WILDCAT
RESOURCES

APPENDIX B

Other Environmental Factors

JUNE 2026

B-1) Landforms

1. EPA Objective

The EPA objective for Landforms is "to maintain the variety and integrity of significant physical landforms so that environmental values are protected" (EPA, 2018). In consideration of this objective, the Proponent has been guided by the EPA's definition of a landform as:

"*The distinctive, recognisable physical features of the earth's surface having a characteristic shape produced by natural processes. A landform is defined by the combination of its geology (composition) and morphology (form)*" (EPA, 2018).

This definition is distinguished from terms such as waste rock landforms or tailings storage facilities, which refer to anthropogenic features constructed as part of mining operations.

2. Relevant Policy and Guidance

Landforms are protected under State legislation, primarily through the EP Act. **Table B-1** outlines the relevant policy and guidance for landforms and explains how they have been considered in the Proposal. In addition to the EP Act, the following guidance is relevant to the assessment of landforms:

- Environmental Factor Guideline - Landforms (EPA, 2018).
- Guideline for preparing Mine Closure Plans (DMPE, 2025).
- Guideline for preparing Mining Development and Closure Proposals (DMPE, 2026).

Table B-1-1: Relevant Policy and Guidance for Landforms

Relevant Policy and Guidance	Explain How the Policy and Guidance has been Considered
Environmental Protection Authority	
EP Act (WA)	Potential impacts on landforms have been assessed under Part IV of the EP Act, with consideration of the EPA objective to maintain the variety and integrity of significant physical landforms, thereby protecting environmental values.
EPA Statement of Environmental Principles, Factors, Objectives, and Aims of EIA (EPA, 2023)	The EPA objective for Landforms provides the basis for this assessment. The Proposal applies the mitigation hierarchy to avoid, minimise, and rehabilitate impacts on natural landforms, including through disturbance planning, infrastructure siting, and progressive rehabilitation.
EPA Environmental Factor Guideline – Landforms (EPA, 2018)	This guideline has informed the scope and methodology of the assessment, including the identification of natural landforms, the assessment of significance against EPA criteria (variety, integrity, ecological importance, scientific importance, rarity, and social importance), and the evaluation of potential impacts.
Other State, Commonwealth or International	
Guideline for preparing Mine Closure Plans (DMPE, 2025)	Relevant to the rehabilitation and closure of disturbed areas, including the design of stable post-mining landforms and consideration of long-term landform stability and erosion performance.
Guideline for preparing Mining Development and Closure Proposal (DMPE, 2026)	Relevant to the management of land disturbance and mine closure under the Mining Act, including the requirement to consider landform stability, rehabilitation and closure outcomes for disturbed areas.

3. Receiving Environment

3.1. Studies and Surveys

The following study relating to landforms has been undertaken for the Proposal and is described in **Table B-1.**

Table B-1-2: Studies and Surveys Relevant to Landforms

Survey/Study	Details	Link
Interim Landform assessment (MBS Environmental, 2026)	A landform assessment was undertaken by MBS Environmental (MBS) to describe the natural landforms and soil types across the Proposal and provide an assessment of the significance of the landforms in accordance with EPA guidance. The assessment comprised a desktop review and field-based assessment across the development envelope. The study considered landform variety, integrity, ecological importance, scientific importance and rarity. The methodology applied standard desktop and field assessment techniques appropriate for the scale and nature of the Proposal. The level of investigation is considered suitable to inform the assessment of landforms for this supporting document. Where additional refinement is required, this will occur through detailed design and mine closure planning rather than through further baseline landform surveys.	**Appendix C-18.**

3.2. Regional Landform Context and Topography

Overview

The Proposal is located within the Abydos Plains and Hills soil-landscape zone of the Fortescue Province, which is characterised by stony plains, localised hills and tributary drainage systems developed over granitic and greenstone lithologies of the Pilbara Craton. Desktop review of Department of Primary Industries and Regional Development (DPIRD) land system mapping, aerial imagery and topographic information indicates that the development envelope is typical of the inland Pilbara landscape and contains no regionally unusual or isolated landform systems. The distribution of the principal land systems within the development envelope is shown in **Figure B-1-1**.

Elevation across the disturbed areas of the site ranges from approximately 95 to 146 mAHD, while adjacent terrain varies more broadly from approximately 75 to 176 mAHD. The highest elevations are generally associated with the Talga land system, particularly in areas surrounding the pit, tailings storage facility (TSF), and elevated ridges. Ephemeral drainage lines associated with the Tabba Tabba/Devil Creek tributary system traverse parts of the development envelope and typically only flow following significant rainfall events.

No National Parks or areas of conservation significance are present within 110km of the Proposal. No known landforms of scientific importance have been identified within the development envelope and the closest known geoheritage sites are located more than 50km south of the Proposal.

Land Systems

A desktop review of DPIRD Natural Resources Information mapping identified two principal land systems within the development envelope:

- Macroy (283Mc), comprising gently undulating stony plains, interfluves, sandy surfaced plains, minor calcrete plains and tributary drainage lines; and
- Talga (283Tl), comprising hills, ridges and lower slopes developed on greenstone, chert and metamorphic lithologies.

The characteristics of these land systems within the development envelope are summarised in **Table B-1**.

Table B-1-3: Land Systems within the Development Envelope

Land System	Code	Geology	Major Soil Types (DPIRD Soil Group)	Landforms	% Development Envelope
Macroy	283Mc	Archaean granite and granodiorite; Quaternary eluvium, colluvium and minor alluvium.	Red deep sandy duplex, red shallow loam, red sandy earth, red loamy earth, stony soil, very shallow soil over calcrete	• Gently undulating stony plains and interfluves with quartz surface mantles. • Sandy surfaced plains. • Calcrete plains. • Variably spaced tributary drainage lines. • Granite hills.	74
Talga	283Tl	Archaean basic volcanics, ultramafic rocks and other metamorphics, basalt, andesite, shale, slate, chert and quaternary colluvium.	Stony soil, very shallow soil over calcrete, red shallow loam, red deep sandy duplex, recent deposits	• Hill tracts and ridges on basalt, greenstones, schist, other metamorphics and cherts. • Very steep upper slopes. • Gently inclined lower footslopes.	26

% = % of mapped land system area within the development envelope

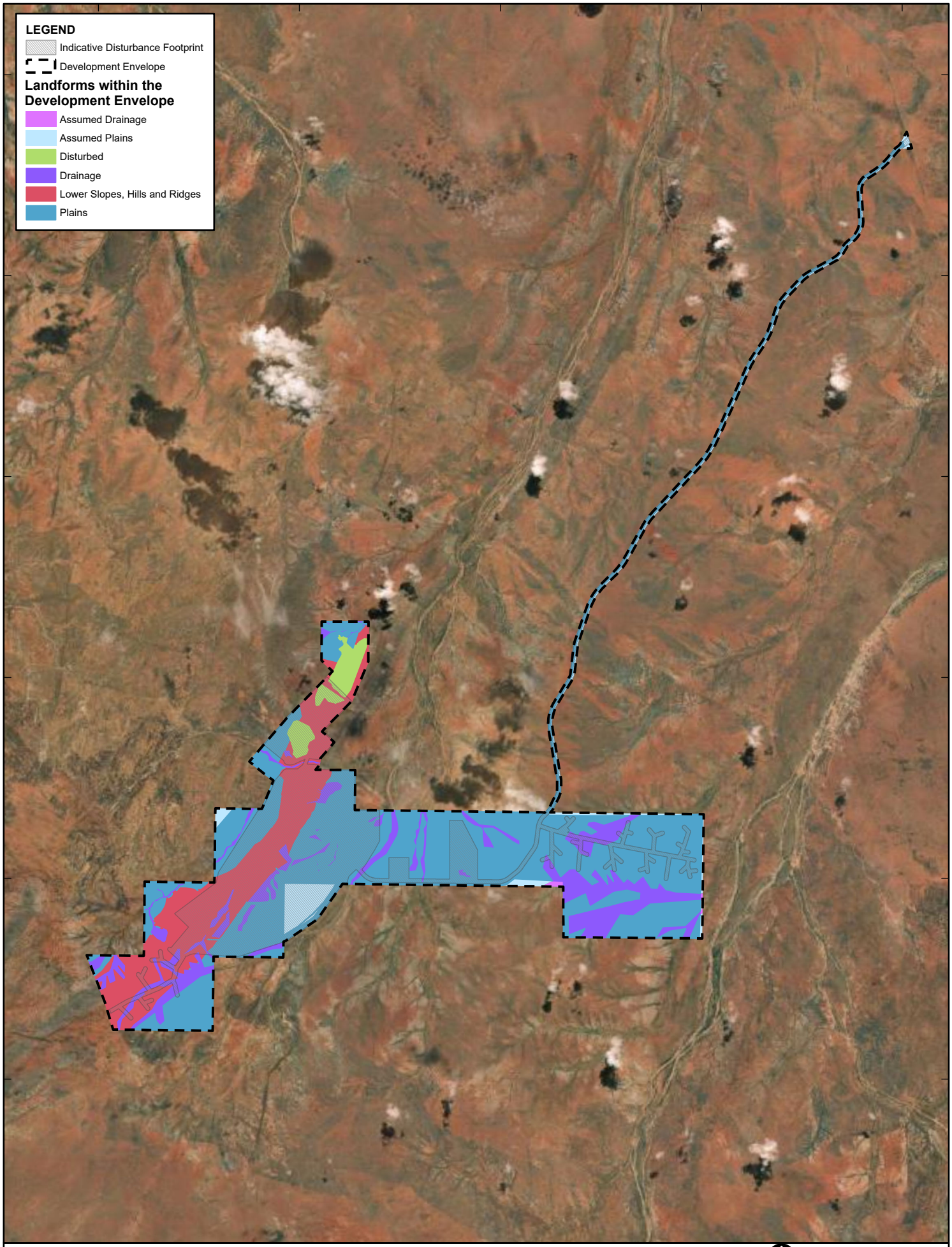
3.3. Landforms within the Development Envelope

Field verification was undertaken at 15 locations across the development envelope. The identified landforms are summarised in **Table B-1** and shown in **Figure B-1-1**.

Table B-1-4: Summary of Identified Landforms in the Development Envelope

Landform Group	Land Systems	Disturbance Areas	Elevation Range (mAHD)	Area (ha) within Development Envelope
Plains/Assumed plains*	283Mc (Macroy)	WRL, solar farm, village, sprayfield, access roads, processing plant, run of mine (ROM), TSF, site office, pit, core farm	96 - 115	2,915*
Lower Slopes, Hills, and Ridges	283Tl (Talga)	WRL, access roads, crushing area, contractor areas, TSF, pit	100 - 145	920
Drainage/Assumed Drainage*	283Mc (Macroy) 283Tl (Talga)	Pit, WRL, processing plant, TSF, village, access roads	95 - 129	850*
Disturbed Land	283Mc (Macroy) 283Tl (Talga)	Pit	99 - 112	155

*Note: Includes assumed landform classifications, interpreted from adjacent mapped landforms and aerial imagery for indicative calculation purposes only.



