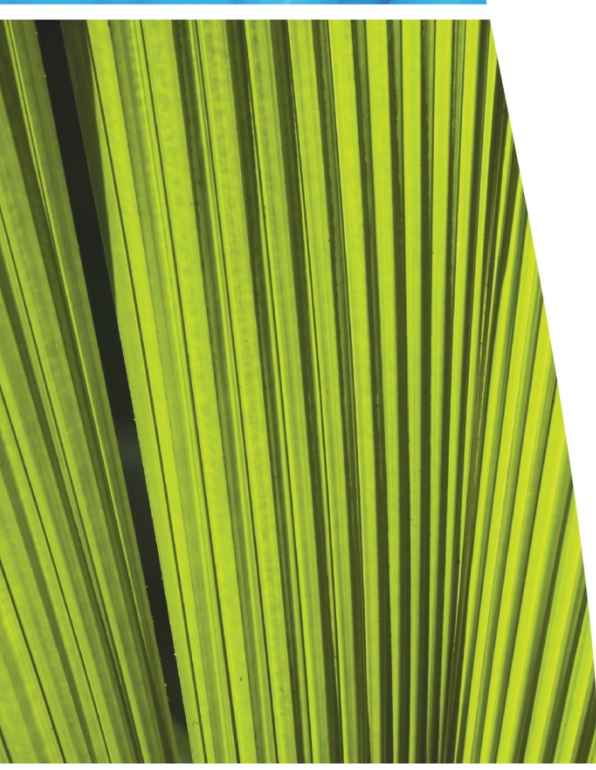




Hexham Relief Roads

Preferred Infrastructure Report



March 2013

Project No. 2012.063t



Hexham Relief Roads

Preferred Infrastructure Report

Prepared for:



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TABLE OF CONTENTS

Glossary and Abbreviations.....	iv
1. Introduction	2
1.1. Purpose of this PIR	2
1.2. Overview of Project and Environmental Impact Statement	3
1.3. Project Amendments	3
1.4. Assessment and Determination Process	4
2. Exhibition and Consultation	6
2.1. Consultation during preparation of Environmental Impact Statement	6
2.2. Consultation During Statutory EIS Exhibition	7
2.3. Consultation Post EIS Exhibition	8
2.4. Consultation Post Project Approval	8
3. Submissions Received and Responses	10
3.1. Response to Government Submissions	10
3.2. Response to Public and General Interest Groups Submissions	83
4. Project Design Amendments (Preferred Project)	101
4.1. Amendment to Project Area	101
4.2. Construction Access Road Realignment	101
4.3. Construction Compound Relocation	111
4.4. Lowering of the Relief Roads	111
4.5. Relief Road Extension	112
4.6. Overhead Conveyor and Pedestrian Overpass	112
4.7. Private Access Track Relocation	113
4.8. Extension of the Swale Drain	113
4.9. Adjustment to Service Road Alignment	116
4.10. Earthworks and construction traffic	116
5. Further Environmental Assessment	119
5.1. Flood	119
5.2. Ecology	120
5.3. Noise and Vibration	120
5.4. Air Quality	121
5.5. Indigenous Heritage	121
5.6. Non-Indigenous Heritage	122

5.7.	Contamination	122
5.8.	Groundwater	123
5.9.	Water Quality	124
5.10.	Traffic and Transport	125
6.	Compilation of Mitigation and Management Measures.....	127
7.	Conclusion.....	137

APPENDICES

APPENDIX A	ZONE PLAN
APPENDIX B	DESIGN DRAWINGS (CROSS SECTIONS)
APPENDIX C	CONSTRUCTION METHODOLOGY
	SURFACE WATER MANAGEMENT STRATEGY
APPENDIX D	ECOLOGY ASSESSMENT ADDENDUM
APPENDIX E	BIODIVERSITY OFFSET STRATEGY
APPENDIX F	JOINT FLOOD MODELLING REPORT
	FLOOD ASSESSMENT ADDENDUM
APPENDIX G	NOISE AND VIBRATION ASSESSMENT ADDENDUM
APPENDIX H	ECOLOGY TABLES IN RESPONSE TO SUBMISSIONS
APPENDIX I	PUBLIC RESPONSE REFERENCE TABLE
APPENDIX J	ABORIGINAL HERITAGE TEST EXCAVATION REPORT
APPENDIX K	NON-ABORIGINAL HERITAGE ASSESSMENT ADDENDUM
APPENDIX L	GROUNDWATER ASSESSMENT ADDENDUM
APPENDIX M	CONTAMINATION ASSESSMENT ADDENDUM

Glossary and Abbreviations

AEP	Annual exceedance probability - the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. e.g., if a peak flood discharge of 500 m ³ /s has an AEP of 5%, it means that there is a 5% chance (that is one-in-20 chance) of a 500 m ³ /s or larger events occurring in any one year
AHD	Australian Height Datum
AHMP	Aboriginal Heritage Management Plan
ANZECC	Australian and New Zealand Environment Conservation Council
Aquifer	Rock containing groundwater, especially in recoverable qualities
ARI	Average Recurrence Interval – the long-term average number of years between the occurrence of a flood as big as or larger than the selected event. For example, floods with a discharge as great as or greater than the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event
ARTC	Australian Rail Track Corporation
AS	Australian Standard
ASS	Acid Sulfate Soils
Aurizon	Previously referred to as 'QR National'.
Ballast	Crushed rock or stone upon which rail sleepers sit
Blue Book	Landcom, 2004, <i>Managing Urban Stormwater: Soils and Construction</i> (Volume 1, 4 th edition)
bgs	Below ground surface
BOS	Biodiversity Offset Strategy
CCS	Community Consultation Strategy
CEMP	Construction Environmental Management Plan
CMA	Catchment Management Authority
Consent	Approval to undertake a development received from the consent authority
Cut	An excavation for constructing below the natural ground level
dB(A)	Decibels (A-weighted) – a unit of sound measurement which has its frequency characteristics modified by a filter (A-weighted) – so that it more closely approximates the frequency response of the human ear
DEC	Department of Environment and Conservation (former name of NSW Office of Environment and Heritage)
DECC	Department of Environment and Climate Change (former name of NSW Office of Environment and Heritage)
DECCW	Department of Environment, Climate Change and Water (former name of NSW Office of Environment and Heritage)

Dewatering	Removal or draining of surface water or groundwater from construction site including excavations
DGRs	Director-General's Requirements for the Environmental Impact Statement
DoF	Department of Fisheries NSW
Down Coal	In a situation with more than one train line in the rail corridor, the Down Coal is the primary coal rail line that coal trains usually traverse when they are heading away from Newcastle Port and is usually positioned on the right when facing towards Newcastle
Down Main	In a situation with more than one rail track in the rail corridor, the Down Main is the side of the track on which trains travel when they are heading away from Sydney and is usually positioned on the right when facing towards Sydney
DP&I	Department of Planning and Infrastructure
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EP&A Act	NSW Environmental Planning & Assessment Act 1979
EP&A Regulation	NSW Environmental Planning & Assessment Regulation 2000
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
EPL	Environment protection licence
Fill	Earth used to construct an embankment or raise the existing level of the ground
Fluvial geomorphology	The study of river related landforms
HRR	Hexham Relief Roads
HWC	Hunter Water Corporation
L_{Aeq}	The average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound over the same measurement period
L_{Amax}	The maximum noise level registered during train passby with the sound level meter set to fast response
LEP	Local Environmental Plan
Level crossing	A crossing provided at ground level across the railway corridor
LGA	Local Government Area
LHRS	Lower Hunter Regional Strategy
NES matters	Matters of national environmental significance, which are referred to in Part 3 Division 1 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999
NML	Noise Management Level
NOW	NSW Office of Water

NPW Act	NSW National Parks and Wildlife Act 1974
NPWS	NSW National Parks and Wildlife Service
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PB	Parsons Brinckerhoff
PCEMP	Project Construction Environmental Management Plan. A document setting out the management, control and monitoring measures to be implemented during construction of a development, to avoid or minimise the potential environmental impacts identified during an environmental impact assessment process
PEA	Preliminary Environmental Assessment
POEO Act	NSW Protection of the Environment Operations Act 1997
Project Area	The Project Area is the area in which the proposed Project would operate and be constructed (as shown in Section 4 of this Preferred Infrastructure Report)
PIR	Preferred Infrastructure Report - this report. Previously issued as a 'Submissions Report' (Nov 2012) Since updated to address agency comments
QR National	Queensland Rail National. Now referred to as 'Aurizon'
Ramsar Wetland	A wetland recognised for international importance under the intergovernmental treaty, The Ramsar Convention.
Rail corridor	Land dedicated to the ARTC for rail purposes
Relief Road	A rail line that runs parallel with the Up Coal. A Relief Road usually provides a passing facility enabling trains to pass those traversing or stationary on the Up Coal thus giving relief to the Up Coal operations. A Relief Road can also allow trains to remain stationary off the Up Coal allowing trains to continue to traverse the Up Coal
Riparian	Relating to the bank of a river or other water body
RMS	NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy
Site compound	Area enclosing construction machinery, materials and site offices usually adjacent to construction sites
Spoil	Excess rock and/or earth material resulting from excavation activities
SSI	State Significant Infrastructure
Study Area	The study area is an area that is necessary for a technical specialist to undertake and complete an assessment of the proposed Project and varies in size depending on the discipline
Submissions Report	Prepared by UHVA for the HRR Project and submitted to DP&I in November 2012. The Submissions Report has subsequently been updated and is now known as the Preferred Infrastructure Report (PIR)-

	this report
Swale drain	A broad, shallow drain
The Code	The <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i>
The Project	The subject of this Preferred Infrastructure Report. The Project involves the construction of five new relief tracks next to the existing tracks alongside the Pacific Highway near Hexham Railway Station
TMP	Traffic Management Plan
Track possession	The period of time where trains cease operation and works on the track can be undertaken continuously, e.g., over a 48 hour period
TSC Act	NSW Threatened Species Conservation Act 1995
TSF	Train Support Facility (as proposed by Aurizon)
Turnout	A rail track component that connects two railway tracks. The turnout comprises a length of straight track and a section of curved track that joins the straight track. The curved track includes a moveable section of track. The moveable section is adjusted to allow a train to travel from the curved track to the straight track
UHVA	Upper Hunter Valley Alliance
Up Coal	In a situation with more than one train line in the rail corridor, the Up Coal is the primary coal rail line that coal trains usually traverse when they are heading toward Newcastle Port and is usually positioned on the left when facing towards Newcastle
Up main	In a situation with more than one rail track in the rail corridor, the Up Main is the primary (main) rail line that trains usually traverse when they are heading toward Sydney and is usually positioned on the left when facing towards Sydney
Up relief	Secondary rail line that runs parallel with the main line(s) that trains usually traverse when they are heading toward Sydney and is usually positioned on the left of the Up Main line when facing towards Sydney. The Up Relief usually provides a passing facility enabling trains to pass those traversing or stationary on the main line thus giving relief to the main line operators/users
Up side	The side of the track on which trains travel to Sydney. For this Project, the up side is on the eastern side of the alignment
WAD	Works Authorisation Deed
WM Act	NSW Water Management Act 2000



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.

Coal mining is an important part of the Hunter Valley economy. The increase in worldwide demand for coal has resulted in an expansion of mining in the Hunter Valley. Consequently, coal exports are forecast to increase. The majority of coal is taken by train to the Port of Newcastle for export.

To cater for this increase, the ARTC is undertaking a number of projects to upgrade the rail network to maintain rail capacity ahead of the demand requested by the coal producers. Full details of these projects are provided in the ARTC's *2011-2020 Hunter Valley Corridor Capacity Strategy* (June 2012).

The Hexham Relief Roads Project (also referred to as the Project) involves the construction of five new relief tracks next to the existing tracks alongside the Pacific Highway near Hexham Railway Station. The Project is estimated to cost approximately \$110million and is expected to take approximately 18 months to construct. Figure 1.1 shows the regional location of the Project.

An Environmental Impact Statement (EIS) for the Project was prepared to seek Project approval from the Minister for Planning and Infrastructure (the Minister) under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was prepared in accordance with the DGRs and demonstrates that ARTC has addressed the potential environmental impacts of the proposed Project.

The EIS was publically exhibited by Department of Planning and Infrastructure (DP&I) between 8 August 2012 and 10 September 2012. During this period, submissions were invited from anyone with an interest in the Project including members of the community and government stakeholders. DP&I received a total of 43 submissions and these are addressed in this Preferred Infrastructure Report.

The Upper Hunter Valley Alliance (UHVA), on behalf of ARTC prepared and issued a Submissions Report to the Department of Planning and Infrastructure (DP&I) in November 2012. This report was subsequently reviewed by DP&I, and other agencies with consolidated review comments provided to UHVA on 10 December 2012 (in written form). UHVA has since undertaken further environmental investigations and, where necessary design amendments, in consultation with key stakeholders and government agencies, to address the comments raised. The information provided in the Submissions Report has since been revised and this Preferred Infrastructure Report (PIR- the subject report) has been prepared to respond to agency comments.

1.1. Purpose of this PIR

Based on consultation with DP&I, the need to update the Submissions Report to address government agency comments (refer to above discussion) and in consideration of the design amendments proposed, this report is issued as a Preferred Infrastructure Report (PIR) for the Project.

This PIR documents and considers the submissions received on the EIS and outlines the ARTC's response to them, as required under Section 115Z (6) of the EP&A Act.

This PIR also provides:

- An overview of the EIS and consultation activities undertaken during preparation and statutory exhibition of the EIS;
- A summary of issues raised during the exhibition period;
- A response to the issues raised in submissions during the exhibition period;
- A summary and response to issues raised by government agencies on review of the Submissions Report (November 2012);
- Details of Project amendments that have been undertaken since exhibition of the EIS; and
- A compilation of final mitigation measures provided for the Project.

1.2. Overview of Project and Environmental Impact Statement

Key components of the proposed Project, assessed in the Environmental Impact Statement (EIS) comprise:

- Five Up Relief Roads (train lines) to the west of the existing Up Main, Down Main and Up Coal including:
 - o the removal of the existing Down Coal (located to the west of the Up Coal);
 - o the construction of five new train lines (tracks) for the Relief Roads;
 - o the construction of a new Down Coal to the west and outside of the proposed Relief Roads;
 - o each Relief Road to accommodate trains generally comprising two or three locomotives and up to 91 wagons (1,543m long) requiring a minimum standing room of 1,670m; and
 - o new turnouts, return curves and associated track changes.
- Installation of new signal infrastructure for the five Relief Roads including signal location cases, huts and gantries;
- Earth and civil works of approximately 265,000 cubic metres, including cut to fill, track formation, drainage and minor structures;
- Ancillary infrastructure including vehicle access tracks, temporary construction compounds and stockpile sites; and
- Land acquisition and the upgrading of existing rail infrastructure and public utilities.

The estimated cost of the Project is approximately \$110 million and is expected to take approximately 18 months to construct.

Section 4 of this PIR provides a summary of design changes that amend the above design assessed in the EIS.

1.3. Project Amendments

As a result of design progression and continued consultation with government agencies and the public, a number of amendments have been made to the Project since the August 2012 EIS. These amendments are described in Section 4 (Project Amendments) of this PIR. In summary, they comprise:

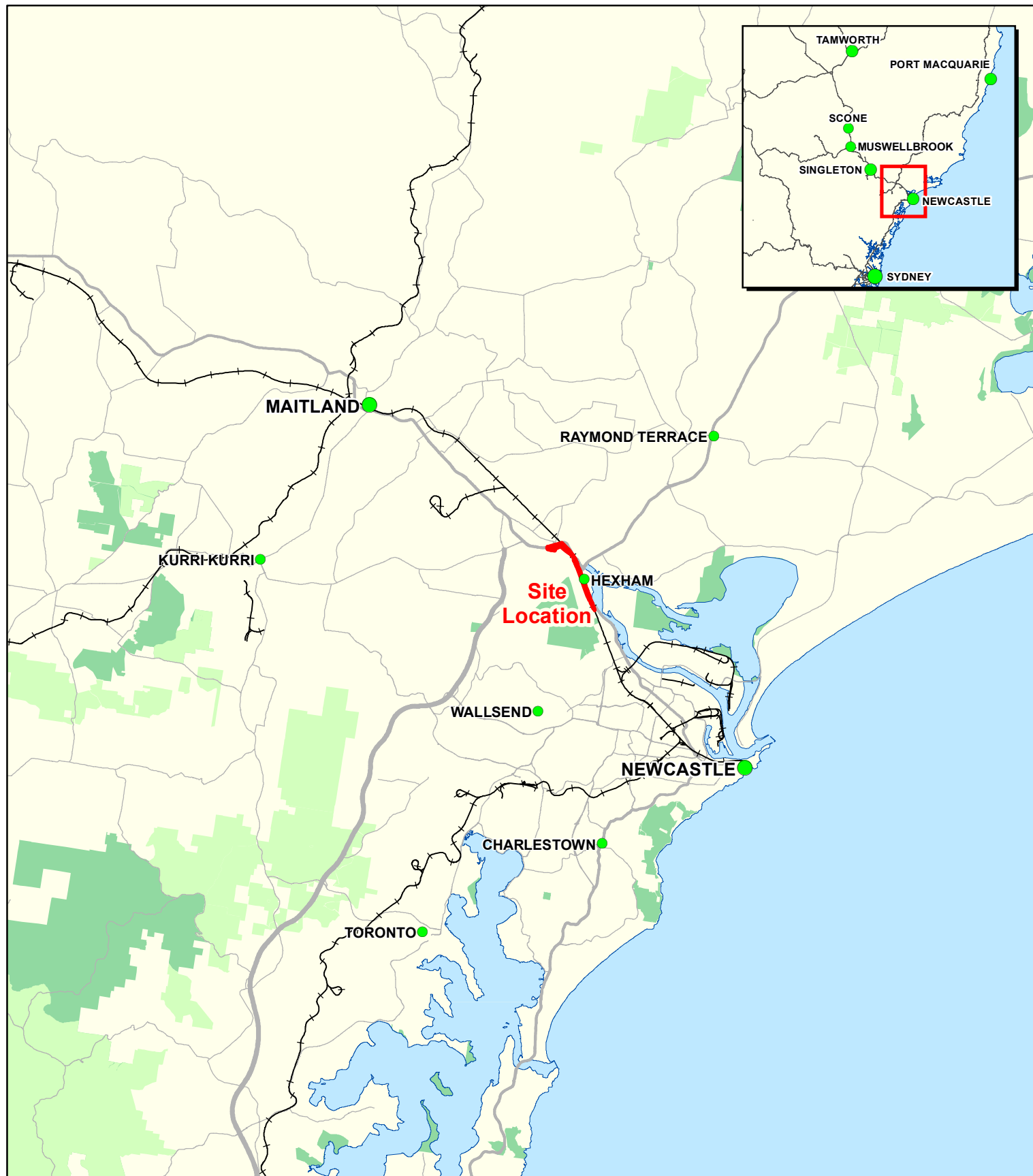
- Construction access road realignment;
- Lowering of the Relief Roads by a maximum of 1.2m for a distance of 820m;
- Construction compound relocation;
- Relief Road extension by approximately 160m at the north (country end);
- Incorporation of overhead conveyor and pedestrian overpass across the existing rail corridor to transport material during the construction phase;
- Private access track relocation;
- Extension of the swale drain at the north (country) end by approximately 1.2km; and
- Adjustment to service road alignment.

The amendments are illustrated in Figures 4.1a-h and Figure 4.2. An assessment of these amendments is provided in Section 4 of this PIR.

1.4. Assessment and Determination Process

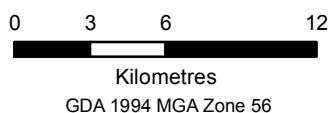
The Project falls within the category of rail and related transport facilities listed in Schedule 3 of *State Environment Planning Policy (State and Regional Development) 2011*. Consequently, approval would be required under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

DP&I, on behalf of the Minister, would review the EIS, all submissions received and this Preferred Infrastructure Report. Once DP&I has completed its assessment, a draft assessment report would be prepared for the consideration of the Director General of DP&I. This report may include recommended Conditions of Approval (CoA) for the Project. The report will then be either assessed under delegation by DP&I, or alternatively by the Minister.



- City/Town
- State Forest
- Site Location
- National Park Estate
- Road
- +— Railway

A4 Original



ARTC
Hexham Relief Roads

Location of the Proposal

Job Number	2110501A
Revision	A6
Date	04.01.2012
Scale	1:300,000

Figure 1.1

2. Exhibition and Consultation

2.1. Consultation during preparation of Environmental Impact Statement

A detailed Community Consultation Strategy (CCS), which formed a sub plan the overarching Community and Issues Management Strategy, was established for the proposed Project at the environmental assessment phase.

During the preparation of the environmental assessment, the Government, stakeholder and community engagement program comprised the following tasks:

- Letters to property owners and residents adjacent to the Project, advising of the PEA commencement;
- Public notification, including newspaper advertisement to inform community of the exhibition of the PEA;
- Newsletter, providing project specific information, of the EIS process and dates for the exhibition of the PEA;
- One on one meetings with property owners and residents adjacent to the Project; and
- PEA exhibition community information session.

Individual stakeholder meetings were held throughout the EIS process to gauge interest in the Project and gain a better understanding of specific issues concerning potentially affected landowners and stakeholders. Stakeholder meetings were offered to all adjacent landowners. A total of five meetings were held with adjacent landowners.

Consultation was undertaken with the following additional stakeholders:

- Department of Planning and Infrastructure (including the Hunter Regional Office);
- Office of Environment and Heritage;
- Department of Sustainability, Environment, Water, Population and Communities;
- Transport for NSW;
- Department of Trade & Investment, Regional Infrastructure and Services;
- Newcastle City Council;
- Roads & Maritime Services;
- Aurizon;
- Hunter Water Corporation; and
- Community members.

Feedback provided by stakeholders, including members of the community during the preparation of the EIS played a valuable role in the document's development. The following issues were raised during the consultation process and were addressed in the EIS:

- Cumulative impacts of the Aurizon Project (proposed Train Servicing Facility (TSF)) and the ARTC Hexham Relief Roads (HRR) Project, including ancillary facilities (e.g. parking, site compounds, etc.). Also some concerns about future expansion of the Project limited by the Aurizon Project;
- The location of the cultural PAD, HS1 which is an indigenous site registered by AMBS, the possible extent of HS1 and the proposed geotechnical test locations and types;
- Details regarding the Biodiversity Offset Strategy;
- EPBC referral & additional information regarding the Grey Headed Flying Fox and wetlands;
- Site access from Woodlands Close;
- Access for construction traffic to the Project site – access via the intersection of the New England Highway and Woodlands Close;
- Increase in traffic on local roads during construction, particularly from residents in the Tarro locality, issues concerning traffic access and haulage routes and increased noise levels;

- Proposed access route for construction traffic to the project site via the Tarro Interchange to Woodlands Close;
- Property issues associated with access and crossing Hunter Water Corporation (HWC) easements;
- Potential capital works project to construct a new 1200mm diameter water pipeline in its easement parallel to the New England Highway;
- Drainage issues in the area and increased risk of flooding due to construction works;
- Dust coming off coal trains and concern about existing and potential increase in dust as a result of increased traffic on the line;
- Vibration impacts to nearby residents, already having problems from previous projects in the area with effects from vibration;
- Increase in noise from construction traffic and increase in train movements once operational; Original noise and vibration assessments were undertaken when track works were being completed, as such concerned about the validity of the results;
- Concern about access to private property and potential property devaluation;
- Area is experiencing significant increases in infrastructure and that the benefits are not being experienced by the local community; and
- Property owners identified that land where temporary access route is proposed, is currently used for stock. As such, installation of appropriate fencing prior to the construction of the temporary access route was requested.

2.2. Consultation During Statutory EIS Exhibition

A notice was placed in the Newcastle Herald by DP&I on 10 August 2012 commencing the statutory exhibition period in accordance with Section 75H (3) of the EP&A Act.

The EIS was exhibited by DP&I from 8 August 2012 until 10 September 2012 online at the Department of Planning and Infrastructure's website www.planning.nsw.gov.au and the UHVA Hexham Project Site <http://uhva.com.au/projects/hexham>. The hardcopy was available to view during business hours at the following locations:

- Newcastle City Council Chambers, Newcastle;
- Newcastle City Library, Beresfield;
- Hexham Bowling Club, Hexham;
- Hunter Wetlands Centre, Shortland; and
- Post Office, Beresfield.

Comments on the EIS were made in the form of a submission during the submission period, either in writing to DP&I or online by visiting DP&I's website. These submissions are discussed in Section 3 of this PIR.

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

- Ongoing monitoring of the UHVA 1800 number and email address to capture community enquiries. Two calls and three emails were received during the exhibition period. All contacts were requests for further Project information, specific to the exhibition of the EIS, for example internet access to documents and exhibition closing date;
- EIS Project Newsletter which outlined the proposed Project, outcomes of the environmental investigations, the submissions process and details on how to make a submission. Approximately 1000 newsletters were distributed to members of the community surrounding the project area within the suburbs of Hexham and Tarro;
- EIS Exhibition notification letter. There were 58 letters distributed to all identified property owners, residents adjacent to the Project, key stakeholders and interested parties registered in the project

consultation database, prior to exhibition. The letter advised of EIS exhibition, where the document could be viewed and provided an invitation to the community information session;

- Advertisement was placed in the Newcastle Herald on Friday 10 August, announcing the EIS exhibition, where the document could be viewed and the community information session;
- EIS community information session. The information session provided members of the community with the opportunity to learn about the Project and seek advice on how to make a submission; and
- Static display at the various locations mentioned above. The exhibition included a physical display of the EIS to give community members without access to the internet an opportunity to access hard copies of the EIS and affiliated reports.

2.3. Consultation Post EIS Exhibition

In November 2012 a Submissions Report was issued to DP&I (and other agencies) for review. Review comments were provided to UHVA in a consolidated letter on 10 December 2012. Subsequent to this letter UHVA has undertaken extensive consultation with government agencies and private and public stakeholders to discuss and mitigate key issues. The following agencies have been consulted via meetings, telephone conversations and written correspondence in the post exhibition period: DP&I, OEHL (EPA), RMS, Transport for NSW, NCC, Fisheries NSW, NoW, CMA and NPWS.

In addition to consultation with government agencies, consultation has been undertaken with private stakeholders. In particular government agency responses requested continued collaboration between UHVA and Aurizon (formerly QR National) to address cumulative impacts of the HRR Project and the adjacent Train Support Facility Project (TSF Project). UHVA and Aurizon have worked closely with one another to identify and mitigate key cumulative environmental issues in particular, but not limited to, flood, ecology, contamination and Indigenous heritage (refer to Section 5).

Other private and public stakeholders consulted by UHVA and Aurizon as part of the joint approach for the projects, include Ausgrid, Jemena, Hunter Water, Brancourts Sewer Treatment Plant and 1 Woodlands Close.

UHVA, in conjunction with Aurizon will continue to consult with government agencies and public and private stakeholders to identify and manage environmental, design and construction matters.

2.4. Consultation Post Project Approval

Following Project Approval, UHVA would continue to consult with community members, government agencies and other stakeholders during the construction phase of the Project. The Hexham Community Communication Strategy would continue to provide specific information on stakeholders, consultation activities and issues management proposed for the Project during the construction period.



3. Submissions Received and Responses

This section of the PIR addresses submissions received during exhibition of the EIS and additional comments received from DP&I and other government agencies relating to the review of the Submissions Report.

3.1. Response to Government Submissions

Table 3-1a provides response to issues identified in the Submissions Report issued on 12 November 2012, and is based on the letter from DP&I dated 10 December 2012. Table 3-1b provides a detailed summary of each submission and issue raised during public exhibition of the EIS, including response and where the issue is addressed in the EIS (where applicable) and this Preferred Infrastructure Report.

Table 3.1a Response to Government agency comments (Attachment A of Letter 10/12/12)

Issue	Comment	Response	Reference
Hunter Rivers Catchment Management Authority (CMA)			
Ecology-offsets	The first line under the "Response" column on page 58 of the Submissions Report states that the offset strategy will be 'like for like'. However, the preferred option is the 'Port Stephens Option' which has nil 'like for like' offset in terms of offsetting <i>Phragmites australis</i> / <i>Typha orientalis</i> EEC and Swamp Mahogany on coastal wetlands. It is requested that this be addressed and considered in deliberations with OEH, and that the final biodiversity offset package be provided to the CMA for review.	As per the Biodiversity Offset Strategy (Appendix E of this PIR), site selection was undertaken through field surveys and consultation with private landowners and government agencies. This process identified a short list of properties as preferred options, based on availability and the biodiversity values present. The preferred Port Stephens site was considered to possess the most appropriate credits for offsetting this project and is understood to be available. Following the submission of the previous Offset Strategy Report (dated October 2012), further detailed vegetation mapping and credit calculations have been completed on the Port Stephens offset site which have refined the vegetation types and extent currently available for offsetting (refer to Tables 1.5 and 1.6 of the revised Biodiversity Offset Strategy in Appendix E of this PIR). The revised vegetation mapping and calculations includes approximately 8 credits of Freshwater wetland vegetation, and additional 10 credits of Swamp Mahogany on coastal wetlands. In total, the Port Stephens offset option would provide approximately 31% or 57/182 of the offset as like for like vegetation community (refer to Section 1.4.1.3 of the Biodiversity Offset Strategy in Appendix E of PIR). In summary, the revised vegetation mapping and credit calculations completed on the Port Stephens offset site, have therefore identified additional areas of "like for like" vegetation available for offsetting the Project impacts. This revised Biodiversity Offset	Appendix E of this PIR

Issue	Comment	Response	Reference
		Strategy further demonstrates that the Port Stephens option would provide an improved outcome in accordance with the OEH guidelines. A Biodiversity Offset Package would be finalised in the future to incorporate the final offset site details and the revised Biobanking Assessment Report dated January 2013 (within Appendix E of this PIR). The Biodiversity Offset Package would be finalised with OEH and it is expected that OEH would provide this to CMA for review as requested. Based on consultation, it is noted that OEH would support an approval condition that requires the Proponent to retire the appropriate amount of biodiversity credits (both 'ecosystem' and 'species') providing the credit tool is re-run and/or appropriate justification is given for any deviations. The revised Biobanking Assessment Report has incorporated clarifications and justifications requested by OEH to date and includes a re-run of the credit calculator. As per Appendix E of this PIR, the project credits requirements for offsetting has increased marginally from a total of 181 to 182 ecosystem credits. Through this revision process and consultation with OEH, the project no longer is required to provide species credits for the Black-necked stork because this species was incorrectly previously identified as occurring within the Project Area of impact.	
Ecology	The EIS states that ARTC proposes to clear 9.1 hectares of EEC. However, in the Submissions Report this has been changed to 7.10 hectares of EEC. There is no explanation for the reduction in clearing.	Section 8.4 of the EIS states that ARTC initially proposed to clear 9.1 hectares of EECs. Subsequent to the EIS results, a process of further minimising impacts was undertaken for the Project (refer Section 3 of updated Biobanking Assessment Report) which, when coupled with the design amendments (refer to Section 4 of this PIR), has led to a decrease in the area of impact. As stated in Section 5 and Appendix D of this PIR, the Project now results in a total of 7.15 hectares of EEC vegetation clearing.	Section 8.4 of EIS Section 4, 5 and Appendices D and Appendix E of this PIR

Issue	Comment	Response	Reference
Water quality	The CMA remains concerned at comments in the EIS that "the wetlands offer an opportunity to manage contamination events more easily" and with ARTCs response to this on page 59 of the Submissions Report. Over \$10M of public funding has been invested over the past 20 years in rehabilitation work to restore Hexham Swamp to a tidal wetland. It is one of the highest priority wetlands in the lower Hunter for investment and ongoing rehabilitation. All available measures must be put in place to protect the wetland against contamination and other environmental impacts that may result from the proposal.	Noted. All available and reasonable management and mitigation measures, as per Section 5 and 6 of this PIR, would be implemented. These mitigation measures aim to ensure no unreasonable surface water quality impacts on the wetlands would result from the Project. In particular, the Surface Water Management Strategy (refer Appendix C) provides further detail on the surface water management during construction.	Section 6 and Appendix C of this PIR
Environment Protection Authority			
Groundwater	The Submissions Report indicates that the proposed swale would intercept the groundwater table and that the swale would discharge groundwater away from the project, mixing surface waters with groundwater. This design appears inconsistent with that in the EIS, which identified the collection and treatment of potentially contaminated groundwater. The Submissions Report refers to the safeguards included in Section 12.6 of the EIS. However, this did not address how any contaminated water would be treated and or, if required, disposed of.	The design of the Project has been amended to reduce the potential interception of groundwater by the swale. In particular, the invert level of the swale has been raised. The swale drain would be utilised towards the end of the construction period and during operation of the Project. A Groundwater Assessment has been prepared to quantify water flow to the swale drain (refer to Appendix L of this PIR). In summary the management of groundwater and surface water would be as follows: - Construction - groundwater and surface water would temporarily be stored in holding cells (basins). Groundwater would be either recharged to the groundwater system through these cells or treated and discharged into the surrounding area (surface water system). - Operation - an existing drain included at the location of the swale drain currently intercepts groundwater, and discharges groundwater and surface water into the surrounding area. Groundwater would seep into the swale drain at different rates depending on the conditions (under/following rainfall or dry conditions). Surface water and groundwater that is captured by the formation may discharge to the swale in high water level conditions via rock finger drains. Water would be discharged from the north and south of the swale drain. The quantity and quality of the discharge from the proposed swale drain would be similar to that provided by the existing drain. The quality of the water discharging via the formation to the swale is expected to be similar to rainfall runoff from the site under current conditions. This is because the rainwater would be draining through inert rock fill which is not expected to be a source of contamination (Appendix L of this PIR).	Section 4, 5 and Appendix L of this PIR.

Issue	Comment	Response	Reference
		The Project would maintain existing conditions and therefore have negligible impact on the surrounding area.	
Groundwater	The EPA re-iterates previous advice regarding issues associated with proposed dewatering of the project and the need to manage groundwater intercepted by construction activities. Actions by the Proponent, including dewatering, have potential to mobilise a range of contaminants identified by the Proponent in the EIS. The EPA will not licence the discharge of these pollutants. It will be the responsibility of the Proponent to ensure the proposal can be constructed without risk of mobilising pollutants, or alternatively the EPA will require treatment of contaminated water. Should the proposal be unable to treat the water to an acceptable standard, the EPA may require offsite disposal at a licensed facility. This may have implications for both the construction and operational phases of the proposal.	The Construction Methodology and Surface Water Management Strategy (Appendix C of this PIR) have been revised to identify the methods to be undertaken for water management during construction of the Project. The aim is to minimise the interception of groundwater and maximise the detention of any intercepted groundwater onsite. In summary, dewatered groundwater would be transferred within the construction site to retention basins. Groundwater would be periodically recharged into the groundwater system through these detention basins. Dewatered groundwater that cannot be practically recharged into the groundwater system would be treated (if required) prior to discharge to nearby surface waters. UHVA is currently sourcing and refining options for an on-site water storage and treatment facilities. Therefore, the dewatering proposed during construction activities would not further, above existing conditions, mobilise any identified contaminants.	Appendix C of this PIR
Roads & Maritime Services			
Traffic & Transport	The first dot point in the second row of the "Response" column on page 34 states that <i>"access for light vehicles (construction workforce) from Woodlands Close during the initial construction would be permitted"</i> . The RMS advises that access via Woodlands Close/ New England Highway is only permitted for the construction workforce involved in the construction of the access road. Access via this intersection is not permitted for the construction workforce for the actual project works.	Agreed. Temporary access for light vehicles would be temporarily available via Woodlands Close until the temporary construction access road, which connects the Tarro Interchange with Woodlands Close, is complete. On completion of the new access road connecting the Tarro Interchange and Woodlands Close, no vehicular access to the Hexham Relief Road work site would be permitted via the New England Highway/Woodlands Close intersection. As discussed in Section 5 of this PIR, the EIS assessed the number of light and heavy vehicles and no further impacts are expected.	Chapter 10 of the EIS Section 5 of this PIR
Traffic & Transport	The first paragraph in the third row of the "Response" column on page 34 of the Submissions Report states that <i>"early access to the Tarro Interchange would be permitted prior to completion of all works under the WAD"</i> . This is incorrect and should be amended to be consistent with the advice in RMS's letter dated 1 November 2012 which stated that vehicular access to the work site via the Tarro Interchange/access road intersection may be considered prior to completion of the road works should RMS concur that the access is suitably safe to accommodate project traffic, at the time such a request is made.	Agreed. Table 3.1 of this PIR has been updated accordingly. As per RMS's letter dated 1 November 2012, permission for early access to the Tarro Interchange may be permitted prior to completion of all road works under the WAD subject to RMS deeming the access is suitable and safe.	Table 3.1 of this PIR

Issue	Comment	Response	Reference
Traffic & Transport	The first paragraph in the third row of the "Response" column on page 35 states that <i>"all operational service vehicles would access the project area via Woodlands Close"</i> . It should be noted that for safety reasons, RMS would support all operational access to the site via the new access road.	The construction access road would provide only temporary access during the construction phase of the HRR Project (refer to Section 4 of this PIR). The construction access road would not be used for operational access post completion of the construction of the HRR Project. Service vehicles would utilise the Woodlands Close/New England Highway intersection during operation of the Project. As discussed in Section 10 of the EIS operational traffic for the HRR Project would comprise occasional service vehicles, with the frequency of visits dependant on the maintenance required. As discussed in the EIS, operational traffic is not considered to impose traffic impacts to the local and regional road network.	Section 10 of the EIS Section 4 of this PIR
Office of Environment and Heritage			
Hydrology /flood	The site for the main construction compound has been relocated to the north of Purgatory Creek, with an approximate area of 2.8 hectares. This site would be raised to the 10% AEP design flood level. It is unclear if this relocated site and fill platform has been included in the revised flood modelling to ascertain its impact on flood flow conveyance between the Hunter River and Hexham Swamp. There are no existing developments immediately adjacent to the proposed compound site location, therefore it is anticipated that there would be no adverse impacts on existing developments external to the site as a result of this fill platform, only (potentially) on the conveyance capacity of the floodplain.	The construction compound has been redesigned to the 10%AEP flood level (approx. 1.2mAHD) and relocated to the northern side of Purgatory Creek (refer to Appendix F. These changes in level and location of the site compound have been updated in the revised modelling which concludes that: - The Hunter River does not connect with the Hexham Swamp for the 10% AEP event and lower so there is only likely to be localised impacts of flood water re-distribution. Given the short (18 month) duration of the construction phase a flood of 10% AEP magnitude or greater has a low chance of occurring. - For events larger than the 10% AEP flood event, flood waters are expected to inundate the construction compound however there would still be some re-distribution of flows due to the loss of flood storage. The greatest impact would be for the 5% AEP flood event, where the flood levels would just above the construction compound elevation. For larger events (e.g. 2% AEP) the impact would decrease with an increase in flood magnitude as the volume of flood storage lost decreases in comparison to the volume of flood waters. A Flood Risk Management Plan has been prepared and is included in Appendix F. This Plan provides measures to manage and mitigate potential flood risk during construction of the Project.	Section 5 and Appendix F of this PIR

Issue	Comment	Response	Reference
Hydrology /flood	The report discusses the re-alignment of the construction access road, including construction of a waterway crossing of Purgatory Creek with a culvert 900 mm in diameter and 22 metres in length. It is unclear if this is the same diameter as the existing crossing. It must be ensured that the waterway area is not reduced at this location, particularly for the conveyance of floodwaters of frequent flood events.	WAE Drawings supplied by Hunter Water Corporation (HWC) for the Chichester Trunk Gravitation Main (CTGM) show that the existing crossing of Purgatory Creek in the vicinity of the Hunter Water Pipeline includes a 900mm diameter pipe. As discussed in Section 4 of this PIR, the proposed new crossing would be consistent with the current crossing, i.e. a 900mm diameter pipe to ensure there is no reduction in the waterway area no restriction in the conveyance of potential flows during flood events.	Section 4 of this PIR
Hydrology /flood	Previous OEH comments requested the Proponent prepare a formal project risk management assessment in accordance with AS/NZS ISO 3100:2009 to include the consideration of the full range of flood events up to and including the PMF. However, the updated flood report includes a 'Provisional Flood Emergency Management Plan' which is indicated as satisfying this requirement. A risk assessment and an emergency management plan are two different things, and the Proponent is again requested to prepare a risk assessment as detailed above. This risk assessment needs to take in to account the risk and associated consequence of things such as: the use and storage of hazardous and other materials in the floodplain that could pollute floodwaters; the risk to personnel working at the site that may be impacted if a flood occurs over the 16 month construction timeframe and subsequent operational phase. The risk assessment should be undertaken in accordance with AS/NZS ISO 3100:2009 and is to include the consideration of the full range of flood events up to and including the PMF.	A Flood Risk Assessment has been prepared, in accordance with ISO 31000:2009, and is included at Appendix F of this PIR.	Appendix F of this PIR
Hydrology /flood	The updated flood report indicates the Proponents' commitment to undertake non-engineered solutions for the mitigation of the adverse flood impacts existing properties external to the site may experience as a result of this development. It is up to the Proponent and the affected land owner as to what this mitigation will entail and what level is considered satisfactory. OEH cannot support this development proposal if it has adverse flooding impacts on existing properties external to the site. Therefore, this mitigation must ensure that the State Government is indemnified against any claims for flooding that may be experienced in the future as a result of this development. In addition, the Proponent would be required to work in cooperation with the proponents of the QR National Train Support Facility and the F3 extension, both of which are likely to impact on the same offsite lands. OEH is prepared to assist the parties in developing suitable compensation measures for the affected landholders.	Subsequent to this and other comments, engineering design solutions and investigations on flood affectation on surrounding properties have been undertaken. The results of these are provided in Appendix F of this PIR. The proposed mitigation measure involves an engineering solution (lowering of the tracks) that would result in minor impacts from 0.02m to 0.1m on surrounding land. The higher range of flood level and velocity increases are localised within rail and road corridors, Aurizon property and undeveloped flood prone swamp and farm land. Flood level increases are typically between 0.02 to 0.05m for adjacent properties with negligible changes in velocity (refer to Appendix F of this PIR). This mitigation measure results in a considerable reduction of impact on affected landowners. Consultation is only required with one landowner (1 Woodlands Close, Hexham). It is envisaged that the Flood Risk Management Assessment (refer to Appendix F) would be suitable to mitigate potential flood impacts on this property during the construction phase. As discussed, consultation is currently being undertaken with this affected landowner (refer to Section 2 of this PIR).	Section 2, 4, 5 and Appendix F of this PIR

Issue	Comment	Response	Reference
		This current design, flood investigations and consultation reflect a collaborative approach to this issue in conjunction with Aurizon (the Train Support Facility) and RMS (F3 extension).	
Hydrology/ flood	The works proposed as part of the development include filling on a declared floodplain of the Hunter Valley Flood Mitigation Scheme. The works therefore constitute a "flood work" as defined under the <i>Water Management Act 2000</i> . The statement in the revised documents that they do not is incorrect and should be amended.	OEH's comment is noted. Appendix F of this PIR, states that the Project would involve 'flood work' in accordance with Section 90 of the <i>Water Management Act 2000</i> . It should be noted that as the Project is State Significant Infrastructure (Part 5.1) no separate approval would be required for this flood work as is consistent with Section 115Z(1)(g) of the <i>Environmental Planning and Assessment Act 1979</i> .	Appendix F of this PIR
Ecology- targeted surveys	The EIS states (as per Sections 8.2.1 and 8.3.13) that specific targeted flora searches have been undertaken, in particular those species which OEHS requested further details (OEHS letter dated 30 May 2012): Trailing Woodruff (<i>Asperula asthenes</i>), Noah's False Chickweed (<i>Lindernia alsinoides</i>), Small Water-ribbons (<i>Maundia triglochoides</i>), Tall Knot-weed (<i>Persicaria elatior</i>) and Horned Pondweed (<i>Zannichellia palustris</i>). However, specific details on these surveys are still lacking, particularly in relation to timing and location of habitats search with respect to individual species. As such it is not possible to determine whether or not targeted searches undertaken are appropriate for each potential species, and whether or not all likely habitats have been searched.	As per Sections 8.2.1 and 8.3.13 of the EIS, a targeted survey was undertaken for all potential threatened species in the appropriate season and in accordance with the NSW <i>Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)</i> (Department of Environment and Conservation 2004). Appendix H of this PIR provides an updated table identifying the survey effort in accordance with the OEHS's request, including the timing and location of all likely habitats.	Section 8.2.1 and 8.3.13 of EIS Appendix H of this PIR
Ecology- targeted surveys	It is noted that Section 2.5 in Appendix C of the EIS provides a number of dates for 'targeted surveys', but these do not indicate which predicted flora species were targeted and at what time. It is acknowledged that in all likelihood, given the range of dates provided, that adequate targeted surveying may have been done, however, there is a need to clearly match the survey dates to each of the different species targeted in order to be certain that each potential threatened flora was sampled at the appropriate time, particularly cryptic taxa requiring flowers and/or fruits to positively identify them. Similarly, there is a need to indicate for each targeted species which specific habitats were searched, to enable assessment as to whether all likely habitats were targeted.	As per Section 2.5 in Appendix C of the EIS, a targeted survey was undertaken for all potential threatened species in the appropriate season and in accordance with the NSW <i>Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)</i> (Department of Environment and Conservation 2004). An updated table indicating the five flora species that were targeted, the timing and location of all likely habitats, is provided in Table 3 and associated figures of the updated Appendix H in this PIR. The Figures in Appendix H illustrate the targeted survey locations for each of the targeted species.	Section 2.5 in Appendix C of EIS Appendix H of this PIR

