Report

Minor or Preliminary Works Application

Eliwana Railway Project

April 2018
EW-AP-EN-0004

Fortescue
The New Force in Iron Ore

	Minor or Preliminary Works Application: Eliwana Iron Ore Railway Project		**EW-AP-EN-0004**
Revision Number	**1**		**4/04/2018**
Status	**IFU - ISSUED FOR USE**		
Author	Chris Heary	Signature	4/04/2018
Checked	Sean McGunnigle	Signature	4/04/2018
Approved	Brett McGuire	Signature	4/04/2018
Confidentiality	**FORTESCUE STAFF & CONTRACTORS**	**Publish on Extranet**	☐ Yes ☐ No
Review Date	**NA**		

Revision History *(to be completed for each version retained by Document Control)*

Author	Checker	Approver	Rev No.	Status	Issued Date
Heary	**McGunnigle**	**McGuire**	0	**IFU**	15/02/2018
Heary	**McGunnigle**	**McGuire**	1	**IFU**	4/04/2018

CHECKLIST: REQUEST FOR MINOR OR PRELIMINARY WORK

Information to be provided	Provided?
1. Information required to be submitted	
1.1. Proposal Title	☑
1.2. Assessment No.	☑
2. Information regarding proposed Minor or Preliminary Work	
2.1. Details of the work proposed	☑
2.2. Information which demonstrates that the work is associated with the implementation of the proposal	☑
2.3. Details of the potential environmental impacts caused or likely to be caused by the work	☑
2.4. Details of any decommissioning or rehabilitation works which would be carried out should the overall proposal not be implemented	☑
2.5. Information which explains how the impact can be reversed (e.g. through rehabilitation)	☑
2.6. Environmental justification for undertaking the work	☑
3. Other information (where relevant)	
3.1. Spatial data showing the location and area of the work	☑
3.2. Details of consultation with relevant stakeholders	☑
Documentation to submit a request	**Attached?**
Completed checklist (this sheet) attached to the section 41A(3) request	☑
Electronic copy of the request, including any applicable spatial data and other relevant information	☑

This page has been left blank intentionally

TABLE OF CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

Fortescue Metals Group Limited (Fortescue) is seeking consent from the Environmental Protection Authority (EPA) under Section 41A(3) of the *Environmental Protection Act 1986* (EP Act) to undertake minor or preliminary works associated with early construction activities for the Eliwana Railway Project, which is currently under formal assessment under Part IV or the EP Act.

The Eliwana Railway Project was referred to the EPA under Section 38 of the EP Act on 7 July 2017. The EPA subsequently determined that the Eliwana Railway Project would be assessed by Public Environmental Review on 27 July 2017.

Proposal Title: Eliwana Railway Project

Assessment Number: 2129

1.1 Eliwana Project Description

The Eliwana Railway Project (the Proposal) consists of the development of a 120km railway linking Fortescue's existing Solomon Mine with the Proposed Eliwana Iron Ore Mine, located approximately 90 km west-north-west of Tom Price (Figure 1).

Fortescue currently owns and operates a number of mining and infrastructure projects in the Pilbara; including the Cloudbreak, Solomon and Christmas Creek iron ore mines along with the Fortescue railway network and the Anderson Point port facility. This project is an important expansion to the infrastructure in the region to facilitate the efficient movement of resources.

The key characteristics of the Eliwana Project are summarised in Table 1 and Table 2.

Table 1: Summary of the Proposal

Proposal title	Eliwana Railway Project
Proponent name	Fortescue Metals Group Ltd
Short description	The proposal is to develop and operate a 120 km railway linking the proposed Eliwana Iron Ore Mine (subject of a separate referral) to Fortescue's existing railway network (Figure 1).

Table 2: Location and Proposed Extent of Physical and Operational Extent

Element	Proposed Extent
Physical Elements	
Railway and associated infrastructure	Clearing of up to 3,690 ha of native vegetation within the 38,029 ha Railway Development Envelope
Operational Elements	
Construction water supply	Up to 4 GL, supplied from multiple local water supply bore fields situated along the railway
Operational water supply	Up to 200,000 kL/a, supplied from the local water supply bore fields.

A list of the major infrastructure for the Eliwana Railway Project is presented in Table 3:

Table 3: Proposed Infrastructure: Railway Development Envelope

• Railway loop • Train loadout • Railway and associated embankment • Crossing/passing loops • Banker siding • Railway overpass • Borrow areas • Ballast quarries • Railway maintenance track • Access roads • Bridges	• Culverts and surface water • Signalling infrastructure • Gas and water pipelines • Power transmission lines • Construction and potable water supply bore field, infrastructure and water storage facilities • Communication infrastructure (including tower and fibre optic cables) • Fuel storage • Waste treatment plants • Construction camps

2. MINOR OR PRELIMINARY WORK

Section 41A(3) of the EP Act allows a proponent to request Ministerial consent to undertake minor or preliminary works, for activities which are associated with the implementation of the proposal but are unlikely to have a significant impact on the environment.

2.1 Criteria for Minor or Preliminary Work

Proponents must demonstrate the following criteria for the EPA to consent to the minor or preliminary work:

1. The work must be associated with the implementation of the proposal.
2. The potential environmental impacts of the work must not be significant.
3. Whether the impact can be reversed (e.g. through rehabilitation).
4. The environmental justification for the work (e.g. avoid breeding season, avoid phytophthora spread during winter rainfall).

2.2 Content of a Request for EPA Consent for Minor or Preliminary Work

The EPA requires that proponents follow the *Checklist: Request for EPA consent for minor or preliminary work* when preparing a request for EPA consent to undertake minor or preliminary work. A completed copy of this checklist is provided at the beginning of this document.

This request includes the following:

1. Assessment details (Section 1).
2. Details of the proposed work (Section 1.1: Eliwana Project Description and Section 2.3: Minor or Preliminary Work proposed).
3. Information to demonstrate that the work is associated with the implementation of the proposal (Section 1.1, Section 2.3).
4. Details of the potential environmental impacts likely to be caused by the work (Section 3).
5. Details of any decommissioning or rehabilitation work which would be carried out should the proposal not be approved for implementation (Section 4).
6. Information to demonstrate that the impact can be reversed (e.g. through rehabilitation) (Section 4).
7. Environmental justification for the work (Section 5).
8. Other approvals required for the work (Section 6).

2.3 Minor or Preliminary Work Proposed

Fortescue requests consent to undertake a number of activities as minor or preliminary work for the Eliwana Railway Project. A detailed description of each activity and information demonstrating how the activities are associated with the implementation of the Eliwana Project is provided in this section. An overview of proposed works is provided in Table 4 and Figures 2 and 3.

Table 4: Proposed disturbance for the Eliwana Railway Minor or Preliminary Works application

Item	Disturbance (Hectares)
Mt Silvia Road	21
Donkey Hole road	10.1
Railway camp 50km	15.0
Railway camp 95km	15.0
Access road rail camp 95	4.5
Water Pipeline and access road	76.2
Borrow	10.0
Turkeys Nests	6.6
Topsoil Stockpiles	0.5
Minor Bridge Works	2.6
TOTAL	**159.6**

The proposed disturbance is associated with the implementation of the larger Eliwana Railway Project and is herein referred to as “minor works”. The minor works will allow essential infrastructure construction and upgrades while the project is under assessment by the EPA. The minor works will allow essential infrastructure construction and upgrades while the project is under assessment by the EPA. The environmental impacts are comparable to mineral exploration and will be regulated in detail under the *Mining Act 1978* (Mining Act), Part V of the *Environmental Protection Act, 1986* (EP Act) and through conditions imposed under these environmental approvals.