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Earthstar Geographics
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IDENTIFIED LANDFORMS IN THE DEVELOPMENT ENVELOPE

FIGURE B-1-1

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabbaLithium\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-1-1_Identified Landforms in the DE

3.4. Assessment of Landform Significance

The Interim Landform Assessment evaluated the significance of the identified landforms against the EPA criteria of variety, rarity, integrity, ecological importance, and scientific importance. Social importance was not assessed by MBS and is being addressed separately through heritage and cultural engagement processes.

The assessment concluded that the plains, lower slopes, hills and ridges, and drainage landforms are all unlikely to be significant with respect to variety/rarity, because they are common locally and regionally and are not unique examples of their type. These landforms were also assessed as unlikely to be significant with respect to integrity, reflecting the influence of existing tracks, clearing, historical pastoral activity, previous mining disturbance and fire.

All three natural landform groups were assessed as potentially significant in an ecological context, as they provide habitat for conservation-significant flora and fauna. However, the landforms themselves are not considered unique or rare, and similar habitats occur elsewhere locally and regionally. They were assessed as unlikely to be significant for scientific reasons, as no known geomorphological or geological reference sites are present within the development envelope. Disturbed land was assessed as not significant because it had already been materially altered by previous mining.

The results of the significance assessment are summarised in **Table B-1**.

Table B-1-5: Landform Significance Assessment

Landform	Soil Land Systems	Variety/Rarity	Integrity	Ecological Importance	Scientific Importance	Area in Development Envelope (ha)	Area in Indicative Disturbance Footprint (ha)	Extent of Disturbance
Plains/Assumed Plains*	283Mc	Unlikely to be Significant: Landform is common locally and regionally and is not a unique example of its type.	Unlikely to be Significant: Roads, tracks and clearing of vegetation common within the landform. The majority of the development envelope lies within the Wallareenya pastoral lease and has been extensively grazed by cattle. The development envelope has been burnt on numerous occasions within the past 20 years.	Potentially Significant: Conservation-significant flora and fauna potentially inhabit the landform.	Unlikely to be Significant: No sites of known scientific importance are present in the development envelope.	2,915*	1,295*	Minor
Lower Slopes, Hills and Ridges	283Tl	Unlikely to be Significant: Landform is common locally and regionally and is not a unique example of its type.	Unlikely to be Significant: Roads, tracks and clearing of vegetation common within the landform. The majority of the development envelope lies within the Wallareenya pastoral lease and has been extensively grazed by cattle.	Potentially Significant: Conservation-significant flora and fauna potentially inhabit the landform.	Unlikely to be Significant: No sites of known scientific importance are present in the development envelope.	920	610	Minor

Landform	Soil Land Systems	Variety/Rarity	Integrity	Ecological Importance	Scientific Importance	Area in Development Envelope (ha)	Area in Indicative Disturbance Footprint (ha)	Extent of Disturbance
			The development envelope has been burnt on numerous occasions within the past 20 years.					
Drainage/Assumed Drainage*	283Mc 283TI	Unlikely to be Significant: Landform is common locally and regionally and is not a unique example of its type.	Unlikely to be Significant: Roads, tracks and clearing of vegetation common within the landform. The majority of the development envelope lies within the Wallareenya pastoral lease and has been extensively grazed by cattle. The development envelope has been burnt on numerous occasions within the past 20 years.	Potentially Significant: Conservation-significant flora and fauna potentially inhabit the landform. Area is potentially significant for migrant avian species during the wet season.	Unlikely to be Significant: No sites of known scientific importance are present in the development envelope.	850*	200*	Moderate
Disturbed Land	283Mc 283TI	Not Significant: Landform has been significantly disturbed and is not in its natural state.	Not Significant: Area was mined for tantalum between 2015-2016.	Not Significant: Area disturbed and rehabilitated.	Not Significant: No sites of known scientific importance are present in the development envelope.	155	75	Minor

*****Note: Includes assumed landform classifications, interpreted from adjacent mapped landforms and aerial imagery for indicative calculation purposes only.

4. Proposed Mitigation

Mitigation measures for potential impacts to landforms have been developed in accordance with the mitigation hierarchy of avoid, minimise, and rehabilitate.

Avoid

Measures incorporated into the design and planning of the Proposal to avoid impacts to natural landforms wherever practicable include:

- Confining disturbance to the development envelope.
- Locating infrastructure within already disturbed or less topographically constrained areas where practicable.
- Avoiding unnecessary disturbance of elevated ridges, drainage lines and other natural landform features outside areas required for mining and associated infrastructure.

Minimise

The following measures will be implemented during construction and operation to minimise impacts to significant landforms:

- Limiting clearing and earthworks to the minimum area required for safe construction and operation.
- Designing access roads, crossings and infrastructure to reduce alteration of natural drainage morphology where practicable.
- Using previously disturbed areas where feasible.
- Implementing erosion and surface water controls to minimise localised degradation of landform surfaces and drainage features.
- Designing anthropogenic landforms, including the TSF, to be stable and compatible with closure objectives.

Rehabilitate

Proposed rehabilitation measures are outlined in the Conceptual Mine Closure Plan (**Appendix F**). Rehabilitation and mine closure will be planned, implemented and verified in accordance with the requirements of the Mining Act throughout the life of mine.

Typical rehabilitation measures relevant to significant landforms include:

- Progressive rehabilitation of disturbed areas, where practicable, throughout the life of the mine, to reestablish natural landforms.
- Reshaping disturbed surfaces to achieve stable, non-polluting and erosion-resistant post-mining landforms.
- Reinstatement of surface drainage patterns where practicable and safe to do so.
- Stabilisation of rehabilitated surfaces through suitable surface treatment and revegetation.

5. Potential Environmental Impacts

Potential impacts to landforms have been assessed in accordance with the EPA's definition of the factor, informed by the interim landform assessment (MBS Environmental, 2026).

5.1. Identified Environmental Impacts

Potential impacts to Landforms were identified based on the characteristics of the natural landforms within the development envelope, the nature and extent of the proposed disturbance, and the potential for direct and indirect modification of landform morphology and drainage features. The identified impacts are summarised in **Table B-1**.

Table B-1-6: Identified Environmental Impacts

Identified Potential Impacts	Relevant to this Proposal	Rationale
Removal or alteration of natural landform morphology	Yes	Excavation of the open pit and construction of associated infrastructure will directly modify the natural shape, relief and surface expression of landforms within the disturbance footprint.
Alteration of natural drainage landforms	Yes	Construction of infrastructure, access roads and crossings may locally modify ephemeral drainage features and surface flow paths.
Degradation of landform surfaces through erosion or instability	Yes (limited)	Disturbance of natural surfaces may increase local susceptibility to erosion if not appropriately managed, particularly on disturbed slopes and in drainage-adjacent areas.
Elimination of a significant regional landform type	No	The landforms affected by the Proposal are common locally and regionally, and none will be removed from the wider local landscape.

5.2. Predicted Environmental Impacts

Predicted impacts on landforms have been assessed for those identified as relevant to the Proposal. The assessment considers direct and indirect, as described in **Table B-1**.

Table B-1-7: Predicted Environmental Impacts

Identified Potential Impacts	Predicted Impact of the Proposal	Data Certainty
Direct		
Removal or alteration of natural landform morphology	Localised modification of the natural shape, relief, and surface expression of landforms will occur within the disturbance footprint due to pit excavation and the construction of associated infrastructure. Cumulative impacts are expected to be negligible, as the affected landforms are common locally and regionally and will remain represented in the surrounding landscape.	High

Identified Potential Impacts	Predicted Impact of the Proposal	Data Certainty
Alteration of natural drainage landforms	Localised disturbance to ephemeral drainage features may occur where they are intersected by mining areas, access roads or other infrastructure. Cumulative impacts are expected to be negligible, as drainage landforms will remain present throughout the local area.	Moderate to High
Indirect		
Degradation of landform surfaces through erosion or instability	Localised erosion or instability may occur on disturbed surfaces if not appropriately managed. These impacts are expected to be confined to disturbed areas, with negligible cumulative impacts.	Moderate to High

Predicted impacts to landforms are expected to be localised and confined to the disturbance footprint. While natural landforms within the footprint will be altered by mining and associated infrastructure, none of the identified landform groups will be eliminated from the immediate local area, and no significant regional landform type will be lost.

Based on the available studies and impact predictions, no significant residual impacts to landforms are predicted for the Proposal. Potential impacts on landforms are expected to be localised to the disturbance footprint, and none of the identified natural landform groups will be eliminated from the local area as a result of planned mining activities. Accordingly, Landforms is not considered a preliminary key factor for the Proposal. Given that no significant residual impacts are predicted for this factor, no further assessment of the significance of residual impacts is required, and no environmental outcomes are proposed.

B-2) Terrestrial Environmental Quality

1. EPA Objective

The EPA Objective for Terrestrial Environmental Quality (TEQ) is "To maintain the quality of land and soils so that environmental values are protected" (EPA, 2016).

Terrestrial environmental quality is defined as "the chemical, physical, biological and aesthetic characteristics of soils" (EPA, 2016).

2. Relevant Policy and Guidance

Table B-2 outlines the relevant policies and guidance for Terrestrial Environmental Quality and explains how they have been incorporated into the Proposal.

Table B-2-1: Relevant Policy and Guidance for Terrestrial Environmental Quality

Relevant Policy and Guidance	Explain How the Policy and Guidance has been Considered
Environmental Protection Authority	
EP Act 1986 (WA)	Potential impacts on terrestrial environmental quality from waste rock landforms, tailings storage facilities, hydrocarbon and chemical storage, spills, and dust deposition have been assessed against the EP Act objective of avoiding unacceptable harm to soil and land quality.
Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)	Considered in the design and operation of fuel, reagent and chemical storage, washdown areas and workshops to prevent unauthorised discharges of contaminants to land. Management measures and containment systems have been developed to ensure compliance with these Regulations.
Contaminated Sites Act 2003 (WA)	Relevant to the identification, reporting and management of any contamination arising from Proposal. The Proposal has been designed to minimise the risk of soil and groundwater contamination.
EPA Statement of Environmental Principles, Factors and Objectives (EPA, 2023)	The EPA objective for Terrestrial Environmental Quality serves as the basis for this assessment. The Proposal applies the mitigation hierarchy to avoid and minimise contamination of soils and landforms, including through the appropriate siting and design of waste rock dumps, tailings storage facilities, and chemical storage areas.
EPA Environmental Factor Guideline – Terrestrial Environmental Quality (EPA, 2016)	Informs the scope of the assessment, including the identification of potential sources of contamination (tailings, seepage, spills, dust deposition) and sensitive receptors and pathways. The guideline has been used to develop management and monitoring measures to maintain soil and land quality consistent with the EPA objective.
Other State, Commonwealth or International	
Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure (ANCOLD, 2019)	Provides best-practice guidance for the design and lifecycle management of the tailings storage facility.
Global Industry Standard on Tailings Management (ICMM, 2020)	Considered in the governance and risk management framework for the TSF.

Relevant Policy and Guidance	Explain How the Policy and Guidance has been Considered
Code of Practice – Tailings Storage Facilities in Western Australia (DMP, 2013)	Applied to ensure that the TSF is planned, designed, constructed, operated and closed in accordance with WA-specific regulatory expectations, including containment of tailings and seepage, monitoring of embankment performance, and progressive rehabilitation to maintain terrestrial environmental quality.

