

Greenbushes Lithium Mine: Additional Waste Rock Landforms and Salt Water Gully Dam

EPA Referral Supporting Document

TALISON LITHIUM AUSTRALIA PTY LTD

POINT OF CONTACT Name: Craig Dawson General Manager - Operations (08) 9782 5700 craig.dawson@talisonlithium.com

LOCATION GREENBUSHES LITHIUM OPERATION 1662 Maranup Ford Road Greenbushes WA 6254 PO Box 31 Greenbushes WA 6254



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Date

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1 EXECUTIVE SUMMARY

Talison Lithium Australia Pty Ltd (**Talison**), operate the Greenbushes Lithium Operations (**Mine; Site; Operations**), located in the Shire of Bridgetown-Greenbushes, immediately adjacent to the town of Greenbushes, approximately 240 km south of Perth in Western Australia. The operations comprise a mine, various mineral processing facilities and supporting infrastructure.

Talison is proposing to expand the Mine Development Envelope (**MDE**) associated with the current Ministerial Statement (**MS1111**), and increase the clearing allowance within the Proposed MDE. The proposed amendments to the MDE and clearing limits are to allow for the following activities (**the Proposal**):

- Expansion of the existing Floyds Waste Rock Landform (Floyds WRL) through construction of the S2 Waste Rock Landform (S2 WRL) within the existing MDE;
- Construction and operation of the S8 Waste Rock Landform (S8 WRL) to the east of the existing MDE;
- Expansion of existing agricultural dams to create a larger Water Dam (SWG Dam) located within Salt Water Gully (SWG) northeast of the existing MDE;
- Developing new surface water, shallow seepage and sediment controls (referred to as "Floyds Water Management Infrastructure") to stop discharge of water-borne leachates from waste rock on the eastern side of the Proposal;
- Extended Maranup Ford Road Infrastructure Corridor;
- Additional Chemical Grade Plant 4 (CGP4) laydown areas; and
- Raising the Austins and Southampton (SH) Dam embankments to reduce the risk of overflows and reduce seepage, including:
 - Potential realignment of Spring Gully Rd; and
 - Development of laydowns and/or stockpiles in areas adjacent to SH/Austins Dam.

This Proposal is being referred to the Environmental Protection Authority (**EPA**) as a significant amendment to a proposal under Section 38 of the *Environmental Protection Act 1986* (**EP Act**). The surface water infrastructure, dam raises, road infrastructure and CGP4 expansion was originally included in an application under Section 45C of the EP Act to amend the approved proposal without inquiry or assessment. This application has since been withdrawn and the proposed amendments have been incorporated into this referral document.

The Proposal to be referred covers the existing MDE, as well as areas to the north west and east where the MDE is proposed to be expanded (**Proposal area**), as shown in Figure 2-1.

Parts of the Proposal are still in the planning and design phase and the final disturbance footprint is expected to evolve through consultation and detailed design. The Proposal as currently designed requires an increase to the MDE of 619 ha, to a total of 2,826 ha. Within this development envelope an additional 162 ha of clearing for native vegetation is required, as well as 29 ha of clearing of mine disturbance and rehabilitated areas. The Proposal infrastructure also includes clearing of native vegetation within the existing MDE and the existing allowance under MS1111. A total of 28.89 ha of clearing for the SH and Austins dam raise, CGP4 laydown and Floyds Water Management Infrastructure will be allocated under the existing 350 ha clearing of native vegetation allowance. Disturbance will also occur over areas that do not require clearing, including 335 ha of pasture and 69 ha of plantation areas.



The Proposal has the potential for significant impacts on the environment. As such, through careful study, consultation and design, Talison will apply appropriate environmental management measures to avoid or minimise impacts on identified environmental values, as outlined in Section 6 below.

Table 1-1 briefly summarises the Proposal. Further detail on the scope of the Proposal is provided in the Proposal Content Document (Appendix A) and Section 3 of this document.

Duou ocol Titlo	Greenbushes Lithium Mine: Waste Rock Landforms, Salt	
Proposal little	Water Gully Dam and additional clearing for infrastructure.	
Type of Proposal	Significant amendment to an approved Proposal (M1111)	
Proponent Name	Talison Lithium Australia Pty Ltd	
	Expansion of the existing Greenbushes lithium operations to	
Short Description	incorporate the S2 WRL, S8 WRL, SWG Dam and additional	
	mine infrastructure.	

Table 1-1: General Proposal Content Description

2 INTRODUCTION

2.1 Purpose and Scope

Talison currently operates the Greenbushes Lithium Mine, located in the Southwest of Western Australia, approximately 250 km south of Perth.

This document contains information to support a Section 38 referral to the Environmental Protection Authority (EPA) under the Western Australian EP Act. The referral is required to approve a significant amendment to the current Ministerial Statement for the Greenbushes mine (M1111). The document outlines the proposed activities that constitute the Proposal, as well as any impacts on Environmental Factors that may occur as a result of implementation of the Proposal. Proposed mitigation strategies are outlined, and an assessment of the likely outcomes is provided.

This document also provides information on the Proposal's potential impacts on Matters of National Environmental Significance (**MNES**) that may require assessment under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (**EPBC Act**).

Figure 2-1 provides an overview of the proposed changes to the MDE, and the indicative disturbance footprint of the proposed infrastructure.

2.2 Proponent Details

The Proponent for the Proposal is Talison Lithium Australia Pty Ltd. The nominated contact for this Proposal is provided in Table 2-1.

Proponent Details	Key Contact	
Talison Lithium Australia Pty Ltd	Nicholas Sibbel	
Level 17, 216 St Georges Terrace	Manager Approvals and Compliance	



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Proponent Details	Key Contact
Perth WA 6000	Talison Lithium
Locked Bag 40, Cloisters Square	Phone: 0407 445 178
Perth WA 6850	Email: Nicholas.sibbel@talisonlithium.com
Phone: +61 8 9263 5555	
Email: GBContact@talisonlithium.com	
Website: talisonlithium.com	







2.3 Environmental Impact Assessment Process

This Referral Supporting Document (**RSD**) aims to provide sufficient information to allow the EPA to set a level of assessment for the Proposal. At the time of writing, Talison expects the Proposal to attract a level of assessment of "Environmental Review – Public Review" (previously known as a Public Environmental Review (**PER**)).

Specific studies and investigations conducted by the Proponent in relation to a range of environmental factors are outlined in this document as well as studies that are either currently underway or are proposed to be undertaken prior to implementation of the Proposal.

The objectives of the reviews, additional studies and investigations are to:

- Ensure that the full environmental effects of the Proposal are properly understood;
- Inform mitigation and optimal management controls; and
- Enable a reliable and knowledge-based environmental impact assessment to be conducted.

The Proponent has undertaken consultation with the Commonwealth DCCEEW and will also refer the Proposal under the EPBC Act due to potential significant impacts on MNES (listed threatened fauna species).

2.4 Previous Assessments and Proposals

An expansion to Talison's Greenbushes Lithium Operations was formally referred under the EPBC Act in May 2018 and under the EP Act in June 2018. On 17th June 2018, the then Department of the Environment and Energy (**DotEE**) determined the Proposal was a Controlled Action and required formal assessment. The project was then assessed by the WA EPA through the accredited assessment process under Section 87 of the EPBC Act.

On the 19th August 2019, Ministerial Statement No. 1111 was published for the expansion, outlining that pursuant to section 45 of the EP Act, subject to implementation conditions and procedures, the proposal may be implemented. On the 14th November 2019, Talison was granted approval to clear native vegetation to construct and operate an expansion of the Greenbushes mine in accordance with the conditions specified in the approval (**EPBC 2018/8206**).

Attachment 1 to MS1111 was approved in April 2020 under Section 45C of the EP Act and allowed an expansion of the MDE to include small areas to the north and southwest. The extent of approved clearing of native vegetation and MDE area were not changed under this approval as an area to the southwest was removed to allow for the additional area required.

Attachment 2 to MS1111 provided an expansion of the MDE to include an area for rehabilitation material stockpiles, a revised Mine Access Road (**MAR**) alignment, and an accommodation village. This Section 45C amendment was approved in May 2023, and did not increase the extent of approved clearing of native vegetation.

The Proposal Content Document (Appendix A) for this Proposal includes the proposed total MDE and additional clearing, and identifies assessable activities. It is anticipated that on approval of this Proposal a new attachment (Attachment 3) summarising the amendments will replace Attachment 2 of MS 1111.



2.4.1 Review of Existing M1111 Conditions

The MS1111 approval contains a number of conditions for the Greenbushes operation to ensure the Project is able to meet the EPA objectives. Talison remains largely in compliance with all conditions, with minor non-compliances in relation to requirements of Environmental Management Plans. The most recent Compliance Assessment Report for MS1111 is included as Appendix B.

Talison has reviewed all existing Ministerial Statement Conditions to understand whether any condition changes will be required on approval of the Proposal. The review of the MS1111 conditions is provided in Table 2-2.

Condition No.	Ministerial Statement 1111 Condition Review of Relevance			
1-1	When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.	The authorised extent of the Proposal as defined in Table 2 of Schedule 1 will require amendment, however this condition will remain relevant to the Proposal.		
2-1	The proponent shall notify the [Department] Chief Executive Officer (CEO) of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.	Condition will remain relevant.		
3-1	The proponent shall not commence implementation of the proposal after five (5) years from the date of this Statement, and any commencement, prior to this date, must be substantial.	The original Proposal commenced 15 November 2020 and is substantially commenced. No changes to this condition will be required.		
3-2	Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.	The original Proposal commenced 15 November 2020 and is substantially commenced. No changes to this condition will be required.		

Table 2-2: MS1111 Condition Review



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Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
4-1	The proponent shall prepare and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.	The Compliance Assessment Plan will require an update to reflect any new conditions. Condition will remain relevant.
4-2	The Compliance Assessment Plan shall indicate: (1) the frequency of compliance reporting; (2) the approach and timing of compliance assessments; (3) the retention of compliance assessments; (4) the method of reporting of potential non-compliances and corrective actions taken; (5) the table of contents of Compliance Assessment Reports; and (6) public availability of Compliance Assessment Reports.	The Compliance Assessment Plan will require an update to reflect any new conditions. Condition will remain relevant.
4-3	After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4.1.	Condition will remain relevant.
4-4	The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4.1 and shall make those reports available when requested by the CEO.	Condition will remain relevant.
4-5	The proponent shall advise the CEO of any potential non- compliance within seven (7) days of that non-compliance being known.	Condition will remain relevant.
4-6	The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO. The Compliance Assessment Report shall: (1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.	Condition will remain relevant.



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
5-1	Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.	Condition will remain relevant.
5-2	If any data referred to in condition 5-1 contains particulars of: (1) a secret formula or process; or (2) confidential commercially sensitive information; the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.	Condition will remain relevant.
6-1	The proponent shall implement the proposal to meet the following environmental objectives: (1) The proponent shall avoid, where possible, and minimise direct and indirect impacts upon conservation significant fauna within the mine development envelope delineated in Figure 1 of Schedule 1 during ground disturbing activities and during all phases of mining activities, as far as practicable; and (2) The proponent shall ensure there is no direct and indirect impact from the implementation of the proposal to conservation significant fauna habitat in the areas as defined in the Conservation Significant Terrestrial Fauna Management Plan.	The Conservation Significant Terrestrial Fauna Management Plan (CSTFMP) will be reviewed and updated to incorporate the Proposal area and any additional mitigation measures. The CSTFMP will be updated prior to submission of the Environmental Review Document (ERD).



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
6-2	In order to meet the requirements of condition 6-1, prior to ground disturbing activities within the mine development envelope delineated in Figure 1 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare a Conservation Significant Terrestrial Fauna Management Plan to the requirements of the CEO on advice of the Department of Biodiversity, Conservation and Attractions. The Conservation Significant Terrestrial Fauna Management Plan shall: (1) when implemented, substantiate and ensure that Condition 6-1 is being met: (2) present objectives and monitoring protocols to identify conservation significant fauna and fauna habitat to ensure no direct or indirect impact occurs; (3) specify criteria (trigger criteria) that will trigger the implementation of management and/or contingency actions to prevent direct or indirect impacts to conservation significant fauna and fauna habitat; (4) specify management and/or contingency actions to be implemented if trigger criteria required by condition 6-2(3) have been reached; (5) include a trapping and translocation program for target fauna species, which includes the Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>), Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus baudinii</i>), Chuditch (<i>Dasyurus geoffroii</i>), Numbat (<i>Myrmecobius fasciatus</i>), Brush-tailed phascogale/wambenger (<i>Phascogale tapoatafa</i>) and Western Ringtail Possum (<i>Pseudocheirus occidentalis</i>), or as otherwise agreed by the CEO; (6) identify objectives and monitoring protocols to measure the success of trapping and translocation program required by condition 6-2(5) and; (7) identify management and contingency measures, including timeframes for their implementation if the objectives of the trapping and translocation program in condition 6-2(5) are not being met.	Figure 1 of Schedule 1 will require update to include the entire Proposal area. The CSTFMP will be reviewed and updated to incorporate the Proposal area and any additional mitigation measures. The CSTFMP will be updated prior to submission of the ERD.
6-3	The proponent shall implement the most recent version of the Conservation Significant Fauna Terrestrial Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1.	Condition will remain relevant.
6-4	The proponent shall continue to implement the Conservation Significant Terrestrial Fauna Management Plan, or any subsequent revisions as approved by the CEO in condition 6- 3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 6-1.	Condition will remain relevant.



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Condition No.	Ministerial Statement 1111 Condition Review of Relevance		
7-1	The proponent shall implement the proposal to meet the following environmental objectives: (1) The proponent shall ensure that progressive rehabilitation of the Floyds Waste Rock Landform occurs over the life of the project to achieve a stable and functioning landform that is compatible with the end land use; (2) The proponent will undertake operations in a manner that minimises visual impacts (including but not limited to light spill) from implementation of the proposal on land identified in condition 7-2(1), as far as practicable.	Condition will require an update to incorporate the same impacts from the S2 extension of the Floyds WRL and the S8 WRL.	
7-2	In order to meet the requirements of condition 7-1, prior to ground disturbance, unless otherwise agreed by the CEO, the proponent shall prepare a Visual Impact Management and Rehabilitation Plan to the requirements of the CEO on advice of the Department of Mines, Industry Regulation and Safety and Department of Biodiversity, Conservation and Attractions. The Visual Impact Management and Rehabilitation Plan shall: (1) identify land within a five (5) kilometre radius of the Floyds Waste Rock Landform from which the mine expansion is visible; (2) detail the screening and rehabilitation practices to be implemented over the life of the operations (including, but not limited to, the planting of indigenous vegetation) for Floyds Waste Rock Landform; (3) specify the short and long term measures to be taken to address visual impacts from Floyds Waste Rock Landform, as well as night time operational work, for land identified in condition 7-2(1); (4) and specify management actions and timeframes for the implementation of all screening and rehabilitation measures required by condition 7-2(2).	The Visual Impact Management and Rehabilitation Plan (VIMRP) will be reviewed and updated to incorporate the Proposal area and any additional mitigation measures prior to submission of the ERD.	
7-3	The proponent shall implement the most recent version of the Visual Impact Management and Rehabilitation Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 7-1.	Condition will remain relevant.	
7-4	The proponent shall continue to implement the Visual Impact Management and Rehabilitation Plan, or any subsequent revisions as approved by the CEO in condition 7-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 7-1.	Condition will remain relevant.	



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
8-1	The proponent shall undertake an offset with the objective of counterbalancing the significant residual impact to 350 ha of foraging, roosting and breeding habitat for Carnaby's Black Cockatoo (Calyptorhynchus latirostris), Forest Red-tailed Black Cockatoo (Calyptorhynchus innamo naso), Baudin's Black Cockatoo (Calyptorhynchus baudinii), Chuditch (Dasyurus geoffroii), Numbat (Myrmecobius fasciatus), Brush-tailed phascogale/wambenger (Phascogale tapoatafa) and Western Ringtail Possum (Pseudocheirus occidentalis) as a result of implementation of the proposal.	Condition will require an update to incorporate the offsets required for the additional clearing included as part of this Proposal.
8-2	Within twelve (12) months of the publication of this Statement, unless otherwise agreed by the CEO, the proponent shall prepare and submit an Offset Strategy to the CEO. The Offset Strategy shall: (1) identify an initially unprotected area or areas greater than 350 hectares to be provided to the Crown for management for conservation purposes under the Conservation and Land Management Act 1984 that contains the habitat values identified in condition 8-1; (2) demonstrate how the proposed offset counterbalances the significant residual impact through consideration of the six principles of the WA Environmental Offsets Policy 2011, and completion of the WA Offsets Template, as described in the WA Environmental Offsets Guidelines 2014, and the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (October 2012) in conjunction with the associated Offsets assessment guide; (3) identify the environmental values of the offset area(s); (4) for land ceded to the crown for the purpose of conservation, the proponent will identify: (a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area; and (b) the quantum of, and provide a contribution of funds for, the management of this area for the first twenty (20) years after completion of purchase. (5) identify any threats or opportunities for habitat improvement to offset values and provide management and/or rehabilitation actions to be undertaken to address the threats or improvements including: (a) the objectives and targets to be achieved, including completion criteria; (b) management and/or rehabilitation actions and a timeframe for the actions to be undertaken; (c) funding arrangements and timing of funding for conservation activities; and (d) monitoring requirements for activities. (6) define the role of the proponent and/or any third parties.	The Offset Strategy will be reviewed and updated with additional proposed offsets prior to submission of the ERD.



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
8-3	After receiving notice in writing from the CEO, on advice of the Department of Biodiversity, Conservation and Attractions, that the Offset Strategy satisfies the requirements of condition 8-2, the proponent shall: (1) implement the actions in accordance with the requirements of the approved Offsets Strategy; and (2) continue to implement the approved Offset Strategy until the CEO has confirmed by notice in writing that it has been demonstrated that the completion criteria in the Offset Strategy have been met and therefore the implementation of the actions is no longer required.	Condition will remain relevant.
8-4	The proponent shall review and revise the Offset Strategy as and when directed by the CEO.	Condition will remain relevant.
8-5	The proponent shall implement the latest version of the Offset Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 8-2.	Condition will remain relevant.
9-1	The proponent shall implement the proposal to meet the following environmental objective: (1) The proponent shall minimise impacts from the implementation of the proposal to flora and vegetation including from marri canker (<i>Quambalaria coyrecup</i>) and dieback (<i>Phytophthora cinnamomi</i>).	Condition will remain relevant.
9-2	In order to meet the requirements of condition 9-1, prior to ground disturbing activities within the mine development envelope delineated in Figure 1 of Schedule 1, unless otherwise agreed by the CEO, the proponent shall prepare a Disease Hygiene Management Plan to the requirements of the CEO on advice of the Department of Biodiversity, Conservation and Attractions. The Disease Hygiene Management Plan shall: (1) when implemented, substantiate and ensure that condition 9-1 is being met: (2) present objectives and monitoring protocols to identify flora and vegetation to ensure impacts are minimised; (3) specify criteria (trigger criteria) that will trigger the implementation of management and/or contingency actions to minimise impacts to flora and vegetation; (4) specify management and/or contingency actions to be implemented if trigger criteria required by condition 9-2(3) have been reached.	The Disease Hygiene Management Plan (DHMP) will be reviewed and updated to incorporate the Proposal area and any additional mitigation measures prior to submission of the ERD.



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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Condition No.	Ministerial Statement 1111 Condition	Review of Relevance
9-3	The proponent shall implement the most recent version of the Disease Hygiene Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 9-1.	Condition will remain relevant.
9-4	The proponent shall continue to implement the Disease Hygiene Management Plan, or any subsequent revisions as approved by the CEO in condition 9-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 9-1.	Condition will remain relevant.

2.4.2 Environmental Management Plans

The Greenbushes mine currently operates under a number of existing Environmental Management Plans required by MS1111, as well as additional Management Plans that govern site operations. The existing Management Plans and relevance to the Proposal are outlined below.

2.4.2.1 Conservation Significant Terrestrial Fauna Management Plan

The CSTFMP was developed in 2019 to manage potential impacts to terrestrial fauna from the Project. Specific conservation significant fauna targeted by the CSTFMP included:

- Carnaby's Cockatoo (Calyptorhynchus latirostris);
- Baudin's Cockatoo (Calyptorhynchus baudinii);
- Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso);
- Western Quoll /Chuditch (Dasyurus geoffroii);
- Wambenger Brush- tailed Phascogale (Phascogale tapoatafa wambenger);
- Western Ringtail Possum (Pseudochieirus occidentalis); and
- Numbat (*Myrmecobius fasciatus*).

Studies undertaken for the Proposal area have indicated several additional species of conservation significance may occur, and as such the CSTFMP will be updated to ensure that all potentially impacted conservation significant fauna are included. This will include a review of proposed management actions to ensure that outcomes for the following species are identified and appropriately mitigated:

- Australasian Bittern (Botaurus poiciloptilus);
- Quenda (Isoodon fusciventer);
- Western Brush Wallaby (*Notamacropus irma*); and
- Water Rat (Hydromys chrysogaster).



2.4.2.2 Visual Impact Management and Rehabilitation Plan

The most recent approved VIMRP was prepared in 2020 to manage visual impacts and rehabilitation of the existing operation. The key focus of the VIMRP included:

- Floyds WRL
- TSF4; and
- Mine Service Area (MSA).

Given the proximity of the Proposal to the South Western Highway and other stakeholders, the additional landforms will also require consideration. The VIMRP will be updated to include management of potential impacts from the establishment of the S8 WRL and the S2 extension of Floyds WRL. The VIRMP update will take into account findings from the Visual Impact Assessment for the Proposal. The additional infrastructure included within this Proposal is not expected to impact significantly on the visual amenity of the local surroundings.

2.4.2.3 Offset Strategy

The first revision of Talison's Offset Strategy for the existing Greenbushes operation was submitted to the Department of Water and Environmental Regulation (**DWER**) on 18 August 2020, as required under Condition 8-2 of MS1111. The strategy was prepared to counterbalance the significant residual impacts of clearing 350 ha of native vegetation consisting of habitat for conservation significant fauna. The strategy included acquiring and ceding four offset properties to the State of WA, vested in the the Department of Biodiversity, Conservation and Attractions (**DBCA**) for conservation. This land totaled 1,269 ha of habitat. Talison is funding the management arrangements with DBCA through a Memorandum of Understanding (**MoU**) for the four offset properties across the life of the offset (proposed 20 years).

Talison submitted an updated revision of the Offsets Strategy to the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) in December 2023 that incorporated comments from DBCA and DCCEEW addressing a deficit relative to the offset required for the significant residual impact. An update to the Offset Strategy has been proposed to address this deficit, as well as proposing additional offsets for part of the Proposal area. The proposed offset properties to be acquired will provide approximately 2,018.14 ha of habitat. Further offsets are likely to be required for the Proposal implementation, and will be outlined in the updated Offset Strategy submitted with the ERD.

The Offset Strategy will provide detail regarding additional proposed offsets to compensate for the additional clearing of native vegetation required for implementation of the Proposal. Consultation with relevant stakeholders including DWER, DCCEEW and DBCA is ongoing to ensure proposed offsets are sufficient. Further detail on the proposed offsets is provided in Section 7.

2.4.2.4 Disease Hygiene Management Plan

The existing DHMP was prepared in October 2019 to manage potential impacts from dieback (*Phytophthora cinnamomi*) and marri-canker (*Quambalaria coyrecup*) associated with the Greenbushes operation. Key potential impacts include the destruction and alteration of native vegetation, fauna habitat, land/soil quality and hydrological regimes from the introduction and spread of dieback and marri-canker.



The Proposal will increase the potential for occurrence of these risks given the larger area over which the operation will occupy. In order to ensure the impact of dieback and marri-canker is managed the DHMP will be updated prior to commencement of the Proposal works. The update will increase the scope of the DHMP to include the Proposal area, as well as incorporate any additional recommendations from dieback mapping and studies undertaken.

2.4.2.5 Other Management Plans

A number of additional management plans will be updated or developed in order to ensure impacts from the Proposal are captured and mitigative actions are implemented on site. The management plans will outline the proposed outcome for the relevant environmental aspects. Table 2-3 below outlines the required management plans and the updates that will be undertaken prior to Proposal implementation.

Management Plan	Updates Required
Dust Management Plan	The Dust Management Plan will be updated to increase the scope to include the additional Proposal area. Dust monitoring locations will be reviewed and monitors will likely be relocated or additional monitoring points established to enable understanding and control of the impacts at receptor locations to as low as reasonably practicable (ALARP).
Air Quality Trigger Action Response Plan (AQTARP)	Talison implements an AQTARP to ensure that air quality parameters within the vicinity of the existing mine are within ambient air quality limits set under Part V Licences. The AQTARP will require amendment as a number of sensitive receptors are located within the Proposal footprint. The AQTARP will be updated to ensure appropriate sensitive receptors are identified from the expansion of the MDE, and ensure appropriate mitigation measures are outlined.
Noise Management Plan	The Noise Management Plan will be updated to increase the scope and include the additional Proposal area. Noise monitoring locations will be reviewed, and monitors will likely be relocated or additional monitoring points established to enable understanding and control of the impacts at receptor locations. Objectives will be reviewed to align with any requirements flowing from the ongoing Environment Protection (Noise) Regulations 1997 approval renewal.
Stakeholder Engagement Plan	The Stakeholder Engagement Plan will be updated to increase the scope to include the additional Proposal area. This will also likely increase the area of influence currently contemplated within the plan, and additional stakeholders will likely be identified.

Table	2-3:	Other	Management	Plans
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Management Plan	Updates Required
Water Management Plan	The Water Management Plan will be updated to incorporate management of the additional risks to surface and ground water resulting from Proposal implementation. This will include updating the baseline information to include analysis of the Proposal area including Lyons River, Cascades Gully and Hester Brook. Additional impacts will be reviewed and proposed mitigation strategies will be incorporated to ensure minimization of potential impacts. Mitigative impacts and management requirements of the Floyds Water Management Infrastructure will also be incorporates.
Waste Rock Management Plan (WRMP)	The existing Waste Rock Management Plan outlines the practices undertaken at Greenbushes to ensure waste rock is appropriately identified, categorised and managed. Talison will update the WRMP to include the additional WRL areas within the scope, and will undertake a review of existing management practices outlined in the plan to ensure they are appropriate and working as intended.
Aboriginal Cultural Heritage Management Plan (ACHMP)	An ACHMP will be developed given the proximity of the Proposal to significant Aboriginal cultural heritage sites. The ACHMP will provide adequate protection for local Aboriginal heritage sites while facilitating development within the Proposal area. The ACHMP will be developed in consultation with site Traditional Owners where possible to ensure the suggested outcomes are acceptable to key stakeholders.