Issue	Comment	Response	Reference
Ecology-targeted surveys	To determine the adequacy of such targeted flora surveys, details on location, survey methodology (e.g. observation technique, random meander, parallel belt transects etc.); timing, seasonal/climatic conditions, duration/effort and habitats searched (as per OEH guidelines - DEC 2004), similar to that provided for the general baseline flora and fauna surveys, is to be provided. The information is to be provided for each likely species individually and should include schematic representations of the survey effort and habitats searched (i.e. individually mapped). If surveys are inadequate, then appropriately timed targeted surveys in accordance with OEH guidelines (DEC 2004) must be undertaken for all potential taxa not adequately targeted.	Consistent with Section 2.5 in Appendix C of the EIS, a table indicating the flowering period of the target species, the dates of survey, the habitat searched, the type of survey and survey effort, for each of the five targeted flora species is provided in Table 3 and associated figures of the updated Appendix H in this PIR. The figures in Appendix H illustrate the targeted survey locations for each of the targeted species.	Section 2.5 in Appendix C of EIS Appendix H of this PIR
Ecology-Threatened species assessment	The Submissions Report indicates that the development footprint has been amended and that additional ecological assessment has been undertaken, as per Appendix D of the Submissions Report. Table 5.1 of this Appendix indicates that the amount of native vegetation/habitat to be cleared is now 7.15 hectares instead of the previous 9.1 hectares. As such, it is understood that a revised BBAM has been undertaken which indicates development would require the retirement of 181 'ecosystem' credits and 36 'species credits' for Black-necked Stork (<i>Ephippiorhynchus asiaticus</i>). However, Table 5.1 in Appendix D indicates that the total area of native vegetation to be cleared does not include 'any minor clearing associated with the proposed private vehicle access road'. Appendix D does not provide details on the size of the clearing nor the native vegetation/habitats affected. These details need to be provided and included in any BBAM assessment of the proposal. Section 6.1 of Appendix D indicates that further clearing is noted with respect to the additional site compound, access road and drainage swale. These details should also be included in any BBAM assessment of the impacts.	The Ecology Assessment Addendum (refer Appendix D of this PIR), amends that provided in the EIS (Refer to Appendix C) confirming that a total of 7.15hectres of native vegetation/habitat is to be cleared as part of the Project. This total includes the proposed access track and other design amendments (refer to Section 4 of this PIR). Further the BioBanking Assessment Report (included at Appendix E of this PIR) includes a re-run of the credit tool. The updated credit report resulted in a single additional credit being required, with the updated total ecosystem credit requirement being 182 credits. Note that the updated assessment has now excluded Black-necked Stork as this species was not actually recorded in the Project Area.	Appendix C of the EIS Section 4, Appendix D and Appendix E of this PIR
Ecology-BioBanking & offsets	The offset package, as detailed in Appendix E of the Submissions Report, has utilised the NSW Biodiversity Banking and Offsets Scheme to identify appropriate biodiversity offsets to compensate for the loss of native vegetation (including endangered ecological communities (EEC) and threatened species). This was predominantly undertaken in accordance with BBAM and the 'BioBanking Assessment Methodology and Credit Calculator Operational Manual'. The OEH is generally satisfied that the development's impacts have been appropriately assessed under BBAM, albeit there are	The minor operational issues, discussed in the comments below, have been resolved as part of the preparation of the BioBanking Assessment Report (Appendix E of this PIR), which reflect what is provided in the final offsets package. The final offsets package would be finalised in consultation with OEH, using the compliant BBAM approach as described above. As per Table 8.1 of the latest BioBanking Assessment Report (Appendix E of this PIR), a total of 182 BioBanking credits are required to offset the impacts. The minor operational errors were therefore corrected with a difference of only 1 BioBanking credit.	Appendix E of this PIR

Issue	Comment	Response	Reference
	minor operational issues (described below).		
Ecology-Biobanking & offsets	The current BBAM has calculated that the proposal will need to retire 181 ecosystem credits and 36 species credits for Black-neck Stork on a registered biobank agreement site. This may need to be revised based on the addition of further clearing (as described above) and amendment of the following operational issues (where required): • overstorey condition for both assessment circles has either been entered in at 'PFC 25% of lower BM' (assessment circle 1) or at 'PFC < 25% of lower BM' (assessment circle 2). This is inconsistent with what is presented in Appendix E of the Submissions Report which states that overstorey has been entered in at 'PFC at benchmark'. If choosing projective foliage cover (PFC) values that differ from benchmark values then adequate justification needs to be provided. Similarly justification should be provided for the reasoning behind entering understorey and groundcover values; • explanation of how the adjacent remnant vegetation was determined, particularly for assessment circle 1, where it has been assessed as 0.70 hectares; explanation as to why the total area of the vegetation to be cleared (i.e. vegetation zones) listed in the credit calculator is less than that cited in Appendix D 'Further Ecology Assessment' (Table 5.1). This Appendix states that 7.15 hectares will be cleared, albeit without the additional clearing associated with the new private access, compared to 7.11 hectares. There are inconsistencies in the clearing figures given for 'Swamp Oak swamp forest fringing estuaries' and 'Swamp Mahogany swamp forest on coastal lowlands'. OEHL would expect that all areas to be cleared are included in the credit calculations, regardless of size, given that small deviations can amount to a number of biodiversity credits involved; and • With respect to the 'geographic/habitat feature' component of the credit tool why was the following feature not acknowledged, given it appears it is likely present on site -'swamps, swamp margins or creek edges' (this relates to Melaleuca biconvexa)? Was this species eliminated on the basis of appropriate targeted surveys or expert opinion?	As is discussed in Appendix D of this PIR, the calculated amount of EEC clearing would be 7.15 Hectares. The latest calculations in the Biobanking Assessment Report (Appendix E of this PIR) corrected the minor operational errors by using the correct figure of 7.15 Hectares of EEC clearing. The correction resulted in a single additional credit being required, with the updated total ecosystem credit requirement being 182 credits as opposed to the previous 181 credits. The assessment has now excluded Black-necked Stork as this species was not actually recorded in the Project Area. Any further amendments required as a result of finalisation of the offset package are likely to be very minor. Should any future amendments be required, the credit tool would be re-run and an appropriate justification would be given for any change in the number of biobanking credits required to offset the impacts. Any revised calculations would be open to OEHL for review and consideration. It is noted that in the final offset package these comments would be integrated as required into the calculation. The latest BioBanking calculation (Appendix E of the PIR) conservatively assumes the condition for both assessment circles is at benchmark. The habitat feature 'swamps, swamp margins or creek edges' have been considered and added to the latest calculation, in the updated BioBanking Assessment Report (Appendix E of this PIR).	Appendix D & Appendix E of this PIR

Issue	Comment	Response	Reference
Ecology-Biobanking methodology for Project offsets	Based on OEH's technical review of the submitted credit calculator files, OEH would expect in addressing the above issues the BBAM tool will need to be re-run and as such it is likely that this will result in a slight change to the number of biodiversity credits that will be required to be retired. As such, OEH would support an approval condition that requires the Proponent to retire the appropriate amount of biodiversity credits (both 'ecosystem' and 'species') providing the credit tool is re-run and/or appropriate justification as outlined above is given for any deviations, including suitable explanation for applying Tier 2 and Tier 3 outcomes under the policy, as described below.	The BioBanking Assessment Report (included in Appendix E of this PIR) includes a re-run of credit tool and an update of the results. The adoption of this condition is supported.	Appendix E of this PIR
Ecology-Offsets/compensatory habitat	Appendix E of the Submissions Report states that the preferred biodiversity offset option is the purchase and retirement of appropriate biodiversity credits, based on a BBAM assessment of the development site (as outlined above). This process adopts both the BBAM methodology and the use of OEH's offset policy, as described above. OEH supports this strategy, however, notes that the policy (OEH 2011) specifically requires the Proponent to provide adequate justification as to why it is appropriate to apply the 'Tier 2' and/or 'Tier 3' outcomes. In considering whether the mitigated net loss standard is appropriate, consideration should be given to: (i) whether the credits required by the calculator are available on the market; (ii) whether alternative offset sites (other than credits) are available on the market; and (iii) the overall cost of the offsets and whether these costs are reasonable given the circumstances. OEH is of the opinion the Submissions Report (including the Appendices) has not adequately addressed this aspect of the policy. Furthermore, the OEH Parks and Wildlife Group (i.e. National Parks and Wildlife Service (NPWS)) advised that potential lands that adjoin Hunter Wetlands National Park may be available for purchase and could offer more suitable offsets (i.e. 'like-for-like') than those proposed under the BBAM option (e.g. Karuah- Port Stephens local government area). It is recommended that the Proponent liaise with NPWS and OEH with respect to the possibility of more appropriately located 'like-for-like' offsets. Under this scenario, the Proponent would also need to ensure that any offsets are managed and conserved in perpetuity, under an appropriate conservation mechanism (as detailed in OEH previous correspondence).	As discussed in the Biodiversity Offset Strategy (included at Appendix E of this PIR), an offsets outcome in accordance with the BBAM and OEH's offset policy would be provided (post Project Approval). This outcome is also in accordance with OEH's requirements for appropriate justification of the Tier type of credits to be used. The draft offset package provides a 'Tier 3 - Mitigated net loss' outcome as impacts to red flag areas cannot be avoided and the offsetting proposed is considered inconsistent with the requirements of the BBAM credit calculator. It is however noted that 44 ecosystem credits meet the criteria for a 'Tier 2 - improve or maintain' outcome (44 out of a total of 182 ecosystem credits required) are included in the draft offset package. In relation to the required justification for the use of the proposed type of credits, including Tier 3 credits, the following responses should be considered: (i) OEH maintains a list of expressions of interest (EOI) for the establishment of BioBank sites, on the BioBanking public register. The issue with sourcing sufficient Tier 1 or 2 credits was that despite initiation and investigation of all EOI with potentially suitable credits, none are currently available; or that in relation to potentially suitable credits they have already been sold, or owners are unwilling to trade the quantum required for the project. (ii) Extensive desktop assessments have been completed to identify appropriate BioBank sites available for securement under a BioBanking agreement. Site selection has also been undertaken through field surveys and consultation with private landowners and government agencies. This process identified a short list of properties as preferred options, based on availability and the biodiversity values present. The final selected Port Stephens site was considered to possess the most appropriate credits for offsetting this project. In addition, potential offsets on adjoining lands owned by Aurizon and others were investigated; however they were either unwilling or not able to provide such potentially suitable lands for offsetting of this project. (iii) No offset options currently investigated have been excluded based on costs, only	Appendix E of this PIR

Issue	Comment	Response	Reference
		on availability. As requested by OEH, Parsons Brinckerhoff initiated dialogue with OEH and NPWS. In an email received from Deon Van Rensburg (A/Regional Manager - Central Coast Hunter Region, Parks and Wildlife Group) on 7 January 2013 it was stated that: <i>"Yes I can confirm that the Parks and Wildlife Group of OEH is not currently aware of any properties for sale adjacent to the Hunter Wetland National Park that would meet the "like for like" requirements for the project. If we become aware of any lands becoming available we will let you know."</i> The preferred BioBank offset option continues to be the Port Stephens site.	
Ecology-Offsets/compensatory habitat	If BBAM proves to be the appropriate offsetting option, once the above avenues are exhausted, Appendix E of the Submissions Report indicates that the project will result in both a Tier 2 and Tier 3 outcome under the policy due to the development impacting on 'red flag areas', namely EEC's and/or highly cleared vegetation types. In determining whether or not the policy has been correctly adopted, OEH has reviewed Section 1.4.1 'Preferred Offset Option - Purchase of biodiversity credits' of Appendix E, and is of the opinion that it has been correctly applied, albeit with the lack of consideration of more appropriately located offsets as outlined above. Providing appropriate justification is given by the Proponent in applying certain aspects of the policy, OEH would support the use of the BBAM and that the appropriate biodiversity credits are purchased and retired, as outlined above. It is acknowledged that the Submissions Report has provided appropriate details on the likely location of proposed offsetting lands (i.e. preferred location is Karuah), and how these lands would be managed and conserved in perpetuity. If the BBAM option is utilised, management requirements and conservation in perpetuity are built into this mechanism. However, if other options are utilised then appropriate details on conservation and management would be required, in accordance with requirements provided in previous OEH correspondence.	Noted. As per the Biodiversity Offset Strategy (Appendix E of this PIR), the BBAM option is proposed to be used and as such management and conservation would be required.	Appendix E of this PIR
Contamination	With respect to the 'Cut and Fill' aspect of the proposal, further clarification is required with respect to what 'non-VENM' materials ARTC propose to use, in particular its source location and type of material. It is noted that immediately to the east of the old Hunter Water Corporation line (the purple area on the map in Appendix A marked IN3 'light industrial') is 'chitter and tailings'. There is concern as to whether: (i) this is appropriate material for the use as a base for construction work; (ii) disturbance of this material may	The Project will use non-VENM materials for earthworks which largely comprise of historical fill materials currently located within the Project Area (refer to the Construction Methodology at Appendix C of this PIR). These fill materials are variable in nature, and include coal washery reject (CWR, also known as coal reject or chitter), rail ballast, and road base type gravels and sands. As identified in Section 11 and Appendix F of the EIS, no tailings have been identified in the area proposed to be excavated for the Project. Notwithstanding this, if tailings	Appendix F of EIS Appendix M of this PIR

Issue	Comment	Response	Reference
	release any held contaminants and/or nutrients from previous coal processing, and as such may impact on surrounding nationally managed wetlands (e.g. Hunter Wetlands National Park); and (iii) once disturbed, any drainage from areas containing this material, particularly during high-rainfall and/or flooding events, will also potentially impact on adjacent wetlands via surface runoff and leaching.	are encountered during excavation of materials, these would be managed as part of the Construction Waste, Reuse & Recycling Management Plan and Remedial Action Plan in the CEMP for the Project. Further Soil Contamination Assessment was undertaken by Coffey environments for the proposed Tarro Access Road (included at Appendix M of this PIR). Contamination testing of this material indicated that it is not contaminated with hydrocarbons, heavy metals, pesticides, or asbestos and the material is therefore suitable for use as a base for construction work. The presence of nutrients (nitrogen and phosphorous) in CWR is not known. Robert Carr in 1998 prepared a paper 'Coal Reject' published in the Australian Geomechanics Society (July 1998) 'Geotechnical Engineering and Engineering Geology in the Hunter Valley'. The paper discusses the physical and chemical properties of coal reject. No reference to the presence of nutrients was made. In addition, the 'POEO (Waste) Regulation 2005 – General Exemption under Part 6, Cause 51 and 51A The coal washery rejects general exemption 2009' does not require testing of nutrients to assess the suitability of beneficially using CWR. This suggests that nutrients are generally not a concern for CWR. It is noted that sulphur compounds are commonly found in CWR. Samples collected as part of the recent geotechnical investigations were analysed for the acid potential. It was found that the CWR has a low potential to produce acidic drainage. The coal has been in contact with groundwater and surface water at the site for over 20 years, during periods of drought and heavy rainfall. Based on this, it is considered that leachable contaminants in the CWR, if they existed, would have previously leached into the environment. As per Appendix F of the EIS, the range in pH of groundwater on site is 5.43 to 7.29; therefore, it is considered that acidic run-off from the CWR is not occurring. Based on the above, the potential risk of nutrients or contaminants leaching from the fill material (including CWR), and exacerbating the degraded state of the surrounding environment is considered to be low.	
Private access	NPWS, and its contractors, staff, local conservation groups, (e.g. Hunter Birds Observers Club), will require access to the Hunter Wetlands National Park (Hexham Swamp) to carry out routine park management, conservation programs and survey works (e.g. annual bird counts). As such appropriate access needs to be provided. The Proponent is recommended to liaise with NPWS with respect to appropriate access.	ARTC have liaised with NPWS on 28 February 2013 to understand the current access to the Hunter Wetlands National Park (Hexham Swamp). NPWS advised that they currently have agreed access to this area based on discussions and verbal agreements with respective land owners. When on-site, NPWS staff currently access the Hunter Wetlands National Park via Woodlands Close and then traverse Aurizon land via existing easements. The Project would not alter or affect any formal existing access routes currently in	N/A

Issue	Comment	Response	Reference
		place between NPWS and landowners. Should NPWS seek formal access via the private access track discussion should be undertaken with the landowner (Aurizon).	
Private access	It is noted that Newcastle City Council have commenced the planning stages of the proposed 'Shortland to Tarro Shared Pathway' which will require access for all phases of this development if it proceeds, as well as long term access by pedestrians, cyclists and maintenance workers. Similarly, the Richmond Vale Rail Trail is also a project that has commenced to develop planning for a proposed cycling path from Hexham (at the north eastern corner of Hexham Swamp) to Kurri Kurri, with an extension to Minmi and Blue Gum Hills Regional Park. The Richmond Vale Rail, which is currently owned by Coal and Allied is to be transferred to NPWS with the 'Northern Lands Transfer' in mid-2013 and as such, will also require appropriate access. It is recommended that the Proponent liaise with NPWS and Newcastle City Council with respect to these additional access issues.	NPWS and Newcastle City Council have not previously, in consultation undertaken prior to the exhibition of the EIS, informed ARTC of their future proposals (refer to Chapter 5 of the EIS and Section 2 of this PIR) or raised this issue during project discussions. It is our understanding that the provision of additional access routes as part of the proposed pathways is still in its early planning stage. In consideration of this the Project, it is not seen as appropriate for the Project to integrate with this pathway. Therefore the Project does not include any provision for this pathway within the current design.	Chapter 5 of EIS Section 2 of this PIR
Aboriginal Heritage	It is noted that the proposed access route from the project area to the Tarro Interchange will be a shared resource between ARTC and the neighbouring QR National Train Support Facility project. It is also noted that a portion of the proposed access route is located on potential archaeological deposits (PADs) identified as Aboriginal sites: 'PCD' and 'HIS'. It is understood that as a component of the Aboriginal cultural heritage assessment process for both projects, sub-surface investigations were proposed along the access route to determine the nature, extent and significance of any Aboriginal objects present within the PADs. Further, if any objects were identified, the Proponents were to develop appropriate management strategies in consultation with the registered Aboriginal parties (RAPs) for the project/s.	Further Aboriginal heritage investigations have been undertaken to assess the potential impact of the proposed temporary construction access road on the potential archaeological deposit (PAD), Site HS1 and the 'Cultural PAD' (refer to Test Excavation Report discussed in Section 5 and provided at Appendix J of the PIR). A summary of the results of these further excavations and Advice prepared by Kelleher Nightingale is provided in Section 5 of this PIR. The Test Excavation Report prepared (included at Appendix J of this PIR), like all other Aboriginal heritage reporting for the Project, has been prepared based on consultation with Aboriginal Representatives in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> . Appropriate management strategies for the objects found would be included in the Aboriginal Heritage Management Plan prepared as part of the CEMP for the Project.	Section 5 and Appendix J of this PIR
Aboriginal Heritage	Section 5.4.3 of the Submissions Report indicates that a series of sub-surface investigations were conducted for a portion of the PADs along the shared route. However, the results of these investigations have not been provided in the Submissions Report. The Aboriginal cultural heritage assessment is therefore incomplete.	Refer to response provided above.	Section 5 and Appendix J of this PIR
Aboriginal Heritage	The results of these additional investigations, including any consultation with the RAPs for the project and final management strategies, are to be provided to finalise the Aboriginal cultural heritage assessment.	Refer to response provided above.	Section 5 and Appendix J of this PIR

Issue	Comment	Response	Reference
Newcastle City Council			
Flooding	The additional details provided in the Submissions Report indicate that there are likely to be significant and unacceptable impacts on the adjoining properties. Generally, any impacts of an increase in depth greater than 0.04 metres have been considered by Council to be unacceptable in the past (refer to Section 3.7.4 of the <i>Newcastle City-wide Floodplain Risk Management Study and Plan (June, 2012)</i> which outlines the basis of the scenario testing to achieve the 40 mm target). The submitted modelling shows increases of up to 0.40 metres and 0.20 metres on the Pacific Highway and 0.18 metres to 0.08 metres on adjoining properties, with velocity changes above 1 metres/second. These are unacceptable impacts on the surrounding road network and the adjoining properties.	An updated Flood Assessment has been prepared for the Project. The Assessment is provided in Appendix F of this Report and contains responses to the items raised and information requested. Flood mitigation measures have been investigated and implemented by design teams with a cumulative impact assessment for the HRR and TSF projects provided in Appendix F. Part of the assessment included consultation with OEH comprising a series of phone calls, review of updated modelling and a meeting held on 24th October 2012, and meeting with DP&I, NCC, and OEH on 25 February 2012. The assessment provides the following results regarding the impact of the Project on flooding in the Hexham area: - The mechanism of the flooding of the Hexham area is overtopping of the Hunter River at two key locations in proximity to Hexham Bridge. - The Project has impacts on the flooding events above the 10% AEP and below the 1% AEP but insignificant impacts on flood events outside this range. - For this range of events the Project results in increases to flood depth of approximately 0.02 to 0.1m and increases flood velocities by 0.2 to 1.0m/s. The higher range of flood level and velocity increases are localised within rail and road corridors, Aurizon property and undeveloped flood prone swamp and farm land. Flood level increases are typically between 0.02 to 0.05m for adjacent properties with negligible changes in velocity. - The Project does not have an impact on the frequency, timing and duration of flooding in the Hexham area and does not change the flood categorisation of this area. - The cumulative impact of the Project, the TSF Project and the F3 Upgrade would not result in flood impacts outside of the Hexham area. - There is the potential for flood impacts during construction however they would be confined to undeveloped areas to the west of the Project Area. The Appendix F assessment provides details for: - Flood mitigation measures incorporated in design; - Construction mitigation measures; - Flood emergency management plan; and - Flood risk management assessment.	Section 5 and Appendix F of this PIR

Issue	Comment	Response	Reference
		UHVA would implement the Flood Emergency Management Plan during construction as discussed in Appendix F. With onsite flood mitigation being implemented to manage flood level increases within acceptable levels for private land owners, consultation with one land owner (1 Woodlands Close, Hexham) only is required and is being undertaken.	
Flooding	No information is provided of the potential upstream and downstream impacts of the development. Modelling by Council of fill deposited in areas of Hexham (as part of the Newcastle City-wide Floodplain Risk Management Study and Plan) revealed impacts on the flows up stream of the Hunter River; as well as Hexham, Hexham wetland and Kooragang Island as shown in the following diagrams (note - the grey areas represent the areas of infill).	ARTC appreciate Council's position in needing to manage the flood risk and limit floodplain filling impacts on the existing development. The revised rail design and associated revised modelling completed indicates that there would be no impact to flood levels beyond the Hexham area (refer to Appendix F). A discussion on filling of the floodplain has been included in the updated flood assessment with reference to Newcastle Council's impact limits.	Section 5 and Appendix F of this PIR
Flooding	While the modelling did not include the fill for a rail line and the associated works, it did demonstrate that filling, the potential blocking of the floodway and limitations on flows downstream can have effects on the wider catchment.	Appendix F provides a cumulative project impact assessment within the wider floodplain and concludes that the HRR project will have localised flood impacts only. Impacts to the flood planning level will be minimal and there will no impact on flood fringes outside of the Hexham area and wider catchment.	Section 5 and Appendix F of this PIR
Flooding	Inadequate details have been provided on what happens in a 1% AEP event, or the maximum amount of changes that could arise and what event this occurs in. No modelling has been undertaken for events between the 1% AEP and the 2% AEP to determine the maximum impact.	The standard range of flood events has been considered as part of the modelling. More details on the 1% AEP are included in the updated modelling report however it is noted that there are only minor negligible impacts for the 1% AEP event. The revised modelling of the project area provides a better understanding of the flood behaviour within Hexham and determines that for the 1% AEP the entire Hexham area is inundated with flood waters. The volume of flood storage loss due to the project is insignificant compared to the total storage across the floodplain of the Hunter River and Hexham Swamp during the 1% AEP event. Flood impact assessments for the 2% AEP comprises an assessment of maximum impacts for flood event between the 1% AEP and 5% AEP event.	Section 5 and Appendix F of this PIR
Flooding	Further design changes are required to ensure that there are no increased impacts (or minimum increases within acceptable limits) arising from the proposal within the Hunter River flood plain for all flood events.	Flood mitigation options have been assessed by the design team in consultation with stakeholders and implemented with the preferred option to lower the rail design level. Section 3 and 7 of Appendix F describe these design changes. Appendix B of this PIR provides a series of cross sections.	Section 5 and Appendix F of this PIR
Flooding	The information provided in the EIS and Submissions Report shows that the proposed development is significantly altering the fundamental flow patterns and not retaining the floodway in a condition that is capable for the	Information provided in the EIS has been updated by that provided in Appendix F Existing flow paths have been maintained as far as possible with flood mitigation	Section 5 and Appendix F of

Issue	Comment	Response	Reference
	conveyance of essential flood flow. Furthermore, it will increase depths and velocities in a number of areas, contrary to Council's requirements.	design changes. See response provided above and refer to section 3 & 7 of Appendix F.	this PIR
Flooding	It is recommended that the Proponent address the principles of the NSW Government Floodplain Development Manual (2005) and that a flood study be prepared to this extent. This study needs to address a broad range of issues to the same detail as the existing management plan and associated studies. However, unlike the current flood studies that have been undertaken, the study should address the cumulative impacts at the global rather than the development specific level.	This study is a project specific flood assessment that has used existing accepted models that have been utilised to manage development and flood risk in other areas of the Hunter River floodplain. The principles of the NSW Floodplain land policy have been considered during the flood modelling and flood risk assessment for this project. Additional text to indicate how the NSW Flood prone land policy and guidelines have been considered included in the flood assessment report (Appendix F).	Section 5 and Appendix F of this PIR
Traffic & Transport	The temporary access road will be designed to current AustRoads Standards. The Proponent proposes to maintain this road as a gravel surface. Council maintains its position that this road be a sealed all-weather access road to minimise dust and prevent erosion.	As discussed in Section 4 of this PIR, the temporary access road is proposed to be sealed with a two coat seal during construction to minimise dust and prevent erosion. As the road is to be temporary for the use of this Project this design is considered suitable and acceptable.	Section 4 of this PIR

Table 3.1b Government Agency Submissions Received During Exhibition

Issue	Agency Issue	Response	Relevant section
OEH			
1.	<u>FLOODING AND IMPACTS ON COASTAL FLOODPLAINS:</u> The following issues relate to further clarification of the impacts on and management of the coastal floodplain to which the subject site is located on. GENERAL REVIEW Cut & Fill 265,000 cubic metres of earthworks are proposed. Site material is classified as non-VENM (Virgin Excavated Natural Material) and has to be removed. Table 4.5c of the EIS estimates approximately 133,000 cubic metres of "Cut to Fill" operation would take place resulting in a level site. Various reports included as appendices to the EIS state how contaminated the soils are, particularly with acid sulphate soil (ASS), and so it is unclear how much of this fill will need to be imported and/or treated. Section 4.5 of the Traffic Impact Assessment by Parsons Brinkerhoff indicates that a maximum of 190 vehicles per day are expected to enter and exit the site – 120 of these heavy vehicles such as trucks and dog trailers. A potential borrow site has not been identified or discussed; therefore the nature of the potential fill material is unknown. Recommendation 1 – Update report to include all details of "cut-to-fill" operations on the site and fill borrow site if required.	The design amendments, discussed in Section 4 of this report, result in changes to the earthworks volumes provided in Chapter 4 of the EIS. A Construction Methodology, and associated design plans have been prepared for the Project to provide further detail (including revisions to the EIS) on the construction activities proposed (refer to Appendix C of this report). In summary, the revised approximate earthworks volumes for the Project comprise: 61,000m³ of cut to fill material for access roads and general fill; 134,000m³ of Gabion Rock and Shot Rock for rail formation; 40,000m³ of ballast for track construction; 48,000 m³ of material imported for access roads and general fill; and 65,500m³ of excess spoil to be taken offsite assuming it is not suitable for reuse onsite. The spoil to be transferred offsite would be taken to a suitable waste management facility or, subject to contamination investigations and testing, be transferred to Wirragulla (Dungog- ARTC site). Notwithstanding this, every effort would be made to reuse spoil on site where possible with, in a best case scenario, all spoil to be reused on site. Waste and Acid Sulphate Soils Management Plans, to be included in the CEMP for the Project, would identify the process for managing the handling & disposal of waste & acid sulphate soils. Traffic estimates for the Project, including a total of 120 heavy vehicles per day remain as provided in the EIS (refer to Section 4.5) and the Traffic Impact Assessment (Appendix E of the EIS). However, as discussed in Section	Section 4.5 of the EIS. Appendix C of this PIR.

Issue	Agency Issue	Response	Relevant section
		4.9 an additional 10 light vehicles (80 in total) per day would be added to that provided in the EIS. An assessment for this is provided in Section 5 of this PIR.	
2.	Construction Staging There are no details to indicate the staging of construction, particularly with regards to the cut-to-fill operations. The northern parts of the site are vital in the floodplain connection between the Hunter River and Hexham Swamp. The earthworks and works on the hydraulic controls need to be staged so there is no adverse impact on the connectivity between Hunter River and Hexham Swamp floodplain, particularly in the north of the site. The staging of the works must also consider the ASS and erosion constraints of the site, as detailed below. Recommendation 2- Update report to include details of construction staging.	A Construction Methodology has been prepared for the Project to provide further detail (including revisions to the information provided in Chapter 4 of the EIS) on the construction activities proposed (refer to Appendix C of this PIR). Comments above have been provided in the cut and fill, and earthworks required for the construction of the Project. An indicative summary of the staging for the Project's construction is provided in Appendix C. In particular, the construction staging of the Project has been scheduled to ensure that connection of the Hunter River to the Hexham Swamp is retained throughout construction. The Construction Methodology (Appendix C of this PIR) considers potential ASS and erosion management. Further, the CEMP for the Project would include mitigation measures to manage ASS and sediment and erosion control.	Chapter 4 of the EIS Appendix C of this PIR.
3.	Flood Study The BMT WBM report 'Hexham Relief Roads – Flood Impact Assessment' (Appendix B of the EIS) indicates the flood levels and flood extent over the site for a range of design flood events, from the 10% Annual Exceedance Probability (AEP) up to and including the Probable Maximum Flood (PMF). The report states, that the 10% AEP Hunter River design flood event is the threshold event whereby flood waters spill in to the Hexham Swamp over the New England Highway to the north of the site. Hexham Swamp is also filled from the southern end by flow through Ironbark Creek from the Hunter River South Arm. At the 1% AEP event, the Hexham Swamp floodplain becomes fully connected, with flood waters entering over the New England Highways and flowing back to the Hunter River between Hexham Bridge and Ironbark Creek. A detailed flood study was carried out by Worley Parsons for the concurrent development application for the Train Support Facility, which was briefly	An updated Flood Assessment has been prepared for the Project. The Assessment is provided in Appendix F of this Report and contains responses to the items raised and information requested. Flood mitigation measures have been investigated and implemented by design teams based on a cumulative impact assessment for the HRR and TSF projects described in Appendix F. Part of the assessment included consultation with OEH comprising a series of phone calls, review of updated modelling and a meeting held on 24th October 2012, and meeting with DP&I, NCC, and OEH on 25 February 2012. The assessment provides the following results regarding the impact of the Project on flooding in the Hexham area:	Section 7.4.1 of the EIS Section 5 and Appendix F of this PIR.

Issue	Agency Issue	Response	Relevant section
	referenced in the BMT-WBM report. The only additional information of benefit to this site that was taken from that report is that this Hexham Relief Roads (HRR) site is indicated as being located within high hazard flood storage area. The lowest threshold design Hunter River flood event for impacts within the proposed development site is the 5% AEP design flood event. Impacts in the 2% AEP and 5% AEP design flood events are restricted to the east and northern sections of the railway upgrade, whereas impacts in the 1% AEP design flood event are to the western and northern end of the works. There are minor impacts in the PMF event; however as flood waters are approximately four meters deep or greater over the whole site, these impacts are considered insignificant. Climate change impacts were also assessed by BMT-WBM, with the following results reported: • 10% increase rainfall intensity leads to increase in the 1% AEP flood levels of approximately 0.3 meters at the site; • 30% increase in rainfall intensity leading to an increase in the 1% AEP flood levels of 0.8m; • Sea level rise of 0.4 metres leads to an increase in 1% AEP flood level of 0.1 metre; and • Sea level rise of 0.9 metres leads to an increase in the 1% AEP flood level 0.2 metres. The report states that the impacts in the 2% and 5% AEP design flood events result in increased flood levels to the east of the site, where overland floodwaters become "trapped" behind the new rail embankments. However, no cross drainage structures were included in the assessment, despite the inclusion in the report of the statement "the provision of sufficient cross drainage structures in the affected locations would assist in mitigating the flood level increases". The location of these flood level increases coincides with the location of existing industrial and residential development. The proposed development also leads to an increase in the velocity in the 2% AEP design flood event around the north of the site by 300% - from 0.5m/s to 1.5m/s. It is unclear whether this impact is experienced solely on the site of the rail upgrade, or impacts properties with existing developments to the east of the existing rail lines as well. Increasing the flood affectation on the existing developments adjacent to this site is considered unacceptable. The proposed design should be amended so that there are no resultant increases in flood affectation to adjoining properties	• The mechanism of the flooding of the Hexham area is overtopping of the Hunter River at two key locations at and north of Hexham Bridge. • The Project has impacts on the flooding events above the 10% AEP and below the 1% AEP but insignificant impacts on flood events outside this range. • For this range of events the Project results in increases to flood depth of approximately 0.02 to 0.1m and increases flood velocities by 0.2 to 1.0m/s. The higher range of flood level and velocity increases are localised within rail and road corridors, Aurizon property and undeveloped flood prone swamp and farm land. Flood level increases are typically between 0.02 to 0.05m for adjacent properties with negligible changes in velocity. • The Project does not have an impact on the frequency, timing and duration of flooding in the Hexham area and does not change the flood categorisation of this area. • The cumulative impact of the Project, the TSF Project and the F3 Upgrade would not result in flood impacts outside of the Hexham area. • There is the potential for flood impacts during construction however they would be confined to undeveloped areas to the west of the Project Area. The Appendix F assessment provides details for: • Flood mitigation measures incorporated in design • Construction mitigation measures • Flood emergency management plan • Flood risk management assessment UHVA would implement the Flood Emergency Management Plan during construction as discussed in Appendix F of this PIR.	

Issue	Agency Issue	Response	Relevant section
	as a result of the development to the west of the existing railway. In addition, the hydraulic modelling needs to be updated to include all proposed cross drainage structures through the rail embankments so that the real impact on the existing developments to the east of the site can be reported. The design needs to take into account the outlets for these cross drainage structures and where they would discharge in to, and include appropriate mitigation measures for water quality and quantity as required. There is no evidence throughout any of the documents submitted as part of the EIS indicating what consultation has been adjoining land owners regarding these impacts. There is no mention of management procedures for the site for floods greater than the 10% AEP. It is recognised that the risk of flooding during the life of this development may be low, the consequences are potentially high. The full range of consequences needs to be evaluated and incorporated in to a project risk assessment. - Principles and Guidelines.' This is to include consideration of personnel working at the site, the use and storage of hazardous materials and other materials stored on site that could pollute floodwaters, for the full range of flood events up to and including the PMF. All buildings or structures located below the flood planning level must be constructed of flood compatible materials. This includes the provision of residual current device (safety switch) on all electrical outlets and fixtures.		
	Recommendation 3.1 – Update hydraulic assessment to include all proposed drainage structures in model. The assessment also needs to include the updated flooding impacts on adjoining properties.	An update of the hydraulic assessment has been undertaken including: • Additional drainage structures • Assessment of impacts on adjoining properties The outcomes of this updated Flood Assessment provided in Appendix F are summarised above.	Appendix F of this PIR.
	Recommendation 3.2 – Prepare a formal project risk management assessment in accordance with AS/NZS ISO 3100:2009 to include the consideration of the full range of flood events up to and including the PMF.	A provisional construction phase flood emergency management plan has been prepared in accordance with AS/NZS ISO 3100:2009 and is included in Appendix F of this PIR.	Appendix F of this PIR.

Issue	Agency Issue	Response	Relevant section
	Recommendation 3.3 – Ensure all buildings or structures located below the flood planning level are constructed of flood compatible materials. This includes the provision of residual current device (safety switch) on all electrical outlets and fixtures.	Agreed. All buildings and structures susceptible to flooding (i.e. below the flood level) would be constructed of flood compatible materials or their design would take into consideration inundation and ponding of floodwaters. Details of construction mitigation are provided in Appendix F	N/A
4.	Drainage Swale Section 12.4.2 of EIS indicates that the drainage swale to the west of the rail lines is to be used during the construction phase as well as during the operational phase of the site. The size and/or capacity of swale has not been indicated anywhere. The outlet of the swale is unknown.	The Project includes a swale drain traversing the western boundary of the Project Area which replaces an existing drainage system (refer to Section 4 of this PIR). The swale drain is divided into two sections" southern and northern. The southern section is 3m wide and would have a maximum storage volume of 1,240m³. The northern section is 1.5m wide and would have a maximum storage volume of 2,100m³. The swale drain would only be used in the latter stages of construction, once the formation works, i.e. construction of the tracks, are complete. In the final stages of construction and during operation, water would drain into the swale drain via mitre drains which collects run-off via the gabion rocks under the proposed tracks. The southern section of the swale has been designed to release the stored water at a controlled rate through a 375 RCP pipe, similar to that of the existing drain at this location. The existing drain pipe would be replaced and extended slightly however water from the swale drain would discharge, as it currently does, to an existing earth channel which flows through the surrounding wetlands, then eventually flows into the Hunter River via a concrete lined channel under the rail and a culvert under the New England Highway. The northern outlet of the swale drain discharges into an existing retention pond that overflows into the low lying swampland which drains to Mid-Site Creek and into the Hunter River.	Section 4.2.3 of EIS. Section 4 of this PIR.
	The reports that the swale may include measures to assist with sediment control, such as rock check dams, sumps excavated below the channel, flocculation of standing water and/or provision of access points to allow excavator or sucker trucks to remove trapped sediment. There is minimal difference in ground levels through the existing and proposed site, so it is not clear how the hydraulic grade	The design of the swale drain has been amended (refer to Section 4 of this PIR). The design of the swale does not include any sumps or traps excavated below the swale invert. Silt curtains and rock check dams may be temporarily installed during construction to manage erosion and	Section 4.2 and Appendix K of the EIS. Section 4 and Appendices, B, C and L in this PIR.

Issue	Agency Issue	Response	Relevant section
	line would enable this swale to function efficiently. The Groundwater Assessment report by Parsons Brinkerhoff states that groundwater levels are approximately between 0.5 to 1.7 metres below ground level, so it is unlikely that subsurface basins could be excavated to an adequate volume to be useful for water management. Careful consideration must be paid to the depth and location of the swale, so as to avoid permanent ponding of groundwater in it.	sedimentation of the swale whilst its being constructed (i.e. they will not excavated below the water table). These are standard ERSED surface controls which are temporary and consistent with the Blue Book. The swale drain (EIS and amended design) includes measures to assist with sediment control and reduce ponding. In particular the swale drain would be gravity fed being designed to allow for periodic discharge of water (ground and surface water) at the northern and southern ends. The slope of the drain ensures that there is no permanent ponding. This design would be accompanied by an adjacent (to the west) vehicle access track for maintenance (including sediment removal) as necessary (refer to Chapter 4 of the EIS and Section 4 of this PIR). This amended design has been undertaken to minimise interaction with groundwater; however, due to the existing condition, groundwater will be intercepted at some locations by the swale drain. Run-off from the Project Area (to the west of the proposed Relief Roads) is fed to the swale drain by the pervious rock formation which sits under the proposed tracks. This rock allows for water to run along the full length of the swale drain. Based on investigations undertaken in the Groundwater Assessment (Appendix L of this PIR) it is envisaged that the discharge of groundwater from the swale drain would be similar to that currently discharged from the existing drain at this location. The swale drain is considered suitable and appropriate for water management during the operation of the Project as well as to mitigate impact to the rail formation and subsequently improving safety.	
	Figures 4.1(e) - (g) show an access track adjacent to the drainage swale, however, it is indicated as "proposed vehicular access" to Lot 312 DP 5874. If this track is to be used for maintenance vehicles such as sucker trucks, then the design of the road must take that in to account. This includes the depth of the excavations required for the road design so that it can cater for heavy vehicles, as well as provision for vehicle turning areas and access points to the swale.	The "proposed vehicular access to Lot 312 DP 5874" has been relocated to the west of this location as discussed in Section 4 of this PIR. This private track is to be used for exclusive use of residents and not for the Project. The Project includes an amended service road (refer to Section 4 of this PIR). The service road, on the eastern side of the swale adjacent to the Down Coal Line, would be used	Section 4 of this PIR.

Issue	Agency Issue	Response	Relevant section
		for maintenance of the swale drain. The service road has been designed to cater for heavy vehicles suitable for the maintenance of the swale drain (as necessary), and includes a turning circle at the southern end.	
	Section 12.5 of the EIS states that the use and capacity of this drain to the west of the lines may need to account of runoff from both the proposed HRR development and the proposed Queensland Rail Train Support Facility (TSF) development to the west of this site. This needs to be indicated at this stage, as the capacity of the swale is highly restricted by the constraints on the sites, including ASS, high groundwater levels and very flat grades. The proposed access track immediately west of the drainage swale may constrain the inlet capacity from the TSF site as well. The different timings in construction between the two sites must also be taken in to account with the design and maintenance of the swale.	The Project design has been amended following exhibition of the EIS, and therefore supersedes Section 12.5 of the EIS (refer to Section 4 of this PIR). The swale drain proposed is for the use of the Project only. It is understood that the Train Support Facility (TSF Project) would drain to the west and have an independent drainage system. The UHVA design team have been liaising with Aurizon to ensure the site drainage is co-ordinated where possible; however, overall drainage would be independent for both Projects.	Section 12.5 of EIS. Section 4 and 6 of this PIR.
	The Groundwater Assessment carried out by Parsons Brinkerhoff states that there is a high probability that the site is underlain by ASS. However due to the depth and extent of fill that is on the site, the possibility of ASS within the top 800mm of the soil is limited. The groundwater is relatively shallow throughout the site, and is generally saline to brackish. There is no consistent pattern to its depth and flow; however these were assumed to be primarily influenced by the tides. The report also states that there is an increased potential of high risk ASS towards the southern end of the site, in the direction of the Hexham Swamp. The local groundwater is shallow, and so there is a high potential that the shallow soils could be exposed during fluctuating water table levels. Any excavation activities near the Hexham swamp must ensure that the associated groundwater draw down does not desaturate acid sulphate soils within the Hexham Swamp itself. It is unclear if the design for the drainage swale and potential sediment traps have taken these issues in to account.	Based on both previous and more recent investigations, it has been assessed that the potential for ASS is limited to areas of alluvial/estuarine sediments and not fill materials (refer to Appendix K of the EIS, and Appendix L of this PIR). It is noted that, due to fluctuating water tables and the dewatering proposed, the excavation works included in the Project have the potential to expose ASS. The Groundwater Assessment (refer Appendix L of this PIR) provides assessment of the potential for groundwater drawdown during both construction and operation to expose potential ASS to oxygen (by de-saturating ASS). During construction, mitigation measures to reduce exposure and manage ASS will be implemented. These include recharging of groundwater to reduce groundwater drawdown and testing and treatment of excavated potential ASS. During operation, the Groundwater Assessment identifies that, given monitored groundwater levels over the last year and assuming ASS is limited to the alluvial/estuarine sediments, groundwater drawdown is insufficient to expose ASS to oxygen (by de-saturating ASS).	Section 4 and Appendix C of this PIR.