3. Receiving Environment

3.1. Studies and Surveys

Studies undertaken for the Proposal relating to TEQ are described in **Table B-2**.

Table B-2-2: Studies and Surveys Relevant to TEQ

Survey/Study	Details	Link
Soil Characterisation (SES, 2024)	Soil characterisation was undertaken by Significant Environmental Services (SES) in April 2024, comprising field sampling and laboratory analysis across the Proposal area. The methodology applied standard soil survey and laboratory analytical techniques consistent with industry practice. Where additional information is required to support detailed design or rehabilitation planning, further targeted investigations have been recommended. These recommendations are currently being progressed through additional investigations being undertaken by MBS, with laboratory analysis ongoing at the time of this referral. These investigations are intended to supplement and refine the existing dataset and are not expected to materially change the assessment's conclusions.	**Appendix C-9**
Tailings Characterisation (MWM, 2025b)	Tailings geochemical characterisation was completed by Mine Waste Management Pty Ltd (MWM) in August 2025, based on analysis of representative samples derived from metallurgical testwork programs. The study applies standard industry methodologies for geochemical assessment, including accepted approaches to acid and metalliferous drainage evaluation, and is considered consistent with EPA expectations for this stage of assessment. Recommendations for additional confirmatory testing, as further metallurgical data become available, are currently being progressed through investigations undertaken by MBS, with samples under laboratory analysis at the time of this referral. These investigations are intended to supplement and refine the existing dataset, and the outcomes are expected to support and refine, rather than materially change, the conclusions of the assessment.	**Appendix C-10**
Waste Rock Geochemical Characterisation (MWM, 2025a)	Waste rock geochemical characterisation was undertaken by MWM in August 2025, based on lithology-specific sampling and analysis. The study utilised standard geochemical testing methods consistent with industry practice, including acid-base accounting and related testing.	**Appendix C-11**
TSF Pre-Feasibility Study Report (CMW Geosciences, 2025)	The Integrated Waste Landform Tailings Storage Facility (IWLTSF) design was developed by CMW in June 2025 as part of the Pre-Feasibility Study. The assessment incorporates preliminary geotechnical and hydrogeological investigations and applies standard engineering and design methodologies appropriate for this stage of development. Recommendations for further geotechnical and hydrogeological investigations to refine design parameters are being undertaken to inform detailed design.	**Appendix C-12**

3.2. Land Systems and Soils

Overview

A review of the DPIRD Dominant Soil Groups database was undertaken to characterise soils within the Proposal area. Two primary land systems (Macroy and Talga) have been identified within the area, as shown in **Figure B-2-1**.

The Proposal is located within the Abydos Plains and Hills soil-landscape zone of the Fortescue Province, which is characterised by stony plains with localised hills developed over granitic and greenstone lithologies of the Pilbara Craton (East Pilbara Terrane).

Significant Environmental Services (2024) identified that soils within the Proposal area predominantly comprise red shallow loams, stony soils, and red sandy earths (sandy plains), that support spinifex/hummock grasslands vegetation as described in **Table B-2**.

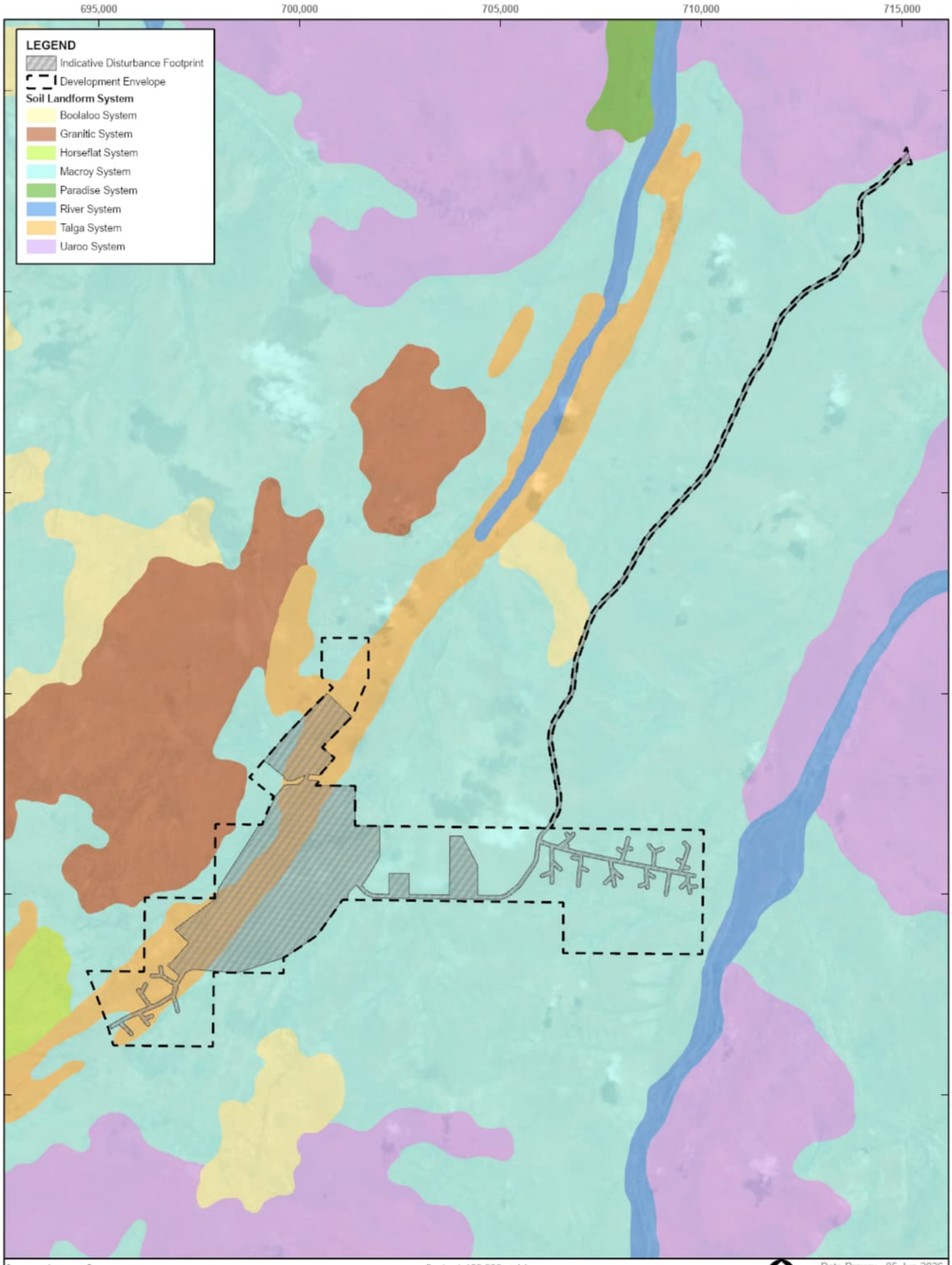
Acid Sulphate Soils (ASS)

Acid sulphate soils (ASS) occur naturally throughout Western Australia (WA) in soils and sediments containing iron sulphides. When exposed to oxygen, these sulphides oxidise, forming sulfuric acid and mobilising metals. In contrast, waterlogged soils containing sulphides that have not been exposed to air are referred to as potential acid sulphate soils (PASS) (DER, 2015).

A desktop assessment of ASS risk (**Figure B-2-2**) indicates that the Proposal area is located within a no-risk zone with ASS risk areas confined to coastal environments north of the Proposal. This interpretation is consistent with findings from the Tabba Tabba Lithium Project Soil Characterisation Study by Significant Environmental Services (2024), which indicate that soils are coarse-textured, well-drained, and low in sulphur.

Table B-2-3: Soils Landform System in the Development Envelope

Land System	Description	Associated Soil Characteristics	Erosion, Stability and Rehabilitation Relevance
Macroy	Rocky/stony plains on granite with gently undulating interfluves; quartz gravel surface mantles; sandy-surfaced plains; minor calcrete; closely spaced tributary drainage lines up-slope widening downslope.	Mix of red shallow loams with gravel/pebbles (stony plains) and red sandy earths (sandy plains). Typical surficial depth 15–35 cm, up to ~50 cm in depositional areas. Low organic carbon and low CEC; pH weakly acidic to alkaline; non-saline.	Low erosion susceptibility, with gravelly surface materials providing protection against wind and water erosion. Soils may be slightly dispersive when wet due to low salinity and organic matter content. These soils are considered suitable for topsoil recovery and use as growth media, particularly in flatter areas where deeper profiles occur.
Talga	Hills and ridges on greenstone, chert and metamorphic lithologies, with rocky crests, steep upper slopes and limited plains.	Dominated by shallow red loams with abundant gravel, pebbles and cobbles. Soil depth is typically <20 cm over rock. High coarse fragment content (~50% gravel). Low organic carbon and CEC, with moderate nutrient levels.	Land system and soil characteristics indicate low susceptibility to erosion, primarily due to the dominance of rock and coarse surface materials. Limited soil depth due to shallow depth; material is excellent for surface armouring on WRLs.



Scale: 1:120,000 at A4
Coordinate System: GDA2020 MGA Zone 50

Date Drawn: 05-Jun-2026
Project Number: 620.V00796

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SOIL LANDFORM SYSTEMS

Earthstar Geographics
Drawn by: JWP

FIGURE B-2-1

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabba\Mxds\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-2-1_Soil Landform Systems

Scale: 1:450,000 at A4
Coordinate System: GDA2020 MGA Zone 50

Date Drawn: 05-Jun-2026
Project Number: 620.V00796

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ACID SULFATE SOIL RISK

Earthstar Geographics
Drawn by: KM

FIGURE B-2-2

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabbaLithium\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-2-2_Acid Sulphate Soil Risk

3.3. Tailings

This section summarises the geochemical and physical characteristics of the tailings, the design of the IWLTSF, and the associated environmental risks and management measures. The assessment draws on findings from the tailings characterisation study and the Proposal's TSF design to evaluate potential impacts on soils and determine the significance of residual effects.

Tailings Characterisation

Tailings geochemical properties have been characterised through laboratory testing. The results indicate that the material is geochemically benign, based on the following:

- Tailings are non-acid-forming (NAF), with very low total sulphur (<0.01 wt%) and negative net acid-producing potential (NAPP), confirming a low risk of acid generation.
- The leachate generated from static leach testing was circum-neutral, fresh, and generally contained low levels of anions, cations, and trace elements, indicating low potential for metal leaching.
- Mineral fibres were not detected for fibrous mineral screening, suggesting a low hazard.
- Low naturally occurring radioactive material (NORM) potential (MWM, 2025b).

Physical and geotechnical characterisation undertaken by CMW Geosciences (CMW) in 2025 indicates that tailings are fine-grained, predominantly silty and non-plastic, with moderate compressibility and dispersivity (Emerson Class 5), consistent with typical hard-rock tailings. These properties support their suitability for conventional tailings storage.

Tailings Storage Facility Design

A TSF pre-feasibility study was undertaken by CMW (2025) for the Proposal. The TSF forms part of an IWLTSF.

