Report and recommendations of the Environmental Protection Authority

Lake Wells Potash Project

Australian Potash Limited

Report 1688

September 2020

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
30/01/2018	EPA decided to assess – level of assessment set	
10/06/2020	EPA received final information for assessment	120
23/07/2020	EPA board completed its assessment	6
02/09/2020	EPA provided report to the Minister for Environment	6
07/09/2020	EPA report published	3 days
21/09/2020	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the Environmental Protection Authority (EPA) decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.

Dr Tom Hatton
Chairman

31 August 2020

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Summary

This document is an assessment report for Western Australia's Minister for Environment. It describes the outcomes of an Environmental Protection Authority (EPA) environmental impact assessment of the Lake Wells Potash Project (the proposal), located 160 kilometres north-northeast of Laverton. The proponent is Australian Potash Limited.

Proposal

The proposal is to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found in the paleochannel aquifer at Lake Wells. The proposal includes the abstraction of up to 0.8 gigalitres per annum from a potable and process water bore field located in the fractured rock aquifer in the off-playa development envelope.

Background and Context

The proponent referred the proposal to the EPA on 21 December 2017. On 30 January 2018, the EPA decided to assess the proposal and set the level of assessment at Environmental Review – No Public Review.

The EPA approved the Environmental Scoping Document for the proposal on 28 September 2018. On 3 May 2018 and 10 July 2020, the proponent made applications to change the proposal during assessment by reducing the overall development envelope from 27,687 hectares to 13,951 hectares and reducing the maximum abstraction rate from the brine aquifer and from the process/potable bore field. The changes were approved under s. 43A of the *Environmental Protection Act 1986.*

Key Environmental Factors and Relevant Principles

The EPA identified the following key environmental factors during the course of its assessment:

- **Flora and Vegetation** – direct disturbance of flora and vegetation for the construction of bore fields, evaporation ponds and infrastructure. There is potential for indirect impacts associated with changes to surface water regimes.
- **Terrestrial Fauna** – direct disturbance of known habitat for significant fauna species. There would also be indirect impacts including increased feral animal activity and vehicle strike.
- **Inland Waters** – changes to groundwater regimes associated with groundwater abstraction of brine and potable or process water. Changes to surface water regimes associated with the construction of evaporation ponds on the playa surface.
- **Subterranean Fauna** – potential impacts to habitat for stygofauna associated with groundwater abstraction.
- **Social Surroundings** – potential impacts to heritage sites.

In identifying the key environmental factors, the EPA had regard to the object and principles set out in s. 4A of the *Environmental Protection Act 1986*. The EPA considered that the following principle was particularly relevant to this assessment:

1. **The principle of the conservation of biological diversity and ecological integrity** – there is potential for previously unknown species of *Tecticornia* to exist in the development envelopes. The EPA has recommended a condition to avoid impacts to *Tecticornia* species to ensure that the proposal would not compromise biological diversity.

Conclusion and Recommendations

The EPA has taken the following into account in its assessment of the proposal as a whole:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant *Environmental Protection Act 1986* principles and the EPA's objectives for the key environmental factors
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

The EPA recommends that the Minister for Environment notes:

1. The proposal assessed is for the development of the Lake Wells Potash Project to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found at Lake Wells, located 160 kilometres north-northeast of Laverton.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna, Inland Waters, Subterranean Fauna and Social Surroundings, set out in section 4 of this report.
3. The EPA has recommended that the proposal may be implemented, provided that implementation is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addressed in the conditions include:
    a) avoiding impacts to *Tecticornia* aff. *undulata, Tecticornia* sp. Sterile 1 *and Tecticornia willisii* (condition 6)
    b) implementing the Fauna Management Plan to minimise impacts to significant terrestrial fauna (condition 7)
    c) implementing the Groundwater Monitoring Strategy to minimise impacts on groundwater and stygofauna (condition 8)
    d) preparing and implementing a Cultural Heritage Management Plan to minimise impacts on heritage sites and cultural values (condition 9).

Contents

1. Introduction

This document is an assessment report for Western Australia's Minister for Environment. It describes the outcomes of an Environmental Protection Authority (EPA) environmental impact assessment of the Lake Wells Potash Project (the proposal), located 160 kilometres north-northeast of Laverton. The proponent is Australian Potash Limited.

The proposal is to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found in the paleochannel aquifer at Lake Wells.

The EPA has prepared this report in accordance with s. 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The assessment report must set out:

(a) what the EPA considers to be the key environmental factors identified during the assessment

(b) the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 21 December 2017. On 30 January 2018 the EPA decided to assess the proposal and set the level of assessment at Environmental Review – No Public Review. The EPA approved the Environmental Scoping Document for the proposal on 28 September 2018.

EPA Procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (State of Western Australia 2016) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA 2020a).

2. The Proposal

The proponent proposes to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found in the paleochannel aquifer at Lake Wells, located 160 kilometres north-northeast of Laverton (Figure 1).

Lake Wells is a salt lake playa system, defined as a lake in an arid or semi-arid region that evaporates during drier months. The playa overlays an ancient river paleochannel, with potassium-rich hypersaline brine, which is the target of the proposed operations. Brine would be pumped at a rate of up to 17 gigalitres per annum (GL/annum) to the surface via a network of bores and transferred by pipeline to evaporation ponds constructed utilising the naturally existing depressions and dunes found on the surface of the Lake Wells playa (Figure 2).

Brine from the evaporation ponds would be pumped out, to off-playa harvest ponds (Figure 2) by gravity flow, leaving behind solidified halite which would accumulate over the life of the proposal. This halite would be held in the ponds following closure and would gradually infiltrate back into the saline aquifer.

Harvested salts would be processed in the on-site processing plant, to obtain the final sulphate of potash crystal product. The product would be transported from the site directly to the Port of Geraldton. Four product return journeys per day (eight movements), restricted to daylight hours would be required when the proposal is in full production.

The proposal includes the abstraction of up to 0.8 GL/annum from a potable and process water bore field located in the fractured rock aquifer in the off-playa development envelope. Other infrastructure required includes an airstrip, access roads and tracks, accommodation camp, offices, storage buildings, 10 megawatt capacity power plant, landfill and wastewater treatment plant.

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in section 2 of the proponent's Environmental Review Document (ERD) (APC 2020).

Table 1: Summary of the proposal

Proposal title	Lake Wells Potash Project
Short description	The proposal is to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found at Lake Wells, located 160 kilometres north-northeast of Laverton. The proposal includes development of a brine borefield, solar evaporation ponds, harvest ponds, sulphate of potash processing plant, associated infrastructure, and transport of product by truck to the Port of Geraldton.

Table 2: Location and proposed extent of physical and operational elements

Element	Location	Proposed extent
Physical elements		
Clearing within the on-playa development envelope for evaporation and processing ponds, brine bore field and associated infrastructure.	On-playa development envelope, Figure 2.	Clearing of no more than 2,470 hectares (ha) within the 9,322 ha on-playa development envelope.
Clearing in the off-playa development envelope for harvest ponds, processing plant, access roads, accommodation camp and associated infrastructure.	Off playa development envelope, Figure 2.	Clearing of no more than 750 ha within the 4,629 ha off-playa development envelope.
Operational elements		
Brine abstraction	Figure 2	Up to 17 GL/annum
Process/potable water abstraction	Figure 2	Up to 0.8 GL/annum
Power plant	Off-playa development envelope, Figure 2	10 megawatt

