



Environmental Protection Authority

EPA Referral Form

Form for the referral of a proposal to the Environmental Protection Authority under Section 38 of the *Environmental Protection Act 1986*

Referrer information				
Who is referring this proposal?		<input checked="" type="checkbox"/> Proponent <input type="checkbox"/> Decision-making authority <input type="checkbox"/> Community member/third party		
Name (print) Brett McGuire		Signature 		
Position	Group Manager, Environment	Organisation	Fortescue Metals Group Ltd	
Email	bm McGuire@fmgil.com.au			
Address	87	Adelaide Tce		
	EAST PERTH	WA	6004	
Date	7/7/2017			
Does the referrer request that the EPA treat any part of the proposal information in the referral as confidential? <i>Provide confidential information in a separate attachment.</i>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Referral declaration for organisations, proponents and decision-making authorities: I, Brett McGuire , (<i>full name</i>) declare that I am authorised to refer this proposal on behalf of Fortescue Metals Group Ltd and further declare that the information contained in this form is true and not misleading.				
Part A: Proponent and proposal description				
Proponent information				
Name of the proponent/s (including Trading Name if relevant)		Fortescue Metals Group Ltd (Fortescue)		
Australian Company Number(s) <input type="checkbox"/>		57 002 594 872		
OR				
Australian Business Number(s) <input checked="" type="checkbox"/>				

<p>Contact for the proposal (if different from the referrer)</p> <p><i>Please include: name; physical address; phone; and email.</i></p>	<p>Sean McGunnigle Manager, Environmental Approvals 87 Adelaide Tce East Perth WA 6004 08 6218 8415 smcgunnigle@fmgl.com.au</p>
<p>Does the proponent have the legal access required for the implementation of all aspects of the proposal?</p> <p><i>If yes, provide details of legal access authorisations / agreements / tenure.</i></p> <p><i>If no, what authorisations / agreements / tenure is required and from whom?</i></p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>The Rail Development Envelope is primarily located within Fortescue-managed Exploration and Miscellaneous tenure.</p> <p>An application has been submitted under Section 91 of the <i>Land Administration Act 1997</i> to allow for access and surveying of a rail investigation corridor during the development phase.</p> <p>Fortescue is currently preparing an application to include a railway corridor in the existing Special Rail Licence L1SA.</p>
Proposal type	
<p>What type of proposal is being referred?</p> <p>For a change to an approved proposal please state the Ministerial Statement number/s (MS No./s) of the approved proposal</p> <p>For a derived proposal please state the Ministerial Statement number (MS No.) of the associated strategic proposal</p>	<p><input checked="" type="checkbox"/> significant – new proposal</p> <p><input type="checkbox"/> significant – change to approved proposal (MS No./s: _____)</p> <p><input type="checkbox"/> proposal under an assessed planning scheme</p> <p><input type="checkbox"/> strategic</p> <p><input type="checkbox"/> derived (Strategic MS No.: _____)</p>
<p>For a significant proposal:</p> <ul style="list-style-type: none"> Why do you consider the proposal may have a significant effect on the environment and warrant referral to the EPA? 	<p>The Proposal incorporates the development of a 120 km Railway, including up to 3,690 ha of land disturbance.</p>
<p>For a proposal under an assessed planning scheme, provide the following details:</p> <ul style="list-style-type: none"> Scheme name and number <p>For the Responsible Authority:</p> <ul style="list-style-type: none"> What new environmental issues are raised by the proposal that were not assessed during the assessment of the planning scheme? How does the proposal not comply with the assessed scheme and/or the environmental conditions in the assessed planning scheme? 	<p>N/A</p>
Proposal description	
Title of the proposal	Eliwana Railway Project
Name of the Local Government Authority in which the proposal is located.	Shire of Ashburton

<p>Location:</p> <p>a) street address, lot number, suburb, and nearest road intersection; or</p> <p>b) if remote the nearest town and distance and direction from that town to the proposal site.</p>	<p>The Eliwana Railway Project is located between the existing Solomon Iron Ore Mine and the proposed Eliwana Iron Ore Mine (subject to a separate Referral), located 90 km west-north-west of Tom Price.</p>
<p>Proposal description – including the key characteristics of the proposal</p> <p><i>Provide as an attachment to the form</i></p>	<p>Please see Attachment 1.</p>
<p>Have you provided electronic spatial data, maps and figure in the appropriate format?</p> <p><i>Refer to instructions at the front of the form</i></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Spatial data enclosed.</p> <p>Figure 1: Eliwana Railway Project Location</p> <p>Figure 2: Eliwana Railway Project Development Envelope.</p>
<p>What is the current land use on the property, and the extent (area in hectares) of the property?</p>	<p>The current land use is primarily pastoral grazing, with the Project intersecting portions of the following pastoral stations:</p> <ul style="list-style-type: none"> • Mount Florance • Hamersley • Rocklea. <p>Other land uses include:</p> <ul style="list-style-type: none"> • Public and private infrastructure (including roads and railways) • Vacant Crown Land. <p>Existing iron ore mines in close proximity to the Project include Fortescue’s Solomon Iron Ore Mine and Rio Tinto’s Silvergrass and Brockman/Nammuldi operations.</p> <p>The Railway Project Area consists of a Rail Development Envelope; approximately 57,000 ha in size.</p>
<p>Have you had pre-referral discussions with the OEPA? If so, quote the reference number and/or the OEPA contact.</p>	<p>Pre-referral discussions with the OEPA include regular monthly meetings with Peter Tapsell. A specific consultation session for the Eliwana Mine and Rail Projects also took place on 2 June 2017.</p>

Part B: Environmental impacts

Environmental factors

What are the likely significant environmental factors for this proposal?