The IWLTSF incorporates engineered containment and seepage management systems, including compacted cut-off trenches and a perimeter underdrainage system. Seepage behaviour has been assessed using numerical modelling to inform the design basis and to compare seepage management options, including lining only the decant pond, lining the decant pond and the Stage 1 upstream face, and full lining of the facility. While full lining provides the greatest seepage control, the low geochemical risk of the tailings, which have been characterised as non-acid-forming, non-leachable, and not presenting NORM or fibrous mineral risks, indicates that an unlined or partially lined design may be suitable. The TSF design is therefore being progressed on this basis, subject to further hydrogeological and detailed design investigations. Water management within the IWLTSF is facilitated by a central decant-and-return water system, designed to maximise water recovery (up to 100% under average operating conditions) and limit ponding within the facility.

Stability assessments indicate that the IWLTSF meets the required safety factors under static and seismic conditions. Embankment and tailings materials are characterised as non-liquefiable and erosion-resistant, supporting the integrity of the containment system.

3.4. Waste Rock Geochemical Characterisation

A waste rock geochemical characterisation program was undertaken to assess the potential for geoenvironmental hazards associated with waste rock materials at the Proposal (MWM, 2025a).

The assessment included a representative sampling of key lithologies expected to be encountered during mining, including pegmatite, basalt, interbedded sediments, phyllite, schist, siltstone and gabbro, followed by laboratory analysis and interpretation of acid-forming potential, leachability and contaminant mobility.

Acid and Metalliferous Drainage Potential

Results of acid-base accounting (ABA) and net acid generation (NAG) testing indicate that the majority of waste rock lithologies exhibit a low acid generation potential, with pegmatite, basalt, interbedded sediments, phyllite, schist and siltstone classified as non-acid forming (NAF).

A low-to-moderate acid generation potential has been identified for gabbro and dolerite. For gabbro, this classification is based on a single sample that returned an acidic NAG pH and a positive net acid-producing potential (NAPP) after accounting for reduced neutralisation capacity. Similarly, a subset of dolerite samples was classified as uncertain to potentially acid-forming (UC-PAF) due to conflicting NAG and NAPP results, with testing indicating that reduced availability of acid-neutralising capacity may result in a positive NAPP.

Despite these conservative classifications, the overall dataset indicates that the risk of acid and metalliferous drainage (AMD) is low, and the generation of neutral metalliferous drainage (NMD) or saline drainage (SD) is considered unlikely across the tested lithologies.

Leachate and Metal Mobility

Static leach testing indicates that leachates generated from waste rock are circum-neutral to alkaline (pH 7.7–9.5), fresh (EC 28-98µS/cm), and generally contained low levels of anions, cations, and trace elements.

Other Geochemical Characteristics

Assessment of additional geochemical characteristics indicates:

- Mineral fibres were not detected in any samples submitted for fibrous mineral screening, indicating a low hazard potential associated with asbestiform minerals across the tested lithologies.
- Based on total uranium and thorium concentrations, combined head-of-chain activity concentrations for the natural U and Th decay series were low, indicating a low naturally occurring radioactive material (NORM) hazard potential for the materials tested.

Geochemical characteristics for the main lithologies are presented below in **Table B-2**.

Table B-2-4: Preliminary Hazard Potentials

Lithology	Acid Mine Drainage (AMD)	Saline Drainage (SD)	Neutral Metalliferous Drainage (NMD)	Metal Leaching (ML)	NORM	Fibrous
Pegmatite (low grade)	Low	Low	Low	Low	Low	Low
Pegmatite (waste rock)	Low	Low	Low	Low	Low	Low
Basalt	Low	Low	Low	Low	Low	Low
Dolerite	Low-moderate	Low	Low	Low	Low	Low
Gabbro	Low-moderate	Low	Low	Low	Low	Low
Interbedded sediments	Low	Low	Low	Low	Low	Not assessed
Phyllite	Low	Low	Low	Low	Low	Not assessed
Schist	Low	Low	Low	Low	Low	Low
Siltstone	Low	Low	Low	Low	Low	Not assessed

4. Proposed Mitigation

- Mitigation measures for potential impacts to terrestrial environmental quality associated with tailings and waste rock have been developed in accordance with the mitigation hierarchy of avoid, minimise and rehabilitate. These measures are consistent with industry standard practice for mine waste management in WA and are based on the findings of the supporting geochemical and geotechnical studies.

Avoid

Measures have been incorporated into the design and planning of the Proposal to avoid impacts to TEQ wherever practicable:

- Avoid unnecessary disturbance of soils through integrated design of the IWLTSF, reducing the overall area of soil disturbance.
- Increase WRL height up to surrounding natural landscape peaks, to reduce total WRL disturbance area.
- Use of geochemical characterisation to inform mine planning and material placement, avoiding inappropriate handling and placement of materials.
- Design of the IWLTSF as a contained, engineered facility incorporating seepage control measures to minimise interaction between tailings and surrounding soils.
- Avoidance of direct discharge of tailings or process water to the environment through a closed-loop water management system.
- Design of water management systems to maximise water recovery and reuse, reducing potential contaminant pathways.

- Storage of hazardous materials in bunded areas to contain potential spills and leaks.
- Incorporation of closure considerations into the IWLTSF design to minimise long-term risks and avoid significant material rehandling at closure.

Minimise

The following measures will be implemented during construction and operation to minimise impacts to terrestrial environmental quality. These measures are well established, widely applied in the mining industry, and have a high level of confidence in their effectiveness:

- Controlled placement of waste rock based on geochemical classification, supporting appropriate material handling.
- Encapsulation of potentially acid-forming (PAF) materials within non-acid-forming (NAF) materials, where required.
- Operational management of TSF deposition, including control of discharge locations and sequencing to promote even distribution and reduce localised seepage potential.
- Active management of TSF supernatant pond size and position to reduce hydraulic gradients and seepage potential.
- Implementation and maintenance of erosion and surface water controls (including diversion drains, bunding and batter stabilisation) to minimise erosion and sediment transport.
- Dust suppression during operations to minimise wind erosion.
- Progressive rehabilitation of waste rock landforms, where practicable, to reduce exposure of materials.
- Routine inspection and maintenance of containment infrastructure to support ongoing performance of seepage and drainage controls.
- Geochemical verification testing during mining to confirm material classification and support adaptive management.
- Groundwater and seepage monitoring programs to support early detection of impacts and implementation of corrective actions.

Rehabilitate

Proposed rehabilitation measures are outlined in the Conceptual Mine Closure Plan (**Appendix F**). Rehabilitation and mine closure will be planned, implemented and verified in accordance with the requirements of the Mining Act, regulated by DMPE.

Typical rehabilitation measures relevant to terrestrial environmental quality include:

- Progressive rehabilitation of disturbed areas, where practicable, to reduce the duration of soil stockpiling and exposure.
- Reshaping and contouring of disturbed surfaces to achieve stable, erosion-resistant conditions.
- Placement of suitable growth media over rehabilitated surfaces, where required, to support vegetation establishment and improve soil condition.

- Revegetation using locally appropriate native species to stabilise soils and support soil development, if required.

- Implementation of erosion control measures during rehabilitation, such as surface roughening and/or contouring, to minimise runoff and sediment transport.
- Encapsulation of PAF materials, where required, to maintain long-term soil quality.
- Design of final surfaces to minimise infiltration and water ponding, reducing the potential for soil degradation.

5. Potential Environmental Impacts

Potential impacts to terrestrial environmental quality have been assessed in accordance with the EPA's definition of the factor, informed by soil-landscape mapping (Macroy and Talga land systems), soil characterisation (SES, 2024), ASS mapping, and geochemical characterisation of tailings and waste rock (MWM, 2025b; MWM, 2025a).

5.1. Identified Environmental Impacts

Potential impacts to terrestrial environmental quality were identified based on the characteristics of soils within the Proposal area, the nature and extent of the proposed disturbance, and the proposed storage of tailings and waste rock within the IWLTSF. The identified impacts include both relevant and non-relevant impact pathways, to demonstrate that all potential risks to soils have been considered. The outcomes are summarised in **Table B-2**.

Table B-2-5: Identified Environmental Impacts to Terrestrial Environmental Quality

Identified Potential Impacts	Relevant to this Proposal	Rationale
Disturbance of soils	Yes	Localised disturbance of shallow, stony soils will occur due to vegetation clearing, excavation and construction activities.
Soil erosion and sediment transport	Yes (limited)	There is limited potential for erosion and sediment transport from disturbed areas. Although soils are generally coarse-textured and not highly erodible, localised erosion may occur where soils are stripped, stockpiled or exposed if not appropriately managed.
Soil handling and topsoil management impacts	Yes	Topsoil will be stripped, handled, and stockpiled during construction, which may affect soil structure and function if not managed appropriately. Available topsoil resources are also important for rehabilitation.
Tailings storage impacts on soil quality	Yes	Tailings will be stored within the IWLTSF and therefore present a potential pathway for impacts to soil quality via seepage or contact with stored material if containment systems do not perform as designed. However, the potential for soil contamination from tailings is inherently low, as the tailings are non-acid-forming (NAF), have very low sulphur content (<0.01 wt%) and negative NAPP, generate circum-neutral leachate with low dissolved constituent concentrations, present low NORM potential and no fibrous mineral risk, and have physical characteristics consistent with stable hard-rock tailings suitable for conventional storage.
ASS impact on soil quality	No	No acid sulphate soils have been identified within the Proposal area, and the regional setting is not conducive to their occurrence. This pathway is therefore not considered relevant to the Proposal.

Identified Potential Impacts	Relevant to this Proposal	Rationale
Waste rock storage impacts on soil quality	Yes	Waste rock will be stored within the IWLTSF and may affect soil quality if reactive materials are not appropriately managed. However, the potential for soil contamination from waste rock is also low, with geochemical characterisation indicating low acid drainage risk across all lithologies, with only minor low to moderate potential identified for dolerite and gabbro, together with low salinity, neutral metalliferous drainage and metal leaching potential, and low NORM and fibrous mineral risk.

5.2. Predicted Environmental Impacts

Predicted impacts to terrestrial environmental quality have been assessed for the impacts identified as relevant to the Proposal. The assessment considers direct, indirect and cumulative impacts, using the available soil, tailings and waste rock studies and the current Proposal design, as described in **Table B-2**.

Table B-2-6: Predicted Environmental Impacts

Identified Potential Impacts	Predicted Impact of the Proposal	Data Certainty
Direct		
Disturbance of soils	Direct disturbance of shallow, stony and low-fertility soils will occur within the disturbance footprint as a result of clearing, excavation, construction and operation of Proposal infrastructure. Cumulative impacts are predicted to be negligible.	High
Soil erosion and sediment transport	Localised erosion may occur from disturbed, stockpiled or rehabilitated surfaces if erosion and sediment controls are not implemented. Cumulative impacts are predicted to be negligible.	Moderate to high
Soil handling and topsoil management impacts	Temporary disturbance associated with stripping, stockpiling and reuse of topsoil will occur within construction and rehabilitation areas. Cumulative impacts are predicted to be negligible.	High
Tailings storage impacts on soil quality	Potential direct impacts to soil quality are expected to be confined to the IWLTSF footprint and associated containment and drainage areas. The potential for chemically induced impacts is low, as the tailings are NAF and have low leaching potential. Cumulative impacts are predicted to be negligible.	Moderate
Waste rock storage impacts on soil quality	Potential direct impacts to soil quality are expected to be confined to waste rock placement and storage areas. The potential for chemically induced impacts is generally low, although a small proportion of waste rock may require specific management due to minor acid-forming potential identified in dolerite and gabbro. Cumulative impacts are predicted to be negligible.	Moderate

Based on available studies and impact predictions, no significant residual impacts on terrestrial environmental quality are predicted for the Proposal. Potential impacts to soils are expected to be localised and confined to the development envelope, primarily in areas of soil disturbance, topsoil handling, and tailings and waste rock storage within the IWLTSF. The supporting studies indicate a generally low geochemical risk for tailings and waste rock, with any reactive materials limited in extent and able to be managed through standard mine waste handling practices. Accordingly, terrestrial environmental quality is not considered a preliminary key factor for the Proposal and will be regulated by DMPE under the Mining Act. Given that no significant residual impacts are predicted for this factor, no further assessment of the significance of residual impacts is required, and no environmental outcomes are proposed.