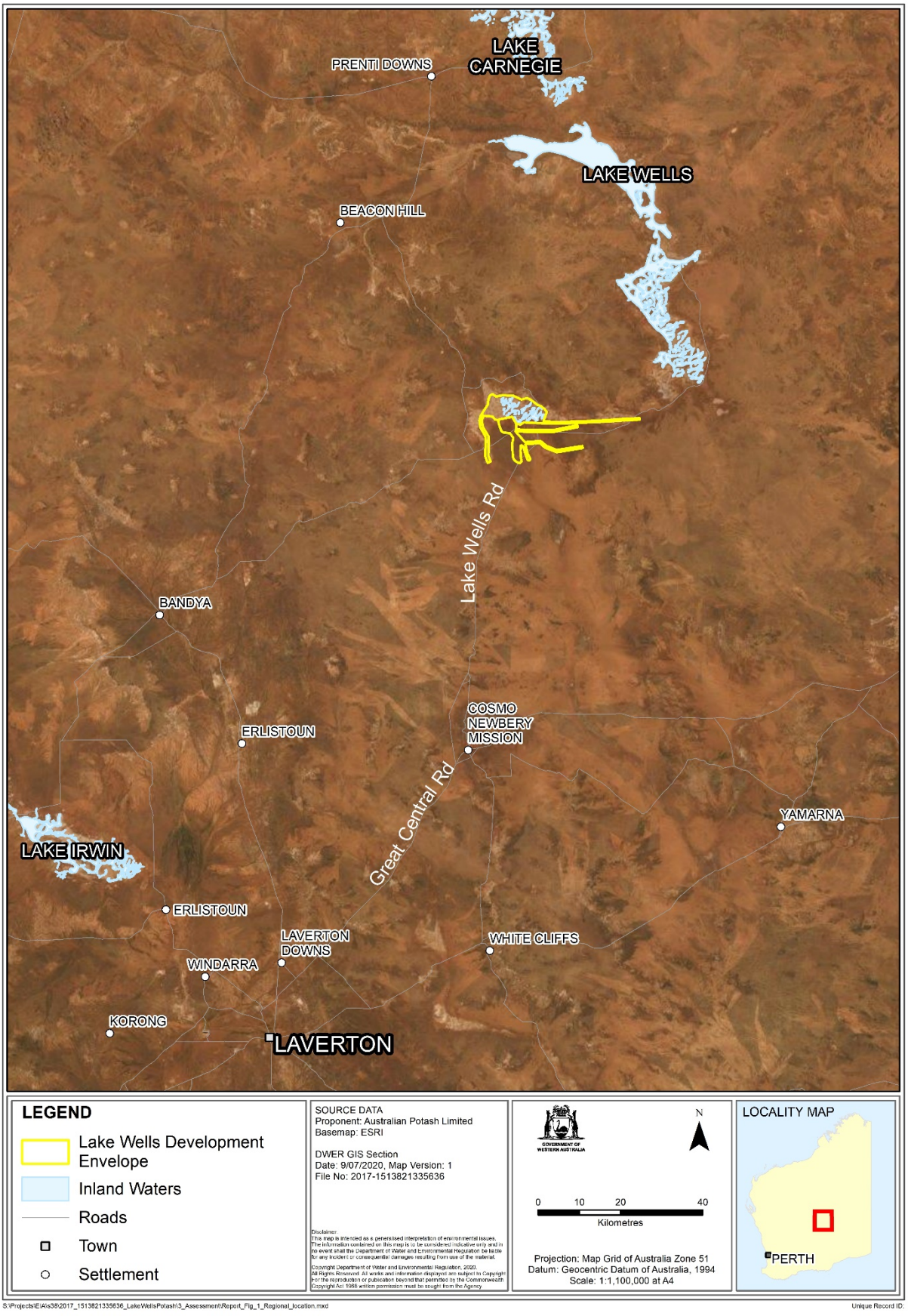

Figure 1: Regional location

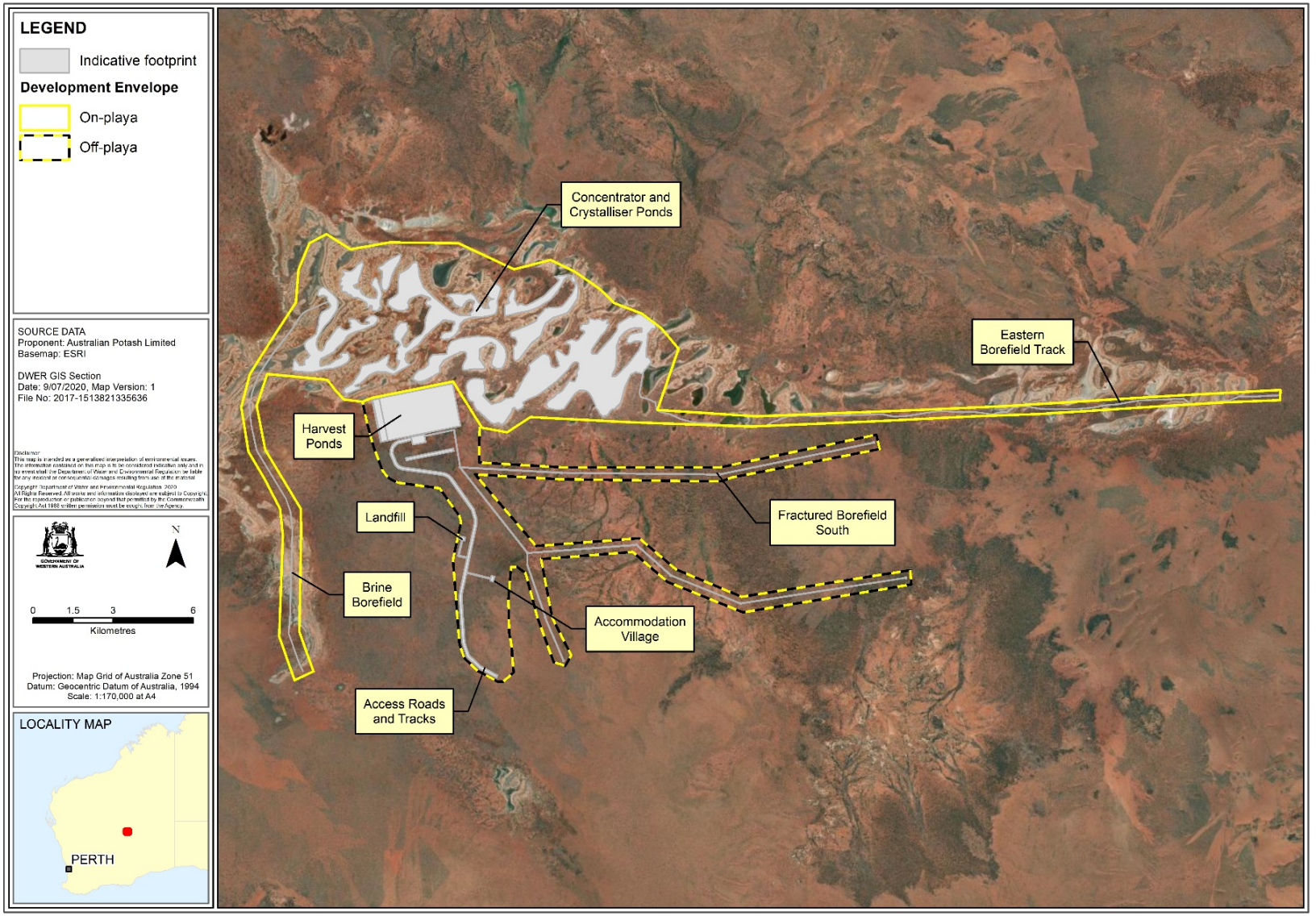

Figure 2: On-playa and off-playa development envelopes and indicative footprint

2.1 Changes to the Proposal during Assessment

The proponent requested the EPA consent to two changes to the proposal during assessment on 3 May 2018 and 10 July 2020. The changes were:

- May 2018
    - reduction in the extent of both the on-playa and off playa development envelopes.
- July 2020
    - removal of the northern bore field area resulting in a reduction in the extent of the off-playa development envelope
    - reduction in the abstraction of brine from up to 40 GL/annum to 17 GL/annum.

The proposed changes did not change the amount of direct disturbance proposed. Both the proposed changes included a reduction in the proposal development envelopes and are in line with the EPA's expectation that development envelopes will be refined through the assessment process.

The EPA Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under s. 43A of the EP Act to the changes on 16 May 2018 and 5 August 2020 respectively.

Tables 1 and 2 above include these changes.

2.2 Context

The proposal lies within the southern fringe of the Great Victoria Desert. Based on the Interim Biogeographic Regionalisation of Australia (IBRA), Lake Wells is located within the Shield (GDV1) subregion of the Great Victoria Desert Region.

Annual rainfall in this semi-arid zone is highly variable and the region is subject to drought periods. Rainfall occurs from both locally generated thunderstorms and dissipating tropical cyclones tracking southeast.

The proposal lies at the southern end of the Lake Wells Playa system. Surface water from the north and south runs into the playa, and flows east before discharging into the larger, north-south oriented playa system.

The goldfields region in which the proposal is located contains unallocated crown land and reserves, and is used for grazing, tourism, exploration and mining. At the time of referral of the proposal, no Native Title determination or claim had been lodged over the development envelopes. However, the Waturta people lodged a claim over the area in July 2018, which is currently under assessment.

3. Consultation

The EPA advertised the referral information for the proposal for seven days public comment in January 2018 and received two submissions. One submission requested ‘Assess – Referral Information’, and one submission requested ‘Assess – Public Environmental Review’.

The proponent consulted with government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised and the proponent’s response are detailed in Table 7 of the proponent’s ERD (APC 2020).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

4. Key Environmental Factors

In undertaking its assessment of the proposal and preparing this report, the EPA had regard for the object and principles in s. 4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- proponent's referral information and ERD
- public comments received on the referral, stakeholder comments received during the preparation of the proponent's documentation and stakeholder and agency comments received on the ERD
- EPA's own inquiries
- *Statement of Environmental Principles, Factors and Objectives* (EPA 2020b)
- relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.5.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – direct disturbance of flora and vegetation for the construction of bore fields, evaporation ponds and infrastructure. There is potential for indirect impacts associated with changes to surface water regimes.
- **Terrestrial Fauna** – direct disturbance of known habitat for significant fauna species. There would also be indirect impacts including increased feral animal activity and vehicle strike.
- **Inland Waters** – changes to groundwater regimes associated with groundwater abstraction of brine and potable or process water. Changes to surface water regimes associated with the construction of evaporation ponds on the playa surface.
- **Subterranean Fauna** – potential impacts to habitat for stygofauna associated with groundwater abstraction.
- **Social Surroundings** – potential impacts to heritage sites.

The EPA considered other environmental factors during its assessment of the proposal. Appendix 3 of this report contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principle was particularly relevant to its assessment of the proposal:

1. **The principle of the conservation of biological diversity and ecological integrity** – the EPA notes that there is potential for previously unknown species of *Tecticornia* to exist in the development envelopes, and has recommended a condition to avoid impacts to *Tecticornia* to ensure that the proposal would not compromise biological diversity.

Appendix 2 of this report provides a summary of all the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 to 4.5. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 6 provides the EPA's recommendation as to whether or not the proposal may be implemented.

4.1 Flora and Vegetation

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

Relevant Policy and Guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016e)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a).

EPA Assessment

Existing environment

The proponent has undertaken flora and vegetation surveys, including targeted surveys for *Tecticornia* species as required by the EPA endorsed Environmental Scoping Document (APC 2018). These surveys were conducted in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016e) and included sampling events over two seasons to ensure that *Tecticornia* samples could be collected during flowering periods where possible. The EPA considers that the survey effort undertaken was appropriate for the scale of the proposal and is adequate to assess the impacts to flora and vegetation associated with the proposal.

The flora and vegetation surveys for the proposal were conducted within a study area (the study area) covering 55,900 ha, which included the development envelopes. A description and map showing the extent of the study area can be found in the *Lake Wells Potash Project Flora and Vegetation Survey* (Botanica 2019).

The proposal is located in the Shield (GDV1) subregion of the Great Victoria Desert Bioregion of Western Australia. Seventeen vegetation types were identified in the development envelopes, all of which remain at approximately 100% of their pre-European extent. Vegetation in the development envelopes is described as being in 'good' to 'very good' condition, with some impacts from grazing and weeds (Botanica 2019).

No Threatened Ecological Communities or Priority Ecological Communities were identified in the study area. None of the vegetation types identified are likely to be groundwater dependent, although vegetation surrounding the playa may opportunistically access stored groundwater within shallow soil profiles. Three priority flora species were identified in the survey area, as well as a potentially new

Tecticornia taxon and a number of sterile *Tecticornia* specimens which could not be identified.

Assessment of impacts

Clearing of native vegetation

The proposal includes clearing or direct disturbance (through flooding and halite deposition) of up to 3,220 ha. Of this area, 2,470 ha would be within the on-playa development envelope, and 750 ha would be within the off-playa development envelope (Figure 2).

Of the 17 vegetation types identified in the development envelopes, the greatest impact would be to the CD-CSSSF1 vegetation type. 1,925 ha of this vegetation type would be impacted, representing 30.9% of the extent mapped within the study area.

The CD-CSSSF1 vegetation type makes up the majority of the on-playa environment and consists of *Tecticornia* (samphire) dominated shrublands. *Tecticornia* is considered a keystone group of species, and may have value as critical habitat for vertebrate and invertebrate fauna, including short-range endemic species.

The area mapped as this vegetation type is on the playa salt lake surface, and includes very sparse vegetation or bare soil (APC 2020). Samphire shrublands are well represented throughout the region. The EPA considers that, while there would be a loss of up to 31% of the extent mapped within the study area for this vegetation type, the loss at a regional scale would be smaller and the proposed impact is therefore unlikely to have a significant impact on regional biological diversity.

The vegetation types SD-AFW1 and CD-CSSSF2 would be impacted by up to 10.3% and 6.2% of their extents within the study area respectively. Direct impacts to these vegetation types are unlikely to be regionally significant. The other 14 vegetation types in the development envelopes would be impacted by less than 5% of the extent mapped in the study area.

The proponent has minimised impacts to native vegetation through the project design process by locating ponds on predominantly bare salt flat areas, and through the layout of infrastructure to avoid vegetation where practicable.

