (now OEH) Interim Construction Noise Guidelines including:</p> <ul style="list-style-type: none"> The need for reversing or movement alarms will be minimised. The dropping materials from a height will be avoided as far as possible. Metal to metal contact on equipment will be avoided as far as possible. Truck movements will be scheduled to avoid residential streets during works outside of standard working hours where possible. Mobile plant clustering near sensitive receivers will be avoided, particularly during works outside of standard working hours (night time track possession works). 	Construction.	<i>NSW Interim Construction Noise Guideline</i> (DECC, 2009).

Objective	Reference No.	Key action	Timing	Reference documents
Air quality				
Minimise construction air quality impacts.	CA1	Standard dust and emission control measures will be implemented to manage construction air quality impacts at sensitive receivers.	Construction.	Section 7.4 of the Environmental Assessment.
Surface and groundwater				
Conservation of water.	SG1	Water efficient fittings and work practices will be adopted.	Construction.	Section 7.5 of the Environmental Assessment.
Minimise scouring of the landscape.	SG2	Design of drainage improvements to incorporate means to reduce erosion and scouring.	Pre-construction and construction.	Section 7.5 of the Environmental Assessment.
Minimise impacts on existing water storages.	SG3	Design options will aim to reduce identified potential impacts on existing water storages adjacent to the proposed works.	Pre-construction and construction.	
Minimise impacts to groundwater.	SG4	Any licence required under relevant NSW water legislation for the interception or use of any groundwater will be applied for. Any groundwater works including bores for the purpose of investigation, extraction, dewatering, testing or monitoring will be identified and approval obtained from the NSW Office of Water prior to installation.	Pre-construction and construction.	
Transport and land use				
Avoid or minimise impacts on traffic and the road network.	TA1	Pre- and post-construction road dilapidation reports will be prepared for local and /or regional roads likely to be used for construction. Any damage resulting from construction (not normal wear and tear) will be repaired unless alternative arrangements are made with the relevant road authority.	Pre-construction and operation.	
	TA2	Construction vehicle movements and works programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing highway.	Pre-construction and operation.	RTA Traffic Control at Worksites (RTA 2003a).

Objective	Reference No.	Key action	Timing	Reference documents
Ensure minimum safety requirements are implemented and maintained on local roads.	TA3	Consultation with RTA and Singleton Council will be undertaken to rectify identified road safety deficiencies and ensure adequate levels of safety are maintained during construction.	Pre-construction and Construction.	UHVA Stakeholder and Community Involvement Plan.
Minimise impacts on non-Indigenous heritage.	TA4	The Middle Falbrook Bridge over Glennies Creek in Middle Falbrook will not be used by heavy construction vehicles. This will be communicated as part of the relevant UHVA induction, pre-start briefs and toolbox talks.	Pre-construction and construction.	Section 7.7 of the Environmental Assessment.
Non-Indigenous heritage				
Minimise impacts on non-Indigenous heritage.	NA1	Mitigation (archival record, test/salvage excavation) will be undertaken for heritage items impacted.	Pre-construction and construction.	<i>How to prepare archival records of heritage items</i> (NSW Heritage 1998). Section 7.7 of the Environmental Assessment.
	NA2	Non-Indigenous sites identified to be conserved will be managed as environmentally sensitive areas. Items will be ameliorated following project construction if disturbed.	Pre-construction and construction.	Section 7.7 of the Environmental Assessment.
	NA3	If human skeletal material is encountered at any time during the project, work in the vicinity will cease immediately and the [site manager] notified. The following organisations will be notified: the ARTC, the police, the state coroner, OEH, the Heritage Branch, Aboriginal stakeholders and the project archaeologist. If the find is determined to be a historical burial, consultation with the appropriate stakeholders (Heritage Branch, ARTC, Land owner) will determine the most appropriate action.	Pre-construction and construction.	<i>NPW Act 1974 Skeletal remains – Guidelines for the management of human skeletal remains under the Heritage Act 1977</i> (NSW Heritage Office 1998).
	NA4	The Middle Falbrook Bridge over Glennies Creek in Middle Falbrook will not be used by heavy construction vehicles. This will be communicated as part of the relevant UHVA induction, pre-start briefs and toolbox talks.	Pre-construction and construction.	Section 7.7 of the Environmental Assessment.

Objective	Reference No.	Key action	Timing	Reference documents
Earthworks				
Minimise soil loss and sedimentation of waterways.	SW1	A Soil and Water Management Sub Plan will be developed and implemented as part of the PCEMP.	Pre-construction and construction.	<i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (Landcom 2004) <i>Managing Urban Stormwater: Soils and Construction Volume 2D, Main Road Construction</i> (DECC 2008b).
	SW2	A soil conservation specialist will be engaged to provide advice on erosion and sedimentation control.	Pre-construction and construction.	Section 7.8 of the Environmental Assessment.
	SW3	Stabilisation of exposed areas will be undertaken progressively.	Construction.	Section 7.8 of the Environmental Assessment.
	SW4	Upstream and downstream water quality monitoring of waterways will be conducted at control and impact locations pre and post discharge from sediment basins.	Construction.	Section 7.8 of the Environmental Assessment.
Avoid contamination of waterways.	SW5	Spill kits will be kept on site at all times and spills will be contained immediately. In the event of a large or hazardous spill, the Fire Brigade, Police, Ambulance and the Department of Environment, Climate Change and Water will be contacted as appropriate.	Construction.	AS 1940 The storage and handling of flammable and combustible liquids. <i>Storing and handling liquids: Environmental protection – participants manual</i> (DECC 2007). <i>Environmental compliance report: Liquid chemical storage, handling and spill management – Part B Review of best practice and regulation</i> (DECC 2005).
	SW6	Bunded areas will be used for storage of potentially hazardous and/or contaminating materials and activities. Refuelling will be undertaken in appropriate offsite locations wherever possible.	Construction.	Section 8.4 of the Environmental Assessment.
Contaminated land and hazardous materials				
Minimise risk to	CL1	Any proposed removal of spoil; ballast etc from the railway	Pre-construction and	Section 8.1 of the Environmental

Objective	Reference No.	Key action	Timing	Reference documents
environment and personnel.		corridor will be tested to identify any contamination which may result in impacts on the environment. If contaminated material is identified it will be reused and/or disposed in accordance with the relevant guidelines.	construction.	Assessment. Waste Classification Guidelines: Parts 1 and 2 (DECC 2008a). <i>Protection of the Environment Operations Act 1997</i>
Manage contaminated land.	CL2	If any unknown contaminated sites are encountered, all works at that site will stop immediately. Works will not recommence until the material is analysed and management measures are developed.	Pre-construction and construction.	Waste Classification Guidelines: Parts 1 and 2 (DECC 2008a).
Visual				
Minimise visual amenity impacts.	VL1	Landscaping treatments will include native plant species endemic to the local area.	Pre-construction and construction.	Section 8.2 of the Environmental Assessment.
Waste minimisation				
Minimise waste.	WM1	The waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose will apply to all aspects of the Project.	Construction.	<i>Waste Avoidance and Resource Recovery Strategy</i> (DECC 2006). NSW Government's Waste Reduction and Purchasing Policy. <i>Environmental guidelines – assessment, classification and management of liquid and non-liquid waste</i> (DECC 1999).
	WM2	Where possible, material using recycled/ reconditioned components will be sourced for appropriate uses.	Construction.	Leighton Contractors Group Environmental Policy.
Energy demand and greenhouse gases				
Minimise greenhouse gas	EG1	Greenhouse gas emissions will be minimised by limiting the extent of clearing of vegetation that sequesters carbon and adopting energy efficient work practices including consideration	Construction.	

Objective	Reference No.	Key action	Timing	Reference documents
emissions and energy use.		of: <ul style="list-style-type: none"> • Energy efficient design of site buildings; • Selection of energy efficient equipment, machinery and materials and low emission fuels; • Placement and design of site compounds to minimise unnecessary vehicle movement; • Regular servicing of site plant and equipment; • Training of construction personnel in energy efficient plant operation; and • The use of accredited GreenPower or solar arrays for construction electricity use and/or operational signalling power supplies. 		
	EG2	The biodiversity offsets achieved for the Project will be accredited as an offset for the greenhouse gas emissions emitted during construction and operation.	Construction and operation.	
Socioeconomic				
Property access is maintained.	SA1	Property access will be maintained for the duration of construction. If required, temporary or alternative access will be provided in consultation with the affected landowner(s).	Construction.	AECMP.
Manage impacts to directly affected properties.	SA2	Negotiations for property acquisition will include consideration of property adjustments where appropriate to maintain existing farm management practices.	Pre-construction and construction.	
Hazards and risks				
Minimise risks and hazards to the environment, community and construction	HR1	Hazardous materials will be stored in bunded areas within the construction site. Hazardous materials will not be stored on a floodplain below the 20 year ARI flood level.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids. <i>DEC Bunding and Spill Management Guidelines</i> (in DEC Environmental Protection manual for Authorised Officers).

Objective	Reference No.	Key action	Timing	Reference documents
personnel.	HR2	Potentially hazardous and contaminating activities will be in bunded areas or in other areas where suitable containment measures are in place to prevent discharge to the environment.	Pre-construction and construction.	AS 1940 The Storage and Handling of Flammable and Combustible Liquids.
Cumulative impacts				
Reduce impacts on the operational (passenger) rail network.	CU1	Co-ordination with the ARTC will be undertaken regarding track possessions.	Construction.	



7. Conclusion

The EA and this report have addressed:

- The key issues and general requirements identified in the Director-General's Environmental Assessment Requirements under Part 3A of the EP&A Act;
- Issues raised by government agencies and the community; and
- The objects of the EP&A Act together with the Project's consistency with the aims and objectives of the NSW State Plan and State Infrastructure Strategy.

The Project would produce some adverse impacts, which are unavoidable for development of this scale.

However, the Project's design and the measures included in the SoCs (refer to Section 9 of the EA and Section 6 of this report) substantially mitigate the potential impacts during construction and operation.

The Project remains a key component in meeting the objectives and ARTC's strategy of improvements endeavouring to keep system capacity ahead of industry demands. In doing so, the Project would be expected to produce economic and transportation benefits to the coal industry on a local, national and international scale that would, in turn, provide flow-on economic benefits to the Hunter Region.

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Appendix A

Response to Ecology Issues in Submissions

Response to Submissions for Nundah Bank Third Track Project

25 May 2011

KMH Environmental



*Parsons Brinckerhoff Australia Pty Limited
ABN 80 078 004 798*

*Level 27, Ernst & Young Centre
680 George Street
SYDNEY NSW 2000
GPO Box 5394
SYDNEY NSW 2001
Australia*

*Telephone +61 2 9272 5100
Facsimile +61 2 9272 5101
Email sydney@pb.com.au*

*Certified to ISO 9001, ISO 14001, AS/NZS 4801
A+ GRI Rating: Sustainability Report 2009*

Revision	Details	Date	Amended By
00	Original	3 May 2011	Selga Harrington
01	Revision	11 May 2011	Selga Harrington
02	Revision	17 May 2011	Selga Harrington
03	Update with new Biobanking information and revised clearing areas	25 May 2011	Selga Harrington

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**Parsons
Brinckerhoff
Australia
Pty Limited**

ABN 80 078 004 798

Level 27, Ernst & Young Centre
680 George Street
SYDNEY NSW 2000
GPO Box 5394
SYDNEY NSW 2001
Australia
Telephone +61 2 9272 5100
Facsimile +61 2 9272 5101
Email sydney@pb.com.au

Certified to ISO 9001; ISO 14001;
AS/NZS 4801

A+ GRI Rating: Sustainability Report 2009

Our reference 2110501B/S Harrington/cls

25 May 2011

Naomi L'Oste-Brown
KMH Environmental
PO Box 5487
WEST CHATSWOOD NSW 1515

Dear Naomi

This memo outlines Parson Brinckerhoff's (PB's) response to the submissions for the Nundah Bank Third Track Project relating to ecology. This follows public exhibition as well as a comparison of impacts of the use an alternative construction access route as well as changes in the development footprint.

1. Response to submissions for Nundah Bank third track project

Two submissions relevant to biodiversity were received following the exhibition of the Nundah Bank third track environmental assessment. These were provided by the Hunter Environment Lobby and The Office of Environment and Heritage. Our response to these is provided below.

1.1 Hunter Environment Lobby submission

1.1.1 Inadequate information has been provided on the proposed ameliorative measure to be taken for biodiversity impacts on the four listed threatened species directly impacted, plus other native species.

Detailed mitigation measures to minimise impacts to flora and fauna have been recommended in the Ecological Assessment (Section 6). These mitigation measures specifically target the Threatened species and habitat to be impacted by the Project.

Four threatened species recorded within the project area: Squirrel Glider, Little Lorikeet, Grey-headed Flying-fox and the Grey-crowned Babbler. These species are mobile and are unlikely to be subject to increased mortality. Potential impacts to these species are likely to be restricted to loss of habitat and increased fragmentation (for Squirrel Glider and Grey-crowned Babbler only). These impacts have been avoided where possible through siting of compounds and roads, and minimising the construction corridor as far as practical. In this way, the majority of the potential habitat within the locality has been avoided. Specific measures have been provided to further minimise the impacts of clearing and fragmentation, including:

- Limit disturbance of vegetation to the minimum necessary to construct works.

- Where appropriate mark the limits of clearing and install fencing around the construction footprint area prior to the commencement of construction activities to avoid unnecessary vegetation and habitat removal.
- Install nest boxes to offset affected hollow trees where the Threatened Squirrel Glider was located.
- Implement clearing protocols, including:
 - ▶ marking trees to be removed and preparing an inventory of trees and hollows to be removed
 - ▶ checking hollow-bearing trees for the presence of bird nests and arboreal mammals, such as possum, gliders and bats, prior to felling
 - ▶ animals found to be occupying trees should be safely removed before the clearing of trees and relocated into nearby woodlands
 - ▶ nest boxes or salvaged tree hollows should be provided in nearby woodland for each relocated animal.
- Restrict equipment storage and stockpiling of resources to designated areas in cleared land.
- Design all drainage structures to incorporate fauna movement capability by ensuring dry status under normal conditions apart from existing box drainage structures under the Camberwell junction.
- Reduce the median width to the minimum necessary for safe operation of the project in potential fauna crossing zones.
- During design include a crossing zone (with multiple gliding poles) in the area of the Integra Coal loop rail loop, to aid Squirrel Glider movement.

Additional measures have been included to minimise the potential impacts of weeds, aquatic disturbance as well as general measures for construction such as inductions and development of a CEMP. The CEMP would include a flora and fauna management sub plan. The sub plan would expand on these measures and provide detailed site specific controls for different areas and ecological sensitivities within the project area.

1.1.2 A review of threatened species impacts cannot be adequately undertaken without knowing the species populations in the affected area and the locality. The assessment fails to do this, especially for key species such as the Squirrel Glider and Grey-crowned Babbler. Further assessment is required to fulfil the Director-General's requirements in this regard.

Specific impacts to Squirrel Glider and Grey-crowned Babbler

There is a relatively large amount of information known and scientific literature available about the ecology of both the Squirrel Glider and Grey-crowned Babbler. Both these species occur in small family groups and each was recorded at only one location in the study area. Although the project will remove some habitat, this removal will be linear in nature and the area of potential habitat to be removed is relatively small in terms of the extent of similar or greater quality habitat available in the study area and surrounding landscape. With the implementation of mitigation measures including tree clearing protocols

and installation of nest boxes, these family groups are likely to relocate to the adjacent habitat and are unlikely to be lost in the study area.

Furthermore, the Grey-crowned Babbler was recorded in an area that will not be affected by the project, occurring approximately 600 m to the north of the project area. This species is not cryptic and would have been recorded if it occurred elsewhere in the study area.

Fulfilment of Director General's requirements

The Director General's requirements included consideration of:

- *The Draft Guidelines for Threatened species assessment* (Department of Environment and Conservation & Department of Primary Industries 2005).
- *Threatened biodiversity survey and assessment: Guidelines for developments and activities* (Department of Environment and Conservation 2004).

Further, the former Department of Environment, Climate Change and Water (DECCW; now the Office of Environment and Heritage) required that the report "*Document all known and likely Threatened species, their habitats, population and ecological communities of the site (including any adjacent areas that may be indirectly impacted upon by the proposal)*".

The survey and assessment for the project followed these guidelines, as specified in the Director General's requirements. All impacts for the project on threatened species, including any adjacent areas that may be indirectly affected, were assessed, as required by DECCW. This included identification and assessment of the Grey-crowned Babbler which occurred recorded in an area that will not be affected by the project, occurring approximately 600 m to the north of the project area. As such, the impacts to Threatened species have been adequately assessed as specified by the Director General.

1.1.3 A draft of the fauna and flora management sub plan referred to in the assessment should have been included as part of the proposal, together with full details of the proposed biodiversity offsets that are foreshadowed.

Detailed mitigation measures to minimise impacts to flora and fauna have been recommended in the Ecological Assessment (Section 6). These mitigation measures provide an outline of key aspects to be included in the flora and fauna management sub plan. The sub plan would expand on these measures and provide detailed site specific controls for different areas and ecological sensitivities within the project area.

The Project is committed to development biodiversity offsets for the project. A biodiversity offset strategy is currently being developed in consultation with the Office of Environment and Heritage and the Department of Planning.

1.1.4 Engineering measures/structures should be included as part of the design of the project to allow threatened species and other native fauna to be able to effectively cross the railway line at a minimum of 1km intervals along the new section of track. This may include above ground fauna bridges or suitably designed culverts.

The project proposes to provide a third track adjacent to existing rail tracks that have provided a barrier to fauna movement for decades. The Project is within a high disturbed area affected by land clearing for agriculture and open cut mining. The highly fragmented vegetation within the study area provides only disconnected connectivity or stepping stones between isolated patches, for highly mobile species such as birds, and is unlikely to be significantly fragmented by the Project.

Where appropriate, engineering structures will be included in the project to improve connectivity for threatened and other species to cross the railway line. For example, it has been recommended (in Section 6) that:

- during design a crossing zone (with multiple gliding poles) is included in the area of the Integra Coal loop rail loop, to aid Squirrel Glider movement
- all drainage structures be designed to incorporate fauna movement capability by ensuring dry status under normal conditions apart from existing box drainage structures under the Camberwell junction
- the median width be reduced to the minimum necessary for safe operation of the project in potential fauna crossing zones
- waterway crossings are designed and constructed in accordance with the DPI's *Why do fish need to cross the road? Fish passage requirements for waterway crossings* (Fairfull & Witheridge 2003).

Given the lack of significant fauna habitat or corridors within the vicinity of the project, limited ground-dwelling fauna and existing barrier to fauna movement, the provision of additional fauna crossings (in addition to those already recommended above), is considered unnecessary.

1.1.5 Biodiversity offset areas to be acquired and protected must be sufficient to provide for a minimum of 10:1 offset ratio, with the land identified before the project is approved. It is inadequate to say in the environmental assessment report that a biodiversity offset plan will be developed.