2.4.2.6 Mine Closure Plan

The existing site Mine Closure Plan (MCP) will require an update to include the additional landforms and other disturbance areas required as part of the Proposal. While the existing closure prescription is likely to be similar for the Proposal as for existing site elements, the MCP will be updated for submission with the required Mining Proposal, and will take into account any additional recommendations from existing rehabilitation trials, or from commissioned study reports. The MCP will ensure that on closure of the site, the landforms are safe stable and non-polluting, and that the outcomes will lead to a post mining land use that is acceptable to the surrounding community and other stakeholders.

2.4.3 Summary of Compliance

Table 2-4 below outlines all non-compliances with conditions of MS1111. All non-compliances relate to conditions of Environmental Management Plans, and all non-compliances have been reported to relevant agencies as well as in the Compliance Assessment Report required under Condition 4-6 of MS1111.



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Reporting Period	Conditions	Non-Compliance	Status	
19 August 2019 - 18 August 2020	9-1 and 9-3	Materials sourced from quarries was not certified as dieback free.	Additional survey confirmed no actual spread of dieback attributable to the event. Talison has developed and revised a suite of procedures to support the implementation of a risk-based BRM importation management process.	
	6-3	Clearing was conducted without a clearing permit, without a Trapping and Translocation Program and without a qualified fauna spotter in place.	The required threshold level actions were initiated in response to this event (cease clearing activities, incident investigation and review of management actions).	
19 August 2020 - 18 August 2021	7-1 and 7-3	A redesign to the MSA footprint to incorporate an entry road from Stanifer Street has resulted in the retained vegetation buffer between Stanifer Street and the MSA ranging from Om to approximately 265m.	A revalidation of the existing VIA was undertaken and confirmed that the inherent visual amenity risk to motorists has not changed at VP11 because of the changed MSA design. Therefore, the objectives of the VIMRP are still being met.	
	9-3	Vehicles accessed an uncleared area without authorisation and without documenting the vehicle hygiene inspections.	The relevant required management/contingency actions were initiated in response to this event (assess the effectiveness of training on hygiene and dieback, amend training method if required and implement more training).	
19 August 2021 - 18 August 2022	7-3	As per previous non- compliance during 2020- 2021 reporting period.	Non-compliance remained as the VIRMP amendment had not been approved.	

Table 2-4: Summary of MS1111 Compliance



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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Reporting Period	Conditions	Non-Compliance	Status	
	9-3	Vehicles commencing work and entering protectable areas without inspection and confirmation that vehicles were clean on entry.	Corrective actions were implemented, and annual dieback monitoring indicated minor to moderate autonomous spread of dieback.	
19 August 2022 - 31 December 2023	6-3	A potential non compliance was noted as trapping, translocation and fauna spotting were not implemented for some clearing activities as required by the CSTFMP.	The deviation was attributed to the lack of risk to conservation significant fauna resulting from the clearing. Talison are undertaking review of the CSTFMP to update relevant procedures with reference to various risk factors including the size of the area and available habitat.	
	7-3	As per previous non- compliance during 2020- 2021 reporting period.	Non-compliance remained as the VIRMP amendment had not been approved.	
	9-3	Dozer entered protectable area without inspection and confirmation that vehicles were clean on entry.	Corrective actions were implemented, including additional training, updated inductions, and improved site signage.	

2.5 Other Approvals and Regulation

2.5.1 Land Tenure

The Proposal is situated within the boundaries of the Mining leases outlined in Table 2-5 and shown in Figure 2-2.

Tenement	Holder	Granted	Expiry
G01/1	TALISON LITHIUM AUSTRALIA PTY LTD	14/11/1986	05/06/2028
G01/4	TALISON LITHIUM AUSTRALIA PTY LTD	21/04/2022	20/04/2043
G70/267	TALISON LITHIUM AUSTRALIA PTY LTD	28/11/2022	27/11/2043
G70/268	TALISON LITHIUM AUSTRALIA PTY LTD	28/11/2024	2711/2043
L70/232	TALISON LITHIUM AUSTRALIA PTY LTD	21/04/2022	20/04/2043

Table 2-5: Proposal Tenements	Table	ble 2-5: Pro	posal T	enements
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Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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Tenement	Holder	Granted	Expiry
L70/244	TALISON LITHIUM AUSTRALIA PTY LTD	16/08/2023	15/08/2044
M01/3	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/4	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/6	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/7	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/8	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/9	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/10	TALISON LITHIUM AUSTRALIA PTY LTD	28/12/1984	27/12/2026
M01/16	TALISON LITHIUM AUSTRALIA PTY LTD	03/06/1986	05/06/2028

The majority of the expansion area for the Proposal is located on crown allotments. Talison has engaged in consultation with the local landholders and intend to purchase all land that will be significantly impacted by the Proposal. Currently agreements have been entered with all stakeholders that have land within the Proposal footprint. Ongoing engagement will occur in this regard.

Additional land tenure in the area includes State Forest, as well as a number of crown reserves, and a section of unallocated crown land. Part of the Proposal area overlaps with Road Reserves. Approval of development within the road reserves will be applied for through the Shire of Bridgetown-Greenbushes (**the Shire**) and Main Roads WA (**MRWA**). The Proposal area also encompasses the Fullerton Road reserve. An overview of site cadastre is provided in Figure 2-3.

2.5.2 Decision Making Authorities

Talison Greenbushes Lithium Operations are recognised as a State Significant Project and have the Department of Jobs Tourism Science and Innovation assigned as Lead Agency. The following DMA's have been identified for this Project;

State:

- Minister for the Environment;
- Department of Biodiversity, Conservation and Attractions (DBCA);
- Department of Water and Environmental Regulations (DWER);
- Department of Energy Mines, Industry Regulation and Safety (**DEMIRS**);
- Department of Planning, Lands and Heritage (DPLH);
- Shire of Bridgetown-Greenbushes; and
- Main Roads WA.

Commonwealth

• Department of Climate Change, Energy, the Environment and Water (DCCEEW).

2.5.3 Other Approvals Required

Other Federal, State and Local Government approvals and regulatory requirements of this Proposal are identified in Table 2-6.



Greenbushes Lithium Mine:

Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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Decision Making Authority	Legislation or Agreement Regulating the Activity	Existing Approval	Approval Required (and related proposal element)	Mitigation Effects on Environmental Impacts
DCCEEW	Environmental Protection and Biodiversity Conservation Act 1999	EPBC 2018/8206	Approval for a controlled action based on potential impacts to matters of national environmental significance (threatened species).	Regulates impacts on threatened species listed under the EPBC Act. This will include impacts on Forest red tailed black cockatoos, Carnaby's black cockatoo and Baudin's black cockatoo.
DWER	EP Act	L4247/1991/13 W6283/2019/1 W6618/2021/1 W6773/2023/1 W6795/2023/1 W6832/2023/1 W6835/2023/1 EP (noise) Regulations Reg 17 Assigned Noise Levels	A Works Approval is expected to be required for the SH Dam and Austins Dam embankment raises and for the Floyds Water Management Infrastructure. The infrastructure within the Maranup Ford Road Infrastructure Corridor will include a treated effluent disposal pipeline, which will likely require a Licence Amendment to permit the disposal of effluent. Works Approvals may also be required for emissions from S8 WRL, S2 WRL and the SWG Dam.	Regulates any potential emissions from the operations into the environment. Provides protection of the environment, including biodiversity and inland waters through limits on water quality and implementation of appropriate monitoring.

Table 2-6: Other Approvals





Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Decision Making Authority	Legislation or Agreement Regulating the Activity	Existing Approval	Approval Required (and related proposal element)	Mitigation Effects on Environmental Impacts
DBCA	Conservation and Land Management Act 1984	Lease Agreement	Lease for State Forest and water abstraction.	Regulates activities undertaken within State Forest managed by DBCA.
Main Roads WA	Main Roads Act 1930	N/A	Approvals of Southwest Highway crossing.	Maintain public access and safety.
DPLH	Aboriginal Heritage Act 1972	N/A	Section 18 Consent Only required if Aboriginal Cultural Heritage is present.	Approval required for any disturbance to heritage sites. Heritage surveys to be conducted to determine presence of Aboriginal Cultural Heritage. A Cultural Heritage Management Plan will be developed to ensure impacts to sites within the vicinity of the Proposal including Hester Brook are minimised.
	Land Administration Act 1997	N/A	Interaction with South Western Highway and shire roads.	Not applicable as this Act regulates land access.





Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

Decision Making Authority	Legislation or Agreement Regulating the Activity	Existing Approval	Approval Required (and related proposal element)	Mitigation Effects on Environmental Impacts
DEMIRS	Mining Act 1978	Refer to tenement conditions	Mining Proposal will be required for ground disturbance for the Proposal, including geotechnical assessment of both WRLs. An update to the Mine Closure Plan (MCP) will also be submitted with the Mining Proposal application.	Regulates ground disturbance for implementation of Mining Operations. Requires environmental outcomes for moderate or higher environmental risk, as well as development of specific performance criteria and monitoring. MCP will outline the requirements for closure in the form of closure completion criteria and outcomes.
Shire of Bridgetown- Greenbushes	Main Roads Act 1930 Local Government Act 1995	N/A	Interaction with Shire roads.	The Proposal will require closure of Shire roads for implementation.







2.6 Proposed Referral Pathway

Given the potential impact to listed Threatened fauna the Proposal will be referred to DCCEEW under the EPBC Act for assessment. This will be done via two separate referrals, one for the increase in Development Envelope for the SH and Austins dam raises, and the other for the increase in Development Envelope and clearing of conservation significant fauna habitat to the east of the existing MDE.

At the time of preparation of this referral, Talison proposes that the assessments will be undertaken in parallel, with referral of the Proposal to the EPA and DCCEEW separately.

Terrestrial fauna is a key environmental factor of the Proposal, which aligns with the potential impacts on Threatened species under the EPBC Act. This will ensure that any conditions imposed as part of the approval process will act to mitigate the potential impacts on threatened terrestrial fauna.


3 THE PROPOSAL

3.1 Background

Talison and its predecessor companies have been producing lithium at Greenbushes since 1983 and the area is recognised as containing one of the world's highest grade and largest hard rock deposit of the lithium mineral spodumene. Greenbushes is also the longest continuously operated mining area in WA following the discovery of tin in 1888, and subsequent development of tin, tantalum and lithium deposits.

The main Greenbushes operation to the west of the South Western Highway has previously been approved under Part IV of the EP Act through application of MS1111. An increase in the ore reserve and recent optimisation extended the mineable reserve, meaning additional locations for waste rock are required. In order to meet increasing demand for lithium from the Greenbushes mine, additional processing facilities have increased the throughput capacity. This will in turn drive greater water demand, requiring an increase in water catchment and storage.

Additional proposed infrastructure will allow improved operation of the Greenbushes mine, through increasing the available water storage on site, allowing additional processing infrastructure to be constructed, and constructing surface water management structures to minimise environmental impacts.

To develop these additional facilities, an increase in the MDE and disturbance footprint is required. The proposed changes to the MDE are shown in Figure 3-1, and the Proposed final MDE is outlined in Figure 3-2. Figure 3-3 shows the Proposal disturbance, and is compared with the existing Greenbushes mining disturbance in Figure 3-4.

The proposed MDE expansion has been constrained by a number of factors, including Mining Act tenure and Hester Brook to the east, and by Cascades Gully to the south, with infrastructure development also constrained by the South Western Highway to the west. Other constraints to the MDE include buffers from high voltage (HV) powerline easements, and the Floyds Water Management Infrastructure has also been constrained by distance to the existing and proposed Floyds WRL.

The proposed infrastructure has also been designed to minimise native vegetation loss and avoid any impacts on Aboriginal cultural heritage sites.

3.2 Proposal Description

The proposed amendment to the current approved MDE involves expansions in two distinct areas.

The area to the east of the existing MDE includes expansion over the South Western Highway to allow for the S8 WRL and SWG Dam, increasing the MDE by 599 ha. The proposed amendment to the north west of the existing MDE requires an increase in the area of the MDE by 20 ha. In total, the Proposal requires an increase to the existing MDE from 2,207 ha to 2,826 ha.

The disturbance included within this Proposal totals 624 ha. This includes:

- 191 ha of clearing of native vegetation (of which 28.89 ha will be undertaken under the existing 350 ha approved under MS1111);
- 29 ha of clearing of previous mine disturbance and rehabilitated areas;



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- 335 ha of disturbance to cleared pasture and parkland; and
- 69 ha of disturbance to plantation areas.

Figure 3-4 provides an overview of the proposed additional disturbance and the clearing requirements.

Part of the proposed disturbance for the SH Dam raise, Floyds Water Management Infrastructure and CGP4 laydown areas will require disturbance to native vegetation that can be undertaken under the existing 350 ha allowance for MS1111. This decreases the amount of native vegetation required to be cleared for the Proposal.

Sterilisation drilling is planned to commence in Q3 2025 and will be completed for all proposed disturbance areas for the S8 WRL and S2 WRL. Further geotechnical assessment will be undertaken prior to commencement of placement of waste rock within the WRL footprints.

The following sections outline the detail of the infrastructure included within this Proposal.

3.2.1 S8 Waste Rock Landform

The S8 WRL has been proposed to be located immediately to the east of the South Western Highway, adjacent to the current Greenbushes mine. This WRL is to be constructed from waste rock generated from the Greenbushes mine, with a capacity of approximately 63,000,000 loose cubic metres (**LCM**), which will extend the life of the operation by 5 to 10 years.

The S8 WRL has a default design height of 330 m Australian Height Datum (AHD), which is the current approved height of the adjacent Floyds WRL. This aims to preserve visual amenity in the area and ensures landforms are not out of place in the local topography. The final design height will be determined through consultation and development of design options to strike a balance between impact on visual amenity and impact of an expanded footprint, while maintaining the required WRL volume. During construction the height of the WRL may vary depending on the construction process and available footprint.

Waste characterisation of the proposed rock to be stored within the S8 WRL has determined that small amounts of potentially hazardous materials may be stored within the WRL. These materials may include potentially acid forming (**PAF**) material, waste rock containing elevated levels of arsenic, and naturally occurring asbestos. This material will be managed through encapsulation within non-acid forming (**NAF**) materials, consistent with approved management practices currently employed at the operation. Further detail on the management of potentially problematic materials within the S8 WRL is provided in Section 5.3.

Haul Truck access to the S8 WRL will require the construction of a crossing over or under the South Western Highway. Consultation with MRWA as well as local stakeholders will inform the design and location of this crossing.

The proposal also requires supporting infrastructure for the construction and operation of the S8 WRL, including access roads, laydown areas, workshops, stockpiles of rehabilitation materials and seepage and runoff collection drains and basins.

3.2.2 S2 Waste Rock Landform

The S2 WRL is a proposed extension of the existing Floyds WRL to the south, within the existing MDE. This WRL is to be constructed from waste rock generated from the Greenbushes mine, with a capacity



of approximately 57,000,000 LCM, further extending the life of the operation. The S2 WRL also has a default design height of 330 m AHD as it is an extension of the approved Floyds WRL.

Waste characterisation of the proposed rock to be stored within the S2 WRL is similar to that of the rock within the S8 WRL, with small amounts of potentially hazardous materials present. Management of these potentially hazardous materials will be undertaken through encapsulation with NAF materials.

The proposal also requires supporting infrastructure for the construction and operation of the S8 WRL, including access roads, laydown areas, stockpiles of rehabilitation materials and seepage and runoff collection drains and basins.

3.2.3 Salt Water Gully Dam

Additional water supply and storage is required for the site mining and processing operations. The SWG Dam is a catchment dam proposed along the Lyons River, within Salt Water Gully, which is expected to collect up to 1 GL/year from the surrounding Salt Water Gully catchment. The dam is intended to be predominantly a catchment dam, providing water for the mining and processing operations. No dewatering from the mine pits is intended to be stored in the SWG Dam, and no additional dewatering of the existing pits will be required as part of the Proposal.

Hydrological modelling indicates that in peak flows, excess water will overtop the dam, releasing into the downstream environment. Overtopping will be controlled via a constructed spillway, releasing water into the remaining section of the Lyons River, which is a tributary of the Blackwood River.

3.2.4 S2 WRL, S8 WRL and SWG Dam Supporting Infrastructure

This Proposal also includes provision for supporting infrastructure, such as access roads, pipelines, a pump station, and laydown areas. A crossing consisting of either an overpass or underpass across the South Western Highway will be developed as part of this Proposal in consultation with Main Roads WA, to allow for the expansion of mining infrastructure to the east of the existing site. Additionally, pipelines will be required to be installed under the South Western Highway, which will be designed and constructed in consultation with MRWA.

Seepage intersection infrastructure will also be installed surrounding the WRLs to ensure capture of runoff as well as seepage from the base of the landforms. The final design has not yet been developed, however the infrastructure is likely to consist of a seepage collection trench, potentially with small sedimentation capture ponds. The collected water will be returned to site for re-use in processing and mining operations.

3.2.5 Floyds Water Management Infrastructure

It has been estimated that in the order of 300 megalitres per year (ML/yr) of water is discharged from the eastern side of the existing mine, comprising water flows from Licensed Emission Points, unmonitored/unregulated surface water flows, and seepage into groundwater. The runoff and seepage contain chemical contaminants that are assumed to partially originate from Floyds Waste Rock Landform (WRL). Runoff from this landform can also transport sediment. Expansion of Floyds WRL could potentially impact the environment, including increased discharges to the environment and/or reduced discharge quality by way of chemical pollution and/or sediment.

Emissions and discharges from the Proposal, including potential surface water discharges, are managed under Talison's EP Act Part V Licence L4247/1991/13 (Licence), regulated by the Department of Water and Environmental Regulation (DWER). DWER has advised that the impacts of Floyds WRL





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on discharge of contaminated water from the eastern side of the Proposal will be considered in future revisions of the Licence. As a result, Talison is pursuing a management plan that includes:

- Alternative water management strategies to progressively stop discharge of contaminated water from the eastern side of the Premises; or
- Strategies and treatment options to control the lithium concentration (and potentially concentrations of other contaminants) in discharge from the eastern side of the Premises.

Talison is seeking to stop discharge of contaminated water from the eastern side of the Premises and/or treat discharge from the eastern side of the Premises to a standard acceptable for environmental discharge. A series of drains and basins at the base of the eastern embankment of Floyds WRL, as per the GHD (2018) concept study, is proposed to meet this outcome.

Clearing for this activity is not currently accounted for in Talison's clearing balance. Aspects of this activity that may require clearing are as follows:

- Basin embankments;
- Basin inundation footprints;
- Seepage interception trenching;
- Drains;
- Pipelines;
- Pumps, tanks, hardstands, footings, fences, gates, powerlines, transformers and other fixed plant and infrastructure; and
- Additional cleared areas to facilitate construction activities (e.g. laydowns, tracks).

Approximately 12.80 ha of additional clearing, consisting of 9.24 ha of native vegetation and 3.56 ha of cleared or completely degraded vegetation, will be required for construction of the water management infrastructure. Talison has determined through a reconciliation of actual and planned clearing at the Project (see Section 9.1.3) that the 9.24 ha of native vegetation clearing required for these works can be carried out within the 350 ha limit currently approved under MS1111. No change to the MDE is proposed for these works.

3.2.6 Maranup Ford Road Infrastructure Corridor

The addition of the Accommodation Village to the existing Proposal was approved under s45C of the EP Act on 15 May 2023. The Village is located on Maranup Ford Road to the south of the Proposal; however the portion of the MDE on which the Village is located is currently disconnected from the remainder of the MDE. A corridor connecting the Village to the active mining area is required for linear infrastructure (e.g. services such as power, pipelines and communications). The proposed corridor is located within the Shire Road Easement. No clearing of native vegetation is required for this corridor, however a 4.26 ha increase to the MDE will be required.

3.2.7 Infrastructure (CGP4 Laydown)

Additional laydown areas to support construction and maintenance activities are proposed to the north of CGP4. Approximately 7.67 ha of additional native vegetation clearing is proposed for the additional laydown areas. Talison has determined through a reconciliation of actual and planned clearing at the Project that the 7.67 ha of native vegetation clearing required for these works can be carried out within the 350 ha limit currently approved under MS1111, meaning no additional clearing is included for the CGP4 laydown within this Proposal. No change to the MDE is proposed for these works.



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3.2.8 Austins and Southampton Dam Raises

Talison is increasing the storage capacity of three existing water dams on site to support the expansion and reduce the likelihood of the dams overtopping and discharging water to the environment. This requires raising the dam embankments and works will also be undertaken to improve embankment stability and seepage management.

Clearing for a conceptual Austins and SH Dam Raise footprint has been included in the current clearing balance. However, aspects of this activity will require additional clearing beyond that currently accounted for and approved. Talison's recent experience with the Cowan Brook Dam raise suggests that additional cleared areas beyond the dam footprint to facilitate construction activities will be required. The proposed clearing will also include additional laydown areas and/or stockpiles adjacent to Austins and SH Dams.

Approximately 16.65 ha of additional disturbance is proposed to allow for works related to the Austins and SH Dam embankment raises, including up to 11.98 ha of additional native vegetation clearing and 4.67 ha of cleared or degraded vegetation. Talison has determined through a reconciliation of actual and planned clearing at the Project that the 11.98 ha of native vegetation clearing required for these works can be carried out within the 350 ha limit currently approved under MS1111. However, an expansion to the MDE is proposed to accommodate the SH Dam embankment raise.

3.2.9 Minor and Preliminary Works

Minor preliminary works will be required to be undertaken within the Proposal area prior to assessment under the EP Act, to allow sterilisation drilling of the lithium resource on land that will be utilised for the construction of the S8 WRL. These works are to be excluded from the Proposal referral, and include:

- Minor clearing required for establishment of access tracks and drill pads to enable sterilisation drilling, geotechnical drilling and test pits to be undertaken within the Proposed Action area;
- Minor clearing required for establishment of access tracks and drill pads to enable drilling and establishment of groundwater monitoring bores within the Proposed Action area. Results from groundwater monitoring will be used to enhance current understanding of the groundwater levels and water quality within the Proposed Action area; and
- Establishment of weirs within local waterways to enable measurement of natural flows.

The majority of the proposed drill sites required as part of preliminary works are located within previously cleared farmland. Two sites are within areas of State Forest and will require up to 0.15 ha of clearing for establishment of drill pads. Additionally, an access track will require up to 0.25 ha of clearing. Sites will be designed to avoid clearing where possible, with existing tracks utilised for access where possible and all potential black cockatoo habitat trees (diameter at breast height of over 50 cm) avoided. Minimal clearing of vegetation may also be required within drainage lines to allow for establishment of the proposed weirs.

No significant environmental impacts are expected as part of the proposed preliminary works, and sites will be rehabilitated in line with DEMIRS guidance following completion of the drilling program. The majority of the proposed preliminary disturbance will be utilised following approval of the proposal, as it intersects the proposed disturbance footprint.



A request for EPA consent to undertake minor and preliminary work under Section 41A(3) of the EP Act will be submitted following referral. Additional approval to undertake the sterilisation drilling will be sought via a Programme of Works through DEMIRS.

3.3 Justification

Lithium minerals produced from the Talison Greenbushes operation are essential for many different applications including batteries (small and large scale), ceramics, glassware, and other industrial and medical applications.

The use of lithium batteries is particularly important for the transition to renewable energies, reflected in increasing demand for lithium batteries as the power source for a wide range of electric vehicles and other mobile applications. This Proposal assists in reducing greenhouse gas emissions on a wide scale.

Talison's current life of mine plan for the Greenbushes lithium mine is forecast to produce approximately 302,000,000 bank cubic metres (**BCM**) of waste rock over 2025 to 2044. The existing approved Floyds WRL has remaining capacity of approximately 85,000,000 BCM. This indicates a 217,000,000 BCM shortfall in available storage for waste rock from approximately 2026.

Talison continues to undertake near field exploration along the north and southern strike lines that is likely to identify additional mineral resources. Waste associated with mining these prospective areas have not been included in the forecast waste rock volumes as they are yet to be sufficiently drilled to be evaluated.

Talison is committed to implementing environmental controls and strategies to identify, minimise, and wherever possible avoid environmental harm arising from the operations, and contends that this proposal can be implemented without significant adverse environmental impacts.

Additionally, the Talison Greenbushes Lithium operations employ approximately 1,700 employees, and the Proposal for the S8 WRL, S2 WRL and SWG Dam will extend the life of mine by 5-10 years. This will provide lasting economic benefits to Greenbushes and the surrounding locality.

3.4 Proposal Alternatives

Broader alternatives to the requirements of the Proposal are not feasible due to the Proposal already being underway. The Proposal is restricted by proximity to the existing Greenbushes mine, in order to reduce haulage routes for waste rock and pumping distances for water supply. Land use and tenure is also a constraining geographic boundary for the Proposal. Avoiding impact on sensitive environmental values is a key consideration for siting. The sections below provide more detail on the alternatives explored for specific aspects of the Proposal

3.4.1 Water Supply and Storage Alternatives

Alternative water storage options considered included increasing the capacity of current site dams. Lifts of current dams are currently progressing to ensure both adequate storage capacity for when water is scarce, as well as sufficient buffers for periods of water excess, reducing the risk of overtopping and associated environmental discharges. However, the expansion of these current dams does not increase water supply, which is required for proposed project expansion. Some additional water supply is available from dewatering of the mine pit. However, this water is insufficient volume and quality to meet future site demands.



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Alternative sites for the proposed dam were also considered, however upstream sites do not provide sufficient catchment volumes for the dam to be viable, and downstream sites have more potential to impact on the Blackwood River, which is a registered Aboriginal Cultural Heritage Site. The design of the SWG Dam is also currently constrained by land access.

The Salt Water Gully site was favoured as it is a logical extension of the mining operations (particularly with respect to the proposed S8 WRL), has a sufficient catchment, and already has historic impacts from mining and agriculture. The dam location has few downstream sensitive uses prior to its intersection with Hester Brook. Alternative locations either do not have sufficient capacity to make dam construction viable or are more likely to impact on higher quality water sources, heritage sites, areas of important habitat or downstream sensitive users.

Water supply through the installation of groundwater bores was considered not viable. The low permeability and lack of groundwater storage in the area generally means this resource is not considered to be of extraction value.