Issue	Agency Issue	Response	Relevant section
		In summary, there will be no adverse impact on drawdown, therefore ASS, within the Hexham Swamp.	
	Recommendation 4.1 – Detail of drainage swale to be provided, including but not limited to inlets, outlets. Cross sections (including depth of excavations). Capacity, maintenance access and whether it will cater for runoff from the adjacent Train Support Facility.	A discussion on the design of the swale drain is included in Section 4 of this PIR. Cross sections which illustrate the swale drain design are provided in Appendix B of this PIR. In summary, the swale drain consists of a northern and southern section. It is typically 0.5m to 1.3m below ground level; however, due to local topography, there are isolated areas of 1.6m and 1.9m depth. The northern section of the swale drain would have a 1.5m wide base (locally increasing to 3m at the southern section; both sections would have) 1:2 batter slopes. (refer to Appendix B of this PIR). The northern outlet of the swale drain discharges into an existing retention pond that overflows into the low lying swampland which drains to Mid-Site Creek and into the Hunter River. The southern outlet would release the stored water at a controlled rate through an existing 375 RCP pipe. The pipe discharges to an existing earth channel which eventually flows into the Hunter River via a concrete lined channel which flows through the surrounding wetlands, and eventually flows into the Hunter River via a concrete lined channel under the rail and a culvert under the New England Highway. The swale drain would only be used in the latter stages of construction, once the formation works, i.e. construction of the tracks, are complete. In the final stages of construction and during operation, water would drain into the swale drain via mitre drains which collects run-off via the gabion rocks under the proposed tracks. The swale has been designed to ARTC standards to accommodate the 1:50 year storm event. The swale drain is designed only to cater for run-off from the HRR Project. The TSF Project would have an independent drainage system.	Section 4 and Appendix B of this PIR.
	Recommendation 4.2 – Detail of vehicle access track to the west of the swale to be provided, including design vehicle loading.	The design amendments for the Project have relocated the private access track, discussed in Section 4 of the EIS,	Section 4.3 of the EIS.

Issue	Agency Issue	Response	Relevant section
		further west of the swale drain (refer to Section 4 of this PIR). This road is to be used for private vehicle access for residents and visitors only. The Project includes a service road to the east of the swale drain that is to be used for maintenance purposes and would be designed for heavy vehicle loading (refer to Section 4 of this PIR).	Section 4 of this PIR.
5.	Stormwater Management There are no details of stormwater management infrastructure as part of the development. This includes no information of potential "cross drainage" from the east to the west of the site. Section 5.1 of the Water Quality Report completed by Parsons Brinkerhoff states the following: <i>"A pervious formation with open channels is the preferred drainage solution (UHVA, 2012a). This would maintain the preconstruction drainage behaviour and would involve deployment of 200mm graded igneous rock providing a large volume of intercedes. Drainage from the formation will be divided into three regions, southern, central and northern. The northern region would flow in to Mid Site creek and the southern region in to Maitland Road creek, whilst the central portion would be divided by the ridgeline with water to the west flowing north and water to the east flowing south".</i> It is unclear if this is referring to the drainage swale to the west of the site. Reference is made to the report 'Stormwater Management Plan - Hexham Train Support Facility' by Worley Parsons, completed as part of the concurrent development application for the TSF for potential stormwater management issues. The following issues are raised in the report, and must be taken in to consideration for the HRR project, particularly with any channel and culvert designs. <i>"The flows are choked at a number of locations due to Structures. Flow rates (and subsequently overflow paths) are highly dependent on maintenance of culverts and channels. The pipe culverts below the HWC watermain choke flows, causing overflows to discharge to the south of the site. The drains around the coal stockpile are currently inundated, heavily vegetated and possibly full of sediment, reducing the amount of detention and conveyance".</i>	Section 5.1 of the Water Quality Report completed by Parsons Brinkerhoff refers to the swale drain to the west of the site (discussed in Section 4.2.3 of the EIS and in Section 4 of this PIR). The information provided in this section of the Water Quality Report is consistent with the current design. The channel and culvert design included in the Project has taken into consideration flow rates and overflow paths. The swale drain is designed to accommodate the 1:50 year storm event. Run-off from the Project Area (to the west of the proposed Relief Roads) is fed to the swale drain by the pervious rock formation which sits under the proposed tracks. This rock allows for water inlet to along the full length of the swale drain. The swale drain discharges to the north and south at ground level similar to the existing stormwater flow in the area. This prevents tidal connection between the swale and the existing watercourses which flow to the Hunter River. The swale drain is located on the western perimeter of the Project Area and does not cross the existing rail lines. It does not affect run-off to the east from the existing rail lines and therefore water connects back to the Hunter river via existing channels. The Project, and in particular the drainage to the swale, does not alter the catchment areas or increase flows to these existing culverts.	Section 4.2.3, 5.1 and of Appendix L of EIS. Section 4 of this PIR.

Issue	Agency Issue	Response	Relevant section
	Recommendation 5.1 - Details of stormwater management for the proposed development need to be provided including but not limited to the inlets, outlets, capacity, ownership and ongoing maintenance requirements. Constructability under the existing railway line needs to be included in these details.	Stormwater management is addressed in Section 12.4.3 of the EIS. Further detail in relation to the swale drain and run off managements is provided above and in Section 4 of this PIR. No construction (including culverts or drainage lines) would be undertaken under the existing railway line.	Sections 12.4.3 of EIS. Section 4 and 6 of this PIR.
6.	Fluvial Geomorphology Section 4.1 of the 'Fluvial Geomorphology' report by Parson Brinkerhoff states that one of the mitigation measures during construction as: <i>"Where practicable, stockpiled material would be placed away from water on stable, level ground above the 10% AEP flood level.</i> The study does not indicate the 10% AEP flood extent, however Figure A-5 of the report by BMT-WBM "Hexham Relief Roads-Flood Impact Assessment" and Figures 12.2(a) - (d) were consulted for this analysis. The figures from this latter report indicate that almost the entire site is inundated in a 10% AEP event - except the artificially 'filled' areas (approximately between chainages 2100 and 500) through the centre of the site. Figure 4.1 of the EIS shows 'proposed compound areas', however, it is unclear if these are to include the stockpiling of material as mentioned above. The 'proposed compound areas' almost coincide with the existing small areas free of floodwater inundation in a 10% AEP flood event. The Fluvial Geomorphology report also states that the site soils are susceptible to sheet and rill erosion particularly where the vegetation covertop soil has been disturbed or removed. Section 4 of the EIS indicates that construction works are expected to take approximately 19 months - from March 2013 to October 2014. Therefore it is imperative that the stockpile and compound locations are located as far as possible out of the flood prone area. Accordingly, it needs to be ensured that all stockpile and compound locations are to be located out of the 10% AEP flood extent, with appropriate erosion and sediment controls in place for the remainder of the work areas.	An updated Flood Assessment (Appendix F of this PIR) provides details on the areas impacted by flood and the level of this impact. Designated stockpile areas have been chosen to be out of the flood prone area where possible as illustrated in the Construction Methodology (Appendix C of this PIR). As stated in the Fluvial Geomorphology Report (Appendix J of the EIS), the proposed stockpiles would be located in areas above the 10% AEP flood level. Stockpiling will be generally isolated to designated areas, however should smaller stockpiles be proposed outside of these areas, below the 10% AEP flood level, consideration would be given to the nature of materials and the potential water quality and erosion risks they present if flooding was to occur. In particular, stockpiling of clean ballast in areas below the 10% AEP flood level would pose minimal water quality risks if inundated by low velocity floodwaters. Should flooding above the 10% AEP be encountered the measures included in the Flood Risk Strategy would be implemented to minimise impact on property, people and the environment. The risk of erosion in this location is low. Nonetheless, during construction, appropriate erosion control would be implemented in line with the Construction Soil and Water Quality Management Plan part of the CEMP. Works within flood prone areas would be conducted in accordance with the Blue Book. A summary of the measures that are to be implemented are included in the Construction Phase Surface Water Management Strategy (Appendix C of this	Appendix J of EIS. Appendices C & F of this PIR.

Issue	Agency Issue	Response	Relevant section
		PIR).	
	Section 6.1 of the same report and Section 19.4.1 of the EIS discusses the bunding of areas that will store or use hazardous materials, as well as for vehicle maintenance areas. There is no mention of management in floods greater than the 10% AEP design flood event.	An updated Flood Assessment is provided in Appendix F of this PIR. The assessment concludes that the Project would be impacted by flood events above the 10% AEP As discussed in the Construction Methodology (Appendix C of this PIR), stores of hazardous materials would be situated at the Primary Site Compound. This compound would be situated above the 10% AEP, and subsequently so would the hazardous stores. Potentially polluting materials (like general fill, PASS or hazardous liquids) would be stored above the 10% AEP flood level wherever practicable; however, should storage below this level be required, the area would be appropriately bunded. Bunding may be of compacted earth construction, or suitable alternative, and designed to be structurally stable if subject to inundation. The bund height would have a freeboard at least 300mm above the 10%AEP level. Access over the bund may be achieved using earth ramps or similar. Further, the provisional flood emergency plan, for the construction phase, provides measures for the management of flood impacts above this event (refer to Appendix F of this PIR).	Section 6.1 in Appendix J of EIS. Section 19.4.1 of EIS. Appendix C and Appendix F of this PIR.
	Section 4.1 of the Fluvial Geomorphology report by Parson Brinkerhoff report also states that <i>"Erosion would be minimised as per Blue Book Guidelines"</i>. Due to the expanse of earthworks proposed, potential for ASS, the location of waterbodies and/or wetlands to the north, south and west of the site, the erosion management details must be detailed in staged construction management plans. The same section of the report states: <i>"During the construction phase, diversion channels and new crossing/culverts would be designed according to standard codes of practice."</i> It is unclear what these diversion channels would be for, and where they would be located (i.e. are they intended to divert external flows around the site or divert internal flows to a different outlet?). It is unclear what 'Standard codes of practice' include for such designs.	As per Section 4.1 of Appendix J of the EIS, erosion would be minimised as per <i>Managing Urban Stormwater – Soils and Construction – Volume 1</i> (Landcom, 2004) (the "Blue Book") (refer to Section 6 of this PIR). An assessment of erosion hazard has been undertaken in accordance with Blue Book methods and the erosion hazard ranked as "very low". The approach to managing erosion and sediment control is outlined in the Construction Soil and Water Quality Management Plan (CSWQMP), which is currently in draft form, and would be submitted to relevant agencies for review and approval as part of the CEMP. Detailed, progressive erosion and sediment control plans (PESCPs) would be prepared for individual stages of construction once the construction methodology and staging	Section 4.1 in Appendix J of the EIS. Section 4 and Appendix C of this PIR.

Issue	Agency Issue	Response	Relevant section
		plans are finalised. The key focus of the PESCPs will be detailing how temporary erosion control can be achieved by covering of exposed soil surfaces, to reduce sediment generation. If deemed necessary, localised diversions (e.g., shallow dish drains or earth banks) may be used to divert stormwater away from areas that capture or expose more contaminated groundwater, so that these waters of different quality may be handled separately. There is no need to construct “diversion channels” as might be typically employed at a construction site to divert clean runoff around the site. The only area where separation of run-on waters is warranted is along the western boundary, where an earth bund would be constructed to the west of the proposed access road, to exclude run-on from the proposed Aurizon TSF during its construction (this bund would be subject to separate approval as part of the TSF Project Approval). The Construction Methodology (Appendix C of this PIR) presents indicative staging diagrams that give consideration to the size of earthworks, potential for ASS disturbance and the location of water bodies. Internal temporary drainage and sediment and erosion control during construction is discussed in the Construction Methodology (refer to Appendix C of this PIR) and would be outlined further in the CEMP for the Project. The Project includes only one creek crossing which is the construction access road across Purgatory Creek. The proposed crossing would incorporate a new culvert of equivalent hydraulic capacity to the existing crossing within the Hunter Water easement, located immediately downstream of the proposed new crossing. Although a Controlled Activity Approval is not required for approved SSI projects, the crossing would be designed and constructed with consideration of the <i>Guidelines for Controlled Activities – Watercourse Crossings</i> (NOW, 2012). This would include the use of inlet and outlet scour protection, maintaining the hydraulic capacity of the waterway, matching existing invert levels, and ensuring prompt rehabilitation of disturbed areas.	

Issue	Agency Issue	Response	Relevant section
		The proposed crossing has been discussed with NSW Fisheries. Fisheries have no objection to a new crossing in this location and agreed that designing for fish passage is not required.	
	Section 4.2 then goes on to state: <i>"During the operational phase, the existing and newly diverted channels that will be utilised postconstruction will be sized appropriately and designed to ARTC standards."</i> It is unclear what these ARTC standards include and whether they are the most appropriate for this site. At a minimum, the AusRoads 'Waterway Design - a Guide to the Hydraulic Design of Bridges' and/or the Newcastle City Council DCP (which references Aus-Spec) should be used for any new crossings/culverts/diversion channels. Particular consideration must be paid to the ASS and high groundwater levels throughout the site. Runoff water should not be diverted to different receiving catchments. Runoff water should be adequately treated before it discharged from the site. Hydraulic capacity of existing culverts/crossings must be maintained as a minimum - the potential to expand the capacity should also be considered.	The comment in Section 4.2 of Appendix J of the EIS refers to the swale drain which is to be constructed on the western side of the Relief Roads and will be utilised towards the end of construction and during the operation phase of the Project. As discussed in Section 4 and Appendix C of this PIR, the swale drain would be constructed to replace the existing network of drains that currently exists within the footprint of the Relief Roads. The swale drain would be designed for a 1:50 year storm event or 2% AEP. As discussed above, the Project includes a crossing of Purgatory Creek at the same location as an existing culvert crossing. The Project includes a culvert consistent with the current design; hence, the hydraulic capacity would be maintained. This crossing complies with the AusRoads 'Waterway Design - a Guide to the Hydraulic Design of Bridges' and has consideration to the Newcastle City Council DCP (which references Aus-Spec). The presence of shallow groundwater and ASS is acknowledged in the design. As per Section 12.4.7 of the EIS, testing and monitoring would be carried out prior to discharge to ensure the quality of the discharge is equal or better than the receiving environment. Details of surface water management are provided in Section 19.4 of the EIS, Appendix C of this PIR and within the CEMP for the Project.	Section 4.2 in Appendix J of EIS & Section 12.4.7 of EIS. Section 4 and Appendix C of this PIR.
	The report also notes the susceptibility of the waterways banks to failure, therefore the integrity of the banks of the watercourses within the project area must also be considered in the design of the culvert crossings and/or upgrades, particularly with the estimated number of truck movements. Their high potential for failure due to their composition and the high water table and the ingress and egress of tidal water flows could be exacerbated with potential climate change impacts on sea level rise and changes in rainfall patterns in the future.	Further investigation has been undertaken subsequent to preparation of the Fluvial Geomorphology Report of the EIS (refer to Appendix J of the EIS). As discussed above, the proposed construction access road includes a new crossing of Purgatory Creek. This creek crossing will utilise a culvert that is consistent with an existing culvert nearby; however, will be designed to accommodate heavy vehicle movements. Further, the new culvert will be of a similar size	Section 2.3.4 in Appendix J of EIS. Section 4 of PIR.

Issue	Agency Issue	Response	Relevant section
		to the existing culvert to ensure that there is no reduction to the waterway area. The detailed design of the culvert and adjoining structures would give consideration to the banks so as to ensure that there is no susceptibility to failure. In the location of the crossing, the creek is quite shallow, has low angled banks that are well vegetated and stable. The risk of erosion in this location is low. Nonetheless, during construction, appropriate erosion control would be implemented in line with the Construction Soil and Water Quality Management Plan part of the CEMP. Works within the waterway would be conducted in accordance with the Blue Book. Specific mitigation measures include minimising disturbance, avoiding times of wet weather, and focusing on temporary erosion control such as covering exposed soil surfaces during site closure. The crossing would be designed and constructed with consideration of the <i>Guidelines for Controlled Activities – Watercourse Crossings</i> (NOW, 2012), including use of inlet and outlet scour protection, maintaining the hydraulic capacity of the waterway, matching existing invert levels, and ensuring prompt rehabilitation of disturbed areas.	
	Section 12.4.3 of the EIS states: <i>"All waterways, spillways and their outlets, would be constructed to be stable in at least the 10% AEP time of concentration storm event."</i> Section 3.2 of the Fluvial Geomorphology Assessment by Parsons Brinckerhoff states: <i>"At present it is proposed that drainage channels be sized for a 20 year rainfall event (UHVA, 2012c). The flooding extent plan for the 5% AEP indicates that the Project Area is 90% free of catchment wide flooding. Anything above this would inundate the Project Area rendering any local drainage ineffective."</i> Consistency is required with the proposed channel design capacities. A greater channel capacity is recommended, due to the flat nature of the site.	An updated Flood Assessment has been undertaken (Appendix F of this PIR) to assess the flood impacts associated with the current Project design. Further consideration has also been undertaken regarding the design of finger drains (from the formation into the swale drain) and the Purgatory Creek vehicle crossing. The swale drain (described above) is designed for a 1:50 year storm event. It has been designed in consideration of the existing topography and replaces an existing drainage system at this location to manage run-off from the Project. The capacity of the swale drain is considered adequate for the Project.	Section 12.4.3 of EIS. Section 4 and Appendices C & F of PIR.

Issue	Agency Issue	Response	Relevant section
	Section 12.4.4 of the EIS states: <i>"The existing road network contains waterway crossings and no significant upgrades or new waterway crossings are proposed."</i> It then goes on to recommend that a low flow pipe and aggregate over geofabric- as per Standard drawing SD5-1 from the 'Blue Book' - should a crossing upgrade be required. Section 4.5 of the Traffic Impact Assessment by Parsons Brinkerhoff indicates that a maximum of 190 vehicles per day are expected to enter and exit the site - 120 of these heavy vehicles such as trucks and dog trailers. It is unclear if the capacity of the existing culverts has been assessed to be able to withstand these forces. A temporary waterway crossing, of the like mentioned, would not be supported by OEH.	Conventional waterway crossings comprising temporary culverts and coarse rock fill, e.g. SD5-1 in the Blue Book, are an appropriate means of traversing minor waterways and channels, and would be used where required to traverse internal clean and dirty water drains. A crossing of Purgatory Creek is required for the construction access road (refer to Section 4 of PIR). This crossing has been designed to be consistent with the existing culvert and would be designed in accordance with relevant Controlled Activity Guidelines. The new culvert crossing at Purgatory Creek, would be designed in a way so as to withstand heavy vehicles without impacts to its structure. Further, the crossing complies with the AusRoads <i>Waterway Design - a Guide to the Hydraulic Design of Bridges</i> and has consideration to the Newcastle City Council DCP (which references Aus-Spec).	Section 12.4.4 of EIS. Section 4 of this PIR.
	Recommendation 6.1 -Compound and stockpile locations are to be located completely outside of the 10% AEP flood extent. Prepare a formal project risk management assessment in accordance with AS/NZS ISO 3100:2009 to include the consideration of the full range of flood events up to and including the PMF.	Section 12.6 of the EIS states that stockpiles and the construction compounds would be located above the 10% AEP flood level. Further, an updated Flood Assessment has been provided in Appendix F of this PIR. As per the Construction Methodology (Appendix C of this PIR), hazardous stores would be situated at the Primary Site Compound. This compound would be situated above the 10% AEP. Proposed stockpiles would also be located in areas above the 10% AEP flood level. Potentially polluting materials (like general fill, PASS or hazardous liquids) would be stored above the 10% AEP flood level wherever practicable; however, should storage below this level be required, the area would be appropriately bunded and designed to be above the 10%AEP level and structurally stable if subject to inundation. A Flood Risk Assessment in accordance with AS/NZS ISO 3100:2009 has been prepared for the Project and is included at Appendix F of this PIR.	Section 12.6 of EIS. Appendices C & F of this PIR.

Issue	Agency Issue	Response	Relevant section
	Recommendation 6.2 - Details of culvert/channel upgrades required including, but not limited to the inlets, outlets, hydraulic capacity and vehicle loading capacity.	The Project includes the construction of a culvert at the location of the Purgatory Creek crossing as discussed in Section 4 of this PIR. The culvert to be installed at this crossing would be similar to that currently installed, however able to withstand heavy vehicle movements. The Project also includes the construction of a swale drain as discussed in Section 4 of this PIR. Appendix B of this PIR includes cross sections of the proposed swale drain.	Section 4 and Appendix B of this PIR.
	Recommendation 6.3 - Clarification required of design parameters for drainage channel capacities. The design parameters should be consistent and take into account the work presented in support of the development application.	As mentioned above, Appendix B and Section 4 of this PIR provide design details of the swale drain which is designed for the 1:50 year storm event or 2% AEP in accordance with ARTC standards. The hydraulic capacity of the existing culverts and crossings would be maintained.	Section 4 and Appendix B of this PIR.
	<u>THREATENED SPECIES</u> Although in general, OEH is of the opinion that the 'Ecological Assessment' (Appendix of the EIS) is adequate, the following matters needs to be addressed before OEH can offer its potential support to the proposal: • additional clarification of the fauna survey effort; • submission of the BBAM credit calculator files and documentation in accordance with Attachment B of OEH Submission; and • further details on the proposed offset package.	Additional Clarification of fauna survey effort is provided in Appendix H of this PIR. The BBAM credit calculator files and documentation and Biodiversity Offset Strategy for the Project are included in Appendix E of this PIR. Further details on the proposed offset package would also be provided in Appendix E of this PIR.	Appendix E and Appendix H of this PIR.
1.	Fauna and Flora Surveys In general, OEH acknowledges that the flora and fauna survey components for the proposal appear to be adequate. OEH supports the use of the Biobanking Assessment Methodology (BBAM) in assessing the impacts of the proposal and quantifying the habitats / vegetation types on the subject site. In OEH's correspondence on 'adequacy of the Draft EIS' (dated 30 May 2012), we requested that further clarification of how the stratification units were determined and how survey design was applied to these would enable OEH to determine whether or not adequate survey effort had been undertaken for fauna. OEH acknowledges that details have been provided on the stratification, fauna habitats	OEH's correspondence on 'adequacy of the Draft EIS' (dated 30 May 2012) was not provided to UHVA by DP&I during the test of adequacy of the EIS. Therefore, earlier response was not able to be provided, or concerns addressed. This information has now been reviewed by UHVA. The basic approach to fauna surveys conducted over the subject site was to assess the diversity of vegetation types present and by noting their extent and proximity to other regional habitat, and deduce which fauna guilds which might	Appendix C and Attachment F (of Appendix C) of EIS. Appendix H of this PIR.

Issue	Agency Issue	Response	Relevant section
	and specific features assessed, however, OEH suggested that the proponent provide a table that details sampling methods and survey effort per stratification unit. This appears to be absent and as such OEH is unable to definitively conclude whether or not the fauna survey effort is adequate. We note that some sampling techniques appear not to have been applied, such as small mammal trapping (e.g. use of Elliott cage traps, pitfalls and/or hair sampling tubes etc.). This may be due to this specific guild of animals being unlikely present, however the EIS needs to specify why such methods are not utilised, if the survey deviates from the recommended effort stated in OEH guidelines (i.e. DEC 2004). As such OEH requests that the proponent provide table that details sampling methods and survey effort per stratification unit, including size of each unit, timing of surveys (not just the survey, but each specific component), prevailing climatic conditions at time of survey, and how they meet the minimum requirements in OEH survey guidelines (DEC 2004). As previously requested (30 May 2012), a map overlaying the survey details over the stratification units vegetation types would also be helpful. With respect to sampling techniques and methodologies utilised, OEH is unsure from the EA whether the minimum effort has been applied, and information as requested above would help determine this. Section 2.5 'Field Survey' of the Ecological Assessment component of the EIS indicates that targeted surveys were undertaken from 15-22 June, 5-6 September, 4 November and 7-8 November 2011, inclusive, but do not distinguish between flora and fauna, nor do they indicate whether these dates apply to general baseline surveys or specific threatened species targeted surveys. Further information is required with respect to timing of surveys, which should be incorporated in the above recommended tabular format for justification of how the surveys undertaken meet OEH guidelines.	have potential habitat within the site. The area of native vegetation within the subject site (<10 ha) determined that the minimum amount of survey effort as set out in the OEH guidelines (DEC 2004) would be required. While there are detailed aspects of the field work that are not evident in the EIS document, there is detailed locality, timing, methodology and weather information contained in Appendix C of the EIS, and specifically in Attachment F (of Appendix C), Figures 2.1a-c (Ecological survey locations); Figures 2.3a-c (GGBF survey locations); and Figures 3.1a-c (vegetation community mapping). As requested the additional information regarding fauna survey stratification details and justification for the suite of fauna surveys conducted and those not undertaken are provided (refer Table 1 in Appendix H of this PIR).	
2.	Targeted Surveys – Flora OEH acknowledges that the EIS states that specific targeted flora searches have been undertaken, in particular those species which OEH requested further details on (in our correspondence dated 30 May 2012): Trailing Woodruff (<i>Asperula asthenes</i>), Noah's False Chickweed (<i>Lindernia alsinoides</i>), Small Water-ribbons (<i>Maundia triglochoides</i>), Tall Knot-weed (<i>Persicaria elatior</i>) and Horned Pondweed (<i>Zannichellia palustris</i>). However, specific details on these surveys are still lacking, particularly in relation to timing, location, species targeted and habitats searched. OEH notes that Section 2.5 Field Survey provide a number of dates for 'targeted surveys', but these do not indicate which predicted flora species were targeted and at what time. Similarly Appendix C 'Threatened species and populations of plants' details whether or not species were recorded on-site	Details on targeted threat-listed flora species surveys and justification for considering some species during targeted field surveys and not others is given in Sections 8.2.1 and 8.3.13 of the EIS. In particular, Section 8.3.13 of EIS notes that <i>Persicaria elatior</i> and <i>Zannichellia palustris</i> were targeted during flora surveys and that other species were determined as not be present, due to a lack of suitable habitat, which was determined as part of onsite habitat assessment and threat-listed flora surveys. Nevertheless, despite an absence of the two above species (and those with a small potential to occur, such as <i>Maundia triglochoides</i>), it was determined	Section 8.2.1, 8.3.13 and Appendix C of the EIS

Issue	Agency Issue	Response	Relevant section
	but does not link this information to specific targeted timed searches. To determine the adequacy of such targeted flora surveys OEH requests the proponent provide details on location, survey methodology (e.g. observation technique, random meander, parallel belt transects etc.); timing, seasonal climatic conditions, duration effort and habitats searched be provided (as per OEH guidelines - DEC 2004). If surveys are inadequate, then OEH recommends appropriately timed targeted surveys in accordance with OEH guidelines (DEC 2004) be undertaken for all potential taxa.	that there was still a moderate chance that they might exist and as such they were assessed in Appendix E of the Ecology Report (Appendix C of EIS). The locations of flora surveys are provided in Figures 2.1a-c of Ecology Assessment (Appendix C of EIS). Targeted surveys for threat-listed wetland plants were undertaken at all wetland habitats within the subject site (see Figure 3.1a-c in Appendix C of EIS) in accordance with OEH guidelines (DEC 2004).	
3.	Threatened Species Assessment OEH acknowledges that the impact assessment on threatened species, ecological communities and their habitat has utilised the 'BioBanking Assessment Methodology' (BBAM) (DECC 2008) as defined under Section 1278 of the <i>Threatened Species Conservation Act 1995</i> (TSC Act) and the 'BioBanking Assessment Methodology and Credit Calculator Operational Manual' (OEH 2011a). OEH supports this aPIRoach as this is consistent with how threatened species impacts can be formally assessed under other parts of the <i>Environmental Planning and Assessment Act 1979</i>. As the BBAM has been used OEH's 2011 "Interim policy on assessing and offsetting biodiversity impacts for Part 3A development" (the 'policy') can apply. The policy allows for modification to the BBAM under limited circumstances. As such, in accordance with this policy the EIS states that the development would require the retirement of 230 'ecosystem' credits, based on 9.1 ha of native vegetation. For OEH to assess whether or not this is correct and that the BBAM has been correctly applied, we require the proponent to submit the relevant credit calculator files and documentation as outlined in Attachment B of OEH Submission. As such OEH requests that DP&I recommend this to the proponent. Please Note: On 1 April 2012, the BioBanking Credit Calculator Version 2 has become the compulsory version of the tool to use for BioBanking assessments (see www.environment.nsw.gov.au/biobankingcalculator.htm for further details). The credit calculator is now web-based and no longer produces 'xml' files. Instead a copy of the assessment can be sent electronically to OEH by following the steps outlined in Attachment B of OEH Submission. The requirement of submitting background files for OEH to use in checking the BioBanking assessment still stands and is also explained in Attachment B of OEH submission. Additionally, OEH recognises that any possible inadequacies the review of the survey methodology reveals, as outlined above, would also need to be	A Biodiversity Offset Strategy, including BioBanking Credit Calculator Version 2 calculation, has been provided in Appendix E of this PIR. This strategy also includes updates for the Project based on the design amendments discussed in Section 4 of this PIR.	Section 4 and Appendix E of this PIR.

Issue	Agency Issue	Response	Relevant section
	incorporated into any revised assessment/BBAM.		
4.	Provision of Offsets/Compensatory Habitat OEH acknowledges the EIS states, that a conservation offset area would be provided, either through a variety of possible offset strategies (as outlined in Section 9.6 of the 'Ecological Assessment' of the EIS) ranging from on-site offsets to an offsite offset package (i.e. securing and improving existing habitat at another site or retiring appropriate biodiversity credits in accordance with the Biobanking Assessment Methodology). OEH supports the use of the BioBanking Assessment Methodology and the interim offset policy (OEH 2011b) in advising the quantum and type of offsets required, as outlined in Section 9.4 of the 'Ecological Assessment'. This assessment appears to have been conducted on the native vegetation component of the development footprint (i.e. <i>Phragmites australis</i> and <i>Typha orientalis</i> coastal freshwater wetlands of the Sydney Basin, Swamp Mahogany swamp forest on coastal lowlands of the North Coast and northern Sydney Basin, and Swamp Oak swamp forest fringing estuaries, Sydney Basin) and not the planted vegetation, disturbed grassland or exotic herbfield communities, which OEH acknowledges is predominantly exotic (though OEH notes that <i>Capillipedium spicigerum</i> which is recorded as an exotic in the EIS is in fact a native grass). OEH notes that the native vegetation to be cleared represents three endangered ecological communities as listed under the TSC Act, namely 'Swamp sclerophyll forest on coastal floodplains', 'Swamp Oak floodplain forests' and 'Freshwater wetlands on coastal floodplains'. All three of these communities on site are in varying condition and typically weed invaded. The EIS states that the development would require the retirement of 230 'ecosystem' credits, based on 9.1 ha of native vegetation. At this stage the EIS has not provided an indication to where the offset would be located nor provided any specific details on the biodiversity value(s) of such an offset. As identified in previous correspondence, OEH would have expected a more descriptive package in the revised EIS regarding a potential offset(s). This is not the case, and the dialogue of the EIS remains essentially the same as the draft version. OEH acknowledges ARTC commitment to developing an offset that adequately meets the quantum of the biodiversity offset requirement as calculated using the BBAM (as per Section 9.4), however, OEH requires an indication of the where the offset is to be located and what its inherent biodiversity values are, so that its adequacy can be assessed against that being lost. OEH would recommend that if a package is to be developed that it would be submitted and reviewed by	A Biodiversity Offset Strategy, including BioBanking Credit Calculator Version 2 calculation, has been provided in Appendix E of this report. This strategy also includes updates for the Project based on the design amendments discussed in Section 4 of this PIR. This report includes all relevant information identified by OEH in this submission. ARTC are currently in discussions with potential land owners on three potential offset sites. The preferred offset sites are located within the Hunter/ Northern Rivers CMA and contain vegetation characteristics matching the developments credit requirements and/or credits considered permissible under the variation rule set outlined within 'the policy'. The details of these preferred offset sites, currently being investigated, are provided in Appendix E (Biodiversity Offset Strategy) of this PIR.	Appendix E of this PIR.

Issue	Agency Issue	Response	Relevant section
	OEH prior to any approvals given for the project. OEH supports the concept of an offset package being provided, but requests its specific details regarding location and biodiversity values be provided so that OEH can assess that the BBAM and associated policy has been correctly applied, and that it represents a suitable offset to compensate the loss of habitat on the development site. OEH requests the following information on the proposed offset package in any future iteration of the EIS: • submission credit calculator files as outlined in Attachment B of OEH Submission; • all appropriate BioBanking assessment files (including all reports, associated maps, field sheets etc), and any relevant expert reports (if applicable). Refer to Attachment B of OEH Submission is a checklist of information required when utilising the draft Biobanking Assessment Methodology and can be used as a guide to the relevant information required; • all appropriate GIS shape files (e.g. maps, plots and transects, assessment circles, species polygons); • geo-referenced map(s) showing the locality of the offset lands, relevant vegetation zones and management areas (if applicable); and • how the offsets would be conserved and managed in perpetuity (*refer to next paragraph).		
5.	Conservation in Perpetuity of Offset Lands OEH again acknowledges that the EIS has indicated that an offset strategy would ensure any identified offsets would be secured under an appropriate conservation measure (as stated in the EIS in accordance with OEH preferred options- Section 9.8). As stated in previous correspondence OEH requires the proponent: • to indicate up front the mechanism to be used to achieve conservation in perpetuity; • provide an outline of all appropriate management regimes (including other habitat enhancement or mitigation measures); • indicate financial security with respect to ongoing management; and • OEH expects this detail to be included in future reiterations of the EIS.	A Biodiversity Offset Strategy is provided in Appendix E of this PIR. As per the Biodiversity Offset Strategy (Appendix E of this PIR), site selection was undertaken through field surveys and consultation with private landowners and government agencies. This process identified a short list of properties as preferred options, based on availability and the biodiversity values present. The preferred option, the Port Stephens site, was considered to possess the most appropriate credits for offsetting this project. No offset options currently investigated have been excluded based on costs, only availability. As discussed above, this strategy identifies a number of potential sites suitable for biodiversity offset. Each of the potential offset sites offer a range of potential offset mechanisms including Biobanking sites under the Biobanking scheme and acquisition of land adjoining the Hunter Estuary Wetlands NP. The actual mechanism used	Appendix E of this PIR.

Issue	Agency Issue	Response	Relevant section
		to achieve conservation in perpetuity would therefore differ depending on the final offset site and package approved. A preferred Biodiversity Offset Package would be provided post Project Approval for the Project subject to conditions of consent.	
6.	Management Plan Typically, OEH requires that an appropriate Management Plan (such as vegetation or habitat) be developed and implemented as a key amelioration measure, prior to any approvals. This would facilitate the assessment of the EIS and whether or not it adequately addresses impacts on threatened species, their habitat and EEC. OEH would expect that any such plan would be underpinned by an appropriate monitoring program and adaptive management regime to ensure ongoing success. The management plan or outline thereof, should clearly document how the offset area, any retained vegetated areas or habitat features and proposed habitat management within the development footprint (e.g. buffer zones, habitat trees and nest boxes) would be managed and implemented with respect to long term conservation and viability, including clear details on how they will be funded. The plan should cover, but not be limited to, the issues outlined in our 30 May 2012 correspondence. OEH acknowledges that if the offset package utilises a biobanking agreement under the TSC Act, then a management plan will be part of that process. References DEC (2004) <i>Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities</i>. Working Draft. November 2004. Department of Environment and Conservation (NSW). This document is available at: www.environment.nsw.gov.au/resources/nature/TBSAGuidelinesDraft.pdf. DECC (2008) <i>BioBanking Assessment Methodology</i>. Department of Environment and Climate Change NSW. OEH (2011a) <i>BioBanking Assessment Methodology and Credit Calculator Operational Manual</i>. Office of Environment and Heritage (NSW), Goulburn Street, Sydney. www.environment.nsw.gov.au/biobanking/calculator.htm OEH (2011b) NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant	As discussed in Section 8.5 of the EIS, plans of management would be prepared, as part of the CEMP for the Project, for the protection of flora, fauna and their habitats during the construction of the Project. This management plan would be prepared to include information, including appropriate management and implementation of biodiversity offsets (refer to Appendix E of this PIR), identified by OEH.	Section 8.5 of the EIS. Appendix E of this PIR.

Issue	Agency Issue	Response	Relevant section
	infrastructure (SSI) projects. NSW Office of Environment and Heritage, Sydney, June 2011.		
1.	<u>ABORIGINAL CULTURAL HERITAGE</u> Aboriginal Cultural Heritage Assessment OEH acknowledges the significance of the local environment to the local Aboriginal community and acknowledges that the Aboriginal cultural heritage assessment has been undertaken in accordance with OEH's Aboriginal cultural heritage assessment requirements. The results of the Aboriginal cultural heritage assessment for the project area are also acknowledged and OEH supports the specific recommendations provided to manage any Aboriginal cultural heritage values associated within the project area.	Noted. No further response required.	Chapter 14 of the EIS.
2.	Management of Aboriginal Cultural Heritage OEH notes that the proponent has committed to managing the potential impact from the project on Aboriginal cultural heritage values and OEH supports this commitment. It is noted that Section 14.9 of the EIS identifies a range of management strategies developed in consultation with representatives of the local Aboriginal community in an effort to manage the potential threat on Aboriginal objects as a result of the major project application. OEH has included recommended conditions of approval to address these matters.	Noted. No further response required.	Chapter 14 of the EIS.
3.	AboriginalHeritage Management Plan OEH acknowledges and supports the proponent's commitment to develop and implement an Aboriginal Heritage Management Plan (AHMP) for the project area, to clearly articulate culturally appropriate management strategies in the event that Aboriginal objects are encountered and likely to be impacted by the proposal. OEH has included a recommended condition of approval to address this matter.	Noted. No further response required.	Chapter 14 of the EIS.
4.	Conclusion OEH has no additional concerns with the Aboriginal cultural heritage assessment for the project application and recommends that the following amended conditions of approval for Aboriginal cultural heritage are reflected in any approval conditions for the project. RECOMMENDED AMENDED CONDITIONS OF APPROVAL FOR	These conditions are consistent with the aims of the Project and therefore considered acceptable.	Chapter 14 of the EIS.

Issue	Agency Issue	Response	Relevant section
	<u>ABORIGINAL CULTURAL HERITAGE</u> 1. The proponent must consult with and involve all the registered local Aboriginal representatives for the project, in the ongoing management of the Aboriginal cultural heritage values. Evidence of this consultation must be collated and provided to the consent authority upon request. 2. The proponent must develop an Aboriginal Heritage Management Plan (AHMP) for the project area to detail procedures for managing the Aboriginal cultural heritage values of the project area. The AHMP is to be implemented in consultation with the registered Aboriginal parties. The plan must also detail the involvement and responsibilities of the Aboriginal stakeholders in the implementation of all cultural heritage management actions; details of the responsibilities of all other stakeholders; details of all mitigation and management strategies (including further investigations); procedures for the identification and management of previously unrecorded sites (including human remains); details of an appropriate keeping place agreement with local Aboriginal community representatives for any Aboriginal objects salvaged through the development process; details of the Aboriginal Cultural Heritage Education Program for all contractors and personnel associated with construction activities; and compliance procedures in the event that non-compliance with the AHMP is identified. 3. In the event that surface disturbance identifies a new Aboriginal object, all works must halt in the immediate area to prevent any further impacts to the object(s). A suitably qualified archaeological specialist and representatives of the local Aboriginal community must be contacted to determine the significance of the object(s). The site is to be registered in the Aboriginal Heritage Information Management System (AHIMS) (managed by OEH) and the management outcome for the site included in the information provided to the AHIMS. The proponent will consult with representatives of the local Aboriginal community, and the archaeological specialist to develop and implement management strategies for all objects/sites. 4. All Aboriginal sites impacted by the project must have an Aboriginal Site Impact Recording (ASIR) form completed and be submitted to the AHIMS Registrar within three (3) months of completion of these works. 5. If human remains are located in the event that surface disturbance occurs, all works must halt in the immediate area to prevent any further impacts to the remains. The NSW Police are contacted immediately. No action is to be undertaken until police provide written notification to the proponent. If the skeletal remains are identified as Aboriginal, the proponent must contact OEH's Environment Line on 131 555 and representatives of the local		

Issue	Agency Issue	Response	Relevant section
	Aboriginal community. No works are to continue until OEH provides written notification to the proponent. 6. An Aboriginal Cultural Education Program must be developed for the induction of all personnel and contractors involved in the construction activities on site. Records are to be kept of which staff/contractors were inducted and when for the duration of the project. The program should be developed and implemented in collaboration with the local Aboriginal community.		
EPA			
1.	Air The EPA has reviewed the Air Assessment and acknowledges that the proponent has addressed the Environmental Assessment Requirements for the project. <u>Recommended Conditions of Approval-</u> - Construction vehicles using public roads must be maintained to prevent any loss of load, whether dust, liquid or soils. Facilities must be provided at exit points of all Construction sites/compounds to minimise tracking mud, dirt or other material onto a public road or footpath. In the event of any spillage, the Proponent must remove the spilled material as soon as practicable within the working day of the spillage. - The Proponent must ensure that the project area including haul roads, as well as any plant, and equipment used in connection with the Activity are: - maintained in a proper and efficient condition; and - operated in a proper and efficient manner.	These conditions are consistent with the aims of the Project and therefore considered acceptable.	Chapter 13 of the EIS.
2.	Noise The EPA has reviewed the Noise Assessment and acknowledges that the proponent has addressed the EPA's Environmental Assessment Requirements. In addition the EPA has the following comments on the EIS.	Noted. No further response required.	Chapter 9 of the EIS.
	<u>Rail Possessions and Out of Hours Works</u> The EIS contains a commitment by the proponent to standard construction hours. The EIS also identified that the proponent plans to undertake works outside of	Noted. Project Approval is sought for construction works to be undertaken outside of construction hours as described in Section 4.5.4 of the EIS. Applications for licensing, having regard to noise and vibration, would be in accordance with	Section 4.5.4 of the EIS.

Issue	Agency Issue	Response	Relevant section
	standard construction hours during rail possessions, as well as potentially at other times during the construction phase. Proposed works to be undertaken outside of standard hours include works during rail possessions, works by utility providers, structural works, asphalt works and lighting. The proponent has recommended in its mitigation measures that works during rail possessions would be undertaken under the Environment Protection Licence (EPL) where feasible. Under Section 50 of the <i>Protection of the Environment Operations Act</i> (1997), the EPA is prohibited from issuing an EPL for works that require but do not have development approval. Consequently, it is important that any approval granted contains a clear quantification of the extent to which out-of-hours works are permitted.	this section of the EIS and relevant conditions of consent provided in the Project Approval. At this stage it is envisaged that works would be undertaken during the following possession times: • August 2013 – 0600 on 13/08/13 to 0600 on 16/08/13 (total 72 hours); • September 2013 – 0300 on 14/09/13 to 0200 on 16/09/13 • March 2014 (dates and hours to be determined); • May 2014– 0600 on 13/05/14 to 0600 on 17/05/14 • August 2014 (dates and hours to be determined); and • November 2014 (dates and hours to be determined). Further additional out of hours periods for other purposes and are currently anticipated to be : • November 2013 – 0600 on 19/11/13 to 2000 on 21/11/13 (total 62 hours)	
	<u>Recommended Conditions of Approval</u> Construction Hours 1. Construction must be restricted to between the hours of 7:00 am to 6:00 pm (Monday to Friday), 8:00 am to 1:00 pm (Saturday) and at no time on Sundays and public holidays except: - for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; - where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or - unless part of Railway Possessions* when works outside standard hours are permissible provided all reasonable and feasible mitigation measures have been implemented to minimise noise impacts. *Works during rail possessions outside of standard construction hours are limited to a maximum of x hours per month. Local residents should be informed of the timing and duration of work approved under item (c) at least 48 hours before that work commences.	Noted. Refer above for detail in relation to out of hours works.	N/A

Issue	Agency Issue	Response	Relevant section
	Construction Noise Management 2. The proponent must schedule rock breaking, rock hammering, sheet piling, pile driving and any similar activity only between the following hours: (a) 9am to 12pm and 2pm to 5pm, Monday to Friday; and (b) 9am to 12pm, Saturday.	Draft Conditions of Approval would be reviewed and discussed with DP&I and relevant Government Agencies.	N/A
	3. The proponent must, where reasonable and feasible, erect operation noise mitigation measures at the start of construction (or at other times during construction) to minimise construction noise impacts.	The EIS identifies that there is no triggering of further assessment of operation noise mitigation. ARTC therefore does not support such a condition.	N/A
	4. The proponent must consult with the church on Old Maitland Rd identified in the EIS and minimise the impact of noise generating construction works in their vicinity. The proponent must ensure that construction works audible at the church are not timetabled during important events, such as services, funerals and weddings, unless arrangements acceptable to the affected institutions are made at no cost to the affected institutions.	Consultation undertaken with the community suggests that this Church is no longer used for church services and has been sold to private owners. Attempts to consult with the landowner have as yet not been successful. Notwithstanding this, draft Conditions of Approval would be reviewed and discussed with DP&I and relevant Government Agencies.	N/A
	Operation Noise Monitoring 5. The proponent must assess the adequacy of the implemented noise mitigation measures between six months and one year after opening the activity. Should the assessment indicate noise levels exceeding those predicted in the EIS, the proponent must: (a) advise the Director-General; and (b) investigate and implement further reasonable and feasible mitigation measures in accordance with the NSW Government's "Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects". The selection of these measures must be undertaken in consultation with affected property owners.	The EIS identifies that there is no triggering of further assessment of operation noise mitigation. ARTC therefore does not support such a condition.	N/A
3.	Soil and Water Management The EPA has reviewed the Soil and Water Management Section of the EIS and acknowledges that the proponent has addressed the EPA's Environmental Assessment Requirements. In addition the EPA has the following comments on the EIS.	Noted. No further response required.	Chapter 12 of the EIS.