The Project is committed to development an offset strategy to maintain or improve environmental outcomes. This biodiversity offset strategy is currently being developed in consultation with the Office of Environment and Heritage and the Department of Planning. The offsets are being developed in accordance with the Principles for the use of biodiversity offsets in NSW (Department of Environment and Climate Change 2008) and the NSW Biobanking methodology and credit calculator. The use of the Biobanking methodology, provides a qualitative assessment of offsets and development impacts, provides a transparent and rigorous method to determine offset needed and will ensure that the maintain or improve policy requirements are met.

1.2 The Office of Environment and Heritage submission

The comments provided by the Office of Environment and Heritage, relating to biodiversity broadly encompass the following key issues:

- further detail of the proposed biodiversity offsetting
- Threatened species survey methodologies.

Our response to these issues is provided below.

1.2.1 Further detail of the proposed biodiversity offsetting

The Project is committed to development an offset strategy to maintain or improve environmental outcomes. This Biodiversity offset strategy is currently being developed. The development of offsets is considering, and being developed in accordance with, the Principles for the use of biodiversity offsets in NSW (Department of Environment and Climate Change 2008) and the NSW Biobanking methodology and credit calculator.

A meeting with was undertaken with Emma Coombs and Mitchell Bennett from the Office of Environment and Heritage (then the Department of Environment, Climate Change and Water) in Newcastle on the 24th November 2010, At the meeting Biobanking was considered as the most appropriate pathway for development an offset and agreeable to combing our offsets with the Hunter8 Project.

The BioBanking tool was used to provide a calculation of the number and class of biodiversity credits required to ensure maintenance or improvement in biodiversity. A BioBanking credit report has been prepared for the project (Attachment A) and supporting maps, mapping layers and plot data are also available (as requested in Attachment B of the submission).

The ecosystem credit requirements for the project are summarised in Table 1.1 and should occur in:

- Hunter/Central Rivers CMA, Hunter subcatchment and consist of Grey Ironbark Spotted Gum Grey Box open forest on hills of the Hunter Valley Sydney Basin (HU556), OR
- Northern Rivers CMA, Stanthorpe Plateau subregion and consist of New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213), OR
- Other similar conservation value vegetation type from the Hunter-Macleay Dry Sclerophyll Forests formation.

The offset strategy will incorporate offsets that meet these credit requirements.

Table 1.1 Summary of BioBanking credits required to offset impacts

Vegetation type	Area requiring offset (ha)	Offset requirements		Credit estimate
		Minimum size (ha)	Surrounding vegetation cover	
Ecosystem credits				
Group 1: Grey Ironbark Spotted Gum Grey Box	13.1	100	10	752
Group 2: Grey Ironbark Spotted Gum Grey Box	2.1	25	10	116
Group 3: Grey Ironbark Spotted Gum Grey Box	5.1	5	10	282
Group 4: Grey Ironbark Spotted Gum Grey Box	0.6	0	10	28
Group 5: Grey Ironbark Spotted Gum Grey Box	2.6	0	0	80
TOTAL	23.5	135		1258

1.2.2 Threatened species survey methodologies

Ambient weather conditions at the time of survey

Due to the low temperatures of ambient weather conditions during the time of surveys, it is expected that activity within amphibian and reptile populations would have been reduced. Under such conditions it is likely that most frogs and reptiles would have been in torpor and only winter breeding frogs such as *Crinia* spp. would have been vocal. Therefore determination of threat-listed species' likelihood of occurrence within the site and adjacent habitats was based upon known ecological requirements of regional threat-listed herpetofauna species and assessment of potential onsite habitat opportunities.

Assessment of regional herpetofauna occurrences in the locality considered that one threat-listed herpetofauna species, namely *Litoria aurea* (Green and Golden Bell Frog) is likely to have potential habitat opportunities within the site, since all other threat-listed herpetofauna species are constrained by specific habitat requirements that are associated with habitat in surrounding ranges or adjacent lowlands.

Apart from populations on Broughton Island there are four recognised sub-populations of *L. aurea* in the Hunter Region: a sub-population confined to the coastal saline environments associated with the Hunter River estuary, a sub-population at Sandgate, a sub-population at Gillieston Heights and a sparsely distributed sub-population from the Bayswater Power Station area toward Jerry's Plains in the west (Department of Environment and Conservation 2005). *Litoria aurea* was once common across a range of habitats in eastern Australia, but it is now confined to isolated remnant sub-populations that are usually associated with saline influences, which are thought to suppress the pathogenic fungus *Batrachochytrium dendrobatidis* that causes mortality in frog populations through the disease chytridiomycosis. In contrast to other frog species *L. aurea* no longer persists in areas where habitat is of greater quality and other frog species thrive. Potential habitat within the site was assessed as possessing sufficient vegetation structural components to represent potential habitat for a range of common frog species and is thus unlikely to be highly suitable for *L. aurea*. A small area of potential habitat (0.4 ha) will be removed during the project and this habitat is not considered to be significant to *L. aurea* due its distance from extant sub-populations and the moderate condition of wetland habitat, which is suited to a diversity of common frogs.

Due to ambient temperatures at the time of survey, a precautionary approach was taken and the determination of threat-listed species' likelihood of occurrence was based upon known ecological requirements of regional threat-listed herpetofauna species and assessment of potential onsite habitat opportunities. Assessment of impacts was undertaken for species with moderate or higher likelihood of occurrence based on available habitats.

Swamp Oak Forest

Due to refinement of the project footprint during detailed design, the project will now require clearing of a small section of Swamp Oak Forest totalling 1 ha. This community was mapped during the ecology surveys and is equivalent to Central Hunter Swamp Oak Forest as described by Peake (2006).

A comparison of Swamp Oak Forest within the study area with Swamp Oak Floodplain Forest listed as Endangered under the TSC Act is provided in Table 1.2. This follows the key characteristics provided in the final determination.

Table 1.2 Diagnostic characteristics of the TSC Act listed Swamp Oak Floodplain Forest compared with Swamp Oak Forest within the study area

Key characteristics of TSC Act listed Swamp Oak Floodplain Forest ¹	Response for the Swamp Oak Forest within the study area
Does the community occur on a Coastal Floodplain in the North Coast, Sydney Basin or South East Corner Bioregions.	The study area occurs in the Sydney Basin Bioregion, however the study area is not mapped as being on a floodplain, on OEH's Camberwell Indicative coastal floodplain mapping. However Glennies Creek occurs approximately 1 km to the north west and occurs at an elevation of approximately 70 m. Due to the flat topography the community may occur on the floodplains associated with Glennies Creek.
Whether the community associated with grey-black clay loams and sandy loams, where the groundwater is saline or sub-saline on waterlogged or periodically inundated flats and drainage lines, lake margins and estuarine fringes associated with coastal plains.	The community occurs on Permian Soloths of Sedgfield soil landscape (Kovac & Lawrie 1991). Soloth soil types in the drainage lines are typically yellow brown sandy loams with a subsoil of brown medium clay. These soil types are formed from saline material. Therefore it is highly likely that the soils are saline. The salinity of the alluvial groundwater aquifers is unknown but this would depend upon the surrounding inputs from runoff from agriculture land and mine workings. It is highly likely that the groundwater is saline due to the saline soils that have been mapped in the vicinity. The vegetation community occurs on Station Creek that has been dammed upstream and once flowed from the east to west through the dam. The community is likely to be periodically inundated as it occurs on a drainage line, however this would only occur when the water flows over the spillway. The period of inundation would depend upon rainfall.
Whether the community occurs below 20 m elevation and generally occurs on floodplains that are below the 1 in 100 year flood level.	The community is at an elevation of approximately 72 m to 75 m (AHD Datum, AUSGeod98 Geod) that is above the required elevation. Data for the 1 in 100 year flood levels is not available for this location.
Canopy species dominated by <i>Casuarina glauca</i> or <i>Melaleuca ericifolia</i> .	Yes, canopy is dominated by <i>Casuarina glauca</i> .

Key characteristics of TSC Act listed Swamp Oak Floodplain Forest ¹	Response for the Swamp Oak Forest within the study area
Whether any of the listed characteristic species occur (including as part of the seedbank in the soil).	Based on the surveys completed, 14 (31%) of the species listed in the final determination of the Swamp Oak Floodplain Forest vegetation were recorded within the community.

Source: ¹ (NSW Scientific Committee 2004)

The Swamp Oak Forest within the study area is in part commensurate with the listed community of Swamp Oak Floodplain Forest, namely:

- Some characteristic species of the threat-listed community occur within the community.
- Due to the flat topography the community may occur on the floodplains associated with Glennies Creek, occurring approximately 1 km to the north west.
- Soils are likely to be saline.

However, this community is considered unlikely to be part of the threat-listed community for the following reasons:

- Peake (2006) does not identify Central Hunter Swamp Oak Forest (commensurate with Swamp Oak vegetation within the study area), as being commensurate with the threat-listed Swamp Oak Floodplain Forest.
- Previous studies have not determined this threat-listed community as occurring in the area despite the community of Central Hunter Swamp Oak Forest being identified within the study area (ERM 2009).
- The scientific determination (NSW Scientific Committee 2004) does not include the Singleton Local Government Area (LGA) in the list of where this community occurs, with all of the listed LGAs occurring in coastal districts.
- The study area falls within an elevation above 20 m also points to the Swamp Oak Forest not being commensurate with the listed community of Swamp Oak Floodplain Forest (NSW Scientific Committee 2004).

The project will impact upon a small area of Swamp Oak Forest, 1 ha, and is unlikely to have a significant impact on this community. Regardless of conservation status of this community, offsets for this community have been included in the BioBanking assessment. However, since “for operational reasons, the minimum size of a vegetation zone is 0.25 ha” for BioBanking assessments, these two patches have been combined with Grey Ironbark – Spotted Gum – Grey Box open forest on hills of the Hunter Valley, Sydney Basin, which is the only other vegetation zone within the study area and is closest in condition and percent cleared. This follows the methodology outlined in the BioBanking assessment manual (Seidel & Briggs 2008) and following this methodology, impacts to this community have been included in the offsets assessment.

Pine Donkey Orchids (*Diuris tricolor*)

Surveys of the study area were undertaken outside the appropriate survey time for this species. For this reason a precautionary approach was taken and the study area assumed to provide potential habitat based on the habitat characteristics within the site.

It is acknowledged that *Diuris tricolor* may occur in derived grassland areas with a high component of exotic pasture. However, the areas identified in the ecology report as “weed dominated” are not considered to be derived grassland with high exotic component. These areas generally occur where the soil profile has been modified (including fill and ballast) and are unlikely to contain a native soil seed bank or to regenerate naturally. Native species recorded in these areas were colonising species are likely to have germinated as a result of wind-dispersed seed (see Section 3.2.3). As such, these weed dominated areas are not considered to provide potential habitat for this species.

The ecological report includes assessment of the impacts of the clearing of 22.12 ha of potential habitat identified for this species which includes:

- 13.37 ha of derived grassland (some of which has high exotic component)
- 8.75 ha of forest vegetation (see Section 7).

This assessment concluded that the project and the removal of this habitat was unlikely to have a significant impact on this species.

Two additional threatened birds for consideration

Two additional species were identified by the Office of Environment and Heritage as having been recorded within the locality in April 2011: Olive Whistler and Varied Sittella. Diurnal bird surveys were undertaken for the project, as outlined in Section 2.4.2.6 of the ecology report, and neither species was recorded.

The habitat requirements of these species and their likelihood of occurrence are discussed below and summarise in Table 1.3.

Table 1.3 Likelihood of occurrence of Olive Whistler and Varied Sittella

Species	TSC Act ¹	EPBC Act ²	Habitat	Likelihood of occurrence
Varied Sittella (<i>Daphoenositta chrysoptera</i>)	V	-	The Varied Sittella inhabits most of mainland Australia except the treeless deserts and open grasslands. It inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. The Varied Sittella feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy. It builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years (Department of Environment Climate Change and Water 2010).	Moderate

Species	TSC Act ¹	EPBC Act ²	Habitat	Likelihood of occurrence
Olive Whistler (<i>Pachycephala olivacea</i>)	V	-	<p>Distributed from Queensland to South Australia, and occurs across the altitudinal range from coastal to alpine areas. In NSW, found north of the Hunter River, NSW, extending just into the Lamington Plateau in far south-east Queensland. There are isolated populations in the Macpherson Range, New England NP, Mt. Boss and Barrington Tops areas, and possibly in the Gibraltar Range and Walcha-Nundle areas.</p> <p>Occurs in tall wet sclerophyll forest, rainforest, woodland, alpine heaths (Simpson & Day 1996). In NE NSW, occurs in cool temperate rainforest and cool, moist sclerophyll forest at elevations of ≥ 800 metres asl. Also recorded in warm temperate and sub tropical rainforests. South of Sydney, the species inhabits rainforest, moist eucalypt forest, coastal, moist thickets and mountain scrubs. Microhabitat for this species is areas with a dense, moist understorey (NSW National Parks and Wildlife Service 1999).</p>	Low

Varied Sittella

The Varied Sittella was not recorded within the subject site, although family groups move widely over woodland and forest habitat areas during foraging (Higgins & Peter 2002) and as such its occurrence on at least an intermittent basis cannot be discounted from the site. Nevertheless, the areas adjacent to the site are not considered high quality habitat for this species due to the fragmented nature of habitat and there is the possibility that the area is not capable of supporting this species in isolation, due to its fragmented nature and relative isolation from extensive areas of higher quality habitat. Habitat to be removed in relation to the proposal is not considered to be significant to potential local populations, due to its linear nature, limited extent, in relation to surrounding vegetation, and degraded quality due to edge effects. As such it is not considered likely that vegetation removal as a consequence of the project will represent a significant threat to the viability of local Varied Sittella populations.

Olive Whistler

In the Hunter Region the Olive Whistler has a limited distribution, being confined to dense vegetation of the plateaus and gullies associated with the Barrington Plateau well to the north of the site (Stuart 2010). Records occurring on the valley floor are considered to be rare accidental occurrences or, in some cases perhaps, misidentifications, due to the somewhat similar markings of immature Golden Whistlers. Habitat within the locality is not considered suitable for this species and vegetation to be removed does not represent habitat which might offer significant opportunities for Olive Whistlers.

Questions about some plants mentioned in the ecology report

The species questioned were not sent to the NSW herbarium for identification confirmation. Comments regarding their identification are summarised in Table 1.4.

Table 1.4 Comments on species identification

Species	Comment regarding identification
<i>Austrostipa wakoolica</i>	This species was recorded at one site and was not definitively identified, and was noted as such in Appendix A of the report. Although it is unlikely to have been this species, this was the nearest identification possible given the available material. The plant (and therefore sample) did not have suitable material during the time of the survey to allow definitive identification and as such was not sent to the herbarium for confirmation.
<i>Drosera pygmaea</i>	Although OEH have identified that this species is not listed as occurring in the Central Hunter Valley according to Peake (Peake 2006), it is listed as a key characteristic species of positive or constant diagnostic species for Central Hunter Spotted Gum- Ironbark-Grey Box Forest according to Peake (2005) (volume 2). Due to the fragile nature of <i>Drosera</i> species, no sample of this species was taken, and this identification is based on in-field identification.
<i>Helicia glabriflora</i>	This species was not recorded during our surveys. It is noted in the flora species list (in Appendix A) as one recorded in the literature (ERM 2009). Given the habitat requirements of this species and the lack of confirmation of its presence during our surveys, this is likely to have been misidentified in the previous ERM study undertaken in the area.

Mistletoe and Painted Honeyeater

Mistletoe was observed to occur at a low density, generally not being recorded over much of the alignment. Mistletoe was recorded within fauna survey site S3 (Table 3-9), outside the area of impact of the project and as a result this area was not surveyed by botanists. As such, it was not possible to identify the mistletoe to genus level and for this reason it was excluded from the flora species list.

Despite the presence of mistletoe in associated eucalypts this is not considered to represent a significant resource for Painted Honeyeaters occurring in the Hunter Region, particularly in reference to the project site, due to the fragmented nature of the site and the propensity of local populations to favour mistletoe in acacias or allocasuarinas. Most records in recent years for this species have been close to the southern ranges or westerly sections of the region where there are significant areas of native vegetation such as occurs on flats and lower slopes adjacent to the Wollemi wilderness and in the Goulburn River National Park (Stuart 2010).

2. Comparison of access options

It is understood that an additional downside construction access route to the rail corridor at Nundah Bank is being considered. The additional access route is via the adjoining Rixs Creek Mine land and would use the existing Rixs Creek Lane paper road (Figure 2.1). This additional access route is required as Rixs Creek Mine intends to construct a large dam where the ARTC had proposed to put the downside access road.



Figure 2.1 Two potential downside construction access routes: route assessed in Environmental assessment (dotted line) and the alternative route (shown in red)

The additional access route was surveyed during the ecology surveys undertaken in 2010 and additional surveys of this area are unlikely to be required. The table below compares the potential ecological impacts of the two access routes (Table 2.1).

Table 2.1 Impacts of the two downside construction access routes

Impacts		Route assessed in EA	Additional access route (paper road)	Total for the two access routes
Vegetation clearing	Derived Grassland	0.9 ha	1.2 ha	2.1 ha
	Central Hunter Spotted Gum Grey Box Forest	0.3 ha	0.1 ha	0.4 ha
	Total	1.2 ha	1.3 ha	2.5 ha
Fauna habitat clearing	Dry open forest	0.3 ha	0.1 ha	0.4 ha
	Cleared land	0.9 ha	1.2 ha	2.1 ha

Impacts	Route assessed in EA	Additional access route (paper road)	Total for the two access routes
Aquatic habitat	The existing dam would be drained and built over	None	The existing dam would be drained and built over
Hollow bearing trees (see Figure 3-1E of the ecological assessment)	None	Up to 13 hollow-bearing trees	Up to 13 hollow-bearing trees

The greater impact resulting from the additional route is unlikely to significantly increase the impacts of the project or change the conclusion of the assessment. However, the use of the additional access route is likely to require a slightly greater area of offset and the provision of extra nest boxes or salvaged tree hollows to mitigate the removal of additional hollow-bearing trees.

3. Changes in project footprint

Refinement of the project design has resulted in a hanged project footprint, with five small additional areas of impact, immediately adjacent to the existing footprint as well as the additional access track (see Section 2). The clearing required for the revised footprint is summarised in Table 3.1. The revised design has resulted in an increased impact of approximately 0.8 ha, including approximately 0.4 ha of Central Hunter Spotted Gum – Ironbark endangered ecological community.

This increase in impacts is not considered significant and is unlikely to alter the conclusion of the report or impact assessments. However, a greater area of offsets is likely to be required.

Table 3.1 Comparison of impacts of the previous and revised footprint

Vegetation community/Fauna habitat	Vegetation clearing (ha)	
	Increase in footprint	Revised footprint
Vegetation	1.7	65.8
Central Hunter Spotted Gum – Ironbark – Grey Box Forest ¹	0.3	9.1
Central Hunter Spotted Gum – Ironbark – Grey Box ² Derived grassland ¹	0.9	14.3
Weed dominated areas	-0.4	40.6
Aquatic vegetation along drainage lines and dams	0.1	0.4
Swamp Oak	1.0	1.0
Plantation	-0.2	0.4
Total area of EEC clearing	0.4	22.5
Fauna habitats		
Dry open forest ²	1.1	10.5
Aquatic habitat	0.1	0.4
Cleared land ³	0.5	54.9

Please do not hesitate to contact me if you require any further information.