☐ Benthic Communities and Habitat

☐ Coastal Processes

☐ Marine Environmental Quality

☐ Marine Fauna

Not applicable – no impacts to benthic communities or habitats, coastal processes or the marine environment.

☒ Flora and Vegetation

Identified as a preliminary environmental factor – please see information below.

☐ Landforms

Not identified as a preliminary environmental factor. Landforms are not expected to be significantly impacted as a result of the proposed activities.

☐ Subterranean Fauna

No significant impacts to subterranean fauna are expected to occur as a result of the Proposal.

☐ Terrestrial Environmental Quality

No significant impacts to terrestrial environmental quality are expected to occur as a result of the Proposal. It is the intention of the Proponent to present physical characteristics of the project area in a Physical Environmental Setting section of any detailed environmental review documentation.

☒ Terrestrial Fauna

Identified as a preliminary environmental factor – please see information.

☒ Hydrological Processes

Identified as a preliminary environmental factor – please see information below.

☐ Inland Waters Environmental Quality

Unlikely to constitute a preliminary key environmental factor. Potential impacts to surface water quality as a result of the Proposal are limited.

☐ Air Quality

Unlikely to constitute a preliminary key environmental factor. Greenhouse and dust emissions are expected to be produced as a result of the Proposal.

☐ Social Surroundings

Not identified as a preliminary environmental factor. Social surroundings are not expected to be significantly impacted as a result of the proposed activities. Fortescue has processes in place to identify and manage impacts to sites of ethnographic or archaeological heritage significance in accordance with the requirements of the *Aboriginal Heritage Act 1972*.

☐ Human Health

Not identified as a preliminary environmental factor. Human health is not expected to be significantly impacted as a result of the proposed activities.

For the environmental factors identified above, complete the following table, or provide the information in a supplementary report. Please be sure to complete a separate table per factor identified above.

Potential environmental impacts		
1	EPA Factor	Flora and Vegetation
2	<p><i>EPA policy and guidance</i> -</p> <p>What have you considered and how have you applied them in relation to this factor?</p>	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2016) lists the objective for flora and vegetation as follows:</p> <p style="text-align: center;"><i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i></p> <p>In considering this objective, Fortescue has sought to quantify the existing biological diversity and ecological integrity of the area through environmental surveying.</p> <p>The following policy and guidance is relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Flora and Vegetation</i> (EPA 2016a). Note, this guidance supersedes EPA Position Statements 2 and 3. • <i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment</i> (EPA 2016b). Note, this guidance supersedes EPA Guidance Statement 51. <p>Environmental Factor Guideline: Flora and Vegetation</p> <p>This guideline provides an outline of how Flora and Vegetation is considered by the EPA in the environmental impact assessment (EIA) process. Relevant matters discussed in Guideline include the following:</p> <ul style="list-style-type: none"> • description of EIA considerations, including <ul style="list-style-type: none"> ○ application of the mitigation hierarchy ○ the flora and vegetation affected by the Proposal ○ the potential impacts and the activities that will cause them ○ surveys and analyses required ○ the significance of the flora and vegetation, and the risk to the flora and vegetation ○ the current state of knowledge of flora and vegetation and the level of confidence underpinning the predicted residual impacts • describes issues commonly encountered by the EPA during EIA of this factor • provides a summary of the type of information that may be required by the EPA to undertake EIA related to this factor. <p>Fortescue has specifically considered this guidance in the following ways:</p> <ul style="list-style-type: none"> • surveys and analyses undertaken and planned to describe the receiving environment and its significance (see section 4 in this table) • identification of activities which may lead to impacts to flora and vegetation (refer to section 5 in this table) • application of the mitigation hierarchy in elements of project design, particularly avoidance of significant vegetation in rail route planning. <p>Technical Guidance – Flora and Vegetation Surveys for EIA</p> <p>This guidance is intended to ensure adequate flora and vegetation data of an appropriate standard are obtained and used in EIA, specifically providing advice</p>