Issue	Agency Issue	Response	Relevant section
	<u>Erosion and Sediment Control</u> The EIS contains broad details on how the site will be managed during the construction phase. This includes reference to a variety of management plans and guideline documents. The proponent has identified that specific management measures will be finalised at a later stage and as part of the management plan process. The EPA encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. The EPA does not review these documents, as our role is to set environmental objectives for environmental management, not to be directly involved in the development of strategies to achieve those objectives. The approaches proposed by the proponent to manage the site are reasonably standard in these proposals and while the proposal does not contain sufficient detail for the EPA to comment on the practicality of the measures proposed by the proponent, the EIS has noted the relevant guidelines and strategies that will help to formulate the management strategies. The main guideline the EIS refers to for Erosion and Sediment Control is Volume 1 of the Department of Housings Managing Urban stormwater (Bluebook). The EPA also recommends consideration of Volume 2 of the Bluebook including chapters 2A - installation of utilities and 2C - unsealed roads. The EPA notes that guideline 2D may also be relevant to the proposal as the guideline appears to address a number of similar risks to the proposal.	Noted. A Soil & Water Quality Management Plan, Erosion and Sediment Control Plan and Acid Sulfate Soils Management Plan are to be prepared for the Project, as part of the CEMP, to appropriately manage site water and soil during the construction phase. Progressive Erosion and Sediment Control Plans would be developed throughout the course of the Project to address different areas and stages. A summary of the management and mitigation measures to be included in these plans is provided at Appendix C of this PIR.	Section 12.6 of the EIS. Appendix C of this PIR.
	<u>Dewatering</u> The proposal includes a brief discussion on the potential need to dewater at the site. The EIS identifies that the site has limited capacity to treat and manage water from dewatering, and suggests this water may be discharged. Based on the information in the EIS, water collected from dewatering has potential to be different from receiving waters. Any resulting discharge could be in breach of Section 120 of the <i>Protection of Environment Operations Act (1997)</i>. The EPA recommends that if the proposal is approved, no discharge be permitted from dewatering activities. <u>Recommended Conditions of Approval</u> 6. The proponent must not discharge during construction, any water generated during the dewatering of the site.	A meeting was undertaken with EPA on 6 November 2012 to discuss this condition. EPA confirmed that point number 6 refers to discharge of water directly from dewatering activities only. An additional meeting was undertaken with EPA on 7 March 2013 to discuss the revised design and the response provided below. Excavation dewatering and waste water discharge would be required to enable construction of the Project (refer Section 12.3 of the EIS). Groundwater interception would take place at times due to the presence of a shallow groundwater table. The Construction Methodology (Appendix C) has been developed with a goal of minimising dewatering; however, there may be times when discharge of dewatered groundwater to surface water is required. During construction, groundwater that is unsuitable for use as	Section 12.3, 12.6, and 19.2.1 of the EIS. Appendix C of PIR.

Issue	Agency Issue	Response	Relevant section
		recharge water would be treated prior to being discharged into the surrounding surface waters. An application would be made for an EPL that includes at least two water discharge locations – to the north and south of the site respectively, i.e. either end of the proposed swale drain. It is proposed that these discharge points would be used to discharge accumulated stormwater during the later parts of the construction phase and during the operational phase. Dewatering and discharge would be undertaken in accordance with the mitigation measures in Section 12.6 of the EIS. As per Section 19.2.1 of the EIS, it is noted that the Project occurs within an environment having significant water constraints, and with highly sensitive water receptors; thus, every effort would be made to ensure that the existing quality of water collected from dewatering does not impact on the receiving waters. Where practicable, surface runoff would be kept separate to dewatered groundwater as they are expected to be of different qualities.	
4.	Waste The EPA has reviewed the Waste section of the EIS and acknowledges that the proponent has addressed the Environmental Assessment Requirements for the project. <u>Recommended Conditions of Approval</u> 7. The proponent must not accept any waste onto the site during construction. 8. The Proponent must ensure that waste is managed during the Construction and Operation stages respectively in accordance with the NSW Government's Waste Reduction and Purchasing Policy. This includes: (a) the application of the waste minimisation hierarchy principles of avoid/reduce/re-use/recycle/dispose; (b) waste handling and storage; (c) disposal of wastes. including disposal of cleared vegetation, contaminated materials, glass, metals and plastics, hydrocarbons (lubricants and fuels) and sanitary wastes; and (d) any waste material that is unable to be re-used, re-processed or recycled must be disposed at a facility approved to receive that type of waste.	These conditions are consistent with the aims of the Project and therefore considered acceptable. Waste would be managed as per Section 23.1 of the EIS and the CEMP for the Project.	Section 23.1 of the EIS.

Issue	Agency Issue	Response	Relevant section
NSW Heritage Council of NSW			
	The proposed works involve the construction of five Up Relief Roads (Train Lines) close to Hexham. Chapter 15 and Appendix I deals with non-Indigenous heritage noting that the following elements are within the area of impact: - the JABAS CPP foundations, footprint, and sidings, constructed in 1956; The C&A CPP sidings foundations and footprint, constructed in 1973; - miscellaneous structures (the concrete silos and associated brick building, concrete storage bins and unidentified structural remains); and - the Minmi to Hexham Railway, including part of the old rail line and the original 1850s junction, the 1850's era junction cottages, the 1850's and 1940's locomotive sheds, and the remains of the 1940's era washhouse and control box.	Noted. Although the listed elements are situated within the Project Area, adherence to the mitigation measures listed in Section 15.7 of the EIS, Section 6 of this PIR and the CEMP for the Project would ensure that potential impacts are minimised or eliminated.	Section 15.7 of the EIS. Section 6 of this PIR.
	The following comments are provided on the EIS: the assessment generally appears to have adequately addressed the requirements of the DGRs.	Noted. No further response required.	Chapter 25 of the EIS.
	One of the management procedures for the project states where excavation is required within the vicinity of the area of the junction of the Minmi to Hexham Railway and Great Northern Railway, an excavation director whose experience complies with the Heritage Branch criteria would be nominated to advise on archaeological issues (Measure EH1). As the project documentation does not identify areas where cut/fill is proposed specifically in relation to the Minmi to Hexham Railway and Great Northern Railways the Heritage Branch is not in a position to comment on whether such an approach is considered adequate.	With the exception of the private vehicle access track, excavation works are not expected to take place directly on the Minmi to Hexham Railway and Great Northern Railway. Further, investigation has been undertaken including an assessment of the impacts of the Project on this heritage item are included in Section 5 and Appendix K of this PIR. In summary, Section 15.7 of the EIS and Section 6 of this PIR, which would be supported by the CEMP for the Project, details the management and mitigation measures to ensure that there are no adverse impacts on these heritage items during construction.	Section 15.7 of the EIS. Section 5, 6 and Appendix K of this PIR.
	- The Mitigation and Management Measures for the project (Table 25.a, pages 25-1 to 25-10) include all the recommendations of the Non-Indigenous Heritage Study including recommendation EH1. Due to the uncertainty regarding the adequacy of this proposed measure it should be amended to read as follows: - where excavation is required within the vicinity of the area of the	Section 15.7 of the EIS and Section 6 of this PIR, which would be supported by the CEMP for the Project, details the management and mitigation measures to ensure that there are no adverse impacts on these heritage items during construction. This amendment to the Mitigation Measure EH1 (Chapter	Section 15.7, Chapter 25 of the EIS.

Issue	Agency Issue	Response	Relevant section
	junction of the Minmi to Hexham Railway and Great Northern Railway, an excavation director whose experience complies with the Heritage Branch criteria would be onsite to monitor any such excavation.	25) in the EIS is not considered suitable or acceptable. Advice would be sought from an excavation director with regards to any archaeological issues; however it is not considered necessary to have this representative on site at all times. The attendance of this representative on-site would be based on the works to be undertaken and by appointment, as necessary, by the contractor.	
	No CEMP has been prepared at this stage and this is considered to be a shortcoming in the EIS. Having noted this, the CEMP is to be based on the recommendations contained in Table 25.a and subject to the relevant heritage measures being incorporated this should be adequate.	The CEMP, currently being finalised would, as a minimum, incorporate the mitigation measures from Chapter 25 of the EIS. The CEMP would provide further details on management and mitigation to ensure that there are no adverse impacts on heritage items.	Chapter 25 of the EIS.
Roads & Maritime Services			
	<u>RMS Responsibilities</u> Transport for NSW and RMS' primary interests are in the road network, traffic and broader transport issues. In particular, the efficiency and safety of the classified road network, the security of property assets and the integration of land use and transport. In accordance with the <i>Roads Act 1993</i>, RMS has powers in relation to road works, traffic control facilities, connections to roads and other works on the classified road network. The New England Highway (HW9) is a classified (State) road and part of the National Land Transport Network. RMS concurrence is required for connections to the New England Highway with Council consent, under Section 138 of the Act. Council is the roads authority for the New England Highway and all other public roads in the area.	Noted. An application for the opening of the temporary construction access road to the Tarro Interchange (Anderson Drive) would be undertaken post Project Approval in accordance with Section 138 of the <i>Roads Act 1993</i> and 115ZH of the <i>Environmental Planning and Assessment Act 1979</i> .	N/A
	<u>RMS Response & Requirements</u> RMS has been involved in discussions with the Upper Hunter Valley Alliance (including ARTC) and QR National for some time in an effort to resolve safe vehicular access arrangements to/from the classified (State) road network. RMS has reviewed the information provided, including the Traffic Impact Assessment dated July 2012 prepared by Parsons Brinckerhoff Australia Pty. Ltd. and has no objections to the proposed development provided the following matters are	Noted. No further response required.	N/A

Issue	Agency Issue	Response	Relevant section
	addressed and included in any Project Approval:		
	- All heavy vehicle access to the Hexham Relief Roads worksite shall be via the existing New England Highway westbound off load/on load ramps at the Tarro Interchange and the existing U turn facilities at Beresfield (John Renshaw Drive I F3 roundabout) and Hexham (under the Hexham Bridge and the existing signalised intersection on the New England Highway). - Access to the Hexham Relief Roads worksite shall be via a new T intersection (Austroads Type CHR/CHL) to be designed and constructed by the proponent to RMS requirements on Anderson Drive (Tarro Interchange) on the southern side of the New England Highway (refer Attachment A of RMS Submission). Vehicular access at this intersection shall be restricted to right in/left out for heavy vehicles. Right in/left out/left in movements shall be permitted for light vehicles.	The new T intersection would be designed and constructed in accordance with RMS requirements.	Section 10.7 of the EIS.
	The proposed Hexham Relief Roads worksite access road connecting the new T intersection with the southern section of Woodlands Close shall be sealed and designed/constructed to Council requirements.	UHVA discussed this matter further in a meeting with RMS held on 2nd October 2012. At this meeting RMS agreed in principle that, subject to the implementation of mitigation measures (such as wheel washes) to prevent material from the construction road being tracked onto the New England Highway, the construction access road did not need to be sealed. Subsequent to this, consideration has been given to this road surfacing and, based on the current design, it is now proposed that the road be sealed (two coat seal) during construction (refer to Section 4 of this PIR). Further, wheel washes and rumble grids would be implemented and road brushes would be used on a daily basis to minimise dust and prevent erosion.	Section 4.5.5 of the EIS. Section 4 of this PIR
	Vehicular access to/from the Hexham Relief Roads worksite via Woodlands Close shall not be permitted on road safety grounds. All vehicular access shall be via the new Anderson Drive T intersection and Hexham Relief Roads worksite access road. <i>Comment: RMS would consider permitting temporary access via the New England Highway/Woodlands Close intersection to allow heavy machinery access for the construction of the proposed Anderson Drive T intersection and Hexham Relief Roads worksite access road until such time as access is</i>	Temporary access from Woodlands Close during construction was also discussed with RMS in the meeting held on 2 October 2012. RMS agreed, in principle, in this meeting and subsequent correspondence (email to Jennifer Burnie (UHVA) from Craig Walker (RMS) on 5 October 2012) to the following: Access for light vehicles (construction workforce) from Woodlands Close during the initial construction	

Issue	Agency Issue	Response	Relevant section
	<i>possible via the Tarro Interchange. RMS will not permit haulage trucks and the construction workforce to access the Hexham Relief Roads worksite via the New England Highway/ Woodlands Close intersection. The applicant must investigate other options for haulage vehicles and the construction workforce to access the worksite.</i>	(approximately 3 months until the Tarro Interchange access is completed) would be permitted. RMS has, subsequent to this meeting, reiterated this response in writing (letter dated 1 November 2012) to DP&I.	
	- All of the above works shall be completed prior to the issuing of a construction certificate for the Hexham Relief Roads works in accordance with the Austroads Guide to Road Design 2009 (with RMS supplements) to the satisfaction of RMS and Council. - A Construction Traffic Management Plan (CTMP) shall be prepared, including a Vehicle Movement Plan and Traffic Control Plans, by the proponent and submitted to RMS and Council for review and approval prior to any road and Hexham Relief Roads worksite construction works. <i>Comment: The CTMP shall be prepared with the intention of construction traffic having minimal impact to the operation of the classified road network and specifically addressing any proposed vehicular access (heavy machinery only) via the New England Highway/Woodlands Close intersection during construction of the intersection and access road.</i>	RMS agreed, in principle, in the meeting held with UHVA on 2 October 2012 and subsequently in writing (letter dated 1 November 2012) that early access to the Tarro Interchange would be permitted prior to completion of all works under the WAD. As per Section 10.7 of the EIS and reiterated in Section 6 of this PIR, a CTMP would be prepared to manage traffic and mitigate any impacts during construction. The Vehicle Movement Plan and the Traffic Control Plan would be submitted to RMS and NCC for review prior to Project Approval.	Section 10.7 of the EIS. Section 6 of this PIR.
	- As road works are required on a State road RMS will require the developer to enter into a Works Authorisation Deed (WAD) with RMS. RMS will exercise its powers under Section 87 of the Roads Act 1993 (the Act) and the functions of the roads authority, to undertake road works in accordance with Sections 64, 71, 72 and 73 of the Act, as applicable, for all works under the WAD. Further advice regarding the preliminary WAD Advice to Consent Authority and Developer is provided in Attachment B of RMS Submission. - Prior to issuing a construction certificate for the proposed Hexham Relief Roads works, the developer shall enter into a WAD with RMS and complete all road works associated with the Tarro Interchange/Access Road intersection. - Prior to issuing an occupation certificate (interim or final) for the proposed development the developer shall complete all works under the WAD to practical completion, as determined by RMS. - All works associated with the proposed development shall be at full cost to the developer and at no cost to RMS or Council, to the satisfaction of RMS.	RMS agreed, in principle, in the meeting held with UHVA on 2 October 2012, subsequently in writing (letter dated 1 November 2012) that early occupation of the access to the Tarro Interchange would be permitted prior to completion of all works under the WAD. This would enable all vehicular access to/from the Project Area from the Tarro Interchange as early as possible, thereby restricting future construction access via the New England Highway/Woodlands Close intersection.	N/A
	While the proposed intersection and access road have been identified as a	Agreed, as discussed in Section 4.5.5 of the EIS, this access would be temporary and only for use during the	Section 4.5.5 and 4.6.2 of the EIS.

Issue	Agency Issue	Response	Relevant section
	temporary construction access in the EIS for the subject project initially, it is intended to use this connection to the Tarro Interchange as the permanent access for the ongoing maintenance of the ARTC rail assets, the proposed QR National Train Support Facility and other properties on the western side of the rail corridor. A realignment of the access road is proposed to connect to the QR National facility which will need to take into account existing properties, rights of access and the proposed future F3 to Raymond Terrace road requirements.	construction of the Project. As discussed in Section 4.6.2 of the EIS, all operational service vehicles would access the Project Area via Woodlands Close. Any operational use of this road, including from the TSF Project would be subject to separate approval.	
Transport for NSW (Joint submissions with RMS)			
	Transport for NSW has raised the following issues to be addressed by the proponent and taken into account in any Project Approval: Noise Impacts: The EIS assumes in its prediction of noise impacts that four of the five relief roads will be used for idling trains and the remaining for manoeuvring trains. It is unclear as to how long these trains will likely be idling for and the potential impacts on nearby residential dwellings.	As discussed in Section 4.6.1 of the EIS, due to uncertainty of variable surrounding congestion, breakdowns and trains entering the network out of sequence it is not possible to ascertain the length of time that trains would be idling on the Relief Roads. The Noise and Vibration Assessment (Chapter 9 and Appendix D of the EIS) has modelled a number of scenarios, including a worst case scenario of 5 trains idling continuously on the Relief Roads. Section 9.3 of the EIS concludes that during operation, the Project, with the exception of the Church on Old Maitland Road, would comply with relevant criteria for noise and vibration impacts at sensitive receivers.	Section 4.6, 9.3 and Appendix D of EIS.
	Potential Fassifern to Hexham line (Newcastle Rail Bypass): The location and design of the proposed Fassifern to Hexham line is yet to be determined, but one option involves the use of the disused formation and junction at Hexham. This option, connecting the Fassifern to Hexham rail link with the Main North railway line, may have consequential impacts on both the proposed Hexham Relief Roads project and the Fassifern to Hexham line project. Additional work is required prior to project approval being granted for the Hexham Relief Roads Project so these impacts can be determined.	It is understood that the Fassifern to Hexham line (Newcastle Rail Bypass) involves bypassing the western shore of Lake Macquarie and removing coal and general freight trains from the Adamstown and Clyde Street level crossings. However, it is understood this Project is subject to further planning and has no application for planning approval currently with DP&I. Further to this, our understanding of this project is that the link with the Main North railway line at Hexham via the disused Minmi rail line was one of several connection options considered in the most recently completed report into the potential Fassifern to Hexham bypass with selection of the preferred corridor not confirmed within this document. Therefore, based on the information available, an assessment of the impact of the Project on the Fassifern to Hexham line is not relevant at	Section 10.2.2 and Chapter 24 of the EIS. Section 3 of this PIR.

Issue	Agency Issue	Response	Relevant section
		this time. Section 10.2.2 of the EIS provides an assessment of the Projects integration with key transportation Projects. This is further supplemented by Section 3.2.9 of this PIR. Chapter 24 of the EIS considers cumulative impacts with respect to a number of planned and recently constructed proposals/projects, including the TSF Project (Aurizon).	
	On the Minister's determination of this matter, a copy of the Project Approval/Refusal is to be forwarded to RMS for record and/or action purposes	Noted. No further response required.	N/A
Department of Primary Industries NSW			
	Fisheries NSW advises that the construction works for the extension of the existing culvert have been noted as requiring a potential blockage of the underlying waterway for a substantial period of time during the construction phase. Any such blockage of flow will stop the free migration of fish and invertebrates into and out of the significant nursery habitats that are undergoing rehabilitation on the site and in the SEPP 14 wetland upstream. This blockage may also have a detrimental effect on the seagrass habitats that have developed in the upstream waterway and on the adjacent saltmarsh habitats, due to desiccation during dry periods or to complete inundation with freshwater during rain events. The recommendation of Fisheries NSW is that the crossing of the waterway at this location be by construction of a bridge span. Consultation with Fisheries NSW should be required in respect to the design and carrying out of this waterway crossing due to this potential significant impact (as stated in the EIS itself) on saltmarsh habitats, seagrass habitats and the ability of fish and invertebrates to migrate freely through the site during construction. The design of the crossing should be fish friendly to assist in on-going fish passage, and construction methods must allow for regular flushing with estuarine water to ensure the upstream habitats do not either dry out or be completely inundated with fresh water. Any proposed approval of the project should include conditions to this effect.	In discussion undertaken with Fisheries NSW, it was confirmed that this statement was written in error and relates to another Project. During this discussion UHVA also presented the design amendment for the Purgatory Creek Crossing (refer to Section 4.2.1 of this PIR). Fisheries NSW identified that they had no objection to the design of the Purgatory Creek crossing, provided the structures invert is at or below existing bed level and that it would not cause or exacerbate flooding upstream.	Section 4 of this PIR.

Issue	Agency Issue	Response	Relevant section
NSW Office of Water (Joint submissions with Department of Primary Industries)			
	The NSW Office of Water provides the following comments for consideration in the final assessment, and recommended conditions of consent. <u>Surface water</u> The design, construction and operation of the proposal must be undertaken in a manner that ensures no more than minimal harm to water sources within the project area. Works within riparian zones should be designed and constructed so as to maintain or improve the hydrologic, geomorphic and ecological integrity of watercourses. All works taking place in, on or under waterfront land, as defined in the <i>Water Management Act 2000</i>, are considered controlled activities. While State Significant Infrastructure projects are exempt from the requirement to obtain and hold approvals for controlled activities (section 1152G of the <i>Environmental Planning and Assessment Act 1979</i>), such activities should be conducted in accordance with the Office of Water's <i>Guidelines for Controlled Activities</i>.	Noted. The detailed design of the Project would have consideration to the NSW Office of Water's <i>Guidelines for Controlled Activities</i>.	N/A
	The NSW Office of Water provides the following comments for consideration in the final assessment, and recommended conditions of consent. <u>Groundwater</u> Groundwater within the project area is governed under the <i>Water Act 1912</i> (Water Act). A licence under Part 5 of the Water Act is required for all activities with the potential to intercept groundwater, including excavations, dewatering works and the installation and operation of monitoring bores, prior to the activity commencing. In addition, all existing groundwater works are required to be licensed. The design and construction of drainage structures should ensure no permanent interception of and/or connection with groundwater.	As per Section 18.5 of EIS, appropriate licences and approvals would be obtained from the relevant authorities prior to any interception or discharge of groundwater. Further consideration and investigation has been undertaken to ensure that groundwater is suitably managed during construction and operation of the Project (refer to the Groundwater Assessment at Appendix L of this PIR). As discussed in the Construction Methodology (Appendix C of this PIR), works would be in accordance with the Water Act 1912. In particular the swale drain (refer to Section 4 of PIR), has been redesigned to minimise interception, and hence discharge of groundwater. During operation, the formation could act as a hydraulically connected unit, potentially allowing groundwater to flow within the formation and ultimately seep through the finger drains to the swale where the swale invert level is below the groundwater level. Groundwater flows to the swale are expected to be similar to pre-development conditions and the development is not expected to significantly impact groundwater seepage to	Section 4.2.3 and 18.5 of the EIS. Section 4 and Appendices C and L of this PIR.

Issue	Agency Issue	Response	Relevant section
		surface water. Finger drains running out of the ballast capping would route water collecting within the formation to the swale. Water is only likely to run through these drains during high rainfall events.	
	<u>Management Plans</u> The proposed Site Water Management Plans should be developed in consultation with the Office of Water and should incorporate monitoring programmes, impact triggers and response actions for all surface water and groundwater sources potentially impacted by the project. It is recommended the following conditions be placed on any proposed approval: 1. Works must be designed and undertaken in accordance with best practice so as to minimise potential impacts to waterways and riparian areas and all impacted areas must be rehabilitated so as to maintain or improve the hydrologic, geomorphic and ecological integrity of the waterways. 2. All works taking place in, on or under waterfront land, as defined in the <i>Water Management Act 2000</i>, should be conducted in accordance with the NSW Office of Water's Guidelines for Controlled Activities. 3. A licence under Part 5 of the <i>Water Act 1912</i> is required for all works likely to intercept or extract groundwater prior to the works commencing. 4. A Site Water Management Plan should be developed to the satisfaction of the NSW Office of Water which outlines measures to mitigate potential impacts to surface water and groundwater sources and incorporates monitoring, impact trigger definition and response actions for all water sources potentially impacted by the project.	The Soil and Water Quality Management Plan for the Project to be included in the CEMP would be prepared in consultation with NOW as requested (refer to Section 12.6 of the EIS). The conditions provided are consistent with legislative requirements and expectations and are therefore considered acceptable for the Project.	Section 12.6 of the EIS.
Agriculture NSW (Joint submissions with Department of Primary Industries)			
	Agriculture NSW advises that the proposal does not raise any agricultural issues.	Noted. No further response required.	N/A
	<u>Additional comment</u> (i) The "preliminary operational footprint" of the proposal appears to include a small parcel of Crown land at its southern extremity. Any proposed use of Crown land will require either purchase of that land or an appropriate tenure	The Project Area does not include any areas of Crown land. All land, acquired for the Project would be from Aurizon as discussed in Section 20.2 of the EIS and supplemented by Section 3 of this PIR. The purchase and utilisation of Crown	Section 20.2 of the EIS. Section 3 of this PIR.

Issue	Agency Issue	Response	Relevant section
	under the <i>Crown Lands Act 1989</i> if considered acceptable under that Act. In this regard, early contact with the local office of Crown Lands should be made.	Land is not required.	
	<u>Additional comment</u> (ii) It is noted that the adjoining Hexham swamp is largely owned and managed by the Hunter-Central Rivers Catchment Management Authority for rehabilitation and biodiversity purposes. The EIS identifies some increased risk of flooding during 1 in 10 year events. This may affect this area and the CMA interests. The EIS does not appear to indicate any specific consultation with the CMA in this regard. It is recommended the Department ensures it has considered a response from the CMA before making any recommendation on this application.	Government agencies, including the Hunter-Central Rivers Catchment Management Authority were consulted as part of the environmental assessment process. Refer Section 5.2 of the EIS. Further, a meeting was held with the CMA in May 2012. CMA have provided a submission on the EIS which is provided and responded to below.	Section 5.2 of EIS. Appendix F of this PIR.
Newcastle Council			
1.	Newcastle Local Environmental Plan, (NLEP) 2012 (a) Zoning It is acknowledged that in accordance with <i>State Environment Planning Policy (State and Regional Development), 2011</i>, the application for the proposed Project will be assessed under Part 5.1 of the <i>Environmental Planning Assessment Act, 1979</i>. Therefore, no legislation or other planning instruments have any effect on the permissibility of the proposed Project. However, the Director-General's requirements required the EIS to consider the relevant Local Environment Plan. Under the Newcastle LEP (NLEP), 2012 the Project is within land zoned SP2 Infrastructure, E2 Environmental Conservation, E1 National Parks and Nature Reserves and IN3 Heavy Industrial. The EIS has not discussed the permissibility of the Project in respect of the above zones or compliance with relevant objectives of the Plan. Also, the EIS does not include a plan/figure that identifies the extent of the Project site relative to the boundaries of the four zones.	Section 2.2.1 and 2.3.6 of the EIS provides a summary of the permissibility of the Project having regard to the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) and relevant environmental planning instruments. In summary, the Project is considered permissible in accordance with clause 87 of <i>State Environment Planning Policy (Infrastructure) 2007</i> (Infrastructure SEPP) which states "railway or rail infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land (under Part 4 of the EP&A Act)". It is noted that consent is required for this Project as it is considered State Significant Infrastructure under <i>State Environment Planning Policy (Regional and State Development) 2011</i>. Therefore, there is no requirement for the Project to consider permissibility under the zones within the <i>Newcastle Local Environmental Plan 2012</i> (NLEP). Notwithstanding this overriding legislation, the Project is considered consistent with the NLEP zone objectives in that: - IN3 Heavy Industrial- provides employment opportunities and does not impact on the development of surrounding land for industrial uses - SP2 Infrastructure- provides development that includes infrastructure and is compatible with the surrounding infrastructure (rail and road) uses	Section 2.2.1 and 2.3.6 of the EIS. Appendix A of this PIR.

Issue	Agency Issue	Response	Relevant section
		E2 Environmental Conservation- the Project includes significant offsets and a number of key mitigation measures to minimise impact on the ecological values of the zone including the Hexham Wetlands, and indirectly on the Hunter River floodplain. We note that the Project area does not include E1 National Parks and Nature Reserves. A zoning plan has been prepared which shows the extent of the Project relative to the boundaries of the four zones under the NLEP (refer to Appendix A).	
	(b) Acid sulfate soils Land within the Project site is mapped as being within Class 2 of the Potential Acid Sulfate Map of NLEP, 2012. For Class 2 land, clause 6.1 of the NLEP, 2012 requires the preparation of an acid sulfate soils management plan for works below ground surface and works by which the water table is likely to be lowered. The EIS states that an acid sulfate soils management plan will be developed. This should be a condition on any consent issued. The management plan should be provided and approved prior to any works on site that result in soil disturbance	As per Section 12.6 of the EIS, an Acid Sulfate Soils Management Plan (ASSMP) would be prepared as part of the CEMP and would be finalised prior to any works potentially causing soil disturbance. Further investigation has been undertaken regarding PASS. The Groundwater Assessment (Appendix L of this PIR) and Construction Methodology (Appendix C of this PIR) provide a discussion on the identification and management of PASS under the Project.	Section 12.6 of the EIS. Appendix C and Appendix L of this PIR.
2.	Flood The recently adopted Newcastle City-Wide Floodplain Risk Management Study and Plan prepared by BMT WBM Pty Ltd, June, 2012 maps the identified floodway, flood storage and flood fringe areas for the Lower Hunter River floodplain. The maps were prepared for the Probable Maximum Flood and 1% Annual Exceedance Probability flood events and follow the principles identified in the State Government's Floodplain Development Manual. The mapping process endeavoured to assess cumulative development impacts over the whole floodplain area rather than local impacts associated with individual developments or a local grouping of proposed developments as used in this submission. The proposed Project needs to be assessed in the context of the floodplain classification mapping prepared by Council for the Hexham area including this site prior to determination of the application.	An updated Flood Assessment is provided in Appendix F of this PIR. This assessment has considered the Newcastle City-Wide Floodplain Risk Management Study and Plan and provides an assessment of the Project in consideration of the flood classification mapping for the area.	Appendix F of this PIR.

Issue	Agency Issue	Response	Relevant section
	The subject site is identified as a high flood hazard area. As such for large Hunter River flood events, there is a significant risk to life and property in this part of the floodplain. The proponent needs to address these risks for the proposed development prior to the determination of the application.	Further investigations and Project design amendments have been undertaken to minimise the impact of the Project on flooding within the area. An updated Flood Assessment has been prepared for the Project including the information requested (refer to Appendix F of this PIR). The report concludes with revised impacts for implemented flood mitigation measures for the construction of the Project (ARTC would implement the Flood Emergency Management Plan during construction, as discussed in Section 6 of this PIR). The outcomes of this assessment have been discussed with OEH in the meeting undertaken on 24 October 2012 and 25 February 2012.	Appendix F of this PIR.
	The EIS states that 'should the project proceed then it is anticipated that the DHI model for Newcastle Council will need to be upgraded to include the Project Area'. Council have no current plans or funds to upgrade the DHI Lower Hunter River flood model to reflect impacts of new developments. New developments need to have acceptable levels of predicted impact from an individual site perspective and a cumulative development position.	Noted. An updated Flood Assessment, which discusses the impacts of the Project from a site and cumulative perspective is provided (refer to Appendix F).	Appendix F of this PIR.
	The submitted EIS has not satisfactorily demonstrated that the proposed Project will not adversely impact on the flood plain of the Hunter River and properties downstream. The location of the subject site traverses floodways identified under Council's current flood classifications. Details of the floodways can be found on Map 4-L & Map 5-L, in the links below: http://www.newcastle.nsw.gov.au/data/assets/pdf_file/0008/204686/Series_4_-_Compendium_of_Flood_Maps.pdf http://www.newcastle.nsw.gov.au/data/assets/pdf_file/0009/204687/Series_5_-_Compendium_of_Flood_Maps.pdf	Further investigations and Project design amendments have been undertaken to minimise the impact of the Project on flooding within the area. An updated Flood Assessment is provided within Appendix F. The assessment discusses the impact of the Project on the Hunter River flood plain and downstream properties.	Appendix F of this PIR.
	Generally, Council does not support development in a floodway. Floodways are areas which, even if only partially blocked, can cause a significant redistribution of flood flow or increase in flood levels, which may in turn adversely affect other areas. Therefore, it is imperative that the proposed Project does not adversely affect these floodways and the existing conditions are	An updated Flood Assessment has been prepared for the Project (refer to Appendix F of this PIR). This assessment discusses impacts of the Project on the flood plain and downstream properties.	Appendix F of this PIR.

Issue	Agency Issue	Response	Relevant section
	replicated with no additional impacts. Specifically, those floodways within chainages (ch) 2000 to ch 3500 and ch 0 to 500 as identified in the Flood Impact Assessment prepared by BMT WBM Pty Ltd		
	The design of the Project should ensure that there will be no increases to flood impacts in these floodways and at a minimum, the finished levels of the proposed tracks (roads) 'are not higher than the existing tracks and the levels of any new roads are not higher than the existing ground levels. The Project is to also include a sufficient number of points for the conveyance of essential flood flow to occur which have the same or greater capacity to the existing facilities so that the flows into and out of the Hexham Wetlands are the same post development to pre-development for all storm and flood events up to a Probable Maximum Flood event.	Further investigations and project design amendments have been undertaken to minimise the impact of the project on flooding within the area. In particular the proposed tracks of the Relief Roads have been lowered, from the EIS design, to reduce impacts on flooding in the surrounding area. An updated Flood Assessment has been prepared for the Project (refer to Appendix F of this PIR). This assessment discusses impacts of the Project on the flood plain and downstream properties.	Appendix F of this PIR.
	The submitted application was not supported by detailed design plans and the single incomplete 'typical cross-section drawing' provided in the EIS shows a design which is in fact contrary to the above flood management objectives. It is considered that the EIS has not adequately demonstrated that the proposed Project will not have a significant impact on flooding in the area and lacks details to make an informed decision in this regard. The design details of the development need to be provided and incorporated into the flood modelling of the Project. In addition, the flood assessment has not adequately considered the cumulative impacts from all future development sites within the flood plain, but has only looked at some key projects in the locality. In terms of cumulative impacts the EIS should address the likely impact from the proposed Project if all other land in the flood plain that could be developed are developed, including the filling of all flood fringe land and other identified projects such as a large proposed industrial development in Tomago. This assessment should be included in the flood modelling with the results advised.	Appendix F provides a cumulative project impact assessment within the wider floodplain and concludes that the HRR project will have localised flood impacts only and therefore impacts to the flood planning level will be minimal and there will no impact on flood fringes outside of the Hexham area Additional cross sections for the Project are provided in Appendix B.	Appendix B and F of this PIR.
3.	Stormwater Management The application is not supported by a detailed stormwater design plan. The stormwater design should be designed in accordance with the relevant requirements of section 7.06 of the Newcastle Development Control Plan.2012; in particular the water quality targets and the reductions in the pollutants. Based on the available information, the proposed development appears to be increasing pollution loads; it is recommended that measures be in place to reduce the	The drainage system has taken account of the relevant requirements of Section 7.06 of the Newcastle Development Control Plan (DCP) 2012. The Project is considered consistent with the DCP in that: It includes a swale drain that would not result in Post development peak flows being greater for all events up to the 100 year ARI (1% AEP).It ensures stormwater is controlled in a way that minimises nuisance to	Chapter 25 of the EIS.

Issue	Agency Issue	Response	Relevant section
	pollutant loads.	neighbours properties in that discharge of the swale drain to the north and south would be controlled realising floodwaters periodically with no change observed to the neighbouring property. Habitable properties do not exist downstream of the swale drain. It minimises the potential for impacts of development and other associated activities on the aesthetic, recreational and ecological values of the receiving waters, in that clean water would be directed to the swale drain and therefore only clean water would be discharged to the receiving waters. This would be managed by the implementation of the Soil and Water Quality Management Plan (SWQMP) and the Progressive Erosion and Sediment Control Plans (PESCPs).	
	Without storm water design plans it is difficult to ascertain how the stormwater systems of the Project will function; however, with the lines consisting of ballast they are partly permeable and would work similar to permeable paving in small storm events and are likely to increase runoff in those events. Discharge rates should be required to be at a maximum of predevelopment levels for all storm events up to the 1% event. It is recommended that a concept stormwater design be prepared and further flood modelling be undertaken based on those plans.	Drainage design is described in Section 4.2.3 of the EIS. Discharge has been considered and assessed for local runoff events in Section 7.2.1 of the EIS. Further flood modelling has been undertaken and is provided in Appendix F. Additional cross sections are provided in Appendix B. As per Section 4 of this PIR, a bund wall within the swale will segregate and control the volume and rate of flow to the northern and southern halves of the swale. The flow velocity within the swale will be such that erosion protection will not be required and the mobilisation of silt will only occur from the ingress of floodwaters from the Hunter River. The swale will be earth lined enabling silt deposited by floodwaters to be mechanically scraped from the swale floor. Discharge from the swale drain is anticipated to be similar to that currently experienced by the existing drain at this location (refer to Appendix L of this PIR).	Section 4.2.3, 7.2.1 and Appendix D of the EIS. Section 4 and Appendix B Appendix F and Appendix L of this PIR..

Issue	Agency Issue	Response	Relevant section												
4.	Ecology The proposed Project entails the potential disturbance of three Endangered Ecological Communities consisting of the following: <table><tr><th>Endangered Ecological Community</th><th>Remnant Area</th><th>Potential Loss</th></tr><tr><td>Swamp Oak Swamp Forest</td><td>6.18 ha</td><td>5.28ha</td></tr><tr><td>Swamp Mahogany Swamp Forest</td><td>1.12 ha</td><td>1.12ha</td></tr><tr><td>Coastal Freshwater Wetlands</td><td>3.46 ha</td><td>2.70ha</td></tr></table> The EIS does not identify what proportion of these EEC are in the Newcastle Local Government Area (LGA) and what the potential loss represents in these terms though there is a table which indicates regional proportions. While Council does not have a comprehensive mapping of Endangered Ecological Communities in the LGA, considering the REMS vegetation mapping of 2003 for example suggests the remnant Swamp Oak Floodplain Forest and Swamp Mahogany Swamp Forest said to be potentially disturbed by the proposed Project are both one of the largest remaining stands and a significant proportion of the total remaining area of these vegetation type in the LGA. An assessment of the % loss of the vegetation types within the LGA should be provided and used to help guide offset ratios and locality for offsets.	Endangered Ecological Community	Remnant Area	Potential Loss	Swamp Oak Swamp Forest	6.18 ha	5.28ha	Swamp Mahogany Swamp Forest	1.12 ha	1.12ha	Coastal Freshwater Wetlands	3.46 ha	2.70ha	Section 8.4 of the EIS assessed the Project’s impacts on the three EECs with reference to the locality and region. These impacts are considered adequate to assess the significance of the project’s impacts. These EECs are all located within the Newcastle LGA. A summary of the area of EEC likely to be removed as a percentage of total EEC within the Newcastle LGA is provided in Table 2 of Appendix H of this PIR. Further, an overall reduction in native vegetation clearing has been achieved through the more detailed design process. Table 2 of the Ecology Assessment Addendum (Appendix D) shows the total area of ECC to be 7.15 ha which is less than the 9.10 ha assessed in the EIS.	Section 8.4 and Appendix C of the EIS. Table 2 in Appendix H of this PIR.
Endangered Ecological Community	Remnant Area	Potential Loss													
Swamp Oak Swamp Forest	6.18 ha	5.28ha													
Swamp Mahogany Swamp Forest	1.12 ha	1.12ha													
Coastal Freshwater Wetlands	3.46 ha	2.70ha													
	Part of a SEPP 14 wetland (Wetland 833) will also be impacted by fill works. It is not clear if the vegetation assessed included parts of the SEPP 14 wetland.	An assessment of the Project’s impacts on two SEPP 14 wetlands associated with the subject site – Wetland 833 and Wetland 840 – have been provided in Section 8.3.13 and 4.5.4 in Appendix C of the EIS. An additional assessment has also been prepared based on recent design amendments and is discussed in Section 5, and included in Appendix D of this PIR. The vegetation to be impacted by the Project is partly within the SEPP 14 wetland (Wetland 833) and is included within the assessment.	Section 8.3.13 of the EIS. Section 4.5.4 in Appendix C of the EIS. Section 5 and Appendix D of this PIR.												
	The proposed Project traverses the Stockton to Watagan Green Corridor. The submitted Ecological Assessment indicates because of the small widening of an	Consideration and assessment of the projects impacts on the Stockton to Watagan Green Corridor was provided in	Section 3.2 in Appendix C of the EIS.												