Yours sincerely



Selga Harrington

Regional Team Manager, Ecology South
Parsons Brinckerhoff Australia Pty Limited

Attachments

Attachment A BioBanking credit report

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Attachment A

BioBanking assessment report

BioBanking Assessment Report – Nundah Bank Rail Upgrade

24 May 2011

Australian Rail Track Corporation



*Parsons Brinckerhoff Australia Pty Limited
ABN 80 078 004 798*

*Level 3
51–55 Bolton Street
NEWCASTLE NSW 2300
PO Box 1162
NEWCASTLE NSW 2300
Australia
Telephone +61 2 4929 8300
Facsimile +61 2 4929 8382
Email newcastle@pb.com.au*


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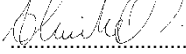
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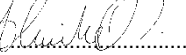
Author: Selga Harrington, Gemma Phelan

Signed: 

Reviewer: Alex Cockerill

Signed: 

Approved by: Alex Cockerill

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1. Introduction

This report is a summary document that outlines the offset requirements associated with a proposed new rail track at Nundah Bank, in the Hunter Valley NSW.

The aim of this report aims to provide the supporting information required for a BioBanking Credit assessment including:

- survey methodology
- impacts of the proposal
- assessment results
- a BioBanking Credit Report describing characteristics of the site.

2. Description of the proposed development

The project consists of the construction of approximately 4.26 km of third track parallel (up side) to the existing Main Northern Railway line.

Associated works include:

- approximately 4.26 km of single track at grade on the up side of the existing up main between 245,240 km and 249,500 km including two new turnouts and return curves
- reconditioning of the existing up main to cater for load sharing between the new up relief and up mains
- upgrades to Camberwell Junction to provide two new crossovers and two new turnouts to the existing balloon loop
- new vehicular maintenance access tracks adjacent to the proposed third track on both the up and down sides
- widening of the formation beneath the existing Rixs Creek Mine Haul Road overbridge to provide width for the third track and access roads to both sides
- decommissioning of the existing signalling system and installation of new signals spaced at 500 m with 400 m overlaps
- construction of temporary ancillary infrastructure such as construction compounds, haul roads, sedimentation basins and stockpile sites
- services and utilities adjustments
- the acquisition of land
- earthworks for track formation, drainage and minor structures.

Further details are provided in the main Environmental Assessment report.

3. Measures to avoid and mitigate the impacts of development

Measures to avoid, minimise and mitigate are described in detail in Section 6 of the ecology report. These measures were considered in the following order: avoiding, minimising and mitigating.

3.1 Avoid

A process to avoid impacts was undertaken for the project. This involved the early examination of a number of possible options and their potential impacts on the environment and other factors (for example, economic and social considerations) prior to selection of the preferred option (SKM 2009a) & (SKM 2009b).

3.2 Minimise

The project has undertaken a process to minimise impacts to habitat and significant species through suitable siting of works compounds and access tracks in disturbed areas, avoiding native forest vegetation. The area of impact was also reviewed throughout the detailed design stage and where possible reduced. It was necessary to survey and assess a larger area of impact in the ecological assessment to provide flexibility for alterations in the design process although it is unlikely that the entire area will need to be disturbed

3.3 Mitigate

Residual impacts that cannot be avoided or minimised were mitigated wherever possible. Mitigation measures developed include:

- General.
 - ▶ Environmental induction for all workers.
 - ▶ Flora and Fauna management plan.
- Vegetation and habitat loss.
 - ▶ Disturbance of vegetation during construction works kept to minimum necessary.
 - ▶ Limits of clearing marked.
 - ▶ Construction footprint fenced.
 - ▶ Installation of Squirrel Glider nest boxes.
 - ▶ Equipment storage and resource stockpiling restricted to designated areas in cleared land.

- Weeds.
 - ▶ Develop weed management actions for construction stage.
 - ▶ Equipment cleaned prior to site entry.
- Direct fauna mortality.
 - ▶ New drainage structures designed for fauna movement.
 - ▶ Minimised median width in fauna crossing areas.
- Fragmentation and connectivity.
 - ▶ Incorporate Squirrel Glider crossing zone in Integra Coal rail loop area.
- Aquatic disturbance.
 - ▶ Best practice erosion and sediment controls including temporary scour protection and energy dissipation measures.
 - ▶ Waterway crossings designed in accord with 2003 DPI fish passage guideline.
 - ▶ Water discharge in accord with 2000 ANZECC Water Quality guidelines.
- Residual impacts.
 - ▶ Offset strategies developed to mitigate residual impacts.

For further detail on mitigation measures refer to Section 6 of the ecological assessment report (Parsons Brinckerhoff 2011).

4. Assessment of impacts

The project will have both direct and indirect impacts on biodiversity during both the construction and operation phases (Table 4–1). These impacts are described in more detail in Section 5 of ecology report (Parsons Brinckerhoff 2011).

Table 4–1 Potential impacts of the project on biodiversity

Impacts of the project on biodiversity	Construction	Operation
Vegetation/habitat clearing	•	
Migratory species	•	•
Fragmentation and connectivity	•	
Noise impacts on fauna	•	•
Weed invasion	•	•
Increase in edge effects	•	
Hydrological changes	•	
Aquatic disturbance	•	
Increase in fauna mortality	•	•
Increase in Key Threatening Processes	•	•

4.1 Vegetation and habitat clearing

Construction of the proposal will require the clearing of vegetation and habitats as summarised in Table 4–2. This includes loss of habitat features including tree hollows.

Table 4–2 Potential loss of vegetation within the subject site

Vegetation community/fauna habitat	Extent within study area (ha)	Vegetation clearing (ha)
Vegetation		
Central Hunter Spotted Gum – Ironbark – Grey Box Forest ¹	45.2	9.1
Central Hunter Spotted Gum – Ironbark – Grey Box ² Derived grassland ¹	84.9	14.3
Weed dominated areas	102.5	40.6
Aquatic vegetation along drainage lines and dams	6.3	0.4
Swamp Oak		1.0
Plantation	17.6	0.4
Total area of EEC clearing	130.1	22.5

Vegetation community/fauna habitat	Extent within study area (ha)	Vegetation clearing (ha)
Fauna habitats		
Dry open forest ²	63.39	10.5
Aquatic habitat	6.29	0.4
Cleared land ³	187.44	54.9

Notes: 1 - Endangered Ecological Community as listed under the *Threatened Species Conservation Act 1995*; 2 – includes plantation and forest; 3 – includes derived grassland and weed dominated vegetation.

4.2 Impacts to threatened biodiversity

One Threatened ecological community and four Threatened species of animal listed under the TSC Act and/or the EPBC Act, were recorded in the study area. This included:

- Central Hunter Ironbark – Spotted Gum – Grey Box Forest
- Squirrel Glider
- Grey-headed Flying-fox
- Grey-crowned babbler
- Little Lorikeet.

A further 32 Threatened fauna species have the potential to use the study area as foraging habitat and two threatened species of flora have potential habitat in the study area (See Section 7 of the ecology report).

Significance assessments for species recorded or with a moderate or higher likelihood of occurrence were completed (see Appendix E of the ecology report). The impacts to threatened biodiversity are summarised in Table 7-1 of the ecology report. This assessment was based on a broad corridor assessment and as such overestimates the area of vegetation and habitats to be cleared. The development footprint would be reduced as a result of ongoing detailed design. Significance assessments for these threatened ecological communities and threatened species concluded that the proposal is not likely to result in any significant impact due to the small area of native vegetation communities likely to be affected and the existing disturbed nature of the subject site.

5. Description of the application of the BioBanking assessment methodology

The BioBanking assessment tool was used to provide a calculation of the number and class of biodiversity credits required to ensure maintenance or improvement in biodiversity. Quantitative (quadrat) site surveys were undertaken following the methodology contained within BioBanking Operation Manual (Seidel & Briggs 2008) and as outlined in Section 2.4 of the ecology report (Parsons Brinckerhoff 2011).

5.1 Landscape assessment

A summary of the study area location is provided in Table 5–1

Table 5–1 Study area location

Location information	Study area
Council	Singleton
Catchment Management Authority	Hunter/Central Rivers
CMA sub region	Hunter
Mitchell Landscapes	Central Hunter foothills

Three landscape assessment circles were used to ensure coverage of the project area. One 100 ha circle was placed within each of the 1000 ha circles. These were placed to cover the most significant areas of the project footprint and thus maximise the difference between vegetation cover calculations before and after Biobanking. The vegetation cover assessment is summarised in Table 5–2

Table 5–2 Vegetation cover assessment

Assessment circle		Native vegetation cover (%)	
		Before development	After development
1	1000 ha	6	6
	100 ha	10	9
2	1000 ha	26	25
	100 ha	64	59
3	1000 ha	29	29
	100 ha	21	20

5.2 Connectivity

The study area occurs in a highly cleared landscape modified by mining and grazing. Connectivity in the area is limited. Connectivity for the landscape assessment is summarised in Table 6–3.

Table 5–3 Connectivity

Assessment circle	Corridor values	Before development	After development	Connectivity description
1	Corridor width (m)	0-5	0-5	Limited. Landscape fragmented by mining and virtually cleared of trees. Corridor unaffected by development.
	Overstorey	No native overstorey	No native overstorey	
	Understorey	>25% of lower benchmark	>25% of lower benchmark	
2	Corridor width (m)	30-100	30-100	Landscape fragmented by mining and cleared grazing land. Connectivity limited and patchy. Vegetation extends to north east of the study area. Corridor unaffected by development.
	Overstorey	At benchmark	At benchmark	
	Understorey	At benchmark	At benchmark	
3	Corridor width (m)	30-100	30-100	Landscape fragmented by clearing for grazing. Patchy connectivity to the south and south east. Corridor unaffected by development.
	Overstorey	At benchmark	At benchmark	
	Understorey	>25% of lower benchmark	>25% of lower benchmark	

5.3 Threatened species sub zones

The threatened species sub zones were determined based on vegetation mapping undertaken during the field survey and the methodology outlined in the BioBanking assessment manual (Seidel & Briggs 2008).

The majority of the vegetation within the project footprint consists of Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (MU556). However, two small areas of Swamp Oak Forest, totalling 0.12 ha, would also be impacted. Following the Biobanking assessment methodology, ‘for operational reasons, the minimum size of a vegetation zone is 0.25 ha’ and for this reason these two patches have been combined with Grey Ironbark – Spotted Gum – Grey Box open forest on hills of the Hunter Valley, Sydney Basin, which is the only other vegetation zone within the study area and is closest in condition and percent cleared. This follows the methodology outlined in the BioBanking assessment manual (Seidel & Briggs 2008).

For the purposes of the BioBanking assessment, the study area contains six threatened species sub zones (see Section 7 for threatened species subzone data).

All threatened species subzones used for the BioBanking Calculator were:

- Vegetation formation: dry sclerophyll forests (shrub/grass sub-formation).
- Biobanking vegetation type: Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (MU556).
- Condition: moderate.

Areas identified in the ecology report as ‘weed dominated’ are considered to be cleared land rather than derived grassland with high exotic component. These areas generally occur where the soil profile has been modified (including fill and ballast) and are unlikely to contain a native soil seed bank or to regenerate naturally. Native species recorded in these areas were colonising species are likely to have germinated as a result of wind-dispersed seed (see Section 3.2.3 of the ecology report). Since a vegetation zone is not required for assessing cleared land on a development site, weed dominated areas have not been included in the BioBanking assessment.

5.4 Survey and geographic features

The site was surveyed in August 2010. The following geographic features were identified:

- land within 40 m of watercourses, containing hollow-bearing trees, loose bark and/or fallen timber
- land within 100 m of emergent aquatic vegetation
- eucalypt forest and grassland.

5.5 Red flag areas

The native vegetation within the study area is a red flag area, due to its listing as a threatened ecological community (Table 5–4).

Table 5–4 Red flag areas

Red flag	Reason
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin	Vegetation type contains an endangered ecological community

5.6 Limitations and assumptions

The data used in the assessment is based on results of the field surveys and are, therefore, merely indicative of the environmental condition of the site at the time of survey, including the presence or otherwise of species. For species where the timing of surveys was not appropriate for detection, a precautionary approach was taken and surveys focussed on detection of areas of potential habitat for these species.

The assessment of presence of potential habitat identified that *Diuris tricolor*, which was not recorded, may occur in the study area and if present would require species credits.

6. Plot and transect data

The plot data for these zones is provided in Table 6–1 and Table 6–2. A list of flora species found in each

Table 6–1 Summary of threatened species subzones

Landscape circle	Threatened species subzone	Area (ha)	Adjacent remnant vegetation area (ha)	Patch size including low condition vegetation (ha)
1	1a.ca	0.3	51.3	51.3
1	1b	0.8	0.8	0.8
1	1c	0.5	0.5	0.5
1	1d	0.3	0.5	0.5
1	1e	0.7	1.8	1.8
2	2ln	0.6	21.2	21.2
2	2rn	3.0	6.2	6.2
2	2lm	1.1	16.4	16.4
2	2rm	1.0	44.7	44.7
2	2ls	2.1	501.0	501.0
2	2rs	4.8	21.2	21.2
3	3R	2.8	501	501
3	3L	5.5	501	501

All threatened species subzones were:

- Vegetation formation: dry sclerophyll forests (shrub/grass sub-formation).
- Biobanking vegetation type: Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (MU556).
- Condition: moderate.

Table 6–2 Plot data

Plot name	Native plant species	Native over-storey cover	Native mid-storey cover	Native ground cover (grasses)	Native ground cover (shrubs)	Native ground cover (other)	Exotic plant cover	Number of trees with hollows	Overstorey regeneration	Total length of fallen logs	Zone	Easting	Northing
A	22	3*	3	55	1	14	5	0	1	9	56	326536	6401437
B	32	20	2	27	2	23	3	0	1	8	56	326137	6402057
C	37	10	3	28	2	6	2	0	1	2	56	325777	6402109
D	26	5	2	20	1	8	2	0	1	12	56	325655	6402257
E	39	3*	10	35	10	10	5	0	0.75	14	56	325406	6402396
F	32	3*	25	20	10	5	5	0	1	7	56	325559	6402346

Notes: MGA 94: Zone 56

7. Description of targeted threatened species surveys and general baseline surveys

7.1 Flora survey

The floristic diversity and possible presence of Threatened species was assessed using a combination of random meander and plot-based (quadrat) surveys in accordance with the *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)* (Department of Environment and Conservation 2004).

Due to the linear nature of the project, random meander surveys were completed along the entire length of the project corridor. See Section 2.4.2 of the ecology report (Parsons Brinckerhoff 2011) for more detail.

7.2 Fauna survey

The survey effort considered the methodology detailed in the *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)* (Department of Environment and Conservation 2004) and the *Threatened Species survey and assessment guidelines: field survey and methods for fauna- Amphibians* (Department of Environment and Climate Change 2009). Surveys included fauna habitat assessments including tree hollow survey as well as targeted surveys including mammal trapping, microchiropteran bat surveys (trapping and anabat recordings), spotlighting and call playback, diurnal bird surveys and active herpetofauna searches.

Fauna habitat assessments were completed to assess the likelihood of Threatened species of animal occurring in the study area.

During habitat assessments and random meander surveys, opportunistic recordings of species were made through incidental sightings, aural recognition of calls and observations of indirect evidence of species' presence (i.e. Yellow-bellied Glider chews, Glossy-black Cockatoo chew cones, nests/dreys, whitewash, burrows and scats). This provided supplementary information on faunal species presence.

Specific fauna habitat features were assessed at five locations in the study area. Features measured and assessed at each site are shown in Section 2.4.2 of the ecology report (Parsons Brinckerhoff 2011). Level of survey effort is summarised in Table 7–1.

Table 7–1 Fauna survey effort

Date	Survey method	Effort	Survey site	Fauna habitat and location description ³	Location (MGA94 Zone 56)	
					Easting	Northing
16/08/10 - 20/08/10	Terrestrial trapping	100 trap nights (Elliott A)	S1	Dry open forest	325378	6402406
			S2		325635	6402251
			S3		325798	6402358
			S4		326167	6402031
17/08/10 - 20/08/10	Arboreal trapping	18 trap nights (Elliott B)	S1	Dry open forest	325378	6402406
			S2		325635	6402251
			S3		325798	6402358
			S4		326167	6402031
17/08/10 - 19/08/10	Harp trap	2 nights	Supplementary	Culvert at chainage 246329 km	326424	6401712
17/08/10 - 19/08/10	Harp trap	2 nights	S1	Dry open forest	325481	6402371
17/08/10 - 20/08/10	Anabat	30 minutes	S1	Dry open forest	325378	6402406
			S3		325798	6402358
			S4		326167	6402031
17/08/2010	Anabat	30 minutes	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
19/08/2010	Anabat	30 minutes	Supplementary	Access track off Bridgeman Road	327787	6401805
19/08/2010	Anabat	1 hour	Supplementary	Drive transect of existing rail corridor	N/A	N/A
17/08/2010	Anabat ¹	1 night	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
18/08/2010	Anabat ¹	1 night	S1	Dry open forest	325481	6402371
17/08/10 - 18/08/10	Call playback (owls)	30 minutes	S1	Dry open forest	325378	6402406
			S3		325798	6402358
			S4		326167	6402031
19/08/2010	Call playback (owls)	30 minutes	Supplementary	Access track off Bridgeman Road, Singleton	327787	6401805
18/08/2010	Call playback (Green & Golden Bell Frog)	20 minutes	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
18/08/2010	Call playback (Green & Golden Bell Frog)	20 minutes	Supplementary	Aquatic habitat at chainage 249370 km	324900	6403990
18/08/2010	Call playback (Green & Golden Bell Frog)	20 minutes	Supplementary	Aquatic habitat at chainage 248020 km	325074	6402667
17/08/10 - 20/08/10	Spotlighting	1 hour	S1	Dry open forest	325378	6402406

Date	Survey method	Effort	Survey site	Fauna habitat and location description ³	Location (MGA94 Zone 56)	
					Easting	Northing
			S3		325798	6402358
			S4		326167	6402031
17/08/2010	Spotlighting	1 hour	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
18/08/2010	Spotlighting	1 hour	Supplementary	Cleared land at potential main compound location	324003	6405925
19/08/2010	Spotlighting	2.5 hours	Supplementary	Drive transect of existing rail corridor	N/A	N/A
19/08/2010	Spotlighting	1 hour	Supplementary	Access track off Bridgeman Road	327787	6401805
17/08/10 - 20/08/10	Herpetofauna survey	40 minutes	S1	Dry open forest	325378	6402406
			S2		325635	6402251
			S3		325798	6402358
			S4		326167	6402031
17/08/2010	Herpetofauna survey	40 minutes	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
19/08/2010	Herpetofauna survey	40 minutes	Supplementary	Aquatic habitat located near potential main compound site	324003	6405925
17/08/10 - 20/08/10	Bird Survey	20 minutes	S1	Dry open forest	325378	6402406
			S2		325635	6402251
			S3		325798	6402358
			S4		326167	6402031
18/08/2010	Bird Survey	1 hour	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
18/08/2010	Bird survey	1 hour	Supplementary	Aquatic habitat at chainage 249370 km	324900	6403990
19/08/2010	Habitat assessment	30 minutes	S1	Dry open forest	325378	6402406
			S2		325635	6402251
			S3		325798	6402358
			S4		326167	6402031
18/08/2010	Habitat assessment	30 minutes	Supplementary	Aquatic habitat at chainage 246329 km	326405	6401696
16/08/10 - 20/08/10	Opportunistic recordings	5 days	Across study area	-	Refer Figure 3-1 in main report	

Note: 1: Anabat Bat Detector set to record throughout the night. 2: General habitat assessment included hollow-bearing tree assessment (20 m x 50 m area). 3: Location description provided for supplementary sites only.