		<p>on:</p> <ul style="list-style-type: none"> • survey preparation and desktop study; • determining the type of survey required; • sampling techniques and survey design; and • data analysis and reporting. <p>Fortescue has specifically applied this guidance in the planning, design and implementation of flora and vegetation surveys currently underway in the Eliwana Railway Project Area.</p>
3	<p>Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts</p>	<p>Preliminary consultation has been undertaken with the EPA (2 June 2017) and DoEE (19 May 2017) and Department of Water (DoW) (17 May 2017) for the Proposal. Fortescue has provided preliminary Project information to DPaW with a view to commencing a formal consultation as soon as possible. No specific concerns or queries have been raised regarding Flora and Vegetation in consultation undertaken to date.</p> <p>Targeted consultation with regulatory and other stakeholders will continue following referral of the Proposal.</p> <p>Consultation with native title groups is ongoing. An environment presentation was provided to the PKKP working group at the regular working group meeting on 23 March 2017. Aside from general interest in the environmental surveys planned at Eliwana, no specific concerns or issues were raised in relation to the Proposal at this stage.</p>
4	<p>Receiving environment - Describe the current condition of the receiving environment in relation to this factor.</p>	<p>The receiving environment in the Eliwana Railway Project Area is generally well understood.</p> <p>The most relevant previous survey relating to flora and vegetation is:</p> <ul style="list-style-type: none"> • Western Hub Rail Link Level 2 Flora and Vegetation Survey (ecoscape 2014). <p>Vegetation</p> <p>The project is located within the Hamersley subregion of the Pilbara IBRA bioregion. Vegetation systems occurring within the project area, as mapped by Beard (DAFWA 2012) include:</p> <ul style="list-style-type: none"> • 29 – Sparse low woodland; mulga, discontinuous in scattered groups • 567 – Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex and <i>Triodia basedowii</i>. <p>Mapping of vegetation types within portions of the Eliwana Railway Project Area from previous surveys has resulted in a significant amount of pre-existing data which will be verified and consolidated as part of the current flora and vegetation surveys.</p> <p>The condition of vegetation within the Eliwana Railway Project Area ranges from Completely Degraded/Cleared to Excellent, with the majority falling within the Very Good – Excellent categories.</p> <p>Significant Vegetation</p> <p>Vegetation representing the ‘Themeda grasslands on cracking clays (Hamersley Station)’ Threatened Ecological Community (TEC) and the associated ‘Brockman</p>

		<p>Iron cracking clay communities of the Hamersley Ranges' Priority Ecological Community (PEC) is known to exist near the north-eastern end of the Rail Development Envelope.</p> <p>Vegetation considered to represent a Groundwater Dependent Ecosystem (GDE) or potential GDE is known to occur within the Eliwana Railway Project Area.</p> <p>Flora</p> <p>No Threatened Flora are known to exist within the Eliwana Railway Project Area. A number of Priority flora species have been recorded within the Eliwana Railway Project Area:</p> <ul style="list-style-type: none"> • P1 <i>Euphorbia inappendiculata</i> var. <i>queenslandica</i> • P2 <i>Euphorbia australis</i> var. <i>glabra</i> • P2 <i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i> • P2 <i>Gompholobium karijini</i> • P2 <i>Indigofera gilesii</i> • P2 <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> • P3 <i>Aristida jerichoensis</i> var. <i>subspinulifera</i> • P3 <i>Astrebla lappacea</i> • P3 <i>Glycine falcata</i> • P3 <i>Grevillea saxicola</i> S.J.Dillon • P3 <i>Indigofera gilesii</i> • P3 <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) • P3 <i>Iotasperma sessilifolium</i> • P3 <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) • P3 <i>Ptilotus subspinescens</i> • P3 <i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) • P3 <i>Rostellularia adscendens</i> var. <i>latifolia</i> • P3 <i>Stackhousia clementii</i> • P3 <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) • P3 <i>Triodia basitricha</i> • P3 <i>Whiteochloa capillipes</i> • P4 <i>Acacia bromilowiana</i> • P4 <i>Goodenia nuda</i> • P4 <i>Ptilotus mollis</i> • P4 <i>Rhynchosia bungarensis</i>. <p>Fortescue is currently undertaking further flora and vegetation surveys to support this Proposal and provide adequate and up-to-date data to support EIA. Following completion of the current surveys, a consolidated flora and vegetation report for the Eliwana Railway Project Area will be prepared.</p>
5	<p>Proposal activities – Describe the proposal activities that have the</p>	<p>Proposal activities (typical of infrastructure corridors) which have the potential to impact flora and vegetation include:</p> <ul style="list-style-type: none"> • Direct clearing of vegetation • Direct loss of significant flora or vegetation • Fragmentation of vegetation • Indirect impacts to groundwater dependent vegetation resulting from