Issue	Agency Issue	Response	Relevant section
	existing highly disturbed rail corridor the proposal is not likely to have a significant effect (p.32). Despite the vegetation in the Project area being highly fragmented and relatively minor in area. These few remaining remnants may be of disproportionate importance on a landscape scale and in the context of the intent of the Green Corridor. An assessment of the importance of these remnants in regards to fauna movement within the regional green corridor should be provided especially in regards to the localised movement of avian and bat species.	the Ecological Assessment (Section 3.2 in Appendix C of EIS). It is acknowledged that remnant areas of vegetation and habitat are relatively small in extent. On-site investigations found that canopy elements of significant maturity were absent within mapped patches. As such, trees were found to be insufficiently mature to develop significant resources for hollow-dwelling fauna, such as hollow-dwelling microchiropteran bats, arboreal mammals or forest owls. Although mapping shows that woodland patches are of moderate extent the shape of such patches is predominantly linear and essentially represented by what might be described as edge habitat, such that they offer little in the way of secluded roosting opportunities or foraging resources. The assessment of the regional ecological context for onsite vegetation found a number of key issues influencing the potential for the vegetation within the site to offer significant ecological corridor benefits to threat-listed fauna occurring in the region: 1. The swamp forest communities within the site are considerably isolated from similar habitat types in the locality - by distance across the Hexham floodplain and by physical boundaries represented by the Hunter River, Pacific Highway (Maitland Road), wetland habitats across the Hunter River and the industrial areas of Hexham, adjacent to the rail corridor, and at Tomago to the north of the river. 2. The lack of significant maturity, structure and thus cover offered by the vegetation, particularly for species such as forest owls and hollowing roosting mobile species such as hollow-dwelling microchiropteran bats. 3. The presence of more suitable habitat in the vicinity, such as the considerable stands of mangrove forest lining the northern bank of the Hunter River and large groves of planted fig trees associated with the Oak factory in the north of the site, that offer	

Issue	Agency Issue	Response	Relevant section
		stepping stone opportunities for mobile species and are likely used as stepping stones in preference to onsite vegetation. As such different fauna guilds are likely to be affected by the above issues in different ways; Terrestrial Mammals, Reptiles and Arboreal Mammals Small terrestrial mammals and reptiles are unlikely to be able to traverse the significant gaps in habitat outlined in point 1. The same for arboreals such as Brush-tailed Phascogale, Squirrel Glider and Koala. Woodland Birds Most regional threat-listed woodland birds occur in more westerly contexts or are sedentary in nature (Grey-crowned Babbler for instance) and therefore are unlikely to utilise this corridor. However, mobile woodland species such as Little Lorikeets, Swift Parrots and forest owls are likely to utilise such pathways intermittently, although, in reference to the proximity of nearby features outlined in point 3, it is unlikely that species that are able to traverse the considerable woodland gap represented by the Hexham floodplain would be disadvantaged significantly by a loss of vegetation within the subject site. The moderate diversity of woodland birds observed within the site, suggests regular utilisation of the site by at least common woodland birds, and although movements across the Hexham floodplain were not noted, nomadic species such as Yellow-faced Honeyeaters and others probably traverse this corridor somewhat regularly. As vegetation within the subject site occurs close to other more significant vegetation is unlikely to be a critical stepping stone component in the corridor for these species. Microchiropteran bats and Flying-foxes In recent years it has been noted that significant colonies of microchiropteran bats roost in mangrove forests of the Hunter River estuary (A. McConville pers. com.). Further, tracking of individuals has shown that individuals regularly cross the Hexham floodplain to forage in the forests to its	

Issue	Agency Issue	Response	Relevant section
		west (A. McConville pers. com.). Moreover, the nightly foraging movements of flying-foxes are well documented and sometimes exceed 50 km. It is considered unlikely that on-site vegetation is used in a stepping stone function by these species or represents more than a small amount of potential foraging habitat for local bat populations.	
	In the section regarding field based studies of Flora and Fauna, there was no reference to the regional flora and fauna survey guidelines (Bell <i>et. al</i> , 2004) therefore the adequacy of survey effort may be questioned.	As discussed in Section 8.2 of the EIS, the survey considered the methodology detailed in the <i>NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)</i> (Department of Environment and Conservation 2004), the <i>Threatened Species survey and assessment guidelines: field survey and methods for fauna-Amphibians</i> (NSW Department of Environment 2009) and the Significant impact guidelines for the vulnerable Green and Golden Bell Frog (<i>Litoria aurea</i>) (Australia 2009). These surveys were conducted in accordance with the DGRs for the Project and are considered adequate.	Section 8.2 of the EIS. Section 2 in Appendix C of the EIS.
	The section on aquatic ecology is relatively poor with inadequate field surveys. In terms of fish, as a minimum seine netting or backpack electrofishing should have been considered. Nonetheless, further surveys in this regard are probably unwarranted but reference to other aquatic studies especially the estuary management studies undertaken in the early 2000's and studies regarding Hexham Floodgates should be considered.	The aquatic surveys and assessment (refer to Section 8.2.3 of the EIS and Appendix C of the EIS) were considered adequate for the habitats observed within the Project Area and the potential impacts to be assessed. It is acknowledged that both seine netting and back pack electrofishing are commonly used survey techniques for aquatic fish species and were considered in the preparation of the aquatic ecological surveys. However, water levels within the aquatic habitats of the site were not considered of a depth suitable for seine netting and the presence of a TIDAL and saline influence prevented the use of electrofishing. The aquatic assessment considered other regional aquatic studies in the assessments. These assessments are therefore considered adequate.	Section 28.2.3 of the EIS. Section 5.3 in Appendix C of the EIS.
	The proximity of the environmentally sensitive Hexham Swamp has only been sporadically mentioned. The potential downstream impacts during a major flood	The EIS, in particular Chapters 8, 12 and 19 continuously, rather than sporadically, refer to the proximity of the Project	Chapters 8, 12 and 19 of the EIS.

Issue	Agency Issue	Response	Relevant section
	event have not been discussed. The potential impact of the development during construction and operation, if a major flood event occurs, on downstream wetland values, including RAMSAR, needs to be included.	Area to the Hexham Swamp. These sections also provide an assessment of the Project's impact on the Hexham Swamp. The Ecology Assessment Addendum at Appendix D of this PIR provides further discussion on the impact of the Project on Hexham Swamp. In summary, the eastern edge of the Hexham floodplain is subject to tidal inundation, which is fed by and drains into the south arm of the Hunter River. The majority of lands occurring immediately west of the Project Area, toward the floodplain, is elevated such that the majority of run-off from the site is likely to travel toward the south arm of the Hunter River and not toward the Hexham floodplain. The existing railway has been in operation for a long period of time and as such it is unlikely that the proposed works would contribute a significantly increased impact upon surrounding environments particularly if erosion and sediment control measures are implemented during the construction phase of the Project. Flood water draining the subject site enters the south arm of the Hunter River downstream of the Hunter River dividing into its north and south arms. The Ramsar wetland in the Hunter River estuary is not fed by the south arm of the Hunter River, but by water entering the north arm of the Hunter River. Therefore, it is unlikely that flood water from the site would reach the Ramsar wetland. However, if floodwaters were of sufficient magnitude to transfer water from the site to the Ramsar wetland, due to overland flow, they are likely be diluted to such an extent that potential impacts from the Project would be negligible.	Section 4.5 in Appendix C of EIS. Appendix D of this PIR.
	The offset strategy will be dependant on the BioBanking methodology. This section of the Assessment does not mention an offset for the <i>State Environmental Planning Policy (SEPP) 14</i> listed wetland (Wetland 833) that will be impacted by fill works associated with Project. The EIS must consider offset requirements for the loss of this SEPP 14 wetland. This aligns with Principal 10 of the NSW Wetlands Management Policy.	The project is being assessed under Part 5.1 of the <i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i> and as such is not required to assess SEPP legislation. Notwithstanding this, the proposed offset strategy has identified that the offset package would be calculated and development in accordance with the BBAM and as such would target the like for like vegetation communities to be impacted by the Project (refer to Section 8.6 of the EIS and	Section 8.6 of the EIS. Appendix D and Appendix E of this PIR.

Issue	Agency Issue	Response	Relevant section
		Appendix D and Appendix E of this PIR). The vegetation to be impacted by the Project within the SEPP14 wetland boundary is associated with the Freshwater wetlands vegetation type and as such the offsets would provide for similar wetland vegetation communities in accordance with the offset policy.	
	In the section 'Impacts of the proposed project' it is noted that there is no reference to the potential impact of extra lighting that increased movement of trains may create. This is particularly pertinent in terms of disorientation and behavioural impacts. An assessment of light impacts should also be considered.	As discussed in Section 8.4.10 of the EIS, the nature of the Project is such that it is likely that the speed of trains entering and departing from the Project Area would be greatly reduced which would have negligible impacts on direct fauna mortality. Further, the Hunter River and Hexham floodplain and between, is subject to considerable lighting impacts from the rail existing corridor, the adjacent Hexham industrial areas and the Pacific Highway. Although it is recognised that there is likely to be a decrease in periodic down periods for the rail line, migratory shorebirds, waterbirds and other bird species that may traverse across the line during nocturnal hours are likely to be very well acquainted with the presence of a spasmodic high frequency of trains in the corridor and are unlikely to be significantly affected by a more regular frequency of trains or the presence of slow moving trains within the Project Area.	Section 8.4.10 of the EIS.
	The EIS indicates that the Project will have impacts on Green and Golden Bell Frog (GGBF) and will rely on 'pre-clearance surveys' of GGBF to attempt to mitigate these impacts. It is queried how effective this methodology will really be if the works schedule of the Project requires that such surveys are not undertaken during the appropriate months of the year.	As per Section 8.2 of the EIS and Chapter 2 in Appendix C of the EIS, survey effort considered a number of methodologies in relevant guidelines including the Significant impact guidelines for the vulnerable Green and Golden Bell Frog (<i>Litoria aurea</i>) (Australia 2009). Recent surveys conducted under optimal conditions did not detect GGBF within potential habitat at 34 survey locations within the Project Area and there have not been any records of GGBF within the vicinity for over 10 years or the north-western sections of Ash Island since 2003. Current understanding of the GGBF populations in the Lower Hunter is that they have contracted to the eastern end of Ash Island.	Section 8.2 and Chapter 25 of the EIS. Chapter 2 in Appendix C of the EIS.

Issue	Agency Issue	Response	Relevant section
		Nevertheless every effort would be made to conduct meaningful and thorough pre-construction surveys taking into account the known habits of GGBF individuals under appropriate seasonal conditions as discussed in Mitigation Measure E4 in Chapter 25 of the EIS.	
	According to the Australian reptiles and amphibians key guide, the Green and Golden Bell Frog breed in summer months and at this time stray long distances from their 'home range'. Therefore, undertaking a pre-clearance survey in the summer months may not be depictive of the actual populations in the area. Males call mainly during the months from August to January. If the survey is undertaken using frog calls, this would be the best period to survey. Under the survey, guidelines defined by the Australian Government Department of Sustainability, Environment, Water, Population and Communities it states: <i>'Methods that have been successfully used in the past to survey the Green and Golden Bell Frog are visual encounter surveys, call surveys and night drives (UC 2003). Call surveys should be conducted during the known calling period, September-January (Anstis 2002; Brook 1980; Dankers 1977; Hero et al. 1991; Littlejohn 1969). Night driving surveys should focus on forest roads, in the non-breeding seasons, and grassy areas where foraging may occur (Pyke & White 1996).'</i>	Refer to comments above.	Section 8.2 and Chapter 25 of the EIS. Chapter 2 in Appendix C of the EIS.
5.	Noise I refer to the Noise and Vibration Assessment prepared by Parsons Brinckerhoff. The Rating Background Levels (RBL) for 'location A' shows an increase from day to evening to night. This is suggested to be the result of increased local road noise in the evening and the influence by fauna at night. The data logging results are included as graphs in the Assessment. Visually, these graphs do not seem to support the actual figures reported, but suggest that the night-time RBL should be less than the day-time RBL. It is recommended that these results be reviewed to confirm that the calculated RBL's reported are corrected. If they are not correct, then the results, recommendations and conclusions of the report for that location would need to be reconsidered and updated as required. It is also noted that the noise impacts from the construction phase are particularly high on some commercial receivers (R18 and R19). Further consideration may be required in relation to the feasible and reasonable control	Table 3.3 in Appendix D of the EIS has been revised. The Rating Background Level for Location A day time should be 48 dB(A) L_{Aeq} not 43 dB(A) L_{Aeq} and for the night time it should be 43 dB(A) L_{Aeq} rather than 48 dB(A) L_{Aeq}. This change alters the construction Noise Management Level for Location A to now be 53 dB(A) L_{Aeq} standard day time and 48 dB(A) L_{Aeq} for works outside standard day time hours. The predicted noise levels would therefore comply with the adopted NMLs. This has been corrected in the updated Noise and Vibration Assessment Addendum (Appendix G of this PIR) which also considers the Project design amendments. As per the Noise and Vibration addendum (Appendix G of this PIR), noise impacts on commercial receivers (R18 and R19) are below the relevant criteria. Notwithstanding this, impacts on these receivers would be reviewed and, should	Section 9.3 of the EIS. Table 3.3 and Section 8 in Appendix D of the EIS. Appendix G of this PIR.

Issue	Agency Issue	Response	Relevant section
	measures to reduce these impacts during construction	any concerns be raised, addressed in the CEMP for the Project.	
6.	Traffic and Transport (a) The application is based on the premise that the proposed Tarro interchange access road is only temporary and will be removed following completion of the rail construction works. Recent discussions between Council officers and representatives of the proponent in relation to cycle provision associated with Routes 8 & 9 under the Newcastle Bicycle Plan 2009, has identified a requirement for any permanent access road to incorporate a culvert structure to permit passage by cyclists. Further consideration should be given to the scenario that the temporary road is retained as a permanent access road and the requirement for cycle passage.	As discussed in Section 4.5.5 of the EIS, and Section 4 of this PIR, the proposed construction access road is to be used only temporarily, during the construction phase, for the purposes of the Project. Therefore, the inclusion of a cycle provision is not considered suitable or necessary. As discussed in Section 4 of this PIR, Aurizon may utilise this road permanently for construction and operation of the TSF Project; however, this would be subject to a separate approval.	Section 4.5.5 of the EIS. Section 4 of this PIR.
	(b) Details should be provided of the location and layout of the proposed construction compound. The layout being inclusive of details of the parking area for construction vehicles.	Noted. Details, of the Primary Site Compound, including layout and the location of the parking area, are included in the Construction Methodology (Appendix C of this PIR).	Appendix C of this PIR.
	(c) The nominated haulage routes include the use of the existing U-turn facility located 400m north-west of the John Renshaw Drive turn-off. This U-turn facility would appear to not adequately cater for heavy vehicles.	Table 10.2c of the EIS describes this intersection. Section 2.2.6 and 4.4 of the Traffic Impact Assessment (refer Appendix E of the EIS) confirm that this U-turn facility is suitable for heavy vehicles.	Table 10.2c of the EIS. Sections 2.2.6 & 4.4 in Appendix E of the EIS.
	(d) The temporary Tarro interchange access road is proposed to be an informal gravel road. It is recommended that this road be a sealed all-weather road to minimise dust and prevent erosion.	The EIS states that the proposed temporary construction access road would be an unsealed gravel pavement (refer to Section 4.5.5 of the EIS. As per Section 4 of this PIR, the temporary construction access road is now proposed to be sealed with a two coat seal during construction to minimise dust and prevent erosion. Section 12.4.4 of the EIS provides details on how the road, previously proposed to be unsealed, would be managed to ensure that there would be no adverse dust and erosion impacts. These mitigation measures in the EIS are therefore considered conservative but have been included in Section 6 of this PIR.	Section 4.5.5 and 12.4.4 of the EIS. Sections 4 & 6 of this PIR.

Issue	Agency Issue	Response	Relevant section
	(e) A typical cross-section profile should be provided in relation to the temporary Tarro interchange access road, inclusive of the estimated height/width of embankments and location of vehicle safety barriers. While the road is temporary it will be required to be designed to current road safety design standards.	The temporary access road would be designed to meet the current Austroads geometric design standards. As per Section 4.5.5 of the EIS and Section 4 of this PIR, for the purpose of the HRR Project, although the access road is temporary it would be sealed with a two coat seal.. A typical cross section providing indicative details of the embankment formation and any safety barriers would be included as part of the detailed design after Project Approval.	Section 4.5.5 of the EIS. Section 4 of this PIR.
	(f) The Traffic Impact Assessment estimates a maximum daily construction traffic generation for this Project at 380 trips per day (140 light and 240 heavy vehicles). It is unclear as to whether this traffic generation includes the traffic associated with the construction of the Tarro Interchange temporary access road and therefore accurately reflects the potential impacts of this Project.	Section 10.3.3 of the EIS provides information on the number of number of vehicle trips during construction which includes 140 light and 240 heavy vehicles. Subsequent to this there has been a minor revision in traffic number for the Project including 160 light (additional 10) and 240 heavy (no change from EIS) vehicle trips per day (refer to Section 5 and Appendix C of this PIR). This revised traffic quantity includes traffic associated with the construction of the Tarro Interchange temporary access (construction access road) and therefore accurately reflects the potential impacts of the Project.	Section 10.3.3 of the EIS. Section 5 and Appendix C of this PIR.
	(g) It is estimated that the construction of the access road will take approximately 3 months. During this period, all construction vehicles will access the area for the construction of this road via the New England Highway/Woodlands Close intersection. Previous meetings between officers of Council, Roads and Maritime Services (RMS) and representatives of the proponent identified significant safety issues with any use of this intersection and accordingly were not supported. The Traffic Impact Assessment is silent on this issue and furthermore failed to assess this intersection in terms of road safety. It is understood the RMS may permit limited access for special construction vehicles but certainly not haulage trucks. There would appear to be a level of confusion existing in relation to this issue that would need to be resolved with RMS prior to determination of this application. It is also to be noted that the Traffic Impact Assessment fails to address the removal of the temporary Tarro interchange access road and the resulting traffic activity and extension to time periods.	As discussed above, temporary access from Woodlands Close during construction was also discussed with RMS in the meeting held on 2 October 2012. RMS agreed, in principle, in this meeting and subsequent correspondence (email to Jennifer Burnie (UHVA) from Craig Walker (RMS) on 5 October 2012) to the following: - Access for light vehicles (construction workforce) from Woodlands Close during the initial construction (approximately 3 months until the Tarro Interchange access is completed) would be permitted; - Access for heavy vehicles (haulage trucks) from Woodlands Close (during initial construction) would only be permitted at night (Sunday -9pm to 4:30am, Monday to Thursday-7pm to 4:30am) with one lane road closures during these times.	Section 4.5.5 of EIS & Section 4.5.5 of the EIS. Section 4 of this PIR.

Issue	Agency Issue	Response	Relevant section
		RMS has reiterated this discussion in writing (letter dated 1 November 2012) to DP&I. As discussed in Section 4.5.5 of the EIS and Section 4 of this PIR, the construction access road is to be used temporarily during the construction phase of the Project. Notwithstanding this, ARTC have discussed use of the road with Aurizon whom has indicated, subject to separate approval, that the road would be used for permanent purposes (construction and operation) for the TSF Project. In consideration of this an assessment for the removal of the construction access road is considered unnecessary.	
	(h) Section 6.42- 'Road Safety Impacts' of the Traffic Impact Assessment states that head on collisions may occur on Anderson Drive due to the new intersection not having sufficient space to accommodate large vehicles. This is considered unacceptable and either the intersection needs to be modified to accommodate these vehicles or if the use of these vehicles is infrequent then appropriate traffic control outside of peak periods could be utilised, subject to RMS approval. The proponent needs to define the vehicle type being referenced as a 'large vehicle'.	Section 6.4.2 of the Traffic Impact Assessment (refer to Appendix E of the EIS) states this. However, this was based on a previous design which has since been superseded and further improved by RMS' response provided on 10 September 2012 and further discussion. The design of the new intersection would be assessed in accordance with the current Austroads Standards and RMS requirements. Further, the final design would be assessed by an Independent Auditor and measures to mitigate any road safety impacts would be identified. These would be further addressed in documentation to be submitted to RMS as part of the Works Authorisation Deed (WAD) process.	Section 6.4.1 in Appendix E of the EIS.
7.	Contamination The detailed site investigation report prepared by Coffey Environments Australia Pty Ltd has confirmed that some remediation is required to make the subject site suitable for the proposed Project. A remedial action plan (RAP) dated 5 July, 2012 has also been prepared by Coffey Environments Australia Pty Ltd.	Noted. No further response required.	N/A
	It is noted that although some removal of contamination is to be carried out as part of the RAP, some contamination is proposed to be managed on site. In this regard, a construction environmental management plan will be prepared to address the contamination issues associated with the construction phase; however, the ongoing management of contamination into the future should also be addressed in a long-term environmental management plan for the site. In this regard, Council recommends the involvement of a NSW Environment Protection	Noted however it is unlikely that contaminated material would need to be managed on site during the construction or operation of the Project. Should this need to be required it would be undertaken in accordance with relevant statutory provisions. Further, an additional Soil Contamination Assessment was undertaken by Coffey environments for the proposed Tarro Access Road (Appendix M of this PIR).	Appendix M of this PIR.

Issue	Agency Issue	Response	Relevant section
	Authority accredited site auditor, particularly in relation to the long-term management of contaminants on site which exceed the guideline for the proposed land use.	Contamination testing at the location of the proposed Tarro Access Road indicated that it is not contaminated with hydrocarbons, heavy metals, pesticides, or asbestos and the material is therefore suitable for use as a base for construction work. Any contaminated material found would be managed in accordance with the Construction Waste, Reuse and Recycling Management Plan and the Remedial Action Plan.	
	In this regard, a copy of all validation reports, long-term management plans, site audit statements and reports should be forwarded to Council for our records.	Should any auditing, operational management plans or validation reports be required, a copy would be sent to Council for their records.	N/A
8.	Indigenous Heritage According to the submitted EIS, an indigenous archaeological survey was conducted on site in August and November 2011. Accompanying this was a full indigenous heritage assessment occurred, research of registers and consultation with the Aboriginal community. As a result of these assessment processes recommendations have been made for the management of indigenous heritage, the timeframe of which should be as a next step in the preliminary preparatory stages prior to any physical works commencing on site.	Noted. Heritage test excavations in accordance with Part 6 of the <i>National Parks and Wildlife Act 1974</i> and the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> have recently (October 2012) been undertaken within the Project Area (refer to Appendix J of this PIR). These investigations have determined objects items of aboriginal significance and recommended further testing (minor). Further testing, and management of these objects identified on site will be undertaken subject to the Aboriginal Management Plan to be included in the CEMP for the Project.	Refer to Section 5 and Appendix J of this PIR.
	In summary, the management strategy requires: 1. Preparation of an Aboriginal Heritage Management Plan (AHMP). 2. Program of Archaeological monitoring and testing concerning Site HS1 and Cultural PAD. 3. A protection zone around the rise of land near to Woodlands Close. For this to be practical it would have to be surveyed in association with the Aboriginal archaeologists and identified in the detail design documentation. 4. All registered Aboriginal stakeholders to be provided access to the site to recover any Aboriginal cultural material. 5. A keeping place for Aboriginal materials to be nominated and determined in association with Aboriginal stakeholders and included in the Aboriginal Heritage Management Plan.	A Construction Aboriginal Heritage Management Plan (CAHMP) is currently being developed as part of the CEMP to manage and protect Aboriginal heritage archaeological sites and cultural places during construction of the Project, whilst ensuring compliance with all relevant regulatory requirements. This CAHMP would be informed by the heritage test excavations undertaken, in conjunction with Aboriginal stakeholders, as discussed above.	Section 14.9.5 of the EIS.

Issue	Agency Issue	Response	Relevant section
	The AHMP should be prepared in accordance with the requirements of the Aboriginal Consultation Guidelines of the Department of Climate Change, Water and Conservation and copies provided to the City of Newcastle on endorsement by the Aboriginal stakeholders.	Noted. No further response required.	N/A
9.	Non-Indigenous Heritage The key issue is potential for impacts to the 19th century artefacts and archaeological relics associated with Minmi to Hexham railway, specifically the control cabins and signal boxes, junction cottages and crossing keepers' cottage. In the absence of NSW Office of Environment and Heritage (OEH) permit requirements under Section 140 of the <i>NSW Heritage Act, 1977</i> an Archaeological Management Strategy (AMS) has been proposed. This AMS seeks to ensure there is a best practice approach to the retrieval and recovery of archaeological information in the event that the development impacts on the Minmi to Hexham railway. While this approach is supported it is recommended that the AMS include an archaeological research design that would be developed in consultation with the OEH Heritage Branch. The research design would ensure the most meaningful information is obtained through any archaeological salvage or monitoring program. The AMS should be implemented and all archival material collected and the site documented prior to the physical commencement of works on site. Further, copies of the AMS including archival recording, should be provided to the City of Newcastle at the end of the archaeological program.	As per Section 15.7 of the EIS and reiterated by Section 6 of this PIR, the AMS aims to manage archaeological relics associated with the Minmi to Hexham Railway & Great Northern Railway. The AMS would be part of the CEMP for the Project and be implemented prior to commencement of works. OEH, DPI, Newcastle City Council and other stakeholders would be contacted as appropriate/required should any unexpected heritage finds occur during the Project.	Section 15.7 of the EIS. Section 6 of this PIR.
10.	Visual impact Assessment The assessment methodology considered in chapter 2 of the Visual Impact Assessment (VIA) prepared by Envisage Consulting Pty Ltd is considered suitable for the development proposal. It is acknowledged that the assessment was undertaken considering a 'worst case scenario' in that there will be trains on all five relief roads proposed. The assessment also considers the cumulative impact of the QR National Train Support Facility.	Noted. No further response required.	N/A
	The VIA concludes in section 3.2 that the area has 'a low scenic amenity'. This was due to the low vegetation and contrasting mix of land uses; specifically with regard to the industrial activity to the east of the Project site. However, while the assessment recognises the number of viewing points from the New England Highway (including Maitland Road), little regard has been made to the fact that	Section 21.3 of the EIS provides an assessment of the Project having regard to visual impact on the surrounding area. The Project is not anticipated to have significant adverse impacts on the surrounding environment in that:	Section 21.3 of the EIS.

Issue	Agency Issue	Response	Relevant section
	the highway intersects the industrial area from the low lying, grazing land to the west providing distinct view changes of either side of the highway. Consequently, in providing a generalised land use statement to this area, reduced weight has been applied to the views offered to the west from the highway. Specifically, the views of Mount Sugar loaf in the distance are identified in the assessment as an important landmark of the Hunter Valley and the low lying, open grazing lands with the lack of vegetation provides ample viewing corridors to this feature making the categorisation as low scenic quality unwarranted. Furthermore, the introduction of a large number of static rail carriages in the foreground has the potential to obstruct this view, or at least distract the viewer from this background feature. Little weight has been given to this impact. The proposal would no doubt remove all views of this low lying mid range view of the wetlands. On this basis, the recommendations of the VIA to screen the rail corridor with vegetation is likely to further block the views and is questioned.	- It is noted that the New England Highway has views to the site from the west however the impact on these views is considered temporary (construction access road during construction) and minor in consideration of the existing rail line and surrounding uses. - The Project would have only temporary impact on the views from the New England Highway to Mount Sugar Loaf during construction (construction access road) and minor impact based on the existing rail corridor contributing to an obstructing of views. - Existing views from the New England Highway to the Hexham Swamp are predominantly obscured by existing trees and therefore the Project, including static trains in this location would only result in a minor impact to existing views.	
	In respect of the nearby Hunter Wetlands National Park, the VIA states that the low number of users reduces the visual sensitivity from that viewpoint. Such comment ignores the fact that in the future the number of visitors to the Park may increase and conversely any detrimental impact of the Project on that viewpoint may in turn reduce the number of visitors to the National Park.	The VIA, included in Appendix M of the EIS, has adequately assessed the visual sensitivity of views from the Hunter Wetlands National Park. Notwithstanding this, the impact of the Project on this view point is considered minor and therefore would not impact on the number of visitors to the National Park.	Appendix M of the EIS.
11.	Design Detail As indicated in previous sections of this submission, concern is expressed at the lack of design details submitted in support of the application. It being noted that the single 'typical cross section' provided does not identify the existing 'Up Coal' and does not include the existing 'Up Main' and 'Down Main'.	Additional design information, including cross sections is provided in Appendix B of this PIR.	Appendix B of this PIR.
Hunter-Central Rivers Catchment Management Authority			
	The key issues that the CMA has concerns about include: The provision of suitable offsets for the 9.1 ha of Endangered Ecological Community (EEC) proposed to be removed as part of this project that meet the 'improve or maintain' (IoM) principles of the Catchment Action Plan. The potential for impacts on groundwater at the site, including 'drawdown' that may	Noted. Responses to these concerns are provided below.	N/A

Issue	Agency Issue	Response	Relevant section
	result in creating Acid Sulphate Soils (ASS); and Changes to the existing hydrology that may result in changes in flow direction and volume causing negative impacts on water quality		
	Offsets for the clearing of native vegetation The CMA expects the proponent to develop an offset package using either the Environmental Outcomes Assessment Methodology (EOAM) or Biobanking methodology and carried out by a qualified Biobanking practitioner. At the very least the proponent should incorporate the principles underpinning Biobanking and/or the EOAM in the development of offsets that meet the 'improve or maintain' test. Information on the EOAM methodology is available at www.environment.nsw.gov.au/vegetation/eoam/index.htm Information on Biobanking methodology is available at http://www.environment.nsw.gov.au/biobanking The CMA would appreciate the opportunity to review the package once completed. The CMA notes that the amount of offset required could be reduced by altering the location of some of the infrastructure including the office and amenities block, carpark and turntable areas to adjacent sites that are already cleared of native vegetation (Fig. 4.4c). As the EIS does not contain adequate details of a specific offset package, the CMA is unable to properly assess or support the proposal at this time.	A Biodiversity Offset Strategy has been prepared and is included at Appendix E of this PIR. This strategy has been discussed with OEH and been prepared in accordance with the relevant Biobanking principles. A Biodiversity Offset Package would not be complete until after Project Approval. The package would be provided to CMA.	Appendix E of this PIR.
	Consistency with the Hunter-Central Rivers Catchment Action Plan The Catchment Action Plan (CAP) is a whole-of government approach to natural resource management which has been endorsed by the NSW Government. The CAP contains specific guiding principles that outline how natural resource management should occur in the Hunter-Central Rivers region to improve or maintain environmental outcomes. The guiding principles for Biodiversity, land use planning and estuary and marine have particular relevance to this project. The CMA requests that these CAP guiding principles be taken into consideration both in the EIS and during implementation for the life of the project. The CAP is available at http://www.hcr.cma.nsw.gov.au.	The Hunter Central Rivers CAP was assessed and considered in the preparation of the EIS and is discussed in Section 8.3.1 of the EIS and Section 3.2.3 in Appendix C of the EIS. The CAP guiding principles have been incorporated into the design, survey and construction phases of the Project, to minimise impacts to threat-listed vegetation communities and habitat for threat-listed flora and fauna. The Project's proximity to estuarine and marine aquatic habitats and nature reserves has also been taken into account to minimise indirect impacts upon surrounding ecosystems. Responses to specific guiding principles as contained in the	Section 8.3.1 of the EIS. Section 3.2.3 in Appendix C of the EIS.

Issue	Agency Issue	Response	Relevant section
		CAP are presented below.	
	The following is a list of specific guiding principles with particular relevance to this proposal: 1. Minimising habitat destruction and improving the condition of habitat- The CMA will support in principle planning measures which reduce or avoid impacts of development on threatened species and communities such as Regional Conservation Plans and the Biodiversity Offsets 'Biobanking' scheme. 2. Maintain or improve the condition of estuary and marine areas- If estuarine or marine aquatic habitat must be disturbed as a result of development then other areas of wetland habitat should offset this loss. 3. To prevent species, populations and ecological communities from becoming threatened or extinct, it is important to preserve high quality salt marsh, mangrove, estuarine, seagrass, marine and marine shoreline habitat that remains in the long-term. It is also important to improve degraded saltmarsh, mangrove, estuarine, seagrass, marine and marine shoreline habitat to increase the limited wetland habitat that now exists. 4. Habitat should be restored to a healthy state so native species are able to outcompete exotic species. 5. The cumulative impacts of development activities on our natural resources should be taken into consideration in landuse planning. 6. The use and development of natural resources should be sustainable 7. Where practical, future development should be restricted to primarily cleared land. Where loss of vegetation is unavoidable, native vegetation offsets should be used.	1. Measures have been incorporated into the Project to ensure that impacts are minimised or avoided where possible. Geotechnical surveys within the Project Area have been located to avoid environmentally sensitive areas and the design of the Project has been modified to minimise impacts to sensitive environmental values. The principle of maintaining or improving the natural environment has been undertaken by minimising potential impacts during each phase of the Project and will be realised by offsetting impacted areas with like for like environmental values. 2. The principle of maintain or improve has been adhered to in regard to estuarine or marine aquatic habitats, by avoiding or minimising impacts during the survey and construction phases of the Project and would be ensured by offsetting like for like for those areas that would be impacted as a consequence of the Project. 3. The Project recognises that there are sensitive environmental values associated with the Project Area including threat-listed flora, fauna and vegetation communities. Furthermore, it is recognised that the Project is located within close proximity to estuarine and marine aquatic ecosystems. For this reason measures have been undertaken during the design, survey and construction phases of the Project to minimise potential both direct and indirect impacts, which may be associated with the Project. Biodiversity offsets to be determined for the Project would ensure that maintain or improve outcomes for the project are realised in relation to estuarine and marine aquatic habitats. 4. The Project area was found to be dominated by exotic plants and native communities were found to be invaded by exotic weeds. Nevertheless the Project is committed to minimising impacts that	Section 8.7 of the EIS. Sections 6, 7, 8 and 9 in Appendix C of the EIS.

Issue	Agency Issue	Response	Relevant section
		might further degrade native vegetation communities and improving the condition of native flora and fauna habitat where possible. 5. Cumulative impacts have been taken into account in relation to the Project (refer Section 8.7 of the EIS and Section 6 in Appendix C of EIS). 6. Not applicable to the Project 7. Native vegetation communities and flora and fauna habitat have been avoided where possible during the design, survey and construction phases of the Project to minimise impacts to sensitive environmental values within the Project Area and the surrounding area.	
	Implementation of World Best Management Practice for Natural Resource Management. The CMA is concerned that the value of the wetlands is not correctly ascribed in Section L volume 4. The report asserts that the habitats are degraded and notes that wetlands (Hexham Swamp) offer an opportunity to manage contamination events more easily. The CMA has determined that the Hexham Swamp is one of the highest priority wetland systems in the CMA area and is currently being rehabilitated to an estuarine wetland system. The CMA expects that best management practice stormwater, sediment and erosion control practices are incorporated into the proposal to ensure that water quality in the receiving waters including the wetlands is not compromised. The CMA notes that a suite of management plans are proposed to deal with groundwater, ASS, WQ and altered hydrological flow. It is imperative that these plans are implemented to a high standard and that the effectiveness of these plans is monitored for the life of the project.	The Water Quality Assessment (refer Section 2.3 in Appendix L of EIS) acknowledges the Hexham Swamp as a potential receptor and that it does not meet the ANZECC guidelines (2000) criteria for a 'slightly to moderately disturbed ecosystem' and as such indicates a degraded aquatic ecosystem. Regardless of the current water quality, the mitigation measures set in Section 6 in Appendix L of the EIS would be adopted to ensure that there are no adverse impacts on the Hexham Swamp.	Sections 2.3 & 6 in Appendix L of EIS.
	Impacts of Flooding The CMA notes that the project forecasts changes in the flood pattern and increases in flood heights within the Hexham Swamp. The CMA defers comment on the impacts of the project on the Lower Hunter Flood Mitigation Scheme to the NSW Office of Environment and Heritage.	Noted.	N/A

3.2. Response to Public and General Interest Groups Submissions

This section provides a summary of the submissions raised by the public and general interest groups. Each of the submissions received has been considered and responses provided below.

3.2.1. Submission Summary

A total of 37 submissions were received from the public during exhibition of the EIS. Submissions have been grouped and responded to by environmental aspect. Responses to these submissions make reference to both the HRR EIS and sections of this PIR. A summary of the responses provided and the section of this PIR where each issue is addressed is provided in Table 3.2a below. This table should be read in conjunction with the source table provided at Appendix I.

Table 3.2a Summary of Public and General Interest Group Submissions

Environmental Aspect	Category	Public Submission	Section of this PIR
Air Quality	Identification of sensitive receivers and results	(5) (9) (11) (17)	Section 3.2.3
	Diesel emissions	(1) (2) (4) (5) (6) (7) (14) (15) (18) (19) (20) (21) (22) (23) (24) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.3
	Dust generation	(1) (2) (4) (5) (6) (7) (8) (9) (11) (14) (15) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.3
	Future rail movements and air emissions	(5) (1) (2) (6) (7) (14) (18) (19) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.3
	Health impacts on surrounding community	(4) (34) (5) (19)	Section 3.2.3
Greenhouse Gas	Greenhouse gas emissions	(3)	Section 3.2.4
Water Quality	Impact on Hexham Swamp	(13) (8)	Section 3.2.5
Flooding	Impact of flooding on surrounding area	(8) (9) (11) (13) (17) (24) (26) (30)	Section 3.2.6
	Flooding impacts and rising sea levels	(13) (16)	Section 3.2.6
	On-going flood management/maintenance	(30)	Section 3.2.6
Ecology	Identification and impact on Hexham Swamp	(4) (8) (13) (29) (12)	Section 3.2.7
	Impact on aquatic ecology	(8) (13) (29)	Section 3.2.7
	Biodiversity Offsets	(13)	Section 3.2.7
Noise and Vibration	Identification of sensitive receivers	(1) (2) (4) (5) (6) (7) (9) (11) (14) (17) (18) (19) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.8

Environmental Aspect	Category	Public Submission	Section of this PIR
	Noise and vibration impacts from additional trains in 2024	(1) (2) (6) (7) (14) (18) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.8
	Noise and vibration impacts on residents (sleep disturbance)	(4) (5) (8) (9) (11) (14) (15) (17) (19)	Section 3.2.8
	Treatment of residential dwellings	(1) (2) (5) (6) (7) (9) (11) (14) (17) (18) (19) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.8
Traffic and Transport	Traffic modelling data	(9) (11) (17)	Section 3.2.9
	Project estimates and traffic generation	(4) (16) (26)	Section 3.2.9
	Access to residential properties and surrounds	(5) (9) (10) (11) (17) (24) (26) (32)	Section 3.2.9
	Integration with other Proposals	(4) (9) (11) (16) (17)	Section 3.2.9
	Public transport and rail line usage	(4) (9) (11) (16) (17) (30)	Section 3.2.9
Property Acquisition	Resumption of properties	(14) (30)	Section 3.2.10
Environmental Protection	Use of existing EPL	(9) (11) (17)	Section 3.2.11
Cumulative Impact	Cumulative impact assessment	(4) (8) (9) (11) (13) (17)	Section 3.2.12
Government and Policy	Listing of Hexham Swamp	(8)	Section 3.2.13
	Compliance with Lower Hunter Regional Strategy and option selection	(8) (13) (29)	Section 3.2.13
	Federal Government funding	(1) (2) (6) (7) (14) (18) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.13
Need for the Project	Support from Port of Newcastle	(28)	Section 3.2.14
Operational Management and Site Options	Length of train stay on Relief Roads	(4)	Section 3.2.15
	Crew change and maintenance	(4) (9) (11) (17)	Section 3.2.15
	Option selection	(13) (29)	Section 3.2.15
	Rehabilitation of area post project	(9) (11) (17)	Section 3.2.15
	Construction of a deflection wall	(1) (2) (5) (6) (7) (14) (18) (19) (20) (21) (22) (23) (25) (27) (31) (33) (34) (35) (36) (37)	Section 3.2.15

3.2.2. General Comments

Additional coal rail line movements

A number of submissions raised concern regarding additional numbers of train movements in the future. Submissions raised concern regarding air, noise, vibration and ecological impacts brought about by additional movements on the coal line. The forecast in additional coal train movements is presented in Section 4.6.1 of the EIS, which notes that the Relief Roads are to be constructed to 'alleviate current congestion and also assist with allowing planned capacity improvements to be realised'. The Project is part of a larger number of projects to upgrade the coal line network. The Hexham Relief Roads project would facilitate re-sequencing of the trains on the coal line to ensure that the trains arrive at the unload points in the correct order. Whilst the Project would provide the ability to minimise capacity loss due to network delays and breakdowns this Project would not directly increase the capacity of the network at this location.

Existing operational management

A number of submissions raised concern regarding impacts on the surrounding environment, property and people brought about by the current operation of the coal line. Concerns were raised primarily regarding air, noise, vibration and ecology. A number of submissions provided comments on how these processes are currently managed and improvements for this management.

ARTC has been provided with these comments during the EIS exhibition and would consider them as part of future operational activities on the coal line as appropriate.

The EIS has considered the existing condition of the surrounding environment and used this as a baseline on which to identify potential impacts of the Project. This PIR provides responses to submissions that relate to the proposed Project as described in the Project Application and EIS.

3.2.3. Air Quality

Submissions Received

A number of submissions were received relating to air quality including the validity of modelling based on future operational conditions and the selection of sensitive receivers (4 submissions) for the purpose of air quality testing/monitoring, diesel emissions (23 submissions) and coal dust (28 submissions) from trains idling on the Relief Roads (23 submissions). Further, submissions raised (3 submissions) suggested levels for the on-going monitoring of air emissions relating to the Project. Some of these submissions (4 submissions) also identified concerns with air quality impacts and the potential health impacts that this may have on their family and the surrounding community.

Response

Identification of sensitive receivers and validity of modelling

A number of submissions state that they do not accept, or doubt, the accuracy of modelling undertaken for air quality. Accuracy of the current baseline and expected operational conditions and impacts was also questioned. In particular these submissions question the choice of sensitive receivers used for modelling potential impacts.

Section 13.2 of the EIS states that 24 sensitive receivers were identified in the neighbouring area, including residential premises and workplaces (predominantly industrial), which were included in the dispersion model to identify and assess potential impacts. The EIS provides detail on the existing environment and background concentrations of air pollutants that were utilised in the modelling for the Project. Section 13.3 of the EIS provides an analysis of the relevant meteorology conditions that were included in the dispersion model to ensure that all potential impacts from the Project were appropriately identified.

Section 13.5 of the EIS includes an assessment of the impacts of the Project with a worst case scenario of five trains idling on the Relief Roads simultaneously, under the worst case weather

conditions. It is expected that there would rarely be five trains idling simultaneously on the Relief Roads. A more likely scenario is that either one or two of the Relief Roads would be occupied at any one time.

The assessment in the EIS has been undertaken in accordance with the NSW Department of Environment and Conservation's 2005 Publication *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* and provides modelling of the potential impacts of the Project's operation having regard to Nitrogen Dioxide (NO₂), Carbon Monoxide (CO), Dust- PM₁₀, Dust- PM_{2.5}, Sulphur Dioxide (SO₂) and Hydrocarbons (refer to discussion below for further information on dust generation assessment). The assessment has thus been undertaken in accordance with legislative requirements.

The background information used in the assessment is considered representative of all receivers.

Diesel emissions

A number of submissions raised concern regarding increased diesel emissions from the operation of the Project with trains idling on the Relief Roads and the resulting impacts on the surrounding area including human health (potential breathing concerns).

As discussed in the EIS, modelling results for NO₂, CO, SO₂ and total hydrocarbons are, at all identified sensitive receivers, below the assessment criteria for hourly average time and for annual averaging period. The results in the EIS show that the Project would not adversely impact on human health or the environment in the surrounding area with regards to diesel emissions. As stated in Section 13.6 of the EIS the results from the Project in addition to potential surrounding projects, i.e. cumulative impact, would remain below criteria.

Dust generation

A number of submissions raised concern with dust emissions from the Project during both construction and operation. In particular, concern was raised regarding dust dispersion and potential impacts on surrounding residents and the safety of traffic on the New England Highway, as a result of the proposed construction access road. Concern was also raised regarding the environmental effects of dust dispersion from the Project (i.e. accumulation of coal dust affecting the Hexham Wetlands and Hunter River).

As discussed above, Section 13.5 of the EIS provides an air quality assessment of the Project during operation, which includes modelling of dust (PM₁₀, PM_{2.5}) impacts based on relevant standards. The assessment concludes that all results from the operation of the Project are within the criteria for dust dispersion. Also, as stated in Section 13.6 of the EIS the results from the Project in addition to potential surrounding projects, i.e. cumulative impact, would remain below criteria.

Section 13.7 of the EIS provides a number of mitigation measures that would be implemented to ensure that there are no unacceptable impacts on the surrounding area during construction including use of water sprays, establishment/enforcement of vehicle speed limits, covering vehicle loads, maintenance of vehicles and machinery, visual monitoring and adjusting construction activities accordingly. Subject to the implementation of these mitigation measures the Project is not considered to have unreasonable impacts on the surrounding area, in particular no adverse impact to safety on the New England Highway. These mitigation measures are included in Section 6 of this PIR.

Future rail movements and potential air quality

Twenty submissions raised concern with air quality from emissions due to additional train movements on the coal line in the future.

Section 13.5 of the EIS includes an assessment of the air quality impacts of the Project on opening (year 2014), concluding that all emissions would be within relevant criteria. Assessment of air quality impacts in the future is not consistent with relevant standards for air impact assessment in NSW and therefore has not been provided in the EIS.

Health impacts on surrounding community

Four submissions raised concern having regard to potential health impacts brought about by the air emissions associated with the Project.

As discussed above, Section 13.5 of the EIS confirms that the Project, subject to the implementation of mitigation measures, would not exceed assessment criteria at any of the identified sensitive residential receivers during construction or operation. Based on this assessment and compliance with the relevant criteria it is not anticipated that the Project would result in any health impacts as a result of air emissions.

3.2.4. Greenhouse Gas

Submissions Received

One submission was received raising the impact of the Project on global climate change. The submission related to the Project being part of a larger plan to increase exportation of coal, which when processed, would likely contribute to greenhouse gas emissions.

Response

The Project results in minor additions to greenhouse gas emissions. It includes mitigation measures to further reduce any potential for greenhouse gas emissions. It is outside the scope of the EIS to comment on emissions from other projects including the exportation of coal and potential impacts on greenhouse gas and climate change.

Chapter 22 of the EIS provides a Greenhouse Gas Assessment taking into consideration greenhouse gas emissions based on the clearing of vegetation and on-site fuel consumption. This assessment has been based on relevant standards including the Greenhouse Gas Protocol (World Business Council for Sustainable Development, 2004), Australian Greenhouse Office Factors and Methods Workbook, (AGO, 2006), the National Greenhouse Accounts Factors (DECC, 2011) and Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DEC, 2005). Section 22.2 of the EIS concludes that the construction of the Project would result in a total of 20,671 tonnes of Carbon Dioxide emissions (CO₂-e) which is a total of 0.01% of the total greenhouse gas emissions for NSW. Further, Section 22.3 of the EIS includes mitigation measures that would be implemented to further reduce the CO₂-e from the Project. These mitigation measures are included in Section 6 of this PIR.