The ambient weather during the fauna surveys were sub-optimal conditions for detecting some fauna species (namely frogs and reptiles), and as such a precautionary approach was taken in reporting the likely presence of fauna. Namely, the conclusions regarding fauna and threatened fauna provided in Section 2.4.2 of the ecology report are based on the presence of potential habitat even if a species wasn't recorded.

8. BioBanking credit report

The BioBanking tool was used to provide a calculation of the number and class of biodiversity credits required to ensure maintenance or improvement in biodiversity. The BioBanking credit report is provided in Appendix C.

The ecosystem credit requirements for the project are summarised in Table 8–1 and should occur in:

- Hunter/Central Rivers CMA, Hunter subcatchment and consist of Grey Ironbark Spotted Gum Grey Box open forest on hills of the Hunter Valley Sydney Basin (HU556), OR
- Northern Rivers CMA, Stanthorpe Plateau subregion and consist of New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213).
- OR Similar Conservation value community within the Hunter-Macleay Dry Sclerophyll Forests-

The offset strategy will incorporate offsets that meet these credit requirements.

Table 8–1 Summary of BioBanking credits required to offset impacts

Vegetation type	Area requiring offset (ha)	Offset requirements		Credit estimate
		Minimum size (ha)	Surrounding vegetation cover	
Ecosystem credits				
Group 1: Grey Ironbark Spotted Gum Grey Box	13.1	100	10	752
Group 2: Grey Ironbark Spotted Gum Grey Box	2.1	25	10	116
Group 3: Grey Ironbark Spotted Gum Grey Box	5.1	5	10	282
Group 4: Grey Ironbark Spotted Gum Grey Box	0.6	0	10	28
Group 5: Grey Ironbark Spotted Gum Grey Box	2.6	0	0	80
TOTAL	23.5	135		1258

References

Department of Environment and Climate Change 2009, *Threatened species survey and assessment guidelines: field survey methods for fauna. Amphibians*, Department of Environment Climate Change, Hurstville.

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Seidel, J & Briggs, S 2008, *Biobanking Operation Manual* NSW Department of Environment and Climate Change, Sydney.

SKM 2009a, *Nundah Bank concept assessment report*, Newcastle West.

SKM 2009b, *Nundah project preliminary environmental assessment*, Newcastle West.

Appendix A

Flora species recorded

Table A.1 Flora species recorded

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
Acanthaceae	<i>Brunoniella australis</i>	Blue Trumpet		Y	Y				2	1	2		1	2
Adiantaceae	<i>Adiantum aethiopicum</i>	Common Maidenhair					Y							
	<i>Cheilanthes distans</i>	Bristly Cloak Fern		Y		Y								1
	<i>Cheilanthes sieberi</i>	Mulga Fern		Y	Y	Y	Y	2	2	2	2	2	2	3
Alliaceae	<i>Nothoscordum borbonicum</i>	Onion Weed	*				Y							
Anthericaceae	<i>Arthropodium minus</i>	Small Vanilla Lily					Y							
	<i>Laxmannia gracilis</i>			Y										
Apiaceae	<i>Apium prostratum</i>			Y									1	1
	<i>Foeniculum vulgare</i>	Fennel	*			Y	Y							
	<i>Hydrocotyle peduncularis</i>						Y							
	<i>Unknown sp.</i>			Y	Y			2	1		2			
	<i>Platysace tridentata</i>			Y										1
Asclepiadaceae	<i>Gomphocarpus fruticosus</i>	Narrow-leaved Cotton Bush	*	Y	Y	Y	Y	1						
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs	*	Y		Y	Y		1		1			
Asteraceae	<i>Brachyscome multifida</i>			Y										
	<i>Calotis cuneifolia</i>			Y							3		3	
	<i>Calotis hispidula</i>	Bogan Flea					Y							
	<i>Calotis lappulacea</i>			Y							1			

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D							
				Forest	Derived grassland				A	B	C	D	E	F		
	<i>Calotis sp.</i>							Y								
	<i>Cassinia aculeata</i>	Dolly Bush						Y								
	<i>Chondrilla juncea</i>	Skeleton Weed	*	Y				Y								
	<i>Chrysocephalum apiculatum</i>	Common Everlasting		Y	Y			Y	3	1	2					1
	<i>Cirsium vulgare</i>	Spear Thistle	*	Y		Y		Y		1		1	1			
	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*	Y		Y		Y								
	<i>Cymbonotus australis</i>			Y	Y				2	2		3				
	<i>Hypochaeris radicata</i>	Catsear	*	Y	Y	Y		Y	2							
	<i>Lactuca serriola</i>		*			Y										
	<i>Onopordum acanthium</i>		*			Y		Y								
	<i>Onopordum acanthium ssp. acanthium</i>	Scotch Thistle	*					Y								
	<i>Ozothamnus diosmifolius</i>			Y						1						
	<i>Senecio madagascariensis</i>	Fireweed	*	Y	Y	Y		Y	2		2	2	2	2	1	
	<i>Senecio sp. 1</i>			Y							1					
	<i>Senecio sp. ?lautus</i>			Y				Y			2					
	<i>Senecio sp. 2</i>			Y											1	
	<i>Sonchus oleraceus</i>	Common Sowthistle	*	Y	Y	Y		Y	1		1	1				1
	<i>Tagetes minuta</i>	Stinking Roger	*					Y								
	<i>Taraxacum officinale</i>	Dandelion	*	Y		Y		Y		1						2

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D						
				Forest	Derived grassland				A	B	C	D	E	F	
	<i>Schoenoplectus mucronatus</i>						Y	Y							
Dilleniaceae	<i>Hibbertia obtusifolia</i>			Y											1
	<i>Hibbertia sp.</i>			Y						1					
Droseraceae	<i>Drosera pygmaea</i>	Pygmy Sundew													
Epacridaceae	<i>Lissanthe strigosa</i>			Y											1
	<i>Euphorbia peplus</i>	Petty Spurge	*			Y		Y							
	<i>Phyllanthus sp.</i>							Y							
	<i>Ricinus communis</i>	Castor Oil Plant	*			Y		Y							
Fabaceae (Faboideae)	<i>Bossieae prostrata</i>			Y						1					1
	<i>Daviesia genistifolia</i>	Broom Bitter Pea		Y		Y		Y							
	<i>Daviesia ulicifolia</i>	Gorse Bitter Pea		Y				Y		1	3	1	2		
	<i>Daviesia ulicifolia ssp. ulicifolia</i>							Y							
	<i>Desmodium varians</i>	Slender Tick-trefoil						Y							
	<i>Glycine clandestina</i>			Y		Y		Y		2	1	1			
	<i>Glycine microphylla</i>			Y	Y	Y		Y		2	1				
	<i>Glycine sp.</i>							Y							
	<i>Glycine tabacina</i>			Y				Y						1	1
	<i>Hardenbergia violaceae</i>			Y						1	1				
	<i>Pultenaea retusa</i>							Y							

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
	<i>Templetonia stenophylla</i>			Y					2					
	<i>Trifolium sp.</i>		*			Y	Y							
Fabaceae (Mimosoideae)	<i>Acacia amblygona</i>	Fan Wattle		Y	Y	Y	Y	1	1	3	3			
	<i>Acacia concurrens</i>	Curracabah					Y							
	<i>Acacia falcata</i>			Y		Y	Y	2				1		
	<i>Acacia parvipinnula</i>	Silver-stemmed Wattle					Y							
	<i>Acacia decora</i>			Y								1		
	<i>Acacia ulicifolia</i>			Y				2						
Geraniaceae	<i>Geranium solanderi</i>	Native Geranium		Y		Y	Y							
Goodeniaceae	<i>Goodenia bellidifolia</i>						Y							
	<i>Goodenia cycloptera</i>			Y				1				2		
	<i>Goodenia sp.</i>			Y								2		
Hydrocharitaceae	<i>Ottelia ovalifolia</i>	Swamp Lily					Y							
Iridaceae	<i>Romulea rosea</i>		*	Y	Y	Y								
Juncaceae	<i>Juncus acutus ssp. acutus</i>	Sharp Rush	*			Y	Y	Y						
	<i>Juncus cognatus</i>		*				Y	Y						
	<i>Juncus subsecundus</i>						Y							
	<i>Juncus usitatus</i>						Y							
Lamiaceae	<i>Ajuga australis</i>	Austral Bugle		Y				1				2	2	1

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
	<i>Marrubium vulgare</i>	Horehound	*	Y	Y	Y	Y	2						
Lobeliaceae	<i>Pratia purpurascens</i>	Whiteroot		Y			Y		2		3	1	3	
Loganiaceae	<i>Mitrasacme alsinoides</i>													
Lomandraceae	<i>Lomandra confertifolia</i>	Mat-rush					Y							
	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush		Y			Y						2	
	<i>Lomandra multiflora ssp. multiflora</i>	Many-flowered Mat-rush		Y	Y		Y	2	2	2	2		2	
Malvaceae	<i>Lagunaria patersonia</i>	Norfolk Island Hibiscus					Y							
	<i>Malva parviflora</i>	Small-flowered Mallow	*	Y		Y	Y							
	<i>Sida rhombifolia</i>	Paddy's Lucerne	*	Y		Y	Y							
Meliaceae	<i>Melia azedarach</i>	White Cedar					Y							
Myoporaceae	<i>Eremophila debilis</i>	Amulla		Y			Y		1	1	1	1	1	
	<i>Myoporum montanum</i>	Western Boobialla		Y			Y				1			
Myrtaceae	<i>Angophora costata</i>	Sydney Red/Rusty Gum					Y							
	<i>Angophora floribunda</i>	Rough-barked Apple		Y		Y	Y							3
	<i>Callistemon salignus</i>	Willow Bottlebrush					Y							
	<i>Corymbia maculata</i>			Y			Y		3	1		1		
	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum		Y			Y							

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark		Y	Y	Y	Y	2	3	1				
	<i>Eucalyptus fibrosa</i>	Red Ironbark		Y			Y							
	<i>Eucalyptus melliodora</i>	Yellow Box					Y							
	<i>Eucalyptus moluccana</i>	Grey Box		Y	Y		Y	1					3	
	<i>Eucalyptus punctata</i>	Grey Gum		Y			Y							
	<i>Eucalyptus tereticornis</i>	Forest Red Gum		Y			Y							1
	<i>Melaleuca armillaris</i>						Y							
	<i>Melaleuca hypericifolia</i>						Y							
	<i>Melaleuca styphelioides</i>	Prickly-leaved Tea Tree					Y							
	<i>Melaleuca thymifolia</i>						Y							
	<i>Notelaea microcarpa</i> var. <i>microcarpa</i>	Native Olive		Y						1				
Onagraceae	<i>Epilobium billardioreanum</i> ssp. <i>cinereum</i>						Y							
	<i>Ludwigia peploides</i>			Y			Y							2
	<i>Oenothera</i> sp.						Y							
Oxalidaceae	<i>Oxalis corniculata</i>	Creeping Oxalis	*				Y							
	<i>Oxalis perennans</i>			Y			Y		1					1
Oxalidaceae	<i>Oxalis rubens</i>			Y										
	<i>Oxalis</i> sp.						Y							

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D						
				Forest	Derived grassland				A	B	C	D	E	F	
	<i>Axonopus affinis</i>	Narrow-leaved Carpet Grass	*			Y	Y	Y							
	<i>Bothriochloa decipiens</i>	Red Grass		Y	Y			Y	3	2	2	2			
	<i>Bothriochloa macra</i>	Red Grass						Y							
	<i>Bromus catharticus</i>	Prairie Grass	*					Y							
	<i>Chloris gayana</i>	Rhodes Grass	*	Y		Y	Y	Y						2	
	<i>Chloris truncata</i>	Windmill Grass		Y	Y			Y	2	2	1	1			
	<i>Chloris ventricosa</i>			Y											
	<i>Cymbopogon refractus</i>	Barbed Wire Grass		Y	Y			Y	2	3	3	3	3		
	<i>Cynodon dactylon</i>	Common Couch		Y	Y			Y	2	1	1	1	1		
	<i>Dichanthium sericeum</i>	Queensland Bluegrass			Y			Y	3						
	<i>Dichelachne micrantha</i>	Shorthair Plumegrass		Y				Y		3		1			
	<i>Digitaria divaricatissima</i>	Umbrella Grass						Y							
	<i>Echinopogon caespitosus</i>			Y								1	1		
	<i>Ehrharta erecta</i>	Panic Veldtgrass	*			Y	Y	Y							
	<i>Entolasia stricta</i>	Wiry Panic		Y				Y			2			2	
	<i>Eragrostis brownii</i>	Brown's Lovegrass		Y	Y			Y		3	2	1	2		
	<i>Eragrostis cilianensis</i>	Stinkgrass	*			Y		Y							
	<i>Eragrostis leptocarpa</i>			Y											
	<i>Hyparrhenia hirta</i>	*		Y						2					

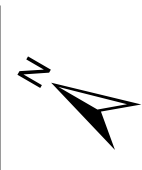
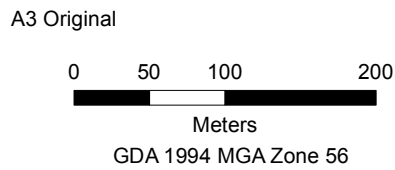
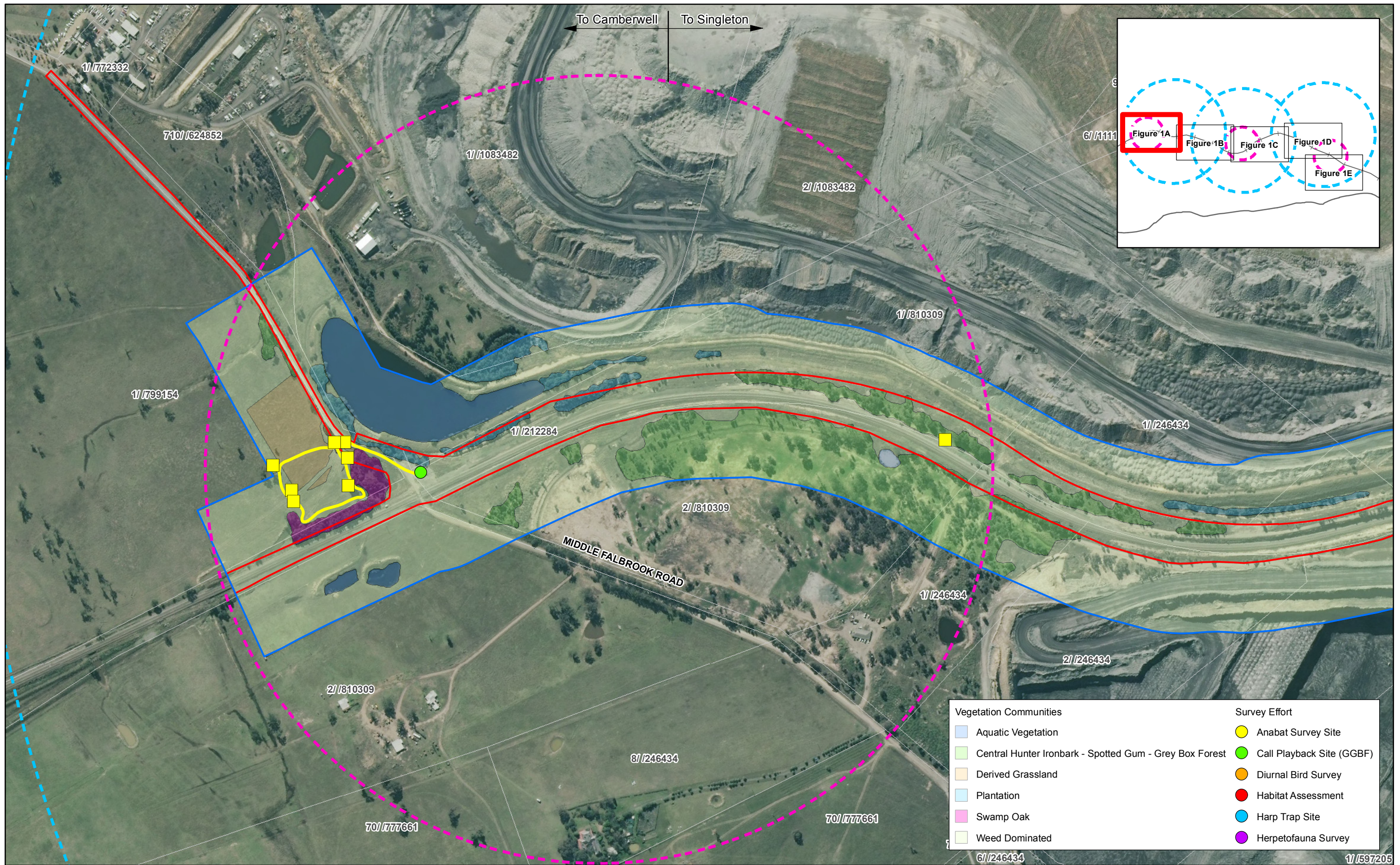
Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
					<i>Imperata cylindrica</i>						Y			
	<i>Melinis repens</i>	Red Natal Grass	*	Y		Y		Y	1				1	
	<i>Microlaena stipoides</i>			Y	Y				2				2	2
	<i>Panicum simile</i>	Two-colour Panic		Y	Y			Y	2				2	2
	<i>Panicum sp.</i>							Y						
	<i>Paspalum dilatatum</i>	Paspalum	*			Y		Y						
	<i>Pennisetum clandestinum</i>	Kikuyu Grass	*			Y		Y						
	<i>Pennisetum setaceum</i>	Fountain Grass	*			Y		Y						
	<i>Poa annua</i>	Winter Grass	*					Y						
	<i>Setaria gracilis</i>		*	Y	Y	Y								1
	<i>Sporobolus creber</i>	Slender Rat's Tail Grass		Y				Y			3			
	<i>Sporobolus indicus var. capensis</i>	Parramatta Grass	*					Y						
	<i>Sporobolus sp.</i>							Y						
	<i>Stipa sp.</i>							Y						
	<i>Themeda australis</i>			Y	Y				3	3			2	2
	<i>Zoysia macrantha</i>	Prickly Couch						Y						
Polygonaceae	<i>Acetosa sagittata</i>	Rambling Dock	*			Y	Y	Y						
	<i>Persicaria decipiens</i>	Slender Knotweed						Y						
	<i>Rumex brownii</i>	Swamp Dock					Y	Y						