Following closure, all off-playa infrastructure would be removed, and disturbed areas rehabilitated in accordance with the proponent's Mine Closure Plan.

Changes to surface water flows

The proposal has the potential to impact flora and vegetation by changing surface water flows in the on-playa environment through placement of ponds, and in the off-playa environment through construction of infrastructure, including linear infrastructure such as access roads and pipelines.

Modelling of changes to surface water flows is described in section 4.3 (Inland Waters). The proponent has identified the areas that would be subject to an increase

in flooding (1,055 ha) or decrease in flooding (46.31 ha) during a 1 in 10 year rainfall event as a result of the proposal (Figure 3).

These areas can be used to estimate indirect impacts to vegetation types, although it is noted that these impacts are likely to be over-estimated, given that many of the areas predicted to receive an increase in flooding would have also been flooded (to a lesser extent) in the base case, and that much of the vegetation in the development envelopes is likely to be highly tolerant to intermittent inundation.

Consideration of cumulative impacts to vegetation types would result in impacts of more than 10% of extent mapped within the study area to three vegetation types, as shown in Table 3.

Table 3: Vegetation types subject to cumulative impacts greater than 10% of mapped extent

Vegetation type	Predicted direct loss	Potential indirect impacts (including decrease or increase in flooding)	Cumulative impact relative to mapped extent within study area
CD-CSSSF1	1,925 ha	25 ha	31.3%
SD-AFW1	392 ha	313 ha	18.5%
D-MWS1	66 ha	125 ha	13.3%

As discussed above, the CD-CSSSF1 vegetation type consists of samphire shrubland and includes areas of very sparse vegetation and base soil. This vegetation type is regionally well represented and the predicted impacts to the locally mapped extent are unlikely to be significant.

The SD-AFW1 vegetation type is well represented in the region, and additional areas of this vegetation type were identified outside the study area extending to the north. Given that the vegetation types identified in the development envelopes remain at approximately 100% of pre-European extent, and the potential for vegetation in the additional flooding areas to be tolerant to increased intermittent flooding, the EPA considers that the predicted cumulative impacts to the vegetation types described in Table 3 are unlikely to result in significant changes to local or regional biodiversity or ecological integrity.

The proponent has minimised changes to surface water flows during the project design process, by ensuring that roads and other linear infrastructure are designed to allow surface water to flow through where required, and by diverting water flows around off-playa ponds to minimise changes to the surface water regime. Given that surface water flows in the off-playa area are generally channelised, the EPA considers that impacts to these flows can be managed through appropriate drainage design to avoid or minimise impacts to flora and vegetation.

Following closure, all off-playa infrastructure and ponds would be removed, and surface water flows re-instated to minimise impacts to flora and vegetation.

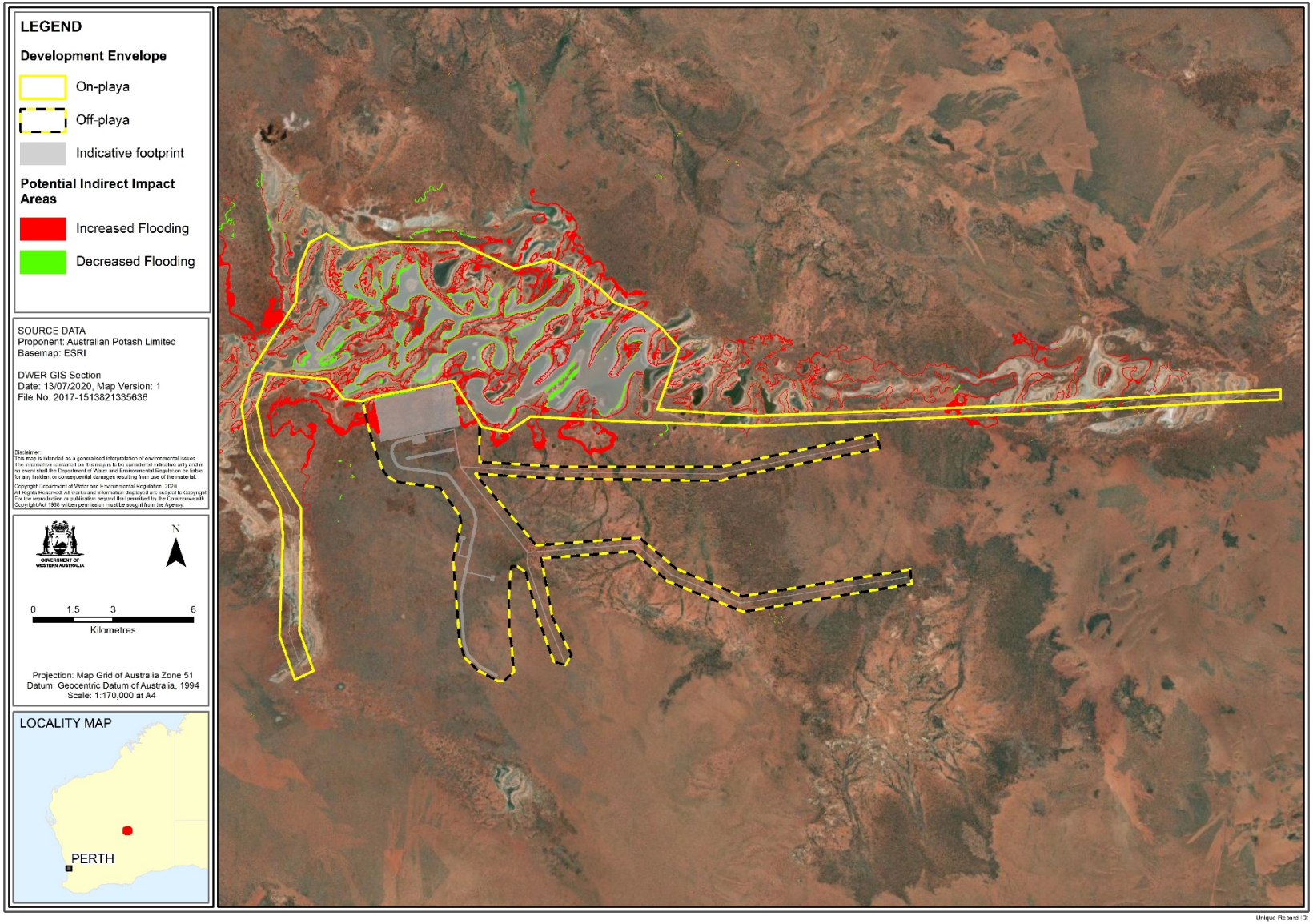

Figure 3: Changes to surface water regimes

Significant flora species, including Tecticornia species

Targeted surveys identified three priority flora and one potentially distinct taxon in the study area. Five specimens, comprised of three species of *Tecticornia,* were collected and could not be identified due to being sterile at the time of survey.

The Priority 1 species, *Lepidium xylode*s, and the Priority 3 species *Meleleuca apostiba* are unlikely to be significantly impacted by the proposal. *L. xylodes* was not identified inside the development envelopes or in any area likely to be indirectly impacted by proposal activities. Direct impacts to *M. apostiba* would occur in only four of the 35 locations identified within the survey area. *M. apostiba* has also been recorded in several other locations, including records over 220 kilometres south east of the development envelopes (Western Australian Herbarium 2020).

The remaining priority flora species and potentially significant flora species are within the Tecticornia genus. Their location in relation to the development envelopes is shown in Figure 4.

- Three populations of *Tecticornia willisii* (Priority 1) were recorded in the study area, with an estimated 141,605 plants recorded (Botanica 2019). The records of this species are located outside the development envelopes, however there is potential for changes to surface water to impact these three populations.
- The potentially distinct taxon, *Tecticornia* aff. *undulata*, was recorded from two populations within the survey area, with an estimated 6,731 individual plants recorded. One of these locations, containing approximately 61% of the recorded plants, is within the proposed disturbance area for the proposal (Figure 4). The second population is outside of the development envelopes for the proposal, but has the potential to be impacted by changes to surface water flows. There is potential for this species to be identified in greater numbers outside the study area, however the risk remains that this species could be restricted to the development envelopes.
- Of the three currently unidentified (sterile) *Tecticornia* samples, two are in locations unlikely to be impacted by the proposal. The third unidentified individual, *Tecticornia* sp. Sterile 1, is located within the proposal footprint, in an area proposed to be impacted by on-playa ponds. The proponent will continue investigations, which may demonstrate that this individual belongs to a widespread species. There is also potential for investigations to determine that this individual represents a previously unknown or restricted species.

The proponent has proposed management of impacts to significant and potentially significant *Tecticornia* species, including:

- Avoidance of the mapped population of *Tecticornia* aff. *undulata*, including a 30 metre buffer, until the distribution elsewhere and/or taxonomy of the species can be confirmed by additional survey, to demonstrate that the species would not be significantly impacted by the proposal.
- Avoidance of the known location of *Tecticornia* sp. Sterile 1, including a 50 metre buffer, until the distribution and/or taxonomy of the species can be confirmed by additional survey, to demonstrate that the species would not be significantly impacted by the proposal.

- Monthly assessment, following implementation, of the mapped populations of *Tecticornia willisii*, *Tecticornia* aff. *undulata,* and *Tecticornia* sp. Sterile 1, including population extent, plant health, observations for signs of surface water impacts and observations for signs of other impacts or potential impacts.
- Management of any decline in the extent, or health of any population in consultation with appropriate government departments.

The EPA considers that impacts to significant and potentially significant *Tecticornia* species can be managed to meet the EPA's objectives for this factor, subject to the implementation of the proponent's proposed management and monitoring of the identified species. The EPA has recommended condition 6 to formalise the proponent's management commitments as described above.

Other indirect impacts

The following indirect impacts were identified as potentially impacting flora and vegetation in the development envelopes:

- Weeds – five introduced species were recorded in the survey area, but none of these are listed as declared plants. The saline nature of the playa would minimise the risk of additional introduction and spread of weeds. The proponent has proposed appropriate management measures to address the risk of weeds, including hygiene and weed control measures.
- Saline water leaks or spills – the proponent has proposed measures to reduce the potential for saline water to leak or spill in areas of native vegetation, including pipeline leak detection systems and regular pipeline inspections.
- Fire – there is potential for increased fire regimes to impact flora and vegetation in the development envelopes. The proponent has proposed management actions including fire breaks around key infrastructure, and installation of firefighting equipment to manage this risk.

The EPA considers that, given the scale of the proposal and the management actions described in the proponent's ERD (APC 2020a) and above, these indirect impacts are unlikely to significantly impact flora and vegetation in the development envelopes. The EPA notes that activities related to these impacts may also be regulated under other approval mechanisms.