3.2.5. Water Quality

Submissions Received

Two submissions were received in relation to water quality. One of the submissions believed to question the identification of Iron Bark Creek as having undesirable water quality in the assessment is incorrect. The submissions also raised concern with regard to the impact on water quality in the Hexham Swamp as a result of site run-off. These submissions were also concerned with impacts on water quality brought about by air emissions.

Response

The EIS is based on the most relevant information publically available supported by technical specialist investigations. Section 2.6 of the Water Quality Assessment (Appendix L of the EIS) states that the 'water quality across the subject site and within the Lower Hunter Estuary is of low value and largely falls outside the ANZECC guidelines (2000) values'. Despite the low quality in water quality, the Report goes on to recognise the environmental value contained within the Lower Hunter Estuary and the Hexham Swamp. The information provided in the EIS is considered sufficiently thorough to allow assessment of the potential water quality impacts of the Project.

Chapter 19 of the EIS provides an assessment of the potential impacts of the Project on water quality. Section 9.3 of the EIS concludes that, subject to implementation of mitigation measures, the impact of

the Project during both construction and operation would have no significant, or negligible, impact on water quality of the Hexham Swamp and the surrounding tributaries. Section 3.1 of this PIR discusses site drainage and run-off in detail as part of the response to government agency comments. As discussed in this section, further testing has been undertaken of ground and surface water quality in, and surrounding, the Project Area. This has been undertaken to further understand the potential impacts of the swale drain, in that it would intercept and discharge groundwater into the neighbouring flood plain.. As discussed in Section 5 below, options for water management were investigated to ensure that the Project, in particular discharge from the swale drain, does not adversely impact on the surrounding Hexham Swamp and tributaries.

Project air emissions are discussed above in Section 3.2.3 of this PIR.

3.2.6. Flooding

Submissions Received

A number of submissions were received relating to potential flooding impacts from the Project on surrounding properties under peak flood events (8 submissions) and under rising sea levels (2 submissions). One further submission was received which included comments on existing inefficient and poor flood management practices that were undertaken by government and ARTC.

Response

Impact of flooding on surrounding area

Section 7.3 of the EIS provides an assessment of the Project having regard to potential impacts on flooding in the surrounding area. As discussed in Section 5.1 of this PIR, a Joint Flood Modelling Report and Flood Assessment Addendum has been prepared to further investigate these potential flooding impacts (refer to Appendix F of this PIR). The flood mitigation solutions, including lowering sections of the proposed Relief Roads would significantly reduce flood impacts on surrounding properties.

As is discussed in Section 6 of this PIR, ARTC would implement measures to reduce and/or manage flood impact on identified affected properties.

Flooding impacts and rising sea levels

Section 7.3 of the EIS provides an assessment of the Project with regard to potential flooding impacts. As discussed in Section 5.1 of this PIR, a Joint Flood Modelling Report and Flood Assessment Addendum has been prepared to further investigate potential flood impacts with consideration to climate change (refer to Appendix F of this PIR). The model gave consideration to the NSW Government's adopted sea level rise planning benchmarks which ensure consideration of sea level rise in coastal areas of NSW. In line with the NSW Government's benchmark, the model gave consideration to the 0.9m increase in water level conditions at Newcastle Harbour (model boundary).

As is discussed in Section 6 of this PIR, ARTC would implement measures to reduce and/or manage flood impact on identified affected properties.

On-going flood management/maintenance

One submission stated that existing minor flooding issues are evident periodically in the immediate surrounding area as a result of a poor maintenance (silt removal not being undertaken regularly). It is understood, from this submission, that the NSW Department of Public Works and the Hexham Drainage Union are currently responsible for these works. This submission recommends that only one party be responsible for this maintenance.

As discussed above and in Section 6 of this PIR, ARTC would be responsible only for the maintenance of infrastructure included in the Project, in particular the swale drain. It is recommended that the relevant parties, identified above, be contacted to discuss the identified existing maintenance issues.

3.2.7. Ecology

Submissions Received

Submissions have been received that raise concerns with regard to the extent of, and impact of the Project on, the Hexham Swamp, in relation to both terrestrial (5 submissions) and aquatic (3 submissions) ecology. One submission raised concern about the loss of this environment and the appropriateness of biodiversity offsets provided by the Project to mitigate impacts.

Response

Impact on Hexham Swamp

Concern was raised in the submissions that the extent of the Hexham Swamp and its neighbouring wetlands (SEPP14 No.840 and No.833) has not been appropriately identified and that ecological value has not been given suitable consideration with regards to the potential impacts of the Project. Further, a question was raised regarding the identification of both terrestrial and aquatic species and the extent that the Project would impact these. In particular, comment was raised regarding fish passage throughout the tributaries and also potential impacts of the Project on fishing and surrounding aquaculture.

Section 8.2 of the EIS provides a discussion on the methodology that was undertaken for the assessment of the Project's potential impact on ecology. This assessment is based on a thorough review of relevant legislation, databases, literature and a series of targeted field surveys all of which were undertaken in accordance with relevant guidelines and standards.

Section 8.3 of the EIS provides a detailed discussion on the existing ecological environment, within and surrounding the Project Area including the identification of the Hexham Swamp and other ecologically significant communities, habitats and species; exotic, native and threatened (under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (refer also to Appendix C of the EIS). This assessment, within the EIS, was prepared in conjunction with a Referral under s68 of the EPBC Act, confirming that the Project would not impact on any ecology that is considered a matter of 'National Environmental Significance (NES)' (refer to Appendix A of the EIS). The EIS also recognises the rehabilitation activities that have been, and are planned to be, undertaken in the Hexham Swamp and neighbouring wetlands and tributaries.

The EIS, and associated technical reporting, has undertaken extensive research on the Project Area and surrounds to ensure that ecological species, communities and habitats have been identified. In particular the Ecological Assessment (refer to Appendix C) of the EIS makes mention of a number of species (shorebirds and aquatic flora) which have also been identified by the community in the Hexham Swamp and surrounding wetland areas (refer to Section 3.5.3 and Appendix I, of Appendix C). Further, Sections 8.4 and 8.5 of the EIS provide a discussion on the impacts of the Project and establish mitigation measures to ensure that these impacts are minimised. The EIS concludes that, subject to the implementation of mitigation measures including biodiversity offsets (refer to below), the Project would not have unreasonable impacts on the ecology of the Project Area or surrounding area including on the terrestrial or aquatic ecology in the Hexham Swamp (refer to Appendix C of the EIS for further detail). The mitigation measures also specifically include controls to ensure that there are no adverse impacts on fish passage where waterways are crossed.

The EIS includes mitigation measures to ensure that there are no unreasonable impacts on water quality (refer to Section 3.2.5 of this PIR) and aquatic ecology and therefore aquaculture in the area.

Further, additional desktop studies and site investigations have been undertaken for the design amendments, discussed in Section 5 of this PIR, as an Ecology Assessment Addendum to the EIS. These confirm that there would be an overall reduction in ecological impacts of the Project from these design changes from that provided in the EIS.

Biodiversity Offsets

One submission raised concern that the Project includes Tier 3, rather than Tier 2 offsets, which signifies that the Project may have a significant impact on the surrounding wetlands. The submission infers that this is unacceptable as it reduces the size of the existing wetlands that have previously been reduced by industry and urban encroachment.

The impacts of the Project to ecology have been discussed above. A Biodiversity Offset Strategy has been prepared to address the loss of habitat, and is included in Appendix E of this PIR. The strategy includes a 'Tier 3-mitigated net loss' outcome however notes that a portion of the ecosystem credits do meet the criteria for 'Tier 2-improve or maintain' outcome. Therefore the Project includes a combined Tier 2 and Tier 3 outcome which is considered suitable for the Project having consideration to the potential impacts on the surrounding ecology. The strategy is required to be approved by the OEH and specifics would be finalised having consideration to any further input that OEH may have.

3.2.8. Noise and Vibration

Submissions Received

A number of submissions received related to noise impacts of the Project on the surrounding area. These include the identification of sensitive receivers (24 submissions), noise impacts from additional trains (18 submissions), noise and vibration impacts on the residents (9 submissions) and suggestions for the treatment of residential dwellings (23 submissions) to mitigate these potential impacts.

Response

Identification of sensitive receivers and validity of modelling

Submissions (24 submissions) raised concern that appropriate sensitive receivers were not included in the assessment (both noise and vibration) provided for the Project. In particular, it was suggested that consideration should be given to residential properties in the suburbs of Wallsend, Shortland and Hexham (Shamrock Street in particular) and the Hexham Bowling Club.

Section 9.2 of the EIS identifies twenty two sensitive residential receivers which have been selected based on their close proximity to the Project Area and the potential for the Project construction or operation activities to be audible (above relevant criteria) at these locations. These receivers were identified based on industry standards for noise assessment (refer to Section 9.1 of the EIS). It is noted that that Hexham Bowling Club was identified and included in the assessment as a sensitive noise receiver. The noise receivers identified represent worst case scenarios, due to their proximity to the Project Area, with regard to the Project's noise and vibration impacts. If the Project's noise and vibration impacts comply at the nearest receivers, which they do with the exception of the Church on Old Maitland Road, then they would also comply at receivers located a further distance away from the Project. The selection of sensitive receivers for the noise and vibration assessment is therefore considered suitable and acceptable.

Noise and vibration impacts from additional trains in 2024

A number of submissions (18 submissions) raised concern with regard to the impacts of the additional trains anticipated on the coal rail line in 2024.

Section 9.3 of the EIS provides a Noise and Vibration Assessment of the Project for the year of operation (2014) and 10 years post Project opening (2024) in accordance with the *Interim Guidelines for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP) (DECCW, 2007). This assessment, for the 2024 scenario, includes future rail movements and provides a worst case scenario of five trains idling on the Relief Roads. The EIS, and associated technical report, confirms that, with the exception of the Church on Old Maitland Road, and subject to the implementation of mitigation measures (refer to Section 9.5 of the EIS), noise and vibration impacts of the Project in the 2024 scenario would not result in exceedances in relevant criteria.

Noise and vibration impacts on residents (sleep disturbance)

Nine submissions raised concern regarding noise and vibration impacts in relation to annoyance at night and potential sleep disturbance.

Section 9.3 of the EIS provides a Noise & Vibration Assessment of the Project's operation during night time (10pm – 7am) at opening (2014) and 10 years after opening (2024). This section confirms that the Project would, with the exception of the Church on Old Road, comply with night time criteria and would therefore not unreasonably impact on the surrounding area. Further, this section also provides an assessment of the vibration of the Project, confirming that it would comply with relevant criteria and therefore disturbance issues are not anticipated during operation.

Further, an assessment is provided in Section 9.3 of the EIS, for construction works that are to be undertaken outside of standard day time construction hours (outside of 7am to 6pm Monday to Friday and 8am to 1pm Saturdays). This section provides comments on sleep disturbance identifying that relevant standards, the *Interim Construction Noise Guidelines*, do not include criteria for sleep disturbance. The EIS recommends a criteria of additional 5 dB(A) and notes that noise from selected construction activities outside of normal construction hours could potentially be audible from the nearest residents on Woodlands Close, Old Maitland Road, Clark Street, Merchant Street and Fenwick Street. It is also noted that reaction to audible noise is a subjective response, with the potential for no sleep disturbance when results are above the determined criteria. Section 9.5 of the EIS includes mitigation measures to ensure that sleep disturbance of residents is minimised during the construction of the Project. Section 9.3 of the EIS also notes that vibration impacts during the construction of the Project are expected to be within human exposure goals and below the relevant criteria, limiting the potential for annoyance or disturbance issues during night time.

Treatment of residential dwellings

A number of the submissions (23 submissions) contained suggestions for the treatment of residential dwellings against potential noise and vibration impacts of the Project. Suggested treatment included sealing and double glazing windows and doors, reducing window sizes and the construction of noise walls/barriers. One submission also recommended the offer of alternative accommodation for residents during construction to avoid sleep disturbance.

As discussed above, Section 9.3 of the EIS, and associated technical report (Appendix D) confirms that the Project would not result in any noise or vibration exceedances at residential receivers. Based on the Project's compliance with noise and vibration criteria and in consideration of the mitigation measures provided, no other mitigation measures would be implemented. Based on the compliance of the Project, the provision of alternative accommodation during construction is not seen as required or necessary.

3.2.9. Traffic and Transport

Submissions Received

A number of submissions were received relating to concerns about surrounding traffic, and transport and access impacts as a result of the construction and operation of the Project. These concerns were:

- surrounding traffic data presented in the traffic assessment (3 submissions);
- traffic generation and congestion on the surrounding road network (3 submissions);
- impacts on access to residential dwellings and surrounding properties (8 submissions);
- the impact and integration of the Project with other transport proposals (5 submissions); and
- usage of the existing railway line (coal, freight and passenger) (6 submissions).

Response

Traffic modelling data

A total of three submissions raised concern with regard to the data identifying existing traffic conditions that were presented in the traffic assessment.

Section 10.2.6 of the EIS identifies the existing traffic conditions and volumes within the road network within and surrounding the Project. The identification of existing conditions and volumes has been provided using the most up to date information available from the Roads and Maritime Services (RMS). Utilisation of this information is considered industry standard. Further, all calculations provided in this assessment have been prepared based on RMS data and industry standards, and undertaken by technical specialists. Notwithstanding this, the design amendments (provided in Section 4 of this PIR), in particular revisions to earthworks quantities, have resulted in a minor increase in the number of vehicles (from 70 to 80 light vehicles per day during construction) for the Project. This increase of ten light vehicles per day would be negligible and therefore would not impact on the assessment provided within the EIS.

The data provided within the EIS and associated technical reporting (Appendix E of the EIS), as amended by Section 4 of this PIR, are therefore considered suitable and appropriate to the assessment of the impacts of the Project on the surrounding road network.

Project estimates and traffic generation

Three submissions raised concern regarding the estimates provided for the Project, questioning whether they are correct, and that the Project would have unreasonable impacts (stated as 'critical impacts' in the submissions) on the surrounding road network. One submission raised safety as a concern particularly with regard to access at the proposed Tarro Interchange construction access road intersection.

Section 10.3.3 of the EIS identifies the number of traffic movements, estimated number of vehicle movements per day and estimated number of trips per day, which have been used in the traffic assessment for the Project. As has been discussed in Section 5.4 of this PIR, an additional 10 light vehicles (totalling 80 light vehicle movements per day) would be required during the construction phase of the Project. The numbers provided in the EIS, supplemented by this PIR, are correct and relevant to the construction and operational traffic that is to be generated by the Project.

Section 10.4 of the EIS, supplemented by Section 5.4 of this PIR, provides an assessment of the construction and operational traffic impacts of the Project on the surrounding road network. This section confirms that the Project would not significantly impact on intersection performance and as a result would contribute to only mild or minimal delays to traffic on Anderson Drive and the New England Highway and the surrounding road network. This section of the EIS also provides a review of sight distances and notes that the Project complies with relevant standards, and Austroads guidelines. The Project would not significantly contribute to delays on the surrounding road network, or detrimentally impact on road safety and therefore is considered acceptable in the context of the surrounding area.

Access to residential properties and surrounds

Eight submissions raised concern with regard to access to residential properties, in particular the use of Shamrock Street for Project construction access, the location of the private access track, emergency access off the New England Highway and the location of the construction access road. In particular, three of the submissions identified that access (for emergency fire fighting, pest and disease control and flooding maintenance) to the southern side of the rail tracks is an issue. Three submissions also requested that access be provided to the area via an additional public level crossing or by an internal roadway with both an east to west entry.

Section 4.5.5 of the EIS identifies that construction access for the Project would be via Woodlands Close, for approximately three months at the start of construction, and then via the proposed Tarro Interchange and construction access road.

As is discussed further in Section 4 of this PIR, the alignment of the proposed construction access road has been altered as part of design amendments post exhibition of the EIS. The revised design includes a construction access road intersection with Woodlands Close further south than that proposed in the EIS (refer to Figure 4.1a-c). Further, the design amendments also include an alteration to the location of the proposed private access track from adjacent to the rail line to a location to the west of the Project Area (refer to Figure 4.2).

The Project would not use Shamrock Street for construction or operation and therefore there would be no impact on existing access or traffic movement on this street. The relocation of the construction access road, further away from residents (1 Woodlands Close, Hexham) ensures that there would be a reduced impact on this property and, in particular is not anticipated to impact on emergency access. The relocation of the private vehicle access road provides a safer and more suitable outcome for access to selected residential properties, and as required access for emergency and maintenance services. This private access track would be restricted to use by identified landowners and guests with no general public access is permitted.

Integration with other Proposals

A number of submissions (5 submissions) raised concern that the Project has not considered proposals including the Newcastle Rail Bypass, the High Speed Rail and expansion to the Port of Newcastle (new grain terminal).

Section 10.2.2 of the EIS provides an assessment of the Project's integration with planned transport infrastructure proposed in close proximity to the Project Area. This list does not include the Newcastle Bypass, High Speed Rail or the expansion to the Port of Newcastle. A summary of these proposals and projects and the Project's integration with each is provided in Table 3.2b below.

Table 3.2b Summary of planned transport infrastructure projects and Project integration

Project	Details of Project	Status	Project Integration
Western Freight Bypass Line	Proposed by the organisation Save Our Rail Inc to divert freight rail traffic away from the suburban areas of Newcastle and Lake Macquarie. The preferred option is Morisset to Thornton which follows the route of the existing F3 easement.	Identified in the Lower Hunter Regional Strategy. Council supports this proposal and resolved to “request the Federal and State Governments to instigate a study, in the short term, for this proposal (Council meeting 3/4/12). The preferred route has yet to be supported or confirmed. No immediate government funding has been identified and therefore no design or planning approval document has been prepared.	This proposal would bypass Hexham and the Project Area. It is noted that the proposal has yet to receive government funding and that the route has yet to be confirmed. In consideration of this status, this proposal is not considered at a suitable stage to be considered for the assessment of the Project.
Brisbane to Melbourne High Speed Rail	Proposed by State and local government and proposes a high speed rail line between Brisbane and Melbourne. The current preferred alignment (early stages) includes the area of Newcastle.	This proposal has been mentioned in Council strategy and the NSW Long Term Transport Master Plan however it is subject to investigations, funding and the identification of a preferred route.	The location of the preferred alignment for the high speed rail proposal has yet to be determined, nor has government funding been provided. This is considered a long term proposal for the government. It is anticipated that this proposal would integrate with the Project as its preferred route is further defined.
Newcastle Port Expansion	A number of projects have recently been undertaken for the expansion of the Newcastle Port, including a new grain loader at the Kooragang Coal Terminal. A number of other projects are also planned to increase trade through the Port of Newcastle.	Projects have been completed and are currently in operation. Further expansion projects are planned, subject to planning approval, for the Port.	The purpose of the Project (HRR) is to satisfy demand for additional coal exportation from the Port of Newcastle. The Project integrates with expansions proposed at the Port as identified in the letter of support provided by the Newcastle Port Corporation (refer to Section 3.2.14 of this PIR).

Public transport and railway usage

Submissions (6 submissions) raised concern that there was a misrepresentation of bus and train services in the Hexham area. In particular, it was identified that no recognition of school bus or interstate bus services, XPT (Country Link) train services and an underestimation of forecasted train movements (freight and passenger) to the year 2024.

Some of these submissions also suggested that the Project should include upgrades to Hexham Station and that use of the Hunter Rail Line (passenger and freight) should be utilised for transportation of workers and materials during the construction phase of the Project.

Section 10.2.4 of the EIS provides a summary of the key public transport services within the surrounding area including bus services by Hunter Valley Buses and passenger rail services on the Hunter Line. Section 9.3 of the EIS provides an estimate of the expected coal freight, non-coal freight and passenger train movements (including XPT (Country Link) train services) at the year of Project opening (2014) and 10 years into operation (2024). These estimates have been provided by ARTC and RailCorp and are considered accurate based on the information available.

The EIS does not specifically make reference to either school bus services or the XPT (Country Link) train services however these movements have been included in traffic estimates (refer to Section 10.2 of the EIS) and rail movement estimates (refer to Section 9.3 of the EIS). The estimates provided for rail movements (coal freight, non-freight and passenger) have been supplied by the service providers (ARTC and RailCorp) and are considered the most accurate information available. Therefore, although not specifically mentioned in the EIS, the estimates for traffic and rail movements utilised in the assessment are considered a suitable depiction of the existing and future traffic and transport scenarios.

Neither the construction nor operation of the Project would adversely impact on the use and operation of the existing Hexham Station (to the immediate east of the Project Area). The Project includes an alteration to the existing coal rail line (Down Coal) however does not include any upgrade to Hexham Station. Based on the purpose of the Project, to improve coal transportation in the Hunter Valley, and that there would be no adverse impacts on the Hexham Station, an upgrade to this station is not considered suitable, nor does it form part of the Project.

Traffic estimates provided in Section 4.4.5 of the EIS, as amended by Section 4 of this PIR, identify a maximum number of vehicles (light and heavy) per day anticipated during the construction phase of the Project. This estimate is considered a worst case scenario, with all workers using private transportation, for the purposes of providing an assessment of the Project's potential impacts during construction. However, workers, wherever practical, would be encouraged to utilise public transport services including rail passenger services and bus services.

Although not mentioned in the EIS, the use of the rail line for the purposes of transporting material has been previously considered in the construction methodology for the Project. However it was determined that this has the potential to pose significant disruption to rail services, alteration to the existing rail line and potential WHS issues for workers. The transportation of construction materials by vehicle is therefore considered the most suitable option.

3.2.10. Property Acquisition

Submissions Received

Two of the submissions received raised comment regarding the purchase and acquisition of privately owned properties for the purpose (construction and operation) of the Project.

Response

Resumption of properties

One of the submissions raised concern that their land has been identified in the Project Area (northern part of the Project Area, south of the Tarro Interchange) and, should it be acquired, it would limit the viability of their remaining land holdings in this location. The other submission identified that, if noise criteria were not able to be complied with during the construction and operation of the Project, a number of properties in close proximity to the Project Area should be purchased by RMS and 'the Rail'.

Section 4.3.3 and 20.2.1 of the EIS provides a summary of the properties that are to be purchased, and /or leased as part of the construction and operation of the Project. Based on the current design this has been updated, and supersedes information provided in the Chapter 20 of the EIS, to include only those properties shown in Table 3.2c.

Table 3.2c Properties to be acquired for the Project

Owner	Lot	Deposited Plan	Approximate Area of Acquisition (within Project Area)
Aurizon	311	583724	6.5ha
	12	1075150	1.1ha
	113	755232	2.7ha

A total of three parcels of land would be purchased from Aurizon (approximately 10.3ha in total to be purchased). ARTC would acquire land via private treaty negotiations (the preferred method) or in accordance with the *Land Acquisition (Just Terms and Compensation) Act 1991*. The Project would also lease land from Aurizon and the Hunter Water Corporation for the joint Primary Site Compound and construction access road (refer to Section 4 of this PIR for further information). No other land would be acquired or leased for the purposes of the Project.

In particular, Section 4.1 of the EIS identifies the Project Area that includes a parcel of land located to the immediate south of the Tarro Interchange. As discussed in Section 4 of this PIR, this parcel of land is also included in the revised Project Area. This parcel of land was originally included in the Project Area to facilitate for an alternative alignment of the construction access road off the Tarro Interchange. RMS has recently provided support, in principle, for the location of the construction access road and Tarro Interchange intersection and therefore it is not anticipated that this parcel of land would need to be acquired, or leased, for the construction or operation of the Project (Refer to Section 3.1 of this PIR). Notwithstanding this, this parcel is included in the amended Project Area.

As discussed above in Section 3.8 of this PIR, and in Section 9.3 of the EIS, the Project would comply with relevant noise criteria, with the exception of the Church on Old Maitland Road, and vibration criteria during construction and operational phases. In consideration of this, the purchase of land is not seen as a relevant or appropriate mitigation measure for the Project.

3.2.11. Environmental Protection

Submissions Received

Three submissions raised concern regarding the utilisation of the existing ARTC Environmental Protection Licence No. 3142 (EPL 3142) for the purpose of the construction and operation of the Project.

Response

These submissions request that the Proponent provide an EPL for the construction and operation of the Project prior to Project Approval. These submissions also suggest that the EPL 3142 is not suitable to include the construction and operational phases of the Project.

Section 2.6 of the EIS provides a discussion of the legislation (NSW Acts of Parliament) that is relevant to the operation and construction of the Project. This section identifies a number of additional approvals that would need to be undertaken for the Project, post Project Approval (by DP&I). These approvals include, amongst others, compliance with the *Protection of the Environment and Operations Act 1997* (POEO Act) which requires the preparation of an EPL relating to potential water, air and noise pollution during operation and construction. As discussed in this section of the EIS, ARTC's existing EPL (No. 3142) would be reviewed and a new EPL applied, as necessary, following Project Approval. This approach is considered suitable and would comply with relevant legislation.

3.2.12. Cumulative Impact

Submissions Received

Six submissions were received raising concern about the cumulative impact of the Project, the Aurizon Train Stabling Facility (TSF Project) and other projects in the surrounding environment.

Response

The submissions received (6 submissions) questioned the validity of the assessment provided for the cumulative impact of Project, the TSF Project and other projects in the surrounding area in particular having regard to ecology, water runoff, flood impacts and vibration.

A cumulative impact assessment is provided in the EIS for ecology (Section 7.8 of the EIS), water quality (19.3.3 of the EIS), flood (Section 7.3.5 of the EIS also supplemented in Section 5 of this PIR), noise and vibration (Sections 9.4 and 9.5 of the EIS supplemented by Section 5 of this PIR) and a summary of all potential cumulative impacts in Chapter 24 of the EIS. This cumulative assessment has included all relevant projects, in addition to the Project, in the surrounding area including the TSF Project, Hexham Crossing Loop, F3 Upgrade and the Hunter Water trunk and rising main upgrades. Section 24.15 of the EIS concludes that interaction between the Project and surrounding projects has the potential to increase environmental impacts however mitigation measures have been provided, by technical specialist assessment, to minimise any potential impact. The assessment and mitigation measures provided are considered adequate to address the potential cumulative impacts of the Project and surrounding projects.

3.2.13. Government and Policy

Submissions Received

A number of submissions received raised concerns regarding the Project's consideration of government strategy and option selection (4 submissions), and funding for the Project by the Federal Government (18 submissions).

Response

Listing of Hexham Swamp

One submission raised concern that the assessment provided does not identify the significance of the Hexham Swamp having regard to the Japan-Australia Migratory Bird Agreement (JAMBA) and China-Australia Migratory Bird Agreement (CAMBA) and Republic of Korea and Australia Migratory Bird Agreement (ROKAMBA) providing an important habitat for these migratory bird species.

Section 2.4.2 of the EIS provides a discussion on the JAMBA, CAMBA and ROKAMBA. Section 8.3.13 of the EIS provides an assessment of the Project on threatened biodiversity and migratory species (including those covered under these agreements) concluding that the Project is not likely to significantly impact on these species or habitats. As discussed in Section 3.2.7 of this PIR and Section 8.3 of the EIS this conclusion is supported by the Commonwealth Department of Sustainability, Environment, Water and Communities (SEWPAC) in that a referral is not required under the EPBC Act.

Compliance with Lower Hunter Regional Strategy and option selection

A number of submissions (3 submissions) raised concern that the Project does not comply with the objectives of the Lower Hunter Regional Strategy (LHRS) in particular with regard to site selection, and especially Stony Pinch (refer to Section 5 of the LHRS).

Section 8.3 and 8.4.11 of the EIS provides a summary of the Project's integration and compliance with LHRS. The EIS notes that the Project is located predominantly within employment land with the adjacent Hexham Swamp identified as part of a green corridor. This section of the EIS concludes that the impacts of the Project on this 'green corridor' are considered minimal and would not further

fragment any areas of existing remnant vegetation. Section 3.2 of the EIS provides a discussion on the site selection that was undertaken for the Project, in which it was determined that Hexham was the most suitable location. This site selection process and the proposed design were undertaken based on feasibility and environmental studies undertaken for the Project. In consideration of the LHRS and the environmental studies undertaken, the Project Area is considered the most suitable site for the Project.

Government funding of the Project

A total of eighteen submissions requested that the Federal Government withhold future funding of the Hunter Valley rail corridor until coal train loads are covered. The key concern relates to dust emissions from these uncovered train loads.

As discussed above in Section 3.2.3 of this PIR, Section 13.5 of the EIS provides an air quality assessment for the Project having regard to a worst case scenario of five trains idling on the Relief Roads at any one time. This section confirms that the Project complies with relevant criteria for air quality emissions and therefore would not result in unreasonable dust generation in the surrounding area. Therefore the covering of trains on the Relief Roads is not required as a mitigation measure for the Project. Further, it should be noted that this Project is funded by ARTC and not the Federal Government. In consideration of the Project's compliance and that the Project is not funded by the Federal Government it is considered suitable that the Project proceeds.

3.2.14. Need for the Project

Submissions Received

One of the submissions received, provided by Port of Newcastle Corporation, support the construction and operation of the Project.

Response

The Port of Newcastle Corporation supports the Project and recognises that it is an important project in the supply of coal to port improving the efficiency of the Hunter Valley coal chain.

Section 3.1.2 of the EIS, which highlights the need for this Project, is consistent with the submission provided.

3.2.15. Operational Management

Submissions Received

A number of the submissions received raise comment and concern surrounding the operation of the Project including length of train stay on the Relief Roads (4 submissions), crew changing facilities at the Relief Roads (3 submissions), rehabilitation of the Project post completion (3 submissions) and construction of a 'deflection wall' to protect against derailment (20 submissions).

Response

Length of train stay on Relief Roads

One submission raised concern with regard to the amount of time that trains would be idling on the Relief Roads.

Section 4.6.1 of the EIS states that due to the complex nature of the coal chain and unforeseen delays due to sequencing and congestion it is not possible to predict a typical day in the operation of the Relief Roads. As discussed above in Sections 3.2.3 and 3.2.8 of the report, and in Section 4.6.1 of the EIS, assessments for air quality, noise and vibration have been undertaken to determine the worst case scenario, amongst others of five trains idling on the Relief Roads for 24 hours a day. As discussed above the Project would not exceed criteria under this scenario with regard to air emissions, noise (with the exception of the Church on Old Maitland Road) and vibration and therefore the impacts of the Project are considered acceptable.

Crew change and maintenance

Four of the submissions received raised the question as to whether the Relief Roads would be utilised as a crew change and train maintenance area.

Section 4.6 of the EIS provides a discussion on the activities to be undertaken during the operation of the Project. These activities do not include crew changing facilities or maintenance to trains on the Relief Roads. Maintenance to the Relief Roads is proposed via the vehicle access track, as discussed in Section 4.6.2 of the EIS. No maintenance of trains or crew changing facilities, at the location of the Relief Roads, are part of this Project Approval. Should crew change facilities and train maintenance be required in the future, at the location of the Relief Roads, they would be subject to a separate approval since they do not form part of this Project Approval.

Rehabilitation of area post Project completion

Three of the submissions provided have recommended that a condition of consent be included to state that at the closure of the Relief Roads, the Project Area would be fully remediated and returned to its original state (i.e. prior to construction of the Project).

The approval sought for the Project is not for a timeframe, i.e. the operation of the Project, after completion of construction, is to be undertaken indefinitely with no completion date for this operation determined.

Construction of a deflection wall

A number of submissions received (20 submissions) recommended that the Project include the construction of a deflection wall to protect the residential suburb of Hexham against derailment.

As is discussed in the EIS, the Project is located on the western side of the rail line and not in immediately adjacent to any residential properties. Further, the Project would be designed and operated in accordance with relevant standards thereby reducing the potential for derailment. Based on this a derailment wall is not required nor is considered a suitable mitigation measure for the Project.



4. Project Design Amendments (Preferred Project)

This section of the report identifies changes that have been made to the design from that provided in the exhibited EIS (dated August 2012). The Project, as altered by the design amendments discussed below, reflects the preferred infrastructure project, i.e. the preferred design for which UHVA and ARTC are seeking consent under Part 5.1 of the EP&A Act.

The design changes are relatively minor in nature and have been undertaken to respond to:

- additional environmental investigations and research;
- issues raised by Government Agencies and the community during the EIS exhibition and review of the Submissions Report (November 2012) periods;
- a greater understanding of the construction methodology; and
- integration with the Aurizon Train Support Facility (TSF).

It is considered that this revised design, although relatively minor, would provide an improved environmental outcome in particular in relation to off-site flood impact and construction phase traffic and noise impacts at local receivers. Refer to Section 5 which provides an assessment of the potential impacts of the design amendments.

4.1. Amendment to Project Area

The Project Area proposed in the EIS is to be revised to accommodate the design changes. The Project Area proposed in the EIS included a total of 39ha. The Revised Project Area includes a total of 55.4ha (including the proposed private vehicle access track). The amendment to the Project Area is shown in Figures 4.1a-h.

4.2. Construction Access Road Realignment

The revised design includes the relocation of the temporary construction access road proposed off the Tarro Interchange. This road has been realigned based on the Aurizon TSF design to allow for shared access for the projects during construction, and exclusive access for operational traffic for the Aurizon TSF.

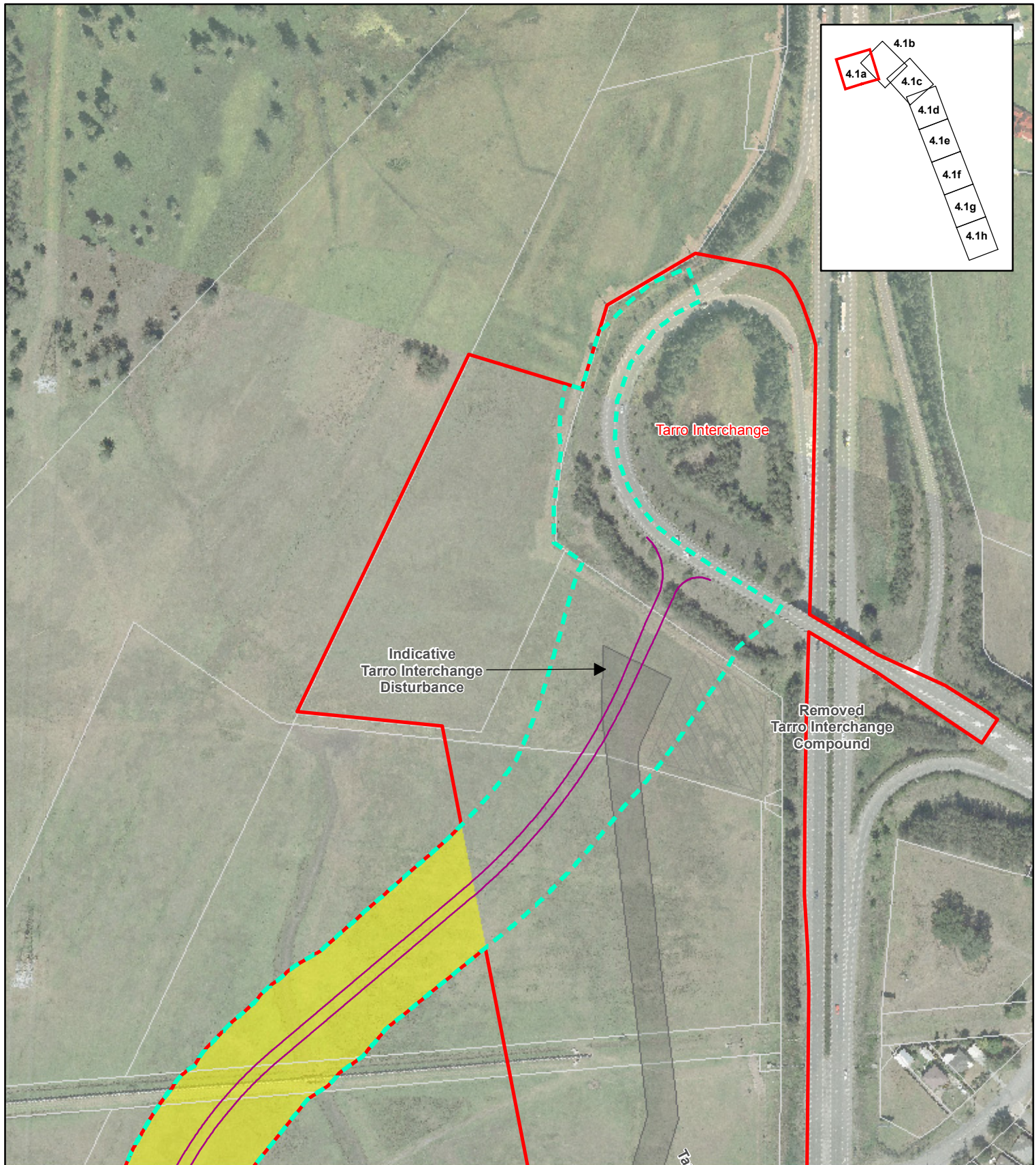
The EIS design included a temporary construction access road, off the Tarro Interchange, connecting to Woodlands Close and traversing the Project Area from east to west to the south of the New England Highway. This construction access road was 490 metres in length, 10 metres wide and speed limited to 40km/h. It was to provide right-in, left-in (for light vehicles only) and left-out movements at the intersection with Anderson Drive (Tarro Interchange) with no right-out movement permitted from the access road.

The revised design includes the realignment of the construction access road, to north-west to south-east. The access road retains connection to Woodlands Close however, the connection is further south of that provided in the EIS design. The access road would be a maximum of 925 metres in length, remain 10 metres in width and be limited to 40km/h with the same entrance arrangements, to the EIS design, from Anderson Drive (Tarro Interchange). The temporary access road is proposed to be sealed with a two coat seal during construction to minimise dust and prevent erosion.

For the purposes of this Project, the road would only be used for the construction phase and would not be used for operational access. However, the access road has been engineered and designed so that Aurizon could upgrade it to provide operational phase access to the TSF, as required. This upgrade and operational phase access, for Aurizon, would be subject to a separate approval.

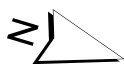
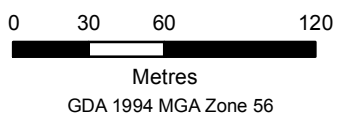
The 231 metre portion of the road between the relocated construction compound (see below) and Woodlands Close would be removed and reinstated at the end of the construction of the HRR Project.

The HRR Project seeks approval for the extent of the road footprint as shown in Figure 4.1a-c.