3.4.2 WRL Alternatives

Talison have reviewed a number of location options for storage of waste rock within a viable haulage distance from the existing mine footprint.

Backfilling of mine voids was initially considered, as this would utilise existing mine disturbance, and minimise impacts of clearing, while also minimising required haulage distances. Backfill of existing Cornwall and North Cornwall pit may be possible as the mine expands, however will account for only small volumes of waste rock placement. Backfill of the broader mine void will not be possible until late in the mine life, if at all, due to the geometry of the pit precluding concurrent backfill and mining. Additionally, the pit does not exhaust the mineral resource, indicating potential for future underground mining, further complicating pit void backfill options.

The potential for waste rock storage over the Tailings Storage Facilities (**TSFs**) on site (beyond currently planned waste rock capping) has also been investigated to minimise the additional clearing footprint required. However, the current TSF locations are still in operational use for storage of tailings, and will also be used for installation of additional plant. TSF1 will not likely be decommissioned until 2033, and while TSF2 has been decommissioned in 2024, the northern portion of the TSF will be used to convey ore from the ore sorters and crusher 4 to CGP4. Additionally, future processing of this tailings material may prove viable. Current information also suggests that the TSF will not be able to geotechnically support the additional load of significant volumes of waste rock, and the proximity of Maranup Ford Road limits options for additional buttressing of the western wall to provide additional stability.

Options for locations for the establishment of additional WRL's were then considered, taking into account limitations on proximity to the existing mine, and available mining tenure.

Areas north of the mine were not considered suitable due to the proximity of the Greenbushes Town, North Greenbushes town, areas of State Forest and prospectivity of areas immediately north of the South Western Highway.

Areas to the west of the mine site were not preferred due to large areas of high value remnant State Forest, known presence of threatened flora (*Caladenia sp.*), as well as the distance from the mine void and associated costs implications.

Additional options analysis was completed on WRL locations to the east and south of the operations. Examination of the area to the east (the Salt water Gully/Cascades area) included various iterations,



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including extension of the existing Floyd's WRL over the South Western Highway, as well as a standalone option that is located on mostly cleared land (S8 WRL). The current proposed S8 WRL footprint is considered low prospectivity from existing geophysical surveys.. Given the minimal clearing of native vegetation required, the S8 WRL is considered the preferred option for waste rock storage.

However, the S8 WRL only provides waste rock storage for approximately 5 years, and with a life of mine projected to 2045, additional waste rock storage will be required.

The extension of the Floyds WRL to the south through development of the S2 WRL is the preferred option from a mining perspective given proximity, existing transport routes and supporting infrastructure.

Together the S8 WRL and S2 WRL will provide sufficient waste rock storage for the Greenbushes mine to 2035.

3.4.3 Floyds Water Management Infrastructure Alternatives

Talison is investigating strategies to stop discharge of contaminated water from the eastern side of the existing MDE and/or to treat or discharge from the eastern side of the MDE to an acceptable standard for environmental discharge. The Floyds Water Management Infrastructure proposed in this application is the preferred approach, as it was designed with the following constraints in mind:

- 20m buffer from the High Voltage (HV) power line easement (Floyds North and South);
- 60m buffer from the HV power line easement at Carters Farm to address visibility concerns; and
- 50m from the toe of the existing or proposed Floyds WRL.

These constraints, as well as restrictions on available area, limit the possibility of alternatives to the Proposed Amendments and no other alternatives have been identified as feasible.

3.4.4 Maranup Ford Road Infrastructure Corridor Alternatives

The Maranup Ford Road Infrastructure Corridor was identified as the best option for linear infrastructure (e.g., services such as power, pipelines and communications) between the active mining area and the Accommodation Village as it is within an existing road reserve and no clearing was required. Shire approval for the infrastructure corridor was received on 24 April 2023. No other alternatives have been identified as feasible.

3.4.5 Supporting Infrastructure Alternatives

The location of the supporting infrastructure included in this Proposal including the CGP4 laydown, RMS stockpiles, workshops, laydown and linear infrastructure is limited by distance to the main infrastructure. The additional CGP4 Laydown is an extension to existing work, so no additional alternatives are feasible.

The design for the proposed crossing over the South Western Highway has not yet been finalised, and two options are currently under consideration. The crossing will either require construction of a bridge overpass over the top of the South Western Highway, or a tunnel underpass beneath the road. Options are currently being discussed with MRWA and stakeholders to determine the preferred outcome.



3.4.6 Austins and Southampton Dam Raise Alternatives

Investigations into possible water storage alternatives were undertaken in 2021 (GHD, 2021). The baseline water storage scenario was identified as Scenario 1. Water balance modelling identified four potential future storage options:

- 1. Scenario 2A: Mt Jones Dam and Cowan Brook Dam small raises;
- 2. Scenario 2B: Mt Jones Dam and Cowan Brook Dam large raises;
- 3. Scenario 3A: Saltwater Gully Dam and Cowan Brook Dam small raises; and
- 4. Scenario 3B: Saltwater Gully Dam and Cowan Brook Dam large raises.

All of these scenarios included embankment raises for Austins Dam and SH Dam, therefore a viable alternative has not been identified. Upgrades to the Austins and SH Dam (raising the spill level) will be undertaken to significantly reduce the likelihood of overflow events.

3.4.7 No Development

No Development was not seen as an option as the Mine is already in operation and not developing new waste Rock landforms would likely see mining cease by 2030. Talison has already committed to expanding its operation (under MS1111) to meet increasing demand for lithium for decarbonisation.

3.5 Local and Regional Context

3.5.1 Location

The existing MDE is situated immediately south of the Greenbushes townsite, in the southern section of the Darling Scarp and predominantly within Greenbushes State Forest 20 (SF20), approximately 250 kilometres (km) south of Perth and 80 km southeast of Bunbury in WA. The Local Government Area is the Shire of Bridgetown-Greenbushes. MDE operations are currently concentrated to the east of Maranup Ford Road and west of the South Western Highway.

This Proposal intends to extend the project MDE over the South Western Highway to develop the SWG Dam and S8 WRL immediately to the east of the existing Greenbushes mine. The S2 WRL will be developed within the existing MDE boundary.

3.5.2 The Cultural Landscape

The MDE occurs at the boundary of Karri Karrak Aboriginal Corporation Native Title Area, and the Wagyl Kaip Southern Noongar Aboriginal Corporation Native Title area. Talison has a Noongar Standard Heritage Agreement in place with the South West Aboriginal Land and Sea Council (SWALSC) on behalf of South West Boojarah #2 (now Karri Karrak Aboriginal Corporation), and Wagyl Kaip Southern Noongar Agreement Group. Talison also has a Noongar Standard Heritage Agreement in place with the Karri Karrak Aboriginal Corporation LCN 9633 for L70/244 and L70/246.

A search of the Aboriginal Cultural Heritage Inquiry System identified one 'Registered' Site of Aboriginal heritage significance within the vicinity of the Proposal (the Blackwood River), and no Sites lodged as 'Other Heritage Places' (DPLH, 2023). The Blackwood River (ID 20434) includes Hester Brook as a major tributary of the Blackwood River, which is a site of mythological significance in association with Waugal beliefs (Brad Goode & Associates, 2018). The Blackwood River site occurs within mining tenements M01/2, M01/4, M01/5, M01/10 and L01/1. The Proposal has been designed with a 50 m buffer zone between the S8 WRL and the Registered site boundary, and seepage interception will be installed to minimise impacts to Hester Brook.

















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3.5.3 Local Land Use

The land uses within and surrounding the MDE and Proposal area are a mix of mining, agriculture, residential/lifestyle and forestry, with a significant area of native vegetation in the form of State Forest. Additionally, the southwest region is a popular tourist destination, with the South Western Highway as the main route between Bunbury and Albany.

3.5.4 **Bioregion**

The existing MDE and Proposal area are within the Southern Jarrah Forest subregion as classified in the Interim Biogeographic Regionalisation for Australia (IBRA), and within the Jarrah Forest Bioregion.

This bioregion consists of the duricrust plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo-Marri woodlands on clayey soils. The vegetation of the Southern Jarrah Forest sub-region is described as, "Extensive areas of swamp vegetation in the south-east, dominated by Paperbarks and Swamp Yate. The understory component of the forest and woodland reflects the wetter nature of this area. The majority of the diversity in the communities occurs on the lower slopes or near granite soils where there are rapid changes in site conditions (Hearn et.al, 2002)".

3.5.5 Climate

The Greenbushes area has a Mediterranean climate, with warm, dry summers and cool wet winters. The nearest operational weather station is 10 km to the south of the site at Bridgetown (Station ID 009617). A summary of the climate data available is presented in Figure 3-5.

The average maximum temperatures for Bridgetown (1998-2024) range from 15.8°C in July to 30.0°C in January. The average minimum temperatures range from 4.8°C in July to 13.6°C in February (BoM, 2024).

The annual rainfall in the area generally varies from approximately 600 mm to 1,600 mm, with the highest rainfall generally occurring between May and September. However recent trends in rainfall volumes show a decrease in annual yields since data has been collected, specifically with decreased rainfall in winter, when the majority of precipitation occurs (Figure 3-6).



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Figure 3-5: Bridgetown Climate



Figure 3-6: Climate Trends



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Proposal Aspects 3.6

3.6.1 Altered Access to / Use of Country

The proposal will alter access and use of country to the east of the current project via the construction of S8 WRL over farmland and state forest. Talison has purchased (or agreed to purchase) all properties directly impacted by the Proposal. This includes the closure of Fullerton Road which Talison will apply to be degazetted.

3.6.2 **Altered Light**

The Proposal will increase the extent of light emissions from site. Talison is currently conducting a light study to determine the impacts of light on surrounding community. Talison is also putting together a planning schedule aimed at operating the S8 WRL during the daytime only to limit light impacts on the surrounding community.

Altered Surface Water Regimes 3.6.3

Rasing the Southampton Dam and installing the Floyds water management Infrastructure will reduce discharges from site and alter the downstream environment by reducing the water flow to the relevant catchments. Rasing Saltwater Gully Dams and taking water for mining operations will reduce the down stream flow of water to Hester Brook. Currently the Lyons River makes up approximately 5% of the Hester Brook flow per annum.

3.6.4 Altered Topography

The proposal will alter the topography of country to the east and south of the current project via the construction of S8 WRL over farmland and state forest, and the S2 WRL over forested areas. The farmland is currently moderately sloping towards Hester Brook. The S8 WRL has been designed to follow the contour of Hester Brook with a 50m offset to allow for drainage management infrastructure.

Change in Groundwater Levels (Abstraction / Dewater) 3.6.5

No changes to groundwater levels are expected as a result of this proposal as no additional groundwater abstraction or dewatering is required.

3.6.6 **Clearing of Vegetation**

The disturbance included within this Proposal totals 624 ha. This includes:

- 191 ha of clearing of native vegetation (of which 28.89 ha will be undertaken under the ٠ existing 350 ha approved under MS1111);
- 29 ha of clearing of previous mine disturbance and rehabilitated areas; ٠
- 335 ha of disturbance to cleared pasture and parkland; and •
- 69 ha of disturbance to plantation areas.

Dust Deposition 3.6.7

Clearing and construction activities associated with the Proposal are likely to have an impact on air quality through generation of fugitive dust emissions. Dust emissions can be considered via total suspended particulates with a diameter of less than 90 microns, PM₁₀, and deposited dust.



3.6.8 Introduction / Spread of Invasive Species

A number of introduced flora species have been recorded within the Proposal area, (Onshore 2024; 2024a; 2024b) including four declared pests under the *Biosecurity and Agricultural Management Act* (BAM Act):

- Asparagus asparagoides (Bridal Creeper);
- Galium aparine (Goosegrass);
- Zantedeschia aethiopica (Arum Lily); and
- Rubus ulmifolius/ Rubus anglocandicans (Blackberry).

Bridal Creeper and Blackberry are also listed as Weeds of National Significance (WoNS).

The relatively high diversity of weeds within the existing MDE, Proposal area and surrounding mining leases reflects the long mining history of the Greenbushes area and close proximity to surrounding agricultural land. Many of the weed species recorded are likely to have been introduced during early exploration and mining, becoming established on disturbed ground and extending into adjacent areas.

Farmland in the southern sector of the existing MDE and the eastern Proposal area is another source of introduced species, with 'edge effects' typically evident around the boundary of cleared annual pasture areas. The annual pasture and verge species are represented within intact native vegetation as a minor component of the understorey. Disturbed areas such as tracks and historical rehabilitation are more susceptible to invasion by these taxa, which are generally not vigorous and do not impact on native vegetation structure (Onshore, 2024).

To minimise introduction and spread of invasive species:

- Clearing will be managed in accordance with Talison ground disturbance permitting procedures; and
- Measures will be undertaken to minimise spread of weeds, through restriction of access to infested areas and vehicle and equipment hygiene procedures in line with the Talison Disease Hygiene Management Plan.

3.6.9 Noise

A noise assessment has modelled the predicted changes in noise levels from the existing operations to include the development of the S2 WRL and the S8 WRL and supporting infrastructure (Herring Storer Acoustics, 2023, 2025a, 2025b; Appendix AC). The noise levels at various receivers are expected to increase during operation of the WRLs by between 1 dB and 11 dB.

Talison has an existing approval under Regulation 17 of the Environmental Protection (Noise) Regulations 1997 (**Noise Regulations**) that alters the assigned noise levels to have a limit of 50 dB during the night. The existing operations comply with these levels, and the modelled increase in noise levels also show that the Proposal will remain within the assigned noise levels.

3.6.10 Release / Contamination of Land

Talison activities will be conducted in a manner that limits contamination of land. A service area for construction and maintenance will be compacted clay and any spills will be cleaned up immediately.



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3.6.11 Release to Water (Groundwater / Surface Water)

Some seepage of Potential Contaminates of Concern (PCoC) may occur as a result of rainfall penetrating the WRLs. Waste Rock high in PCoC will be encapsulated within the WRL to minimise seepage. Seepage collection system will be installed around the S2 and S8 WRL's to minimise seepage entering adjacent water ways.

3.6.12 Social Surrounds

In 2023 a Social Impact Assessment (SIA) was carried out by ERM to understand the local communities view on the current Greenbushes mine. Key issues included air quality, noise, traffic, and pressures on local services and accommodation.

A stakeholder consultation strategy has been development to ensure that all stakeholders are adequately consulted and any concerns with the Proposal are taken into account, and mitigation strategies are implemented where required. Stakeholder consultation has commenced with significant participation from the surrounding communities, highlighting specific concerns regarding the Proposal and the existing operations. Talison is undertaking a review of these concerns, and will investigate opportunities to alter the Proposal design and/or operation to further minimise impacts, where practicable. Talison intends to provide responses to community concerns raised.

A further SIA has been developed to assess the potential impacts of the Proposal on the surrounding community and other stakeholders, which is currently ongoing in conjunction with the stakeholder consultation.

3.6.13 Vibration

Vibration impacts have been monitored by Talison for a significant amount of time, with a vibration monitor located within the town of Greenbushes. Two additional vibration monitors were installed in 2024. Analysis of the past three years of monitoring at the Greenbushes locations shows that the majority of blasts result in a vibration impact of less than 1 mm/sec, with the highest recorded vibration over this time period being 3.03 mm/sec. The highest vibration at the additional two installed monitors was 3.36, while the average (only including blasts that triggered the monitor) was 0.47 mm/sec. These values are well below the 5 mm/sec human comfort limit.

As the Proposal does not involve any increase in pit size or blasting practices, no further vibration studies have been undertaken. Talison will continue to monitor vibration impacts of operation, and design blasts to ensure vibration impacts on the town are minimised.



4 STAKEHOLDER ENGAGEMENT

4.1 Key Stakeholders

The Stakeholders and interested parties for the Project that have been identified are:

- Project envelope landholders;
- Neighbouring landholders;
- Surrounding landholders;
- Aboriginal Native Title Groups: Gnaarla Karla Booja Aboriginal Corporation, Karri Karrak Aboriginal Corporation, Wagyl Kaip Southern Noongar Aboriginal Corporation;
- Federal and State Government Members;
- WA Government Departments and Agencies: JTSI, EPA, DEMIRS, DPLH, DBCA, MRWA;
- Commonwealth Government Agencies: DCCEEW;
- Local Government Authorities: Shire of Bridgetown-Greenbushes, Shire of Donnybrook Balingup, Shire of Manjimup, Shire of Nannup, Shire of Boyup Brook;
- Industry / Business Leaders: Donnybrook-Balingup CCI, Blackwood Chamber of Commernce, Chamber of Minerals and Energy, Minerals Council of Australia;
- Conservation / Environment Groups: Blackwood Basin Group, Blackwood Environment Society, Bridgetown-Greenbushes Community Landcare;
- Special Interest Community Groups: Grow Greenbushes (Rate Payers & Residents Association), Balingup Progress Association, Sporting Groups (Shamrock Sporting Club), Country Women's Association (Greenbushes CWA Belles);
- Broader Regional Communities: Residents and businesses across the Bridgetown and Balingup communities;
- Tourists: day visitors to the region, Greenbushes Discovery Centre, Bridgetown-Greenbushes Tourism Association, Balingup Visitor Centre; and
- Community Service Providers: Emergency Services (Police, Fire and Rescue, Ambulance Service, SES), Greenbushes Volunteer Bushfires Brigade, Health Services, Accommodation Providers.

4.2 Stakeholder Engagement Process

The Greenbushes mine is an existing operation and has an established Stakeholder Engagement Plan. In accordance with the Stakeholder Engagement Plan for the existing operation, stakeholders who are relevant to the existing operation are consulted in relation to future plans and changes, including the Project.

Additional to the Stakeholder Engagement Plan for the existing operation, a specific Stakeholder Consultation Plan regarding the Project has been developed to ensure potential stakeholders are appropriately engaged at all stages of the process, and community concerns are heard and taken into consideration.

Stakeholder engagement that has been undertaken specifically regarding the Project has been outlined at the 'Stakeholder Consultation Outcomes' section below, and summarised at Table 1.



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Future engagements planned specifically regarding the Project is outlined in the 'Future Engagement' section below.

Stakeholder engagement that has been undertaken in relation to existing operations is summarised in Section 4.2.1 - 4.2.4.

4.2.1 Surrounding Communities

Surrounding communities are kept informed of activities through regular presentations at monthly Grow Greenbushes meetings and contributions to local publications. Grow Greenbushes meetings are also used to advise the community of any proposed Project changes and to obtain feedback on issues or concerns that the community may have.

Talison has established a community liaison office at the Community Resource Centre (**CRC**) in Greenbushes. The office is manned once a month with community members having the opportunity to attend and discuss proposed expansions with the Talison staff members attending the office at this time.

Talison maintains an active community presence through the support of, and attendance at local events, an annual open day, and employee participation in community organisations such as the Volunteer Fire Brigade, Greenbushes Discovery Centre, Greenbushes Community Resource Centre, St John's Ambulance, the Tidy Towns Committee and the Blackwood Basin Group (**BBG**).

4.2.2 Local Government

Talison representatives meet with Bridgetown-Greenbushes Shire representatives on a monthly basis (or more frequently if required) to discuss upcoming plans and project progression. Talison representatives attend Council meetings where required to provide presentations, inform council and seek feedback.

4.2.3 State and Federal Government

Talison maintains an open communication channel with other key government stakeholders. Annual reports inform and update agencies on activities and compliance at the operation. Talison also organises a joint regulatory agency site visit with representatives from DWER, DEMIRS and DBCA. During the site visits, Talison presents environmental performance information and plans for the coming year. Typically, this event is organised annually although it may be held less frequently if Talison has been in regular contact with the departments over the preceding year.

4.2.4 Stakeholder Consultation Strategy

Talison recognises that ongoing stakeholder engagement relating to Project activities is required. Ongoing stakeholder engagement will aim to ensure key stakeholders are kept informed of Project plans and that any concerns which arise are addressed.

Key engagement methods identified within the Stakeholder Engagement Plan include:

- One-on-one meetings, phone calls and written correspondence with neighbouring landholders, government agencies, non-Government organisations, members of Parliament and local Government;
- Regular articles in the local newspaper and community newsletters (available in hard copy or online);



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- Monthly presentations at Grow Greenbushes meetings (includes presenting details of proposed changes and seeking feedback);
- Email distribution list to provide updates, including site bulletins, and seek feedback (generated from community meetings, site tours and public submissions);
- Community notifications in the form of letters to all Greenbushes Post Boxes;
- Questionnaires or surveys to seek community feedback on community concerns and expectations regarding the Project;
- Talison website (publish frequently asked questions relating to the expansion and the Project, site bulletins and approval documentation);
- Community information sessions (open to the public);
- Annual open day (includes mine tour, information briefing, project displays and discussions with Talison employees);
- Annual reports and site visits for Government regulators (e.g., DWER, DEMIRS, DBCA, DCCEEW);
- Exhibitions and displays manned by Talison employees at key community events such as the Balingup Small Farm Field Day and the Bridgetown Show;
- Manned community information booth at the Greenbushes CRC;
- Site tours available via arrangement; and
- A dedicated telephone and email address for the community to register concerns, comments or queries.

A specific Stakeholder Consultation Plan regarding the Project has been developed to ensure potential stakeholders are appropriately engaged at all stages of the process, and community concerns are heard and taken into consideration. Stakeholder engagement that has been undertaken specifically regarding the Project has been outlined at the 'Stakeholder Consultation Outcomes' section below and summarised at Table 4-1. Planned future engagements are set out at the 'Future Engagement' section.

Talison has an External Stakeholder Grievance Resolution Guideline which is available on the company website.

4.2.5 Stakeholder Engagement Undertaken to Date for the Proposal

Below is a summary of the stakeholder engagement undertaken to date specifically related to the Project. Further details as to stakeholder consultation outcomes are provided in the next section (Stakeholder Consultation Outcomes).

The location of the Project requires the acquisition of private landholdings as well as access to areas of State-owned Forest and Road Reserves. Early, meaningful engagement with relevant landholders throughout each stage of the Project will be vital to its success. The Proponent's extensive efforts in this regard are reflected in the number of landholders consulted to date (Table 4-1) and the outcomes achieved (Stakeholder Consultation Outcomes) section below.



Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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Stakeholder category	Number of people/agencies consulted	Key topics and issues	How proponent will address issues
Landholders	9	Negotiation for land acquisition	Various stages of discussion, negotiation and acquisition
Local authorities	1	Upcoming plans and project progression	Ongoing provision of presentations and seeking feedback.
State authorities	1	Annual reports, site visits	Ongoing provision of information about the proposed expansion project.
Federal authorities	1	Annual reports, site visits	Ongoing provision of information about the proposed expansion project.
Internal workforce	1	Upcoming plans and project progression	Ongoing provision of information about the proposed expansion project.
Community	159	Upcoming plans and project progression	Ongoing provision of information about the proposed expansion project. Responses to various concerns via targeted workshops.

Table 4-1: Summary of Stakeholder Consultations

4.3 Stakeholder Consultation Outcomes

Between 17 October 2023 and 24 January 2025, Talison had multiple consultations with landholders not only within the project footprint but also within buffering lots. Negotiations for purchase of land from these landholders are ongoing, with some proceeded to a draft offer and acceptance, others in the counter offer stage, and others still at discussion stage.

Between 16 November 2023 and 4 December 2024, Talison has met with various State and Federal agencies, including the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Water and Environmental Regulation (DWER). Discussions have included provision of information by Talison about the proposed expansion proposal, with the outcome being ongoing engagement throughout the referral and assessment process.

In January and February 2025 Talison informed the broader workforce of the Proposed expansion firstly via manager briefings then State of the Nation Presentations, emails and intranet news items. The purpose of this information was to inform the workforce of the Proposal detail and dispel rumours and misinformation. This was followed by targeted stakeholder engagement with the surrounding landholders, including face to face meetings, email and phone calls. Targeted engagement showed a strong interest in the expansion project and a willingness to understand the impacts of the Proposal. The engagement with workforce and surrounding landholders will be ongoing as required.



Greenbushes Lithium Mine: Additional Waste Rock Landforms, SWG Dam and Mine Infrastructure

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In March 2025 Talison commenced community engagement sessions with ten sessions held in Bridgetown, Greenbushes and Balingup over four days. One hundred and fifty-nine (159) people attended, raising a range of potential issues raised including dust, noise, light, and visual impact of the Proposal activities. These community engagement sessions will be ongoing to provide timely response to raised concerns and allow stakeholder input into design. Engagement will involve face to face meetings, email and phone calls as appropriate.

A detailed breakdown of the stakeholder engagement undertaken to date has been included as Appendix C.



5 OBJECT AND PRINCIPLES OF THE EP ACT

Section 4A of the EP Act establishes the five principles to be considered throughout the Environmental Impact Assessment process. These five principles are outlined below, as well as how they have been applied to the development of this Proposal.

5.1 The Precautionary Principle

The precautionary principle states that:

"Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by:

- a. careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and
- b. an assessment of the risk-weighted consequences of various options."

Talison has identified a range of studies on environmental factors required to fully understand the baseline of the proposal area, and the potential impact of the proposed activities. These studies are currently progressing and will continue throughout development of the Proposal. Outcomes from these initial studies will also be used to inform mine planning, as well as development of additional or alternative mitigation strategies to prevent environmental harm.

Where threats to the environment are uncertain, Talison will adopt a precautionary approach.

5.2 The Principle of Intergenerational Equity

The principle of intergenerational equity states that:

"The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations."

Talison will manage their impact to environmental factors, through careful planning based on the outcomes of environmental impact studies. Where possible, the health, diversity and function of the environment will be maintained or improved for the benefit of future generations.

Additionally, the Proposal infrastructure as well as the wider Greenbushes project area will be rehabilitated progressively and following operations, in accordance with a Mine Closure Plan (**MCP**) approved by DEMIRS.

5.3 The Principle of the Conservation of Biological Diversity and Ecological Integrity

The principle of the conservation of biological diversity and ecological integrity states that:

"Conservation of biological diversity and ecological integrity should be a fundamental consideration."



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The value of biological diversity and ecological integrity are recognised by Talison and are key to the management of the Proposal development. Where possible and practicable, decisions have been made regarding infrastructure locations to reduce the potential ecological impact. A key example of this principle in practice is the determination of the S8 WRL location to avoid impacts to State Forest and instead locate the WRL in an area that is mostly cleared pasture.

Talison will continue to undertake recommendations from proposed biological studies to minimise environmental impact on the biodiversity of the Proposal area.