The construction camps will improve site safety by reducing travel distance and will house workers conducting the minor works construction activities. Road upgrades are important to improve road safety and increase the connectivity of the site to a greater variety and volume of vehicles (heavy and light).

There has been considerable effort expended to ensure the minor works disturbance footprint and activities will have minimum impact on the environment. Approval of the minor works will allow for a gradual implementation of the Eliwana Railway Project, which is likely to reduce the overall environmental impacts of the entire project. Should minor works not proceed, the construction timeframe will be considerably shortened requiring a greater intensity of work, which in turn requires significantly larger camp footprints, larger laydown areas and wider roads commensurately larger with greater environmental impacts.

2.3.1 Clearing Controls

Fortescue manages clearing of native vegetation though a Land Use Certificate System (LUC), previously known as a Ground Disturbance Permit (GDP). A LUC identifies the area to be disturbed and considers multiple factors, such as environmental (significant values and approvals), heritage, *Mining Act 1978* tenure, pastoral leases and water, before disturbance is permitted. Each LUC application is reviewed for each factor by technical leads with Fortescue before approval. Conditions are placed on each LUC with regards to the identified factors to ensure clearing is undertaken in accordance with legal obligations and with regards to environmental or heritage values. The LUC process allows applicants to modify their application to avoid significant or sensitive values in consultation with the technical leads prior to approval of the LUC.

Conditions of the LUC may include ground inspections for conservation significant flora or fauna depending on the receiving environment and the conditions of any environmental approval applicable to the area. No LUC would be approved without the area having been subject to heritage survey.

2.3.2 Camp Operation and Development

Fortescue proposes to develop two new construction camps and continue the operation of an existing exploration camp. The Eliwana Railway Project extends across approximately 112 km, presenting significant distances for workers to travel when conducting investigation or construction works for the project. The two proposed camps are located to allow workers to have access to the site without having to travel excessive distances. In addition, the Rio Tinto owned Silvergrass mine site occurs in the middle of the Railway Development Envelope, which creates significant connectivity issues when traversing the minor works site.

Development of camp facilities will allow for minor works to be undertaken in a practical manner and will also allow for an immediate commencement of construction activities following the full approval of the Eliwana Railway Project.

Development of Railway Camp 50

Railway Camp 50 will require the clearing of up to 15 ha to accommodate up to 300 construction personnel working on the eastern portion of the minor works of the railway. The location of the camp is provided in Figure 3

Development of Railway Camp 95

Railway Camp 95 will require the clearing of up to 15 ha to accommodate up to 300 construction personnel working on the western portion of the minor works of the railway. The location of the camp is provided in Figure 2.

Waste Water Treatment

Both camps will require their own waste water treatment plant (WWTP) with a capacity of approximately 100 kLper day. A spray field is required to release treated waste water to the environment. The release of treated waste water is regulated under Part V of the *Environmental Protection Act, 1986*, administered by the Department of Water and Environmental Regulation (DWER). The conditions of any Part V Licence will depend on the risk assessment undertaken by DWER in accordance with published guidance, however Fortescue anticipates that the conditions of any Part V license issued for the release of treated waste water will include monitoring of the quality of the treated effluent on a regular basis.

Fortescue operates several WWTP at its existing operating sites under licence from DWER.

Ongoing Operation of Eliwana Exploration Camp

Fortescue currently operates the Eliwana Exploration Camp which services up to 120 personnel and incorporates a licenced WWTP. The Eliwana Exploration Camp was developed under Programmes of Work issued under the *Mining Act, 1978*. Fortescue proposes to continue operating this camp accommodation of personnel working in ongoing exploration, resource development and general construction activities.

No additional disturbance is required for the ongoing operation of the Eliwana Exploration Camp.

2.3.3 Access Roads

Fortescue proposes to construct several roads that will allow for greater access throughout the site and prepare for future construction activities should the Eliwana Railway receive Ministerial approval.

Mine Road

In the western portion of the Eliwana Railway Development Area, a section of the Mine Access Road has been included in this application. This section is a continuation of the Mine Access Road referenced in a separate application for Minor or Preliminary Works associated with the Eliwana Iron Ore Mine Proposal and provides connectivity to the Mine Camp, Aerodrome and Eliwana Exploration Camp. The construction of this road is essential to create connectivity between the Eliwana mine and railway areas. The relationship of this minor works proposal to the Eliwana Iron Ore Mine minor or preliminary works proposal is shown in Figure 4.

Mt Silvia Road and Donkey Hole Roads

The location of the Rio Tinto Silvergrass mine site across a central portion of the Eliwana Railway line creates connectivity issues moving in either an east or west direction along the Eliwana railway line. The construction of Mt Silvia Road and Donkey Hole Road allows for the

Silvergrass site to be circumnavigated, allowing connectivity and access for Fortescue personnel.

The Mt Silvia Road is an existing track that requires upgrading and realignment. Up to 21.1 ha of disturbance is required for the Mt Silvia Road upgrade and construction. Donkey Hole Road is a new road that will require the clearing of 10.1 ha.

Camp Access Road

A short section of road is required to connect Railway Camp 95 to the main access track. This will require up to 4.5 ha of clearing.

General Site Access

Fortescue currently accesses the project area using third-party owned and operated roads, which involves access through the Rio Tinto Brockman 4 Mine gate. During the minor works, this will continue to be the main access to site. No clearing is required for this access.

2.3.4 Construction Materials Source and Handling

Borrow Pits

Construction materials required for minor works will be sourced from two borrow pits within the Eliwana Railway Project Area. The borrow material is proposed to be extracted from the two locations provided in Figure 2 and Figure 3. It is proposed that 10 ha of disturbance within two envelopes totalling 264.5 ha will be required. The exact locations of borrow pits within the borrow envelope will be determined following geotechnical testing.

Topsoil Stockpiles

Topsoil will be removed from areas of disturbance and stockpiled for future use during rehabilitation. Topsoil stockpiles will be situated within the indicative footprint of disturbance, where possible. A topsoil stockpile has been designated near the airport on the Mine Access Road in the west of the application area (Figure 2).

Construction Material Stockpiles

Temporary stockpiles of materials required for construction will be required within the indicative footprint of disturbance. No additional clearing is required for these temporary stockpiles.

Mobile Crushing and Screening

Mobile crushing and screening may be required for construction materials. These activities will be undertaken within the indicative disturbance footprint and no additional clearing will be required.

Concrete Batching

Concrete batching may be required for construction activities and will be undertaken within the indicative disturbance footprint and no additional clearing will be required. Alternatively, concrete will be brought to site from existing local suppliers.

2.3.5 Construction Water Supply and Storage Infrastructure

Development of construction water supply infrastructure will allow for minor works to be undertaken along the railway site and will also allow for an immediate commencement of construction activities following the full approval of the Eliwana Railway Project.

Construction Water Infrastructure

Water pipelines will be distributed along the railway line to provide a reliable water supply for construction activities and camp facilities. The pipeline infrastructure consists of trunk lines that will connect smaller pipes from production bores. Due to the significant distances between activities that require water supply across the railway corridor, 76.2 ha of clearing is required for construction water supply pipelines in areas where pipelines cannot be accommodated within existing or proposed disturbance areas. The water supply pipelines are only required in the central portion of the Eliwana Railway corridor as the eastern and western ends have sufficient local supplies that do not require water transport pipelines.