B-3) Air Quality

1. EPA Objective

The EPA objective for air quality is "to maintain air quality and minimise emissions so that environmental values are protected" (EPA, 2020). The assessment of this factor considers whether emissions associated with the Proposal have the potential to adversely affect human health, amenity or environmental values at relevant receptors.

2. Relevant Policy and Guidance

Table B-3 outlines the relevant policies and guidance for Air Quality and explains how they have been incorporated into the Proposal.

Table B-3-1: Relevant Policy and Guidance for Air Quality

Relevant Policy and Guidance	Explain How the Policy and Guidance has been Considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors, Objectives and Aims of EIA (EPA, 2023)	The EPA's Air Quality objective forms the basis of this assessment. The Proposal applies the mitigation hierarchy to avoid, reduce, and manage air emissions.
Environmental Factor Guideline – Air Quality (EPA, 2020)	Informed the scope of the assessment, including consideration of pollutants of interest, receptors, existing air environment and predicted impacts.
Draft guideline: Air emissions (DWER, 2019)	Provides Ambient Air Quality Guideline Values (AGVs) based on approved health guidelines of Western Australia's Department of Health and the New South Wales EPA publication Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA, 2016). These guideline values were used to identify the adopted air quality criteria for pollutants of interest, including particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter less than 10 microns in diameter (PM_{10}), total suspended particulates (TSP) and NO_2, and to evaluate the predicted air quality impacts of the Proposal.
Draft guideline: Dust emissions (DWER, 2021)	Provides guidance for DWER's assessment of applications with fugitive dust emissions under Part V Division 3 of the EP Act. The guideline was used to inform the assessment of fugitive dust emissions associated with the Proposal, including the adopted health-based criteria for PM_{10} and $PM_{2.5}$, and the amenity-based dust deposition criteria. It also informed consideration of background dust levels and the interpretation of the impacts of deposited dust, recognising that amenity impacts depend on the nature and location of receptors.
Dust Management Guideline (DEC, 2011)	Informed of the development of dust management measures, and the proposed monitoring and contingency framework for the Proposal. In particular, the guideline has been used to inform the design of practical dust control measures for disturbed areas, haul roads, stockpiles, and material handling.
Other State or Commonwealth	
National Environment Protection (Ambient Air Quality) Measure – NEPM (1998; amended 2016 and 2021)	Provided national standards and goals for the pollutants of interest of the proposal, including PM_{10}, $PM_{2.5}$, and NO_2. These standards underpin the assessment of potential air quality impacts on human health and environmental receptors.

3. Receiving Environment

3.1. Studies and Surveys

The following study relating to landforms has been undertaken for the Proposal are described in **Table B-3**.

Table B-3-2: Studies and Surveys Relevant to Air Quality

Survey/Study	Details	Link
Air Quality Impact Assessment (SLR, 2026)	An Air Quality Impact Assessment (AQIA) was prepared by SLR Consulting. The AQIA assessed particulate emissions associated with the Proposal, including TSP, PM_{10}, $PM_{2.5}$, dust deposition, and combustion emissions associated with the proposed gas-fired power plant. The assessment developed a site-specific emissions inventory and applied dispersion modelling using the TAPM/CALMET/CALPUFF modelling suite to predict ground-level concentrations and dust deposition rates under a conservative worst-case operational scenario.	**Appendix C-15**

3.2. Climate and Meteorology

The Proposal is located in the Pilbara region of Western Australia, which is characterised by a hot, dry climate with strong seasonal variation in temperature and rainfall. These climatic conditions are relevant to air quality because they influence the potential for dust generation, transport, and deposition, particularly during extended dry periods and under elevated wind conditions.

The nearest inland meteorological monitoring station operated by the Bureau of Meteorology (BoM) with long-term climate statistics is the Port Hedland Airport automatic weather station (AWS), located approximately 45km northwest of the development envelope (Station ID 4032). This station has been operating since 1942 and provides long-term records for temperature, rainfall, solar radiation, relative humidity, wind speed and wind direction. These data provide the regional climatic context for the Proposal.

Long-term temperature records indicate that the region experiences high temperatures for much of the year. Mean maximum temperatures range from approximately 27.4°C in winter to 36.8°C in summer, while mean minimum temperatures range from approximately 12.5°C in winter to 25.7°C in summer. Extreme temperatures have also been recorded, with a maximum of 48°C and a minimum of 3°C. These conditions contribute to drying of exposed surfaces and can increase the potential for dust lift-off from disturbed areas, haul roads and stockpiles.

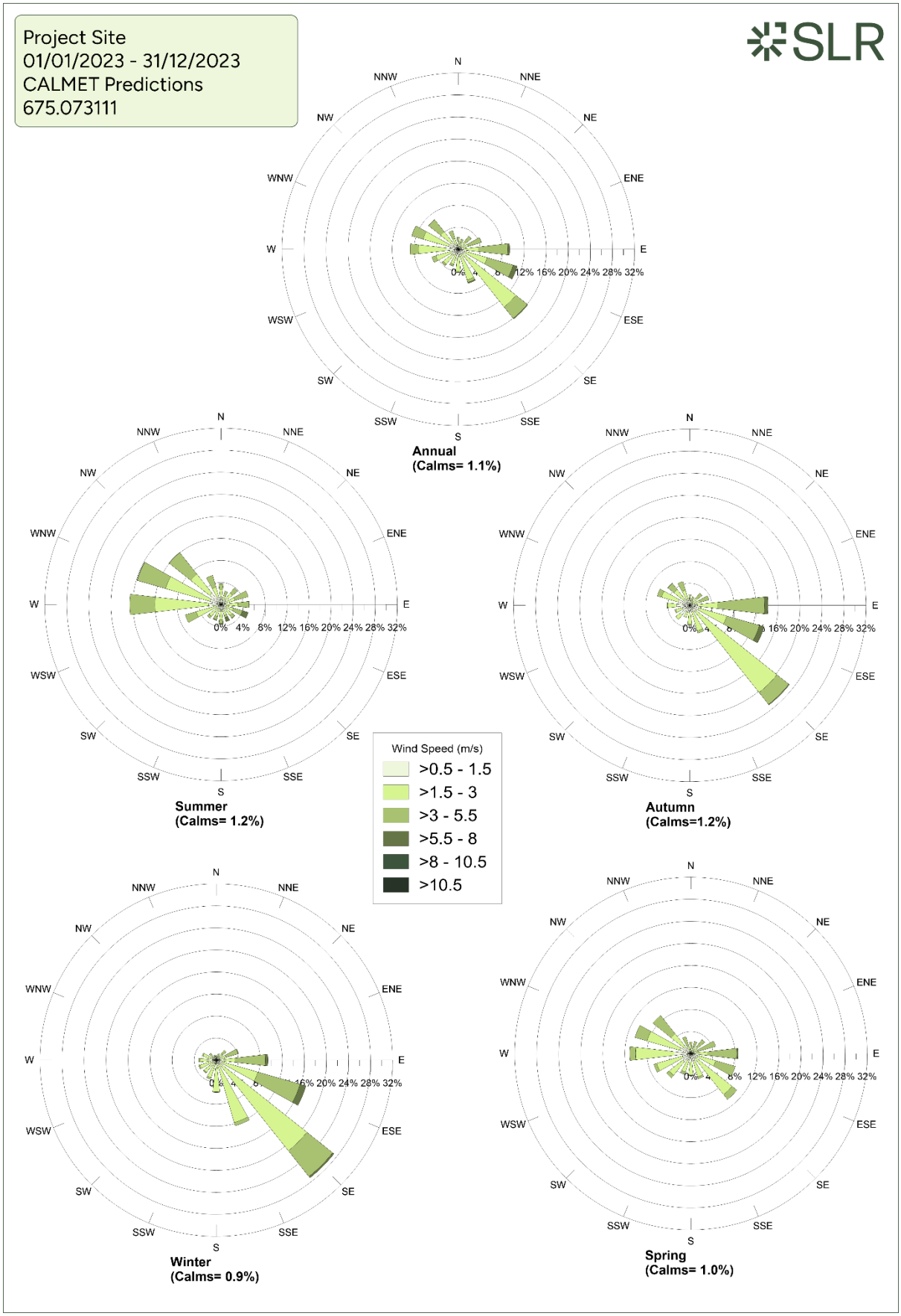
Rainfall is generally low and strongly seasonal. The highest average monthly rainfall occurs between January and March, while average rainfall is comparatively low through the remainder of the year. The driest period occurs between July and November, with the lowest average rainfall of approximately 0.9 mm recorded in October. Peak rainfall events generally occur between December and April and are often associated with tropical cyclone activity.

Long-term regional wind data from Port Hedland Airport indicate a clear diurnal pattern in wind behaviour. Winds from the eastern quadrant are predominant in the morning, while winds from the northern quadrant are predominant in the afternoon. These regional wind patterns are useful for describing the broader climatic setting; however, wind conditions at the Proposal may differ from those recorded at Port Hedland due to local terrain and land surface influences.

For this reason, the AQIA also considered site-specific meteorological modelling using TAPM/CALMET. A summary of the annual wind behaviour predicted for the Proposal for the modelled year (2023) is presented in the modelled wind roses (**Figure B-3-1**). These plots indicate that, on an annual basis, the development envelope experiences moderate wind speeds (between 3 m/s and 8 m/s), primarily from the southeast quadrant. Calm wind conditions (wind speeds less than 0.5 m/s) were predicted to occur for about 1.1% of the time throughout the modelling period.

During summer, low to moderate winds from the western quadrant are predominant. In autumn and winter, winds from the south-east quadrant are predominant, with very low frequency from other directions. During spring, winds from the western quadrant are predominant. Winds from east-southeast are also significant in Spring.

Figure B-3-1: Annual Wind Roses for the Project Site



3.3. Existing Air Environment and Pollutants of Interest

Ambient air quality criteria relate to the cumulative pollutant concentration to which the population may be exposed. Air dispersion modelling assessments, therefore, require that background air quality be characterised, so that background concentrations of each pollutant of interest can be added to the model-predicted incremental impacts to assess potential cumulative impacts. In addition, background ozone levels (not assessed) were used as inputs to NO-to-NO_2 conversion calculations.