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D					
				Forest	Derived grassland				A	B	C	D	E	F
Primulaceae	<i>Anagallis arvensis</i>	Scarlet/Blue Pimpernel	*	Y	Y	Y	Y	Y	2	1	2	1	2	
Proteaceae	<i>Hakea decurrens</i>						Y							
	<i>Hakea sp.</i>						Y							
	<i>Helicia glabriflora</i>						Y							
Rosaceae	<i>Rubus discolor</i>	Blackberry	*				Y							
Rubiaceae	<i>Galium aparine</i>			Y						2	1	1		
	<i>Richardia humistrata</i>	*		Y						2		1		
Salicaceae	<i>Salix babylonica</i>	Weeping Willow	*				Y							
Sapindaceae	<i>Dodonaea viscosa</i>			Y			Y			1				
Scrophulariaceae	<i>Veronica plebeia</i>	Trailing Speedwell		Y	Y		Y		1					
Solanaceae	<i>Cestrum parqui</i>	Green Cestrum	*			Y	Y							
	<i>Lycium ferocissimum</i>	African Boxthorn	*				Y							
	<i>Solanum cinereum</i>	Narrawa Burr					Y							
	<i>Solanum nigrum</i>	Black-berry Nightshade	*	Y		Y	Y				1		1	
	<i>Solanum papaverifolium</i>													
	<i>Solanum prinophyllum</i>	Forest Nightshade		Y			Y				2		1	
	<i>Solanum pungetium</i>	Eastern Nightshade		Y			Y							
	<i>Solanum sp.</i>						Y							
Thelypteridaceae	<i>Christella dentata</i>						Y							

Family	Scientific name ^A	Common Name	Exotic species	Spotted Gum-Ironbark-Grey Box		Weed dominated	Aquatic vegetation	Literature ^C	Quadrat ^D						
				Forest	Derived grassland				A	B	C	D	E	F	
Thymelaceae	<i>Pimelea curviflora var. sericea</i>			Y											1
Typhaceae	<i>Typha domingensis</i>	Narrow-leaved Cumbungi					Y	Y							
	<i>Typha orientalis</i>	Broad-leaved Cumbungi						Y							
Verbenaceae	<i>Verbena bonariensis</i>	Purpletop	*	Y		Y	Y	Y							
Native species		167		100	29	18	6	118	22	32	37	26	39	32	
Total species count		226		122	39	56	15	172	30	38	41	33	46	38	

Appendix B

Maps



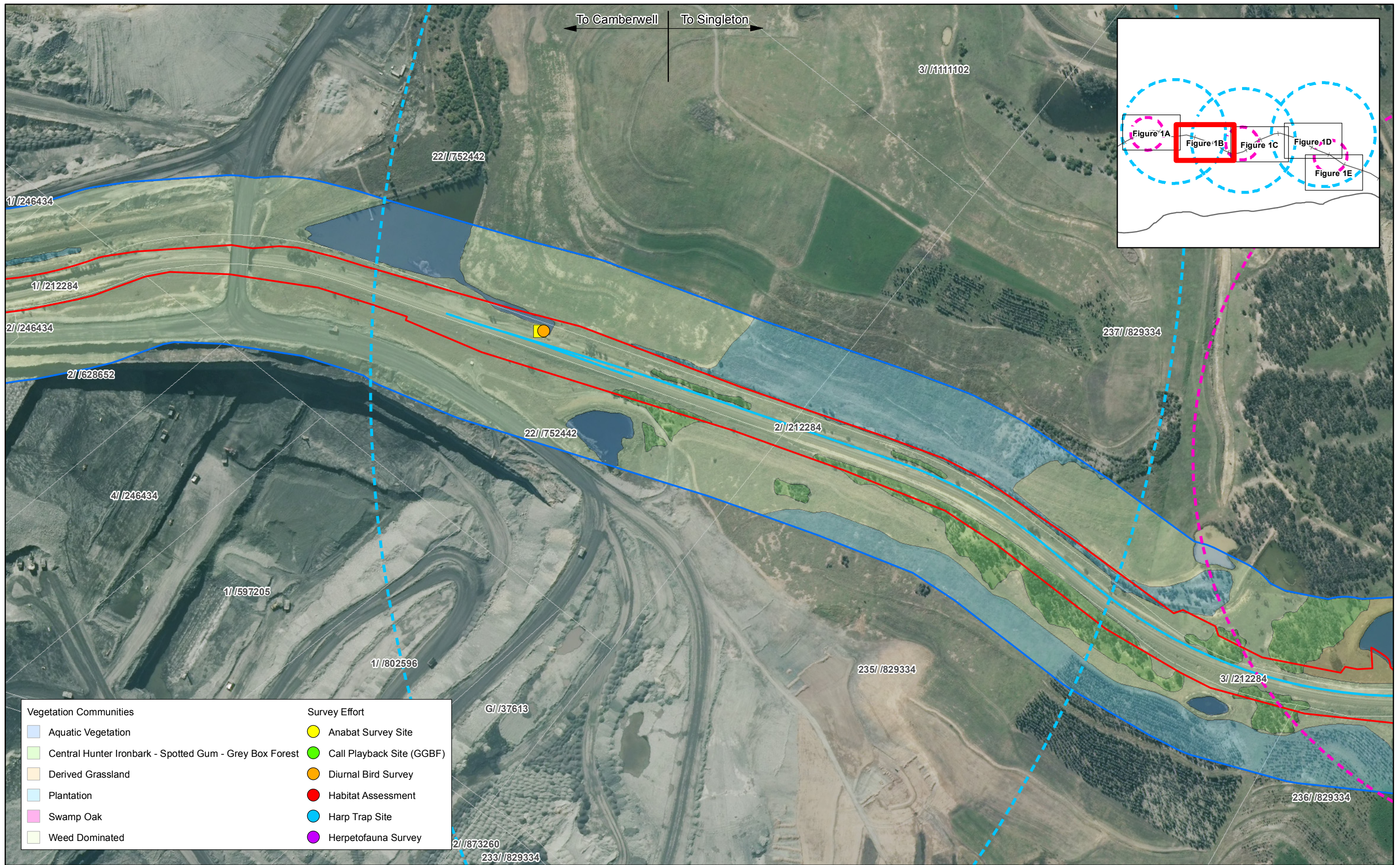
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- Hollow Bearing Tree
- Spotlight Transect
- Cadastre
- 100ha Biobanking Circle
- 1000ha Biobanking Circle
- Study Area
- Subject Site



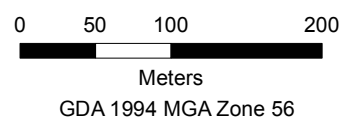
ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A1
Date	16.05.2011
Scale	1:5,000

Ecological Features Figure 1A



A3 Original



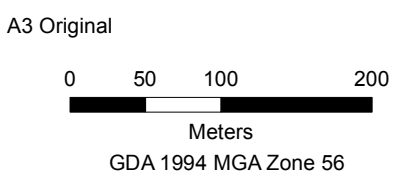
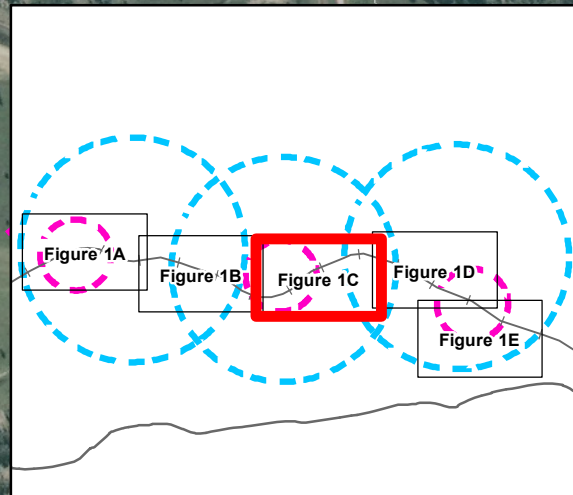
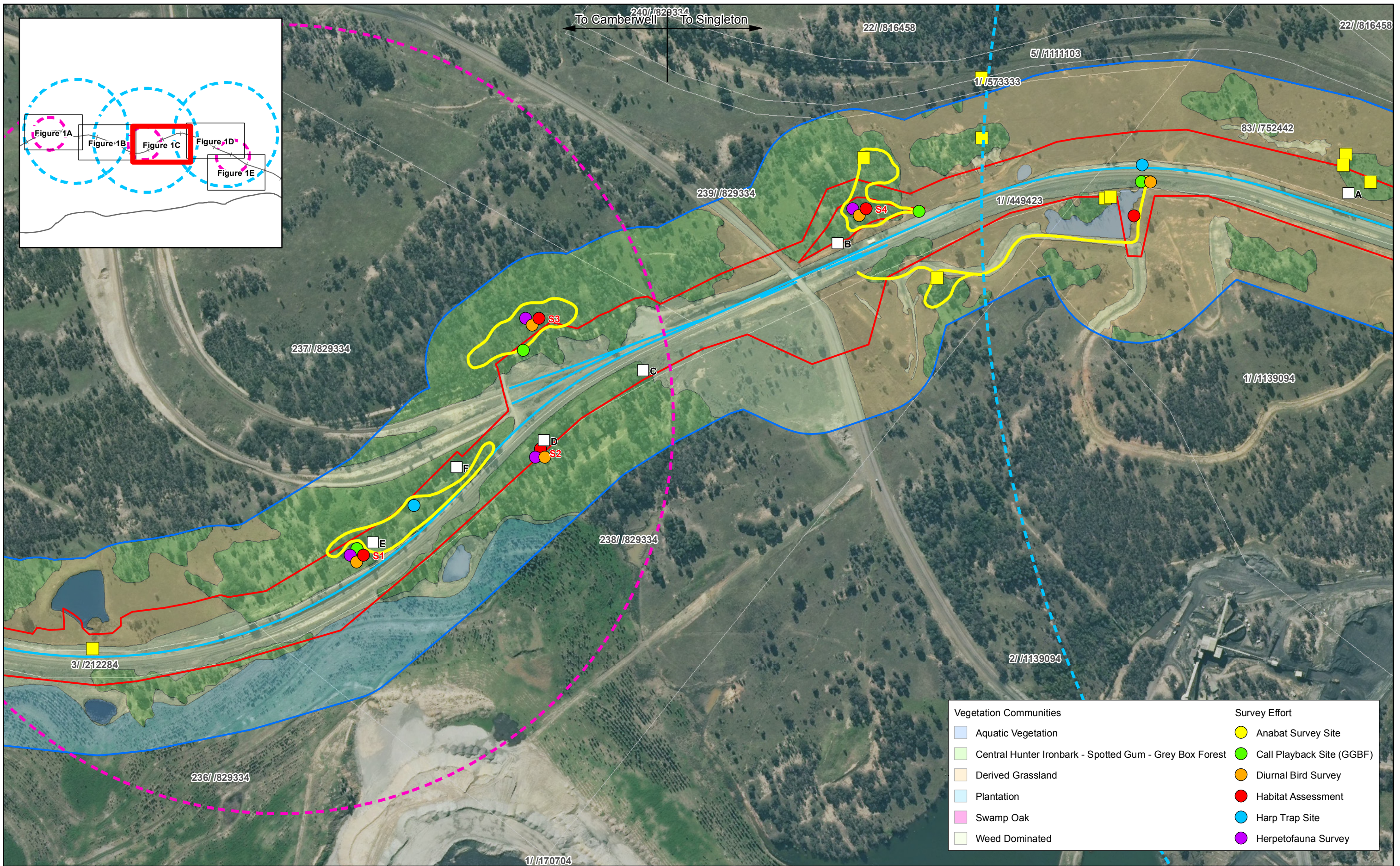
- | | | | |
|--|---------------------|--|--------------------------|
| | Flora Quadrat | | 100ha Biobanking Circle |
| | Hollow Bearing Tree | | 1000ha Biobanking Circle |
| | Spotlight Transect | | Study Area |
| | Cadastre | | Subject Site |



ARTC
Nundah Bank
Proposed Third Track

Job Number	2110501B
Revision	A1
Date	16.05.2011
Scale	1:5,000

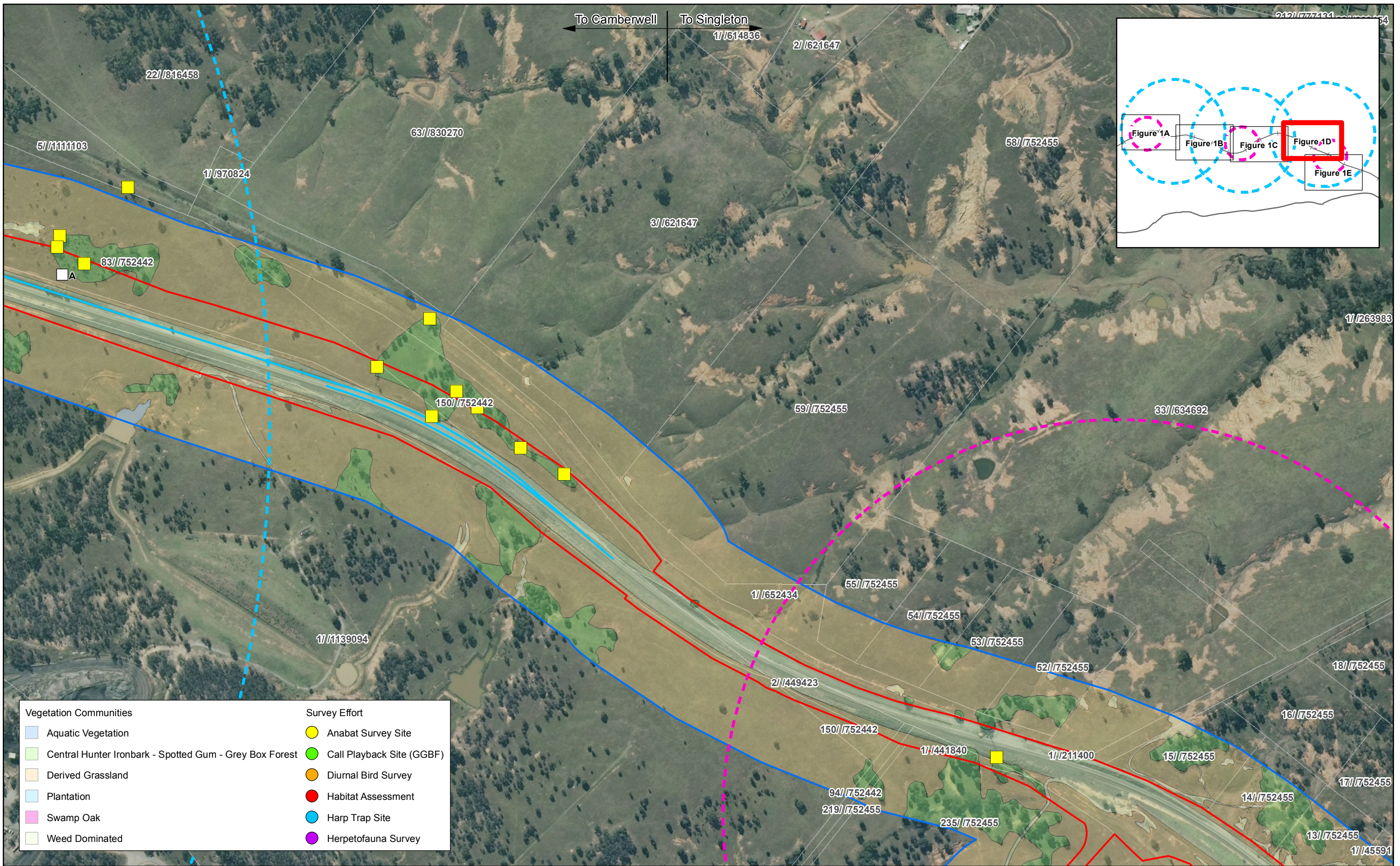
Ecological Features Figure 1B



ARTC
Nundah Bank
Proposed Third Track

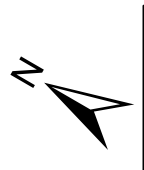
Job Number 2110501B
Revision A1
Date 16.05.2011
Scale 1:5,000

Ecological Features Figure 1C



Vegetation Communities		Survey Effort	
	Aquatic Vegetation		Anabat Survey Site
	Central Hunter Ironbark - Spotted Gum - Grey Box Forest		Call Playback Site (GGBF)
	Derived Grassland		Diurnal Bird Survey
	Plantation		Habitat Assessment
	Swamp Oak		Harp Trap Site
	Weed Dominated		Herpetofauna Survey

A3 Original
 0 50 100 200
 Meters
 GDA 1994 MGA Zone 56



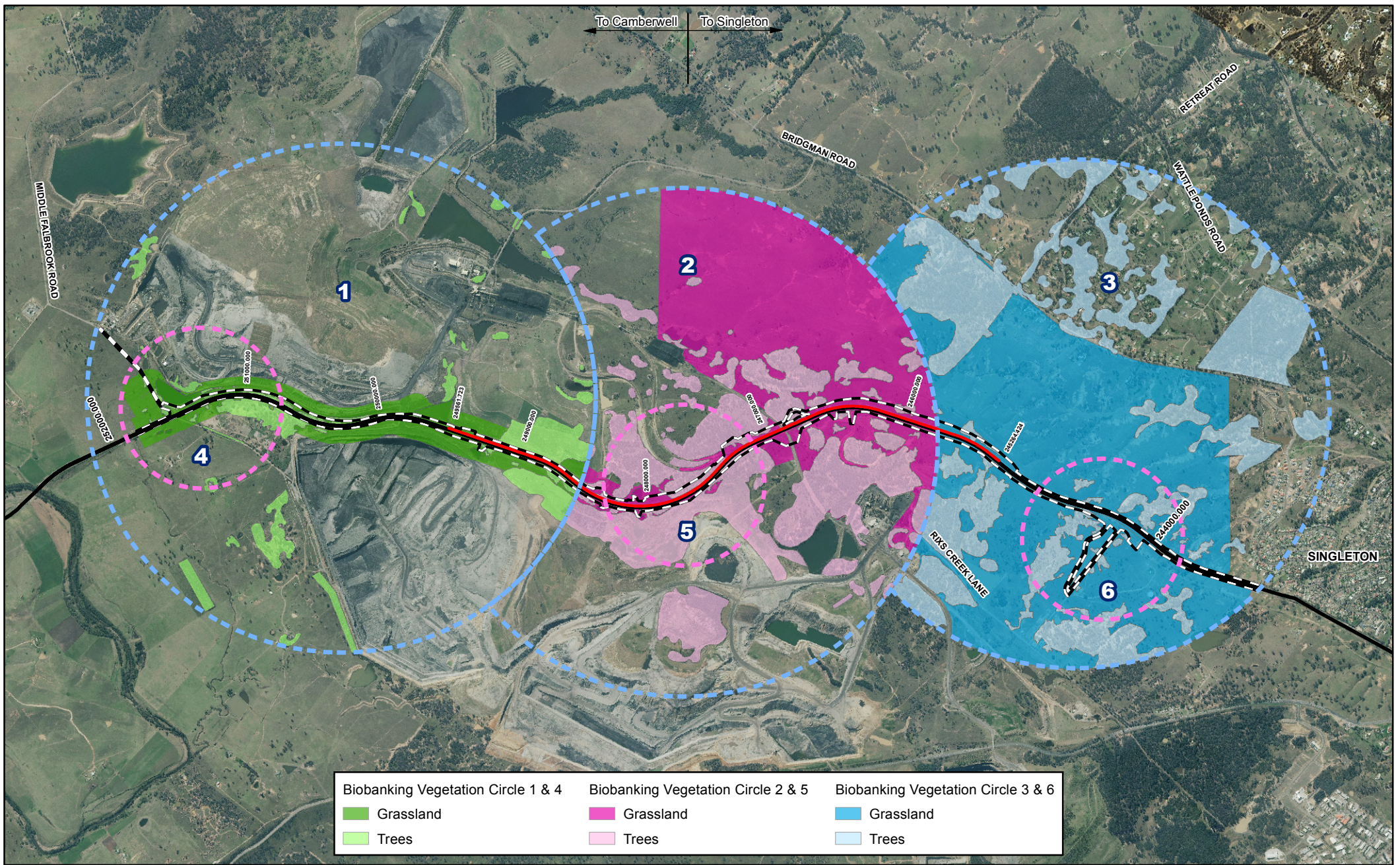
	Flora Quadrat		100ha Biobanking Circle
	Hollow Bearing Tree		1000ha Biobanking Circle
	Spotlight Transect		Study Area
	Cadastre		Subject Site



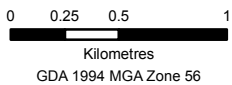
ARTC
 Nundah Bank
 Proposed Third Track

Job Number 2110501B
 Revision A1
 Date 16.05.2011
 Scale 1:5,000

Ecological Features Figure 1D



A4 Original



- Third Track
- Existing Alignment
- Proposed Impact Area

- Biobanking Circles**
- 100ha Circle
 - 1000ha Circle



ARTC
Nundah Bank

Job Number 2110501A
Revision A5
Date 19.05.2011
Scale 1:35,000

Landscape Assessment Figure X.X

Appendix C

Biobanking credit report

Biobanking Credit Report

This report identifies the number and type of credits required at a DEVELOPMENT SITE.