Water Supply Volumes

Less than one (1) GL of water, to be supplied by a number of bores located along the railway corridor, is required for construction purposes. In all areas, a bore is required to be established and these locations may be inferred by the various branches leading off main water supply trunk lines. A number of test bores will be required to be drilled before a suitable water supply is identified that will meet minor works construction demand, this work will be conducted under the authority of a Programme of Work under the *Mining Act, 1978*.

The water requirement for minor works is so low that a hydrogeological assessment is unlikely to be required by the DWER for any production bore licence application.

Water supplies at the eastern end of the railway corridor are serviced from the existing Southern Fortescue Borefield supplying water to the Solomon Mine. The water supply at the western end of the railway corridor will be supplied by the borefield subject to the Eliwana Mine Minor or Preliminary Works application. The water requirement provided in that application (1.6 GL) included a small volume of water required for railway infrastructure at the eastern end of the railway corridor.

Turkeys Nests

Up to seven turkeys nests (small water storage dams) will be required to store construction water across the railway corridor (Figure 2 and Figure 3). In total, these facilities will require up to 6.6 ha of disturbance. These may be substituted for water tanks in some locations if appropriate.

2.3.6 Access Bridge Minor Works

Minor works are required to establish two bridges that will cross Rio Tinto's road and railway infrastructure (Figure 3). The bridge works will occur on cleared or highly disturbed land that is adjacent to and within existing road and railway infrastructure. In addition, the locations are subject to heavy vehicles and trains, further reducing the environmental value of this location.

3. POTENTIAL ENVIRONMENTAL IMPACTS

The environmental impacts of the minor works have been assessed according to the preliminary environmental factors outlined in the Eliwana Railway Project Environmental Scoping Document (EPA, 2017).

3.1 Hydrological Processes & Inland Waters Environmental Quality

Vegetation clearing may cause some increased sedimentation during times of heavy rainfall and creek flows. The risk of increased sedimentation is higher during the wet season and during early construction of infrastructure while management measures are being constructed and implemented. The risks of flow changes and sedimentation are low due to the low impact nature of the proposed disturbance. No major earth works are proposed which could divert or trap surface water flows. The environmental impacts are analogous to mineral exploration and will be regulated in detail under the Mining Act and through conditions imposed under other environmental approvals. In addition, should the minor works be permitted to take place in the dry season, potential impacts to hydrological processes and inland water is reduced further.

Surface water

All infrastructure associated with the minor works occurs in the Duck Creek or Boolgeeda Creek Catchments. Approximately one third (59.4 ha) of all proposed clearing is for water pipelines and associated access roads. Similarly, there is a further 31 ha of clearing for other access roads. The proposed roads and pipelines cross only lower order creeks that do not experience significant surface water flow. Those drainage lines intercepted will be managed with low level floodways or culvert crossings if required.

There are two instances where pipelines and roads cross Duck Creek, considered a higher order (significant) creek as shown in Figure 5. In these areas, there is no intention to build significant floodways or embankments requiring culverts. The roads will follow the existing topography and are not required to be all weather roads. Pipelines may be buried in these high flow areas to protect the infrastructure. As a result, there will be no impediment to surface flows in these areas. If required, roads and pipelines will be repaired if damaged during flooding events.

3.2 Flora and Vegetation

As the minor works area has been subject to extensive flora and vegetation survey effort, the impacts of the minor works are quantifiable. The most relevant previous surveys relating to flora and vegetation include:

- Eliwana and Flying Fish Level 2 Flora and Vegetation Survey (Ecoscape, 2015)
- Western Hub Rail Link Level 2 Flora and Vegetation Survey (Ecoscape, 2014)

- Eliwana Consolidated Detailed Flora and Vegetation Survey (Biota, 2017)

3.2.1 Vegetation Communities

A total of 76 vegetation communities have been mapped within the Eliwana Railway Development Envelope. Under the minor works proposal, up to 159.6 ha of native vegetation will be cleared from 38 of these vegetation communities (Table 5). The impact to the extent of all of the vegetation communities within the minor works footprint is low. With the exception of vegetation community EvAcVfDICf, which is discussed in section 3.2.3, the percentage reduction of the mapped extent of all other communities is below 6%.

Table 5: Vegetation Communities to be impacted by the minor works proposal

Veg Type Code	Description	Disturbance (ha)*	Mapped Extent (ha)	% Reduction
AanAprAatTwTe	*Acacia 'aneura', A. pruinocarpa* low open woodland over *Acacia atkinsiana* tall sparse shrubland over *Triodia wiseana, T. epactia* mid hummock grassland	1.73	603.00	0.29
AanCHf	*Acacia 'aneura'* low open woodland over *Chrysopogon fallax* mid sparse tussock grassland	3.42	2,496.69	0.14
AanEgAbTe	*Acacia 'aneura'* isolated trees over *Eucalyptus gamophylla* isolated mallee trees over *A. bivenosa* isolated tall shrubs over *Triodia epactia, T. wiseana* mid closed hummock grassland	6.79	3,255.42	0.21
AanExAatAbCHfTe	*Acacia 'aneura', Eucalyptus xerothermica* mid open woodland over *Acacia atkinsiana, A. bivenosa* mid sparse shrubland over *Chrysopogon fallax* mid sparse tussock grassland over *Triodia epactia* mid hummock grassland	0.22	144.78	0.15
AbAeTwTeTl	*Acacia bivenosa, A. exigua, Stylobasium spathulatum* mid sparse shrubland over *Triodia wiseana, T. epactia, T. longiceps* mid hummock grassland	0.24	456.75	0.05
AiTw	*Acacia inaequilatera* tall sparse shrubland over *Triodia wiseana* low open hummock grassland	13.93	6,074.13	0.23
AiTw/ElTa	MOSAIC: *Acacia inaequilatera* tall sparse shrubland over *Triodia wiseana* low open hummock grassland / *Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Triodia angusta, T. longiceps, T. wiseana* low open hummock grassland	0.12	8,549.63	0.00
AxAanAtERcTw	*Acacia xiphophylla, A. 'aneura'* low woodland over *Acacia tetragonophylla* tall sparse shrubland over *Eremophila cuneifolia, E. forrestii subsp. forrestii, Senna stricta* mid sparse shrubland over *Triodia wiseana, T epactia* mid open hummock grassland	2.43	232.30	1.04