	potential to impact the environment	<p>groundwater abstraction</p> <ul style="list-style-type: none"> Indirect impacts to sheetflow/surface water dependent vegetation resulting from infrastructure placement.
6	Mitigation - Describe the measures proposed to manage and mitigate the potential environmental impacts.	<p>Fortescue has applied the mitigation hierarchy to the Project in relation to flora and vegetation. Mitigation measures include:</p> <p>Avoidance</p> <ul style="list-style-type: none"> Fortescue is currently undertaking flora and vegetation surveys which will identify flora and vegetation of significance which may be able to be avoided during the detailed design of the Project footprint. Fortescue has worked to actively avoid unnecessary impacts to TEC/PEC vegetation when developing the rail alignment. Disturbance will be managed using Fortescue's Land Use Certificate system (superseding the Ground Disturbance Permit system) to avoid unauthorised clearing of vegetation. <p>Minimisation</p> <ul style="list-style-type: none"> Clearing and direct disturbance will be minimised where possible. Disturbance will be managed using Fortescue's Land Use Certificate system in order to minimise clearing of vegetation. Undertaking surface water modelling identifying any impacts to sheetflow-dependent vegetation, should any be identified in the current survey. <p>Rehabilitation/Revegetation</p> <ul style="list-style-type: none"> Fortescue will rehabilitate disturbed areas at the end of their serviceable or operational life. These activities will be undertaken progressively during the operating life of the railway. <p>Offset</p> <ul style="list-style-type: none"> Fortescue will develop an offset strategy, including offsets for disturbance of vegetation in good – excellent condition, in consultation with DPaW, EPA and DoEE.
7	Impacts - Assess the impacts of the proposal and review the residual impacts against the EPA objective.	<p>A detailed environmental impact assessment has not yet been undertaken for this Project. Likely residual impacts are listed below and are generally not quantified:</p> <ul style="list-style-type: none"> Direct clearing of vegetation (up to 3,690 ha) Direct loss of significant flora or vegetation (including minimal disturbance to TEC/PEC vegetation and loss of Priority flora) Fragmentation of vegetation Indirect impacts to groundwater dependent vegetation resulting from groundwater abstraction Indirect impacts to sheetflow or surface water dependent vegetation resulting from infrastructure or landform placement.
8	Assumptions	N/A

1	EPA Factor	Terrestrial Fauna
2	<p>EPA policy and guidance -</p> <p>What have you considered and how have you applied them in relation to this factor?</p>	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2016) lists the objective for terrestrial fauna as follows:</p> <p style="text-align: center;"><i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i></p> <p>In considering this objective, Fortescue has sought to quantify the existing biological diversity and ecological integrity of the area through environmental surveying.</p> <p>The following policy and guidance is relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Terrestrial Fauna</i> (EPA 2016c). • <i>Technical Guidance – Terrestrial Fauna Surveys</i> (EPA 2016d). Note, this guidance supersedes EPA Guidance Statement 56. • <i>Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna</i> (EPA 2016e). Note, this guidance supersedes EPA/DEC Technical Guide for Terrestrial vertebrate Fauna Surveys for EIA (2010). <p>Environmental Factor Guideline: Terrestrial Fauna</p> <p>This guideline provides an outline of how Terrestrial Fauna is considered by the EPA in the environmental impact assessment (EIA) process. Relevant matters discussed in Guideline include the following:</p> <ul style="list-style-type: none"> • description of EIA considerations, including <ul style="list-style-type: none"> ○ application of the mitigation hierarchy ○ the terrestrial fauna affected by the Proposal ○ the potential impacts and the activities that will cause them ○ surveys and analyses required ○ the significance of and risks to the fauna ○ the current state of knowledge of terrestrial fauna and the level of confidence underpinning the predicted residual impacts • describes issues commonly encountered by the EPA during EIA of this factor • provides a summary of the type of information that may be required by the EPA to undertake EIA related to this factor. <p>Fortescue has specifically considered this guidance in the following ways:</p> <ul style="list-style-type: none"> • surveys and analyses undertaken and planned to describe the receiving environment and its significance (see section 4 in this table) • identification of activities which may lead to impacts to terrestrial fauna (refer to section 5 in this table) • application of the mitigation hierarchy in elements of project design. <p>Technical Guidance – Terrestrial Fauna Surveys</p> <p>This guidance is intended to provide information on standards and protocols for terrestrial fauna surveys to ensure adequate data of an appropriate standard are obtained and used in EIA, specifically providing advice on:</p> <ul style="list-style-type: none"> • survey preparation and planning;