In accordance with the *WA Government Offsets Policy* (Government of Western Australia 2011) and *WA Environmental Offsets Guidelines* (Government of Western Australia 2014), the EPA has considered whether clearing and disturbance associated with the proposal represents a significant residual impact. The EPA notes that vegetation in the development envelopes does not contain threatened flora or threatened ecological communities and does not include any vegetation that is significantly reduced from its pre-European extent. The EPA also notes that the development envelopes do not include any conservation significant areas or wetlands. Therefore, the EPA considers that, subject to the authorised extent in Schedule 1 of the Recommended Environmental Conditions, and implementation of the recommended condition 6, impacts to flora and vegetation associated with the proposal are not so significant as to require environmental offsets.

Summary

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2020b)
- *Environmental Factor Guideline: Flora and Vegetation* (EPA 2016a)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011) and *WA Environmental Offsets Guidelines* (Government of Western Australia 2014)
- quantified direct and indirect impacts to vegetation types in the development envelopes, and the widespread nature of vegetation types in the study area
- proponent's proposed management and monitoring of risks to significant and potentially significant *Tecticornia* species.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation that the impacts to this factor are manageable and would no longer be significant, provided there is:

- restriction of direct disturbance to that described in the proponent's ERD through the authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 6 to formalise the proponent's commitment to manage and monitor risks to significant and potentially significant *Tecticornia* species.

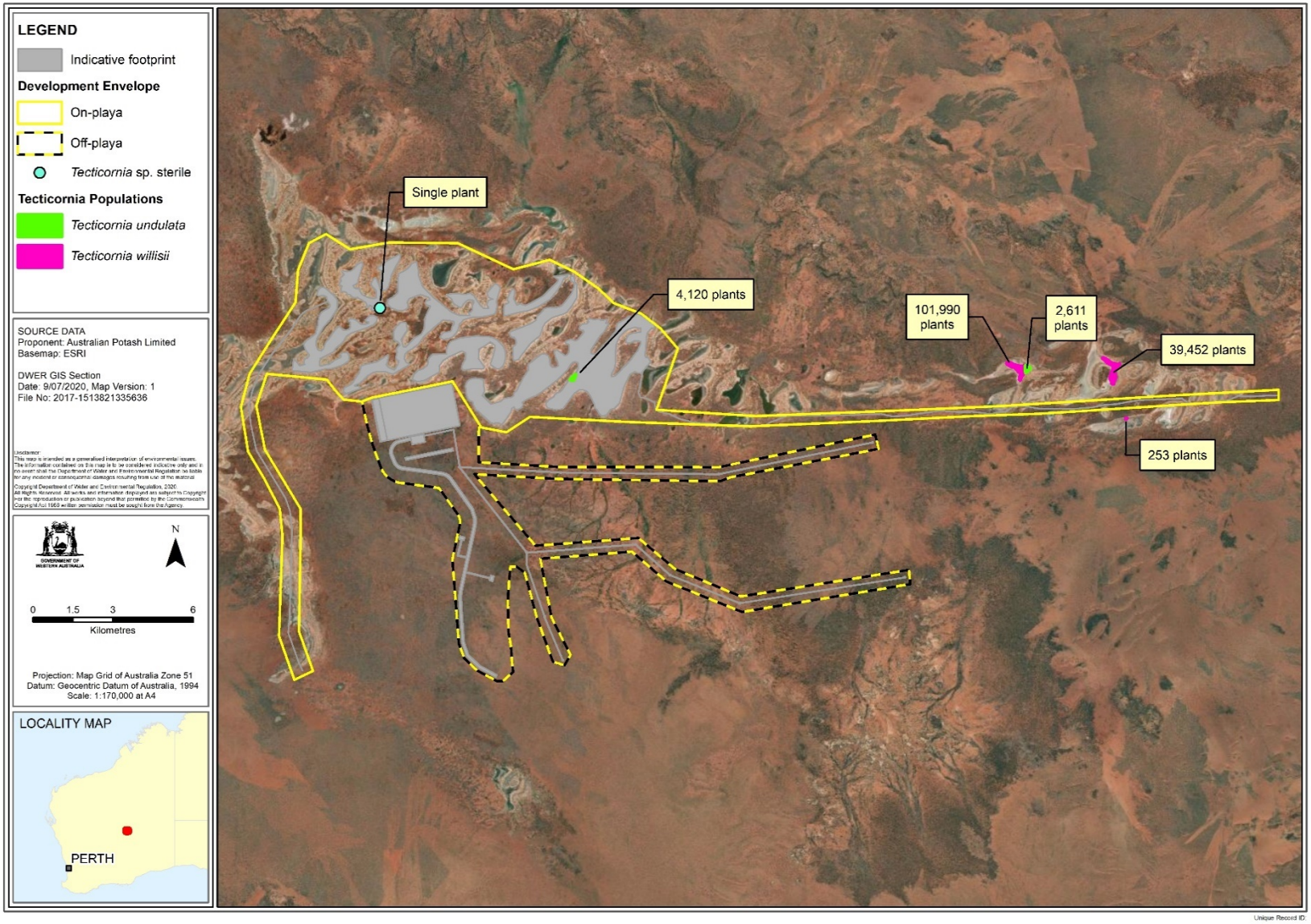

Figure 4: Locations of significant and potentially significant Tecticornia species, with estimated population numbers

4.2 Terrestrial Fauna

The EPA's environmental objective for Terrestrial Fauna is *to protect terrestrial fauna so that biological diversity and ecological integrity are maintained*.

Relevant Policy and Guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d)
- *Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA 2020c)
- *Technical Guidance – Sampling of Short Range Endemic Invertebrate Fauna* (EPA 2016f).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d).

EPA Assessment

The proponent has conducted surveys and studies to assess the potential impacts of the proposal on terrestrial fauna. Some of the studies and surveys conducted were limited by access to survey areas and timing relative to ideal weather conditions. The proponent conducted additional studies for shorebirds and aquatic invertebrates following significant rainfall in February 2020 to address these limitations. The EPA considers that the surveys conducted are adequate to inform the EPA's assessment of terrestrial fauna, relative to the size of the proposal and the magnitude of the predicted impacts.

The terrestrial fauna surveys for this proposal were conducted within the study area, which covers an area of about 55,900 ha, and includes the development envelopes. The study area is described and mapped in *Lake Wells Potash Project – Level 2 Fauna Survey Phase 1 and 2* (Harewood 2017).

Fauna habitat

Nine habitat types were identified in the development envelopes. Of these habitats, only the Salt Lake habitat would be impacted by more than 8% of the extent mapped in the study area.

The salt lake habitat includes the playa depressions, which would be impacted by the concentrator and crystalliser ponds to be established on the playa surface. This habitat ranges from totally vegetated to sparsely vegetated and could provide habitat for migratory birds following significant rainfall events. Impacts to this habitat type would be up to 21.2% of the total extent of the habitat mapped in the study area. No significant migratory species are likely to use the salt lake habitat in the development envelopes. Other habitat suitable for bird species within the Lake Wells region would not be impacted. Therefore, the biological diversity or ecological integrity of any species reliant on this habitat type is not expected to be impacted.

Vertebrate fauna

Vertebrate fauna surveys identified 192 native species in the study area, including birds, reptiles, mammals and amphibians. Targeted surveys based on desktop studies identified the following significant fauna in the study area:

- The great desert skink (*Liopholis kintorei*) is listed as Vulnerable under the *Environment Protection and Biodiversity Act 1999* (EPBC Act). Four burrows and several individuals were identified in the survey area, with all burrows located outside of the proposed footprint. Clearing would impact up to 0.5% of the mapped sandplain habitat associated with this species in the study area.
- The brush-tailed mulgara (*Dasycercus blythi*) is listed as Priority 4 under the *Biodiversity Conservation Act 2016* (BC Act). Tracks, burrows and diggings from this species were recorded and several individuals were trapped in the survey area. Habitat for this species includes the sandplain habitat and mulga woodland. Impacts to these habitat types from the proposal would be up to 0.5% and 1.6% of the respective extents mapped in the study area.
- The long-tailed dunnart (*Sminthopsis longicaudata*) is listed as Priority 4 under the BC Act. The species was recorded in the rocky hill habitat and the stony plains habitat. Impacts to these habitats from the proposal would be up to 0.2% and 0.3% of the respective mapped extents within the study area.
- The marsh sandpiper (*Tringa stagnatilis*) is listed as a migratory species under the EPBC Act. A single individual was recorded during a survey in 2017, but has not been recorded in subsequent surveys. Due to the very low frequency of occurrence, the development envelopes are not considered to be significant habitat for this species.
- The night parrot (*Pezoporus occidentalis*) is listed as Critically Endangered under the EPBC Act and the BC Act. It has not been recorded in any recent surveys of the study area, however, there is one historical record (1896) of the species in the region. The EPA notes that there were some limitations to the proponent's surveys for night parrot, and therefore there is potential for the species to occur in the development envelopes. Potential habitat for night parrot in the development envelopes includes sand dunes (predicted impact of 7.1% of mapped extent within the study area), and sandplain (predicted impact of 0.5% of mapped extent within the study area). It is noted that the spinifex in the development envelopes is generally small and does not present ideal habitat for the species, with much of it being burnt in the last decade.

The EPA considers that direct impacts to habitat for each of the above species are unlikely to be significant, given the relatively small percentage of the identified habitats to be impacted by the proposal.

Potential indirect impacts to terrestrial fauna, including the above significant species, includes vehicle strike, increased predation by feral animals and increased fire regimes. The proponent has prepared a Fauna Management Plan to address these indirect impacts, which includes the following management actions:

- pre-clearance surveys of prospective habitat for the great desert skink and brush-tailed mulgara, to ensure that burrows are avoided where practicable

- speed limits and limitation of vehicle movements to daylight hours
- management and control of feral animals
- management of fire regimes.

The EPA considers that, subject to implementation of the proponent's Fauna Management Plan, impacts to significant vertebrate fauna species can be managed to meet the EPA's objective for this factor. The EPA has recommended condition 7 to formalise the proponent's commitment to implement the management actions described in the Fauna Management Plan.

Migratory shorebirds and waterbirds

Three surveys for waterbirds and shorebirds were conducted in the study area. At least one survey followed significant rainfall and in the presence of some ponded water on the playa surface. A total of 18 species of waterbird and shorebird were identified, with over 640 individual waterbirds and shorebirds recorded.

Two individuals recorded represented migratory species – a marsh sandpiper was recorded in 2017, but has not been identified in any subsequent surveys, and an unidentified medium sized shorebird was identified in 2020.

The occurrence of the unidentified shorebird and the marsh sandpiper indicates that there is some usage of the system by migratory shorebirds, however numbers appear to be low and opportunistic. The EPA considers that the system is unlikely to be significant habitat for migratory shorebirds.

Given that disturbance related to the proposal within suitable habitat for waterbirds would be limited to 21% of the mapped extent within the study area, with suitable habitat known to extend outside of the study area, and the general lack of significant species recorded in the development envelopes, the EPA considers that the proposal is unlikely to significantly impact waterbird and shorebird populations.