Veg Type Code	Description	Disturbance (ha)*	Mapped Extent (ha)	% Reduction
AxTl	*Acacia xiphophylla* low woodland over *Triodia longiceps, T. angusta, T. wiseana* low sparse hummock grassland	0.63	385.83	0.16
CdEgAaTw	*Corymbia deserticola subsp. deserticola, E. leucophloia subsp. leucophloia* mid open woodland over *Eucalyptus gamophylla* open mallee woodland over *Acacia ancistrocarpa, A. atkinsiana, A. exigua* mid sparse shrubland over *Triodia wiseana* mid hummock grassland	2.49	168.19	1.48
ChAiTw/ElAbTlo	Mosaic: *Corymbia hamersleyana* and/ or *Eucalyptus leucophloia subsp. leucophloia* low isolated trees over *Acacia inaequilatera* and/ or *A. bivenosa* mid-tall sparse shrubland over *Triodia wiseana* low hummock grassland / *Eucalyptus leucophloia subsp. leucophl*	17.35	2,6026.21	0.07
ChApyTHtTe	*Corymbia hamersleyana* low open woodland over *Acacia pyrifolia and/or A. tumida var. pilbarensis* mid sparse shrubland occasionally over *Gossypium australe* low sparse shrubland over *Themeda triandra* open tussock grassland over *Triodia epactia* mid open	1.42	149.44	0.95
ChApyTw	*Corymbia hamersleyana* low open woodland over *Acacia pyrifolia, A. spp.* sparse shrubland over *Themeda triandra* mid sparse tussock grassland over *Triodia wiseana* mid sparse hummock grassland	2.84	582.90	0.49
ChEgAatTw	*Corymbia hamersleyana* low open woodland over *Eucalyptus gamophylla* mid mallee woodland over *Acacia atkinsiana, A. kempeana, A. bivenosa* mid open shrubland over *Triodia wiseana* mid hummock grassland	10.08	603.06	1.67
EcAcEUaTe	*Eucalyptus camaldulensis subsp. refulgens, E. victrix* mid woodland over *Acacia citrinoviridis, Melaleuca glomerata* tall open shrubland over *Eulalia aurea* mid sparse tussock grassland over *Triodia epactia* low sparse hummock grassland	0.28	328.30	0.09
EgAatAtuTe	*Eucalyptus gamophylla* low open mallee woodland over *Acacia atkinsiana, A. tumida var pilbarensis* and /or *A. bivenosa* and *Senna artemisioides subsp. oligophylla* mid sparse shrubland over *Themeda triandra* mid sparse tussock grassland over *Triodia epactia*	15.09	389.35	3.88
ElAanAprAbTwTe	*Eucalyptus leucophloia subsp. leucophloia* isolated mid trees over *Acacia 'aneura', A. pruinocarpa, A. bivenosa* tall open shrubland over *Triodia wiseana, T. epactia* mid hummock grassland	4.71	6,795.00	0.07
ElAanTbr	*Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana* scattered tree low sparse woodland over *Acacia 'aneura' A. pruinocarpa, A. bivenosa* tall open shrubland over *Triodia brizoides, T. epactia* mid hummock grassland	0.05	21.56	0.24

Veg Type Code	Description	Disturbance (ha)*	Mapped Extent (ha)	% Reduction
ElAatTe	*Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Acacia atkinsiana* mid sparse shrubland over *Triodia epactia* low hummock grassland	5.00	771.06	0.65
ElAaTw	*Eucalyptus leucophloia subsp. leucophloia* low isolated trees over *Acacia ancistrocarpa, A, bivenosa, A. inaequilatera* mid sparse shrubland over *Triodia wiseana* or *T. brizoides* open hummock grassland	1.63	1,117.73	0.15
ElAbCHf	*Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana, Acacia citrinoviridis* low open woodland over *Acacia bivenosa, Androcalva luteiflora, Petalostylis labicheoides* mid shrubland over *Chrysopogon fallax, Eulalia aurea, Themeda triandra*	0.75	97.83	0.77
ElAbTw	*Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Acacia bivenosa* mid sparse shrubland over *Triodia wiseana* mid closed hummock grassland	3.22	3,842.44	0.08
ElAdAadTw	*Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana* low open woodland over *Acacia dictyophleba* and/ or *A. tenuissima* and *A. cowleana* mid sparse shrubland over *A. adoxa var. adoxa* low sparse shrubland over *Triodia wiseana* mid hummock grassland	0.53	939.05	0.06
ElAeTw	*Eucalyptus leucophloia subsp. leucophloia* low isolated trees over *Acacia exigua, A. pruinocarpa, Senna glutinosa subsp. glutinosa* mid open shrubland over *Triodia wiseana, T. epactia* mid open hummock grassland	0.71	99.83	0.71
ElAkTe	*Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Acacia kempeana* mid sparse shrubland over *Triodia epactia* or *T. wiseana* low hummock grassland	29.57	564.78	5.24
ElAmTw	*Eucalyptus leucophloia subsp. leucophloia* and/ or *Corymbia hamersleyana* mid open woodland over *Acacia maitlandii* mid sparse shrubland over *Triodia wiseana* low hummock grassland	1.30	16,750.98	0.01
ElChAeTw	*Eucalyptus leucophloia subsp. leucophloia* and/ or *Corymbia hamersleyana* low open woodland over *Acacia exigua, A. bivenosa, A. synchronicia* mid open shrubland over *Triodia wiseana* mid hummock grassland	1.22	454.10	0.27
ElEgAatTw	*Eucalyptus leucophloia subsp. leucophloia, Acacia pruinocarpa* isolated low trees over *E. gamophylla* isolated low mallee trees over *Acacia atkinsiana, A. bivenosa, Senna glutinosa subsp. glutinosa, S. glutinosa subsp. pruinosa* tall sparse shrubland	0.10	101.19	0.10
ElHcAhTw	*Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana* low open woodland over *Hakea chordophylla* mid sparse shrubland occasionally over *Acacia hilliana, Acacia adoxa var. adoxa* low sparse	0.95	3,715.87	0.03

Veg Type Code	Description	Disturbance (ha)*	Mapped Extent (ha)	% Reduction
	shrubland over *Triodia wiseana* mid hummock grassland			
ElSENgTw	*Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Senna glutinosa subsp. glutinosa, S. glutinosa subsp. pruinosa, Acacia marramamba* mid isolated shrubs over *Triodia wiseana, T. epactia* mid hummock grassland	1.10	937.51	0.12
ElTa	*Eucalyptus leucophloia subsp. leucophloia* low open woodland over *Triodia angusta, T. longiceps, T. wiseana* low open hummock grassland	39.79	7,555.46	0.53
EsMeTl	*Eucalyptus socialis subsp. eucentrica, E. leucophloia subsp. leucophloia* low open woodland over *Melaleuca eleuterostachya*, *Acacia exigua* mid sparse shrubland over *Triodia longiceps, T. wiseana* mid hummock grassland	3.14	991.53	0.32
EvAcCcERIt	*Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis* and/ or *Melaleuca glomerata* tall open shrubland over **Cenchrus ciliaris, Eriachne tenuiculmis* mid open tussock grassland	0.43	565.99	0.08
EvAcMgERIt	*Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis, Melaleuca glomerata* tall sparse shrubland over *Eriachne tenuiculmis* mid sparse tussock grassland	0.13	357.92	0.04
EvAcVfDICf	*Eucalyptus victrix, (E. camaldulensis subsp. refulgens)* woodland over *Acacia citrinoviridis* low open woodland over **Vachellia farnesiana* tall sparse shrubland over *Dichanthium fecundum, Eulalia aurea, Themeda triandra 'sens. lat', (Eriachne benthamii)*	0.12	0.56	21.43
EvExAcTHt	*Eucalyptus victrix, E. xerothermica* open woodland over *Acacia citrinoviridis, Gossypium robinsonii* tall shrubland over *Themeda triandra* mid sparse tussock grassland	0.09	54.75	0.17
ExAanERloTHt	*Eucalyptus xerothermica, Acacia aptaneura, A. citrinoviridis* low open woodland over *Eremophila longifolia, Acacia bivenosa, Acacia ancistrocarpa* tall sparse shrubland over *Themeda triandra, Chrysopogon fallax, Dichanthium fecundum* mid closed tussock grass	0.23	55.47	0.41
ExAcTHtTe	*Eucalyptus xerothermica* low open woodland over *Acacia citrinoviridis, A. bivenosa, A. pyrifolia* tall sparse shrubland over *Themeda triandra, Chrysopogon fallax* mid tussock grassland over *Triodia epactia* mid hummock grassland	0.71	557.69	0.13
TEdTl	*Acacia tetragonophylla, A. cowleana, A colei* tall isolated shrubs over *Tecticornia disarticulata* low sparse shrubland over	0.56	142.38	0.39

Veg Type Code	Description	Disturbance (ha)*	Mapped Extent (ha)	% Reduction
	Triodia longiceps, T. angusta low sparse hummock grassland			

* The disturbance figures for vegetation types total 173.37 ha. This is because the calculations have been made based on polygon shapes that are larger than the proposed disturbance. That is, although borrow locations total 44.2 ha, only 10 ha of this area will be cleared. Because there is a possibility that clearing may occur anywhere within the designated envelope, the entire envelope has been used to quantify potential impacts.