		<ul style="list-style-type: none"> determining the type of survey required; and presentation and reporting. <p>Fortescue has specifically applied this guidance in the planning, design and implementation of terrestrial fauna surveys currently underway in the Eliwana Railway Project Area.</p> <p>Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna</p> <p>This guidance is intended to provide information on standards and protocols for terrestrial fauna surveys to ensure adequate data of an appropriate standard are obtained and used in EIA, specifically providing advice on:</p> <ul style="list-style-type: none"> pre-survey protocols; determining the level of survey required; sampling techniques for specific fauna; survey design; and data analysis and reporting. <p>Fortescue has specifically applied this guidance in the planning, design and implementation of terrestrial fauna surveys currently underway in the Eliwana Railway Project Area.</p>
3	Consultation – Outline the outcomes of consultation in relation to the potential environmental impacts	<p>Preliminary consultation has been undertaken with the EPA, DoEE, DoW and the PKKP Native Title Group. No specific concerns or queries have been raised regarding Terrestrial Fauna in consultation undertaken to date.</p> <p>Targeted consultation with regulatory and other stakeholders will continue following referral of the Proposal.</p>
4	Receiving environment - Describe the current condition of the receiving environment in relation to this factor.	<p>The receiving environment in the Eliwana Railway Project Area is generally well understood. The most relevant previous survey relating to terrestrial fauna is:</p> <ul style="list-style-type: none"> Western Hub Rail Link Fauna and Habitat Assessment (ecoscape 2015). <p>Fauna Habitat</p> <p>Broad fauna habitat types known to occur within the project area include:</p> <ul style="list-style-type: none"> Hills, ranges and plateaux Plain-stony Drainage Line/River/Creek Gorges and gullies Plain-shrubland <p>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.</p> <p>Despite targeted searches, no significant roost caves supporting the Pilbara Leaf-nosed Bat or Ghost Bat are known from within the Eliwana Railway Project Area.</p> <p>Mapping of habitat types within portions of the Eliwana Railway Project Area from previous surveys has resulted in a significant amount of pre-existing data which</p>

		<p>will be verified and consolidated as part of the current terrestrial fauna surveys.</p> <p>Significant Fauna</p> <p>Several significant fauna species have previously been recorded from within the Eliwana Railway Project Area:</p> <ul style="list-style-type: none"> • S3 (Vulnerable) Pilbara Leaf-nosed Bat (<i>Rhinonictoris aurantia</i>) • S3 (Vulnerable) Ghost Bat (<i>Macroderma gigas</i>) • S3 (Vulnerable) Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) • S5 Fork-tailed Swift (<i>Apus pacificus</i>) • S5 Rainbow Bee-eater (<i>Merops ornatus</i>) • P1 Gane's Blindsnake (<i>Anilius ganei</i>) • P1 Pilbara Barking Gecko (<i>Underwoodisaurus seorsus</i>) • P4 Short-tailed Mouse (<i>Leggadina lakedownensis</i>) • P4 Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>). <p>In addition, there are several records of Northern Quoll in close proximity to the Eliwana Railway Project Area.</p> <p>Fortescue is currently undertaking further terrestrial fauna surveys incorporating general and targeted searches and delineation of fauna habitat to support this Proposal and provide adequate and up-to-date data to support EIA. Following completion of the current surveys, a consolidated terrestrial fauna report for the Eliwana Railway Project Area will be prepared.</p> <p>In addition, specifically targeted surveys for Pilbara Leaf-nose Bats and Ghost Bats are also being undertaken.</p>
5	<p>Proposal activities – Describe the proposal activities that have the potential to impact the environment</p>	<p>Proposal activities (typical of infrastructure corridors) which have the potential to impact terrestrial fauna include:</p> <ul style="list-style-type: none"> • Direct clearing of fauna habitat • Fragmentation of fauna habitat due to linear infrastructure or landforms • Mortality or displacement of fauna due to infrastructure, vehicle interactions, modification of water regimes, and attraction of feral predators.
6	<p>Mitigation - Describe the measures proposed to manage and mitigate the potential environmental impacts.</p>	<p>Fortescue has applied the mitigation hierarchy to the Project in relation to terrestrial fauna. Mitigation measures include:</p> <p>Avoidance</p> <ul style="list-style-type: none"> • Fortescue is currently undertaking terrestrial fauna surveys (incorporating targeted searches) which will identify terrestrial fauna and supporting habitat of significance which may be able to be avoided during the detailed design of the Project footprint. • Disturbance will be managed using Fortescue's Land Use Certificate system (superseding the Ground Disturbance Permit system) to avoid unauthorised clearing of vegetation. • Clearing of critical habitat for the Northern Quoll, Pilbara Leaf-nosed Bat,

		<p>Ghost Bat and Pilbara Olive Python will be avoided where possible.</p> <p>Minimisation</p> <ul style="list-style-type: none"> • Where it cannot be avoided, clearing of critical habitat for the Northern Quoll, Pilbara Leaf-nosed Bat, Ghost Bat and Pilbara Olive Python will be minimised where possible. • Clearing and direct disturbance will be minimised where possible. • Disturbance will be managed using Fortescue's Land Use Certificate system in order to minimise clearing of fauna habitat. • Vehicle speed limits will be enforced. <p>Rehabilitation/Revegetation</p> <ul style="list-style-type: none"> • Fortescue will rehabilitate disturbed areas at the end of their serviceable or operational life. These activities will be undertaken progressively during the operating life of the railway. <p>Offset</p> <ul style="list-style-type: none"> • Fortescue will develop an offset strategy, including offsets for disturbance of critical fauna habitat, in consultation with DPaW, EPA and DoEE.
7	Impacts - Assess the impacts of the proposal and review the residual impacts against the EPA objective.	<p>A detailed environmental impact assessment has not yet been undertaken for this Project. Likely residual impacts are listed below and have not yet been quantified:</p> <ul style="list-style-type: none"> • Direct clearing of fauna habitat (up to 3,690 ha) • Fragmentation of fauna habitat due to linear infrastructure • Mortality or displacement of fauna due to infrastructure placement, vehicle interactions, modification of water regimes, and attraction of feral predators.
8	Assumptions - Describe any assumptions critical to your assessment e.g. <i>particular mitigation measures or regulatory conditions.</i>	N/A