5.4 Principles Relating to Improved Valuation, Pricing and Incentive Mechanisms

Principles relating to improved valuation, pricing and incentive mechanisms include:

- Environmental factors should be included in the valuation of assets and services.
- The polluter pays principles those who generate pollution and waste should bear the cost of containment, avoidance and abatement.
- The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.
- Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solution and responses to environmental problems.

Costs of environmental management have been factored into all stages of Proposal planning and will continue to be accounted for during further studies and implementation.

Annual budgets contain provisions for environmental management and monitoring, as well as provision for site rehabilitation and closure costs. Predicted closure costs are updated annually and have been factored into the financial assessment of the Proposal.

Cost savings associated with minimisation of environmental impact have also been considered and implemented. Examples include minimisation of vegetation clearing which reduces earthworks costs, minimisation of material consumption, identifying options for recycling, and investigation into processes that may reduce water usage.

5.5 The Principle of Waste Minimisation

The principle of waste minimisation states:

"All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment."

Talison is committed to implementation of waste minimisation practices at the Greenbushes operation. This is achieved through adoption of a long-term strategy that aims to reduce solid waste going into landfill, re-use potential waste materials whenever possible, and minimise packaging waste.



6 ENVIRONMENTAL FACTORS

Talison have identified the following Environmental Factors as being potentially relevant to the implementation of the Proposal:

- Flora and vegetation;
- Terrestrial environmental quality;
- Terrestrial fauna;
- Inland waters;
- Air Quality;
- Greenhouse gas emissions; and
- Social surroundings.

This view is based on the EPA's approach to the determination of whether a potential impact may be significant (EPA, 2023). This document states that:

When considering significant impact or effect, the EPA may have regard to various matters, including the following:

- a) the object and principles of the Act
- b) values, sensitivity and quality of the environment which is likely to be impacted
- c) all stages and components of the proposal (such as any infrastructure required for the proposal to be practicably implemented, or a proposal life cycle)
- d) extent (intensity, duration, magnitude, and geographic footprint) of the likely impacts
- e) resilience of the environment to cope with the impacts or change (including considering pressures such as climate change)
- *f*) *consequence of the application of the mitigation hierarchy to the proposal*
- g) consequence of the likely impacts (or change), including off-site impacts (such as impacts on a wetland from chemicals discharged into upstream river systems) and indirect impacts (such as reduced fish harvest due to decreased water quality)
- *h) likely environmental outcomes, and whether these are consistent with the EPA environmental factor objectives*
- *i)* cumulative effects, taking into account cumulative environmental impacts the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities
- *j)* holistic impacts connections and interactions between impacts, and the overall impact of the proposal on the environment as a whole
- *k*) *level of confidence in the prediction of residual impacts and the success of proposed mitigation (see section 7 for further information on the mitigation hierarchy)*



I) public interest about the likely effect of the proposal or scheme, if implemented, on the environment, and relevant public information.

A brief summary of the classification of environmental factors relevant to the Proposal are listed in Table 6-1. Given the inland location of the Proposal, marine-related environmental factors were not considered. Similarly, three other factors – subterranean fauna, landforms and human health – do not appear to be relevant to the Proposal and have not been considered beyond this section.

Factor	Classification	Basis of Classification
Flora and Vegetation	Preliminary Environmental Factor	Specimens of Threatened flora species have been found in historic surveys to the west of the existing mine site. Extensive flora and vegetation surveys have been conducted over the Proposal area, and no Threatened flora species have been located within the Proposed disturbance footprint. One Priority 4 flora species (<i>Acacia semitrullata</i>) has been identified within the proposed footprint for the SH Dam raise and surrounds, within rehabilitated areas that have been previously disturbed. No vegetation communities of conservation significance have been identified within the Proposal area. No direct or indirect impacts on Threatened flora or ecological communities are expected from this Proposal. Minor impacts to one Priority 4 species are expected due to the clearing required for the SH Dam. Flora and Vegetation is not expected to be a Key Environmental Factor for assessment, as the majority of impacts are associated with fauna habitat values.
Landforms	Not relevant	No significant landforms occur in the project area.
Subterranean Fauna	Not relevant	The likelihood of impacts on subterranean fauna from the Proposal is considered low, given the low numbers recorded in the region, and lack of suitable habitat within the Proposal area (Bennelongia, 2020).
Terrestrial Environmental Quality	Preliminary Environmental Factor	Management of waste rock is likely to be required to ensure impacts to terrestrial environmental quality are minimised. Soils may require management to ensure availability for use in rehabilitation.
Terrestrial Fauna	Key Environmental Factor	Several Threatened and Priority terrestrial fauna species are likely to be impacted by the Proposal through both direct impacts to critical habitat and indirect impacts.

Table 6-1: Environmental Factors



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Factor	Classification	Basis of Classification
		Management actions to minimise impacts to these species are likely to be required, including potential offsets where residual impacts remain.
Inland Waters	Key Environmental Factor	The proximity of the Project to permanent surface water features means inland waters is likely to be considered a key environmental factor for the Project assessment. The construction of the SWG Dam will impact the flow of the Lyons River within Salt Water Gully, and the construction of the WRLs may impact local surface and groundwater quality.
Air Quality	Preliminary Environmental Factor	Given the proximity of the Proposal to a number of sensitive receptors including residential premises, air quality is likely to be a significant consideration. Air quality is likely to be impacted by the construction and ongoing operation of the WRLs and construction of the additional proposed infrastructure.
Greenhouse Gas Emissions	Preliminary Environmental Factor	Greenhouse gas emissions of the existing Greenbushes Project approvals have not yet been assessed by the EPA. The Project is not likely to meet the annual 100,000 t CO2-e trigger for assessment in isolation, however when considered as part of the wider Greenbushes site this limit will be
Social Surroundings	Key Environmental Factor	exceeded. Given the proximity to the town of Greenbushes, the South Western Highway and other residential properties, the impacts of the Project on local amenity, noise, and dust are likely to require consideration and mitigation. Additionally, the nearby Blackwood River is a registered Aboriginal heritage site, and the Project has the potential to impact on the water quality and flow of the River.
Human Health	Not relevant	No impacts from implementation of the proposal are likely to have a significant impact on human health outcomes, as the Proposal does not involve impacts from radiation.

The following sections provide a detailed assessment of the potential impacts of the implementation of the proposal, as well as proposed mitigation measures and predicted outcomes.



6.1 Environmental Factor: Flora and Vegetation

6.1.1 EPA Objective

The relevant EPA objective for Flora and Vegetation is *"to protect flora and vegetation so that biological diversity and ecological integrity are maintained."*

6.1.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the flora and vegetation environmental factor:

- Environmental Factor Guideline Flora and Vegetation (EPA 2016);
- Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a); and
- Guidance Statement No. 6 Rehabilitation of Terrestrial Ecosystems (EPA 2006).

6.1.3 Receiving Environment

6.1.3.1 Flora and Vegetation Studies

Recent studies relating to the flora and vegetation likely to be impacted by the Proposal have been completed and compiled in the following reports:

- Onshore Environmental, (2024) Salt Water Gully Combined and Extended Flora and Vegetation Survey; (Appendix D, IBSA 2024-0087);
- Onshore Environmental, (2023) Salt Water Gully Downstream Reconnaissance Flora and Vegetation Survey; (Appendix E);
- Onshore Environmental, (2024a) S2/S7 Future Waste Rock Landform Flora and Vegetation Survey; (Appendix F);
- Onshore Environmental (2024b) Detailed Flora and Vegetation Survey Additional Areas North (Appendix G)
- Onshore Environmental, (2024c) Groundwater Dependent Vegetation Assessment, Talison Lithium New Water Storage; (Appendix H);
- Onshore Environmental (2024d) Reconnaissance Flora and Vegetation Survey; Greenbushes Lithium – Upcoming Clearing Approvals (Appendix I); and
- Glevan Consulting, (2023) Saltwater Gully Phytophthora Dieback Occurrence Report; (Appendix J).

Several of the studies listed above are consolidated reports to cover the Proposal area, and incorporate findings from surveys conducted over several survey areas and seasons.

These flora and vegetation studies have been undertaken over the Proposal area and include clarification of the vegetation types and condition in the area, assessment of the conservation significance of the plant taxa and vegetation communities, and identification of any introduced flora species. Separate assessments were conducted to assess occurrence of Groundwater Dependant Vegetation (GDV) and dieback within the expanded Proposal area to the east of the existing MDE. Results from these studies are outlined and summarised in the below sections.



6.1.3.2 Regional Vegetation Context

The existing MDE and Proposal area occurs in the Menzies Subdistrict of the Darling Botanical District, in the South-West Botanical Province (Beard, 1981) which covers a total area of 26,103 km², of which 18,060 km²(67.86%) originally supported jarrah and jarrah-marri forest (WALGA, 2020).

The existing MDE and Proposal area is mapped as Beard Vegetation Association 3 – Medium Forest; Jarrah-Marri. Over 67% of the pre-European vegetation extent remains intact (WALGA, 2020). Vegetation complexes of the southern jarrah forest have most recently been defined by Mattiske and Havel (1998) and updated by Webb et al. (2016). Vegetation complexes mapped within the Proposal area are listed in Table 6-2.

6.1.3.3 Local Vegetation Types

A number of vegetation types have been mapped in the Proposal area by Onshore Environmental, described in Table 6-2, and depicted in Figure 6-1. The majority of the proposed expansion is either in areas of cleared farmland, or Jarrah and Marri forest, with patches of Plantation.

Vegetation Type	Description
HC EmCc BgPl PeMr(Bl) BoLc	Forest of <i>Corymbia calophylla</i> and Eucalyptus marginata subsp. marginata over Low Woodland A of <i>Banksia grandis</i> and <i>Persoonia longifolia</i> over Open Low Scrub A/B of <i>Pteridium esculentum</i> and <i>Macrozamia riedlei</i> (Bossiaea <i>linophylla</i>) over Dwarf Scrub D of <i>Bossiaea ornata</i> and/or <i>Leucopogon</i> <i>capitellatus</i> on brown loamy sand on hill crests and upper hill slopes.
HS EmCc BoLc	Forest of <i>Eucalyptus marginata subsp. marginata</i> and <i>Corymbia calophylla</i> over Low Heath D of <i>Bossiaea ornata</i> and <i>Leucopogon capitellatus</i> on grey/brown sandy loam on hill crests and upper hill slopes.
HS EmCc PeMr LcBo	Forest of <i>Eucalyptus marginata subsp. marginata</i> and <i>Corymbia calophylla</i> over Low Scrub A of <i>Pteridium esculentum</i> and <i>Macrozamia riedlei</i> over Low Heath D of <i>Leucopogon capitellatus</i> and <i>Bossiaea ornata</i> on brown loamy sand on lateritic hill slopes.
HS CcEm Bl Pe(XpMr) LcBoHam	Forest of Corymbia calophylla and Eucalyptus marginata subsp. marginata over Scrub of Bossiaea linophylla over Low Scrub B of Pteridium esculentum (Xanthorrhoea preissii, Macrozamia rieldei) over Open Dwarf Scrub D of Leucopogon capitellatus, Bossiaea ornata and Hibbertia amplexicaulis on brown sandy loam on lateritic hill slopes.
HS CcEm	Forest (to Open Woodland) of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over parkland cleared understorey.

Table 6-2: Vegetation Communities



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Vegetation Type	Description
LS CcEpEm Hp Xp HaBdLc NjLlDf	Forest of Corymbia calophylla, Eucalyptus marginata subsp. marginata and Eucalyptus patens over Open Scrub of Hakea prostrata over Open Low Scrub A of Xanthorrhoea preissii over Dwarf Scrub D of Hypocalymma angustifolium, Banksia dallanneyi subsp. sylvestris and Lysiandra calycina over Open Low Sedges of Netrostylis sp. Jarrah Forest (R. Davis 7391), Lepidosperma leptostachyum and Desmocladus fasciculatus on red brown loam on lower valley slopes.
LS CcEpEm BIXp Pe(XpLvMr) LcCcSp	Forest of Corymbia calophylla, Eucalyptus patens and Eucalyptus marginata subsp. marginata over Scrub of Bossiaea linophylla and Xanthorrhoea preissii over Low Scrub B of Pteridium esculentum (Xanthorrhoea preissii, Leucopogon verticillatus, Macrozamia riedlei) over Open Dwarf Scrub D of Leucopogon capitellatus, Chorizema cordatum and Styphelia propinqua on brown loam on lower hill slopes and footslopes.
GR CcEp XpApHs Hi HaHcSg	Low Woodland A of <i>Corymbia calophylla</i> and <i>Eucalyptus patens</i> over Open Low Scrub A of <i>Xanthorrhoea preissii, Acacia pulchella</i> and <i>Hakea lissocarpha</i> over Low Scrub B of <i>Hemigenia incana</i> over Dwarf Scrub D of <i>Hypocalymma</i> <i>angustifolium, Hibbertia commutata</i> and <i>Stypandra glauca</i> on brown sandy and silty loam on granitic Slopes.
DF Mr Jp	Tall Sedges of <i>Machaerina rubiginosa</i> over Very Open Low Sedges of <i>Juncus pallidus</i> on brown light medium clay on drainage zone amongst annual pasture.
ME Er(CcEp) BliClAs(Mr) TIPe LeJp	Forest of Eucalyptus rudis subsp. rudis (Corymbia calophylla, Eucalyptus patens) over Low Woodland A of Banksia littoralis, Callistachys lanceolata and Acacia saligna (Melaleuca rhaphiophylla) over Low Scrub A of Taxandria linearifolia and Pteridium esculentum over Very Open Tall Sedges of Lepidosperma effusum and Juncus pallidus on brown loam on medium drainage lines and floodplains.
LS CcEm Xp PcBdHa	Forest of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata subsp. marginata</i> over Scrub of <i>Xanthorrhoea preissii</i> over Dwarf Scrub C of <i>Lysiandra calycina, Banksia dallanneyi subsp. sylvestris</i> and <i>Hypocalymma angustifolium</i> on brown sandy loam on lower hill slopes.
DF EpCc TIBIHp Ha CaNjDb	Forest of Eucalyptus patens and Corymbia calophylla (Eucalyptus marginata subsp. marginata) over Scrub of Taxandria linearifolia, Bossiaea linophylla and Hakea prostrata over Open Dwarf Scrub D of Hypocalymma angustifolium over Very Open Low Sedges of Cyanochaeta avenacea, Lepidosperma leptostachyum and Netrostylis sp. Jarrah Forest (R. Davis 7391) brown sandy clay loam on drainage flats.



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Vegetation Type	Description
HS Bg	Forest of Corymbia calophylla and Eucalyptus marginata subsp. marginata over Low Woodland A of Banksia grandis, Persoonia longifolia, Corymbia calophylla and Eucalyptus marginata subsp. marginata over Open Low Scrub A of Bossiaea linophylla, Pteridium esculentum and/or Macrozamia riedlei over Low Heath D of Bossiaea ornata and/or Leucopogon capitellatus on brown sandy loam on upper hillslopes.
Hs Bo	Forest of <i>Eucalyptus marginata subsp. marginata</i> and <i>Corymbia calophylla</i> over Low Heath D of <i>Bossiaea ornata, Leucopogon capitellatus</i> and <i>Banksia dallaneyi subsp. sylvestris</i> over Very Open Low Sedges of <i>Lepidosperma leptostachyum</i> and <i>Netrostylis sp.</i> Jarrah Forest on grey/brown loamy sand on lateritc hill crests and upper hill slopes.
HS Pd TpBl	Heath A of <i>Podocarpus drouynianus (Pultenaea ochreata</i>) with Woodland (to Forest) of <i>Eucalyptus marginata subsp. marginata</i> and <i>Corymbia calophylla</i> over Scrub of <i>Taxandria parviceps (Bossiaea linophylla</i>) over Dwarf Scrub C/D of <i>Dasypogon bromeliifolius, Adenanthos obovatus</i> and <i>Styphelia erubescens</i> on grey sand on lower hillslopes
DF EpMpHp	Forest of Eucalyptus patens and Corymbia calophylla (Eucalyptus marginata subsp. marginata and *Pinus radiata) over Scrub of Taxandria linearifolia, Bossiaea linophylla and Hakea prostrata over Open Dwarf Scrub D of Hypocalymma angustfolium over Very Open Low Sedges of Cyathochaeta avenacea, Lepidosperma leptostachyum and Netrostylis sp. Jarrah Forest (R. Davis 7391) on brown sandy clay loam on drainage flats.
DF TIHp	Thicket of <i>Taxandria linearifolia</i> and <i>Hakea prostrata</i> with Low Woodland A of <i>Melaleuca preissiana</i> and Banksia litoralis (Callistachys lanceolata, Corymbia callophylla) over Open Tall Sedges of <i>Leptocarpus depilatus</i> on brown sandy clay loam on drainage flats.
DL EpCc Tp	Woodland (to Forest) of Eucalyptus patens and Corymbia calophylla (Callistachys lanceolata, Banksia seminuda or Banksia litoralis) over Thicket of Taxandria parviceps, Bossiaea linophylla, Acacia extensa and Pteridium esculentum over Open Dwarf Scrub D of Dasypogon bromeliifolius and Conospermum capitatum on grey sand on drainage lines.
FL LrBr	Dense Tall Sedges of * <i>Typha orientalis</i> on brown light clay.
WE TI	Dense Tall Sedges of <i>Machaerina rubiginosa, Machaerina juncea</i> with Low Open Scrub A of <i>Taxandria linearifolia, Taxandria parviceps</i> and <i>Astartea scoparia</i> on brown sandy clay on wetlands.
MD	Mine Disturbance/Clearing
MR	Mine Rehabilitation Areas



GREENBUSHES LITHIUM OPERATION

EPA Referral Supporting Documentation

Vegetation Type	Description
PL	Plantation.
RT	Roads, tracks and infrastructure corridors.
WB	Water bodies/ dams.
CF	Farmland (annual pasture).

6.1.3.4 Vegetation Condition

Vegetation condition within the Greenbushes region has been impacted by past activities including logging, access tracks, historical mine activities including excavation of costeans and shafts, construction of powerline and rail corridors, clearing for farmland and plantation timber, edge effects around the Greenbushes townsite and illegal dumping of domestic rubbish in addition to more recent mining and exploration activity in the area (Onshore, 2024). Dieback and macropod grazing also impact on vegetation condition within the Greenbushes region.

Vegetation condition over the proposed disturbance areas varies from cleared to very good. The vegetation within the majority pastoral areas, plantation and rehabilitation areas is considered mostly degraded, while areas of state forest within the Proposal area are generally in good to very good condition. Figure 6-1 outlines the vegetation types within the Proposal area, and Figure 6-2 outlines the vegetation condition.

6.1.3.5 Previously Rehabilitated Areas

The Project is the longest continuously operated mine in WA (since 1888), therefore original approval to clear these areas potentially precedes the EP Act and Mining Act. Many of these areas and areas authorised to be cleared under Part IV, Part V and Mining Act approvals have been rehabilitated but Talison has not requested that they be relinquished. Talison requests that the re-clearing of these previously approved and rehabilitated areas is included in the clearing allowance under MS1111 as "29 ha of previous mine disturbance and rehabilitated areas" so there is clarity about their status for ongoing mine development. This will help to distinguish between clearing of native vegetation (which is largely in State Forest) that requires offsets, and rehabilitated areas that have not yet established habitat values for conservation significant species.











6.1.3.6 Significant Vegetation Communities

There are no Federal or State listed Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) within a 20km radius of the MDE or within the Talison Greenbushes mining tenements (Onshore 2024, 2024a).

The nearest Environmentally Sensitive Area (**ESA**) was identified approximately 2 km to the Northwest of the Proposal area (Onshore, 2024a) The ESA incorporates a winter-wet dampland supporting a population of Threatened Flora *Caladenia harringtoniae*. The Proposal is not expected to impact on the identified ESA.

Caladenia harringtoniae occurs within creek line or swamp habitats, and flowering of this species occurs from September to November. Survey over the habitat types this species is most likely to occur within along the Lyons River was conducted in October 2022, and no individuals were identified. Given there are no records of *Caladenia harringtoniae* within the Proposal area, no additional ESAs will be impacted.

6.1.3.7 Significant Flora

The existing MDE has been extensively surveyed and no Threatened flora listed under the EPBC Act or BC Act have been recorded within the boundary. One priority species recognised by the DBCA (*Acacia semitrullata*, Priority 4) has been recorded within the MDE, and one occurrence of the EPBC and BC Act listed species *Caladenia harringtoniae* (Vulnerable) has been recorded approximately 560 m from the southwest boundary of the existing MDE.

Detailed flora studies of the proposed disturbance areas have been undertaken, and no plant taxa recorded were listed as Threatened Flora under the EPBC Act of the WA BC Act. One Priority 4 flora species (*Acacia semitrullata*) was identified within the proposed footprint for the SH Dam raise and surrounds, within rehabilitated areas that have been previously disturbed (Onshore, 2024b). *Acacia semitrullata* is a low sprawling shrub and was recorded as 25 plants within native rehabilitation situated adjacent to Spring Gully Road. The species is known to occur from white/grey sands on sandplains or swampy areas, from the Jarrah Forest, Swan Coastal Plan and Warren bioregions (WAH 2024). It has been widely recorded between Pinjarra in the north, Cape Leeuwin in the south, and Collie and Nannup in the east, with one outlying record from Walpole on the south coast (Onshore 2024b). Currently, 127 populations of this species have been identified in the South West region of WA. The population within the Proposal area has been determined to be of state significance, noting that it occurs with an area of native rehabilitation.

Additionally, two species of interest that could not be identified to species level were found within the SWG area:

- Gonocarpus sp. was recorded in a single location within verge vegetation along the South Western Highway, as a population of approximately 85 plants. The Perth Taxonomic Review Committee has not recognised a new species, but has recommended future collection of fruiting material.
- Lepidosperma sp. was recorded as a population of 13 plants within the Lyons River drainage system, with several other populations located outside the Proposal area. Given the location of this population on the very boundary of the Proposal area, the population identified is not likely to be directly impacted by the disturbance footprint.


6.1.3.8 Introduced Species

A number of introduced flora species have been recorded within the Proposal area, (Onshore 2024; 2024a; 2024b) including four declared pests under the *Biosecurity and Agricultural Management Act* (BAM Act):

- Asparagus asparagoides (Bridal Creeper);
- Galium aparine (Goosegrass);
- Zantedeschia aethiopica (Arum Lily); and
- Rubus ulmifolius/ Rubus anglocandicans (Blackberry).

Bridal Creeper and Blackberry are also listed as Weeds of National Significance (WoNS).

The relatively high diversity of weeds within the existing MDE, Proposal area and surrounding mining leases reflects the long mining history of the Greenbushes area and close proximity to surrounding agricultural land. Many of the weed species recorded are likely to have been introduced during early exploration and mining, becoming established on disturbed ground and extending into adjacent areas.

Farmland in the southern sector of the existing MDE and the eastern Proposal area is another source of introduced species, with 'edge effects' typically evident around the boundary of cleared annual pasture areas. The annual pasture and verge species are represented within intact native vegetation as a minor component of the understorey. Disturbed areas such as tracks and historical rehabilitation are more susceptible to invasion by these taxa, which are generally not vigorous and do not impact on native vegetation structure (Onshore, 2024).

6.1.3.9 Plant Pathogens

Phytophthora cinnamomi (Dieback) is a water slime mould which lives in soils and kills susceptible plants by attacking their root systems preventing the plant from absorbing water and nutrients. The mould is found throughout the southern extent of WA in areas with susceptible plant species that receive rainfall in excess of 300 mm/year (Dieback Working Group, 2023).

The Greenbushes area is within an area at risk of *Phytophthora cinnamomi*, and vegetation within the existing MDE and Proposal area is highly susceptible to infestation. Dieback mapping has been undertaken by the DBCA within part of the existing MDE, and shows that dieback occurs in some areas. Some areas have been mapped as unprotectable due to elevations, surrounding land use and nearby presence of dieback infested areas. There are also areas which remain dieback free where controls are necessary to prevent infestation occurring. A map showing the current knowledge of dieback presence within the existing MDE and Proposal area is provided in Figure 6-3.

Dieback mapping of the proposed areas of native vegetation to be cleared within the Proposal area will be undertaken within the 12 months prior to commencement of clearing, to ensure that information is up to date. Measures to control the spread of dieback will be implemented as appropriate, consistent with exiting site procedures at the Greenbushes mine.





6.1.4 Potential Impacts

Talison have undertaken initial baseline flora and vegetation studies that provide characterisation of the receiving environment and inform the preliminary impacts on vegetation as a result of the Proposal. These studies are intended to provide a thorough understanding of the potential impacts on flora and vegetation associated with Proposal implementation.

Impacts on the flora and vegetation within the Proposal area as a result of implementation of the Proposal will be primarily through direct clearing of native vegetation. The Proposal requires disturbance of 634 ha, of which up to 191 ha will consist of native vegetation (of which 28.89 ha will be allocated under the existing MS1111 approval), and 29 ha will be within previous mine disturbance and rehabilitated areas. The remaining disturbance consists of areas within pasture and plantation as well as some areas of existing waterbodies.

The Proposal will also result in clearing of up to 25 individual plants of *Acacia semitrullata* from a population determined to be of significance to the state, within an area of native rehabilitation.

At a regional scale, the clearing of native vegetation will not significantly reduce the remaining area of Beard Vegetation Association 3, and the remaining extent of this vegetation association will continue to be well above 30%. The retention of 30% or more of the pre-clearing extent of each ecological community is recognised as being necessary for protection of biological diversity (WALGA, 2020).

At a more local scale, the vegetation types impacted by the Proposal footprint are generally well represented in the area. No vegetation types are unique to the MDE.

Additional potential indirect impacts on flora and vegetation may include:

- Introduction or spread of weeds or plant pathogens as a result of vehicle movements and earthmoving activities;
- Alteration to downstream surface water hydrology and water quality as a result of the SWG Dam construction and operation;
- Loss or degradation of vegetation condition due to dust emissions as a result of operations; and
- Loss or degradation of vegetation condition as a result of hazardous materials release, including potential Acid Mine Drainage (AMD).

The current Greenbushes operation is located in a similar environment as the proposed expansion areas, and Talison have undertaken mining operations in this area for 40 years. This experience, along with the baseline information provided as part of ongoing studies, ensures that the environmental impacts of the Proposal can be appropriately managed to meet the EPA objective.