3.2.2 Conservation significant vegetation communities

During the design of infrastructure placement, specific attention was given to avoiding flora and vegetation communities of environmental significance. There will be no impact to Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) under this proposal. The Themeda grasslands on cracking clays (TEC) and Brockman Iron cracking clay communities of the Hamersley Range (PEC) occur within 600m of proposed water pipeline locations in the eastern area of the minor works proposal. Given the low impact nature of this infrastructure and the distance to these environmental features it is unlikely there would be any significant impacts.

3.2.3 Groundwater dependent and potentially groundwater dependent vegetation

Groundwater Dependant Vegetation (GDV) is defined as terrestrial vegetation that is dependent on the presence of groundwater to meet some or all of its ecological water requirement (Astron, 2016). Three vegetation types have been identified within the minor works footprint that represent GDV or potentially GDV (Table 6).

Table 6: Groundwater Dependent Vegetation impacted by the minor works proposal

Vegetation Unit	Minor works footprint (ha)	Biota 2017 Mapped Extent (ha)	Percentage of Surveyed Area (%)
Groundwater Dependant Vegetation			
EvAcVfDICf	0.12	0.56	21.43
Potentially Groundwater Dependant Vegetation			
EvAcMgERlt	0.13	357.92	0.04
EvExAcTht	0.09	54.75	0.17

Up to 0.12 ha of the GDV unit EvAcVfDICf (Table 6) will be cleared under this proposal to widen the already existing Mt Silvia Road. The mapped extent of this vegetation unit appears comparatively small (0.56 ha) compared to most other units within the survey area, however, this is almost certainly due to the limit of mapping extent and not a reflection of the actual extent of this vegetation community. This vegetation unit was mapped along a thin 90 m wide linear

corridor that was surveyed along Mt Silvia Road and where the thin mapping corridor crossed a major creekline supporting this vegetation unit (EvAcVfDICf), a cross section of the unit was mapped resulting in only a small representation of this unit being mapped. It is apparent from inspection of high definition aerial photographs that the vegetation unit continues along the creekline either side of the survey area. Furthermore, this vegetation community is analogous with the community EvVfEb mapped by Ecoscape (2012), of which approximately 1,611 ha has been identified in surveys commissioned by Fortescue. In combination, the disturbance for the minor works proposal within this vegetation unit totals less than 0.01%.

Approximately 0.22 ha of two potential GDV units will be impacted by road construction and water pipelines (Table 6). The roads and pipelines cross these potential GDV units in 10 locations across the proposed minor works area. Given the low impact nature of the proposed development and the relatively small area of clearing there will not be a significant impact on these vegetation communities.

In addition, the very low volume of groundwater to be abstracted for construction purposes will not impact on any GDE or potential GDE vegetation community.

3.2.4 Conservation significant flora

No Threatened Flora listed under the *Environment Protection and Biodiversity Conservation Act 1999* or the *Biodiversity Conservation Act 2016* is anticipated to occur as a result of the Proposal.

The proposed Donkey Hole Road will impact two locations of *Triodia basitricha*, a Priority 3 plant species. The recorded locations are approximately 600 m apart and contain approximately 1,000 and 500 individuals each. It is estimated that the construction of the road will result in the impact of 10-20% of these individuals. The flora survey for Donkey Hole Road was conducted along a 90m corridor and hence the positioning of the road alignment within this corridor has limited flexibility. Avoiding *Triodia basitricha* for the road development in this area would be difficult, as the species grows in relative abundance and it is highly likely to be present throughout this local area. Moving the road outside of the surveyed area to avoid the recorded locations would pose a greater risk to flora impacts as this area has not been surveyed for conservation significant flora and therefore potential impacts could not be quantified as they can under the current proposal. A description of the species and its population statistics and potential impacts are recorded in (Table 7).

Table 7: *Triodia basitricha* species population statistics and estimated impact

Species	Description	Known Number of Individuals	Individuals within the minor works area	Estimated impact (number of plants)
Triodia basitricha	A low perennial hummock grass with a fine inflorescence. This species occurs over a range of approximately 400 km east-west in the Pilbara, but has also been recorded from the Gascoyne.	85,922	1,500 (combination of two locations 600m apart)	150 – 300 (0.17% - 0.35% of known individuals)

3.3 Terrestrial Fauna

The minor works area has been subject to extensive fauna survey effort and thus the impacts of the minor works are quantifiable. Fortescue engaged Ecoscape (Australia) Pty Ltd (Ecoscape) to conduct a consolidated Level 2 terrestrial fauna assessment of the Eliwana Project and associated railway corridor. A total of 41 previous fauna survey reports were consulted to develop the *Eliwana Project: Consolidated Vertebrate Fauna Survey* (Ecoscape, 2017) of which ten surveys overlapped with the Eliwana Railway Development Envelope.

3.3.1 Fauna habitat

Five broad fauna habitat types, as mapped by Ecoscape (2017), occur within the minor works footprint. Details regarding these habitat types are listed in Table 8, including whether they support conservation significant fauna.

The minor works have been designed to avoid all areas of significant habitat for the Ghost Bat (*Macroderma gigas*), Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), Pilbara Olive Python (*Liasis olivaceus barroni)* and Northern Quoll (*Dasyurus hallucatus*) that has been identified from the survey effort.

Fauna habitat is affected to some extent by grazing and trampling by cattle and feral donkeys in localised areas, but generally is considered to be in good condition (Ecoscape, 2017).

Despite targeted searches, no significant roost caves supporting the Pilbara Leaf-nosed Bat or Ghost Bat are known from within the broader Railway Development Envelope that encompasses the minor works proposal.

Table 8: Fauna habitat of the minor works area

Habitat Type	Areal extent (ha)	Description	Conservation Significant Fauna
Plain (Stony/Gibber)	31,048	Relatively flat, slightly undulating plain with open shrubland of Acacia's and Senna over a spinifex hummock grassland. Substrate of bedrock with scattered pebbles and stones.	Pebble-mound Mouse, Grey Falcon (foraging)
Lower Slopes/Hillslopes	16,785	Rolling hills, footslopes of hills with a hard rocky substrate. Tree strata of *Eucalyptus leucophloia*, *Acacia*, over a shrub layer of *Senna* and a spinifex hummock grassland.	Pebble-mound Mouse
Plain (Shrubland)	3,773	Mixed Acacia (mulga) woodland over spinifex hummock grassland.	Nil
Drainage Line/River/Creek (Minor)	993	Dense, variable shrub layer, sometimes with occasional Eucalypt overstorey. Shrub layer of *Acacia, Grevillea* over *Themeda* tussock grasses.	Peregrine Falcon (foraging) Grey Falcon (foraging)
Drainage Line/River/Creek (Major)	156	Large Eucalyptus victrix over a shrub layer of *Acacia*, *Gossipium* and grasses including *Triodia* hummock grasses and *Themeda*, *Eriachne* tussock grasses. Buffel grass (**Cenchrus ciliaris*) often encountered. Soils often clay with alluvial pebbles in the creek bed. Some areas recorded with surface water present.	Northern Quoll (foraging, dispersal) Pilbara Leaf-nosed Bat (foraging) Ghost Bat (foraging)

3.3.2 Conservation significant fauna

A total of eleven significant fauna species have previously been recorded from within the broader Railway Development Envelope that encompasses the minor works footprint. Although not recorded from the Railway survey area an additional two species (Long-tailed Dunnart and Grey Falcon) were assessed as having a high likelihood of occurrence and four species (Northern Quoll, Spectacled Hare-wallaby, Eastern Great Egret and Fortescue Grunter) were assessed as a medium likelihood of occurrence based on preferred habitat type (Ecoscape, 2017).