1	EPA Factor	Hydrological Processes
2	<p><i>EPA policy and guidance</i> -</p> <p>What have you considered and how have you applied them in relation to this factor?</p>	<p>The EPA's overarching Statement of Environmental Principles, Factors and Objectives (EPA 2016) lists the objective for hydrological processes as follows:</p> <p style="text-align: center;"><i>To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.</i></p> <p>In considering this objective, Fortescue has sought to model the hydrological regimes of the area to ensure that impacts to these regimes can be assessed and environmental values can be protected.</p> <p>The following policy and guidance is relevant to this factor:</p> <ul style="list-style-type: none"> • <i>Environmental Factor Guideline: Hydrological Processes</i> (EPA 2016h). <p>Environmental Factor Guideline: Hydrological Processes</p> <p>This guideline provides an outline of how Hydrological Processes is considered by the EPA in the environmental impact assessment (EIA) process. Relevant matters discussed in Guideline include the following:</p> <ul style="list-style-type: none"> • description of EIA considerations, including <ul style="list-style-type: none"> ○ application of the mitigation hierarchy ○ the environmental values associated with hydrological processes affected by the Proposal ○ the potential impacts and the activities that will cause them ○ analyses required ○ the current state of knowledge of hydrological processes and the level of confidence underpinning the predicted residual impacts • describes issues commonly encountered by the EPA during EIA of this factor • provides a summary of the type of information that may be required by the EPA to undertake EIA related to this factor. <p>Fortescue has specifically considered this guidance in the following ways:</p> <ul style="list-style-type: none"> • surveys and analyses undertaken and planned to describe the receiving environment and its significance (see section 4 in this table) • identification of activities which may lead to impacts to hydrological processes (refer to section 5 in this table) • application of the mitigation hierarchy in elements of project design.
3	<p><i>Consultation</i> –</p> <p>Outline the outcomes of consultation in relation to the potential environmental impacts</p>	<p>Preliminary consultation has been undertaken with the EPA, DoEE, DoW and the PKKP Native Title Group. No specific concerns or queries have been raised by EPA or DoEE regarding Hydrological Processes in consultation undertaken to date.</p> <p>Targeted consultation with regulatory and other stakeholders will continue following referral of the Proposal.</p>

4	Receiving environment - Describe the current condition of the receiving environment in relation to this factor.	<p>The south-west portion of the Eliwana Railway Project Area fall within the Ashburton River catchment and the Duck Creek subcatchment (which encompasses Caves Creek and Boolgeeda Creek). Duck Creek, Caves Creek and Boolgeeda Creek flow west to the Ashburton River, which runs north-west and reaches the coast just west of Onslow.</p> <p>The north-east portion of the Eliwana Railway Project Area falls within the Lower Fortescue River Catchment and the Weelumurra Creek subcatchment. The Rail Development Envelope intersects the headwaters of Duck Creek and Caves Creek, in addition to Weelumurra Creek, Zalamea Creek and tributaries to the Lower Fortescue River near the Solomon Mine.</p>
5	Proposal activities – Describe the proposal activities that have the potential to impact the environment	<p>Proposal activities (typical of infrastructure corridors and groundwater abstraction) which have the potential to impact hydrological processes include:</p> <ul style="list-style-type: none"> • Groundwater abstraction for water supply resulting in groundwater drawdown • Placement of infrastructure resulting in interruption of surface water flows (including cutting off/diversion of surface water streamflows and sheetflow shadowing).
6	Mitigation - Describe the measures proposed to manage and mitigate the potential environmental impacts.	<p>Fortescue has applied the mitigation hierarchy to the Project in relation to hydrological processes. Mitigation measures include:</p> <p>Avoidance</p> <ul style="list-style-type: none"> • The broad project footprint avoids interaction with significant surface water features such as major rivers and major creeks where possible. • Where possible, infrastructure and landforms will be placed to avoid interaction with minor surface water features. <p>Minimisation</p> <ul style="list-style-type: none"> • Fortescue is surface water modelling in order to allow impacts to be quantified. • Fortescue is currently investigating options for management of surface water flow in areas of interaction with significant infrastructure in order to balance constraints such as topography and tenure with potential impacts to surface water flows and downstream impacts. <p>Rehabilitation/Revegetation</p> <ul style="list-style-type: none"> • Fortescue will rehabilitate disturbed areas at the end of their serviceable or operational life. These activities will be undertaken progressively during the operating life of the railway. <p>Offset</p> <ul style="list-style-type: none"> • Fortescue will develop an offset strategy, including offsets for disturbance to significant hydrological aspects as required, in consultation with DPaW, EPA and DoEE.