6.1.5 Mitigation

The EPA hierarchy of mitigation has been considered in the management of environmental impacts at Greenbushes. Mitigation measures that will be implemented for the protection of flora and vegetation throughout Proposal implementation are outlined below.

6.1.5.1 Avoid

Measures undertaken to avoid impacts from the Proposal include:

• Identification of any conservation significant flora or vegetation communities within the Proposal area or in the near vicinity;





- Site infrastructure designed to avoid disturbance to conservation significant flora or vegetation communities where possible; and
- Location of infrastructure intended to minimise the impact to native vegetation, through placement on previously cleared farmland where possible.

6.1.5.2 Minimise

Where impacts are unavoidable, measures will be taken to minimise the severity of the impact, including:

- Clearing to be undertaken in stages as required for operational purposes. Establishment of the S8 WRL will be prioritised over the S2 WRL to delay clearing of higher value forest habitat;
- Clearing will be managed in accordance with Talison ground disturbance permitting procedures;
- Potentially problematic waste materials will be identified and managed appropriately (through adequate encapsulation) to ensure minimal impact to the receiving environment;
- Measures will be undertaken to minimise spread of dieback and weeds, through restriction of access to infested areas and vehicle and equipment hygiene procedures in line with the Talison Disease Hygiene Management Plan; and
- Dust management procedures are to be implemented to minimise the potential for dust emissions and resulting impacts on flora.

6.1.5.3 Rehabilitate

Talison has developed a Mine Closure Plan (MCP) that covers the current Greenbushes operation. This MCP has been developed in consultation with local stakeholders and has been approved by DEMIRS. The MCP will be updated to incorporate the proposed changes to the MDE and the rehabilitation plans for the infrastructure proposed as part of the Proposal.

The final closure strategy for the Proposal will be determined following consultation with stakeholders, as the water storage features may be retained post relinquishment for agricultural purposes. If the SWG Dam requires removal at closure, it will be decommissioned and removed and the area rehabilitated, ensuring downstream drainage is retained and impacts of erosion are minimised.

The S2 WRL and S8 WRL will be progressively rehabilitated over the Life of Mine to retain as much public amenity as possible and encourage early establishment of native vegetation. The WRLs will be constructed with chemically inert material on the outer surfaces in consideration of the characterisation of the materials within the landform. Specific rehabilitation practices will be developed considering results of previous rehabilitation trials undertaken in the Greenbushes area.

Rehabilitation will focus on revegetating the disturbed areas to provide foraging habitat for impacted fauna species. Additional measures to provide nesting habitat for black cockatoos will also be investigated and incorporated into the MCP.

6.1.6 Assessment of Residual Impacts

Residual impacts on flora and vegetation will include direct impacts through clearing of native vegetation, and indirect impacts through potential changes to local water regimes and dust generation.



The total residual impact on flora and vegetation from the Proposal in combination with the existing approved extent will be:

- Clearing of 512 ha of native vegetation (including existing and proposed clearing); •
- Clearing of 29 ha of previous mine disturbance and rehabilitated areas; •
- Disturbance within 69 ha of plantation areas; and •
- Disturbance within 335 ha of cleared pasture/farmland. •

This clearing will result in clearing of up to 25 individual plants of Priority 4 species Acacia semitrullata. These plants are part of a significant population occurring in areas of rehabilitation, however the species is known to occur in at least 126 other locations. As such the impact to this species is not considered to be significant.

Proposed mitigation strategies will work to minimise the indirect impacts of the Proposal on the flora and vegetation. Talison is confident that no unacceptable impacts to conservation significant flora or vegetation will result from the Proposal, and that the objectives of the EPA regarding flora and vegetation can be met.

6.1.7 **Predicted Outcome**

Outcomes are predicted to align with the EPA objectives for flora and vegetation. Approximately 191 ha of native vegetation will be cleared as part of this Proposal (including 28.89 ha allocated under the existing MS1111 approval), however no Threatened flora species or vegetation communities are expected to be impacted. One Priority 4 species (Acacia semitrullata) will be impacted through the loss of a population occurring within rehabilitated areas.

Environmental Factor: Terrestrial Fauna 6.2

6.2.1 EPA Objective

The relevant EPA objective for terrestrial fauna is "To protect terrestrial fauna so that biological diversity and ecological integrity are maintained".

6.2.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the terrestrial fauna environmental factor:

- Environmental Factor Guideline Terrestrial Fauna (EPA 2016b); •
- Technical Guide Terrestrial Vertebrate Fauna Surveys for Environmental Impact • Assessment (EPA 2020);
- Technical Guide Sampling of short range endemic invertebrate fauna (EPA 2016c); •
- Guidance Statement No. 6 Rehabilitation of Terrestrial Ecosystems (EPA 2006); •
- Survey guidelines for Australia's threatened birds (Commonwealth Department of the • Environment, Water, Heritage and the Arts, 2010); and
- Survey guidelines for Australia's threatened mammals (Commonwealth Department of • Sustainability, Environment, Water, Population and Communities 2011).



6.2.3 **Receiving Environment**

6.2.3.1 Terrestrial Fauna Studies

The following recent fauna studies and reports have been undertaken within the Proposal area, which have informed this baseline assessment:

- Onshore Environmental (2024e) Terrestrial Vertebrate Fauna Survey; Salt Water Gully Combined and Extended; (Appendix K; IBSA 2024-0427);
- Onshore Environmental (2024f) S2/S7 Future Waste Rock Landform Terrestrial Vertebrate • Fauna Survey; (Appendix L);
- SLR (2023) Talison Lithium Greenbushes Aquatic Fauna Field Survey Spring 2022; (Appendix M);
- SLR (2023a) Talison Greenbushes Aquatic Ecological Assessment for the Proposed New Waste Rock Landform S8; (Appendix N; IBSA 2023-0222);
- Onshore Environmental (2024g) Detailed Vertebrate Fauna Survey Additional Areas North (Appendix O);
- GHD (2025) Ecological Risk Assessment Norilup and Salt Water Gully Dams (Appendix P); •
- SLR (2024) Burrowing Crayfish (Engaewa sp.) Literature and Habitat Preference • Assessment; (Appendix Q);
- Onshore Environmental (2024h) Black Cockatoo Habitat Assessment Greenbushes Operations - Upcoming Clearing Approvals; (Appendix R)
- Onshore Environmental (2025) Targeted Black Cockatoo Survey; (Appendix S); and •
- Biologic (2018) SRE survey report; (Appendix T); and •
- Bennelongia (2020) Desktop review and assessment; (Appendix U);

These studies include assessment of critical habitat including black cockatoo habitat trees, as well as assessment of the aquatic systems within the Proposal area. Several studies are also consolidated reports to cover the Proposal area, and incorporate findings from surveys conducted over several survey areas and seasons.

6.2.3.2 Fauna Habitat

Two naturally occurring habitat types have been mapped within the Proposal area, consisting of Jarrah-marri forest on hillslopes, and drainage lines which include terrestrial aquatic habitats. Additional habitat types including cleared farmland and plantation also present.

Table 6-3 and Figure 6-4 below outline the fauna habitat types within the Proposal area.

Habitat Type	Habitat Description and Features
Jarrah-marri forest on Hillslopes	Jarrah/Marri forest on hillslopes with brown sandy loam.
	Habitat includes areas with many logs and log piles, dense leaf litter, larger trees occurring within this habitat provide hollows.

Table 6-3: Habitat Types



EPA Referral Supporting Documentation

Habitat Type	Habitat Description and Features
Drainage lines and dams	Drainage lines and dams/ pools. Vegetation is variable including areas of <i>Eucalyptus rudis - Eucalyptus patens, Taxandria linearifolia,</i> areas of rehabilitation and weeds.
	Dams contain permanent water, with dense sedges and shrubs occurring along some banks, and some large trees surrounding drainage line. Small areas of reed beds present. Large areas of this habitat type have been historically mined and rehabilitated.
Plantation and shelter belt	Dense Low Forest of <i>Pinus radiata</i> and <i>Eucalyptus</i> Plantation and other planted species. Habitat includes areas with moderate logs and dense leaf litter, larger trees occur within this habitat however providing some hollows.
Cleared farmland and Cleared Parkland	Cleared annual pasture with small, localised remnants of eucalyptus forest. Habitat includes areas with moderate logs and dense leaf litter, larger trees occur within this habitat providing some hollows.







6.2.3.3 Local Fauna Species

Desktop searches have identified a total of 291 vertebrate fauna taxa, including 17 amphibians, 26 reptiles, 210 birds and 38 mammals. Following review, 91 of these species were considered unlikely to occur.

Field surveys for the S2 WRL area have identified 87 vertebrate fauna species, including one amphibian, 13 reptiles, 55 birds, and 18 mammals. Field surveys over the SWG area identified slightly more fauna species, with 100 species recorded. These included seven amphibians, nine reptiles, 71 birds and 16 mammals. Studies over the areas for the SH Dam raise, CGP4 laydown, Maranup Ford Road corridor and Floyds Water Management Infrastructure identified fewer species, with only 26 vertebrate fauna species recorded. This is likely due to the more disturbed nature of these areas providing a lower habitat value for local fauna species.

6.2.3.4 Conservation Significant Fauna

Desktop studies of the Proposal area determined 40 species listed under the EPBC Act or BC Act or that are listed as Priority fauna by DBCA have the potential to occur within the Proposal area. Nineteen of these are either confirmed as present or are considered possible or likely to occur in the Proposal area and are outlined in Table 6-4 below.

Species	EPBC Act	BC Act	Likelihood of Occurrence
Species	Classification	Classification	
Australasian Bittern (Botaurus poiciloptilus)	Endangered	Endangered	Likely. Small amount of suitable habitat present in the Proposal area, and a single record is located nearby.
Western Quoll /Chuditch (<i>Dasyurus</i> <i>geoffroii</i>)	Vulnerable	Vulnerable	Likely . Recorded nearby (approximately 6 km from the Proposal area) in surveys in 2018, however no records within the Proposal area or in more recent surveys.
Wambenger Brush- tailed Phascogale (Phascogale tapoatafa wambenger)	NA	Conservation Dependant	Confirmed present. Recorded within the Proposal area in previous surveys in 2018.
Quenda (Isoodon fusciventer)	NA	Р4	Confirmed present. Recorded within close proximity in previous surveys in 2018. Suitable habitat present within the Proposal area.
Western Brush Wallaby (<i>Notamacropus irma</i>)	NA	Р4	Confirmed present. Recorded within the Proposal area in previous surveys in 2018.

Table 6-4: Conservation Significant Fauna Potentially Located in the Proposal Area



GREENBUSHES LITHIUM OPERATION

Greenbushes Lithium Mine Additional Waste Rock Landforms and SWG Dam

EPA Referral Supporting Documentation

Species	EPBC Act Classification	BC Act Classification	Likelihood of Occurrence
Water Rat (Hydromys chrysogaster)	NA	Р4	Confirmed present. Recent records within 1 km of the Proposal area. Unlikely to occur in the S2 WRL area due to lack of suitable habitat.
Baudin's Cockatoo (Calyptorhynchus baudinii)	Endangered	Endangered	Confirmed present. Recent records in close proximity. Suitable habitat present.
Carnaby's Cockatoo (Calyptorhynchus latirostris)	Endangered	Endangered	Confirmed present. Recent records in close proximity. Suitable habitat present.
Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso)	Vulnerable	Vulnerable	Confirmed present. Recent records in close proximity. Suitable habitat present.
Common Sandpiper (Actitiis hypoleucos)	Mi	NA	Possible. May occasionally utilise the study area. Nearest record 23 km south east. Unlikely to occur in the S2 WRL area given lack of suitable habitat.
Peregrine Falcon (Falco peregrinus)	NA	Special Protection	Possible. Records in the general area. May occasionally utilise study area.
Blue-billed duck (<i>Oxyura australis</i>)	NA	P4	Possible. Records in the general area. Not recently recorded in close proximity.
Wood Sandpiper (Tringa glareola)	МІ	NA	Possible. Uncommon migrant. May occasionally use study area. Unlikely to occur in the S2 WRL area given lack of suitable habitat.
Masked Owl (Tyto novaehollandiae)	NA	Р3	Possible. Multiple records in close proximity, however has not recently been recorded in the area.
Blue-billed Duck (<i>Oxyura australis</i>)	NA	P4	Possible. Records in the general area. Not recently recorded in close proximity.
Woylie (Bettongia penicillate ogilbyi)	EN	CR	Possible. Scattered records exist in the area, however most are over 20 years old.



GREENBUSHES LITHIUM OPERATION

EPA Referral Supporting Documentation

Species	EPBC Act Classification	BC Act Classification	Likelihood of Occurrence
Western False Pipstrelle (<i>Falsistrellus mackenziei</i>)	NA	Ρ4	Possible. Multiple records in the general area, no recent records in close proximity.
Tammar Wallaby (Notamacropus eugenii derbianus)	NA	Р4	Possible. Records within 50 km of the Proposal area. Suitable habitat present within the Proposal area.
Quokka (Setonix brachyurus)	VU	VU	Possible. Recent records within 20 km, however habitat within the study area is limited.
Western Ringtail Possum (Pseudocheirus occidentalis)	VU	VU	Possible. Scats possibly identified by Biologic in 2018, however targeted surveys have failed to locate the species and indicated that habitat in the general area is marginal for this species.
Darling Range South- west Ctenotus (Ctenotus delli)	NA	Р4	Possible. Historical record in close proximity. Suitable habitat present.

6.2.3.4.1 Black Cockatoos

Surveys have included targeted studies to determine the impact of the Greenbushes mine on the populations of the three species of Black Cockatoos known to be present in the area. These studies have determined that the Proposal area contains trees that are potentially suitable for both foraging and nesting of Black Cockatoos. Trees with hollows that are either actual or potentially suitable breeding hollows have been identified, and clearing of these trees will be avoided where possible. Where this is not possible, specific management practices will be put in place to ensure that any breeding Black Cockatoos will not be impacted.

Within the SWG Dam area an assessment focusing on identification of potential habitat trees within the hillslopes habitat type was undertaken. Twenty-two trees were identified as being suitable for use by black cockatoos. Of these, 18 were considered suitable nesting trees, with hollows that were considered of a size, orientation and depth to be suitable for use as breeding hollows. A further three trees identified as potential nesting trees, with hollows that were above the minimum entrance size suitable for black cockatoos but were considered less likely to be suitable due to depth of hollow, orientation or other factors. One tree showed evidence of chewing by black cockatoos, further suggesting the tree had recently been used (Onshore, 2024c). The hollow was likely to have recently been used by Forest Red-tailed Black Cockatoos with a pair and juvenile observed frequently within the vicinity of the hollow.

Within the S2 WRL area, three known nesting trees, 12 suitable nesting trees and 14 potential nesting trees are likely to be impacted by clearing required for the construction of the WRL.



GREENBUSHES LITHIUM OPERATION

EPA Referral Supporting Documentation

There are no known nesting trees located within the areas surveyed for the Floyds Water Management Infrastructure, Maranup Ford Road infrastructure corridor, CGP4 laydown and SH Dam raise areas. Seven trees within this area supported hollows that were considered suitable for use by Black cockatoos, however there was no evidence that these trees were actively or historically used for nesting purposes (Onshore, 2024h).

Talison has undertaken a species needs analysis for the three species of black cockatoo found within the Proposal area, and as part of this commissioned a targeted black cockatoo survey over the wider Greenbushes mining leases, excluding the areas previously surveyed (Onshore, 2025). This survey identified 68 known nesting hollows including 10 active Forest Red-tailed Black cockatoo nests over approximately 3000 ha of native vegetation. A further 385 trees were identified as potentially suitable nesting trees, and 215 trees were identified as suitable nesting trees.

Over all the black cockatoo targeted surveys on Talison tenure, there have been 91 known nesting trees, 334 suitable nesting trees, and 585 potentially suitable nesting trees identified. The current proposed disturbance intersects only two known nesting trees, 26 suitable nesting trees, and 24 potentially suitable nesting trees.

Additionally, there is extensive high quality foraging habitat within the vicinity of the identified hollows as well as several water dams, which are both important for successful breeding of cockatoos. All together this suggests that the area contains high quality breeding and foraging habitat for black cockatoos.







6.2.3.5 Aquatic Fauna

An aquatic fauna survey of Salt Water Gully was undertaken in 2022 by Wetland Resource Management as part of SLR (SLR, 2023). A total of eight aquatic fauna species were recorded in spring sampling, including five native and three invasive species.

The survey also included targeted sampling for conservation significant species Carters freshwater mussel (*Westralunio carteri*) and Rakali (*Hydromus chrysogaster*). No sightings of the mussel were noted, and video traps did not record any rakali, however deceased and partially eaten crayfish were found in fyke nets, which is a common behavioural trait of water rats.

A study of the Cascades gully was also undertaken in spring 2023 (SLR, 2024). This survey identified two native fish species, one introduced fish species, two native crayfish species, one introduced crayfish species and the endemic southwestern snake-necked turtle. The Pacific Black Duck (*Anas superciliosa*), one dugite (*Pseudonaja affinis affinis*) and two species of frog (*Litoria adela*idenis and *Litoria moorei*) were also observed during the survey. None of the species recorded are of conservation significance.

The Cascades gully also included survey of aquatic macroinvertebrates, with 110 taxa recorded of which 84 were recorded upstream of the proposed WRL and 64 taxa recorded downstream. None of the species recorded were considered to be of conservation significance.

Woljenup Creek has also been included in the Talison annual aquatic ecological assessment program since 2023. No aquatic fauna species of listed conservation-significance were recorded during the survey, however, the Priority 4 mammal species *Hydromys chrysogaster* (Rakali) is considered likely to inhabit much of the survey area (SLR, 2023). The survey concluded that current mine operations have not been identified to negatively impact aquatic fauna assemblages.

6.2.3.6 Short Range Endemic Invertebrates

An assessment of the potential presence of SRE's within the existing MDE was undertaken by Biologic (2018a). Due to the high habitat complexity in leaf litter, woody debris and scattered rock formations, and the prevalence of shade offered by the dense vegetation, the fauna habitat types featuring Jarrah/ Marri Forest and Marri/Blackbutt/Flooded Gum Woodland are considered to have a moderate potential to host SRE fauna. Areas disturbed by mining, farming or plantation forestry are considered to have a low suitability for SRE fauna due to the disturbance of the natural vegetation and soil (Biologic, 2018b). Based on the moderate potential for SRE to occur, 12 locations with the Jarrah/Marri Forest habitats of the existing MDE were sampled for SRE's (Biologic, 2018a). At each site active foraging, leaf litter sifting and soil sifting, and targeted searches for spider and scorpion burrows were undertaken.

Twenty (20) specimens belonging to SRE groups were collected during the survey (Biologic, 2018a). This comprised specimens from four broad taxonomic groups: Two mygalomorph spiders, two isopods, four scorpions, and 12 millipedes (Biologic, 2018a). Three of the taxa collected (representing five specimens) have been identified as 'Potential SRE' as they could not be identified to a species level due to the absence of diagnostic features which are only present on mature male specimens (Biologic, 2018a). The 'Potential SRE' collected included:

• Mygalomorph Spider, *Nemesiidae Sp. indet.* - two specimens collected from the Jarrah/Marri forest habitat type;



- Millipede, Paradoxosomatidae Sp. indet. two specimens collected from the Jarrah/Marri • forest over Banksia habitat type; and
- Millipede, Siphonotidae Sp. indet. single specimen collected from the Jarrah/Marri forest • habitat type.

Owing to the poor state of taxonomy for the species collected, assessment of the local and regional significance of the fauna collected is somewhat limited. The taxa regarded as indeterminate ('indet.') (Nemesiidae, Paradoxosomatidae, Siphonotidae) cannot be fully assessed for SRE status until significant knowledge gaps are resolved at various taxonomic levels. Although limited, the current information for these taxa indicates that there is a reasonable likelihood that they may be range restricted, therefore they are considered Potential SREs as a precaution. In each instance, genetic analysis would be required to determine the species and/or if the specimens are unique to what has previously been recorded within the region.

In the absence of firm taxonomic identifications, it is considered reasonable to use habitats as a surrogate to assess the potential impact of the Project to Potential SRE species (Biologic, 2018a). Each of the moderately suitable SRE habitat zones (Jarrah/Marri forest and Jarrah/Marri forest over Banksia) are well represented beyond the existing MDE.

No further SRE studies are proposed for the Proposal area due to the largely cleared nature of the Proposal area, and the wide representation of available habitat within the vicinity of the Proposal area.

6.2.3.7 **Introduced Species**

Six introduced mammals have been recorded within the Proposal area:

- Pig (Sus scrofa); •
- Cat (Felis catus);
- European Rabbit (Oryctolagus cuniculus); •
- Red Fox (Vulpes vulpes); ٠
- House mouse (Mus musculus); and •
- Black rat (Rattus rattus).

The Laughing Kookaburra (Dacelo navaequineae) was also recorded in the Proposal area. However, this species is now considered naturalised in the region.

The existing MDE and Proposal area has been subject to an extended period of mining activity, forestry activities, farming activities and is adjacent to the Greenbushes townsite which has resulted in introduced fauna species already being present and established within the local area.

Talison has an established program of feral animal control activities which are implemented on an annual and ad hoc basis and aims to prevent introduced species from increasing their spread or density.

6.2.3.8 **Ecological Linkages**

The southwest of Western Australia is Australia's only Global Biodiversity Hotspot, with a high level of endemic plants and animals (Myers et. al., 2000). Following European settlement of this area, the native vegetation has become increasingly fragmented, where native vegetation is reduced to small



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pats of varying quality (Molloy et al., 2009). This can have significant impacts on the long-term viability of native species.

Ecological linkages aim to provide 'stepping stones' of vegetation between regionally significant areas such as national parks. The South West Regional Ecological Linkages Project (**SWREL**) has identified areas where ecological linkages are important at a regional level, based on vegetation extent and the proximity to other valuable patches of native vegetation.

There are no SWREL areas located within the existing MDE or Proposal area. However there is a linkage to the north east of the Proposal area, following remaining forest blocks, and another linkage area located to the south west of the S2 WRL area (Figure 6-6). The SWREL area to the north continues to the north and west of the existing Greenbushes operation, through State Forest and local waterways. The SWREL area to the south follows State Forest and vegetation to the Blackwood River.

The Proposal area does not impact on any SWREL areas, and the proposed disturbance footprint will not break any of the local linkages. While the proposed clearing for the S2 WRL will impact an area of State Forest, the remaining forest will be at least 500 m in width, allowing the ecological link to be maintained.

6.2.4 Potential Impacts

The Proposal will directly impact Terrestrial Fauna through clearing of native vegetation causing a reduction in available habitat. This may include clearing of important habitat for black cockatoos, including nesting trees and foraging habitat. Clearing will be undertaken over several types of fauna habitat, the majority of which are low value cleared areas including annual pasture. Habitat of value includes drainage lines, shelter belt and Jarrah-Marri Forest on hillslopes, which provides high quality habitat for a number of conservation significant species.

The final Proposal footprint will be designed to avoid any known, potential or suitable black cockatoo habitat trees where possible, with buffers in place around the identified trees. However, the Proposal will require clearing of up to 2 known nesting trees, 26 suitable nesting trees, and 24 potential nesting trees.

Talison has undertaken a species needs analysis for the three species of black cockatoo found within the Proposal area, and as part of this commissioned a targeted black cockatoo survey over the wider Greenbushes mining leases (Onshore, 2025). This survey identified 68 known nesting hollows including 10 active Forest Red-tailed Black cockatoo nests over approximately 3000 ha of native vegetation. A further 385 trees were identified as potentially suitable nesting trees, and 215 trees were identified as suitable nesting trees. Two known nesting trees will be impacted by the Proposal. The proposed clearing of habitat trees represents clearing of approximately 13% of the identified suitable nesting trees in the broader Greenbushes area, and up to 5% of the identified potentially suitable nesting trees.

Further direct impacts may include fauna mortalities from vehicle strike or entrapment, and there may be impacts on aquatic fauna through changes in hydrology. No adverse impacts to ecological linkages are expected given that all identified ecological linkages within the vicinity of the Proposal will be remain at over 500 m width.

Indirect impacts on fauna resulting from the Proposal may include the effects of dust generation, and noise, vibration or light pollution. Additionally, the spread of weeds or forest disease may also impact the quality of fauna habitat available.



Talison has experience mining in regions with similar risks to terrestrial fauna, and considers that with current management measures in place, the potential environmental impacts to terrestrial fauna can be managed to be consistent with the EPA's objectives.

6.2.5 Mitigation

Where possible, the Proposal has implemented the mitigation hierarchy of avoidance, minimisation and rehabilitation. Baseline studies have been used to determine the potential impacts of the Proposal, as well as providing a foundation for potential mitigation strategies.

6.2.5.1 Avoid

One of the key drivers for the choice of location of the Proposal area was the reduced impact on native vegetation by placing the S8 WRL on majority cleared farmland. The S2 WRL has also been designed and located to minimise additional clearing required, by incorporating the WRL as an extension of the existing Floyds landform. This minimises additional footprint by minimising WRL slopes.

Additionally, where possible, the site will be designed to avoid significant fauna habitat or ecological linkages, including black cockatoo habitat trees.

6.2.5.2 Minimise

Techniques to minimise the potential impacts of the Proposal include:

- Accurate mapping of fauna habitat types within the Proposal area;
- Site inductions to include training on conservation significant species and terrestrial fauna values within the Proposal area;
- Implementation of the site Conservation Significant Fauna Management Plan;
- Clearing to be undertaken progressively as much as possible, to only clear that required for operational purposes. Talison have established disturbance procedures which include requirements to clearly demarcate clearing boundaries and any exclusion zones;
- Any open excavations including water dams to include fauna egress matting, and to be fenced/barricaded;
- Imposition of site speed limits to minimise potential for vehicle strike; and
- Vehicle hygiene procedures in place to minimise spread of weeds and plant pathogens.

6.2.5.3 Rehabilitate

Talison will update the existing Mine Closure Plan in accordance with DEMIRS guidelines, that will outline appropriate measures for the rehabilitation of the Proposal area.

This will include consideration of post mining land uses with regard to fauna habitat and ecological linkages, and the development of appropriate closure outcomes to support local fauna populations, including conservation significant fauna. This may include specific selection of flora species to be used in rehabilitation as future fauna habitat or foraging material, as well as consideration of the inclusion of artificial fauna habitat or hollows that may aid in supporting re-introduction of the species into the area. Monitoring to ensure the closure criteria are met will also be undertaken.