- Jemena Gas Pipeline - Tarro Interchange Access - Project Area (Updated Post EIS Exhibition) - Project Area Additions (from August 2012) - Cadastre	Former Features - Former Relief Roads - Former Design Features - Indicative Tarro Interchange Disturbance - Former Compound Area	Updated Features - Updated Relief Roads - Updated Swale Drain - Updated Vehicular Access - Updated Indicative Tarro Interchange Disturbance - Updated Compound Area
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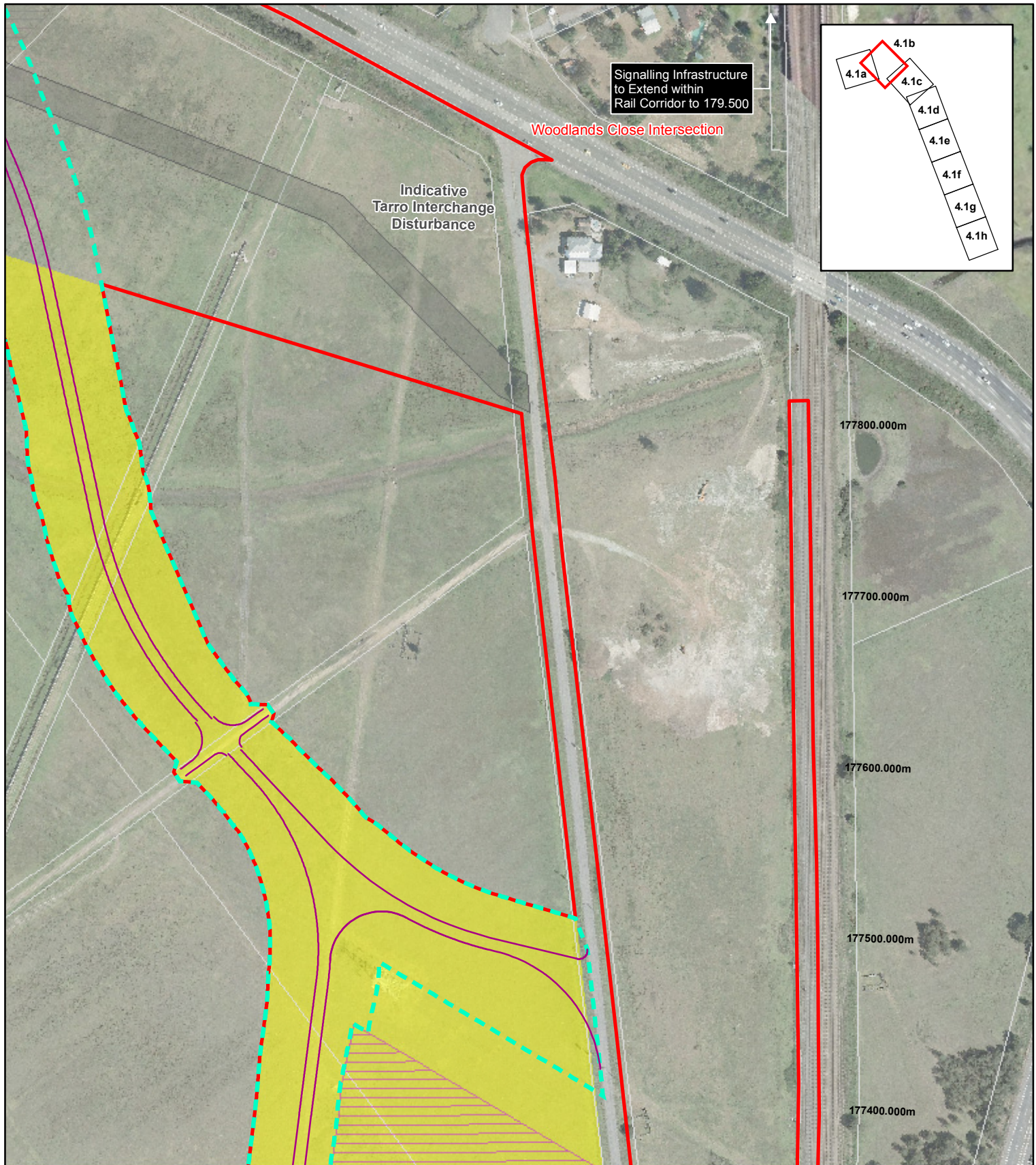
A4 Original



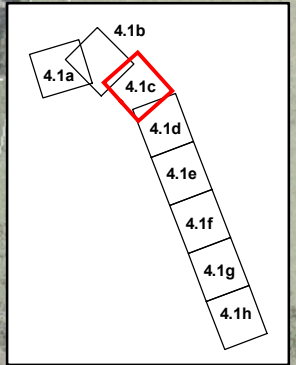
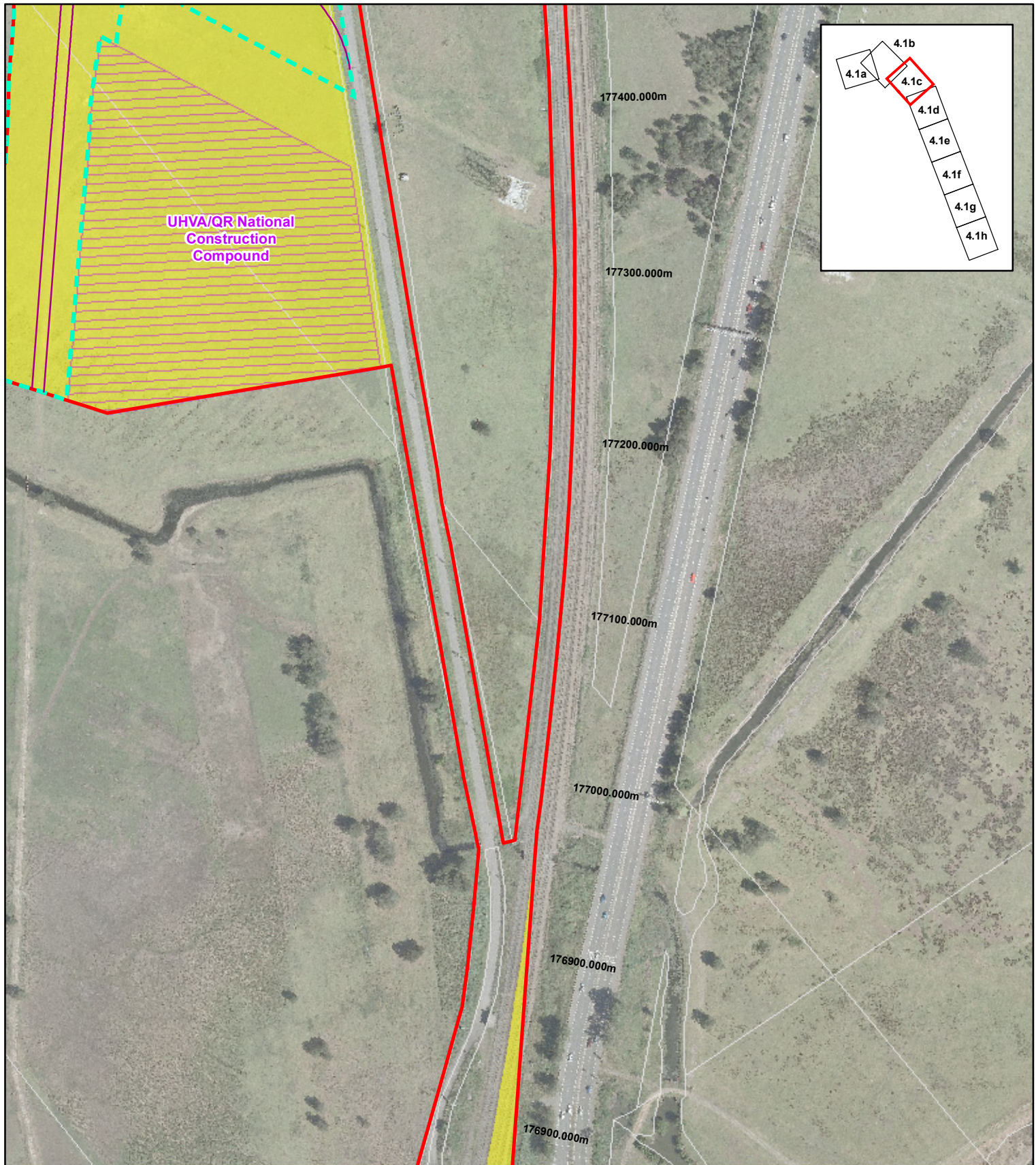
ARTC
Hexham Relief Roads

Job Number	2110501B
Revision	A5
Date	07.11.2012
Scale	1:3,000

Key Project Features **Figure 4.1a**



A4 Original 0 30 60 120 Metres GDA 1994 MGA Zone 56			ARTC Hexham Relief Roads	Job Number 2110501B Revision A5 Date 07.11.2012 Scale 1:3,000	Key Project Features Figure 4.1b
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- Jemena Gas Pipeline - Tarro Interchange Access - Project Area (Updated Post EIS Exhibition) - Project Area Additions (from August 2012) - Cadastral	- Former Features - Former Relief Roads - Former Design Features - Indicative Tarro Interchange Disturbance - Former Compound Area	- Updated Features - Updated Relief Roads - Updated Swale Drain - Updated Vehicular Access - Updated Indicative Tarro Interchange Disturbance - Updated Compound Area
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A4 Original

0 30 60 120

Metres

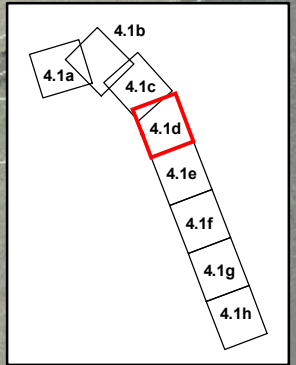
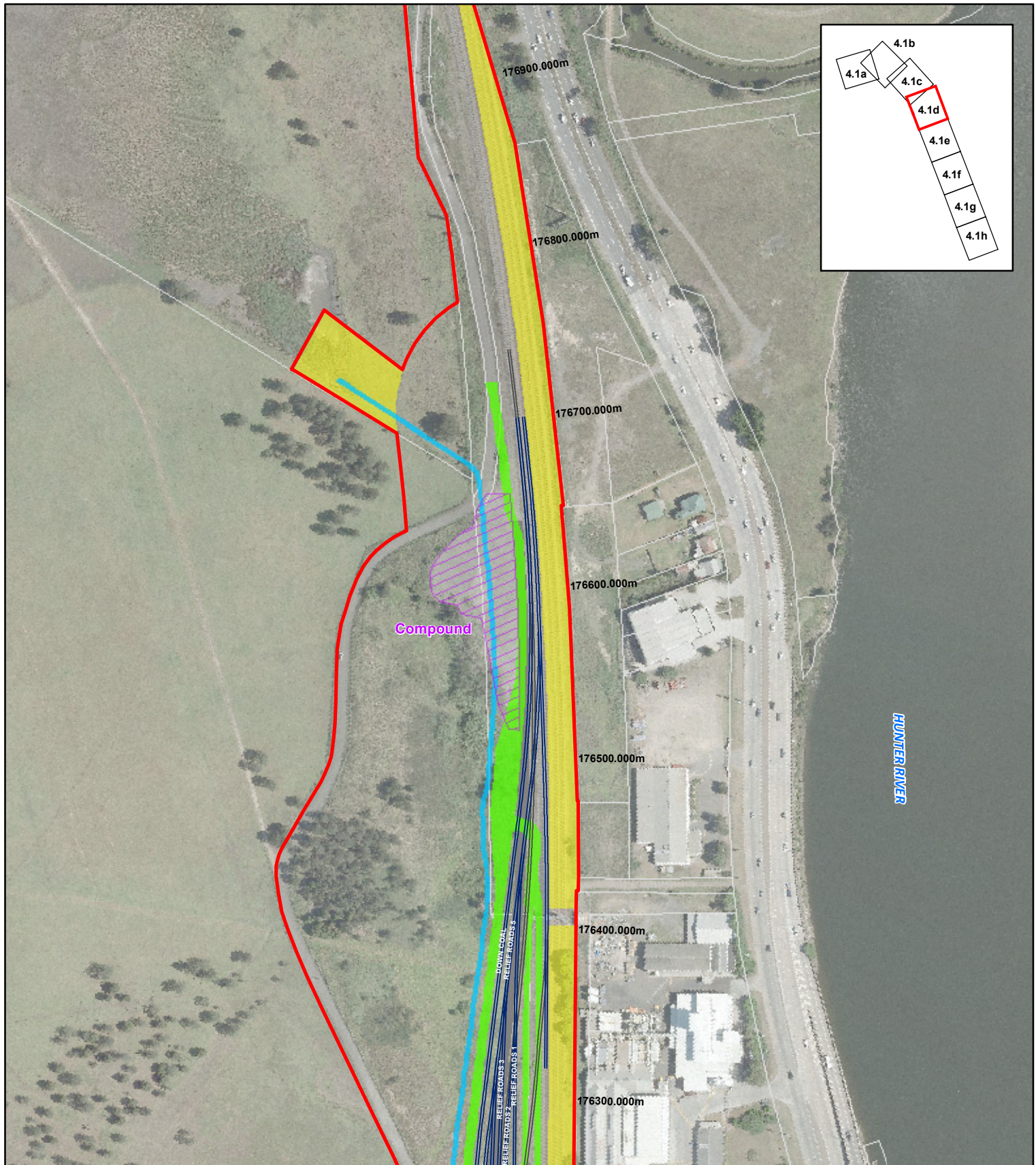
GDA 1994 MGA Zone 56

ARTC
Hexham Relief Roads

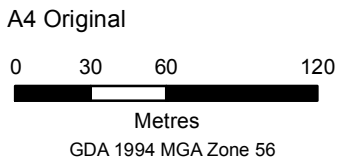
Job Number | 2110501B
Revision | A5
Date | 07.11.2012
Scale | 1:3,000

Key Project Features

Figure 4.1c



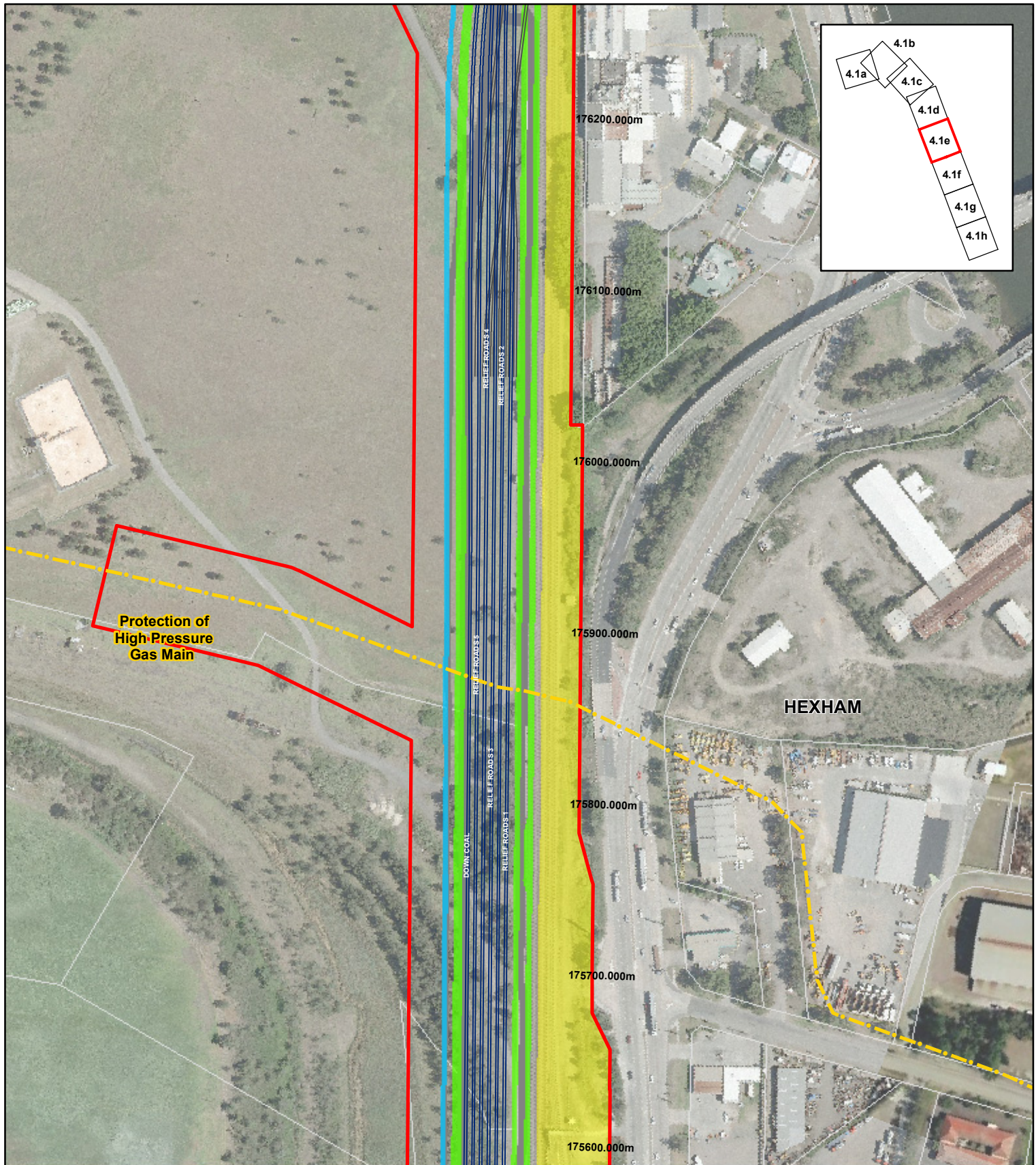
- Jemena Gas Pipeline - Tarro Interchange Access - Project Area (Updated Post EIS Exhibition) - Project Area Additions (from August 2012) - Cadastre	Former Features - Former Relief Roads - Former Design Features - Indicative Tarro Interchange Disturbance - Former Compound Area	Updated Features - Updated Relief Roads - Updated Swale Drain - Updated Vehicular Access - Updated Indicative Tarro Interchange Disturbance - Updated Compound Area
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ARTC
Hexham Relief Roads

Job Number	2110501B
Revision	A5
Date	07.11.2012
Scale	1:3,000

Key Project Features **Figure 4.1d**

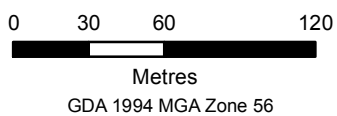


- Jemena Gas Pipeline
- Tarro Interchange Access
- Project Area (Updated Post EIS Exhibition)
- Project Area Additions (from August 2012)
- Cadastre

- Former Features**
- Former Relief Roads
 - Former Design Features
 - Indicative Tarro Interchange Disturbance
 - Former Compound Area

- Updated Features**
- Updated Relief Roads
 - Updated Swale Drain
 - Updated Vehicular Access
 - Updated Indicative Tarro Interchange Disturbance
 - Updated Compound Area

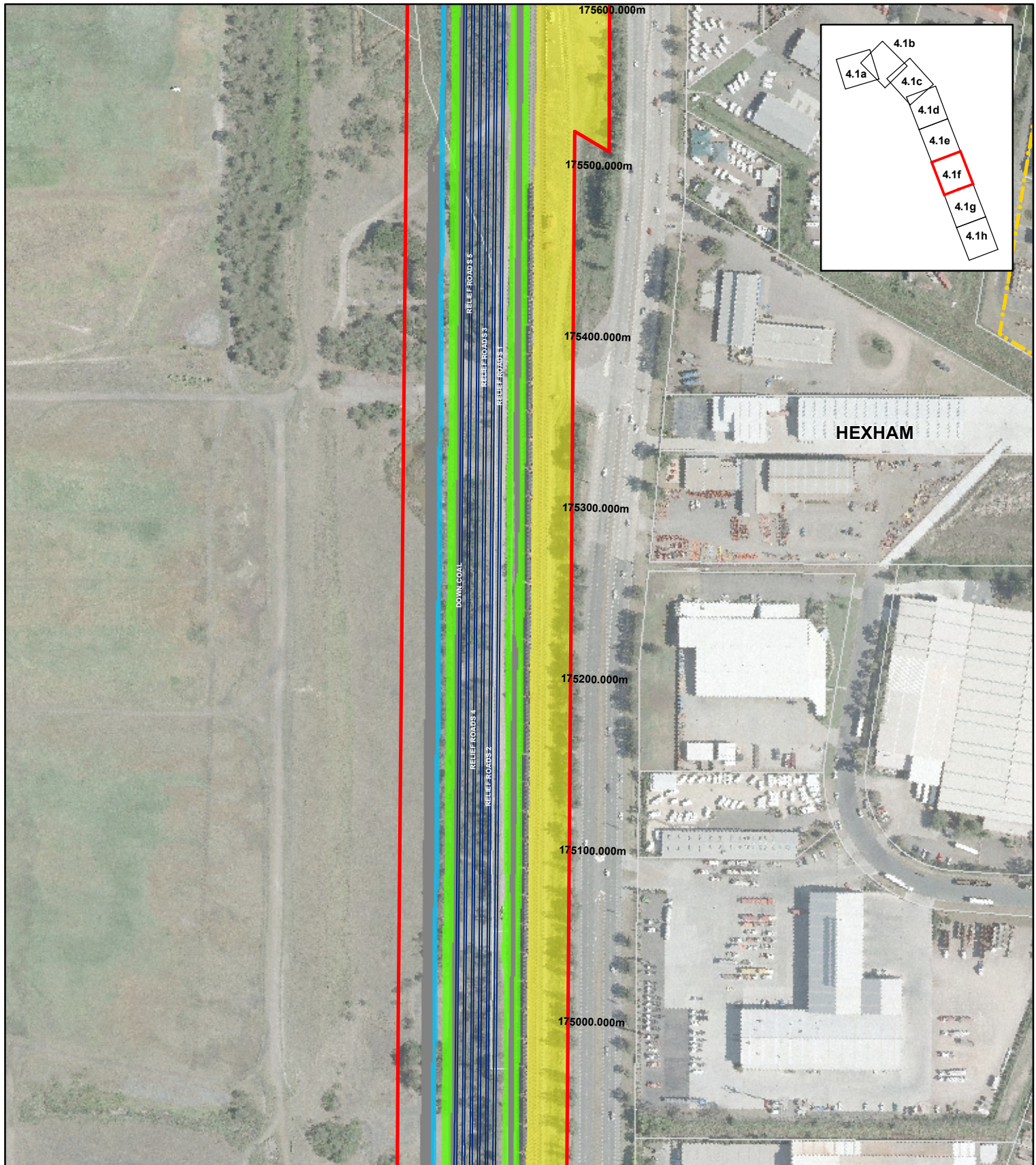
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ARTC
Hexham Relief Roads

Job Number	2110501B
Revision	A5
Date	07.11.2012
Scale	1:3,000

Key Project Features **Figure 4.1e**

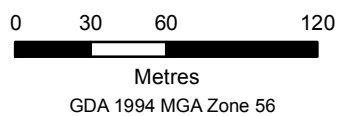


- Jemena Gas Pipeline
- Tarro Interchange Access
- Project Area (Updated Post EIS Exhibition)
- Project Area Additions (from August 2012)
- Cadastre

- Former Features**
- Former Relief Roads
 - Former Design Features
 - Indicative Tarro Interchange Disturbance
 - Former Compound Area

- Updated Features**
- Updated Relief Roads
 - Updated Swale Drain
 - Updated Vehicular Access
 - Updated Indicative Tarro Interchange Disturbance
 - Updated Compound Area

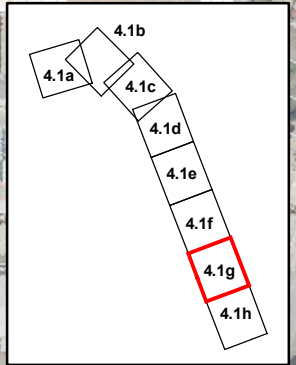
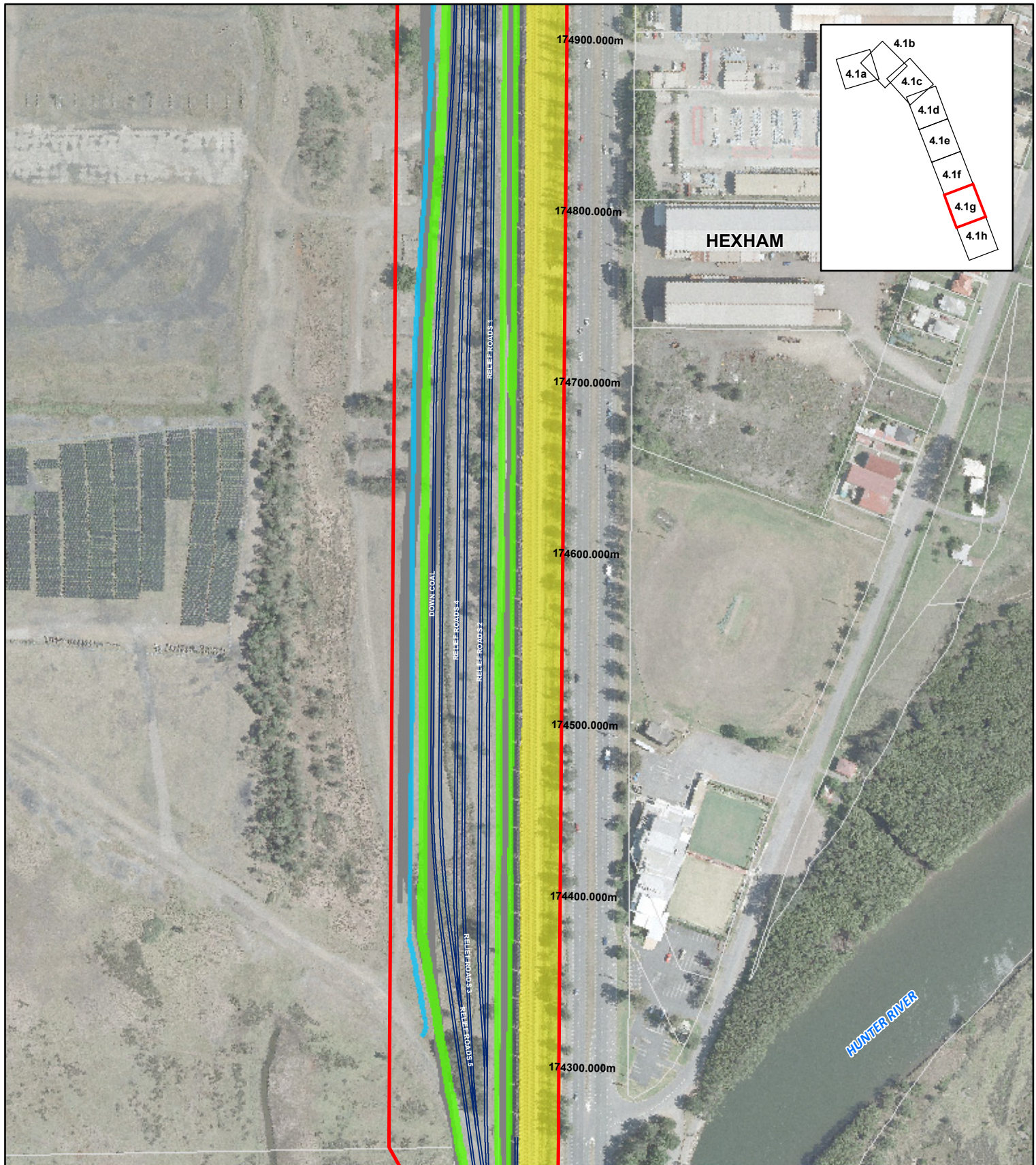
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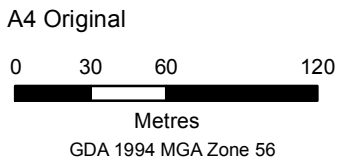
ARTC
Hexham Relief Roads

Job Number	2110501B
Revision	A5
Date	07.11.2012
Scale	1:3,000

Key Project Features **Figure 4.1f**



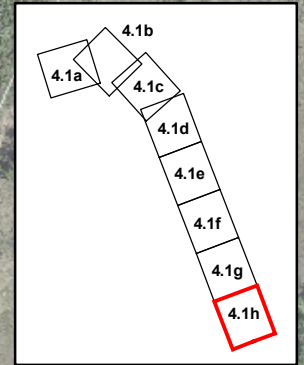
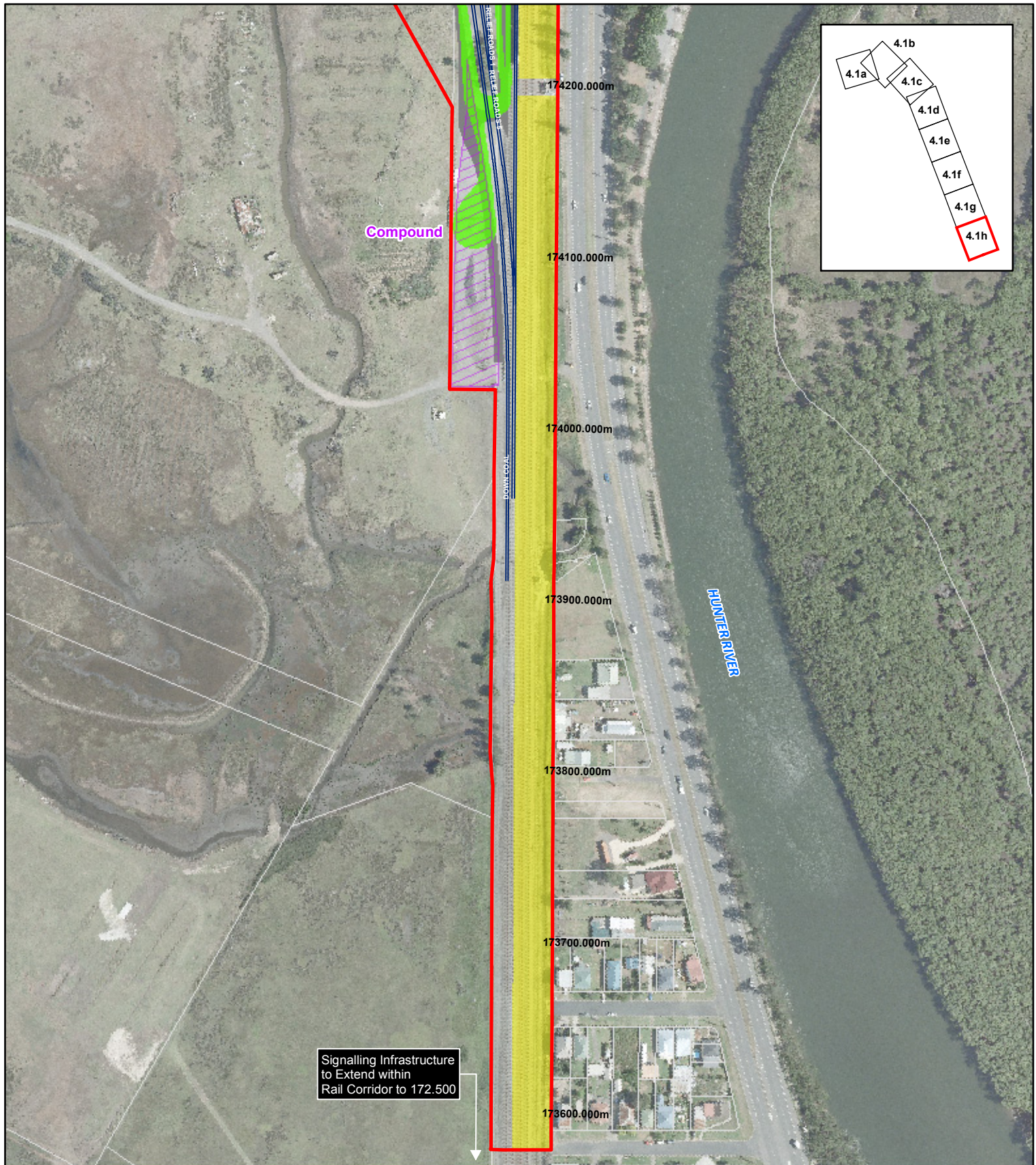
- | | | |
|--|---|--|
| <ul style="list-style-type: none"> ● Jemena Gas Pipeline — Tarro Interchange Access Project Area (Updated Post EIS Exhibition) Project Area Additions (from August 2012) Cadastre | <p>Former Features</p> <ul style="list-style-type: none"> — Former Relief Roads Former Design Features Indicative Tarro Interchange Disturbance Former Compound Area | <p>Updated Features</p> <ul style="list-style-type: none"> — Updated Relief Roads Updated Swale Drain Updated Vehicular Access Updated Indicative Tarro Interchange Disturbance Updated Compound Area |
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ARTC
Hexham Relief Roads

Job Number	2110501B
Revision	A5
Date	07.11.2012
Scale	1:3,000

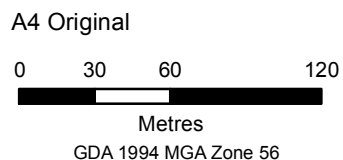
Key Project Features Figure 4.1g



- • Jemena Gas Pipeline
- Tarro Interchange Access
- Project Area (Updated Post EIS Exhibition)
- Project Area Additions (from August 2012)
- Cadastre

- Former Features
- Former Relief Roads
 - Former Design Features
 - Indicative Tarro Interchange Disturbance
 - Former Compound Area

- Updated Features
- Updated Relief Roads
 - Updated Swale Drain
 - Updated Vehicular Access
 - Updated Indicative Tarro Interchange Disturbance
 - Updated Compound Area



ARTC
Hexham Relief Roads

Job Number | 2110501B
Revision | A5
Date | 07.11.2012
Scale | 1:3,000

Key Project Features Figure 4.1h

4.2.1. Purgatory Creek Crossing

The realignment of the construction access road results in a crossing of Purgatory Creek which traverses the Project Area from north east to south west. A culvert, 0.9 metre in diameter and 22 metres in length, with equivalent hydraulic capacity to the existing culvert and of suitable integrity to accommodate heavy construction vehicle movements, would be installed at this creek crossing location. As discussed this road would be used by ARTC and Aurizon (subject to approval) for temporary construction access only, however it is likely that Aurizon would use this road for operational access and therefore the culvert to be installed would be suitable for this purpose.

4.3. Construction Compound Relocation

The revised design includes the relocation and extension of the proposed Construction Compound from the Tarro Interchange to an area adjacent to the HRR and TSF revised construction road intersection Figure 4.1b to c illustrates the location of the three compounds.

The EIS included a primary site compound approximately 0.36ha in the central part of the Project Area (between chainage 176600m and 176500m), a temporary mid-site compound approximately 0.35ha adjacent to the Tarro Interchange and New England Highway, and a secondary satellite compound approximately 0.33ha adjacent to chainage 174100m.

The revised design includes the deletion of the proposed construction compound adjacent to the Tarro Interchange and the establishment of a construction compound (now referred to as the Primary Site Compound) that would be utilised by ARTC. The new Primary Site Compound would be approximately 2.8ha, situated on a raised level of compacted soil surrounded by fencing. Existing soil would be used from on-site excavation to elevate the temporary Mid-site Compound to ensure it is all above the 10% AEP design flood level. Access to this compound would be via the intersection of the proposed temporary access road and Woodlands Close (refer to Figure 4.1c).

The temporary Mid-site compound would be for the purposes of construction offices, storage of construction equipment and vehicles and parking of construction worker vehicles. The compound would also be used for the temporary stockpiling of soil and hazardous materials. Approximately 10,000m³ of spoil may be stockpiled at the construction compound at any one time. ARTC would decommission the compound and reinstate the area at the completion of construction works of the HRR Project.

Notwithstanding this, it is envisaged that, subject to separate approval, Aurizon would also utilise this compound for the construction of the TSF Project. Subject to approval timeframe, there is the potential for both these projects to be utilising this construction compound during their construction periods. It is anticipated that UHVA would complete construction first and, in this scenario would undertake discussion and agreement with Aurizon regarding the decommissioning and reinstatement of the area.

The revised design does not include removal or relocation of the primary or secondary construction compound which would remain as proposed in the EIS.

4.4. Lowering of the Relief Roads

The revised design includes a 'lowering' of the Relief Roads to the north of the existing Jemena gas pipeline. The purpose of this design change is to reduce and mitigate adverse off site flood impacts as discussed further in Section 5 of this PIR.

The EIS design included the formation level for the tracks and access roads to be a minimum of 900mm (500mm ballast and 400mm to 2,100mm of rock fill) above natural ground surface (refer to Section 4.2 of the EIS).

The revised design includes a lowering the tracks over approximately 820 metres between chainage 175680 and 176500. This is separated into three sections including a 340m section of where the tracks are lowered by approximately 1.2m and sections either side where the tracks gradually grade

back to the previous levels (180m and 300m long respectively). This is shown in the design plans provided at Appendix B. The lowered tracks do not alter the horizontal alignment of the tracks or the Project footprint. The vertical alignment outside of the area mentioned above remains as shown in the EIS design. The proposed rock formation is consistent (same quantity and composition) as shown in the EIS design.

4.5. Relief Road Extension

The revised design includes an extension of the proposed Relief Roads to the north (at the country end) as shown in Figure 4.1d. The purpose of this design amendment is to improve operational efficiency of the Relief Roads.

The EIS design included the construction of the Relief Roads to connect to the existing Up Coal Line from approximately chainage 176400m to the south. The EIS design proposed 5 Relief Roads approximately 1,670m in length and a total (for all 5 Relief Roads) of approximately 11.5km of rail.

The revised design includes the extension of the Relief Roads to connect to the existing Up Coal Line at chainage 176560m rather than 176400m proposed in the EIS. This extension does not significantly change the location of the connection of the proposed Down Coal Line into the existing Down Coal Line at 176620 (the EIS design tied into the existing track at chainage 176600 to clear an existing signalling gantry).

The approximate revised length of each of the Relief Roads is as follows:

- Relief Road 1 – 2,250m;
- Relief Road 2 – 2,060m;
- Relief Road 3 – 2,110m;
- Relief Road 4 – 2,000m; and
- Relief Road 5 – 2,530m.

Approximately 2,725m (in length) of the existing Down Coal would be removed and relocated. A total length of 13.675km of rail would be installed, which is approximately 2kms more than that proposed in the EIS design. This extension of the Relief Roads is to provide sufficient safe distance between parked and moving trains and does not increase the holding capacity or the speed at which trains enter/exit the roads.

4.6. Overhead Conveyor and Pedestrian Overpass

Further investigation into the construction methodology for the Project has resulted in the need for the establishment of an overhead conveyor across the rail corridor to transport construction material. The conveyor would be located at chainage 175700 (refer to Figure 4.1 of Appendix C).

Discussions with RMS have identified that vehicle movement into Woodlands Close from New England Highway would be limited to the first 12 weeks of the construction phase. Vehicle movements would be limited until the completion of construction of the Tarro Interchange and temporary construction access road intersection, at which time no vehicles (for construction purposes) would be permitted to use the existing intersection.

The purpose of the overhead conveyor is to reduce the impact of delivery vehicles on the local road network by means of direct access via the Pacific Highway until the construction of the Tarro interchange is complete, and to avoid material deliveries via Woodlands Close. The conveyor would be used to transport imported construction materials from the eastern to western side of the rail corridor for construction of the Relief Roads and associated access roads. A loading and handling area would be established on the eastern side of the rail line. This eastern side area would be accessed via the traffic lights at the intersection between the Pacific Highway and Old Maitland Road (refer to Figure 4.1 of Appendix C).

Peak capacity of the conveyor would be approximately 150 tonnes per hour which equates to approximately four to five truck and dog movements per hour. The conveyor would not function at full capacity for the entire duration of the Project and would not be used for all material deliveries. Outstanding materials would be delivered via the newly constructed construction access road. The conveyor would be decommissioned upon completion of the construction phase of the Project.

In addition to the conveyor, a temporary pedestrian overpass would be constructed across the rail corridor close to Hexham Railway Station. The structure type is likely to be scaffolding and be restricted to use by Project related construction workers only. No public access would be provided to this overpass. The overpass would transport workers from the station, which would be used as a temporary parking area, to the Project Area during construction hours. The existing bus stop facility and pedestrian/commuter footpath access to the Hexham Railway Station from this location would not change under the Project. The pedestrian overpass would be removed at the end of the construction phase of the Project.

4.7. Private Access Track Relocation

The revised design includes a relocation of the private access track to more suitably provide access to adjoining residents. The location of the new property access road is shown in Figure 4.2.

The EIS design proposed a 3.5m wide property access road to service a number of properties located to the west and south of the Project Area including Lot 312, DP 583724, Lot 270, DP 605404 and the Brancourt effluent treatment plant. The EIS design proposed that this property access road be located to the west of the proposed Relief Roads and that it traverse the Project Area from approximately chainage 176200m (in the north) to 174400m (in the south) connecting to existing access tracks.

The revised design includes the relocation of the private access track to the west of the Relief Roads (refer to Figure 4.2) to allow for a more suitable access arrangement to adjoining properties to the west and south. The revised private access track would be consistent with the width proposed in the EIS (i.e. 3.5m). This private access track would, as practical, utilise and formalise existing track footprints to minimise on-ground disturbance.

4.8. Extension of the Swale Drain

The revised design includes refinement of the route and location of the swale drain proposed in the EIS design to improve stormwater run-off from the site during construction and operation. This amendment is shown in Figure 4.1d-g.

The EIS design proposed a swale drain to the west of the existing Relief Roads to collect water draining from the Project Area. This swale drain was divided into two regions, southern flowing swale and a northern flowing swale. The swale drain in the EIS proposed discharges to the north into an existing wetland area to join Mid-site Creek and to the south into an existing man made canal to join the Hunter River.

The revised design includes a refinement and readjustment of the alignment of the proposed swale drain. The swale drain would be predominantly located at the site of an existing drain with similar northern and southern discharge points. The revised swale drain follows a more direct alignment in similar location to the EIS design. The revised design would maintain north and southern drainage regions. It also includes a refinement of discharge points based on further understanding of geology, topography and drainage including an extension of the swale at the northern end (by approximately 1.2km), with no change to the swale drain at southern end.

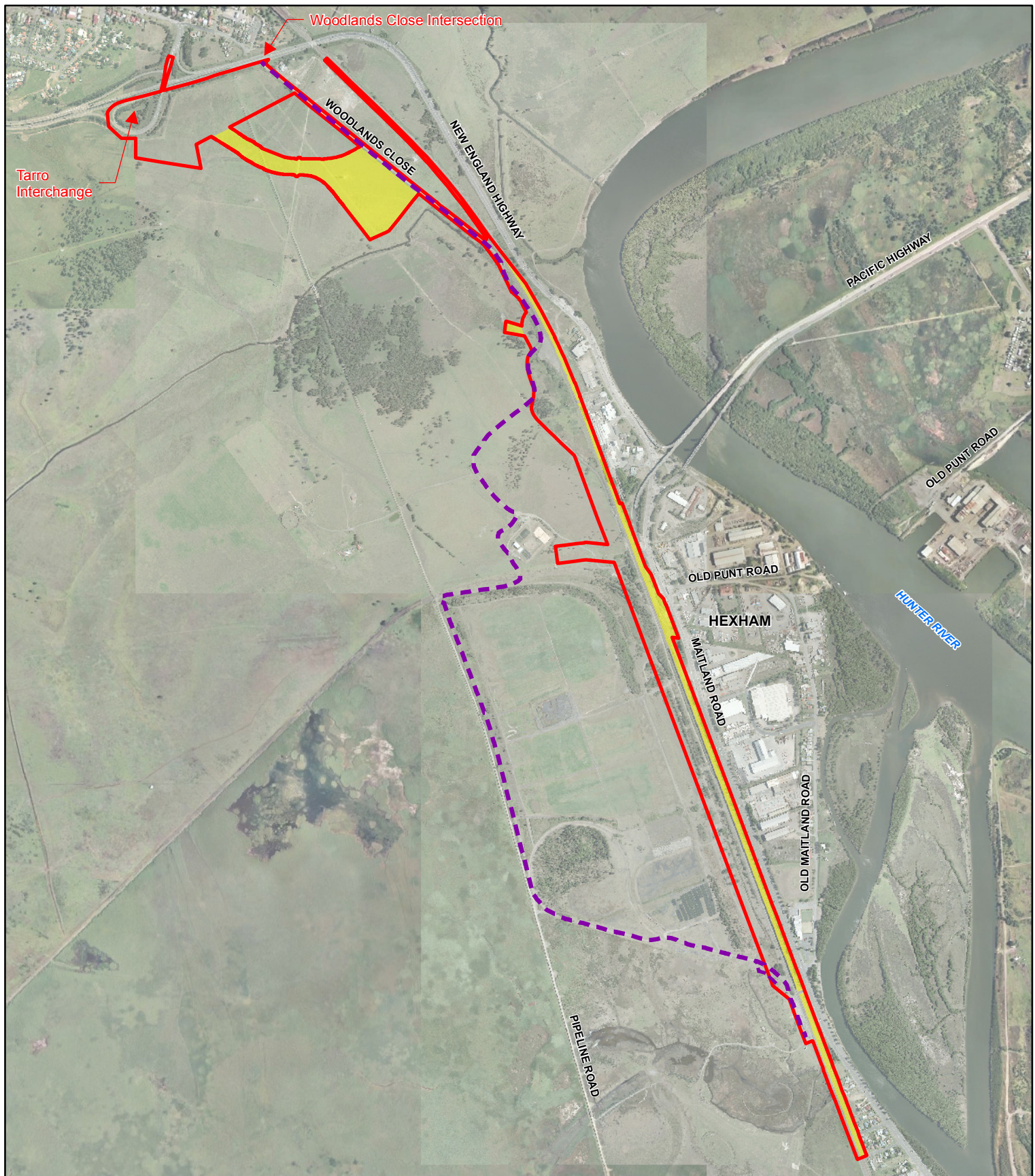
A bund wall at chainage 174940 within the swale would segregate and control the volume and rate of flow to the northern and southern halves of the swale.

The southern section would be trapezoidal with a 3m wide base and 1:2 side slopes. The maximum storage volume would be 1,240m³ that would only be achieved in a 1:50 year flood event. As a result

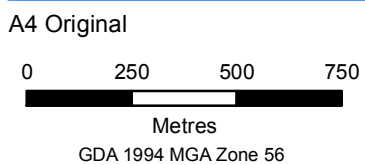
of the existing topography the southern section of the swale ranges from 0.5m to 0.7m below ground level. This section of the swale has been designed to release the stored water at a controlled rate through a 375 RCP pipe, similar to that of the existing drain at this location. The existing drainage pipe would be replaced and extended slightly however water from the swale drain would discharge, as it currently does, to an existing earth channel which eventually flows into the Hunter River via a concrete lined channel under the rail and a culvert under the New England Highway.

The northern section would be trapezoidal in shape with a 1.5m wide base and 1:2 side slopes. The storage volume would be approximately 2,100m³ to which would only be achieved in a 1:50 year flood event. As a result of the existing topography the northern section of the swale ranges from 0.5m to 1.9m below ground level. This section of the swale has been designed to free drain to a retention pond that overflows into the low lying swampland which drains to Mid-Site Creek and into the Hunter River.

As proposed in the EIS this swale drain has been designed and would be used exclusively for the HRR Project. Aurizon has confirmed that they would have a separate drainage system for their Project. To further isolate the drainage between sites (TSF Project and the HRR Project) Aurizon would create a berm on the western side of the swale drain to ensure that no surface water drains from the TSF site to the HRR site.



- Project Area
- Project Area Additions (from August 2012)
- Proposed Private Vehicle Access (included in Project Area)



ARTC
Hexham Relief Roads

**Project Features
(Private Access Track)**

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Revision	A2
Date	23.01.2013
Scale	1:18,000

Figure 4.2

4.9. Adjustment to Service Road Alignment

The revised design includes an adjustment to the alignment of the service roads (vehicular access) to the Relief Roads. The purpose of these tracks is to facilitate safer access to the Relief Roads during construction and operation (maintenance) of the Project.

The EIS design proposed two operational access tracks including one between the existing Up Coal Line and Relief Road 1 and another to the western side of the proposed (relocated) Down Coal Line. These would be unsealed and 5.5m in width and connect at either end of the Relief Road (northern and southern ends). A joint operational access track would join these two tracks to an existing established track for access from the northern part of the Project Area.

The revised design includes three operational access tracks, including two 3.5m wide roads (previously one 5.5m wide in the EIS design) between the existing Up Coal Line and Relief Road 1 and another to the western side of the proposed (relocated) Down Coal Line (as proposed in the EIS design). The revised design also includes a widening of the operational access tracks to accommodate an intersection of all three tracks and a minor extension to connect to the existing track from the northern part of the Project Area. These tracks would be unsealed, with the exception of the proposed intersection.

4.10. Earthworks and construction traffic

The design changes discussed above have resulted in an alteration to the amount of earthworks to be undertaken for the construction of the Project. An update of Table 4.5c provided in Chapter 4 of the EIS is included in Table 4.9a below showing the revised approximate earthworks volumes.

Table 4.9a Approximate Earthworks Volume (revised)

Material	Approximate Volume (cubic metres)	Description
Cut to fill	61,000	A cut to fill operation would take place resulting in a predominately level site.
Gabion Rock and Shot Rock	134,000	Depending on ground conditions, a 600mm to 1,200 mm rock layer would be placed on the cut to fill. This rock would be 100% imported.
Ballast	40,000	Ballast would be placed on top of the gabion rock layer.
Imported fill	48,000	Material to be imported for access road and general fill.
Spoil	65,500	Excess spoil to be removed off site assuming it is not suitable for re-use.

The above quantities are based on current contamination testing however if further testing should determine that the cut to fill is unsuitable this would also need to be transported offsite. A maximum of 65,000m³ of spoil is anticipated to be removed from site as a worst case scenario.

This spoil would be transferred to a suitable waste management facility or, subject to contamination investigations, be transferred to Wirragulla (Dungog- ARTC site). Notwithstanding this, every effort would be made to reuse spoil on site where possible with, in a best case scenario, all spoil to be reused on site.

The undertaking of these design amendments has resulted in a minor update in the estimated traffic movements for the Project. As discussed in the Construction Methodology (Appendix C) an additional 10 light vehicle movements per day are required during the construction phase of the Project. The revised total for the Project is as shown in Table 4.9b.