Within the proposed minor works disturbance footprint, five conservation significant species may utilise the habitat types that will be impacted by this proposal for foraging and dispersal:

- Northern Quoll (foraging, dispersal),
- Pilbara Leaf-nosed Bat (foraging),
- Ghost Bat (foraging),
- Peregrine Falcon (foraging) and
- Grey Falcon (foraging)

The Pebble-mound Mouse is likely to use some of the proposed disturbance footprint for breeding purposes. The small area of clearing proposed under the minor works is unlikely to significantly impact the continued existence of this species.

Given the low impact nature of the proposed disturbance, it is unlikely there would be a significant impact on terrestrial fauna.

3.4 Social Surroundings

The Eliwana Railway Project is located within the Puutu Kunti Kurrama and Pinikura (PKKP) and Eastern Guruma Native Title Determination areas.

Fortescue has entered into various agreements with the Eastern Guruma and PKKP People which contain heritage management processes (Heritage Agreements). Fortescue signed a Land Access Agreement (LAA) with Wintawari Guruma Aboriginal Corporation (WGAC), Eastern Guruma's 'Prescribed Body Corporate' on 15 December 2009 and signed an LAA with the PKKP People on 28 May 2010. The LAA's include comprehensive provisions including agreed processes and protocols around cultural heritage management and environmental protection and facilitate exploration, mining and development activities within the Native Title Determination areas.

Fortescue has commissioned, funded and facilitated ethnographic and archaeological heritage surveys which have been completed by PKKP and Eastern Guruma People, nominated by them and their representatives, and Independent Heritage Professionals, nominated and engaged by the representatives of the Traditional Owners. Those surveys were completed in accordance with the contractual terms and heritage processes set out in the Agreements and to ensure compliance with relevant legislation, including the *Aboriginal Heritage Act 1972*.

A total of 34 archaeological or ethnographic surveys have been undertaken over the Railway Development Envelope to identify places of significance to the Traditional Owners.

There has been considerable effort to design the placement of minor works infrastructure to be sensitive of culturally important sites. An important aspect of the LAA's is the establishment of

Working Groups and Committees, for Fortescue to meet with and consult with the Traditional Owners relating to the identification, protection and management of cultural heritage and operational and development planning. Fortescue will continue to consult with and keep both PKKP and Eastern Guruma informed of its project planning.

Fortescue will undertake all works in accordance with statutory and contractual requirements, in accordance with the appropriate approvals and Fortescue's Land Use Certification system.

Fortescue has protocols and notification arrangements with pastoralists that may be affected by the works associated with this proposal. The Proposal intersects the Hamersley pastoral station and Unallocated Crown Land. Due to the low impact nature of the proposed activities, it is unlikely to result in impacts to the operations at the Hamersley pastoral station.

3.5 Air Quality

Given the low impact nature of the proposed disturbance, air quality is not anticipated to be significantly impacted by the proposed works.

3.6 Summary

The ground disturbance associated with the minor works has been minimised and designed to avoid conservation significant flora, vegetation, fauna and fauna habitat. Road construction will impact approximately 10-20% of a population of *Triodia basitricha*, a Priority 3 flora species. Some small areas of GDV or potential GDV will be cleared for linear infrastructure (roads and water pipelines). The impacts to priority flora and potential GDVs are anticipated to be insignificant and reversible through rehabilitation.

Fortescue considers that the level of disturbance associated with the minor works proposed is similar in scale to exploration activities authorised under the Mining Act. Fortescue believes that the Mining Act and Part V of the EP Act will adequately manage the disturbance associated with this proposal.

4. DECOMMISSIONING/REHABILITATION AND REVERSIBILITY OF IMPACTS

The types of activities planned under minor works have been designed with the constraint that they will be temporary in nature and can be rehabilitated to reverse any environmental impacts that may have occurred. The environmental impacts are analogous to mineral exploration and will be regulated in detail under the *Mining Act 1978* and through conditions imposed under other environmental approvals.

In addition, the location of the activities have been designed to occur in environmental features that are common in the landscape. Therefore, reducing the environmental impact while improving the reversibility of the impacts.

A Mining Proposal is required to undertake the proposed works and a Mine Closure Plan is required to be submitted in support of the Mining Proposal. Rehabilitation of the minor works footprint will be undertaken in accordance with the Mine Closure Plan.

All of the minor works infrastructure such as camps, signage, stockpiles and water pipelines can be decommissioned and removed. Borrow pits can be backfilled, disturbance can be contoured and revegetation can take place that will ensure the impacts of the disturbance are reversible.

5. ENVIRONMENTAL JUSTIFICATION

The wet season in the Pilbara region (December – February) is associated with sporadic and intense rainfall events. Fortescue proposes to undertake these works in the dry season (June - August) when rainfall is generally low. Extreme rainfall events could significantly interrupt the proposed works as construction activities cannot be conducted when it is too wet. Heavy rainfall during construction can cause erosion and sedimentation if it strikes before management measures are in place. Hence, on environmental grounds, it is preferable to conduct the works in the dry season.

6. OTHER APPROVALS REQUIRED

A number of other environmental approvals required in order to undertake the proposed minor or preliminary work (Table 9).

Table 9: Other Approvals Required

Activity	Legislation	Approval Required
Change to potential impacts to Matters of National Environmental Significance	*Environment Protection and Biodiversity Conservation Act 1999*	A revised referral will be submitted which excludes the proposed minor or preliminary works from the Eliwana Iron Ore Project which is currently under assessment by the Department of Environment and Energy.
Land Clearing	EP Act (Part V)	A Native Vegetation Clearing Permit will be required for all land clearing activities to be undertaken as minor or preliminary works.
Schedule 1 Activities	EP Act (Part V)/ *Environmental Protection Regulations 1987*	Approval under Part V of the EP Act for will be required for the following premises: • Category 12/70: Screening etc. of material • Category 54/85: Sewage Facility • Category 73: Bulk storage of chemicals • Category 77: Concrete batching. Approval types will include Works Approvals, Licences and Registrations.
Development of mining-related infrastructure on mining tenure	*Mining Act 1978*	A Mining Proposal will be required for the approval of mining-related infrastructure and activities to be undertaken on tenure granted under the *Mining Act 1978*. A Mine Closure Plan will also be required to be submitted with a mining proposal detailing how disturbance will be rehabilitated if it is required.
Construction of wells and abstraction of groundwater	*Rights in Water and Irrigation Act 1914*	Approval to construct a well for the purpose of groundwater production (26D Licence) and approval to abstract groundwater (5C Licence) will be required for camp and construction water supply infrastructure proposed within the minor or preliminary work scope.