6.2.6 Assessment of Residual Impacts

It is likely that the Proposal will result in short to medium term impacts on terrestrial fauna, including potential reduction in local populations of conservation significant fauna through habitat loss, particularly Black Cockatoos. While all efforts will be undertaken to avoid habitat trees where possible, up to two known nesting trees, 26 suitable nesting trees and 24 potential habitat trees will be cleared. The additional native vegetation within the Proposal area also consists of up to 162 ha of foraging habitat for Black Cockatoos which will be cleared on Proposal implementation.

The existing native vegetation clearing allowances under MS1111 also result in impacts to terrestrial fauna. To date 248.44 ha of the 350 ha allowance has been cleared. The Proposal infrastructure will require additional clearing of native vegetation of 28.89 ha to be incorporated under the existing 350 ha allowance, as well as an additional 162 ha to allow clearing for the S2 WRL, S8 WRL and SWG Dam. In total, the Greenbushes operation will require 512 ha of clearing of native vegetation under MS1111, which will result in loss of terrestrial fauna habitat. The areas of rehabilitated mine disturbance within the Proposal footprint does not provide significant habitat value to conservation significant species, and the disturbance on pasture is not likely to impact conservation significant fauna. While the existing plantation areas may provide some small habitat value to terrestrial fauna species, these areas will be felled by South West Forest Holdings prior to establishment of mine disturbance, and the Proposal is not likely to impact on the fauna habitat values of these areas.

Rehabilitation of the area will be undertaken on mine closure, and will include targeted actions to support re-introduction of conservation significant fauna to the area.

6.2.7 Predicted Outcome

While the Proposal is not yet fully defined, it is likely that there will be some impact on terrestrial fauna in the Proposal area. Talison expects that offsets will be necessary to address the residual impact on Black Cockatoos and are developing an Offsets Proposal as outlined in Section 7. Given the proposed management techniques and rehabilitation plans, Talison is of the view the Proposal can be undertaken in line with the EPA objectives regarding biological diversity and ecological integrity.





6.3 Environmental Factor: Terrestrial Environmental Quality

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6.3.1 EPA Objective

The relevant EPA objective for Terrestrial Environmental Quality is *"To maintain the quality of land and soils so that environmental values are protected"*.

6.3.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the terrestrial environmental quality environmental factor:

- Environmental Factor Guideline Terrestrial Environmental Quality (EPA 2016d); and
- EPA Statement of Environmental Principles, Factors and Objectives (EPA, 2023).

6.3.3 Receiving Environment

6.3.3.1 Relevant Studies

The following studies have been undertaken within Talison's mining leases, which have informed this baseline assessment of the terrestrial environmental quality:

- Landloch 2020, Greenbushes Erodibility Testing and Erosion Modelling; (Appendix V);
- GHD 2018, Rehabilitation of Historical mining Areas, Preliminary Contaminated Sites Assessment; (Appendix W);
- Onshore Environmental Consultants 2018, *Rehabilitation Materials Characterisation, Greenbushes Mining Operations*; (Appendix X); and
- GHD, 2023 Talison Kinetic Leach Testing Progressive Kinetic Tailings and Waste Rock Leach Test Results; (Appendix Y).

6.3.3.2 Regional Soil Landscape Systems

The Department of Primary Industries and Regional Development (**DPIRD**) describe two main soil landscape systems within the existing MDE and Proposal area; the Darling Plateau System and Lowden Valleys System.

Within these systems, there are a number of Subsystems present within the Proposal area, as outlined in Table 6-5 and Figure 6-7.

Soil Landscape Subsystem	Description	Proposed MDE Mapped Extent
Yarragil downstream valleys phase	Shallow, narrow valleys. Relief 20-40 m, slopes 3-10%. Valley floor is narrower than upstream phase. Soil parent materials are laterite, granite and gneiss. Soils are loamy gravels, loamy earths and deep sandy gravels.	123.26

Table 6-5: Soil Subsystems



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Soil Landscape Subsystem	Description	Proposed MDE Mapped Extent
Yarragil upstream valleys phase	Relief 5-20 m, slopes 3-10%. Valley floor is broader than downstream phase. Soil parent material is mainly laterite. Soils are gravels and sands.	500.96 ha
Yarragil subsystem	Shallow, narrow, upper valleys of the deeply dissected Murray, Bindoon and Helena units. Alluvial, clay and loam soils, moderately well drained, often gravelly, with some sands and loams. Salt prone. Woodland of <i>E. wandoo</i> , <i>E. accedens</i> .	10.35 ha
Dwellingup subsystem	Divides, lower to upper slopes and hillcrests. Duplex sandy gravels and loamy gravels with minor areas of shallow gravels, deep sandy gravels, yellow deep sands and yellow and pale deep sands, often gravelly.	647.48 ha
Hester subsystem	Ridges and hill crests on laterite and gneiss, relief 5-40 m, slopes 5-15%. Soils are sandy gravels, loamy gravels and loamy earths.	238.47 ha
Balingup low slopes phase	Balingup Subsystem phase, slopes 5-15%, relief 20-50 m.	71.03 ha
Balingup moderate slopes phase	Balingup Subsystem, moderate slope phase, slopes 15-35%, relief 60-120 m.	130.22 ha
Grimwade subsystem	Moderately deep valleys (30-70 m) in granite. Soils are loamy earths and loamy gravels.	15.05 ha
Mornington Hill subsystem	Low hills on laterite overlying granite, relief 40-80 m, slope5-20%. Soils are sandy and loamy gravels with some deep sands and loamy earths.	48.91 ha
Wilga subsystem	Broad gently undulating (1-5%) plains and low rises (2-15 m) with swampy depressions. Lateritic terrain over Eocene sediments. Soils are sandy and loamy gravels, with some deep sands, semi-wet soils and wet soils.	4.98 ha
Darling Plateau disturbed land	Mine. Disturbed land	1034.58 ha





6.3.3.3 Soils

The soils of the current MDE have been mapped in the 2018 Onshore report, which showed two characteristic soil types:

- Ironstone gravelly soils, greater than 80 cm deep; and
- Pale coloured sands extending to depths of 80 cm or more.

The upper soil profile consists of a topsoil cover to 50-100mm depth, over subsoils comprising of either gravelly sandy loam or grey sand, depending on topographic location.

The majority of soils within the existing MDE and Proposal area have been classified as having an extremely low probability of containing Acid Sulphate Soils as determined by the Australian Soil Resource Information System. The exception includes several areas within the footprint of the existing TSF and two water storage dams, which have a higher probability of containing ASS.

Soils are considered to be adequate for rehabilitation purposes, and no further studies are anticipated to be undertaken prior to Proposal implementation.

6.3.3.4 Geology

The Greenbushes pegmatite (spodumene ore body) intrudes rocks of the Balingup Metamorphic Belt, which forms the southern portion of the Western Gneiss Province, one of four divisions of the Yilgarn Craton. The Greenbushes pegmatite lies within a 15 to 20 km wide, north to north-west trending lineament, known as the Donnybrook-Bridgetown Shear Zone. A sequence of sheared gneiss, orthogneiss, amphibolite and migmatite outcrop along the shear zone lineament together with syntectonic granitoid intrusives (Talison, 2014).

The pegmatite consists of several mineralised zones, including lithium-enriched spodumene zone, the sodium or ablibe zone, and the potassium feldspar zone. Accessory minerals in the pegmatite are apatite and small amounts of beryl and garnet. Small areas of sulphides may also be present, in the form of pyrite, pyrrhotite and chalcopyrite, and native arsenic is also widely found in the local area.

6.3.3.5 Waste Characterisation

Waste characterisation of the proposed waste rock to be located within the S2 WRL and S8 WRL indicate that some sections will be potentially acid forming (PAF) and others may have increased Arsenic levels. This is consistent with the existing mined materials, and development of the Floyds WRL has been undertaken in a manner that manages potential impacts associated with potentially problematic materials. The waste rock deposited in the S2 WRL and S8 WRL will be managed appropriately to ensure any small amounts of sulphide material are identified and blended with waste rock which exhibits buffering capacity (i.e. amphibolite GHD 2019). Existing management techniques for PAF materials will be undertaken in the construction of the future WRLs, as per the Waste Rock Management Plan (Appendix Z). The SWG Dam and SH dam raise will be constructed from NAF materials only.

Kinetic leach testing of waste rock materials is currently ongoing. Early results indicate that concentrations of Arsenic (As), Lithium (Li), Rubidium (Rb), Antimony (Sb), Thallium (Tl), and Vanadium (V) will initially be above one or more of the relevant site-specific drinking water guidelines and freshwater ecology protection guidelines, with only As and V concentrations being persistent (i.e. not showing long term declining trends) (GHD, 2024).



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There are four types of typical waste rock extracted from the Greenbushes mine; Granofels, Amphibolite, Dolerite and Pegmatite. All rock types were sampled, and results indicate that the pegmatite type waste rock leaches relatively higher concentrations of contaminants compared to the other three rock types. This indicates that design of waste rock landforms should consider increased mitigation/management of seepage from Pegmatite waste.

6.3.3.6 Contaminated Sites

The Greenbushes Operation was first classified under the *Contaminated Sites Act* in June 2007 as 'Possibly Contaminated – Investigation Required'. This classification was updated in 2015 to 'Contaminated – Restricted Use' due to:

- Hydrocarbons and metals present in soils in isolated locations at site;
- Elevated concentrations of metals present in groundwater beneath the site; and
- Elevated concentrations of metals (lithium and arsenic) present in surface water at the site.

In 2018 GHD was commissioned to undertake a contaminated sites investigation of historic mining areas including Salt Water Gully in the Proposal area. Salt Water Gully was assessed as moderate to high risk of contamination.

6.3.4 Potential Impacts

The Project has the potential to impact the Terrestrial Environmental Quality through:

- Direct soil disturbance associated with clearing and construction activities, as well as impacts of stockpiling topsoil as a rehabilitation resource;
- Exposure to PAF materials leading to acidification of local soils;
- Exposure to materials with increased levels of arsenic and lithium, potentially resulting in contamination of local soils; and
- Contamination of soils through unintended spills.

No further studies on the soil properties or waste rock characterisation are currently proposed as the local soils are well understood, and the waste characterisation is not expected to differ from the current waste properties. Kinetic leach testing is currently ongoing, and results will inform any required updates to the site Waste Rock Management Plan.

6.3.5 Mitigation

Where possible, the Proposal has implemented the mitigation hierarchy of avoidance, minimisation, and rehabilitation. Baseline studies will be used to determine the potential impacts of the Proposal, as well as providing a foundation for potential mitigation strategies.

6.3.5.1 Avoid

Due to the nature of the Project, there are likely to be inherent impacts to the surrounding terrestrial environment. The sites of all Proposal infrastructure have been selected to avoid impacts to more sensitive sites wherever possible.

6.3.5.2 Minimise

Actions proposed to minimise the potential impacts to the surrounding terrestrial environment include:



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- Clearing to be undertaken progressively as much as possible, to only clear that required for operational purposes;
- Management of PAF materials and other potentially problematic materials within the S8 WRL and S2 WRL to ensure any potential contaminants of concern are adequately managed, including monitoring of potential impacts;
- Floyds Water Management Infrastructure is intended to stop discharge of contaminated water from the eastern side of the MDE and/or treat discharge from the eastern side of the MDE to a standard acceptable for environmental discharge;
- Tracking and management of soils stockpiled for rehabilitation to ensure viability of seed resources;
- Undertaking direct soil return for other site rehabilitation projects where possible; and
- Storage and handling of hazardous materials to ensure risk of spills are minimised, and spills that do occur are cleaned up appropriately.

Clearing for the Proposal will be undertaken in accordance with site procedures for collecting and storing topsoil and subsoil materials for future use in rehabilitation. Up to 300 mm of topsoil will be collected from all proposed disturbance areas, and 700 mm of subsoil materials where available. This will result in approximately 5,024,280 m³ of rehabilitation materials sourced from the Proposal footprint. While direct placement of materials for rehabilitation will be undertaken where possible, storage areas will be required for rehabilitation material stockpiles (RMS). Stockpiles of subsoil are expected to be approximately 15 m high, while topsoils taken from vegetated areas will be stored at 2 m height to maintain viability. Topsoils taken from areas of cleared pasture will be stored at an intermediate height of 10 m, given the likely reduced seed bank of native species.

6.3.5.3 Rehabilitation

Rehabilitation will be undertaken in accordance with a Mine Closure Plan approved by DEMIRS. Topsoils and subsoils collected from the areas to be cleared for the Proposal will be instrumental in the viability of rehabilitation to be conducted on the WRLs and other disturbance areas, and as such, management of this resource is key.

Where possible, rehabilitation of the S2 WRL and S8 WRL will be undertaken progressively. Rehabilitation of other infrastructure will be undertaken on decommissioning or closure.

6.3.6 Assessment of Residual Impacts

The potential impacts on the terrestrial environment are likely to be localised. With appropriate management through the implementation of the mitigation techniques addressed above, including rehabilitation of the site, the impacts are unlikely to have a significant long-term effect on the landscape.

6.3.7 Predicted Outcome

It is likely that there will be some impact on Terrestrial Environmental Quality in the Proposal area. However, given the proposed management techniques and rehabilitation plans, Talison believes the Proposal can be undertaken in line with the EPA objectives regarding the quality of land and soils in the area.



6.4 Environmental Factor: Inland Waters

6.4.1 EPA Objective

The relevant EPA objective for Inland Waters is *"To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected".*

6.4.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the inland waters environmental factor:

- Environmental Factor Guideline Inland Waters (EPA 2018a); and
- EPA Statement of Environmental Principles, Factors and Objectives (EPA, 2023).

6.4.3 Receiving Environment

6.4.3.1 Inland Water Studies

A number of studies have been completed over the Greenbushes tenure relevant to the Proposal. Studies relevant to the Salt Water Gully area (Appendix AA) include:

- GHD (2019a), Talison Mining Proposal Surface Water Assessment;
- GHD (2023a), Eastern Catchments Hydrology Study Conceptual Site Model;
- GHD (2023b), Eastern Catchments Hydrology Study Groundwater Modelling;
- GHD (2023c), Eastern Catchments Hydrology Study Monitoring Plan;
- GHD (2023d), Eastern Catchments Hydrology Study Water and Mass Balance Modelling;
- GHD (2023e), *Technical Memorandum Saltwater Gully Dam Preliminary Water Balance Results*; and
- GHD (2023f), Eastern Catchments Hydrology Study Preliminary Risk Assessment.

Studies relevant to the S2 WRL area (Appendix AB) include:

- GHD, (2024a), S2 and S7 Waste Rock Landforms Hydrology Study Conceptual Site Model;
- GHD (2024b), S2 and S7 Waste Rock Landforms Hydrology Study Groundwater Modelling;
- GHD (2024c), S2 and S7 Waste Rock Landforms Hydrology Study Water and Mass Balance Modelling.
- GHD (2024d) S2 and S7 Waste Rock Landforms Hydrology Study Surface water and mass balance modelling;
- GHD (2025c) S2 and S7 Waste Rock Landforms Hydrology Study Preliminary Risk Assessment; and
- GHD (2024f) S2 and S7 Waste Rock Landforms Hydrology Study Water resources monitoring plan.

Additionally, GHD have completed Gap Assessments of the available data for the relevant catchments, that identifies where data may be missing. Recommendations from these Gap Assessments have been actioned to ensure a full dataset for the catchment studies.



6.4.3.2 Regional Context

The entire Greenbushes mine including the Proposal area is located at the top of a catchment that leads into the Blackwood River via Norilup Brook, Woljenup Creek and Hester Brook. The existing MDE and Proposal area are both located within the Middle Blackwood Surface Water Management area, with the Proposal area positioned in the Hester Brook Surface Water Management subarea (DWER, 2023). The existing MDE and Proposal area do not sit within a Proclaimed Surface Water area.

The existing MDE and Proposal area are located in the Karri groundwater area, which is not within a Proclaimed Groundwater Area.

6.4.3.3 Local Inland Waters

The eastern catchments where the SWG Dam and S8 WRL are located are entirely within the Hester Brook Catchment (Figure 6-8), with surface water flows draining from Salt Water Gully and Cascades Gully into Hester Brook, and ultimately into the Blackwood River. Salt Water Gully is a naturally ephemeral watercourse with permanent flows due to manmade dams, while the Cascades Gully is an ephemeral creek. The combined catchments of Salt Water Gully and Cascades Gully make up 10% of the total Hester Brook catchment, and the upper reaches of both water courses are potentially mine impacted.

The SWG Dam sits within the Salt Water Gully, where water will be collected from the surrounding catchment, while the S8 WRL sits to the south of Salt Water Gully, and the current design incorporates a 50 m buffer between the S8 WRL boundary and the Cascades Gully. Some areas prone to waterlogging in the vicinity of the S8 WRL will be covered by the S8 WRL.

The S2 WRL is located over two catchments, the Upper Cascades Gully catchment, and the internally draining TSF4 Cell 1 catchment, which may also drain to the Woljenup Creek which is another ephemeral tributary of the Blackwood River. The S2 WRL design does not directly impact any watercourses.

The Floyds Water Management Infrastructure is located in the Eastern catchment, but does not impact on any significant watercourses. This infrastructure is intended to capture any seepage and potentially contaminated runoff from the Floyds WRL and prevent it from discharging to the east of the site.

The SH Dam and Austins Dam as well as the CGP4 laydown are located within the western catchment on site, as it is located to the west of the ridgeline contained within the Hester Brook subcatchment area. This western catchment ultimately discharges to Norilup Brook.

The proposed Maranup Ford Road disturbance is located within the Woljenup Creek Catchment, however given no additional disturbance is proposed, no impacts to water quality or flow are expected.

There is some level of connectivity between the surface water and ground water in the local area, with a radial flow pattern outward from the current mine site, as this is located on a ridge. This results in groundwater being discharged into the local surface water system, including Salt Water Gully, Cascades Gully and potentially as far as Hester Brook (GHD, 2023a).



6.4.3.4 Local Hydrogeology

The hydrogeological units in the existing MDE and Proposal area can be differentiated into shallow surficial systems of alluvial materials that exist above a layer of confining saprolitic clays, and intermediate systems, that occur in the transition between the saprock layer and fractured bedrock (GHD, 2023a). The basement unit consists of fresh bedrock with low permeability.

Sedimentary sequences have been deposited in palaeodrainage channels, which are embedded in the saprolite and upper bedrock. These channels also co-exist with alluvial sand deposits that occupy the topographic lows and form a shallow alluvial aquifer that is generally located adjacent to the surface drainage channels, supporting the connection between surface and groundwater in the area.

6.4.3.4.1 Surficial Sands

The upper layer of surficial materials in the Proposal area contain lateritic caprock and gravel, ranging from 2 m to 30 m in thickness. This layer is laterally discontinuous and covers the majority of the WRL and SWG Dam footprint. In winter, the surficial areas become saturated with perched groundwater up to 1 mbgl. It is expected that due to the high hydraulic conductivity of these areas, groundwater from the WRLs will be facilitated to move downstream to Salt Water Gully (GHD 2023a).

6.4.3.4.2 Intermediate Clays

Depth to bedrock across the site is generally between 25 and 30 mbgl. The saprolitic clays are generally between 15 and 20 m thick, have a low permeability, and are differentiated into an upper, pallid layer and lower, non-pallid layer.

The Saprock layer is considered to be laterally continuous, however given the unit is relatively thin at between 1 and 4 m thickness, and the low to moderate permeability, the unit is unlikely to contain exploitable groundwater.

6.4.3.4.3 Basement Rock

The bedrock has not been extensively tested, however when it has been encountered it has shown low permeability, with a sharp contact between the weathered bedrock and unoxidised bedrock. Pit inflows of the mining open pits are also low, which supports the inference of low permeability of the local basement rock.





6.4.3.5 Inland Water Condition

Surface water quality is currently monitored extensively throughout the Greenbushes operation, including sites within the Salt Water Gully, Cascades Gully and Woljenup Creek. Water within the Eastern catchment is impacted by the current mining operation, particularly Floyds WRL.

6.4.3.5.1 Surface Water Baseline

Baseline monitoring has been conducted across Norilup Brook, Salt Water Gully, Hester Brook, Cascades Gully and Woljenup Creek. Water quality is variable across sites, however similar properties included elevated conductivity, with several sites also showing elevated arsenic levels (SLR, 2024). Historical monitoring at Salt Water Gully also indicates that the waters in the Lyons River contains elevated levels of lithium, arsenic, sulphate and nitrate, while Cascades Gully and Hester Brook also contain levels of lithium that exceed the drinking water quality guidelines (GHD, 2025). Table 6-6 below shows the existing baseline range for surface water monitoring. Monitoring of local surface waters are ongoing, and the baseline will be updated in the ERD to reflect any additional seasonal changes.

Analyte	Units	Minimum	Maximum	
Alk+B5:B34alinity	mg/L	114	160	
Arsenic (As)	mg/L	0.00019	0.00067	
Calcium (Ca)	mg/L	23.3	65.6	
Cadmium (Cd)	mg/L	<0.0001	<0.0001	
Cobalt (Co)	mg/L	0.0003	0.002	
Chromium (Cr)	mg/L	<0.0005	<0.0005	
Copper (Cu)	mg/L	0.0002	0.0006	
Dissolved Oxygen (DO) (field)*	%	82	107.1	
Dissolved Organic Carbon (DOC)	mg/L	3.7	12	
Conductivity (field)*	μs/cm	1453	3380	
Iron (Fe)	mg/L	0.073	0.29	
Hardness	mg/L	180	410	
Potassium (K)	mg/L	1.5	6.2	
Lithium (Li)	mg/L	0.011	0.25	
Magnesium (Mg)	mg/L	29.4	73	
Manganese (Mn)	mg/L	0.063	0.23	
Nitrogen from Ammonia (N_NH3)	mg/L	<0.01	0.04	
Nitrogen from Nitrite (N_NO2)	mg/L	<0.01	<0.01	

Table 6-6: Surface Water Baseline



GREENBUSHES LITHIUM OPERATION

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Analyte	Units	Minimum	Maximum
Nitrogen from Nitrate (N_NO3)^	mg/L	<0.01	0.15
Nitrogen from Nitrate + Nitrite (N_NOx)	mg/L	<0.01	0.15
Total Nitrogen (N_total)	mg/L	0.35	1.1
Sodium (Na)	mg/L	135	532
Nickel (Ni)	mg/L	<0.001	0.001
Soluble Reactive Phosphorus (P_SR)	mg/L	<0.01	<0.01
Total Phosphorus (P_total)	mg/L	0.006	0.023
pH (field)*	рН	7.57	7.9
Lead (Pb)	mg/L	<0.0001	<0.0001
Redox (field)*	mV	-66.2	-38.7
Sulphur from Sulphate (SO4_S)	mg/L	19.5	315
Tin (Sn)	mg/L	<0.0001	<0.0001
Total Dissolved Solids (TDS_grav)	mg/L	720	1700
Temperature (field)*	°C	18.8	24.2
Total Suspended Solids (TSS)	mg/L	2	6
Thorium (Th)	mg/L	<0.0001	<0.0001
Turbidity (field)*	NTU	5.43	12.18
Uranium (U)	mg/L	0.0001	0.0007
Vanadium (V)	mg/L	0.0003	0.0011
Zinc (Zn)	mg/L	<0.001	<0.001

6.4.3.5.2 Groundwater Baseline

The characterisation of the existing groundwater quality (or baseline groundwater quality) is based upon the understanding that groundwater may have been subject to impacts derived from the historic mining/dredging of water courses/palaeochannels which surround the mine.

Groundwater monitoring for environmental purposes has been undertaken across the Greenbushes mine since 2018. Groundwater within the archaean basement is generally considered to be slightly acidic, with slightly elevated Lithium levels. Generally other metals are below detection limits. Groundwater within alluvium/dredge material often shows a much higher Lithium concentration up to 10 mg/L and Arsenic to 0.4 mg/L, reflective of TSF seepage collection.





The minimum and maximum of analytes since 2018 across 22 bores on site are displayed in Table 6-7.

Analyte	Unit	Minimum	Maximum
рН	рН	3.6	8.1
TDS	mg/L	67	9500
Chloride, Cl	mg/L	13	4700
NO₃ as N	mg/L	<0.01	0.62
Sulfate, SO4	mg/L	1	280
Arsenic, As	mg/L	<0.001	0.4
Copper, Cu	mg/L	<0.001	0.122
Manganese, Mn	mg/L	0.013	13.4
Nickel, Ni	mg/L	<0.001	0.17
Uranium, U	mg/L	<0.001	0.044
Cobalt, Co	mg/L	<0.001	0.16
Iron, Fe	mg/L	<0.005	67
Lithium, Li	mg/L	<0.01	10
Thorium, Th	mg/L	<0.001	0.049
Magnesium, Mg	mg/L	1.3	420
Sodium, Na	mg/L	11	2700
Ra 226	Bq/L	<0.01	0.97
Ra 228	Bq/L	<0.08	3.26

Table 6-7: Groundwater Baseline

6.4.4 Potential Impacts

Given the location of the proposed infrastructure in relation to surface and groundwater flows, there is potential for the Project to significantly impact upon the local hydrology. Impacts may include:

- Throughout construction the local catchments will undergo minor changes, with a slight reduction in the overall Hester Brook and Woljenup Creek catchments predicted following construction of the S8 WRL and S2 WRL;
- The WRLs may impact on local downstream water quality as a result of contamination of runoff and seepage waters by PAF waste rock material, or unintended spills of hazardous materials; this includes impacts to Hester Brook, Cascades Gully and Woljenup Creek;
- A decrease in the downstream flows of the Salt Water Gully may impact downstream water users and biodiversity, as water from the catchment is dammed and used on site; and



• Potential groundwater mounding immediately upstream of the SWG Dam embankment, leading to water loss to the underlying aquifer.

The above potential impacts are similar to the potential impacts of the current Greenbushes operation. Drawing on the successful management of existing operations, Talison considers that the potential impacts can be managed in line with the EPA objectives for inland waters.

The impact to downstream water quality includes an increase in Contaminants of Potential Concern (**CoPC**) at Cascades Gully, which will be likely due to the establishment of the S2 WRL. While this will impact significantly on the Cascades Gully, the impacts to the downstream reaches of Hester Brook are not expected to be significant given dilution from upstream non-impacted flows (GHD, 2025c). The GHD Risk Assessment also includes potentially significant impacts to Woljenup Creek, however these impacts are based on the establishment of the S7 WRL, which is not included in this Proposal. The S2 WRL only encroaches on a small section of the Woljenup Creek catchment, and is not likely to materially alter the water quality within the Creek.