There are no DWER ambient air quality monitoring stations (AQMS) located in the immediate vicinity of the Proposal. Background air quality was therefore characterised using surrogate monitoring data from existing monitoring stations considered representative of the broader regional environment. For particulate matter, validated monitoring data from the Yule River Air Quality Monitoring Station (AQMS) were used. This station is a rural background monitoring location within the Port Hedland monitoring network, approximately 70km west of the Propsoal. For NO_2 and ozone, background data from Rolling Green AQMS were adopted.

The adopted background concentrations used in the AQIA (SLR, 2026) are presented in **Table B-3**.

Table B-3-3: Background Concentrations Used in the AQIA

Pollutant	Averaging Period	Adopted Background Concentration
$PM_{2.5}$	24-hours	6.6µg/m³
	Annual	4.9µg/m³
PM_{10}	24-hours	25.5µg/m³
	Annual	22.8µg/m³
TSP	24-hours	63.8µg/m³
Deposited Dust	30-days	2g/m²/month
NO_2	1-hour	14.4µg/m³
	Annual	4.1µg/m³
Ozone	1-hour	120µg/m³

The AQIA notes that the TSP background concentration was estimated by scaling the assumed background annual average PM_{10} concentration using a PM_{10}/TSP ratio of 0.40, based on published data from coal mine environments, as no publicly available PM_{10}/TSP ratio for mineral mines was identified in the literature. Deposited dust background was conservatively estimated at 2g/m²/month in the absence of local data.

Pollutants of Interest

The Proposal has the potential to generate both fugitive dust emissions from mining and processing activities and combustion-related emissions from power generation, as presented in **Table B-3**. The principal pollutants of interest for the Proposal are:

- $PM_{2.5}$, representing fine particulate matter with an aerodynamic diameter of up to 2.5 micrometres.
- PM_{10}, representing particulate matter with an aerodynamic diameter of up to 10 micrometres.

- TSP, representing total suspended particulates, including both inhalable and nuisance dust fractions.
- Deposited dust, which is relevant to amenity impacts associated with dust settling on surfaces; and
- NO_2, representing the key combustion-related pollutant associated with operation of the proposed gas-fired power plant.

Fugitive dust emissions are associated primarily with drilling and blasting; material extraction and loading; vehicle movements on unsealed roads; dumping and stockpiling of materials at waste rock landforms, ROM stockpiles, and tailings storage areas; ore crushing and processing; and wind erosion from exposed areas. From a health and nuisance perspective, these particulate fractions are relevant because PM_{10} and $PM_{2.5}$ are associated with potential human health impacts, while TSP and deposited dust are relevant to nuisance and amenity effects, including visible dust and soiling.

Combustion emissions associated with the proposed gas-fired power plant include oxides of nitrogen, carbon monoxide, sulfur dioxide, particulate matter and volatile organic compounds. Of these, NO_2 was identified in the AQIA as the primary pollutant requiring detailed assessment. Other combustion-related pollutants, including CO, SO2 and VOCs, were screened out on the basis that emissions were expected to be low and unlikely to result in significant offsite impacts.

The adopted air quality criteria (**Table B-3**) used in the AQIA were sourced from DWER draft guidance, principally the Draft Guideline: Air emissions (2019) and, for fugitive and deposited dust, the Draft Guideline: Dust Emissions (2021). The Draft Guideline: Air emissions provides Ambient Air Quality Guideline Values based on approved health guidelines of the Western Australian Department of Health and the New South Wales EPA publication *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (2016). The Guideline: Dust Emissions (Draft) provides the health-based criteria for PM_{10} and $PM_{2.5}$, and amenity-based deposited dust criteria.

Table B-3-4: Adopted Air Quality Criteria Used in the AQIA

Pollutant	Averaging Period	Adopted Criterion
$PM_{2.5}$	24-hours	25µg/m³
	Annual	8µg/m³
PM_{10}	24-hours	50µg/m³
	Annual	25µg/m³
TSP	24-hours	90µg/m³
Deposited Dust	30-days	4g/m²/30 days (maximum) 2g/m²/30 days above background
NO_2	1-hour	246µg/m³
	Annual	62µg/m³

These adopted criteria were used to assess whether predicted cumulative concentrations associated with the Proposal may exceed relevant health- or amenity-based benchmarks.

3.4. Receptors

The receiving environment surrounding the Proposal is characterised by a low density of off-site sensitive receptors and limited existing industrial emission sources. Land use in the surrounding area is predominantly pastoral, with large setbacks between the development envelope and nearby occupied areas, such as Wallareenya homestead (approximately 18km from the centre of the development envelope).

A desktop review of aerial imagery undertaken for the AQIA identified no off-site sensitive receptors within 6km of the development envelope. This is relevant to the air quality assessment because while conservative modelling predicts elevated particulate concentrations proximate to the development envelope, the absence of nearby offsite sensitive receptors reduces the potential for material offsite air-quality impacts.

A mine accommodation village is proposed within the development envelope. For the purposes of the AQIA, this village has not been treated as an off-site sensitive receptor because it will accommodate mine workers in a temporary occupational capacity as part of the Proposal. Exposure at this location is therefore considered an occupational health and safety/operational matter, rather than a public receptor issue for environmental impact assessment purposes.

The substantial separation distance between the development envelope and surrounding occupied places is an important characteristic of the receiving environment and has been considered in interpreting the results of the air quality assessment. Accordingly, the receptor setting for the Proposal is one of low offsite sensitivity, with the primary air quality management focus on controlling fugitive dust near operational areas and preventing material impacts beyond the development envelope.

3.5. Air Quality Modelling

An AQIA was undertaken by SLR Consulting (2026) to assess the potential air quality impacts of the Proposal under a conservative worst-case operating scenario. The assessment considered both fugitive dust emissions from mining and processing activities and combustion emissions from the proposed gas-fired power plant, as presented in **Table B-3**.

The AQIA assessed a worst-case operational scenario representing concurrent operation of open-cut and underground mining activities, ore processing activities, and all thirteen gas-fired generators at 100% continuous load. A backup diesel generator is also proposed; however, it is expected to operate only during startup, shutdown or emergency conditions and was therefore not considered to warrant detailed dispersion modelling.

Potential emissions associated with mining and processing were estimated using activity data representative of the worst-case scenario and relevant emission factors from established technical references. The AQIA identified wheel-generated emissions from on-site material transport as the dominant source of fugitive dust.

Dispersion modelling was undertaken using the CALPUFF modelling system, with local meteorological fields generated using CALMET and upper-air meteorological inputs derived from TAPM. The modelling incorporated local topography, land use and project-specific source characteristics to predict cumulative concentrations and deposition rates across the modelling domain.

The surrounding terrain varies from approximately 70 m to 175mAHD, with the Proposal located at approximately 100 m AHD. Elevated terrain is present to the west of the Proposal, while no significant topographical features are evident in other surrounding directions. These local landform characteristics are relevant to air quality because they influence wind behaviour,

airflow patterns and pollutant dispersion at the local scale, and were therefore incorporated into the meteorological and dispersion modelling undertaken for the AQIA.

The assessment adopted a number of conservative assumptions, including maximum annual ROM and overburden throughput; maximum exposed disturbance areas based on the full footprints of pits, overburden dumps, and dry tailings stockpile areas; conservative stack parameters and emission rates for the power plant; and one full year of meteorological data for 2023. These assumptions are expected to result in a conservative representation of potential impacts and likely overestimate actual operational concentrations. This conservative approach is appropriate for assessing the upper range of potential air-quality effects associated with the Proposal.

4. Proposed Mitigation

Mitigation measures for potential impacts to Air Quality have been developed in accordance with the mitigation hierarchy of avoid, minimise and rehabilitate, informed by the AQIA and relevant State guidance on dust management.

Avoid

Avoid measures incorporated into the Proposal include:

- Refining site layout and infrastructure placement to maximise separation between major dust-generating activities and occupied locations where practicable.
- Confining disturbance to the development envelope.
- Limiting the extent of exposed and disturbed areas at any one time where practicable.
- Considering the mine accommodation village separately as an occupational receptor rather than a public receptor for environmental impact assessment purposes.

Minimise

The following measures will be implemented during construction and operations to minimise emissions to air:

- Minimise disturbed areas as far as practicable and stabilise inactive disturbed areas where feasible.
- Stage clearing, earthworks and related activities where practicable to reduce the extent and duration of exposed surfaces.
- Use water carts to wet down work areas, haul roads and other dust-prone surfaces where required.
- Pre-wet areas prior to disturbance where appropriate.
- Locate stockpiles in sheltered areas where practicable, and orient or manage stockpiles to reduce wind exposure.
- Limit stockpile height and slope where practicable to reduce wind pick-up.
- Install wind barriers or other shielding measures where required to reduce short-range dust movement.
- Relocate or modify dust-generating activities during adverse wind conditions where practicable.

- Maintain safe and reduced vehicle speeds to minimise wheel-generated dust.
- Maintain unsealed haul roads and work areas to reduce silt build-up and road surface deterioration;
- Stabilise overburden dump and dry tailings stockpile areas that are not in active use for longer periods;
- Implement routine inspection, maintenance and prompt repair of dust control equipment.
- Check forecast weather conditions prior to shifts and communicate elevated dust risk periods to relevant personnel.
- Implement a complaints management process and adaptive response where dust issues are identified.

Rehabilitate

Rehabilitation and closure measures relevant to Air Quality include:

- Progressive rehabilitation of disturbed areas during operations where practicable.
- Stabilisation of exposed surfaces to reduce wind erosion potential.
- Surface treatment and revegetation, where appropriate, to reduce long-term dust generation.
- Closure landform design to achieve stable, erosion-resistant post-mining landforms.
- Maintenance of stabilised areas until landforms are considered stable and no longer prone to unacceptable dust generation.

5. Potential Environmental Impacts

Potential impacts to air quality have been assessed in accordance with the EPA's definition of the factor and informed by the AQIA (SLR, 2026).

5.1. Identified Environmental Impacts

Impacts to Air Quality were identified based on the nature of the Proposal, the pollutants emitted, the characteristics of the receiving environment, and the findings of the AQIA. The outcomes are summarised in **Table B-3**.

Table B-3-5: Identified Environmental Impacts

Identified Potential Impacts	Relevant to this Proposal	Rationale
Fugitive dust emissions causing elevated $PM_{2.5}$, PM_{10} and TSP concentrations	Yes	Mining, haulage, crushing, stockpiling, material handling and wind erosion from exposed areas have the potential to generate particulate emissions. PM_{10} and $PM_{2.5}$ are relevant to human health, while TSP is relevant to nuisance and amenity impacts.
Dust deposition causing amenity impacts	Yes	Fugitive dust emissions may result in dust deposition in areas near operational activities, with potential nuisance and amenity effects.
Combustion emissions from the gas-fired power	Yes	The proposed gas-fired power plant will emit combustion products. NO_x/NO_2 was identified as the principal

Identified Potential Impacts	Relevant to this Proposal	Rationale
plant affecting ambient air quality		combustion-related pollutant requiring detailed assessment, while CO, SO2 and VOCs were considered but screened out as unlikely to result in significant offsite impacts.
Material air quality impacts at offsite sensitive receptors	No/limited	No off-site sensitive receptors were identified within 6km of the development envelope, reducing the potential for significant off-site impacts.
Significant impacts from backup diesel generator operation	No	The backup diesel generator is expected to operate only during startup, shutdown or emergency conditions and was not considered to warrant a detailed assessment.