Date of report: 24/05/2011 Time: 16:47 Tool Version: 1.2

Development Details

Proposal ID: 0015/2011/D024

Development Name: Nundahbank loop

Development Location: Main North Railway, between 245.240 km and 249.500 km. Camberwell

Development Address:

CMA: Hunter/Central Rivers

Proponent Name: UHVA

Proponent Address: C/- Locked Bag 1, BROADMEADOW NSW 2292

Proponent Phone:

Assessor Name: Selga Harrington

Assessor Address: Level 7, 28 University Ave GPO Box 331 Canberra ACT 2601

Assessor Phone: 0424026374

Assessor Accreditation Number: 015

The following information is required to be submitted with this BioBanking Statement (where ticked)

- Local reference data is required for the following vegetation zones
- An Expert Report for the following species
- The minimum number of plots were not entered for the following vegetation zones



Improving or maintaining biodiversity values

The proposal has 1 or more Red Flag areas, as listed below:

Red Flag

Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Reason

Vegetation type contains an endangered ecological community;

The development does not improve or maintain biodiversity values and a biobanking statement cannot be issued.



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Ecosystem Credits

Vegetation Type

	Area (ha)	Credits Required	Red Flag
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin [HU556]	13.1	752	Yes
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin [HU556]	2.1	116	Yes
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin [HU556]	5.1	282	Yes
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin [HU556]	0.6	28	Yes
Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin [HU556]	2.6	80	Yes

Credit Profiles

Group: 1 Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Ecosystem credits: 752 credits

Total area of vegetation(s): 13.1 ha

1. Surrounding vegetation cover	2. Patch size, including low condition
<p>Description: Minimum surrounding vegetation cover in which the credits must be obtained.</p> <p>Minimum percent cover: 10%</p>	<p>Description: Minimum area of contiguous vegetation in which credits must be obtained.</p> <p>Minimum area: 100 ha</p>

3. CMA subregion & vegetation types

Credits must be obtained in any one or more of the following CMA Sub-regions and vegetation types:

Hunter/Central Rivers

CMA Sub-Region(s)

Hunter

Wyong

Veg Type(s)

Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)

Northern Rivers

CMA Sub-Region(s)

Stanthorpe Plateau

Veg Type(s)

New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213)

Group: 2 Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Ecosystem credits: 116 credits

Total area of vegetation(s): 2.1 ha



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1. Surrounding vegetation cover	2. Patch size, including low condition
<p>Description: Minimum surrounding vegetation cover in which the credits must be obtained.</p> <p>Minimum percent cover: 10%</p>	<p>Description: Minimum area of contiguous vegetation in which credits must be obtained.</p> <p>Minimum area: 25 ha</p>

3. CMA subregion & vegetation types

Credits must be obtained in any one or more of the following CMA Sub-regions and vegetation types:

Hunter/Central Rivers

CMA Sub-Region(s)

Hunter

Wyong

Veg Type(s)

Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)

Northern Rivers

CMA Sub-Region(s)

Stanthorpe Plateau

Veg Type(s)

New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213)

Group: 3 Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Ecosystem credits: 282 credits

Total area of vegetation(s): 5.1 ha

1. Surrounding vegetation cover	2. Patch size, including low condition
<p>Description: Minimum surrounding vegetation cover in which the credits must be obtained.</p> <p>Minimum percent cover: 10%</p>	<p>Description: Minimum area of contiguous vegetation in which credits must be obtained.</p> <p>Minimum area: 5 ha</p>

3. CMA subregion & vegetation types

Credits must be obtained in any one or more of the following CMA Sub-regions and vegetation types:

Hunter/Central Rivers

CMA Sub-Region(s)

Hunter

Wyong

Veg Type(s)

Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)

Northern Rivers

CMA Sub-Region(s)

Stanthorpe Plateau

Veg Type(s)

New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213)



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Group: 4 Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Ecosystem credits: 28 credits

Total area of vegetation(s): 0.6 ha

1. Surrounding vegetation cover	2. Patch size, including low condition
<p>Description: Minimum surrounding vegetation cover in which the credits must be obtained.</p> <p>Minimum percent cover: 10%</p>	<p>Description: Minimum area of contiguous vegetation in which credits must be obtained.</p> <p>Minimum area: 0 ha</p>

3. CMA subregion & vegetation types
Credits must be obtained in any one or more of the following CMA Sub-regions and vegetation types:

Hunter/Central Rivers

CMA Sub-Region(s)	Veg Type(s)
Hunter	Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)
Wyong	

Northern Rivers

CMA Sub-Region(s)	Veg Type(s)
Stanthorpe Plateau	New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213)

Group: 5 Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin

Ecosystem credits: 80 credits

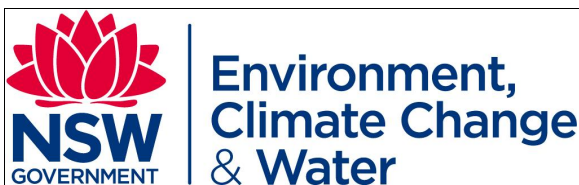
Total area of vegetation(s): 2.6 ha

1. Surrounding vegetation cover	2. Patch size, including low condition
<p>Description: Minimum surrounding vegetation cover in which the credits must be obtained.</p> <p>Minimum percent cover: 0%</p>	<p>Description: Minimum area of contiguous vegetation in which credits must be obtained.</p> <p>Minimum area: 0 ha</p>

3. CMA subregion & vegetation types
Credits must be obtained in any one or more of the following CMA Sub-regions and vegetation types:

Hunter/Central Rivers

CMA Sub-Region(s)	Veg Type(s)
Hunter	Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)
Wyong	



Northern Rivers

CMA Sub-Region(s)

Stanthorpe Plateau

Veg Type(s)

New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213)

Species Credits



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Appendix B

Consultation log with Registered Aboriginal Groups

Consultation Log				
Date Sent	From	To	Type	Content
29/06/2010	DPB	Hunter-Central Rivers Catchment Management Authority	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	National Native Title Tribunal	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	NTSCORP	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	Singleton Council	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	Wanaruah Local Aboriginal Land Council	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	DECCW - Coffs Harbour branch	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
29/06/2010	DPB	Office of the Registrar, Aboriginal Land Rights Act	Post	Request for names and contact details of relevant Aboriginal people and groups who may have an interest in the project
1/07/2010	Kashana Cohen-McMeekin, NN	DPB	Post	Results of Native Title search over project area
5/07/2010	Suzie Worth, Wanaruah LALC	Naomi L'Oste-Brown, KMH	Fax	Provision of list of Aboriginal people who may have an interest in the project; also registering an interest for the LALC
7/07/2010	DPB	Annie Hickey, Gidawaa Walang Cultural Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Arthur Fletcher, Wonn1 Consulting	Post	Invitation to register an interest in the project
7/07/2010	DPB	Barbara Foot/Reginald Eveleigh, Wanaruah Custodians	Post	Invitation to register an interest in the project

Date Sent	From	To	Type	Content
7/07/2010	DPB	Barry Anderson, Lower Wonnarua Tribal Consultancy Pty. Ltd.	Post	Invitation to register an interest in the project
7/07/2010	DPB	Barry McTaggard, Yarrawalk	Post	Invitation to register an interest in the project
7/07/2010	DPB	Brian and David Horton, Muswellbrook Cultural Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Christine Archibald, Hunter Valley Cultural Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Clifford Matthews, Mingga Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Darryl Matthews, Upper Hunter Heritage Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	David French, Hunter Valley Cultural & Natural Resources	Post	Invitation to register an interest in the project
7/07/2010	DPB	Des Hickey, Wattaka Wonnarua Cultural Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	George and Donna Sampson, Cacatua Culture Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Jean Hands, EllieLewis Aboriginal Corporation	Post	Invitation to register an interest in the project
7/07/2010	DPB	John and Margaret Matthews, Aboriginal Native Title Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Joseph and Gordon Griffiths, Wonnarua Cultural Heritage	Post	Invitation to register an interest in the project
7/07/2010	DPB	Justin Matthews, Carrawonga	Post	Invitation to register an interest in the project
7/07/2010	DPB	Kathleen Steward-Kinchela, Yinarr Cultural Services	Post	Invitation to register an interest in the project
7/07/2010	DPB	Larry Van Vliet, Valley Culture	Post	Invitation to register an interest in the project
7/07/2010	DPB	Laurie Perry and Sandra Miller, Wonnarua Nation Aboriginal Corporation	Post	Invitation to register an interest in the project
7/07/2010	DPB	Lea-Ann Ball (Miller), Lower Hunter Wonnarua Council	Post	Invitation to register an interest in the project
7/07/2010	DPB	Lloyd Matthews, Bullen Bullen Heritage Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Luke and Pansy Hickey, Hunter Valley Cultural Surveying	Post	Invitation to register an interest in the project
7/07/2010	DPB	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	Post	Invitation to register an interest in the project
7/07/2010	DPB	Rene Molineaux, St Clair Singleton Aboriginal Corporation	Post	Invitation to register an interest in the project

Date Sent	From	To	Type	Content
7/07/2010	DPB	Rhoda Perry and Tom Miller, Wonnarua Elders Council	Post	Invitation to register an interest in the project
7/07/2010	DPB	Rhonda Griffith, Hunter Valley Aboriginal Corporation	Post	Invitation to register an interest in the project
7/07/2010	DPB	Rick Coles, Hunter Traditional Owners	Post	Invitation to register an interest in the project
7/07/2010	DPB	Rodney Matthews and Michelle Stair, Giwiirr Consultants	Post	Invitation to register an interest in the project
7/07/2010	DPB	Scott Franks, Yarrowalk	Post	Invitation to register an interest in the project
7/07/2010	DPB	Taasha Layer, Ungooroo Aboriginal Corporation	Post	Invitation to register an interest in the project
7/07/2010	DPB	Tracey Skene, Culturally Aware	Post	Invitation to register an interest in the project
7/07/2010	DPB	Rhonda Ward, Ungooroo Cultural & Community Services Inc	Post	Invitation to register an interest in the project
7/07/2010	DPB	Victor Perry, Upper Hunter Wonnarua Council Inc	Post	Invitation to register an interest in the project
8/07/2010	Monica Collins, DECCW - Coffs	Naomi L'Oste-Brown, KMH	Post	Details of Aboriginal groups who may have an interest in the project
8/07/2010	Des Hickey, Wattaka Wonnarua	DPB	Fax	Registration of interest
9/07/2010	Mark Hickey, Kayaway Eco Cult	DPB	Email	Registration of interest
11/07/2010	Donna Sampson, Cacatua Cultu	Naomi L'Oste-Brown, KMH	Post	Registration of interest
12/07/2010	Ann Hickey, Gidawaa Walang	DPB	Post	Registration of interest
12/07/2010	Tracey Skene, Wonnarua Perso	DPB	Email	Registration of interest
12/07/2010	Rhonda Ward, Ungooroo Cultur	DPB	Fax	Registration of interest
12/07/2010	Rhonda Ward	DPB, Biosis Research	Phone	Rhonda rang as a curtesy call to let DPB know that she intends to send a registration letter to Biosis Research in the next day or so.
13/07/2010	DPB	Tracey White, Black Creek Aboriginal Corporation	Post	Invitation to register an interest in the project
13/07/2010	DPB	Cheryl Moodie & Justin Matthews, Carrawonta Consultants	Post	Invitation to register an interest in the project
13/07/2010	DPB	Tara and Rick Owners, Hunter Traditional Owners	Post	Invitation to register an interest in the project
13/07/2010	DPB	Luke Hickey, Hunter Valley Cultural Surveying	Post	Invitation to register an interest in the project
13/07/2010	DPB	David French, Hunter Valley Cultural & Natural Resources	Post	Invitation to register an interest in the project
13/07/2010	DPB	Lea-Ann Ball/Tommy Miller, Lower Hunter Wonnarua Council Inc	Post	Invitation to register an interest in the project

Date Sent	From	To	Type	Content
13/07/2010	DPB	Rick Griffiths, Mindaribba Local Aboriginal land Council	Post	Invitation to register an interest in the project
13/07/2010	DPB	Rhoda Perry, Upper Hunter Wonnarua Council Inc	Post	Invitation to register an interest in the project
13/07/2010	DPB	Kathleen Steward, Yinarr Cultural Services	Post	Invitation to register an interest in the project
13/07/2010	NTSCORP	Margaret Matthews	Post	Forwarding letter inviting groups to register an interest in the project
13/07/2010	Taasha Layer, Ungooroo Aborig	DPB	Email	Registration of interest
20/07/2010	John and Margaret Matthews, A	Naomi L'Oste-Brown, KMH	Fax	Registration of interest
20/07/2010	Thomas Miller, Lower Hunter Wonnarua Council Incorporated			Registration of interest
20/07/2010	Barry McTaggart, Yarrowalk	DPB	Fax	Registration of interest
21/07/2010	DPB	Donna Sampson, Cacatua Culture Consultants	Fax	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Justin Matthews, Carrawonga	Fax	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Des Hickey, Wattaka Wonnarua CCS	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Anne Hickey, Gidawaa Walang Cultural Heritage Consultancy	Fax	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	Fax	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Tracey Skene	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Rhonda Ward, Ungooroo Cultural & Community Services Inc	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Suzie Worth, WLALC	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes

Date Sent	From	To	Type	Content
21/07/2010	DPB	Barry McTaggart, Yarrawalk Enterprises	Email	Acknowledgement of registration of interest and request for nominated spokesperson and privacy wishes
21/07/2010	DPB	Suzie Worth, WLALC	Email	List of registered stakeholders and their contact details
22/07/2010	Ann Hickey, Gidawaa Walang	DPB	Fax	Confirmation of nominated spokesperson and privacy wishes
22/07/2010	Rhonda Ward, Ungooroo Cultural	DPB	Email	Confirmation of nominated spokesperson and privacy wishes
23/07/2010	Laurie Perry, Wonnarua Nation	DPB	Email	Registration of interest
29/07/2010	Kathleen Stewart Kinchella, Yinarr	DPB	Fax	Registration of interest
29/07/2010	DPB	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corp	email	Sent methodology
29/07/2010	DPB	Des Hickey, Manager, Wattaka Wonnarua CCS	email	Sent methodology
29/07/2010	DPB	Barry McTaggart, General Manager, Hunter and Northern Region	Post	Sent methodology
29/07/2010	DPB	Suzie Worth, Cultural Heritage Officer	Post	Sent methodology
29/07/2010	DPB	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	Post	Sent methodology
29/07/2010	DPB	Rhonda Ward Ungooroo Cultural and Community Services Incorporated	Post	Sent methodology
29/07/2010	DPB	Tracey Skene	Post	Sent methodology
29/07/2010	DPB	Thomas Miller Lower Hunter Wonnarua Council Incorporated	Post	Sent methodology
29/07/2010	DPB	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	Post	Sent methodology
29/07/2010	DPB	Anne Hickey, Project Officer Gidawaa Walang Cultural Heritage Consultancy	Post	Sent methodology
29/07/2010	DPB	Justin Matthews Carrawonga Consultants	Post	Sent methodology
29/07/2010	DPB	Donna Sampson, Administration Cacatua Culture Consultants	Post	Sent methodology
3/08/2010	Kathleen Stewart Kinchella, Yinarr	DPB	Email	Confirmation of nominated spokesperson and privacy wishes
3/08/2010	DPB	Kathleen Stewart-Kinchella, Yinarr Cultural Services	post	Sent methodology
3/08/2010	Des Hickey	DPB, Biosis Research	email	Des agrees with the methodology
9/08/2010	Rhonda Ward	DPB, Biosis Research	Phone	Doesn't have a problem with what's going on
9/08/2010	Rhonda Griffith	DPB, Biosis Research	Phone	They can do it - Paulette Ryan will be attending on 2

Date Sent	From	To	Type	Content
10/08/2010	DPB, Biosis Research	Rhonda Griffith	Phone	Called to speak to Rhonda but missed her - 02 6543 1180
12/08/2010	DPB, Biosis Research	Rhonda Griffith	Phone	Called to speak to Rhonda but missed her - 02 6543 1180
12/08/2010	DPB, Biosis Research	Cheryl Matthews	Phone	Informed by person that she was not available. Left my details with the person.
16/08/2010	DPB	DECCW - Coffs Harbour branch	Email	List of registered stakeholders and their contact details
17/08/2010	DPB, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	Phone	Asked if he is available to partake in a field survey on week 30th August, possibly week after. He reckons he is and can provide a medical.
17/08/2010	DPB, Biosis Research	Alan Paget, Ungooroo Aboriginal Corporation	Phone	Asked Alan Paget, Ungooroo Aboriginal Corporation if he is available to partake in a field survey on week 30th August, possibly week after. He reckons he is and can provide a medical.
17/08/2010	DPB, Biosis Research	Barry Mctaggart, Yarrowalk,	Phone	Asked Barry Mctaggart, Yarrowalk, if he is available to partake in a field survey on week 30th August, possibly week after. He reckons he is and can provide a medical.
17/08/2010	DPB, Biosis Research	Anne Hickey, Gidiwa Walang	Phone	Asked Anne Hickey, Gidiwa, if she is available to partake in a field survey on week 30th August, possibly week after. She reckons she is and can provide a medical.
18/08/2010	DPB, Biosis Research	Tony Chalker, Mine Inducter Integra	Phone	Rang about type of medical required - no answer
18/08/2010	DPB, Biosis Research	Pegasus inductions	Phone	Range about type of medical required. Need further details about the components of commercial drivers medical - Tamly from Pegasus mentioned that mentioned that a full medical is required including drug and alcohol, eyes, ears and felxibility is required
24/08/2010	DPB, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	email	Formal invite for survey and induction information
24/08/2010	DPB, Biosis Research	Alan Paget, Ungooroo Aboriginal Corporation	email	Formal invite for survey and induction information