The water from the Lyons River will also potentially increase the CoPC concentrations in downstream flows, which are diluted at the confluence with Hester Brook from upstream catchment flows.

Modelling results indicate that arsenic and lithium plumes from both existing and proposed WRLs and TSFs are largely confined within or near the boundaries of these facilities. A lithium plume is projected to extend eastwards along the paleochannel sand from TSF1, but remains predominantly beneath the proposed WRLs. Additionally, isolated lithium plumes extend within the sap rock up to about 300 metres east of the WRLs, but they do not reach the uppermost layers that are likely to discharge to the surface.

The Floyds Water Management Infrastructure is intended to stop discharge of contaminated water from the eastern side of the Project and/or treat discharge from the eastern side of the Project to a standard acceptable for environmental discharge. It is expected that this infrastructure will decrease the potential impacts to Inland Waters.

The SH dam raise will not increase the existing mine impacts on local surface waters. The dam raise is proposed to decrease water impacts by increasing the storage within the Mine Water Circuit and reducing the risk of overflow/spillage from the water storage dams.

6.4.5 Mitigation

Where possible, the Proposal has implemented the mitigation hierarchy of avoidance, minimisation and rehabilitation, with offsets considered for residual impacts. Baseline studies are ongoing and are intended to be used to determine the potential impacts of the Proposal, as well as providing a foundation for potential mitigation strategies.

6.4.5.1 Avoid

The Project design will inherently have an impact on inland water flows and quality, given the nature of the requirement for water storage. A study was undertaken to determine the preferred location of the proposed water storage, including an assessment of lifting current water storage dams.

The preferred option that provided the required volumes of storage included not only lifting current dam embankment heights, but the establishment of a new water storage dam. The Salt Water Gully valley was determined to provide the best location within land constraints for the positioning of the



new dam, while the SH dam and Austins dam raise will increase water storage capacity and reduce the likelihood of spills and overtopping.

Additionally, the area has already been subject to significant impacts through the construction of several smaller farm dams along the Salt Water Gully, which further supports the current location preference.

6.4.5.2 Minimise

Examples of actions intended to minimise impacts of the Project on the receiving hydrological environment include:

- Undertake clearing only as required to minimise open areas and potential for increased erosion;
- Maintain and update a site water balance model to inform site management of water;
- Management of potentially problematic materials within the S2 and S8 WRL to ensure any potential contaminants of concern are adequately managed;
- Floyds Water Management Infrastructure is intended to stop discharge of contaminated water from the eastern side of the MDE and/or treat discharge from the eastern side of the MDE to a standard acceptable for environmental discharge;
- Storage and handling of hazardous materials to ensure risk of spills are minimised, and spills that do occur are cleaned up appropriately; and
- The establishment of the SWG Dam will also mitigate the downstream CoPC concentrations, by acting to capture discharges from the Floyds WRL and S8 WRL.

6.4.5.3 Rehabilitate

Talison will develop an MCP in accordance with DEMIRS guidelines, that will outline appropriate measures for the rehabilitation of the Proposal area. Implementation of the MCP will ensure the closure criteria are met.

A key requirement within the MCP will be the identification of the post mining land use, particularly regarding the SWG Dam and SH Dam as they may be considered useful infrastructure for the local council or landholders. If the Dams are unable to be retained, the embankment will be removed to retain pre-mining surface water flows.

Post-closure water management will also require careful consideration to ensure the landforms and infrastructure do not result in contamination of waterways. The intended closure design of the S2 WRL and S8 WRL will retain the major pre-mining drainage pathways.

6.4.6 Assessment of Residual Impacts

Due to the nature of the proposed infrastructure, impacts to inland water flows are expected, and it is likely that water quality in the immediate downstream waterways, as well as the groundwater within the vicinity of the WRLs will be impacted.

Modelling of the post development water flows and quality include impacts from the existing mine, and show that mitigation strategies will be required to maintain an acceptable water quality in downstream environments. The proposed mitigation strategies and eventual rehabilitation of the area will act to ensure that there are no unacceptable impacts on the receiving environment as part of



Proposal implementation. Further refinement of the Proposal design will also consider opportunities for alternative or additional mitigation strategies.

6.4.7 Predicted Outcome

Proposal implementation will result in some impact on inland waters in the Proposal area, particularly regarding surface water flows. However, given the proposed mitigation and management techniques, as well as proposed rehabilitation plans, Talison is of the view that the Proposal can be undertaken in line with the EPA objectives regarding hydrological regimes.

6.5 Environmental Factor: Social Surroundings

6.5.1 EPA Objective

The relevant EPA objective for Social Surroundings is *"To protect social surroundings from significant harm"*.

6.5.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the social surroundings environmental factor:

- Environmental Factor Guideline Social Surroundings (EPA 2023a)
- EPA Statement of Environmental Principles, Factors and Objectives (EPA, 2023);
- Technical Guidance Environmental impact assessment of Social Surroundings Aboriginal cultural heritage (EPA, 2023b);
- Aboriginal Heritage Due Diligence Guidelines (Department of Aboriginal Affairs and Department of Premier and Cabinet 2013); and
- DWER Draft Guideline Assessment of environmental noise emissions (DWER 2021).

6.5.3 Receiving Environment

6.5.3.1 Social Surroundings Studies

In 2023 a Social Impact Assessment (SIA) was carried out by ERM to understand the local communities view on the current Greenbushes mine. Key issues included air quality, noise, traffic, and pressures on local services and accommodation.

A stakeholder consultation strategy is currently in development to ensure that all stakeholders are adequately consulted and any concerns with the Proposal are taken into account, and mitigation strategies are implemented where required. Stakeholder consultation has commenced with significant participation from the surrounding communities, highlighting specific concerns regarding the Proposal and the existing operations. Talison is undertaking a review of these concerns, and will investigate opportunities to alter the Proposal design and/or operation to further minimise impacts, where practicable. Talison intends to provide responses to community concerns raised.

A further SIA has been developed to assess the potential impacts of the Proposal on the surrounding community and other stakeholders, which is currently ongoing in conjunction with the stakeholder consultation.



6.5.3.1.1 Noise and Vibration

A noise assessment has modelled the predicted changes in noise levels from the existing operations to include the development of the S2 WRL and the S8 WRL and supporting infrastructure (Herring Storer Acoustics, 2025; Appendix AC). The noise levels at various receivers are expected to increase during operation of the WRLs by between 1 dB and 11 dB.

Talison has an existing approval under Regulation 17 of the Environmental Protection (Noise) Regulations 1997 (**Noise Regulations**) that alters the assigned noise levels to have a limit of 50 dB during the night. The existing operations comply with these levels, and the modelled increase in noise levels also show that the Proposal will remain within the assigned noise levels.

The existing Regulation 17 approval expired in February 2024, and Talison has applied for renewal of this approval to allow the assigned noise levels to remain. The HSA noise assessment included comparison with the assigned levels under Regulation 7 of the Noise Regulations, and determined that there would be widespread exceedances across a number of receivers, and the noise levels would not be able to be feasibly managed to meet the Regulation 7 criteria.

Vibration impacts have been monitored by Talison for a significant amount of time, with a vibration monitor located within the town of Greenbushes. Two additional vibration monitors were installed in 2024. Analysis of the past three years of monitoring at the Greenbushes locations shows that the majority of blasts result in a vibration impact of less than 1 mm/sec, with the highest recorded vibration over this time period being 3.03 mm/sec. The highest vibration at the additional two installed monitors was 3.36, while the average (only including blasts that triggered the monitor) was 0.47 mm/sec. These values are well below the 5 mm/sec human comfort limit.

As the Proposal does not involve any increase in pit size or blasting practices, no further vibration studies have been undertaken. Talison will continue to monitor vibration impacts of operation, and design blasts to ensure vibration impacts on the town are minimised.

6.5.3.1.2 Visual Impact

A Visual Impact Assessment (VIA) has been undertaken, outlining the likely impact of the S2 WRL and S8 WRL on local residents and road users (Appendix AD). The VIA includes assessment of the landscape character of the existing area, and the likely impacts of the S2 WRL and S8 WRL. There are no specific sensitive views or landscapes that require specific protection, and the existing visual landscape is generally representative of the wider regional area.

6.5.3.2 Regional Context

The Greenbushes mine is located within the South West region of WA, in the southern section of the Darling Scarp. The mine is approximately 250 km south of Perth and 80 km south east of Bunbury. The land use is a mix of residential, and agriculture and forestry industries, and the south west is also a popular tourist destination. The South Western Highway that connects Perth to the south western region passes the Greenbushes mine site, and will intersect the proposed MDE.

6.5.3.3 Local Social Surroundings

The current social land use of the Proposal area is majority agricultural, with parts allocated as State Forest and crown land reserves. The town of Greenbushes is located immediately to the north of the mine, meaning the potential for residential impacts is significant.


6.5.3.4 Aboriginal Cultural Heritage

A number of Aboriginal heritage surveys have been conducted over the Proposal area in consultation with representatives from the Gnaala Karla Booja, South West Boojarah and Wagyl Kaip Native Title Groups. No Aboriginal sites have been located within the current MDE or Proposal area, however the Blackwood River and tributaries including Hester Brook is a site of mythological significance in association with Waugal beliefs (Brad Goode & Associates, 2018) (Figure 6-9). This site is also the only site within the Proposal area found during the desktop search of the Aboriginal Cultural Heritage Inquiry System (DPLH, 2023). The Proposal has been designed to avoid direct impacts on Hester Brook and the Blackwood River.

A heritage notification has been prepared and accepted by Traditional Owners for the SWG Dam area, and no further survey is required over this area. The S2 area has been surveyed, and a heritage notification has been submitted for the S8 WRL to the relevant Traditional Owner representative body corporates.

6.5.3.5 Native Title

Native title has been extinguished over the Greenbushes site, as part of the South West Settlement Native title determination. The Proposal occurs at the intersection of two areas covered by Indigenous Land Use Agreements (Figure 6-9):

- Karri Karrak Aboriginal Corporation (formerly South West Boojarah #2); and
- Wagyl Kaip & Southern Noongar Aboriginal Corporation.

Talison has a Noongar Standard Heritage Agreement in place with SWLSC on behalf of the South West Boojarah 2, and Wagyl Kaip and Southern Noongar claimant groups. Talison also has two Noongar Standard Heritage Agreements with Karri Karrak Aboriginal Corporation.

The proposal is also adjacent to the area covered by the Gnaala Karla Booja Aboriginal Corporation.

6.5.3.6 European Heritage

No World or Commonwealth heritage Sites are located within 5km of the Proposal. A search of the WA inHerit Heritage Council site shows no heritage sites on the State Register within the existing MDE or Proposal area. The closest places listed on the State Register are:

- Golden Valley Site approximately 7.25 km north east; and
- Southampton Homestead approximately 6.5 km west of the existing MDE.

A number of sites are listed by the Shire as places of local heritage significance. This includes the South Cornwall Pit which is located within the existing MDE and is registered due to the continuous history of mining activity at this location since 1903. Several sites are also adjacent to the existing MDE and Proposal area, including the Greenbushes cemetery (Heritage Place no. 26679), the Old Police Station (Heritage Place no. 270), and the Old Courthouse and Gaol (Heritage Place no 267).







6.5.4 Potential Impacts

Potential impacts on the social surroundings of the Proposal include:

- Impacts on the amenity of the local community and surroundings including:
 - o Visual amenity as the mine is visible to local residents and traffic.
 - An increase in dust, noise and light emissions from the site.
 - Reduced agricultural productivity as soil profiles of waste rock landforms are less productive.
- Impacts on Aboriginal Cultural Heritage sites due to changes in water quality and flow; and
- Potential impacts on unknown Aboriginal Cultural Heritage sites.

Talison acknowledge that the Proposal location contains many different land uses and potential receptors nearby, and the impacts of the Proposal may vary depending on outcomes of stakeholder consultation.

The majority of the expected impacts of the Proposal are extensions of the current impacts of the Greenbushes mine. Given the existing experience with management of mining impacts in close proximity to sensitive receptors, Talison is of the view that the Proposal can be implemented in a manner that will minimise negative impacts on the social surroundings. Even so, Talison are currently investigating further options to minimise the potential impacts on the surrounding community. This includes additional lighting studies to trial new technologies to minimise light spill while maintaining a safe working environment, as well as investigating opportunities for concurrent operation of WRLs to minimise operation close to sensitive receptors at night.

Direct impacts on Aboriginal heritage sites are not expected, and the Proposal has been designed to minimise indirect impacts to Hester Brook and the Blackwood River. Talison will continue to consult with relevant Traditional Owner groups on this. It is therefore not anticipated that any approvals will be required under Aboriginal heritage legislation.

6.5.5 Mitigation

6.5.5.1 Avoid

The WRLs and SWG Dam have been designed to avoid direct impacts on known Aboriginal and European heritage sites. The designs also maximise the height at that of surrounding landforms, including the existing Floyds WRL on the western side of South Western Highway. This limit aims to reduce the impact of visual amenity while also maximising the available volume of the WRLs, enabling a reduction in the footprint of the landforms. Talison will continue to liaise with relevant Traditional Owner groups to identify and manage any additional cultural heritage values at risk from the Proposal.

6.5.5.2 Minimise

Actions proposed to minimise the impact of the Proposal on the surrounding social environment include:

- Surface water flow and quality management measures (as outlined in Section 5.4) to minimise the impact on the Blackwood River heritage site;
- Ground disturbance and permitting procedures will be in place to ensure that any unexpected artefacts or burial locations uncovered during earthworks and excavations are protected;



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- Noise impacts are to be managed through the *Environmental Protection (Noise) Regulations* 1997, including regular monitoring and response to community complaints;
- Opportunities to reduce noise emissions are to be further investigated;
- Lighting is to be placed to avoid spill to sensitive receptors, and opportunities regarding newer technologies are to be investigated;
- Dust management procedures will be implemented (as outlined in Section 5.6);
- Inductions include information on the importance of dust, noise and light impact mitigation;
- Screening trees are planned to be planted along the South Western Highway and Cascades Gully prior to commencement of operations to minimise visual impacts;
- Talison's Visual Impact Management and Rehabilitation Plan will be updated and implemented; and
- Ongoing stakeholder engagement opportunities and maintenance of a stakeholder engagement register to ensure all community concerns are investigated.

6.5.5.3 Rehabilitate

Progressive rehabilitation of the WRLs will enable mitigation of impacts through:

- Reduction in dust generation as vegetation stabilises surface soils;
- Improvements to the visual amenity of the area through contouring of landforms and establishment of vegetation to conform with the surrounding landscape; and
- Improved water quality of runoff as vegetation is established.

Rehabilitation trials may also be undertaken as part of the WRL development to further an understanding of rehabilitation of landforms within the south-west region. Trials may establish vegetation types for a return to natural vegetation, or a return to agriculture. Existing rehabilitation practices for the Greenbushes site will be refined and utilised to inform future rehabilitation of the Proposal landforms and other disturbance.

6.5.6 Assessment of Residual Impacts

Due to the location of the Proposal in close proximity to a number of sensitive receptors, it is likely that there will be an impact on the social surroundings of the Project. The size of the WRLs will lead to significant impacts on visual amenity as the Proposal will increase the visibility of the mining operations to local and regional residents, workers, tourists, and Traditional Owners. Particularly during construction of the WRLs, SWG Dam, and SH and Austins Dam raises, it is likely that noise and dust generation will impact on local surroundings. Rehabilitation of the WRLs will be undertaken with a priority on surfaces with the greatest visual impact, minimising long term visual amenity impacts.

Given the proposed mitigation strategies to minimise impacts to local surface water outlined in Section 5.4, and the proposed procedures for monitoring during ground excavations it is also expected that there will be no significant impact to Aboriginal heritage as a result of the Proposal.

6.5.7 Predicted Outcome

Given the scale and location of the Proposal, impacts to the social surroundings are almost certain to occur. Talison is confident that the mitigation strategies proposed, as well as progressive rehabilitation of the WRL will ensure that the impacts to the social surroundings can be adequately managed to ensure the EPA objective for social surroundings is met.



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6.6 Environmental Factor: Air Quality

6.6.1 EPA Objective

The relevant EPA objective for Air Quality is *"To maintain air quality and minimise emissions so that environmental values are protected".*

6.6.2 EPA Policies and Guidelines

The following EPA policies and guidelines are considered relevant to the air quality environmental factor:

- Environmental Factor Guideline Air Quality (EPA 2020a);
- Draft Guideline: Dust emissions (DWER, 2021a);
- Draft Guideline: Air Emissions (DWER); and
- National Environment Protection Ambient Air Quality Measure (NEPM).

6.6.3 Receiving Environment

6.6.3.1 Relevant Studies

The following studies have been completed over the Greenbushes tenure relevant to the Proposal:

- Environmental Technologies and Analytics (2023) Talison Lithium, Greenbushes operations – Air Quality Assessment Final Report Version 3; (Appendix AE);
- Environmental Technologies and Analytics (2025) S2 and S8 Waste Rock Landforms Air Quality Assessment; (Appendix AF); and
- GHD (2019b) Greenbushes Lithium Mine Expansion, Dust Impact Assessment; (Appendix AG).

6.6.3.2 Regional Context

The Greenbushes mine is located immediately south of the town of Greenbushes and 10 km north of the town of Bridgetown in an area mix of state forest and Farmland with scattered residences. Air quality related to dust generation in particular is also affected by local climatic conditions, meaning it is important to have an understanding of the existing environment to understand the scale of the potential impact of the Proposal.

Regional dust sources in the area include:

- Mechanical land disturbance from pastoral properties;
- Traffic and vehicle movements along unsealed road surfaces;
- Fire, including backyard fires, residential wood heaters, prescribed burns and bushfires; and
- Emissions from existing mining operations.

The climate of the area is outlined in Section 3.5.5 and is broadly characterised by hot dry summers and mild wet winters. As a result, dust generation is more likely to be elevated in the summer months, and additional controls may need to be implemented during construction in these months.



6.6.3.3 Local Air Quality

Local air quality emissions are dominated by emissions from the existing mining operation. Emissions from the mine can be from erosion from the TSF's, existing WRL's, open pits, stockpiles and haul roads, and to a lesser extent activities such as blasting, crushing, conveyors and loading activities.

There are a number of sensitive receptors in the area, defined as areas where people are likely to work or reside. This may include dwellings, schools, hospitals, offices or recreational areas. Figure 6-10 shows the sensitive receptors within 10 km of the Greenbushes Operation.

6.6.3.4 Air Quality Monitoring

Talison has a program of dust monitoring at the Mine which has been ongoing since 1999. The monitoring network comprises a HiVol dust sampler and a Tapered Element Oscillating Microbalance (TEOM). The HiVol dust sampler is located within the Greenbushes townsite and records particulates less than or equal to 10 microns in diameter (PM_{10}) over a 24-hour period. Monitoring is conducted as per requirements of Talison's operating licence. The TEOM provides real time detection of PM_{10} levels and which are monitored to detect and react to increasing dust levels. The TEOM is moved to where activity is occurring when needed.

Further air quality studies will inform the requirements for additional air quality monitoring relating to the Proposal.

6.6.4 Potential Impacts

Clearing and construction activities associated with the Proposal are likely to have an impact on air quality through generation of fugitive dust emissions. Dust emissions can be considered via total suspended particulates with a diameter of less than 90 microns, PM₁₀, and deposited dust. Additionally, the burning of fossil fuels may impact air quality through an increase in emissions of particulate matter with a diameter of 2.5 microns or less (PM_{2.5}) particulates.

The 2025 assessment for the S2 and S8 WRL (including the existing mine operations) has predicted that both PM_{10} and TSP emissions will exceed the 24-hour criterion for at least one of the nearby residential receptors without mitigation strategies in place. $PM_{2.5}$ criterion were not always exceeded at any receptors. Model results also indicate that there are often significant reductions in the predicted concentrations from the maximum to the 6th highest at each of the receptors, which indicates that the elevated impacts at the receptors are limited (ETA, 2025).

These modelling results are conservative, and indicate that the potential risk for impact will require application of mitigation actions to ensure impacts to air quality within the region are acceptable.





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6.6.5 Mitigation

6.6.5.1 Avoid

Dust generation is inevitable as a result of the construction of the Proposal infrastructure. Talison is investigating the potential for use of electric vehicles where possible to reduce the air quality impacts of the use of diesel generated machinery.

6.6.5.2 Minimise

Air quality impacts resulting from the Proposal will be minimised through:

- Watering of haul roads;
- Watering of stockpiles;
- Earthworks will not be undertaken in sensitive locations where hot dry conditions have prevailed;
- Sprays will be installed on plant equipment where required;
- Speed limits will be enforced on unsealed roads; and
- Investigation into low emission mining equipment will be undertaken.

Talison has an existing Air Quality Trigger Action Response Plan (**AQTARP**) as mandated by the site Prescribed Premise Licence L4247/1991/13. This allows real time dust and weather monitoring to inform mining operations, where changes can be made to operations to minimise dust generation. This AQTARP will be reviewed and updated with additional controls if required, prior to submission of the ERD.

6.6.5.3 Rehabilitate

Progressive rehabilitation will be undertaken on the WRLs, which will aid in reducing dust emissions from the WRL surfaces. Rehabilitation works including adding topsoil layers, reshaping the slope, ripping and seeding will be undertaken in winter and spring, to reduce the impact of dust emissions during these works. Additionally, this will aim to establish vegetation prior to summer, to assist with soil stabilisation and reduce wind erosion of topsoil.

6.6.6 Assessment of Residual Impacts

Dust generation is an inevitable result of the construction of the proposed mining activities and construction of the associated infrastructure. However, the proposed minimisation and rehabilitation strategies will aid in reducing the air quality impacts of the Proposal on sensitive receptors, and ongoing monitoring and responsive actions will ensure accurate measurement and minimisation of impacts.

6.6.7 Predicted Outcome

Although the implementation of the Proposal will result in increased dust emissions during mine operations, these impacts are likely to reduce over the long term as a result of reduced mining activity and rehabilitation of mining landforms at closure. Mitigation techniques to be adopted during operations, as well as additional monitoring of control sites and receptors will ensure that the EPA guidelines for air quality can be met by the Proposal.



Environmental Factor: Greenhouse Gas Emissions 6.7

6.7.1 **EPA Objective**

The relevant EPA objective for Greenhouse Gas (GHG) Emissions is "To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change".

6.7.2 **EPA Policies and guidelines**

The following EPA policies and guidelines are considered relevant to the greenhouse gas emissions environmental factor:

Environmental Factor Guideline – Greenhouse Gas Emissions (EPA, 2024).

This guideline provides that generally the EPA will have regard to the GHG Emissions environmental factor where the emissions from a project are likely to exceed 100,000 tonnes CO₂-e of either Scope 1 or Scope 2 emissions in any year.

6.7.3 **Receiving Environment**

An assessment of the Proposal and the existing operations has been conducted and a GHG emissions management Plan has been drafted (Appendix AH). Although the project itself is unlikely to exceed the thresholds outlined in the EPA guidance on GHG Emissions, Scope 1 emissions of the Talison Greenbushes mine as a whole are likely to exceed 100,000 tonnes CO₂-e. As such, GHG emissions are likely to be considered a key environmental factor for the Proposal.

The exceedance of the 100,000t CO₂-e threshold will also mean Talison will become a Safeguard facility. Each year that the Greenbushes facility exceeds the baseline, the following data will be published:

- Scope 1 emissions; •
- Baseline scope 1 emissions; •
- Excess scope 1 emissions that exceed the baseline emissions; and ٠
- Number of Australian Carbon Credit Units surrendered, either voluntarily or to offset excess . emissions.

The likely ACCUs to be surrendered have been modelled by Greenbase, with the maximum expected in one year to be 184,336 ACCU's required in 2029. A total of 4,303 ACCUs were requested for surrender in the 2023-2024 reporting year, which was Talison's first year as a Safeguard facility.

If the number of ACCU's surrendered in a year is greater than 30% of baseline emissions, Talison will provide a written statement explaining why more carbon abatement was not undertaken during the reporting period, to be published alongside the published emissions.

6.7.3.1 Local Emissions

Emissions associated with the Proposal are primarily through diesel consumption, LPG consumption, as well as use of electricity from the southwest grid. Smaller levels of emissions are generated through land clearing, soda ash consumption, and use of petroleum-based oils and greases, as well as other incidental sources on site.

Emissions are calculated and reported on an annual basis in line with the National Greenhouse and Energy Reporting (NGER) Act.



6.7.4 Potential Impacts

Although few localised impacts of the increase in GHG emissions are expected, any increase in GHG emissions will contribute to the broader impacts of climate change. These impacts include exacerbation of extreme climate events including floods, bushfires, droughts and heatwaves, as well as an increase in ocean temperatures resulting in more frequent tropical cyclones.

These events will have cascading effects on resource supply chains, and may also increase impacts on local ecosystems and communities. The south west of WA is particularly vulnerable to these impacts, as it is currently drying at one of the fastest rates in the world.

6.7.5 Mitigation

6.7.5.1 Avoid

Talison have recently developed a Greenhouse Gas Policy statement that outlines Talison's commitment to expand production without increasing carbon intensity to 2030, and achieve net zero Scope 1 and Scope 2 emissions by 2050 or earlier.

This policy statement will be further supported through the development of a GHG Management Plan, that will outline in more detail the actions proposed in order to achieve the proposed emissions reductions.

6.7.5.2 Mitigate

Talison are currently investigating options to reduce overall emissions from the operation. Major options being investigated include:

- Development of and investment in renewable energy options;
- Electrification of mining equipment and vehicles;
- Options for land offset areas and potential restoration; and
- Selection of electric and/or low emission plant.

Additionally, minimisation of clearing areas, and progressive clearing of forested areas will ensure that the resulting emissions are reduced as much as possible throughout operations.

6.7.5.3 Rehabilitate

Progressive rehabilitation will minimise the time the land is cleared. Establishment of vegetation as early as possible will be undertaken to offset carbon emissions and bring the site closer to achieving net zero emissions.

Regard will be given to ensuring that the rehabilitation composition retains some climate resilience, to mitigate against the ongoing impacts of climate change. This will include considerations in seed mix composition, as well as developing an understanding of the potential changes in water availability and temperature increases that are likely to impact the site.

6.7.6 Assessment of Residual Impacts

The initial implementation of the project is likely to increase the short term GHG emissions from the mine. However, implementation of the proposed mitigation techniques will ensure that over time the



overall emissions from the Proposal are reduced, with a significant reduction by 2030 and a clear plan to achieve net zero by 2050.