7. CONCLUSION

Fortescue proposes to undertake minor works associated with the Eliwana Railway Project that has been referred to the Environmental Protection Authority. The works are essential to ensure that low environmental risk activities of the project can continue to be developed while the entire project is subject to Public Environmental Review. The minor works have been designed to have low environmental impact and be reversible through decommissioning and rehabilitation.

REFERENCES

Astron. (2016). *Pilbara Groundwater Dependent Vegetation Literature Review.* Unpublished report prepared for Fortescue Metals Group Ltd .

Biota. (2017). *Eliwana Consolidated Detailed Flora and Vegetation Survey.* Unpublished Report prepared for Fortescue Metals Group Ltd.

Ecoscape. (2012). *Central Pilbara Project Level 2 Flora and Vegetation Assessment .* Perth : Unpublished report for Fortescue Metals Group Limited.

Ecoscape. (2014). *Western Hub Rail Link Level 2 Flora and Vegetation Survey.* Unpublished Report prepared for Fortescue Metals Group Ltd.

Ecoscape. (2015). *Eliwana and Flying Fish Level 2 Flora and Vegetation Survey (Phase 2).* Perth, Western Australia: Unpublished report prepared for Fortescue Metals Group Ltd.

Ecoscape. (2017). *Eliwana Project: Consolidated Vertebrate Fauna.* Unpublished report prepared for Fortescue Metals Group Ltd.

Ecoscape. (2017). *Eliwana Project: Consolidated Vertebrate Fauna Report.* Perth: Unpublished report.

EPA. (2017). *Eliwana Project - Environmental Scoping Document.* Western Australia: Environmental Protection Authority (EPA).

Figure 1: Location of the Eliwana Railway Project

This page has been left blank intentionally

LOCATION MAP

LEGEND

- Rail Development Envelope
- GOV_Towns
- 2M Roads
- FMG_Rail_Alignments

3RD_Rail_Alignments

- <all other values>

Company

- BHP
- Rio Tinto

N

0 100

Kilometres

Requested By: Chris Heary
Drawn By: Chris Heary
Revised By: cheary
Approved By:
Scale: 1:1,550,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: Eliwana Rail Project Location Map

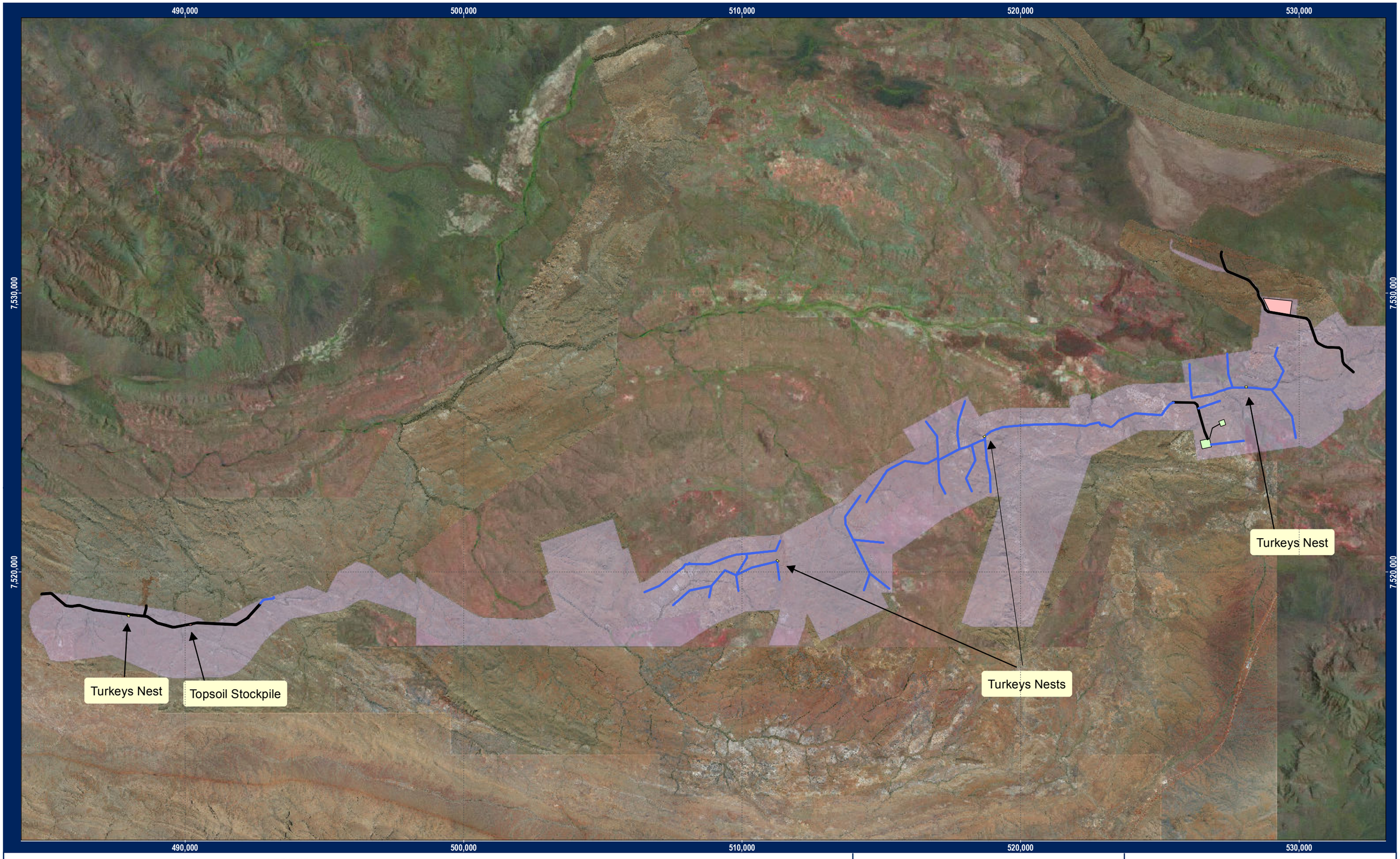
Date: 14/02/2018
Size: A3L
Revision: 0
Confidentiality: 1

Eliwana Rail Project Location Map

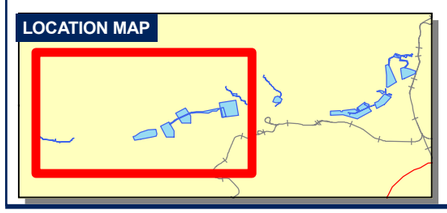
Fortescue Metals Group Ltd
The New Force in Iron Ore

Figure 2: Minor Works Western Portion

This page has been left blank intentionally



LOCATION MAP



LEGEND

- Turkeys Nest
- Topsoil Stockpiles
- Water Pipelines
- Roads
- Rail Borrow
- Rail Camps
- Rail Development Envelope

Data Source(s):
Aerial Imagery:
FMG, Aerial, 2017
GOV WA Landsat Mosaic 2005

N

0 5 10 15
Kilometres

Requested By: Chris Heary
Drawn By: Chris Heary
Revised By: cheary
Approved By:
Scale: 1:125,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: Eliwana Rail Western Works Final Annotation