24/08/2010	DPB, Biosis Research	Barry McTaggart, Yarrowalk,	email	Formal invite for survey and induction information
24/08/2010	DPB, Biosis Research	Anne Hickey, Gidiwa Walang	email	Formal invite for survey and induction information
24/08/2010	DPB, Biosis Research	Suzie Worth, WLALC	email	Formal invite for survey and induction information
25/08/2010	DPB, Biosis Research	Barry McTaggart, Yarrowalk,	phone	rang about survey. He is getting on it. Thinks the time frame may be difficult
25/08/2010	DPB, Biosis Research	Anne Hickey, Gidiwaa Walang	phone	Rang about survey she seemed ok with the dates.
25/08/2010	DPB, Biosis Research	Suzie Worth, WLALC	email	No answer
25/08/2010	DPB, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
25/08/2010	DPB, Biosis Research	Ungooroo Aboriginal Corporation	phone	spoke to Alan Paget about the survey and sent him an e-mail as taasha is on holiday sent to ungooroo@bigpond.com
25/08/2010	DPB, Biosis Research	Suzie Worth, WLALC	phone	No answer
25/08/2010	DPB, Biosis Research	Tracey Skene	phone	No answer - I rang to reply to her email if she would be involved in the field survey
26/08/2010	DPB, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
26/08/2010	DPB, Biosis Research	Suzie Worth	phone	No longer nominated spoesperson
26/08/2010	DPB, Biosis Research	Noel Downs	phone	They can do it - Paulette Ryan will be attending on 2
30/08/2010	DPB, Biosis Research	Noel Downs	phone	spoke about field survey. Spoke about Wayne who has a RISI card, and he already has the medical certificate.
30/08/2010	DPB, Biosis Research	Wayne French	phone	spoke about field survey. RISI card he already has the medical certificate. Wayne's number os 0409 126 258
30/08/2010	DPB, Biosis Research	Thomas Miller	phone	spoke about field survey. He is keen to attend, I told him about the ankle high boots. He is trying to organise his medical.
30/08/2010	DPB, Biosis Research	Alan Paget	phone	spoke about boots and possiblity of Friday survey. He's fine with that.
1/09/2010	DPB, Biosis Research	Lauren Pegasis	phone	rang about risi training req for medical - they don't know and will find out and call me back
23/11/2010	PBK	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corg	Post	Sent report
23/11/2010	PBK	Des Hickey, Manager, Wattaka Wonnarua CCS	Post	Sent report
23/11/2010	PBK	Barry McTaggart, General Manager, Hunter and Northern Region	Post	Sent report
23/11/2010	PBK	Suzie Worth, Cultural Heritage Officer	Post	Sent report
23/11/2010	PBK	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	Post	Sent report

Date Sent	From	To	Type	Content
23/11/2010	PBK	Rhonda Ward Ungooroo Cultural and Community Services Incorporated	Post	Sent report
23/11/2010	PBK	Tracey Skene	Post	Sent report
23/11/2010	PBK	Thomas Miller Lower Hunter Wonnarua Council Incorporated	Post	Sent report
23/11/2010	PBK	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	Post	Sent report
23/11/2010	PBK	Anne Hickey, Project Officer Gidawaa Walang Cultural Heritage Consultancy	Post	Sent report
23/11/2010	PBK	Justin Matthews Carrawonga Consultants	Post	Sent report
23/11/2010	PBK	Donna Sampson, Administration Cacatua Culture Consultants	Post	Sent report
23/11/2010	PBK	Kathleen Steward-Kinchela, Yinarr Cultural Services	post	Sent report
29/11/2010	PBK	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	Post	Re-sent report as Mark had changed address
29/11/2010	GWCHC - Anne Hickey	Pamela Kottaras	letter	In support of the assessment recommendations
16/12/2010	JML, Biosis Research	Des Hickey, Manager, Wattaka Wonnarua CCS	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Mark Hickey, Kayaway Manager Kayaway Eco Cultural & Heritage Services	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Suzie Worth, WLALC	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	rang to advise of closing date for comments but no answer and no message facility

Date Sent	From	To	Type	Content
16/12/2010	JML, Biosis Research	Barry McTaggart, Yarrowalk,	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corporation	email	email advising of closing date for comments on report and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Tracey Skene	phone	left message advising of closing date for comments and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Donna Sampson, Administration Cacatua Culture Consultants	phone	Spoke to Donna regarding comments; advised that she would send through before the closing date
16/12/2010	JML, Biosis Research	Rhonda Ward Ungooroo Cultural and Community Services Incorporated	phone	left message advising of closing date for comments and that comments would be accepted verbally or in writing
16/12/2010	JML, Biosis Research	Justin Matthews Carrawonga Consultants	phone	left message advising of closing date for comments and that comments would be accepted verbally or in writing
20/12/2010	Cacatua CC - Donna Sampson	Pamela Kottaras	phone	Happy with the assessment recommendations; believes that every effort will be made to protect Aboriginal cultural heritage
2/03/2011 - 12:22 pm	Samantha Gibbins (SJG) Biosis Research	Barry McTaggart, Yarrowalk	phone	Spoke to Barry regarding Aboriginal Cultural Heritage Assessment - report sent in November was not received. Barry confirmed postal address for re-sending the report

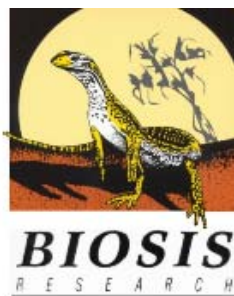
Date Sent	From	To	Type	Content
2/03/2011	SJG, Biosis Research	Des Hickey, Manager, Wattaka Wonnaraua CCS	email	Email requesting confirmation of postal address for re-sending the report
2/03/2011	Des Hickey, Wattaka Wonnarua	SJG, Biosis Research	email	Email advising report sent in November was not received and confirming postal address for re-sending the report
2/03/2011 - 12:25 pm	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	left message requesting confirmation of postal address for re-sending the report
2/03/2011 - 12:27 pm	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	No answer
2/03/2011 - 12:33 pm	SJG, Biosis Research	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corporation	phone	Spoke to Laurie regarding Aboriginal Cultural Heritage Assessment - report sent in November was not received. Laurie confirmed postal address for re-sending the report
2/03/2011 - 12:35 pm	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	No answer
2/03/2011 - 12:38 pm	SJG, Biosis Research	Ungooroo Aboriginal Corporation	phone	Spoke to Jess who confirmed postal address for re-sending the report
2/03/2011 - 12:40 pm	SJG, Biosis Research	Tracey Skene, Wonnarua Person and Traditional Owner	phone	left message requesting confirmation of postal address for re-sending the report
2/03/2011 - 12:43 pm	SJG, Biosis Research	Rhonda Ward, Ungooroo Cultural & Community Services Inc	phone	Spoke to Rhonda regarding Aboriginal Cultural Heritage Assessment - report sent in November was not received. Rhonda confirmed postal address for re-sending the report
2/03/2011 - 12:47 pm	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
2/03/2011 - 12:49 pm	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	No answer
2/03/2011	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	email	Email requesting confirmation of postal address for re-sending the report
2/03/2011 - 2:31 pm	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	Spoke to Justin regarding Aboriginal Cultural Heritage Assessment - report sent in November was not received. Justin confirmed postal address for re-sending the report
2/03/2011 - 2:40 pm	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	Spoke to Mark and he confirmed postal address for re-sending the report
2/03/2011 - 2:54 pm	Tracey Skene, Wonnarua Person	SJG, Biosis Research	phone	Tracey confirmed postal address for re-sending the report
2/03/2011 - 2:59 pm	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	No answer

Date Sent	From	To	Type	Content
2/03/2011 - 3:01 pm	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
2/03/2011 - 3:03 pm	SJG, Biosis Research	Lea-Ann Ball, Lower Hunter Wonnarua Council Incorporated	phone	Lea-Ann confirmed postal address for re-sending the report
3/03/2011 - 11:18 am	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	No answer
3/03/2011 - 12:00 pm	Kathleen Steward-Kinchela, Yinarr Cultural Services	SJG, Biosis Research	phone	Kathy confirmed postal address for re-sending the report (did not receive report that was sent in November)
3/03/2011	SJG, Biosis Research	Barry McTaggart, Yarrowalk	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Des Hickey, Manager, Wattaka Wonnarua CCS	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Justin Matthews, Carrawonga	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corporation	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Tracey Skene, Wonnarua Person and Traditional Owner	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Rhonda Ward, Ungooroo Cultural & Community Services Inc	post	Sent report for comment
3/03/2011	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	post	Sent report for comment
7/03/2011 - 4:31 pm	Kathleen Steward-Kinchela, Yinarr Cultural Services	SJG, Biosis Research	phone	Kathy confirmed receipt of report and asked about process of selection of RAPs for participation in the survey
8/03/2011 - 12:19 pm	SJG, Biosis Research	Barry McTaggart, Yarrowalk	phone	Left msg for Barry to confirm receipt of report and a reminder that comments are due by 18 March 2011
8/03/2011 - 12:22 pm	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	Left msg for Justin to confirm receipt of report and a reminder that comments are due by 18 March 2011
8/03/2011 - 12:25 pm	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	Spoke to Kathy re: process of selection of RAPs for participation in the survey; reminded Kathy that comments on report are due by 18 March 2011
8/03/2011 - 12:29 pm	SJG, Biosis Research	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corporation	phone	Laurie confirmed receipt of report and I reminded him that comments are due by 18 March 2011
8/03/2011 - 12:34 pm	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	No answer
8/03/2011 - 12:36 pm	SJG, Biosis Research	Ungooroo Aboriginal Corporation	phone	Spoke to Jess who will check post and advise SJG if report has not arrived

Date Sent	From	To	Type	Content
8/03/2011 - 12:40 pm	SJG, Biosis Research	Tracey Skene, Wonnarua Person and Traditional Owner	phone	Left msg for Tracey to confirm receipt of report and a reminder that comments are due by 18 March 2011
8/03/2011 - 12:43 pm	SJG, Biosis Research	Rhonda Ward, Ungooroo Cultural & Community Services Inc	phone	Left msg for Rhonda to confirm receipt of report and a reminder that comments are due by 18 March 2011
8/03/2011 - 12:46 pm	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
8/03/2011 - 12:47 pm	SJG, Biosis Research	Lea-Ann Ball, Lower Hunter Wonnarua Council Incorporated	phone	Spoke to Lea-Ann who will check post and advise SJG if report has not arrived; reminded Lea-Ann that comments are due by 18 March 2011
8/03/2011	SJG, Biosis Research	Des Hickey, Manager, Wattaka Wonnarua CCS	email	Email requesting confirmation of receipt of report and a reminder that comments are due by 18 March 2011
8/03/2011 - 1:08 pm	Tracey Skene, Wonnarua Person	SJG, Biosis Research	phone	Tracey confirmed report has been received
9/03/2011	Des Hickey, Manager, Wattaka	SJG, Biosis Research	email	Email confirming receipt of report
10/03/2011	Des Hickey, Manager, Wattaka	PBK, Biosis Research	fax	Letter in support of report recommendations
16/03/2011 - 3:20 pm	SJG, Biosis Research	Barry McTaggart, Yarrowalk	phone	Spoke to Barry who advised that: Yarrowalk agrees with the report recommendation provided Yarrowalk is given the opportunity to be involved in infrastructure work including fencing of areas near and around sites, road and rail construction and the like
16/03/2011	SJG, Biosis Research	Barry McTaggart, Yarrowalk	email	Email requesting confirmation of verbal comments on report received over phone
16/03/2011	Barry McTaggart, Yarrowalk	SJG, Biosis Research	email	Email confirming comments on report
16/03/2011 - 3:38 pm	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	Left a msg reminding Justin of report comments deadline
16/03/2011 - 3:40 pm	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	Left a msg reminding Kathy of report comments deadline
16/03/2011 - 3:43 pm	SJG, Biosis Research	Laurie Perry, Chairperson / Director, Wonnarua Nation Aboriginal Corporation	phone	Spoke to Laurie and reminded him of report comments deadline
16/03/2011 - 3:45 pm	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	No answer
16/03/2011 - 3:49 pm	SJG, Biosis Research	Ungooroo Aboriginal Corporation	phone	Spoke to Jess who will remind Taasha Layer of the report comments deadline

Date Sent	From	To	Type	Content
16/03/2011 - 3:53 pm	SJG, Biosis Research	Rhonda Ward, Ungooroo Cultural & Community Services Inc	phone	Left a msg reminding Rhonda of report comments deadline
16/03/2011 - 3:56 pm	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	Spoke to Tommy and reminded him of report comments deadline
16/03/2011 - 4:32 pm	SJG, Biosis Research	Tracey Skene, Wonnarua Person and Traditional Owner	phone	Spoke to Tracey and reminded her of report comments deadline
18/03/2011	Tracey Skene, Wonnarua Person and Traditional Owner	SJG, Biosis Research	email	Email with report comments received
18/03/2011 - 10:48 am	SJG, Biosis Research	Tracey Skene, Wonnarua Person and Traditional Owner	phone	Left a msg requesting confirmation that email comments can be included in report
18/03/2011 - 10:53 am	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	Left a msg reminding Justin of report comments deadline today
18/03/2011 - 10:57 am	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	Spoke to Mark and reminded him of the report comments deadline today
18/03/2011 - 10:59 am	SJG, Biosis Research	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	phone	Left a msg reminding Taasha of report comments deadline today
18/03/2011 - 11:01 am	SJG, Biosis Research	Rhonda Ward, Ungooroo Cultural & Community Services Inc	phone	Spoke to Rhonda - Rhonda advised SJG that they are unable to comment on the report because they didn't work on the project
18/03/2011 - 11:12 am	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	phone	No answer
18/03/2011 - 11:44 am	Ungooroo Aboriginal Corporation	SJG, Biosis Research	phone	Spoke to Alan who provided report comments over the phone
18/03/2011 - 1:47 pm	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	No answer
18/03/2011	SJG, Biosis Research	Ungooroo Aboriginal Corporation	email	Email requesting confirmation of verbal comments on report received over phone
18/03/2011	Tracey Skene, Wonnarua Person and Traditional Owner	SJG, Biosis Research	email	Email confirming comments sent via email can be included in report
18/03/2011	Laurie Perry, Chairperson / Director	Pamela Kottaras, Biosis Research	email	Email with report comments received
18/03/2011	Kathleen Steward-Kinchela, Yinarr Cultural Services	Pamela Kottaras, Biosis Research	phone	Pamela spoke to Kathy who provided report comments over the phone
18/03/2011	PBK, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	email	Email requesting confirmation of verbal comments on report received over phone
21/03/2011 - 10:38 am	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	No answer
21/03/2011 - 10:42 am	SJG, Biosis Research	Taasha Layer, Manager, Ungooroo Aboriginal Corporation (UAC)	phone	Spoke to Taasha who will follow up with Alan re: email confirmation of report comments

Date Sent	From	To	Type	Content
22/03/2011	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	email	Follow up email requesting confirmation of verbal comments on report received over phone
24/03/2011 - 9:23 am	SJG, Biosis Research	Justin Matthews, Carrawonga	phone	Left a msg requesting Justin to provide any report comments to me
24/03/2011 - 9:25 am	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	phone	Spoke to Mark and he will try to send comments to me by the end of this week
24/03/2011 - 9:27 am	SJG, Biosis Research	Thomas Miller, Lower Hunter Wonnarua Council Incorporated	phone	Spoke to Tommy and he will try to get comments to me by tomorrow
29/03/2011	SJG, Biosis Research	Kathleen Steward-Kinchela, Yinarr Cultural Services	email	Email requesting confirmation of verbal comments on report received over phone
29/03/2011	SJG, Biosis Research	Ungooroo Aboriginal Corporation	email	Email requesting confirmation of verbal comments on report received over phone
29/03/2011	Ungooroo Aboriginal Corporation	SJG, Biosis Research	email	Email confirming verbal comments on report received over phone
29/03/2011 - 12:13 pm	Ungooroo Aboriginal Corporation	SJG, Biosis Research	phone	Taasha following up to make sure the email was received; will check with Alan to see if he has any further comments
30/03/2011	Mark Hickey, Kayaway Manager	Dominic Brady, Biosis Research	email	Email + attached letter with report comments received
31/03/2011	SJG, Biosis Research	Mark Hickey, Kayaway Manager, Kayaway Eco Cultural & Heritage Services	email	Email confirming receipt of report comments
8/04/2011	SJG, Biosis Research	Ungooroo Aboriginal Corporation	email	Email follow up on report comments
8/04/2011	Ungooroo Aboriginal Corporation	SJG, Biosis Research	email	Email confirming agreement with overall report recommendations



Barry McTaggart
General Manager Hunter and Northern Region
Yarrowalk Enterprises
913 Wollombi Road
Broke, NSW 2330

23 November 2010

Dear Barry,

RE: NUNDAH BANK THIRD TRACK CULTURAL HERITAGE ASSESSMENT

As per the 'Interim Community Consultation Requirements for Applicants (DEC (now DECCW) 2004)' and *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) please find enclosed the Nundah Bank Third Track Cultural Heritage Assessment.

Your comments on the assessment are invited. Please provide your views no later than 21 December 2010. You are also invited to consider when providing your views:

- How would you describe the cultural significance of Aboriginal cultural heritage sites relevant to the Project Area – particularly those within and in the immediate vicinity of the Project Area?
- Are there any other strategies that would help manage potential development related impacts to Aboriginal cultural heritage that could be implemented at this stage or at later stages of the project?
- Is there any further information about the proposed development and proposed cultural heritage assessment process you would like KMH Environmental/Biosis Research to provide at this stage of the project?
- Are there any other Aboriginal cultural heritage assessment requirements you would like addressed?

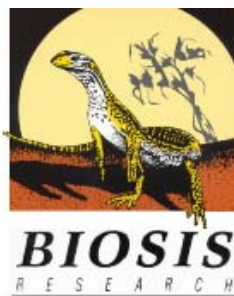
Please advise KMH Environmental/Biosis Research of specific protocols, including restrictions, associated with knowledge your party shares concerning the cultural significance of Aboriginal cultural heritage relevant to the Project Area.

You may note that some page numbers are missing; this will be rectified with the final report. If you have any comments, please identify by report section.

Please do not hesitate to contact myself on (02) 9690 2777 or pkottaras@biosisresearch.com.au to discuss this letter or enclosures.

Yours sincerely,

Pamela Kottaras
Team Leader



Barry McTaggart
General Manager Hunter and Northern Region
Yarrowalk Enterprises
913 Wollombi Road
Broke NSW 2330

2 March 2011

Dear Barry,

RE: NUNDAH BANK THIRD TRACK CULTURAL HERITAGE ASSESSMENT

As per the 'Interim Community Consultation Requirements for Applicants (DEC (now DECCW) 2004)' and *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) please find enclosed the Nundah Bank Third Track Cultural Heritage Assessment.