Aquatic and short-range endemic invertebrates

Surveys for aquatic fauna, including aquatic invertebrates, did not identify any species that are restricted to the proposal footprint. Three species were identified in early surveys that may be restricted to the general area, however these were located outside of the proposal footprint. Given that large areas of suitable habitat for these species would remain within and outside the development envelopes, and connectivity and water flow through the development envelopes would be maintained, the EPA considers that it is unlikely that implementation of the proposal would impact the biological diversity of aquatic fauna.

A desktop review of the study area (Bennelongia 2018) identified seven habitat units which were prospective for short range endemic (SRE) invertebrate fauna. These habitat units were targeted during subsequent SRE surveys, resulting in a total of 38 species belonging to potential SRE groups being recorded. No confirmed SRE species were recorded in the study area, however nine potential (data deficient) SRE species were identified. The EPA notes that the mapped habitat for these species extends beyond the development envelopes and considers that all the species recorded are likely to have ranges beyond the development envelopes.

Summary

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2020b)
- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d)
- quantified impacts to habitat for vertebrate and invertebrate fauna for the proposal
- proponent's proposed management and monitoring of risks to significant fauna species, described in the proponent's Fauna Management Plan.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna that the impacts to this factor are manageable and would no longer be significant, provided there is:

- restriction of direct disturbance to that described in the proponent's ERD through the authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 7 to formalise the proponent's commitment to manage and monitor indirect impacts to significant terrestrial fauna species.

4.3 Inland Waters

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

Relevant Policy and Guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Inland Waters* (EPA 2018).

EPA Assessment

Existing environment

Lake Wells is a salt lake playa system, defined as a lake in an arid or semi-arid region that evaporates during drier months. The playa is characterised by a series of depressions separated by slightly elevated ridges.

The playa overlays an ancient river paleochannel, with potassium-rich hypersaline brine, which is the target of the proposed operations. The deep paleochannel aquifer is the subject of an H3 Hydrogeological Assessment to inform the viability of the proposal (AQ2 2019). The properties of the aquifer are well understood. The surficial aquifer in this area is between 0.12 and 5 metres below ground (mbgl), and the deep paleochannel aquifer occurs between 150 and 170 mbgl.

Low permeability clays occur beneath the playa at a depth of 1 to 2.5 metres (m), enabling the brine to be placed in ponds on the playa surface for evaporation and concentration. Some connectivity between groundwater and surface water systems in this area is expected, as demonstrated by changes in salinity levels within the brine aquifer detected following recent rainfall.

Surface water in the catchment flows onto the playa surface from the north and south along defined drainage lines. It then flows eastward through the playa system into a larger playa system, which is aligned north-south. Inundation of the lake only occurs following infrequent, large rainfall events.

The off-playa areas are underlain by Archean bedrock, which supports a fractured rock aquifer. Water quality in this aquifer is fresh to brackish, and the aquifer is proposed to supply potable and process water for the proposal. The depth to groundwater in this area ranges from 6 to 36 mbgl.

Potential impacts

The proposal has the potential to impact:

- groundwater regimes
- surface water regimes
- surface water quality.

Groundwater regimes

Paleochannel (brine) aquifer

The proposal includes abstraction of up to 17 GL/annum of brine from the deep paleochannel aquifer, to enable harvesting of the sulphate of potash product in on-playa harvest ponds. A maximum drawdown of 130 m is predicted in this aquifer (AQ2 2019).

Given the highly saline nature of the brine aquifer, it is not expected to support any significant stygofauna communities, and no groundwater dependent vegetation was identified in the flora and vegetation study area.

There is potential for drawdown in the brine aquifer to result in localised drawdown within the adjacent (potable) fractured rock aquifer. This risk is addressed below in the discussion of the fractured rock aquifer. There is also potential for drawdown in this aquifer to result in minor changes to surface water regimes, given the apparent connectivity between the two systems. This potential impact is addressed in the discussion of surface water regimes below.

Given the lack of significant receptors (vegetation or stygofauna) that could be directly impacted by drawdown in this aquifer, the EPA considers that drawdown in the brine aquifer can be managed to meet the EPA's objectives for this factor.

Fractured rock (potable) aquifer

The proposal has the potential to impact the groundwater regime within the fractured rock aquifer through:

- abstraction of up to 0.8 GL/annum of water from the fractured rock aquifer
- connectivity between the fractured rock aquifer and the brine aquifer resulting in drawdown associated with abstraction in the brine aquifer.

No groundwater dependent vegetation was identified in the development envelopes or the wider flora and vegetation study area, although some vegetation on the edges of the playa may access stored soil water opportunistically following rainfall events. Given that the fractured rock aquifer is between 6 and 36 mbgl, it is unlikely that drawdown in this aquifer associated with the proposal would significantly impact vegetation health or surface water regimes. The fractured rock aquifer supports a community of stygofauna species, some of which may be restricted to the likely area of drawdown. Impacts to stygofauna are addressed in section 4.4 (Subterranean Fauna) below.

Regional magnetic surveys suggest that the fractured rock aquifer identified in the development envelopes is extensive across the region (APC 2019). Exploratory drilling indicates that the aquifer extends at least 70 mbgl, however regional geophysical surveys indicate that fractures may occur up to 400 mbgl.

Given the extensive nature of the fractured rock aquifer, it is not expected that abstraction of up 0.8 GL/annum, or connectivity with the brine aquifer would significantly impact groundwater regimes within the fractured rock aquifer. However, there is some uncertainty regarding the extent of impacts. The proponent notes that modelling of groundwater drawdown associated with the fractured rock aquifer has not been completed due to the difficultly in accurately predicting the behaviour of this resource. The EPA notes that these aquifers typically have extreme spatial variability in hydraulic conductivity (Cook 2003) which is a limitation to accurate modelling.

To address this uncertainty, the proponent has prepared a groundwater monitoring strategy. The strategy requires that the proponent monitor groundwater levels in all bores to verify predicted impacts, and implement management actions, including suspension or reduction of abstraction, if groundwater levels fall by 5 m or more from baseline in bores identified as supporting environmental values (in this case potentially restricted stygofauna) or that are utilised by other users. Monitoring will be reviewed following 12 months of operation to verify predicted impacts.

The EPA considers that the risks associated with groundwater drawdown in the fractured rock aquifer are low, given the aquifer does not support any confirmed groundwater dependent vegetation or other surface water features. The EPA considers that the proponent's proposed management and monitoring strategies are adequate to address any residual risk to groundwater regimes due to uncertainty in impact predictions within the fractured rock aquifer. The EPA has therefore recommended condition 8 to formalise the proponent's commitment to implement the groundwater management plan.

Surface water regimes

On-playa

As noted above, surface water in the local catchment area flows from the north and south onto the playa surface, and then flows eastward through a series of depressions along the length of the playa to discharge into the larger, north-south oriented section of Lake Wells. Surface water flows only occur following large rainfall events.

Flow velocities across the playa during rainfall events are low, typically less than 0.7 metres per second for rainfall events less than a 1 in 10 year. Water is generally contained within the depressions and evaporates or infiltrates into the surface soils quickly, with a small proportion discharging into the larger playa system.

Surface water regimes in the playa system may support aquatic invertebrates, waterbirds and shorebirds, including migratory species, and salt lake vegetation types consisting of samphire and other salt tolerant species. Impacts to these significant receptors are discussed in section 4.1 (Flora and Vegetation) and section 4.2 (Terrestrial Fauna). It is noted that:

- impact predictions for these receptors are quantified based on the loss of habitat within the salt lake depressions where ponds would be constructed
- no flora or fauna species, or vegetation type is expected to be restricted to the development envelopes
- habitat for all significant species identified is extensive outside of the development envelopes.

The construction of the ponds across the playa, using the existing dunes as pond walls where possible, would result in floodwaters being directed around the ponds. The proponent has conducted modelling to predict the likely impacts to surface water flows as a result of this disturbance, and these predictions have been verified where possible by observations following recent rainfalls in February 2020. The EPA considers that the studies conducted are adequate to inform the EPA's assessment of the proposal.

It is predicted that the proposal would result in an increased flow velocity between the ponds, and a localised increase in the extent of flooding (Figure 3). There may also be a small increase in the depth of flooding. It is not expected that the proposal would result in any changes to the volume of water reporting through the system to the east during a rainfall event. The proposal includes the installation of suitable flood ways, drains and culverts to ensure the natural flow patterns across the playa are maintained as far as practicable.

Abstraction of brine from the paleochannel aquifer has the potential to decrease the duration of ponding on the playa surface following rainfall events, as more infiltration would occur into the unsaturated zone. A low-permeability clay layer occurs between 1 and 2.5 mbgl beneath the playa surface, minimising connectivity between surface waters and the deep paleochannel aquifer. However, some connectivity exists, and is demonstrated by minor changes in salinity in the aquifer following rainfall.

Due to the infrequent rainfall and high rates of evaporation in the area, the duration of ponding under baseline conditions is relatively short. Following recent significant rainfall in February 2020, surface water ponding was reduced within four weeks to the centre of the salt lake depressions. This suggests that it is unlikely there is significant support for surface water ponding from groundwater, with surface water quickly infiltrating into the ground. The proponent considers that any reduction in the duration of ponding associated with groundwater abstraction from the paleochannel aquifer is likely to be minor. The EPA considers that the proponent's conclusion is reasonable.

The EPA considers that, given the extensive habitat for significant flora, vegetation and fauna outside the development envelopes, the localised nature of predicted impacts to surface water flows, and the maintenance of surface water volumes reporting to the playa system to the east of the development envelopes, proposal activities are not likely to significantly impact environmental values supported by surface water regimes in the areas likely to be directly or indirectly impacted by the proposal.

Off-playa

There is potential for the off-playa infrastructure, including processing plant, access roads and bore fields associated with the proposal to impact surface water flows in the local catchment.

Surface water flows in the off-playa area are highly channelised and can be managed through infrastructure design, including culverts and overflows for access roads where ephemeral streamlines are intersected, burial or elevation of pipelines across drainage lines, and diversion of drainage lines around harvest ponds to ensure that surface water reports to the playa system. It is noted that inclusion of these features in infrastructure design is required to protect infrastructure as well as environmental values. The EPA considers that impacts associated with changes to surface water flows in the off-playa environment can be managed to meet the EPA's objectives for this factor.

Surface water quality

The proposal has the potential to impact surface water quality through:

- lateral seepage of brine from concentrator or crystalliser ponds, and runoff of hypersaline brine to the wider environment
- exposure of acid sulphate soils
- leaks or spills of saline water, hydrocarbons or chemicals.

The proponent has identified a low-permeability clay layer which would reduce the infiltration of saline water back into the underlying aquifer. To prevent lateral seepage of saline water beneath pond walls to the environment, the proponent would install a slurry wall down to the clay layer at the edge of the ponds.

The proponent has conducted analyses of lakebed sediments and soils and has determined that acid sulphate soils are not present in the playa system. It is therefore unlikely that excavations to establish slurry walls and pond walls would result in acid or metalliferous drainage to the environment.