7	Impacts - Assess the impacts of the proposal and review the residual impacts against the EPA objective.	<p>A detailed environmental impact assessment has not yet been undertaken for this Project. Likely residual impacts are listed below and have not yet been quantified:</p> <ul style="list-style-type: none"> • Groundwater drawdown as a result of water supply abstraction. • Permanent modification to existing catchments and associated impacts to flow paths of surface water streamflows. • Sheetflow shadowing in areas of sheetflow impacted by infrastructure or landform placement.
8	Assumptions - Describe any assumptions critical to your assessment <i>e.g. particular mitigation measures or regulatory conditions.</i>	N/A

Part C: Other approvals and regulation			
State and Local Government approvals			
Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If this proposal has been referred by a decision-making authority, what approval(s) are required from you?		N/A	
Proposal activities	Land tenure/access	Type of approval	Legislation regulating the activity
Sewage facilities	Miscellaneous Lease/ Mining Lease	Works Approval/ Licence/ Registration	<i>Environmental Protection Act 1986 Part V</i>
Groundwater abstraction for water supply	Miscellaneous Lease/ Mining Lease	26D and 5C	<i>Rights in Water and Irrigation Act 1914</i>
Railway	State Agreement Tenure (ie L1SA)	Ministerial Approval	<i>Railway and Port (The Pilbara Infrastructure) Agreement Act 2004</i>
Commonwealth Government approvals			
Does the proposal involve an action that may be or is a controlled action under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Has the proposed action been referred? If yes, when was it referred and what is the reference number (EPBC No.)?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Date: _____ EPBC No.: _____ Fortescue anticipates referring the Proposal under the EP Act and EPBC Act simultaneously.	
If referred, has a decision been made on whether the proposed action is a controlled action? If 'yes', check the appropriate box and provide the decision in an attachment.		N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Decision – controlled action <input type="checkbox"/> Decision – not a controlled action	
Do you request that this proposal be assessed under the bilateral agreement or as an accredited assessment?		<input checked="" type="checkbox"/> Yes - Bilateral <input type="checkbox"/> No <input type="checkbox"/> Yes - Accredited	
Is approval required from other Commonwealth Government/s for any part of the proposal? <i>If yes, describe.</i>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Approval:	

Attachment 1: Proposal Description

General Proposal Description

Fortescue Metals Group Ltd (Fortescue) is proposing to develop the Eliwana Railway Project in the Pilbara region of Western Australia (**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 rail network and the Anderson Point port facility.

The Eliwana Railway Project comprises the development and operation of the Eliwana Railway: a railway corridor linking the Proposed Eliwana Iron Ore Mine (the subject of a separate referral) with the existing Fortescue rail network.

While preliminary planning for the location of these components and associated infrastructure has been undertaken, detailed design of the Eliwana Railway Project is still underway. To accommodate refinements in Project layout during the design process, the Project area has been defined through the use of a development envelope. The Rail Development Envelope is shown in **Figure 2**.

Frederick Rail Spur

The Frederick Rail Spur will be constructed as part of the Solomon Project. It incorporates approximately 20 km of railway linking the existing Hamersley Railway with the Frederick deposit. The Eliwana Railway will commence at the terminus of the Frederick Rail Spur (Figure 2).

Eliwana Iron Ore Mine

The Eliwana Iron Ore Mine is being progressed as a separate project and is the subject of a separate referral under the *Environmental Protection Act 1986*.

Key Characteristics

The key characteristics of the Eliwana Railway Project are summarised in **Tables 1** and **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) with Fortescue's existing rail network (Figure 1).

Table 2: Location and proposed extent of physical and operational elements		
Element	Location	Proposed Extent
Physical elements		
Railway and associated infrastructure	Figure 3	Clearing of up to 3,690 ha of native vegetation within the 57,000 ha Rail Development Envelope
Operational elements		
Construction Water Supply	N/A	Up to 2 GL/a, supplied from local water supply borefields.
Operational Water Supply	N/A	Up to 100,000kL/a, supplied from local water supply borefields.

Timing and Proposal Staging

Pending receipt of all relevant approvals, Fortescue plans to commence broad scale construction of the Eliwana Project in early 2019. The target date for first ore on train is June 2020. The Project is not a staged development.

Fortescue anticipates that a number of activities may be progressed under Section 41A(3) as minor or preliminary works. These may include (but are not limited to):

- accommodation camps and associated supporting infrastructure
- access roads
- fuel storage areas
- communications infrastructure
- construction laydown areas
- construction water supply borefields and associated infrastructure.