Table 4.9b Vehicle movements (revised)

Construction Traffic Type	Estimated Maximum Number of Vehicles per day
Light vehicles*	80
Heavy vehicles**	120

* Light vehicles include transportation used by staff to arrive at the worksite at start of shift and site visitors.

** Heavy vehicles include trucks and semi-trailers delivering construction plant and equipment and truck and dogs delivering quarry products (structural fill). The definition of a Heavy Vehicle is in accordance with Road Maritime Service which is a motor vehicle or trailer that has a Gross Vehicle Mass (GVM) greater than 4.5 tonnes.



5. Further Environmental Assessment

Additional environmental assessment has been undertaken to address comments provided by government agencies and the public and general interest groups during both the exhibition of the EIS and, government only, during the review of the Submissions Report (dated November 2012).

This section provides further environmental assessment of the amended Project design as described in Section 4 of this PIR. This environmental assessment is considered an addendum to that provided in the EIS for the Project. This environmental assessment considers the potential for additional environmental impacts as result of the design amendments and, as necessary, identifies mitigation measures for the following key environmental issues relating to the Project:

- Flood;
- Ecology;
- Noise & Vibration;
- Air quality;
- Indigenous Heritage;
- Non-Indigenous Heritage;
- Contamination;
- Groundwater;
- Water Quality; and
- Traffic and transport.

Further discussion on each of these environmental issues in the context of the Project design amendments is provided below. Section 6 provides a summary of the mitigation measures for the Project, as amended by this further assessment.

5.1. Flood

An addendum to the Flood Assessment, included in Appendix B of the EIS, has been provided for the design amendments and is included at Appendix F of this PIR. Further, a Joint Flood Modelling Report is included in Appendix F of this PIR. The Flood Assessment Addendum was undertaken to assess potential flood impacts associated with Project amendments and to respond to government agency clarifications raised.

A detailed local flood model was used to better understand the nature of existing flood behaviour and flood impacts in Hexham, and further refine the requirements for flood mitigation in respect of the proposed works (refer Appendix F of this PIR). The Joint Flood Modelling Report assessed the cumulative impact of the Aurizon Train Support facility, the ARTC Hexham Relief Roads Project and the joint access road on the Hunter River flood conditions.

The report found that the Project would have limited impact on regional flood behaviour; however, the localised impacts were of sufficient magnitude to require specific flood mitigation. A series of mitigation measures were investigated including a design revision as described below.

The revised design includes a lowering the tracks over approximately 820 metres between chainage 175680 and 176500. This is separated into three sections including a 340m section of where the tracks are lowered by approximately 1.2m and sections either side where the tracks gradually grade back to the previous levels (180m and 300m long respectively).

The adequacy of the flood mitigation solution was then tested for the purpose of minimising flood impacts on surrounding properties. It was found that lowering of significant sections of the proposed relief roads, would significantly reduce flood impacts to existing property and businesses.

In summary, the mitigation and management measures in Section 6 and Appendix F of this PIR are appropriate for the reduction and control of potential flood impacts associated with Project design amendments.

5.2. Ecology

An addendum to the Ecology Assessment, included in Appendix C of the EIS, has been provided for the design amendments and is included at Appendix D of this PIR. This assessment includes additional reporting on the design amendments that previously, as part of the exhibited EIS (August 2012) and associated technical reports, were outside of the Project Area and also reporting on potential impacts identified through the government agency review of the Submissions Report (dated November 2012).

The conclusions of the Ecology Assessment Addendum on the potential impacts from these design amendment is as follows:

- Vegetation clearing - the revised design would reduce the impacts of the Project through a reduction in native vegetation and EEC clearing from 9.10ha (provided in the EIS) to 7.15ha.
- Fauna habitat - the revised design includes additional fauna habitat clearing (from 39.05ha in the EIS to 45.25ha in the revised design) however given the reductions in native/EEC clearing proposed impacts to fauna habitat are considered consistent with the EIS.
- Threatened biodiversity - the revised design results in reductions to native habitat impacts and no new species or community impacts.
- Groundwater dependant ecosystems - given that impacts on wetlands are within the HRR, and to a lesser extent the TSF construction footprints, there will be no additional impacts (above the EIS design).

In summary the design amendments are unlikely to significantly impact on biodiversity and no further mitigation measures, in addition to those provided in Section 8.5 of the EIS, are identified.

Further, the Biodiversity Offset Strategy (BOS) has been updated to include impacts of the design amendments, and is included at Appendix E of this PIR. The BOS concludes that as the result of the Project requiring clearing of 7.15ha of native vegetation a total of 182 ecosystem credits would be acquired. A suitable site has been recommended and is discussed further in the BOS (refer Appendix E for further details).

5.3. Noise and Vibration

An addendum to the Noise and Vibration Assessment, included in Appendix D of the EIS, has been undertaken to assess potential construction noise and ground vibration impacts associated with Project amendments and to respond to government agency clarifications raised (refer Appendix G of this PIR). This assessment includes predicted noise impacts from the design amendments on previously identified and additional receivers. The additional modelling included in this assessment focusses on the northern extent of the alignment as the design changes are not expected to influence rail noise levels on Old Maitland Road and the southern extent (e.g. Clark Street, Merchant Street and Fenwick Street).

The assessment concludes the following with regards to the amendments:

- The construction access road realignment results in a greater separation distance from residences and therefore represents a potential reduction in predicted construction noise levels (up to 15 dB(A) L_{Aeq}). During the initial three months, predicted construction noise levels at nearest residential receiver R1 would comply with the construction traffic noise goal as only light vehicles would utilise the existing Woodlands Close;
- As a result of crossing Purgatory Creek, construction noise levels predicted in the EIS would not increase and would comply with the residential and commercial NMLs at nearest receivers;

- The establishment of the Primary Site Compound does not alter the approximate separation distance of 400m to the nearest residential receiver R1 at Woodlands Close therefore there are no new impacts;
- The Relief Road extension has amended the alignment to be adjacent to residential receivers on the New England Highway, however the predicted noise levels comply with the relevant criteria;
- Under the lowering of the Relief Roads design amendment the Project will maintain a similar construction footprint to that proposed in the EIS and therefore this is not expected to cause further noise and vibration impacts;
- The private access track relocation is not expected to result in a change to the predicted construction noise and vibration impacts assessed in the EIS;
- The conveyor and pedestrian overpass are anticipated to not exceed criteria, based on the implementation of mitigation measures;
- Short term construction works for the swale drain, including the extension, are not expected to trigger the Noise Management levels (NMLs) at nearest receivers; and
- The proposed amendment of the service road alignment changes the separation distance between the roads and nearest receivers by less than 10m; however, this is a minor change and the noise levels would still comply with the noise criteria.

In summary, based on the Noise and Vibration Assessment Addendum, the mitigation and management measures in Section 9.5 of the EIS and Appendix G are appropriate for the reduction and control of potential impacts associated with Project design amendments.

5.4. Air Quality

The design amendments are minor in nature and do not require any modelling in addition to that provided in the EIS (refer Chapter 13 of EIS). The Project design amendments do not cause any amendment to the Air Quality Impact Assessment conducted for the EIS (refer to Appendix G of the EIS) and therefore the mitigation measures previously provided in the EIS are considered suitable and appropriate.

5.5. Indigenous Heritage

The Indigenous Heritage Assessment, included in Appendix H of EIS, surveyed the design amendment locations. The original survey identified the presence of a Potential Archaeological Deposit (PAD) and Site HS1 and a 'Cultural PAD' (refer to Appendix H of the EIS). Subsequent to this, further investigation, including heritage test excavations for the purpose of geotechnical testing, contamination sampling and potholing, were undertaken (refer to the Aboriginal Heritage Test Excavation Report at Appendix J of this PIR). These test excavations provided further results regarding the Indigenous Heritage significance at the location of the proposed construction access road and the Primary Site Compound.

In summary, the outcomes of the AMBS reporting are as follows:

- HS1 includes materials that have been brought into the site and therefore is considered to not be archaeologically sensitive;
- Surface deposits, known as HS2, discovered from disturbed contexts were identified during the excavations do not need to remain in situ; and
- The areas of the Cultural PAD that were tested are not considered to have any archaeological significance beyond the identified HS2.

The Report concluded that:

- The site card for the Site should be amended to reflect the findings of the test investigations;
- An additional 6 test pits should be excavated in the central part of the Project Area to test the significance of the Cultural PAD in this location; and

- The Aboriginal Heritage Management Plan (part of the CEMP) should address the findings of the excavation.

Investigations into altering the Site Card to reflect the above results are currently being undertaken, in conjunction with Aurizon and based on discussions with OEH. The additional test pits, recommended in this Report are to be undertaken post Project Approval as part of the implementation of the AHMP.

Further, subsequent to the undertaking of these investigations, advice has been prepared by Kelleher Nightingale, commissioned by Aurizon, with regard to the conclusions of the heritage investigations in relation to both the HRR and TSF Project Areas. This advice, although providing a differing methodology for the investigation that has been undertaken, is generally consistent with the recommendations of the AMBS Aboriginal Test Excavation Report (Appendix J of this PIR) with the exception of the additional test pits that are to be undertaken post Project Approval. Aurizon has indicated that this advice has been recently issued to relevant Aboriginal stakeholders for comment. UHVA and ARTC will continue to discuss the relevance of this advice to the Project with Aurizon however, based on investigations undertaken by AMBS having been endorsed by Aboriginal stakeholders, will utilise the mitigation measures/recommendations provided in the current reporting (Appendix J of this PIR).

5.6. Non-Indigenous Heritage

The Non-Indigenous Heritage Assessment, included in Appendix I of the EIS, identified all heritage items within the area (refer also to Section 15.3 of the EIS). The only design amendment that has the potential to impact on any listed heritage item is the proposed private access track.

The private access track would be in close proximity to the Minmi to Hexham Railway and the Hexham Railway Station both of which were identified by the Newcastle Local Environmental Plan (LEP) 2012 as heritage items of Local Significance. The Hexham Railway Station is located on the eastern side of the rail line and therefore would not be impacted by the private access track. The private access track, where possible, would utilise already established tracks; however, the private access track would traverse the Minmi to Hexham Railway at one point.

A Non-Aboriginal Heritage Assessment Addendum, including a site visit by AMBS, was undertaken to investigate any potential impacts posed by the private access track on the Minmi to Hexham Railway (refer to Appendix K of PIR). The report concludes that impacts from the proposed access track could be mitigated with the implementation of the mitigation measures provided in the EIS (refer to Section 15.7 of the EIS) and those below:

- where possible ensure that archaeological relics associated with the Minmi to Hexham Railway are retained in situ;
- surface elements that affect the construction of the private access track can be relocated in consultation with a suitably qualified archaeologist;
- the private access track at the location of the railway embankment, prior to construction, should be covered with a geotextile layer (or similar) and the track base laid across this to protect the integrity of any underlying archaeological relics; and
- the precise location of the track and appropriate buffer zone should be determined prior to works being undertaken in consultation with a suitably qualified archaeologist.

Section 6 of this PIR (Compilation of Mitigation Measures) has been updated to be consistent with these above mitigation measures. Further construction mitigation and management measures would be detailed in the CEMP for the Project.

5.7. Contamination

An investigation into the potential impacts of the design amendments with regards to the contamination assessment, provided in Appendix F of the EIS, has been undertaken. The key design

amendments that have the potential to be affected by, or impact on, existing contamination in the Project Area include the relocation of the Primary Site Compound, the realignment of the construction access road and the lowering of the Relief Roads.

The location of the Primary Site Compound has previously been assessed including a site history assessment, which covers this part of the Project area, and contamination testing which has been carried out on Woodlands Close immediately adjacent to the compound (refer Chapter 11 of EIS). Further assessment has been undertaken at the location of the construction access road and Primary Site Compound (refer to Contamination Assessment Addendum at Appendix M of this PIR). Based on this, the following impacts are considered for the Primary Site Compound and access road:

- Site history indicates that the location was, and continues to be, used for dairy cattle grazing. Further, effluent irrigation occurs to the south of the Primary Site Compound, however it is anticipated that effluent irrigation water would flow into Mid-Site Creek, and therefore is unlikely to impact on the construction compound; and
- soil sampling and analysis carried out on Woodlands Close indicated contamination in the form of benzo(a)pyrene and total polycyclic aromatic hydrocarbons (PAHs). The contamination is considered likely to be from fill material imported for the construction of Woodlands Close and it is unlikely that it would be present in the Primary Site Compound area. However, testing and analysis would be required to confirm this.
- Further analysis was undertaken and confirmed that concentrations of heavy metals, hydrocarbons, pesticides and asbestos were either not detected, or were recorded below the adopted investigation levels and that the potential risk of nutrients or contaminants leaching from the fill material and exacerbating the degraded state of the surrounding environment is considered to be low.

The construction footprint of the Relief Roads was tested for soil contamination as part of the EIS (refer to Chapter 10 and Appendix F of the EIS). The proposed lowering of the tracks design amendment has the potential to result in removal of existing potentially contaminated fill currently located on site. This would be appropriately managed in accordance with the CEMP for the Project.

In summary, there is a low risk of significant soil contamination being present on the site. The design amendments would be suitably managed by the mitigation measures included in the EIS (also provided in Section 6 of this PIR). Further, should contaminants be identified, these would be managed in accordance with the CEMP for the Project.

5.8. Groundwater

The Groundwater Assessment, included in Appendix K of the EIS, provided an assessment of the existing groundwater characteristics for the area, which includes the location of the design amendments. The design amendments, with the exception of the swale drain and lowering of the Relief Roads, would not alter the impacts, and therefore the mitigation measures, provided in the EIS (refer to Section 18.5 of the EIS).

Additional groundwater investigations have been undertaken to assess the revised design (refer to the Groundwater Assessment at Appendix L of this PIR). The assessment concluded the following:

- Groundwater flow and drawdown -
 - o During construction groundwater drawdown may be up to 2.3m and 1.8m (immediately adjacent to the formation of the Relief Roads) in wet and dry conditions respectively. Recharging of collected groundwater would considerably reduce these drawdowns.
 - o During operation groundwater would seep into the swale where it inverts below ground level however this will be similar to existing drainage and discharge conditions. On-going groundwater drawdown may be experienced (immediately adjacent to the formation of the Relief Roads) however this would only be evident at isolated locations and within the disturbed Project Area.

- Potential Acid Sulfate Soils (PASS) - during construction and operation groundwater drawdown has the potential to expose PASS.
 - o During construction the recharging of groundwater, and as required, implementation of barriers and bunds within open excavation, would reduce potential for exposure of PASS to be negligible.
 - o During operation, under dry conditions groundwater drawdowns are not expected to be significant enough to expose PASS.
- Impacts on wetlands (SEPP 14 listed) - wetlands in close proximity to the proposed formation are located between chainages 175880 and 176300. At this location groundwater drawdown is not expected to extend significantly beyond the formation and therefore these wetlands are not anticipated to be affected by drawdown outside of the footprint of the HRR Project.
- Impacts on Groundwater Dependant Ecosystems (GDEs) - GDEs are present along the majority of the proposed formation to the west. The extent of groundwater drawdown is isolated to the footprint of the HRR, and to a lesser extent TSF, Projects which will remove GDEs in this location. Therefore there will no on-going impacts to GDEs.
- Water quality - during rainfall events infiltration of rainwater to the formation is expected to dilute existing contaminants and salinity within groundwater. This, along with the replacement of existing fill by the formation, is anticipated to result in an overall improvement in the quality of groundwater between that currently discharged at the site and that to be discharged from the swale drain.

In summary the interception and discharge of groundwater would be similar to that currently evident from existing on site drains. No on-going impacts are anticipated from groundwater drawdown on wetlands (SEPP 14) or GDEs outside of the HRR or TSF Project Areas. The mitigation measures in Section 18.5 of the EIS would be sufficient to mitigate and manage the environmental impacts associated with the Project, as amended. In particular, as stated in Section 18.5 of the EIS, licencing would be sought, as necessary, prior to construction commencement, to permit interception management and discharge of groundwater during construction.

5.9. Water Quality

The Water Quality Assessment, provided in Appendix L of the EIS, includes a similar total operational footprint area as that provided by the revised Project Area, including the design amendments. There are small differences in the proportion of the areas identified for different land uses in the operation phase but this would not significantly affect the inputs or results provided in the EIS. The approach in the EIS for water quality modelling was to assume the entire area was going to be disturbed, and thus that the contaminant loads predicted were a conservative worst case scenario. Generally contaminant loads would be lower than originally predicted in the EIS based on a reduced area of disturbance.

In particular, the revision of the design for the swale drain and lowering of the Relief Roads have the potential to impact on water quality to be discharged from the Project Area. A summary of the potential impacts and mitigation is as follows:

- During construction intercepted groundwater will be recharged into the groundwater system or treated, in a treatment facility, prior to being discharged from the site (refer to Appendix C and Appendix L for further information); and
- During operation, as discussed above, groundwater/surface water discharge from the swale drain is anticipated to be of an improved quality to that currently discharged on site (refer to Appendix L for further information).

Overall water quality would be managed through the implementation of CEMP and on-going water quality monitoring all of which are included in Section 6 (Compilation of Mitigation Measures) of this PIR.

5.10. Traffic and Transport

The Traffic and Transport Assessment, provided in Appendix E of the EIS, includes a total of 190 vehicles (70 light vehicles and 120 heavy vehicles). The design amendments provided in Section 4, in particular revisions to earthworks quantities, has resulted in a minor increase to the number of vehicles for the Project, namely a total of 200 vehicles (80 light vehicles and 120 heavy vehicles). This increase of 10 light vehicles per day would be negligible and therefore would not impact on the assessment provided within the EIS.

The implementation of an overhead conveyor system would reduce delivery and heavy vehicle movements via Woodlands Close during the early part of the Project's construction. This would reduce traffic impact on the New England Highway and Woodlands Close and provide a more direct and safer option for construction traffic movements during construction.

Heavy vehicles in the form of truck and dogs would deliver and load the material for the conveyor via the existing Pacific Highway and Old Maitland Road signalised intersection. Up to five truck and dog movements are expected at this intersection per hour.

The majority of approaches to this intersection are signalised, however, the actual western approach of this intersection which would be utilised for construction vehicle access and egress currently operates as a priority (give-way) controlled intersection and therefore vehicle egress is dependent on Pacific Highway traffic flows. Construction vehicles may struggle to enter the Pacific Highway during peak periods; however, the existing green signal on Old Maitland Road would assist egress movements as to vehicle separation created from other signalised intersections.

With the implementation of a pedestrian overpass at or adjacent to Hexham Railway Station, the introduction of additional light vehicles is expected with the creation of car parking facility with access and egress to the Pacific Highway. The car parking facility could provide for up to 40 light vehicles per day. It is expected that the intersection of the Pacific Highway and Old Maitland Road would continue to operate satisfactorily with the addition of 40 light vehicles (over a daily period) and five heavy vehicles (per hour) proposed to and from the western leg of this intersection. Further, pedestrian (limited to workers on HRR construction site) accessibility would be improved with the implementation of a temporary pedestrian overpass adjacent to Hexham Railway Station. This overpass would improve pedestrian safety and remove pedestrian/vehicle conflict potential on Woodlands Close.



6. Compilation of Mitigation and Management Measures

This section provides a summary of the mitigation measures for the Project. Minor amendments have been made to these mitigation measures after the exhibition of the EIS (August 2012) to address comments provided by both government agencies and the public (refer to responses in Section 3 of this PIR) and design amendments (refer to Section 4 of this PIR). Amendment to the mitigation measures has been identified having regard to additions (underlines) and deletions (strikethroughs).

The mitigation measures provided below represent the final mitigation measures to be incorporated into the conditions of approval for the Project Approval of the Project, as required by Schedule 2, Part 3, cl 7(1)(e) of the *Environmental Planning and Assessment Regulation 2000*.

Table 6.a Management and Mitigation Measures

Measure No.	Mitigation and Management Measure
Flooding	
F1	Compounds, and where practicable, stockpiles would be placed above 10% AEP flood level. The proposed Primary Site Compound adjacent to Woodlands Close is in an area currently subject to inundation in the 10% AEP flood event. This site would have buildings and stores elevated above the 10% AEP flood level of 1.0m AHD to prevent inundation of the buildings in a flood event and would have information regarding the flood affectation of the site clearly displayed.
F2	During construction controlled capture and conveyance of sediment laden runoff areas via a network of dirty water channels connecting to suitable sediment controls would be implemented. To be designed with a 50% to 20% AEP design flood flow capacity.
F3	A construction Flood Emergency Management Plan (similar to that provided in Appendix F of this PIR) would be prepared to provide information on flooding at the site, such as expected peak flood levels, expected times of inundation and information on how to reduce the risks to people and property during a flood event.
F4	ARTC would undertake further detailed assessment of potential flood impacts on affected properties. ARTC would continue to investigate measures to reduce and/or manage flood impact on these properties.
Ecology	
E1	Provide all workers with an environmental induction prior to starting work on site. This would include information on the ecological values of the site, protection measures to be implemented to protect biodiversity, and penalties for breaches.
E2	Prepare a Flora and Fauna Management Plan as part of the CEMP.
E3	Limit disturbance of vegetation to the minimum necessary to construct works.
E4	Implement clearing protocols, including: - marking trees to be removed and preparing an inventory of trees and hollows (if observed) to be removed; - pre-clearance surveys to be completed by an appropriately qualified ecologist, particularly for the Green and Golden Bell Frog; - check trees for the presence of bird nests and potentially arboreal mammals, prior to felling; and - as far as practicable, animals found to be occupying trees would be allowed to leave before the clearing of trees.
E5	Where practicable, restrict equipment storage and stockpiling of resources to designated areas within cleared land.

Measure No.	Mitigation and Management Measure
E6	Develop weed management actions to manage weeds during the construction phase of the proposed Project. This would include the management of exotic perennial grasses, such as <i>Chloris gayana</i> , <i>Melinis repens</i> that were recorded abundantly within the existing rail corridor and adjacent lands, and the seven noxious weeds of <i>Alternanthera philoxeroides</i> , <i>Ageratina adenophora</i> , <i>Cestrum parqui</i> , <i>Cortaderia selloana</i> , <i>Echium plantagineum</i> , <i>Rubus fruticosus</i> and <i>Lantana camara</i> as per the Noxious Weeds Act 1993.
E7	Minimise the clearing of freshwater wetlands, coastal saltmarsh and mangroves to that which is absolutely necessary for the safe construction and operation of the Project.
E8	Incorporate existing drainage channels into design of the Project drainage channels where possible.
E9	Where required, install high visibility signs at freshwater wetland and coastal saltmarsh sites occurring outside the proposed Project Area, to inform workers of no go areas. This is particularly important during spring and summer when migratory shorebirds and waders use such habitats.
E10	Erosion and sediment controls would be implemented in accordance with the Blue Book.
E11	Where practicable undertake channel works affected by tidal flow during low or ebb tides.
E12	Waterway crossing design would be in accordance with DP&I's Fish passage requirements for waterway crossings (Fairfull & Witheridge 2003). Retain the double box culvert design of the existing culvert.
E13	Control and manage potential contaminants (fuels, oils, lubricants) from construction activities.
E14	Develop an offset strategy (provided in Appendix E of this PIR) and package to mitigate the impact of clearing native vegetation. This would fulfil the need to improve or maintain as required in the <i>Principles for the use of biodiversity offsets in NSW</i> .
E15	Within the construction phase, establish 'no-go areas' adjacent to the private access track in consultation with an ecologist to ensure that important habitats are adequately protected.
Noise and Vibration	
N1	A Construction Environmental Management Plan (CEMP) for the Project would be prepared prior to commencement of works and be implemented through all phases of construction.
N2	Standard construction working hours would be restricted to 7 am and 6 pm (Monday to Friday) and 8 am and 1 pm (Saturdays), with the exception of out of hours construction works as identified in the EIS (Section 4.5.4) and the EPL to be prepared for the Project.
N3	Where construction works are required outside of the standard day time construction hours the following would be implemented: - all works undertaken during rail possession would be managed in accordance with EPL for the Project where feasible; - where feasible high noise generating works would be avoided during morning, evening and night time services at the Church on Old Maitland Road; - where feasible consideration would be given to a mass loaded absorptive acoustic curtain being installed on localised wire fencing around noise generating plant and machinery; and - high noise generating works, including vegetation clearance with chainsaw and chipper would not be undertaken during the 10pm to 7am night time period.
N4	All site workers (including subcontractors and temporary workforce) would be made aware of the potential for noise and vibration impacts upon local residents and encouraged to take practical, feasible and reasonable measures to minimise noise during the course of their activities.
N5	Where measured construction noise levels trigger the residential and non-residential noise NMLs identified in the EIS and this PIR; dominant noise generating mechanical plant would be fitted with feasible noise mitigation controls such as exhaust mufflers and engine shrouds.

Measure No.	Mitigation and Management Measure
N6	Quieter and reduced vibration emitting construction methods would be applied where feasible and reasonable. For example, when piling is required, bored piles rather than impact-driven piles would minimise noise and vibration impacts.
N7	The construction site would be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receivers wherever possible.
N8	Where work is proposed in the vicinity of residences, potentially affected residents would be advised in advance of the proposed construction period at least 2 weeks prior to the commencement of works.
N9	Fixed equipment (i.e. pumps, generators, compressors) would be located to maximise the practical separation distance away from nearest residences.
N10	Temporary stockpiles would be located away from the nearest residences.
N11	Whenever possible, loading and unloading areas would be located away from the nearest residences.
N12	Broadband reversing alarms would be used instead of tonal reversing alarms, in particular outside standard working hours (night-time track possession works). Sub-contractors would also be notified of this requirement.
N13	Equipment which is used intermittently would be shut down when not in use.
N14	All engine covers would be kept closed while equipment is operating.
N15	Specific work method statements and directives would be prepared to prohibit unnecessary dropping of materials from heights in/out of vehicles.
N16	Where possible, trucks associated with the work would not be left standing with their engine operating in a street adjacent to a residential area.
N17	Where practicable simultaneous operations of loader, Bobcat, 30T excavator, rail tamper and ballast regulator plant is to not occur in the same local area.
N18	Sign-posted traffic speeds would be adhered to and all drivers would implement responsible driving practices to minimise unnecessary acceleration and braking events. Traffic movements would be scheduled to minimise continuous traffic flows (convoy).
N19	At the commencement of works, ground vibration monitoring would determine safe working distances for all vibration generating plant to minimise potential for disturbance and cosmetic issues at all receivers and property.
N20	The planning and scheduling of vibration generating works would include safe working distances to minimise potential disturbance and cosmetic structural damage impacts. Table 9.5a provides recommended safe working distances for vibration generating plant.
N21	Prior to the commencement of construction, condition surveys of residences on Clark Street, Fenwick Street, Merchant Street and at/ off Woodlands Close and the Hexham Station are to be undertaken to determine the current integrity and visible damage. The surveys are to be used to manage vibration through safe working practices to prevent further or new cosmetic damage.
N22	All plant on site would be operated in accordance with the manufacturer's instructions.
N23	The constructor (as appropriate) would establish contact with the local residents and communicate, particularly when noisy or vibration generating activities are planned.
N24	The constructor or site developer (as appropriate) is to provide a community liaison phone number and permanent site contact so that noise and/or vibration related complaints, if any, can be received and addressed in a timely manner.

Measure No.	Mitigation and Management Measure
	Consultation and cooperation between the site(s) and neighbours to the site(s) would assist in limiting uncertainty, misconceptions and adverse reactions to noise and vibration.
N25	Where measured construction noise levels from the Proposed Project at nearest residences are greater than 75 dB(A) $L_{Aeq,15min}$ the following would be considered: • respite periods of 1 hour are recommended for every continuous 3 hour period of work; and • works would be scheduled between 9am – 12pm and 2pm – 5pm.
N26	Upon receipt of adverse comment/complaints, measures would be taken to reduce noise and vibration levels at adjacent communities and receivers. Attended noise and ground vibration measurements would be undertaken as determined by the environmental site representative to confirm the noise and vibration levels are consistent with the prediction in this assessment and any approval and/or licence conditions. All noise measurements would be undertaken at the most exposed/ affected receivers and be carried out consistent with Australian Standard AS1055.1-1997 <i>Acoustics - Description and Measurement of Environmental Noise - General Procedures</i>. Vibration measurements would be undertaken in accordance with the procedures documented in the DECCW's Assessing Vibration - a technical guideline (2006) and BS7385 Part 2-1993 Evaluation and measurement for vibration in buildings. In the event of any non-conformance to the project objectives and/or conditions, the current noise and vibration management measures would be reviewed and additional feasible and reasonable control implemented to reduce impacts where it is practical.
N27	All works undertaken during rail possession would be managed in accordance with Environmental Protection Licence for the Proposed Project.
N28	Where feasible, noise generating works would be avoided during morning, evening and night time services at the Church on Old Maitland Road.
Traffic and Transport	
T1	Preparation of a Construction Traffic Management Plan (TMP) as part of pre-construction considering: • provide a swept path analysis to ascertain that sufficient manoeuvring space is provided for all vehicles at intersections along the haulage routes; • traffic management signs to advise road users in advance of work zones and surrounding intersections, and advanced warning signs to be erected in advance of the works commencing; and • emphasis on banned right turn movements on the Anderson Drive/temporary construction access intersection and the documentation of suitable U-turn facilities elsewhere.
T2	Provide advanced T-junction warning signs to warn motorists of the upcoming intersection on Anderson Drive.
T3	Provide suitable signage to prohibit non-construction vehicles from entering the temporary construction access.
T4	Provide suitable signage to prohibit large vehicles from turning left from Anderson Drive onto the temporary construction access.
T5	Provide Project personnel with information on site access as well as locations where vehicle turnaround intersections are provided.
T6	Establish a site rule that entry and exit to/from the site must be from the newly created Anderson Drive/temporary construction access road intersection and vehicular access to the New England Highway via Woodlands Close is banned after the temporary construction access road is constructed.
T7	Undertake a Road Condition Survey prior to construction and after completion of haulage operations along the section of Woodlands Close proposed to be used for access to the project site.

Measure No.	Mitigation and Management Measure
Contamination	
C1	Preparation of a site specific Remedial Action Plan (RAP) by a suitably qualified contaminated land consultant. The RAP would discuss potential remediation and/or management options for the identified contaminated soils and present the preferred remediation option(s) based on the final design and construction details for the proposed Project. This Final RAP has been completed and is presented in Appendix F Contamination of the EIS.
C2	Implementation of the RAP in order to remediate and validate affected areas.
C3	Remediation could comprise excavation and disposal of the waste materials, including restricted solid waste to appropriately licensed landfill. Hazardous waste would require treatment prior to disposal. Alternatively, remediation could comprise pre-treatment, capping of contamination in combination with a risk assessment and site management plan. Additional assessment in these areas would further refine the remediation options.
C4	Preparation of a validation report and/or site management plan(s), depending on the remediation/management option chosen.
C5	It is also noted that during construction, a Construction Environmental Management Plan (CEMP) would be prepared and would include measures to protect workers' health during construction. The CEMP would include information on how to recognise, handle and manage contamination (including asbestos) in soil and fill materials.
C6	A Water Quality Management Plan would also be prepared as part of the CEMP to manage the surface water and groundwater contamination, and would include, but not be limited to: • measures to ensure that the existing contamination in surface and groundwater is not exacerbated during construction of the Project; • management measures for the protection of human health and the environment; • monitoring protocols, including frequency of monitoring, the analytes to be tested, and the adopted assessment criteria to demonstrate that contamination is not being exacerbated; and • contingency plans. The water quality management plan is further discussed in Volume 1 of the EIS.
C7	Different waste types would require different procedures for handling and transport to appropriately licensed facilities. General procedures that would apply to all waste types are: • waste to be classified before loaded for transport to disposal location; • if waste quantities are large, the disposal facility would be contacted prior to loading to check when they can accept waste; • waste would be covered during transport to prevent loss of waste between Project Area and disposal location; and • dockets, or other documentation, would be maintained to demonstrate appropriate disposal of waste. Waste must be notified to OEH and tracked in accordance with the <i>Protection of the Environment Operations Act 1997</i> and the <i>Protection of the Environment Operations (Waste) regulation 2005</i>.
C8	In order to ensure waste is appropriately disposed to lawful facilities licensed to accept the waste, a material tracking register, containing the following information would be kept: • the material type and volume; • the classification of the waste; • where it was re-used, i.e. location on the Project site or property address if re-used off-site (if re-used); • where it was disposed, i.e. landfill name and address (if disposed); and • reference number of relevant documentation, (i.e. waste dockets, waste classification letters), if applicable.
C9	It is not anticipated that waste generated from the Project Area would be classified as hazardous waste. Asbestos waste has hazardous characteristics, and would require additional management during handling and transport. It is unlikely, but possible, that waste with high concentrations of metals or hydrocarbons would be encountered on site. Additional measures that would be employed when dealing with hazardous

Measure No.	Mitigation and Management Measure
	waste are provided in Appendix F Contamination of the EIS.
Soil and Water Management	
SW1	A detailed SWMP would be prepared and implemented prior to commencement of construction. This would include any enabling or earthworks.
SW2	Progressive Erosion and Sediment Control Plans (PESCPs) would be prepared during construction that address the different stages of construction and changing nature of works.
SW3	Erosion and sediment control would be prioritised in construction planning and in day to day works as outlined in the Blue Book.
SW4	Stormwater flows would be controlled from both above the proposed Project and within the proposed Project area. As far as is practicable, mixing of “clean” and “dirty” waters would be avoided.
SW5	Sediment-laden runoff from within the disturbed site would be captured and diverted to sediment control devices. These may include, though not necessarily limited to, sediment fence, rock check dams, and shallow excavated sediment traps. The feasibility of using sediment basins would be investigated.
SW6	Appropriate drainage and durable all-weather surfaces would be provided to unsealed vehicle access tracks, to minimise erosion and sediment generation from these high use areas.
SW7	An Acid Sulfate Soils Management Plan would be prepared and implemented.
SW8	Minimise, as far as practicable, excavation into the natural soils underlying coal reject fill to reduce the potential for exposure and oxidation of potential acid sulfate soils.
SW9	Minimise, as far as practicable, excavations that intercept the shallow groundwater table and activities that involve dewatering. Alternatives to dewatering would be investigated wherever practicable due to the risks of exposing Potential Acid Sulfate Soil (PASS) to oxidation and additional management requirements this introduces.
SW10	Where dewatering is required, reuse of water onsite would be pursued as a first priority and only after options for onsite reuse are exhausted, would alternative options including discharge to nearby land or receiving waters be investigated.
SW11	Appropriate management practices would be implemented for all waste materials including paint, concrete slurry, acid, sewage, cleared vegetation, garbage and various chemicals.
SW12	All fuels, oils and hazardous substances used on site would be stored in bunded locations above the 10% AEP flood level, to minimise the risk of release into the environment and contamination of receiving waters.
SW13	Where practicable, locate above the 10% AEP flood level the following activities and facilities: soil stockpiles, construction compounds, hazardous materials stores and areas for the storage and treatment of potential acid sulfate soils.
SW14	A self-auditing inspection program of soil and water controls would be developed.
Air Quality	
AQ1	Dust control practices would be implemented and may include: • use of water sprays on stockpiles and unsealed construction areas as required; • establishment and enforcement of onsite vehicle speed limit; • covering of vehicles loads carrying loose material; • maintenance of vehicles and machinery in an efficient condition to minimise potential emissions; and • visual monitoring of wind conditions and adjusting construction activities accordingly.

Measure No.	Mitigation and Management Measure
Indigenous Heritage	
IH1	An Aboriginal Heritage Management Plan (AHMP) would be completed prior to the start of any works that could have an impact on Aboriginal heritage.
IH2	The rise of land near Woodlands Close is not proposed to be impacted. This area would be a designated 'No Go Zone'.
IH3	A program of archaeological test and salvage excavation would be undertaken in any section of the Site HS1 and Site HS2 and, as necessary on the Cultural PAD proposed to be impacted. The scope of any such program would be based on the Heritage Test Excavation Report (Appendix J of this PIR) and the AHMP, and would be undertaken prior to or at the time of enabling works for the Project.
IH4	As a mitigation measure, registered Aboriginal stakeholders would be offered the opportunity to collect the rounded stone and the shell material located in fill material near the southern end of the proposed Relief Roads area, prior to any development works in this area. Any Aboriginal heritage material would be collected and recorded.
IH5	A keeping place for the Aboriginal heritage material recovered from within the Project Area is to be nominated in consultation with the registered Aboriginal stakeholders, and identified in an AHMP, which would be developed in consultation with the registered Aboriginal stakeholders, as part of the next stage of the approval process. Other requests of the Aboriginal stakeholders would also be addressed in the AHMP.
European Heritage	
EH1	Where excavation or works are required within the vicinity of the area of the junction of the Minmi to Hexham Railway and Great Northern Railway, an excavation director whose experience complies with the Heritage Branch criteria would be nominated to advise on archaeological issues.
EH2	Prior to activities associated with the initiation of ground breaking works, the excavation director would develop information for induction to brief contractors on the 'relics' provisions of the <i>Heritage Act 1977</i> .
EH3	Where construction activities for the Project have potential to expose archaeological relics associated with the Minmi to Hexham Railway the excavation director would be on call to monitor, supervise and record the process as required.
EH4	A number of options will be considered for management or relics related to the Minmi to Hexham Railway in order of preference: - Where possible relics from the Minmi to Hexham Railway would remain in situ. - If they cannot remain, they would be relocated. - If this is not possible would be covered by a protective layer prior to construction in consultation with the excavation director.
EH5	Should unexpected relics which are identified as having State significance by the excavation director, be exposed, work would be required to cease and the Heritage Branch would be informed, to determine the appropriate management strategy. The duration of this would depend on the integrity and significance of the relic. The excavation director would be contacted in the first instance to verify significance.
EH6	All archaeological deposits, features and relics that are exposed during the works associated with the proposed Project would be recorded in accordance with Heritage Branch guidelines.
EH7	Following completion of all archaeological investigations the excavation director would prepare a report detailing the results of the fieldwork and post excavation analysis. The report would be prepared in accordance with current heritage best practice guidelines as identified by the Heritage Council of NSW, and would address relevant research questions.

Measure No.	Mitigation and Management Measure
Social	
S1	Consultation with the community regarding potential social impacts through the construction stage of the Project, in partnership with ongoing community and stakeholder consultation and engagement.
S3	Continual implementation of the existing consultation strategy to include: - communication with adjacent landholders providing sufficient information on construction activities and timeframes; - provision of newsletters, channels for feedback including community information telephone line; - communication of information regarding measures to monitor performance and precautions taken to minimise environmental impacts; - communication of construction related road changes that may affect the local community; and - an avenue for ongoing communications between the local community and the ARTC following construction where appropriate.
Fluvial Geomorphology	
FG1	Where practicable, stockpiled material would be placed away from water on stable, level ground above the 10% AEP flood level. Appropriate controls would be used to reduce runoff from stockpiles. Storage of any loose material in particular, and especially during wet weather, would be carefully controlled at a distance of more than 40m from watercourses.
FG2	Stabilisation of site access. Rumble grates or other vehicle wash facility to remove soil from vehicles leaving the Project Area would be installed.
FG3	Prior to, and once works have been completed, any banks impacted by the proposed Project would be stabilised in accordance with the Blue Book. The most appropriate technique for bank stabilisation would be detailed in the CEMP and is site-specific depending on the scale/type of erosion.
FG4	Existing drainage channels and infrastructure that would be utilised post-construction would be checked for conveyance capacity.
FG5	Diversion channels and new crossings/culverts would be designed according to standard code of practice (RRC 2002). Excavation areas for the diversion channels would have suitable controls which may include water cut-off systems.
Groundwater	
GW1	Regulatory approvals: Appropriate licences and approvals prior to any extraction (i.e. aquifer access licence) and discharge of groundwater would be gained from relevant regulating authorities, such as NOW and Office of Environment and Heritage. An EPL would be obtained for the Project. Any licences in addition to the EPL would be identified as part of this process.
GW2	Groundwater monitoring would be undertaken using existing and proposed monitoring bores located in the Project Area to form a monitoring network and develop a monitoring plan. Where possible, the monitoring network would be aligned with that proposed with the Aurizon TSF site to assist with monitoring cumulative impacts. Monitoring would focus on defining patterns of groundwater response, with respect to flow direction; elevation; and quality, particularly from oxidation of ASS and mobilisation of contaminants.
Water Quality	
WQ1	Vehicle maintenance areas, refuelling stations and storage of fuels, oils and batteries would be undertaken in banded areas, designed and constructed above the 10% AEP flood level and in accordance with AS1940 (2004) – <i>The storage and handling of flammable and combustible liquids</i> .

Measure No.	Mitigation and Management Measure
WQ2	Appropriate spill containment kits would be suitably located, and used for the clean-up of spills in the field. Equipment that is susceptible to spills and / or leakages would have a spill kit located near the equipment. The kits would contain equipment for clean-up of both spills on land or in dry creek beds, and spills to water. Use of items within the spill kit would be demonstrated to all construction personnel.
WQ3	Erosion control would be placed in ditches and drainage lines running from cleared areas, especially on slopes and levee banks.
WQ4	Prepare and implement a water monitoring programme.
WQ5	When practicable, modifications to permanent creek crossings would be scheduled during a dry period (minimising the likelihood of rainfall and runoff carrying sediment and other pollutants into the creeks).
WQ6	Where modification of a permanent creek is undertaken during a rainfall event the workspace would be isolated, irrespective of an isolated pool or flowing water. The isolation would be designed such that it is completed within one week, to minimise the impact.
Land Use and Planning	
LP1	All acquisition of land would be undertaken in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> . It is recognised that the negotiated acquisition of the affected areas of individual properties is a desired outcome and this process is currently underway. However, where negotiation with the affected landowners is not successful, compulsory acquisition in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> would be carried out.
LP2	Stock fencing would be provided along the newly defined property boundaries and be constructed prior to the removal of existing fencing.
LP3	Access requirements for the construction phase would be discussed with individual landowners.
Visual	
V1	Following construction and as part of stabilisation, consideration would be given to tree-planting at a number of locations which would be determined based on environmental conditions and taking into account safety clearance distances from the rail corridor.
Greenhouse Gas	
GG1	Where feasible, consideration would be given to selection of vehicles, construction equipment and machinery on the basis of low energy usage and clean emissions and of the minimum size to complete tasks effectively.
GG2	Where feasible, biofuels (such as biodiesel, ethanol or blends) would be used to reduce the greenhouse gas emissions associated with fuel use for mobile and fixed plant.
GG3	Construction machinery would be maintained in accordance with manufacturers' requirements to maintain operating (and fuel) efficiency.
GG4	Where practicable, material and personnel would be locally sourced where possible to reduce transport-related emissions.
GG5	Where practicable, the distance of stockpile and laydown areas would be minimised to reduce transport-related emissions.
GG6	The use of recycled/reconditioned materials would be considered in appropriate circumstances e.g. ballast, aggregate, and recycled content in steel to minimise the embodied energy in construction materials and avoid the use of new materials where practicable.
GG7	Where feasible, renewable energy (green power) would supply electricity requirements.

Measure No.	Mitigation and Management Measure
Waste Minimisation	
WM1	A Waste Management Sub Plan would be developed as part of the CEMP which would guide the management of all wastes arising from the construction of the Proposed Project. The sub plan would also document the processes or procedures to further explore opportunities associated with material component recycling/ reuse.
Hazards and Risks	
HR1	Construction environmental hazards and risks associated with the Proposed Project would be addressed through a risk assessment prior to construction commencing. A Hazard and Risk Management Sub Plan would be developed to guide the management of identified and unexpected events. The Hazard and Risk Management Sub Plan would be incorporated into the CEMP.

7. Conclusion

This PIR has addressed:

- The issues raised by government agencies and the public; and
- The requirements stipulated by the EP&A Act.

The Project would result in a number of impacts, which are unavoidable for development of this scale; however, the Project design and the mitigation & management measures (refer Section 6 of this PIR) would 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.



Appendix A

Zone Plan



Appendix B

Design Drawings (cross sections)



Appendix C

Construction Methodology

Surface Water Management Strategy



Appendix D

Ecology Assessment Addendum



Appendix E

Biodiversity Offset Strategy



Appendix F

Joint Flood Modelling Report
Flood Assessment Addendum



Appendix G

Noise & Vibration Assessment Addendum



Appendix H

Ecology Tables in response to Submissions



Appendix I

Public response reference table



Appendix J

Aboriginal Heritage Test Excavation Report



Appendix K

Non-Aboriginal Heritage Assessment Addendum



Appendix L

Groundwater Assessment Addendum



Appendix M

Contamination Assessment Addendum