To prevent leaks of saline water to the environment, pipelines would be fitted with leak detection systems and regularly inspected. Water flows would be automatically shut off where leaks are detected. Standard chemical and hydrocarbon management procedures would be implemented, and any spills cleaned and removed from site by a licensed third party. It is noted that management of contaminants is also regulated under other approval mechanisms.

Following closure, the on-playa evaporation ponds would remain, and be filled with a solidified halite that has precipitated from brine and built up on the pond floor over the project life. The final post-closure landform of ponds would be designed to hold water, preventing saline spills to the environment, and promoting infiltration of salts back to the saline aquifer.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018)
- hydrological investigations conducted by the proponent
- nature of the sensitive receptors, including vegetation, fauna and subterranean fauna, that are reliant on the groundwater and surface water regimes in the development envelopes
- proponent's proposed groundwater management actions, which include changes to abstraction where monitoring indicates that drawdown in the fractured rock aquifer has exceeded 5 m below baseline levels.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Inland Waters that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent of drawdown in both the paleochannel aquifer and the fractured rock aquifer, in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 8, formalising the proponent's commitment to implement the Groundwater Monitoring Strategy.

4.4 Subterranean Fauna

The EPA's environmental objective for Subterranean Fauna is *to protect subterranean fauna so that biological diversity and ecological integrity are maintained*.

Relevant Policy and Guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016c)
- *Technical Guidance – Subterranean Fauna Survey* (EPA 2013)
- *Technical Guidance – Sampling Methods for Subterranean Fauna* (EPA 2007).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016c).

EPA Assessment

Troglofauna

Due to the highly saline nature of the environment, troglofauna are not expected to be present in the on-playa development envelope. Troglofauna surveys carried out in the off-playa development envelopes indicated there may be a moderately diverse troglofauna community in the area. Activities to be carried out on the off-playa areas are mostly above ground, such as processing plants and access roads. Therefore, the EPA considers that impacts associated with the proposal are unlikely to significantly impact the biological diversity or ecological integrity of troglofauna communities.

Stygofauna

Due to the hypersaline nature of the paleochannel aquifer, it is not expected that this aquifer would include habitat for stygofauna. The proponent has therefore focussed sampling effort in the low-salinity bores within the fractured rock aquifer from which potable and process water for the proposal would be abstracted.

Surveys indicated that the development envelopes have moderate stygal diversity, with 29 of the identified 40 species potentially being restricted to the predicted area of groundwater drawdown. The mapped distribution of a number of the stygofauna species recorded suggests that suitable habitat for stygofauna extends beyond the impact area (Bennelongia 2020).

Predicted impacts to the fractured rock aquifer are described in section 4.3 (Inland Waters). There is potential for localised drawdown in the aquifer from abstraction for potable/process water, and from connectivity with the paleochannel brine aquifer. Given the expected extent of the fractured rock aquifer, it is unlikely that drawdown would significantly impact any stygofauna habitat. However, due to inherent difficulties in modelling drawdown in fractured rock aquifers, there is uncertainty regarding the potential extent of drawdown likely in this aquifer.

To address this uncertainty, the proponent has prepared a Groundwater Monitoring Strategy, which includes management of groundwater levels and groundwater quality. If groundwater levels in fractured rock aquifer bores where potentially restricted stygofauna have been identified fall more than 5 m below baseline, the proponent would alter or cease abstraction in or near the impacted bores. The EPA considers that this strategy addresses the risk associated with direct abstraction from the aquifer and indirect drawdown caused by connectivity with the brine aquifer. Management responses would also be initiated if a decline in groundwater quality, including increased salinity, is detected in any potable bore.

Given the mapped distribution of recorded stygofauna species, indicating likely extension of habitat outside of the predicted extent of groundwater drawdown, the localised nature of predicted impacts, and the proponent's proposed management of groundwater levels in the fractured rock aquifer, the EPA considers that impacts to stygofauna as a result of the proposal can be managed to meet the EPA's objectives for this factor.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016c)
- likely extent and connectivity of stygofauna habitat within the fractured rock aquifer
- proponent's proposed management of groundwater to avoid and minimize impacts to stygofauna habitat.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Subterranean Fauna that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent of drawdown in both the paleochannel aquifer and the fractured rock aquifer, in Schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 8, formalising the proponent's commitment to implement the Groundwater Monitoring Strategy.

4.5 Social Surroundings

The EPA's environmental objective for Social Surroundings is *to protect social surroundings from significant harm*.

Relevant Policy and Guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016b)
- Guidance Statement 41 – Assessment of Aboriginal Heritage (EPA 2004).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016h).

EPA Assessment

The proposal has the potential to impact social surroundings in the Lake Wells region through disturbance of significant heritage sites.

At the time that the proposal was referred to the EPA, there was no Native Title determination or claim over the development envelopes or the surrounding area. A claim was lodged by the Waturta claimant group during the assessment process. This claim has passed the initial requirements to be registered and is in the process of being considered.

The proponent has conducted ethnographic heritage surveys within and outside of the development envelopes in accordance with the requirements of the EPA endorsed Environmental Scoping Document. Some of these surveys included participants from within the Waturta claimant group, and other local knowledge holders. The Department of Planning, Lands and Heritage (DPLH) has advised the EPA that the participants in the heritage surveys included known knowledge holders for the region.

The ethnographic heritage surveys did not identify any heritage or cultural sites in the development envelopes. Some sites were identified to the north of the development envelopes, including the Yilli Yilli creek. The proposal would not directly or indirectly impact these sites.

The proponent has committed to conducting archaeological surveys on a case-by-case basis in areas considered to be at high risk of containing heritage sites, including the edges of the playa. Any sites identified during these surveys would be managed by the proponent to avoid or minimise impacts to heritage where possible.

The EPA has invited and received submissions from the Waturta claimants. The claimants have indicated that there is potential for significant sites to occur in the development envelopes that have not been identified in the proponent's ethnographic heritage surveys. The proponent has committed to continuing consultation with relevant stakeholders, including the Waturta claimant, during construction and throughout the life of the proposal.

The EPA notes that three sites which may intersect the development envelopes, have been submitted for registration, and been determined by the Aboriginal Cultural Materials Committee not to be sites to which the *Aboriginal Heritage Act 1972* (AH Act) applies (DPLH 2020).

The *Environmental Factor Guideline – Social Surroundings* (EPA 2016b) provides the following:

- the AH Act provides for the preservation of heritage sites
- the EP Act can complement the AH Act, in cases where physical protection of the environment is required to protect sites of heritage significance
- for social surroundings to be considered in environmental impact assessment, there must be a clear link between a proposal's impact on the physical or biological surroundings, and the subsequent impact on a person's (cultural) surroundings.

The EPA considers that assessment under the EP Act may provide additional or different protection to the AH Act, where heritage sites or other cultural values are confirmed to exist, including protection from indirect impacts to the physical environment, and impacts to amenity including access to cultural areas. Where there is uncertainty regarding the nature of sites, the EPA must defer to the requirements of the AH Act, and the determinations of the Aboriginal Cultural Materials Committee.

The EPA has sought and received advice from the DPLH that any impacts to heritage sites associated with the proposal can be managed under the AH Act (DPLH 2020).

Given the potential for sites or values to be identified during the proposed pre-clearance archaeological surveys, the EPA has recommended a condition to formalise the proponent's commitment to identify and manage heritage values prior to undertaking clearing activities on a site-by-site basis. Implementation of the condition would ensure that management of these sites and values is implemented to avoid or minimise impacts to social surroundings, such that the EPA's objective for this factor will be met. The recommended condition requires the proponent to consult with relevant stakeholders in managing impacts to social surroundings.

The EPA considers that the proposal can be managed to meet the EPA's objectives for Social Surroundings, subject to the requirements of the AH Act being met, and the implementation of the recommended condition 9.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016b)
- proponent's heritage surveys indicating that there are unlikely to be any heritage sites intersecting the development envelopes
- advice received from DPLH that any impacts to heritage sites associated with the proposal can be managed under the AH Act

- proponent's commitment to pre-clearance archaeological surveys, management of heritage values and continued consultation with relevant stakeholders.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for social surroundings that the impacts to this factor are manageable and would no longer be significant, subject to the requirements of the AH Act being met, and the implementation of the recommended condition 9.

5. Conclusion

The EPA has considered the proponent's proposal to develop the Lake Wells Potash Project, located 160 kilometres north-northeast of Laverton in the Goldfields region of Western Australia.

Application of the Mitigation Hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including:

- locating as much disturbance as possible on the un-vegetated playa surface
- avoiding direct disturbance to potentially novel or restricted *Tecticornia* species
- designing the on-playa infrastructure to utilise the existing depressions and dune systems, reducing impacts to surface water regimes.

Conclusion

The EPA has taken the following into account in its assessment of the proposal as a whole:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant EP Act principles and the EPA's objectives for the key environmental factors
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

6. Recommendations

The EPA recommends that the Minister for Environment notes:

1. The proposal assessed is for the development of the Lake Wells Potash Project to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found at Lake Wells, located 160 kilometres north-northeast of Laverton.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna, Inland Waters, Subterranean Fauna and Social Surroundings, set out in section 4 of this report.
3. The EPA has recommended that the proposal may be implemented, provided that implementation is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addressed in the conditions include:
    a) avoiding impacts to *Tecticornia* aff. *undulata, Tecticornia* sp. Sterile 1 *and Tecticornia willisii* (condition 6)
    b) implementing the Fauna Management Plan to minimise impacts to significant terrestrial fauna (condition 7)
    c) implementing the Groundwater Monitoring Strategy to minimise impacts on groundwater and stygofauna (condition 8)
    d) preparing and implementing a Cultural Heritage Management Plan to minimise impacts on heritage sites and cultural values (condition 9).

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Appendix 1: Consideration of Environmental Protection Act Principles

EP Act Principle	Consideration
1. The precautionary principle *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.*	In considering this principle, the EPA notes that Flora and Vegetation, with particular regard to *Tecticornia* species, could be significantly impacted by the proposal. The assessment of these impacts is provided in this report. The proponent has conducted flora and vegetation surveys in accordance with EPA guidance, and has determined that there is one Priority species, *Tecticornia willisii*, one potentially novel species, *Tecticornia* aff. *undulata,* and one unidentified individual in the study area. The proponent has committed to avoiding these species until it can be determined that they are suitably distributed outside of the proposal area. From its assessment of this proposal the EPA has concluded that there is no threat of serious or irreversible harm.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*	In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna, Inland Waters, Subterranean Fauna, and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report. The EPA notes that the proponent has identified measures to avoid or minimise impacts where possible. The EPA considered these measures during the assessment. From its assessment of this proposal the EPA has concluded that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.
3. The principle of the conservation of biological diversity and ecological integrity	This principle is a fundamental and relevant consideration for the EPA when assessing and considering impacts of the environmental factors of Flora and Vegetation, Terrestrial Fauna, Inland Waters, Subterranean

EP Act Principle	Consideration
Conservation of biological diversity and ecological integrity should be a fundamental consideration.	Fauna, and Social Surroundings. The assessment of these impacts is provided in this report. The EPA notes that vegetation types and habitats identified in the study area remain at approximately 100% of their pre-European extent, and that no flora, vegetation, habitat type or species is likely to be restricted to the project area. The EPA notes that there is potential for previously unknown species of *Tecticornia* to exist in the development envelopes, and has recommended a condition to avoid impacts to *Tecticornia* species to ensure that the proposal would not compromise biological diversity. From its assessment of this proposal the EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.* *(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.* *(3) 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.* *(4) 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 minimize costs to develop their own solution and responses to environmental problems.*	In considering this principle, the EPA notes that the proponent would bear the cost relating to waste and pollution, including avoidance, containment, decommissioning, rehabilitation and closure. The EPA has had regard to this principle during the assessment of the proposal.