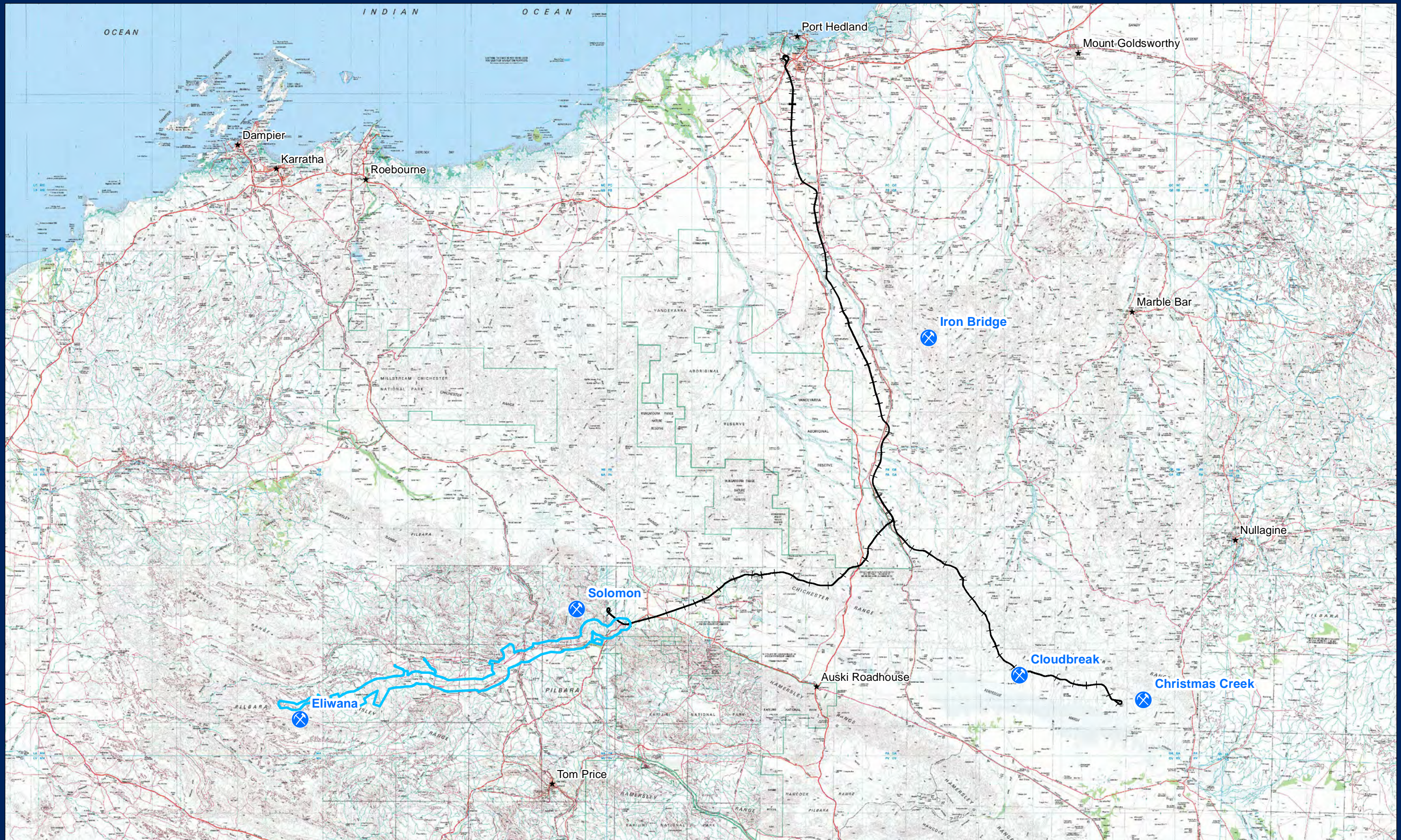
A formal request will be submitted to the EPA following referral, in accordance with the *Instructions and checklist for request for EPA consent to undertake minor or preliminary work under Section 41A(3) of the Environmental Protection Act 1986*.

Proposed Infrastructure




Table 3 provides a list of major infrastructure associated with the development envelope for the Proposal.

Table 3: Proposed Infrastructure	
Rail Development Envelope	
<ul style="list-style-type: none"> • rail loop • train loadout • railway and associated embankment • crossing/passing loops • banker sidings • railway overpass • borrow areas • ballast quarries 	<ul style="list-style-type: none"> • culverts • signalling infrastructure • gas and water pipelines • power transmission lines • construction and potable water supply borefield, infrastructure and water storage facilities

Table 3: Proposed Infrastructure	
<ul style="list-style-type: none"> • rail maintenance track • access roads • bridges 	<ul style="list-style-type: none"> • communications infrastructure (including towers and fibre optic cables) • fuel storage • wastewater treatment plants • construction camps.



LEGEND

-  Rail Development Envelope
-  FMG Rail Alignments
-  GOV Towns

Data Source(s):
Aerial Imagery: Landgate
All other data: FMG, 2014



0 20 40 60 80 100
Kilometres

Requested By: Rachael Sharp
Drawn By: Rachael Sharp
Revised By: rsharp
Approved By:
Scale: 1:1,250,000
Coordinate System: GDA 1994 MGA Zone 50
Document Name: Eliwana Project Location

Date: 7/07/2017
Size: A3L
Revision: 0
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Eliwana Railway Project Location



Fortescue Metals Group Ltd
The New Force in Iron Ore