5.2. Predicted Environmental Impacts

Predicted impacts to Air Quality are summarised in **Table B-3** and described further below.

Table B-3-6: Predicted Environmental Impacts

Identified Potential Impacts	Predicted Impact of the Proposal	Strength of data available to define predicted impacts (Certainty)
Direct		
Fugitive dust emissions causing elevated $PM_{2.5}$, PM_{10} and TSP concentrations	Fugitive dust emissions from haul roads, pits, processing areas and exposed surfaces may result in elevated particulate concentrations close to disturbance areas. Under conservative worst-case assumptions, cumulative $PM_{2.5}$ concentrations may exceed adopted criteria within approximately 500 m to 1.5km of the Development Envelope, while cumulative PM_{10} and TSP concentrations may exceed adopted criteria at distances of up to approximately 6km from the Development Envelope. Predicted cumulative impacts are low due to the absence of nearby mining or industrial developments likely to contribute materially to overlapping particulate impacts in the locality.	High
Dust deposition causing amenity impacts	Dust deposition may occur within and near the Development Envelope, particularly close to operational areas and pits. Dust deposition rates are generally predicted to comply beyond the Development Envelope, although slight exceedances may occur in close proximity to pit areas. Predicted cumulative impacts are low, given the remote setting and limited nearby dust-generating sources.	High
Combustion emissions from the gas-fired	Combustion emissions from the gas-fired power plant are predicted to result in low cumulative one-hour and annual average NO_2 concentrations across the	High

Identified Potential Impacts	Predicted Impact of the Proposal	Strength of data available to define predicted impacts (Certainty)
power plant affecting ambient air quality	modelling domain; therefore, the predicted cumulative impacts are negligible.	

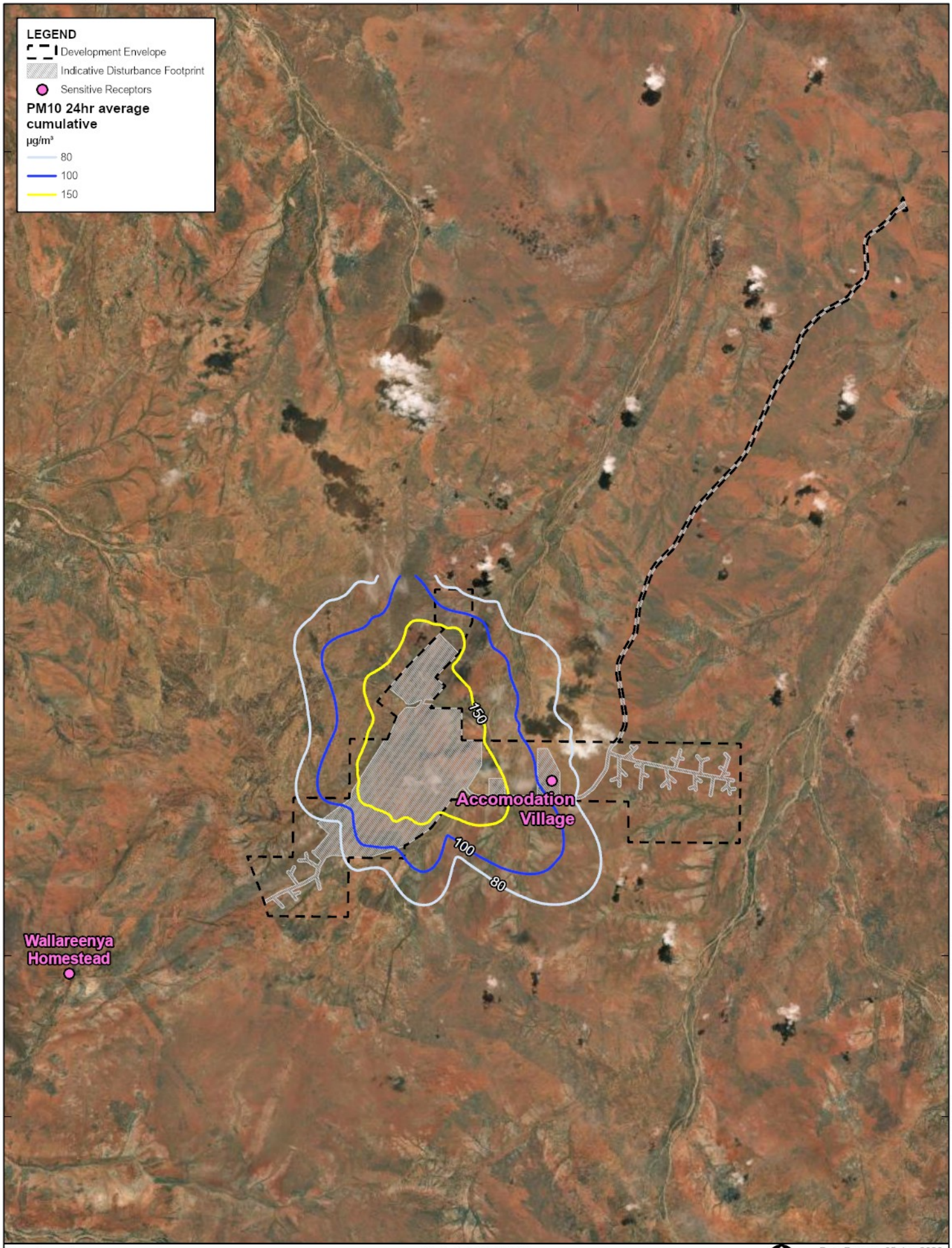
Air Quality Impact Assessment Results

The AQIA assessed the potential air quality impacts of the Proposal under a conservative worst-case operating scenario representing concurrent mining, processing and gas-fired power generation activities. The assessment predicted cumulative concentrations by combining modelled Proposal contributions with adopted background concentrations and comparing the results against the adopted air quality criteria.

Table B-3 compares the adopted background concentrations and air quality criteria used in the AQIA with the reported modelling outcomes for each pollutant and averaging period.

Table B-3-7: Comparison of Background Concentrations, Adopted Criteria and AQIA Results

Pollutant	Averaging Period	Background Concentration	Adopted Criterion	AQIA Result / Outcome
$PM_{2.5}$	24-hour	6.6µg/m³	25µg/m³	Predicted cumulative concentrations may exceed the criterion within approximately 500m of the development envelope under conservative worst-case assumptions, as referred to in **Appendix C-15**.
	Annual	4.9µg/m³	8µg/m³	Predicted cumulative concentrations may exceed the criterion within approximately 1.5km of the development envelope under conservative worst-case assumptions, as referred to in **Appendix C-15**.
PM_{10}	24-hour	25.5µg/m³	50µg/m³	Predicted cumulative concentrations may exceed the criterion up to approximately 6km from the development envelope; refer to **Figure B-3-2**.
	Annual	22.8µg/m³	25µg/m³	Predicted cumulative concentrations may exceed the criterion up to approximately 6km from the development envelope, as referred to in **Appendix C-15**.
TSP	24-hour	63.8µg/m³	90µg/m³	Predicted cumulative concentrations may exceed the criterion up to approximately 6km from the development envelope; refer to **Figure B-3-3**.
Deposited dust	30-day	2g/m²/month	4g/m²/30 days (maximum) 2g/m²/30 days above background	Predicted cumulative dust deposition rates are generally compliant beyond the development envelope, with slight exceedances predicted close to pit areas; refer to **Figure B-3-4**.
NO_2	1-hour	14.4µg/m³	246µg/m³	Predicted cumulative concentrations are well below the criterion across the modelling domain; refer to **Figure B-3-5**.
	Annual	4. µg/m³	62µg/m³	Predicted cumulative concentrations are well below the criterion throughout the modelling domain, as noted in **Appendix C-15**.



0 1 2 km

Scale: 1:150,000 at A4
Coordinate System: GDA2020 MGA Zone 50

Date Drawn: 05-Jun-2026
Project Number: 620.V00796

SLR

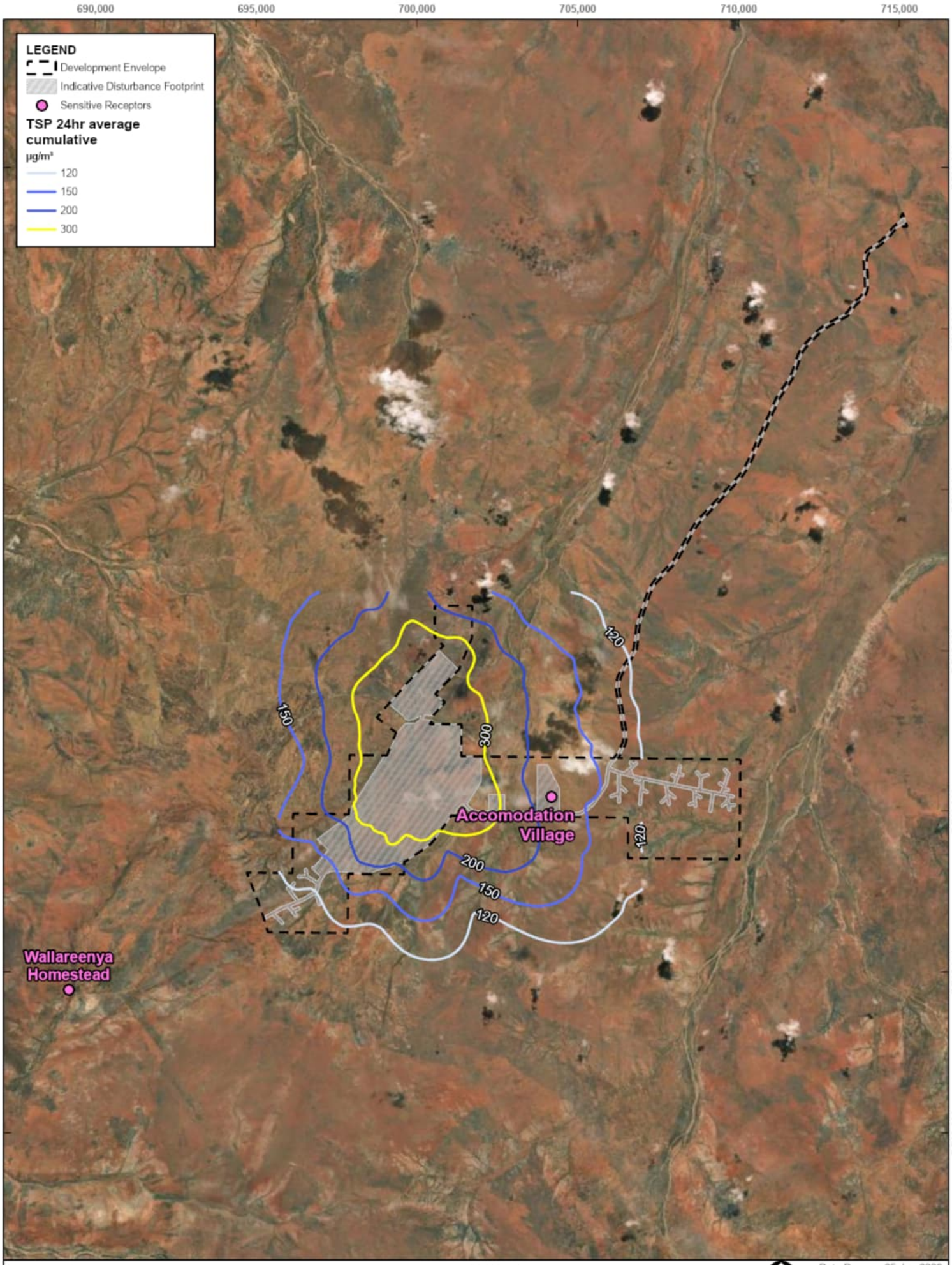
Earthstar Geographics
Drawn by: JWP

TABBA TABBA PROJECT
ENVIRONMENTAL REVIEW DOCUMENT

PREDICTED CUMULATIVE 24-HOUR AVERAGE PM10 CONCENTRATIONS

FIGURE B-3-2

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabbaLithium\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-3-2 Predicted Cumulative 24-hour Average PM10 Concentrations