EP Act Principle	Consideration
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	In considering this principle, the EPA notes that the proponent proposes to implement the waste management hierarchy of avoid, reuse, recycle, recover and dispose. The EPA has had regard to this principle during the assessment of the proposal.

Appendix 2: Evaluation of Other Environmental Factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Land			
Landforms	Lake Wells is a significant landform in the region. The proposal includes construction of infrastructure on the playa surface, some of which will remain post-closure.	No comments were received on this factor during consultation with other agencies or stakeholders.	Landforms was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal or in the Environmental Scoping Document. The proposal has been designed to utilise the naturally occurring dunes and depressions of the Lake Surface, thereby minimising construction requirements. It is not expected that the ponds would significantly alter the form or function of the playa in the landscape. At closure, pond walls would be built up to approximately 8 metres, which is similar to the natural kopai dune islands that occur on the playa. Pond walls would be re-shaped to ensure that remaining ponds and halite deposits are stable and non-polluting. Ponds and halite stockpiles are expected to eventually be reintegrated into the playa surface. Accordingly, the **EPA did not consider Landforms to be a key environmental factor** at the conclusion of its assessment.

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Air			
Greenhouse Gas Emissions	The proposal would generate greenhouse gas emissions through the operation of a 10 megawatt power station for processing of product, use of diesel for vehicles, bore operation and transport of product. The proponent has calculated greenhouse gas emissions for the proposal, as follows: • 5,436 tonnes CO_2-e over two years for construction of the proposal • 28,762 tonnes CO_2-e per annum during operations.	No comments were received on this factor during consultation with other agencies or stakeholders.	Greenhouse Gas Emissions was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal or in the Environmental Scoping Document. Having regard to predicted greenhouse gas emissions being below 100,000 tonnes CO_2-e per annum, the EPA considers it is unlikely that the proposal would have a significant impact on greenhouse gas emissions and that the impacts to this factor are manageable. Accordingly, the **EPA did not consider Greenhouse Gas Emissions to be a key environmental factor** at the conclusion of its assessment.

Appendix 3: Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-Making Authorities

Section 44(2) of *Environmental Protection Act 1986* specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) of the *Environmental Protection Act 1986* requires the Minister for Environment to consult with decision-making authorities (DMAs), and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following DMAs have been identified:

Decision-Making Authority	Legislation (and Approval)
1. Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972* (Consent under section 18)
2. Minister for Environment	*Biodiversity Conservation Act 2016* (Permit to take flora and fauna)
3. Minister for Mines	*Mining Act 1978* (Granting of mining lease)
4. Minister for Water	*Rights in Water and Irrigation Act 1914* (Groundwater abstraction licence / License to construct bores)
5. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	*Dangerous Goods Safety Act 2004* (Storage and handling of dangerous goods)
6. Chief Executive Officer, Department of Water and Environment Regulation	*Environmental Protection Act 1986* (Works approval and licence / Clearing permit)
7. Chief Executive Officer, Shire of Laverton	*Building Act 2011* (Building permit)
8. Chief Health Officer, Department of Health	*Health Act 1911* Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974
9. Executive Director, Environment Resources and Environmental Compliance Division, Department of Mines, Industry Regulation and Safety	*Mining Act 1978* (Approval of mining proposal)

10. Mining Registrar, Department of Mines, Industry Regulation and Safety	*Mining Act 1978* (Miscellaneous licenses)
11. State Mining Engineer	*Mines Safety and Inspection Act 1994* (Mine safety)

Note: In this instance, agreement is only required with DMAs 1, 2, 3, and 4 since these DMAs are a Ministers.

Recommended Environmental Conditions

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
***(Environmental Protection Act 1986*)**

LAKE WELLS POTASH PROJECT

Proposal: The proposal is to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found at Lake Wells, located 160 kilometres north-northeast of Laverton.

Proponent: Australian Potash Limited
Australian Company Number: 149 390 394

Proponent Address: Suite 3, 22 Railway Road
Subiaco WA 6904

Assessment Number: 2144

Report of the Environmental Protection Authority: 1688

Pursuant to section 45 of the *Environmental Protection Act 1986,* it has been agreed that the proposal described and documented in Tables 1 and 2 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

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.

2 Contact Details

2-1 The proponent shall notify the 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.

3 Time Limit for Proposal Implementation

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.

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.

4 Compliance Reporting

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.

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.

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.

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.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

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 Chief Executive Officer or a person delegated to sign on the Chief Executive Officer'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.

5 Public Availability of Data

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.

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.

6 Flora and Vegetation – Significant Tecticornia Species

6-1 The proponent shall implement the proposal to meet the following environmental outcomes:

(1) ensure there are no direct or indirect impacts, as a result of the proposal, within a 30-metre distance of the known locations of *Tecticornia* aff. *undulata* as shown in Figure 2 and described in

Schedule 2 of this statement, unless the CEO has confirmed by notice in writing that the proponent has demonstrated that the removal of these plants would not significantly impact on *Tecticornia* taxa in the region;

(2) ensure there are no direct or indirect impacts, as a result of the proposal, within a 50-metre distance of the known location of *Tecticornia* sp. Sterile 1, as shown in Figure 2 and described in Schedule 2 of this statement, unless the CEO has confirmed by notice in writing that the proponent has demonstrated that the removal of the known individual would not significantly impact on *Tecticornia* taxa in the region; and

(3) ensure there are no direct or indirect impacts, as a result of the proposal, to the known population of *Tecticornia willisii* as shown in Figure 2 and described in Schedule 2 of this statement.

6-2 To verify that the outcomes of condition 6-1 are met, the proponent shall ensure that monitoring of the known populations of significant *Tecticornia* species named in condition 6-1 and shown in Figure 2 of Schedule 1 is carried out by suitably qualified personnel, including observations of population extent and plant health, and signs of direct or indirect impacts.

6-3 The proponent shall, within two (2) years of this statement being issued, or in accordance with a schedule approved by the CEO by notice in writing:

(1) undertake additional survey and/or taxonomic work to clarify the conservation status of *Tecticornia* aff. *undulata* and *Tecticornia* sp. Sterile 1; and

(2) provide a report to the CEO demonstrating that the requirements of 6-3(1) have been met.

6-4 The proponent shall carry out the monitoring required by condition 6-2 monthly, or in accordance with a schedule of monitoring or any subsequent revisions of the schedule of monitoring that the CEO has confirmed by notice in writing is adequate to verify that the outcomes of condition 6-1 have been met.

6-5 The proponent shall continue to implement the monitoring required by condition 6-2 until the CEO has confirmed by notice in writing that the outcomes specified in condition 6-1 have been met.

6-6 If monitoring required by condition 6-2 indicates that the outcomes of condition 6-1 may not be met, the proponent shall notify the CEO within seven (7) days of the potential non-compliance being identified, and implement management

measures to mitigate any impacts in consultation with the Department of Water and Environmental Regulation.

6-7 The proponent shall include the results of monitoring carried out in accordance with condition 6-2, and the details of management measures carried out in accordance with condition 6-6, in the Compliance Assessment Report required by condition 4-6.

7 Terrestrial Fauna

7-1 The proponent shall implement the proposal to meet the following environmental objective:

(1) avoid, where possible, otherwise minimise direct and indirect impacts to significant terrestrial fauna species, including but not limited to the night parrot and great desert skink.

7-2 In order to meet the requirement of condition 7-1, the proponent shall implement the *Fauna Management Plan – Lake Wells Potash Project* (18 August 2020), or any subsequent revisions as approved by the CEO.

7-3 The proponent shall continue to implement the *Fauna Management Plan – Lake Wells Potash Project* (18 August 2020) or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the objective specified in condition 7-1 has been met.

7-4 The proponent may review and revise the *Fauna Management Plan – Lake Wells Potash Project* (18 August 2020) or any subsequent revisions as approved by the CEO.

7-5 The proponent shall review and revise the *Fauna Management Plan – Lake Wells Potash Project* (18 August 2020) as and when directed by the CEO.

8 Inland Waters and Subterranean Fauna

8-1 The proponent shall implement the proposal to meet the following environmental objectives:

(1) avoid, where possible, otherwise minimise impacts to groundwater levels and groundwater quality outside the on-playa development envelope shown in Figure 1 and described in Schedule 2; and

(2) avoid, where possible, otherwise minimise impacts to stygofauna habitat.

8-2 In order to meet the objectives of condition 8-1, the proponent shall implement the *Groundwater Monitoring Strategy – Lake Wells Potash Project* (20 August 2020), or any subsequent revisions as approved by the CEO.

8-3 The proponent shall continue to implement the *Groundwater Monitoring Strategy – Lake Wells Potash Project* (20 August 2020) or any subsequent revisions as approved by the CEO, until the CEO has confirmed by notice in writing that the objective specified in condition 8-1 has been met.

8-4 The proponent shall submit a revised *Groundwater Monitoring Strategy* within fifteen (15) months of the commencement of operations that analyses the results of the first twelve (12) months of monitoring during operations to demonstrate that the requirements of condition 8-1 can be met.

8-5 The proponent may review and revise the *Groundwater Monitoring Strategy – Lake Wells Potash Project* (20 August 2020) or any subsequent revisions as approved by the CEO.

8-6 The proponent shall review and revise the *Groundwater Monitoring Strategy – Lake Wells Potash Project* (20 August 2020) as and when directed by the CEO.

9 Cultural Heritage Management

9-1 The proponent shall implement the proposal to meet the following environmental objective:

(1) avoid, where possible, and minimise impacts to heritage sites and cultural values.

9-2 To ensure that the objective of condition 9-1 is met, the proponent shall prepare a Cultural Heritage Management Plan. The Plan shall include:

(1) the methodology and scope of pre-clearance surveys to be conducted prior to disturbance in areas identified to be at high risk of including heritage sites or other cultural values;

(2) management actions to be undertaken where sites or cultural values are identified, to meet the objective of condition 9-1(1);

(3) a framework for consultation with relevant stakeholders during the life of the proposal, including the timing of consultation relative to the stages of the project, the form of consultation for each stage identified, information to be provided before and during consultation, including spatial data and maps, and actions to be implemented in the event that consultation cannot be conducted due to the inability to schedule consultation events. In the event that all attempts to schedule consultation are unsuccessful, the proponent must continue to implement the plan; and

(4) contingency actions to be implemented in the event that management actions required by 9-2(2) have not been implemented, including but not limited to consultation with relevant agencies.