Date: 15/02/2018
Size: A3L
Revision: 0
Confidentiality: 1

Eliwana Railway Project: MPW Western Works

Fortescue Metals Group Ltd
The New Force in Iron Ore

Figure 3: Minor Works Eastern Portion

This page has been left blank intentionally

530,000 540,000 550,000 560,000 570,000

7,540,000 7,530,000 7,520,000

Turkeys Nest

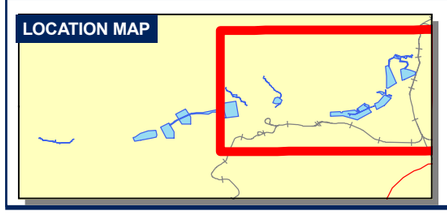
Bridge works

Turkeys Nest

Bridge works

Turkeys Nests

LOCATION MAP



LEGEND

- Rail Bridge Works
- Turkeys Nest
- Water Pipelines
- Roads
- Rail Borrow
- Rail Camps
- Rail Development Envelope

Data Source(s):
Aerial Imagery:
FMG, Aerial, 2017
GOV WA Landsat Mosaic 2005

N

0 5 10 15
Kilometres

Requested By: Chris Heary
Drawn By: Chris Heary
Revised By: cheary
Approved By:
Scale: 1:125,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: Eliwana Rail Eastern Works Final Annotation

Date: 15/02/2018
Size: A3L
Revision: 0
Confidentiality: 1

Eliwana Railway Project: MPW Eastern Works

Fortescue Metals Group Ltd
The New Force in Iron Ore

Figure 4: Relationship Between Mine and Railway Minor or Preliminary Works

This page has been left blank intentionally

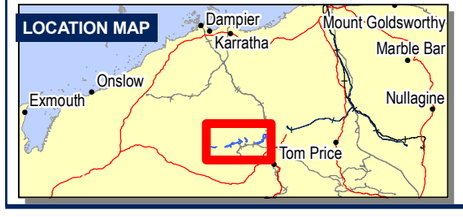
480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000 560,000 570,000

7,550,000 7,540,000 7,530,000 7,520,000 7,510,000 7,500,000

The Mine Development Area and the Rail Development Area are closely linked but have distinct project boundaries. Because of the interlinked nature of the projects, some of the mine infrastructure occurs within the Rail Development Area. Two Minor or Preliminary Works applications have been submitted to the EPA, one for the mine area and a second one for the rail area.

480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000 560,000 570,000

LOCATION MAP



LEGEND

- Mine Area Early Works
- Rail Area Early Works
- Mine Development Envelope
- Rail Development Envelope
- 2M Roads

3RD_Rail_Alignments

Company

- Rio Tinto

N

0 5 10 15

Kilometres

Requested By: Chris Heary
Drawn By: Chris Heary
Revised By: cheary
Approved By:
Scale: 1:250,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: Relationship between MPW projects 2

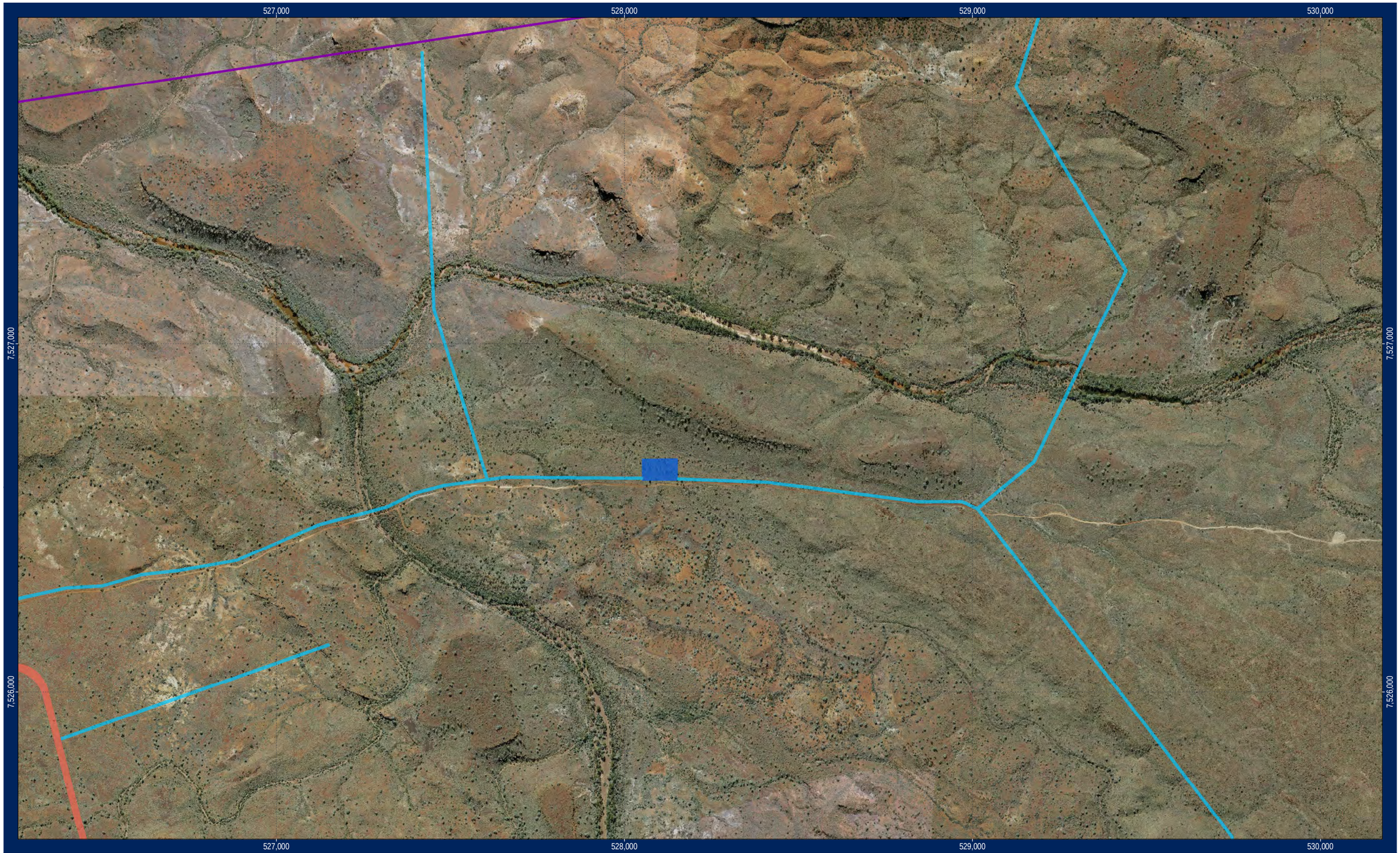
Date: 15/02/2018
Size: A3L
Revision: 0
Confidentiality: 1

Relationship between mine and rail early works

Fortescue Metals Group Ltd
The New Force in Iron Ore

Figure 5: Infrastructure Crossing Duck Creek

This page has been left blank intentionally



LEGEND

- Rail Development Envelope

Minor Preliminary Works - Rail

- Roads
- Turkeys Nest
- Water Construction

Data Sources:
All data, FMG, 2017.

N

0 100 200 300 400 500
Meters

Requested By: M. Dowling
Drawn By: S. Costello
Revised By: scostello
Approved By: S. Costello
Scale: 1:10,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: 750EW_MP_EN_0007.015_r0

Date: 16-Mar-18
Size: A3L
Revision: 0
Confidentiality: 1

Duck Creek Crossings

Fortescue Metals Group Ltd
The New Force in Iron Ore