SLR

Earthstar Geographics
Drawn by: JWP

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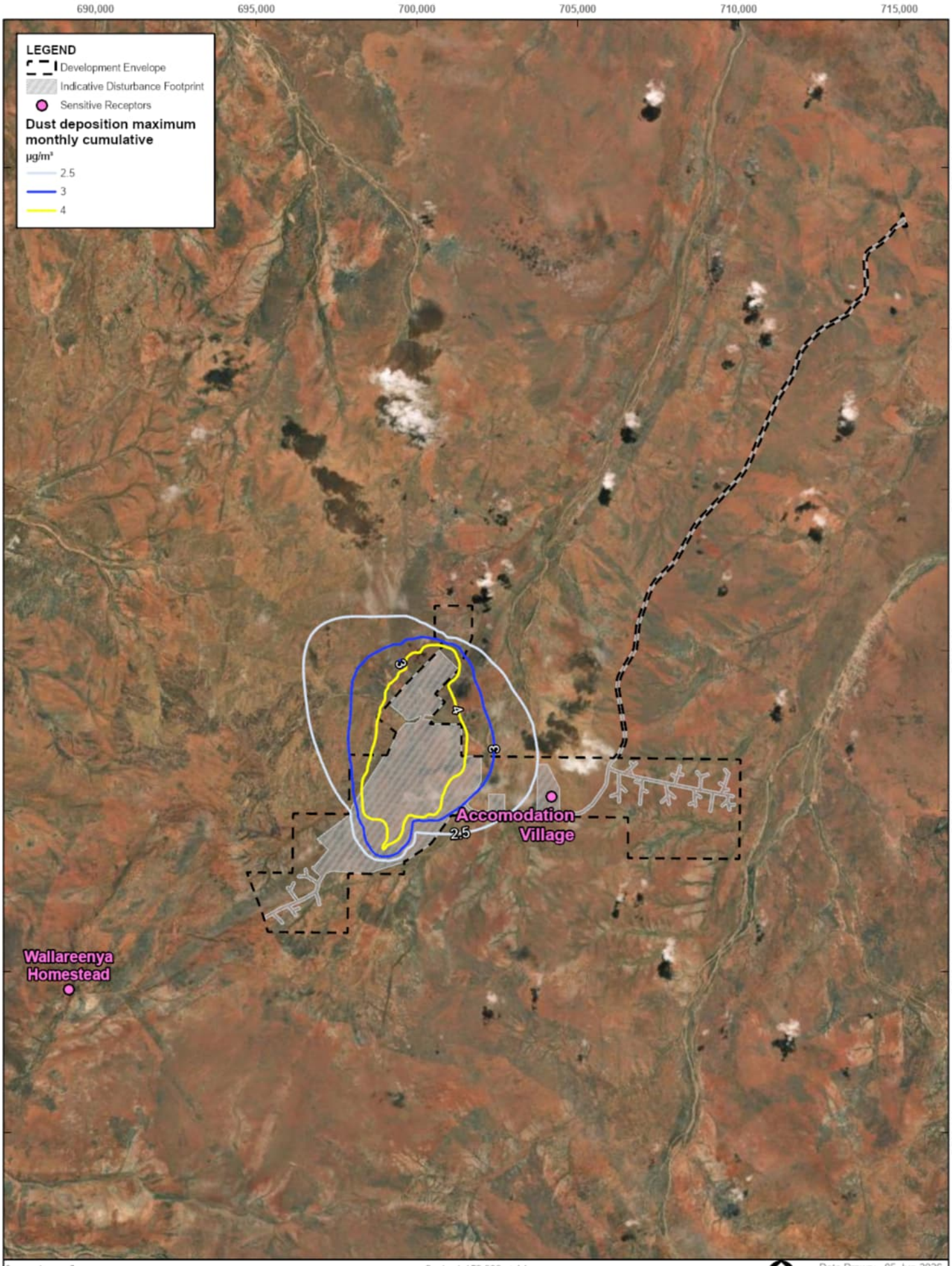
PREDICTED CUMULATIVE 24-HOUR AVERAGE TSP CONCENTRATIONS

FIGURE B-3-3

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabba_Rtsm\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-3-3 Predicted Cumulative 24-hour Average TSP Concentrations



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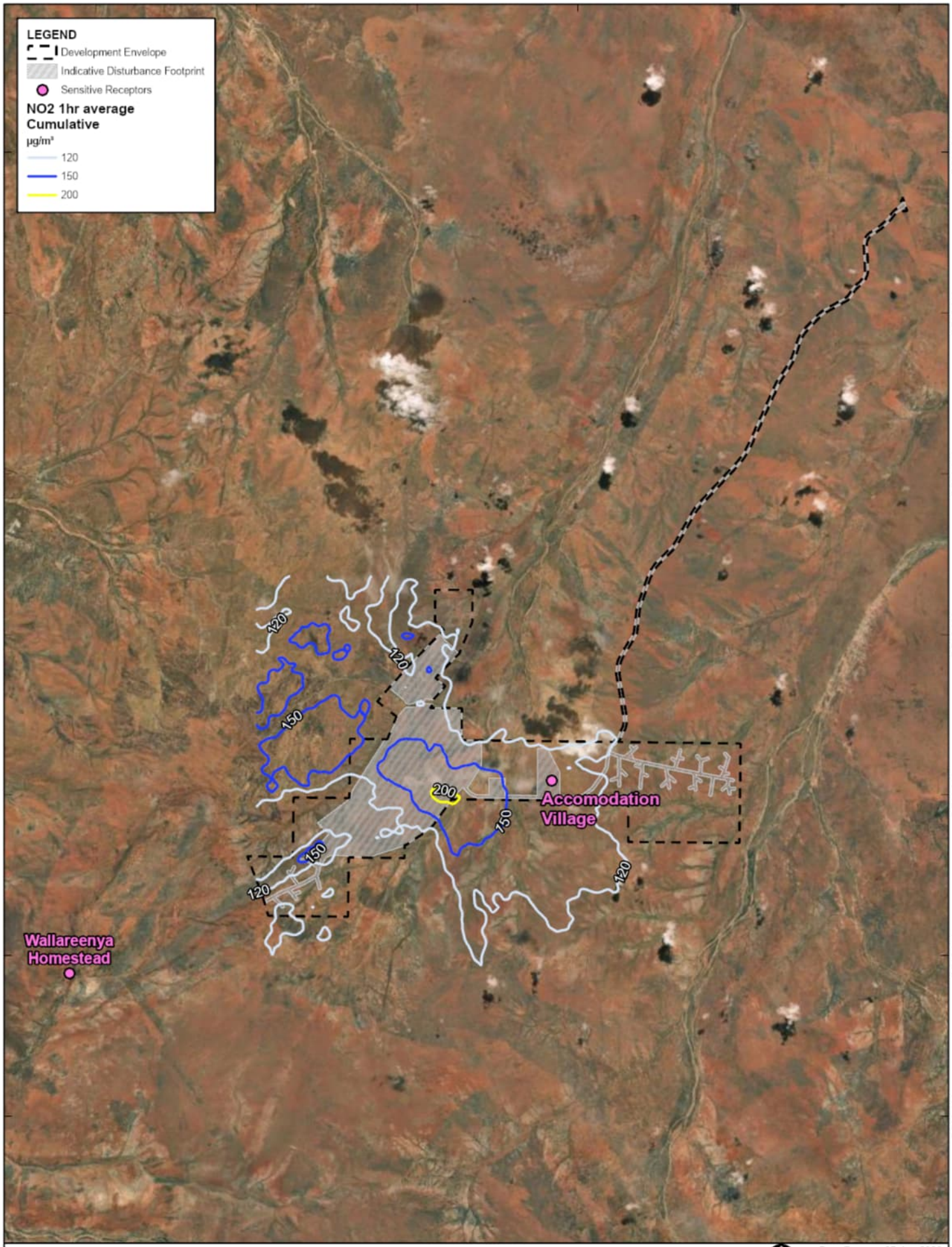
PREDICTED CUMULATIVE 24-HOUR AVERAGE P30-DAY DEPOSITED DUST CONCENTRATIONS

FIGURE B-3-4



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PREDICTED CUMULATIVE 1-HOUR AVERAGE NO2 CONCENTRATIONS

FIGURE B-3-5

Path: H:\Local Resources\Mining Advisory\ADVGIS\03-Projects\Australia-WA\TabbaTabba_Rhum\ADVAU00796\01-ESRI\ADVAU00796.aprx\ERD Fig B-3-5 Predicted Cumulative 1-hour Average NO2 Concentrations

The AQIA identifies fugitive dust as the main air quality issue for the Proposal, with wheel-generated dust from on-site material transport being the largest source. Particulate concentrations are predicted to be highest near operational areas and decrease with distance.

Under conservative worst-case assumptions:

- $PM_{2.5}$ may exceed criteria close to the development envelope, within about 500 m for the 24-hour criterion and 1.5km for the annual criterion.
- PM_{10} and TSP may exceed criteria at distances of up to about 6km from the development envelope.
- Deposited dust is generally compliant beyond the development envelope, with only slight exceedances near pit areas.
- NO_2 from the gas-fired power plant is predicted to remain well below the adopted criteria across the modelling domain.

The AQIA notes that the modelling used conservative assumptions, so predicted particulate concentrations are likely to overestimate actual operational conditions.

Although some particulate criteria may be exceeded close to the development envelope, no offsite sensitive receptors were identified within 6km, so the AQIA concludes that the Proposal is not expected to create material offsite air quality constraints. Any elevated dust exposure at the mine accommodation village is treated as an occupational health and safety / operational matter, not an off-site environmental receptor issue.

Based on the available studies, the characteristics of the receiving environment, the conservative modelling results, and the implementation of mitigation measures, no significant residual impacts to Air Quality are predicted for the Proposal. Potential impacts are expected to be localised to the development envelope and surrounding operational area, and no material offsite air quality constraints have been identified as a result of planned mining activities. Accordingly, Air Quality is not considered a preliminary key environmental factor for the Proposal. Given that no significant residual impacts are predicted for this factor, no further assessment of the significance of residual impacts is required, and no environmental outcomes are proposed.

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