Biosis Research originally sent the report to you for comment on 23 November 2010, but we have not as yet received a response. Our client has requested that we re-send the report to you today and invite you to provide any comments by **no later than Friday 18 March 2011**.

Comments will be accepted via letter, fax, email or telephone to Sam Gibbins at Biosis Research (see contact details below). If you have any comments, please identify by report section (e.g. Section 7.0 Recommendations). You are also invited to consider when providing your views:

- How would you describe the cultural significance of Aboriginal cultural heritage sites relevant to the Project Area – particularly those within and in the immediate vicinity of the Project Area?
- Are there any other strategies that would help manage potential development related impacts to Aboriginal cultural heritage that could be implemented at this stage or at later stages of the project?
- Is there any further information about the proposed development and proposed cultural heritage assessment process you would like KMH Environmental/Biosis Research to provide at this stage of the project?
- Are there any other Aboriginal cultural heritage assessment requirements you would like addressed?

Please advise KMH Environmental/Biosis Research of specific protocols, including restrictions, associated with knowledge your party shares concerning the cultural significance of Aboriginal cultural heritage relevant to the Project Area.

Please don't hesitate to contact me if you have any questions.

Yours sincerely,

Samantha Gibbins
Field Archaeologist
ph: 02 9690 2777
fax: 02 9690 2577
mob: 0408 551 439
email: sgibbins@biosisresearch.com.au

*Biosis Research Pty. Ltd. A.B.N. 65 006 175 097 A.C.N. 006 175 097
18-20 Mandible Street, Alexandria, NSW 2015
Phone: (02) 9690 2777 Fax (02) 9690 2577
Email: sydney@biosisresearch.com.au*

Appendix C

Correspondence from Registered Aboriginal Groups

Samantha Gibbins

From: Lyn O'Brien
Sent: Friday, 18 March 2011 9:23 AM
To: Samantha Gibbins
Subject: FW: Sent to me but your project.

From: Tracey Skene [REDACTED]
Sent: Friday, 18 March 2011 9:20 AM
To: Lyn O'Brien
Subject:

Hi Samantha

Re: Nundah Bank Third Track Cultural Heritage Assessment

Culturally Aware have Read the Report that Biosis has been commisioned to undertake for the above project and agree with the recommendation they have prosed for this Management Plan.

Culturally Aware input:

How would you describe the cultrual significance of Aboriginal culture heritage sites relevant to the project are-particularly those within and in the immediate vicinity of the project area ?
All sites within these areas and surrounding areas are of high Importance to the Aboriginal Communities as these site are evidence of our past ancestors.

Are there any other strategies that would help manage potential developement related impacts to Aboriginal Cultural heritage that could be implemented at this stage or at later stage of the project ?
Contruction plans should be assessed before hand so sites can be avoided and redesigned around known sites and if this is unavoidable to do then the process of Aboriginal consultation should take place imediately.

Is there any further information about the proposed developementand and proposed cultural heritage assessment process you would like KMH Environmental/Biosis Research to provide at this stage of the project?
Culturally Aware will have input to this area at a later stage.

Are there any other Aboriginal Cultural heritage assessment requirements you would like addressed?
Not at this point of time.

Yours Sincerly
Tracey Skene



Wattaka Wonnarua CCS-Des Hickey Manager

8/3/2011

To: P Kottaras
Team Leader
18-20 Mandible Street
Alexandria NSW 2015

Dear Pamela

Re: Nundah Bank Third Track Cultural Heritage Assessment

Wattaka received the cultural heritage assessment report and we agree with the Recommendations that Biosis Research as put forward for this project, However in saying that we are also off the same opinion as the Wonnarua Local Aboriginal Land Council recommendation that they pointed out in there response letting, their concerns must be taken into consideration.

We look forward to continuing our consultation process with Biosis Research, please do not hesitate to contact me on the above phone or email address if you require any further information concerning this project.

Yours sincerely

Des Hickey
Manager WWCCS

Samantha Gibbins

From: Barry McTaggart [REDACTED]
Sent: Wednesday, 16 March 2011 4:07 PM
To: Samantha Gibbins
Subject: RE: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - Comments

Samantha

As advised previously Yarrawalk agrees with your recommendations provided. Yarrawalk is given the opportunity to be involved in infrastructure work including fencing of areas near and around sites, road and rail construction and the like.

Barry McTaggart
Yarrawalk

From: Samantha Gibbins [mailto:SGibbins@biosisresearch.com.au]
Sent: Wednesday, 16 March 2011 3:37 PM
To: [REDACTED]
Subject: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - Comments

Hi Barry,

Could you please confirm via return email to me the following comments you provided over the phone this afternoon regarding the Nundah Bank Third Track Aboriginal Cultural Heritage Assessment:

- Yarrawalk is in agreement with the report recommendations
- Yarrawalk wishes to be involved in any future work that may take place, including preservation and the fencing off of sites and areas of sensitivity

Please let me know if any changes should be made to these comments, or if you have any further comments to make.

The deadline for comment is this Friday, 18th March 2011.

Kind regards,

Sam

Samantha Gibbins

Field Archaeologist
Mobile: 0408 551 439
Email: SGibbins@biosisresearch.com.au

Biosis Research Pty. Ltd.
Natural and Cultural Heritage Consultants
18 Mandible Street
Alexandria NSW 2015
ph: (02) 9690 2777
fax: (02) 9690 2577
www.biosisresearch.com.au

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18/03/2011

Samantha Gibbins

From: Pamela Kottaras
Sent: Monday, 21 March 2011 9:23 AM
To: Samantha Gibbins
Subject: FW: Nundah Bank Third Track
Attachments: GHD_12-month actions_27April10.pdf

Pamela Kottaras

Team Leader – Cultural Heritage
Mobile: **0409 199 785**
Email: pkottaras@biosisresearch.com.au

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Natural and Cultural Heritage Consultants
18-20 Mandible Street
Alexandria NSW 2015
ph: (02) 9690 2777
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From: Josephine Dessmann
Sent: Monday, 21 March 2011 9:21 AM
To: Pamela Kottaras
Subject: FW: Nundah Bank Third Track

From: L Perry [REDACTED]
Sent: Friday, 18 March 2011 1:19 PM
To: Sydney
Cc: Tracey Skene
Subject: Nundah Bank Third Track

ATT: Pamela Kottaras
Team Leader
Biosis Research
18-20 Mandible Street
Alexandria NSW 2015

18th March 2011

By email

22/03/2011

Dear Pamela

I have read the The Third Bank Track Cultural Heritage Assessment Report and would like to say that I am happy with the outcome at this stage of the process and would like to be included in all aspects of work inside the recommendations.

I would like to add that the new Third Bank Track area has close ties with the Wonnarua Nation Aboriginal Corporation members as indicated in the report because we own the former Aboriginal St Clair Mission property 10 kilometres down the road and have Traditional ties with the area.

The Wonnarua Nation Aboriginal Corporation have developed a Property Management Plan for St Clair [see our website below] and are currently entering into a Bio Banking Offset Agreement with ARTC for the Minimbah to Maitland new rail line with our other property Valley Arm near the town of Broke see our website about Valley Arm property Management Plan.

This agreement involves ARTC, GHD, DECCW and the contractor John Holland Construction this consortium are called the HUNTER 8 ALLIANCE.

I would like to pursue a Offset option for our property St Clair Mission or Valley Arm for the destruction off our Culture and Heritage for the Nundah Bank Third Track Project.

See attachment of what we have been doing over the last 12 months as we are close to nearly signing off this historic agreement.

I have included our culture and heritage unit in this reply.

Please call me for further discussions.

Yours Truly

Laurie Perry
CEO
Wonnarua Nation Aboriginal Corporation

[Redacted signature block]

Samantha Gibbins

From: Samantha Gibbins

Sent: Friday, 18 March 2011 4:19 PM

To: [REDACTED]

Subject: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Dear Allan,

Could you please confirm via return email to me the following comments you provided over the phone this afternoon regarding the Nundah Bank Third Track Aboriginal Cultural Heritage Assessment:

1. Any sites that will be impacted by the proposed works should have a Section 90 for destruction with the collection of as many artefacts as possible.
2. Potential subsurface deposits at the campsite at the railway crossing northeast of Middle Falbrook Road will be impacted by the proposed 2 acre compound (machinery plant).

In regards to your first comment, I can inform you that Biosis Research has included recommendations for collection at any of the sites that will be impacted. In relation to your second concern, that compound has now been removed because the site was identified as having moderate archaeological sensitivity, so it will not be impacted.

Please let me know if you have any further comments to make.

Kind regards,

Sam

Samantha Gibbins

Field Archaeologist

Mobile: **0408 551 439**

Email: SGibbins@biosisresearch.com.au

Biosis Research Pty. Ltd.

Natural and Cultural Heritage Consultants

18 Mandible Street

Alexandria NSW 2015

ph: (02) 9690 2777

fax: (02) 9690 2577

www.biosisresearch.com.au

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Samantha Gibbins

From: Pamela Kottaras
Sent: Friday, 18 March 2011 6:41 PM
To: [REDACTED]
Cc: Samantha Gibbins
Subject: Nundah Bank

Hi Kathleen,

Thanks for calling with your response to the report. It is much appreciated.

I have reproduced your comments below. Please let Sam know if you're happy with what I wrote:

- Sites that were identified should be collected and reburied or kept in safe storage
- The sites are of low cultural significance and Kathleen agrees with the methodology in the report

Sam, these comments are from Kathleen Kinchela of Yinarr Cultural Services for the Nundah Bank report. Kathleen will respond to this email to confirm what I wrote is what she intended.

Regards,

Pamela Kottaras

Team Leader – Cultural Heritage
Mobile: **0409 199 785**
Email: pkottaras@biosisresearch.com.au

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Natural and Cultural Heritage Consultants
18-20 Mandible Street
Alexandria NSW 2015
ph: (02) 9690 2777
fax: (02) 9690 2577
www.biosisresearch.com.au

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Gidawaa Walang

Wiradjuri Meaning ~ Goanna Turning the Stone

Cultural Heritage Consultancy

...To keep our Culture...

29th November 2010

Pamela Kottaras
Team Leader
Biosis Research Pty Ltd
18-20 Mandible Street
Alexandria,
NSW 2015

Dear Pamela,

Re: Nundah Bank Third Track Cultural Heritage Assessment

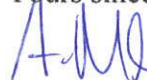
Gidawaa Walang Cultural Heritage Consultancy believes all cultural heritage sites found in the area are important, we also support there should be continued consultation with the registered Aboriginal stakeholders and a Development of a Conservation Heritage Management Sub Plan.

We also support the recommendations listed below that were included in the report for KMH Environmental October 2010 :-

Conservation opportunities through avoidance,

Aboriginal Cultural Heritage sites
Zone of moderate (Archaeological) sensitivity
Zone of low (Archaeological) sensitivity
Additional areas
Ongoing management
Unanticipated Aboriginal sites
We support the strategies that Biosis have put into place for the above project.

Yours sincerely



Ann Hickey
Project Officer

**76 Lang Street
Kurri Kurri
NSW 2327**



**Phone: 4937 1094
Fax: 4936 4449
Mob: 0411 196 991**



25 January 2011

Ms P Kottaras
Team Leader
Biosis Research
18-20 Mandible Street,
ALEXANDRIA NSW 2015
(Sent by fax: 9690 2577)

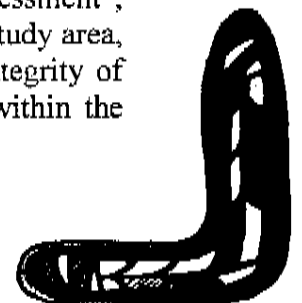
Dear Pamela

**RE: NUNDAH BANK THIRD TRACK CULTURAL HERITAGE
ASSESSMENT**

Thank you for the report dated October 2010. As noted, Sarah Hall (Cultural Heritage Fieldworker) of Wanaruah LALC participated in the surveys undertaken for this project. I have reviewed the report and comment as follows. I am sure you have been made aware of the 'cultural' sensitivity of the study area and therefore the Wanaruah LALC support the recommendations put forward by the traditional stakeholders in the protection and conservation of the sites.

This letter from the Wanaruah LALC does not express the views of any other Aboriginal stakeholder group or groups (whether their representatives are members of the LALC or not) who have chosen to speak in their own right. The comments provided are considered appropriate under Clause No. 42(4) (a) and (b) of the Aboriginal Land Rights Act (1983) (and its amendments) in relation to the role of the LALC in the protection and the promotion of awareness in the community of culture and heritage for Aboriginal people within its boundary.

Biosis Research has named this report an "Aboriginal Cultural Heritage Assessment", but it only appears to consider the archaeological (scientific) aspects of the study area, not the cultural landscape and the importance of preserving the cultural integrity of sites within their environment. There is no way that any of these sites within the



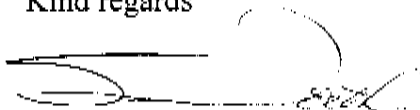
'Project Area' will not, in one way or another, be impacted regardless of whether they area temporarily fenced or not.

The Wanaruah LALC therefore would ask that you and the proponent consider the following recommendations:

- That artefact salvage in accordance with a DECCW s90 AHIP is appropriate for all sites identified and recorded within the 'Project Area' marked on Figures 9a to 9e. This also includes those sites which are marked on the boarder of the 'Project Area' corridors. Railway construction is extremely detrimental to artefact sites and just placing fences around them will not protect the sites from heavy machinery etc.
- Those sites identified with 'Site Extent' should be further tested and salvaged in accordance with a DECCW s90 AHIP if you believe that there is subsurface material, particularly if the extent of an artefact scatter is over a wide area.
- Those sites identified and recorded outside the 'Project Area' corridors are to be temporarily fenced with relevant signage so that they will be protected during the rail line construction and truck and vehicle movements etc. nearby (eg. >5m outside and beyond the corridor edge).
- It is up to the traditional stakeholders to decide for the long term, what is to happen to the artefacts salvaged from the sites within the 'Project Area' corridor.
- Legislation awareness, as part of the contractor induction process will need to be provided prior to work commencing. Should any subsurface artefacts be located or disturbed during work activities, the Wanaruah LALC in consultation with the other traditional stakeholders and DECCW are to be notified immediately. Work must stop in that area until management action strategies are discussed and implemented before commencement of work.

We look forward to continuing the consultation process with Biosis Research and should you wish to discuss any of the above issues, please do not hesitate to contact Noel Downs (CEO) on 02 6543 1288 or myself on 0457 707 565.

Kind regards



Suzie Worth
Indigenous Archaeologist
For Wanaruah Local Aboriginal Land Council

Samantha Gibbins

From: Taasha Layer [REDACTED]
Sent: Friday, 8 April 2011 11:31 AM
To: Samantha Gibbins
Subject: RE: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Hi Sam,

Yes , have spoken with Allen Paget and he is in agreement with the overall report recommendations and do not want to add any more further comments to the report.
Thanks

Regards,

Taasha Layer

Manager
Ungooroo Aboriginal Corporation (UAC)

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

**'WINNER' INDIGENOUS BUSINESS OF THE YEAR - HUNTER REGION
BUSINESS ENTERPRISE CENTRE BUSINESS AWARDS 2009**

**'HIGHLY COMMENDED' INDIGENOUS BUSINESS OF THE YEAR - HUNTER
REGION BUSINESS ENTERPRISE CENTRE BUSINESS AWARDS 2010**

From: Samantha Gibbins [mailto:SGibbins@biosisresearch.com.au]
Sent: Friday, 8 April 2011 11:27 AM
To: 'Taasha Layer'
Subject: FW: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Hi Taasha,

Just wondering if you have had a chance to talk to Alan regarding whether UAC is in agreement with the overall report recommendations (as per my email below)?

Many thanks,

Sam

From: Samantha Gibbins
Sent: Tuesday, 29 March 2011 12:15 PM

11/04/2011

To: 'Taasha Layer'

Subject: RE: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Hi Taasha,

Thanks for getting back. Could you please confirm whether UAC are in agreement with the overall report recommendations, or if there are any further comments about these that you wish to make?

Kind regards,

Sam

From: Taasha Layer [REDACTED]

Sent: Tuesday, 29 March 2011 12:03 PM

To: Samantha Gibbins

Subject: RE: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Hi Sam,

We would like to confirm that you have recorded our comments correctly regarding the Nundah Bank Third Track Aboriginal Cultural Heritage Assessment. We would also like to add that there isn't any further comments that we would like to add. Thank you.

Regards,

Taasha Layer

Manager

Ungooroo Aboriginal Corporation (UAC)

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

**'WINNER' INDIGENOUS BUSINESS OF THE YEAR - HUNTER REGION
BUSINESS ENTERPRISE CENTRE BUSINESS AWARDS 2009**

**'HIGHLY COMMENDED' INDIGENOUS BUSINESS OF THE YEAR - HUNTER
REGION BUSINESS ENTERPRISE CENTRE BUSINESS AWARDS 2010**

From: Samantha Gibbins [mailto:SGibbins@biosisresearch.com.au]

Sent: Tuesday, 29 March 2011 10:52 AM

To: [REDACTED]

Subject: FW: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Hi Alan and Taasha,

11/04/2011

Could you please confirm via return email that I have recorded your comments (below) correctly, and let me know if you have any further comments to make?

Many thanks,

Sam

From: Samantha Gibbins
Sent: Friday, 18 March 2011 4:19 PM
To: [REDACTED]
Subject: Nundah Bank Third Track Aboriginal Cultural Heritage Assessment - comments

Dear Allan,

Could you please confirm via return email to me the following comments you provided over the phone this afternoon regarding the Nundah Bank Third Track Aboriginal Cultural Heritage Assessment:

1. Any sites that will be impacted by the proposed works should have a Section 90 for destruction with the collection of as many artefacts as possible.
2. Potential subsurface deposits at the campsite at the railway crossing northeast of Middle Falbrook Road will be impacted by the proposed 2 acre compound (machinery plant).

In regards to your first comment, I can inform you that Biosis Research has included recommendations for collection at any of the sites that will be impacted. In relation to your second concern, that compound has now been removed because the site was identified as having moderate archaeological sensitivity, so it will not be impacted.

Please let me know if you have any further comments to make.

Kind regards,

Sam

Samantha Gibbins

Field Archaeologist
Mobile: **0408 551 439**
Email: SGibbins@biosisresearch.com.au

Biosis Research Pty. Ltd.

Natural and Cultural Heritage Consultants
18 Mandible Street
Alexandria NSW 2015
ph: (02) 9690 2777
fax: (02) 9690 2577
www.biosisresearch.com.au

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KAYAWAY

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Alexandria, Nsw 2011

Dominic Brady

Re: Nundah, Third Track Proposed Aboriginal Cultural and Heritage
Process and Assessment

Dominic,

I have read the Proposal and Process and Assessment documentation and, have no concern with the methods of research, all though taking into account the corridor and the foot print are reasonably small, and the fact that infrastructure still remains in this area makes it straight forward.

My main concern is the preservation of culture and its relics I and have been informed that this is sensitive area from passed accounts so with that in mind, we should be able to carry out our objectives and reach the appropriate outcomes.

Kind Regards

Mark Hickey

KAYAWAY ECO CULTURAL & HERITAGE SERVICES

Mail: 6/20 Government Street, Thorton, Nsw

Phone 0432 829 335

Email: kayaway@rocketmail.com