The production of lithium is currently necessary for the development of lithium-ion batteries, which are a significant proportion of rechargeable batteries. This battery technology has enabled an evergrowing swing away from traditionally combustion powered equipment, towards battery storage, which has the potential to be powered by renewable energies. Overall, this is likely to result in a significant reduction in emissions through replacement of fossil-fuel generated power.

6.7.7 Predicted Outcome

Through the implementation of the proposed GHG Management Plan and associated actions, the Proposal will achieve net zero emissions by 2050. This meets the requirements of the EPA GHG environmental factor objectives and will ensure that the Proposal minimises contributions to the effects of climate change.



7 OFFSETS

Environmental offsets are actions that provide environmental benefits which counterbalance the Significant Residual Impacts of a Proposal. The following offset policies apply to the proposal:

- WA Environmental Offsets Policy (EPA, 2011);
- EPBC Act Environmental Offsets Policy (DSEWPC, 2012); •
- Western Australian Government's Environmental Offsets Guideline (Government of Western • Australia 2014);
- EPBC Act Offsets Assessment Guide for use in determining offsets under the EPBC Act, (October 2012); and
- Public Advice Considering environmental offsets at a regional scale (EPA, 2024). •

Offsets may be applied after other mitigation measures have been considered, as per the following hierarchy:

- Avoid; •
- Minimise; •
- Rehabilitate; and •
- Offset.

As noted in WA Environmental Offsets Guidelines, "Environmental offsets address significant environmental impacts that remain after on-site avoidance and mitigation measures have been undertaken. Environmental offsets will only be considered after strategies to avoid and mitigate significant environmental impacts have been applied." As such, all reasonable and feasible actions under the mitigation hierarchy should be considered to address residual significance prior to considering offsets. Significant Residual Impacts include those that:

- Affect rare and endangered plants and animals (such as declared rare flora and threatened • species that are protected by statute);
- Areas within the formal conservation reserve system;
- Important environmental systems and species that are protected under international agreements (such as Ramsar listed wetlands); and
- Areas that are already defined as being critically impacted in a cumulative context.

7.1 **Offset Strategy**

Talison's Offset Strategy will be focussed on providing net positive outcomes and will be guided by a Species Needs Analysis (i.e., conservation planning document) for three species of conservation significant black cockatoos. Talison will execute the Offset Strategy through a combination of strategic land acquisition for protecting and improving habitat, including revegetation where appropriate, along with the establishment, support and funding of a conservation fund operated as a charitable trust.

Talison are currently investigating existing black cockatoo habitat at various stages of evaluation with the intent to acquire the habitat and cede to the State for inclusion into the conservation estate. Talison will undertake appropriate management actions to improve black cockatoo habitat quality over the life of the offset.



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The charitable trust will ensure scientifically robust, secure, nature positive outcomes for the three species of conservation significant black cockatoos. Funds from the trust will be directed to conservation projects that are aligned with recommendations from the Species Needs Analysis. The trust will consist of members who are suitably skilled and qualified in biodiversity management and will be supported by a Technical Advisory Group. The trust model builds on experience of existing biodiversity trusts operating in Western Australia for the purposes of biodiversity offset acquittal. The trust model is consistent with existing offset policies in place at a Commonwealth and State level as well as the draft Nature Positive reforms, in particular the National Offset Standard being put forward by the Federal Government.

Further detail on the proposed offsets will be developed as the Proposal progresses, and will include input from DCCEEW, DWER and DBCA to ensure that the Offset Strategy is appropriate and will achieve agreed outcomes.

7.1.1 Predicted Outcome

Offsets will be implemented to achieve long-term outcomes relating to the protection of environmental and biodiversity values. Detailed long term proposed outcomes for offsets at Talison will be further identified and developed as the Proposal progresses, following consultation with appropriate stakeholders.



HOLISTIC IMPACT ASSESSMENT 8

A holistic impact assessment considers the connections and interactions between impacts, and the overall impact of the proposal on the environment as a whole.

There are several interconnected factors that may affect the impacts of the Proposal, including:

- Vegetation and terrestrial fauna; •
- Vegetation and inland waters;
- Inland waters and terrestrial fauna (including aquatic species);
- Terrestrial environmental quality and inland waters; and
- Greenhouse gas emissions and inland waters. •

The state of the physical environmental is also intrinsically interconnected with the social surroundings of the area, both in regard to the heritage values and public amenity of the area.

The Proposal has been located and designed to create the minimum impacts on all environmental factors possible. Each mitigation measure while predominantly implemented for a specific purpose, will then act to minimise impacts of the Proposal as a whole.

The mitigation hierarchy plays a key role in ensuring the mitigation strategies are effective across all environmental factors, with avoidance of impacts being the preferred option. Where this is not possible, measures to minimise impacts will be implemented, and rehabilitation plans will be developed to ensure the land is returned to the agreed post mining land use as soon as practicable.

Further detail on the holistic impacts of the Proposal will be provided as the Proposal progresses, following input from stakeholder engagement. Guidance material provided by the EPA will be followed to manage the approach for assessment of holistic impacts.



CUMULATIVE IMPACT ASSESSMENT 9

Cumulative environmental impacts are the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2023).

The Proposal is located in the south west of WA, which is currently predominantly used for farmland. There is not currently a lot of alternative mining activity within the Greenbushes vicinity, however cumulative impacts can be imposed through a number of alternative land uses, including clearing for farming, forestry and other industry.

The Proposal has specifically been located within an area that is predominately cleared farmland, to avoid impacts associated with the clearing of State Forest. The SWG Dam has also been located on a disturbed waterway to minimise further impacts to higher quality streams and rivers.

Talison is not aware of any other planned future proposals in the local area that would affect the cumulative impacts of the Proposal.

The cumulative environmental impacts of the Proposal have the potential to increase the significance of the Proposal impacts. The sections below outlines the potential cumulative impacts on the key environmental factors in this assessment.

9.1 Flora and Vegetation

An EPA search of referred significant proposals in the area only includes proposal for linear infrastructure, including the Millstream to Greenbushes water supply link, and the Conservation Commission of Western Australia Forest Management Plan. Neither of these projects will significantly increase the cumulative impacts of the Greenbushes mine on Flora and Vegetation, given the limited clearing involved in the linear infrastructure proposals.

The Proposal does not impact on any Threatened flora or vegetation communities, and only one Priority 4 flora species is likely to be impacted by this Proposal. This species is located in 126 other locations, and cumulative impacts on this species are not considered to be significant.

9.2 **Terrestrial Fauna**

There are a number of conservation significant fauna species located within the Proposal area. Loss of current and future breeding habitat is a major threat to many of these species, in particular the three species of Black Cockatoo found within the Greenbushes area. The other additional Proposals identified within the vicinity of the Proposal are not likely to significantly increase the impacts on conservation significant fauna in the immediate area. However, the Black Cockatoos have a large range, and any clearing of forest within the habitat ranges of these species may have an impact on breeding, foraging or roosting habitat. This includes not only clearing for mining operations and industry, but clearing of farmland and

Talison have designed the Proposal to avoid any known, suitable or potentially suitable cockatoo habitat trees, however there will still be an impact to this species from this Proposal. The forest areas within the vicinity of the Proposal area have been surveyed, and all trees with the potential to be cockatoo habitat trees have been mapped.



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Offsets proposed for the Proposal will focus on ensuring the establishment and protection of habitat for Black Cockatoos and other conservation significant fauna, to minimise cumulative impacts to these species.

Impacts to aquatic species may also be realised through the Proposal implementation, and resulting reduction in downstream water flows and subsequent habitat availability. No other proposals in the area are expected to impact on aquatic fauna habitat, however impacts to Inland Waters (Section 10.4) may have holistic effects on aquatic species.

9.3 Terrestrial Environmental Quality

The potential impacts on Terrestrial Environmental Quality are expected to be highly localised, and are not expected to be significant. The potential impacts are limited to availability and suitability of rehabilitation. No other Proposals are expected to increase the impacts to this environmental factor.

9.4 Inland Waters

Impacts from the Proposal on inland waters can be exacerbated by a number of additional factors. Clearing of native vegetation can increase sedimentation from runoff, industry can impact on the water quality within local surface and groundwater flows, and fertilisers or pesticides used in farming can also impact on water quality parameters.

The Proposal also impacts on the quantity of surface water flows within Salt Water Gully, which will have flow on effects to Hester Brook and the Blackwood River. The Proposal area is not a Proclaimed surface water area, meaning surface water can be taken without a licence, and the existing waterway contains a number of small farm dams.

Hester Brook originates approximately 12 km from the Proposal area, however the river path is approximately 27 km from the origin to the confluence with Salt Water Gully. The path of the river is mostly through cleared farmland and patches of native vegetation. Flows downstream of the confluence with Salt Water Gully traverse similar terrain for approximately 10 km prior to merging with the Blackwood River. There are multiple smaller tributaries in the area that feed into Hester Brook.

Within this catchment, there are no other mining operations or large industry bodies that would result in significant impacts on water quality, no major dams are present and no additional large-scale extraction of water is apparent. Landholders within the region collect water through the development of small farm dams within the catchment and along the tributaries of Hester Brook. These dams collect rainfall that would otherwise be directed to Hester Brook, however the volumes collected are not likely to be significant in terms of overall river flows.

9.5 Social Surroundings

9.5.1 Aboriginal Heritage

The only significant heritage site in the area is the Blackwood River and its major tributaries including Hester Brook. Impacts to the Blackwood River and major tributaries are outlined in Section 10.4 above. No significant cumulative impacts on Aboriginal heritage sites are expected as a result of the Proposal.



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9.5.2 Noise

Cumulative impacts from noise from the existing Greenbushes mine and the Proposal activities have been modelled, taking into account existing baseline levels of emissions and ambient noise levels in the area. Talison is not aware of any additional Proposals or planned activities within the vicinity of the Greenbushes mine that would result in any significant increase in noise emissions that would result in cumulative impacts to local receptors.

9.5.3 Visual Impact

The landscape of the south west region is generally characterised by farmland and forests on rolling hills. The visual impacts of the Proposed landforms are relatively localised, and are somewhat unique in the southwest, as there are few large scale mining operations in the area. It is not expected that there will be any other proposals or activities in the area that will result in cumulative visual amenity impacts to the local surroundings.

9.6 Air Quality

Cumulative impacts from dust from the existing Greenbushes mine and the Proposal activities have been modelled, taking into account existing baseline levels of emissions and ambient dust levels in the area. Talison is not aware of any additional Proposals or planned activities within the vicinity of the Greenbushes mine that would result in any significant increase in dust emissions that would result in cumulative impacts to local receptors.

9.7 Greenhouse Gas Emissions

Greenhouse gas emissions are of global concern, and impacts are not restricted to local areas. Globally in 2024, approximately 37.41 billion metric tons of CO_2 was emitted from fossil fuels (Canadell, 2024), and emissions continue to trend upwards. Talison's contribution to this figure is well under 0.1% of these emissions. However Talison intends to set an example and reduce carbon emissions where possible, to minimise the impact of the operations on CO_2 emissions.



10 CONCLUSION

The Proposal is located within an environment that is sensitive to potential impacts. There are several environmental factors that have the potential to be significantly impacted by the Proposal, which means the design and operation of the Proposal will require adequate mitigation strategies to be adopted to ensure the environmental impacts of the Proposal are able to meet the EPA objectives.

With the implementation of the mitigation hierarchy, Talison contends the Proposal can be implemented in a manner that reduces the significance of the impacts on the surrounding environment to a point where the environment is adequately protected. The Proposal is still in the planning phase, and disturbance footprints as well as operational parameters and requirements for mitigation will be further refined following the outcomes of stakeholder engagement relating to the Proposal.



11 REFERENCES

Atlas of Living Australia (2023) Spatial Database search.

Beard JS (1981). Vegetation Survey of Western Australia. 1:1 000 000 Series. Sheet 7. Swan. Map and Explanatory Notes. University of Western Australia Press, Nedlands.

Bennelongia (2020) Greenbushes Subterranean Fauna Desktop Review and Assessment. Report prepared for Talison Lithium Australia Pty Ltd.

Biologic (2018a). Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey. Unpublished report prepared for Talison Lithium Australia Pty Ltd.

Biologic (2018b). Greenbushes Vertebrate, SRE and Subterranean Fauna Desktop Assessment. Unpublished report prepared for Talison Lithium Australia Pty Ltd

Brad Goode & Associates (2018) Report of An Aboriginal Heritage Survey of Report of An Aboriginal Heritage Survey of for the Talison Lithium Mine Expansion M01/2, M01/3, M01/6, M01/7 and L01/1 Greenbushes, Western Australia. Unpublished report prepared for Talison Lithium Australia Pty Ltd.

Bureau of Meteorology (2024) Climate Data Online (Site ID 009617) <u>http://www.bom.gov.au/climate/data/index.shtml</u>.

Campbell (2014) Greenbushes Mine: Appraisal of Drainage - Water from Floyds Dump and Implications for Future Mine Waste Management.

Commonwealth Department of Climate Change, Energy, the Environment and Water (2012) *Offsets* assessment guide.

Commonwealth Department of the Environment, Water, Heritage and the Arts (2010) *Survey* guidelines for Australia's threatened mammals. Commonwealth of Australia.

Commonwealth Department of Sustainability, Environment, Water, Population and Communities (2011) *Survey guidelines for Australia's threatened mammals*. Commonwealth of Australia.

Commonwealth Department of Sustainability, Environment, Water, Population and Communities (2012) *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*.

Department of Aboriginal Affairs and Department of Premier and Cabinet (2013) *Aboriginal Heritage Due Diligence Guidelines*.

Department of Planning, Lands and Heritage (DPLH) (2023). Aboriginal Heritage Inquiry System Database. Prepared for the Government of Western Australia. Retrieved May 2023: [https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS]

Department of Water and Environmental Regulation (2014) *A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the Environmental Protection Act 1986*.

Department of Water and Environmental Regulation (2019) *Draft Guideline – Air Emissions*. Government of Western Australia.



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Department of Water and Environmental Regulation (2021) *Draft Guideline - Assessment of environmental noise emissions*. Government of Western Australia.

Department of Water and Environmental Regulation (2021a) *Draft Guideline – Dust Emissions.* Government of Western Australia.

Dieback Working Group (2023). *Phytopthora Dieback*, Retrieved May 2023, from [https://www.dwg.org.au/about-dieback/phytophthora-dieback/].

Environmental Protection Authority (2006). *Rehabilitation of Terrestrial Ecosystems*, EPA, Western Australia.

Environmental Protection Authority (2016). *Environmental Factor Guideline – Flora and Vegetation*, EPA, Western Australia.

Environmental Protection Authority (2016a), *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, EPA, Western Australia.

Environmental Protection Authority (2016b), *Environmental Factor Guideline: Terrestrial Fauna*, EPA, Western Australia.

Environmental Protection Authority (2020), Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment, EPA, Western Australia.

Environmental Protection Authority (2020a) *Environmental Factor Guideline: Air Quality*, EPA, Western Australia.

Environmental Protection Authority (2016c), *Technical Guide* — *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*, EPA, Western Australia.

Environmental Protection Authority (2016d), *Environmental Factor Guideline: Terrestrial Environmental Quality*, EPA, Western Australia.

Environmental Protection Authority (2018) *Environmental Factor Guideline: Inland Waters* EPA, Western Australia.

Environmental Protection Authority (EPA) (2023). *Statement of environmental principles, factors, objectives and aims of EIA*, EPA, Western Australia.

Environmental Protection Authority (2023a) *Environmental Factor Guideline: Social Surroundings*, EPA, Western Australia.

Environmental Protection Authority (2023b), Technical Guidance – Environmental impact assessment of Social Surroundings – Aboriginal cultural heritage, EPA, Western Australia.

Environmental Protection Authority (2024) *Environmental Factor Guideline: Greenhouse Gas Emissions*. EPA, Western Australia.

Environmental Protection Authority (2024) Considering environmental offsets at a regional scale.



Environmental Technologies and Analytics (2023) Talison Lithium, Greenbushes operations – Air Quality Assessment Final Report Version 3.

Environmental Technologies and Analytics (2024) Salt Water Gully Air Quality Assessment.

Environmental Technologies and Analytics (2025)

ERM, Validation Workshop: Social Impact Assessment. Workshop conducted with Talison Lithium Greenbushes Operations, 4 April 2023.

GHD (2018) Rehabilitation of Historical mining Areas, Preliminary Contaminated Sites Assessment.

GHD (2019) Talison leaching study Stage 2 AMD testing Results.

GHD (2019a) Talison Mining Proposal Surface Water Assessment.

GHD (2019b) Greenbushes Lithium Mine Expansion, Dust Impact Assessment.

GHD (2023a) Eastern Catchments Hydrology Study – Conceptual Site Model.

GHD (2023b) Eastern Catchments Hydrology Study – Groundwater Modelling.

GHD (2023c) Eastern Catchments Hydrology Study – Monitoring Plan.

GHD (2023d) Eastern Catchments Hydrology Study – Water and Mass Balance Modelling.

GHD (2023e) Technical Memorandum – Saltwater Gully Dam – Preliminary Water Balance Results.

GHD (2023f) Eastern Catchments Hydrology Study - Preliminary Risk Assessment.

GHD (2024) Talison Kinetic Leach Testing - Progressive Kinetic Tailings and Waste Rock Leach Test Results (Aug 2022 to Dec 2023).

GHD (2024a) S2 and S7 Waste Rock Landforms Hydrology Study - Conceptual Site Model.

GHD (2024b) S2 and S7 Waste Rock Landforms Hydrology Study – Groundwater Modelling.

GHD (2024c) S2 and S7 Waste Rock Landforms Hydrology Study - Water and Mass Balance Modelling.

Glevan Consulting (2023) Saltwater Gully Phytophthora Dieback Occurrence Report.

Government of Western Australia (2011) WA Environmental Offsets Policy.

Government of Western Australia (2014) Western Australian Government's Environmental Offsets Guideline.

Hearn, R., Williams, K., Comer, S. and Beecham, B. (2002) Jarrah Forest 2 (JF2 – Southern Jarrah Forest subregion). In: May, J. and McKenzie, N (Eds), *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*. Department of Conservation and Land Management, Perth.

Herring Storer Acoustics (2025)



Landloch (2020) Greenbushes Erodibility Testing and Erosion Modelling.

Landloch (2022) Rehabilitation stockpile redesign.

Onshore Environmental Consultants (2018) *Rehabilitation – Materials Characterisation, Greenbushes Mining Operations*.

Onshore Environmental (2023) Salt Water Gully Downstream Reconnaissance Flora and Vegetation Survey.

Onshore Environmental (2024) Salt Water Gully Combined and Extended Flora and Vegetation Survey.

Onshore Environmental (2024a) S2/S7 Future Waste Rock Landform Flora and Vegetation Survey.

Onshore Environmental (2024b) *Reconnaissance Flora and Vegetation Survey - Greenbushes Operations - Upcoming Clearing Approvals.*

Onshore Environmental, (2024c) *Groundwater Dependent Vegetation Assessment, Talison Lithium – New Water Storage*.

Onshore Environmental (2024d) - *Reconnaissance Flora and Vegetation Survey; Greenbushes Lithium* – *Upcoming Clearing Approvals.*

Onshore Environmental (2024e) *Terrestrial Vertebrate Fauna Survey; Salt Water Gully Combined and Extended.*

Onshore Environmental (2024f) S2/S7 Future Waste Rock Landform Terrestrial Vertebrate Fauna Survey.

Onshore Environmental (2024g) Detailed Vertebrate Fauna Survey - Additional Areas North.

Onshore Environmental (2024h) Black Cockatoo Habitat Assessment Greenbushes Operations - Upcoming Clearing Approvals.

Onshore Environmental (2025) Targeted Black-cockatoo Survey; Greenbushes Mining Leases.

Pep Canadell, Corinne Le Quere, Glen Peters, Judith Hauck, Julia Pongratz, Pierre Friedlingstein, Robbie Andrew (2024) *Global carbon emissions inch upwards in 2024 despite progress on EVs, renewables and deforestation*. CSIRO Report, 13 November 2024.

SLR (2023) Talison Lithium Greenbushes Aquatic Fauna Field Survey Spring 2022.

SLR (2023a) Talison Greenbushes Aquatic Ecological Assessment for the Proposed New Waste Rock Landform S8.

SLR (2024)

WA Local Government Association (2020) 2020 Vegetation retention status for Beard Associations and by IBRA Regions. Dataset.



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Western Australian Herbarium (2024) *Florabase - Information on the Western Australian flora*. Department of Biodiversity Conservation and Attractions. Online: https://florabase.dpaw.wa.gov.au/search.



APPENDIX A – PROPOSAL CONTENT DOCUMENT

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APPENDIX B – MS1111 COMPLIANCE ASSESSMENT REPORT 2023-2024



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APPENDIX C – STAKEHOLDER ENGAGEMENT REGISTER

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APPENDIX D - ONSHORE ENVIRONMENTAL, (2024) - SALT WATER GULLY COMBINED AND EXTENDED FLORA AND VEGETATION SURVEY



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APPENDIX E - ONSHORE ENVIRONMENTAL, (2023) - SALT WATER GULLY DOWNSTREAM RECONNAISSANCE FLORA AND VEGETATION SURVEY

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APPENDIX F - ONSHORE ENVIRONMENTAL, (2024) - S2/S7 FUTURE WASTE ROCK LANDFORM FLORA AND VEGETATION SURVEY

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Greenbushes Lithium Mine Additional Waste Rock Landforms and SWG Dam

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APPENDIX G - ONSHORE ENVIRONMENTAL (2024) DETAILED FLORA AND VEGETATION SURVEY - ADDITIONAL AREAS NORTH



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APPENDIX H - ONSHORE ENVIRONMENTAL, (2024) - GROUNDWATER DEPENDENT VEGETATION ASSESSMENT, TALISON LITHIUM – NEW WATER STORAGE



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APPENDIX I - ONSHORE ENVIRONMENTAL (2024) - RECONNAISSANCE FLORA AND VEGETATION SURVEY; GREENBUSHES LITHIUM – UPCOMING CLEARING APPROVALS



APPENDIX J - GLEVAN CONSULTING, (2023) - SALTWATER GULLY PHYTOPHTHORA DIEBACK **OCCURRENCE REPORT**

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APPENDIX K - ONSHORE ENVIRONMENTAL (2024) - TERRESTRIAL VERTEBRATE FAUNA SURVEY; SALT WATER GULLY COMBINED AND EXTENDED



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APPENDIX L - ONSHORE ENVIRONMENTAL (2024) - S2/S7 FUTURE WASTE ROCK LANDFORM TERRESTRIAL VERTEBRATE FAUNA SURVEY

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APPENDIX M - SLR (2023) - TALISON LITHIUM GREENBUSHES AQUATIC FAUNA FIELD SURVEY SPRING 2022


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APPENDIX N - SLR (2023) - TALISON GREENBUSHES AQUATIC ECOLOGICAL ASSESSMENT FOR THE PROPOSED NEW WASTE ROCK LANDFORM S8



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APPENDIX O - ONSHORE ENVIRONMENTAL (2024) DETAILED VERTEBRATE FAUNA SURVEY -**ADDITIONAL AREAS NORTH**

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APPENDIX P - GHD (2025) ECOLOGICAL RISK ASSESSMENT – NORILUP AND SALT WATER GULLY DAMS



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APPENDIX Q - SLR (2024) - BURROWING CRAYFISH (ENGAEWA SP.) LITERATURE AND HABITAT **PREFERENCE ASSESSMENT**



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APPENDIX R - ONSHORE ENVIRONMENTAL (2024) - BLACK COCKATOO HABITAT ASSESSMENT GREENBUSHES OPERATIONS - UPCOMING CLEARING APPROVALS



APPENDIX S - ONSHORE ENVIRONMENTAL (2025) - TARGETED BLACK COCKATOO SURVEY



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APPENDIX T - BIOLOGIC (2018) SRE SURVEY REPORT

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APPENDIX U - BENNELONGIA (2020) DESKTOP REVIEW AND ASSESSMENT

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APPENDIX V - LANDLOCH 2020, GREENBUSHES ERODIBILITY TESTING AND EROSION MODELLING



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APPENDIX W - GHD 2018, REHABILITATION OF HISTORICAL MINING AREAS, PRELIMINARY CONTAMINATED SITES ASSESSMENT



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APPENDIX X - ONSHORE ENVIRONMENTAL CONSULTANTS 2018, REHABILITATION – MATERIALS CHARACTERISATION, GREENBUSHES MINING OPERATIONS



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APPENDIX Y - GHD, 2023 TALISON KINETIC LEACH TESTING PROGRESSIVE KINETIC TAILINGS AND WASTE ROCK LEACH TEST RESULTS

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APPENDIX Z – TALISON WASTE ROCK MANAGEMENT PLAN

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APPENDIX AA – GHD (2023) EASTERN CATCHMENTS HYDROLOGY STUDY

- Conceptual Site Model
- Groundwater Modelling
- Monitoring Plan
- Water and Mass Balance Modelling
- Preliminary Risk Assessment



APPENDIX AB – GHD (2024) S2 AND S7 WASTE ROCK LANDFORMS HYDROLOGY STUDY

- Conceptual Site Model
- Groundwater Modelling
- Monitoring Plan
- Water and Mass Balance Modelling
- Preliminary Risk Assessment



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APPENDIX AC - HERRING STORER ACOUSTICS (2025) PROPOSED EXPANSION S2 WASTE ROCK LANDFORM GREENBUSHES ACOUSTIC ASSESSMENT



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APPENDIX AD – TALIS (2025) VISUAL IMPACT ASSESSMENT



APPENDIX AE - ENVIRONMENTAL TECHNOLOGIES AND ANALYTICS 2023 - TALISON LITHIUM, **GREENBUSHES OPERATIONS – AIR QUALITY ASSESSMENT FINAL REPORT VERSION 3**

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APPENDIX AF - ENVIRONMENTAL TECHNOLOGIES AND ANALYTICS (2025) – S2 AND S8 WASTE ROCK LANDFORMS AIR QUALITY ASSESSMENT

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APPENDIX AG - GHD (2019) GREENBUSHES LITHIUM MINE EXPANSION, DUST IMPACT ASSESSMENT



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APPENDIX AH – GREENBASE (2024) GREENBUSHES GREENHOUSE GAS EMISSIONS MANAGEMENT PLAN

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