9-3 The Cultural Heritage Management Plan shall be approved by notice in writing from the CEO prior to the commencement of operation.

9-4 The proponent shall implement the approved Cultural Heritage Management Plan, or the most recent version, which the CEO has confirmed by notice in writing satisfies the requirements of condition 9-2

9-5 The proponent may review and revise the Cultural Heritage Management Plan or any subsequent revisions as approved by the CEO.

9-6 The proponent shall review and revise the Cultural Heritage Management Plan as and when directed by the CEO by a notice in writing.

9-7 The proponent shall continue to implement the approved Cultural Heritage Management Plan, or any subsequently approved revisions, until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objective in condition 9-1 is being and will continue to be met.

9-8 In the event of failure to implement management actions detailed in the approved Cultural Heritage Management Plan, the proponent shall notify the CEO in writing within seven (7) days of the non-compliance being identified, and shall immediately implement the contingency actions described in the plan as required by condition 9-2(4).

Schedule 1

Table 1: Summary of the proposal

Proposal title	Lake Wells Potash Project
Short description	The proposal is to produce sulphate of potash through the abstraction, evaporation and processing of potassium and sulphate rich brines found at Lake Wells, located 160 kilometres north-northeast of Laverton. The proposal includes development of a brine borefield, solar evaporation ponds, harvest ponds, sulphate of potash processing plant, associated infrastructure, and transport of product by truck to the Port of Geraldton.

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Authorised extent
Physical elements		
Clearing within the on-playa development envelope for evaporation and processing ponds, brine bore field and associated infrastructure.	Figure 1	Clearing of no more than 2,470 ha within the 9,322 ha on-playa development envelope.
Clearing in the off-playa development envelope for harvest ponds, processing plant, access roads, accommodation camp and associated infrastructure.	Figure 1	Clearing of no more than 750 ha within the 4,629 ha off-playa development envelope.
Operational elements		
Brine abstraction	Figure 1	Up to 17 gigalitres per annum
Process/potable water abstraction	Figure 1	Up to 0.8 gigalitres per annum
Power plant	-	10 megawatt

Table 3: Abbreviations and definitions

Acronym or abbreviation	Definition or term
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EP Act	*Environmental Protection Act 1986*
ha	Hectare

Figures (attached)

Figure 1 Development envelopes and indicative footprint (this figure is a representation of the co-ordinates described in Schedule 2).

Figure 2 Locations of known significant and potentially significant *Tecticornia* species in the Lake Wells project area (this figure is a representation of the co-ordinates described in Schedule 2).

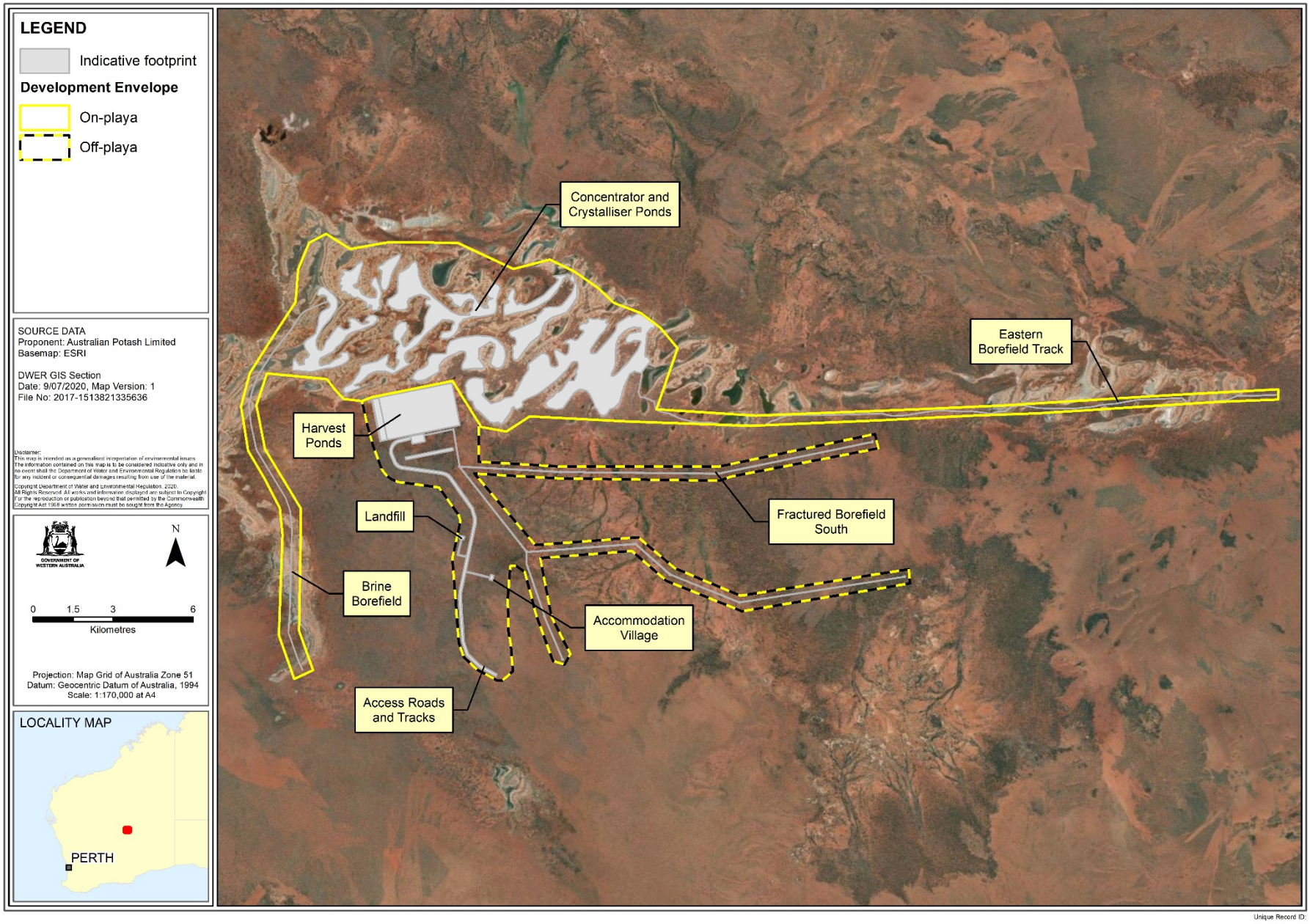

Figure 1: Development envelopes and indicative footprint

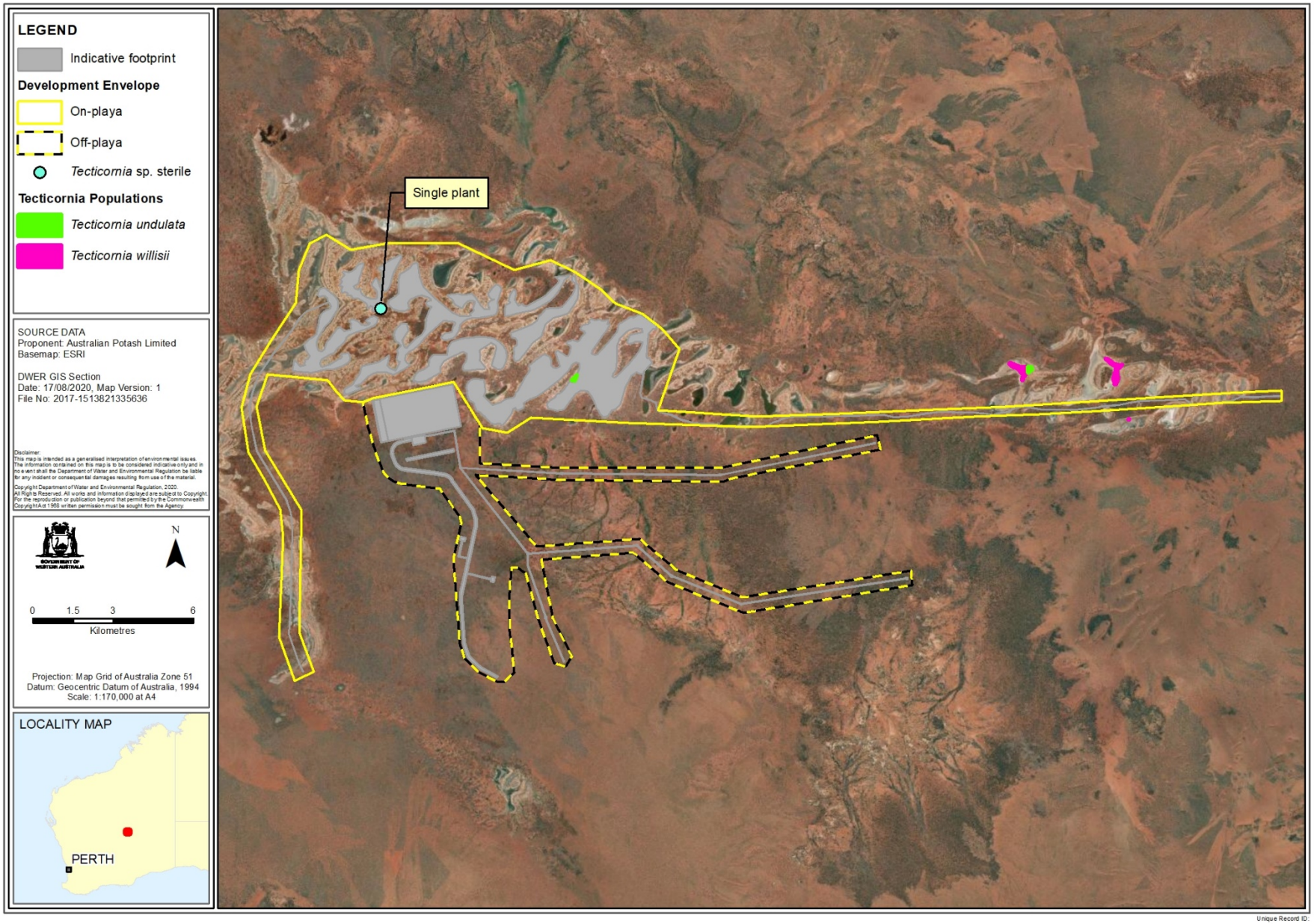

Figure 2: Locations of known significant and potentially significant *Tecticornia* species in the Lake Wells project area

Schedule 2

Co-ordinates defining the areas shown in Figure 1 are held by the Department of Water and Environmental Regulation under Reference Number DWERDT306325.

Co-ordinates defining the areas shown in Figure 2 are held by the Department of Water and Environmental Regulation under the Reference Number DWERDT306327.

All co-ordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone50), datum of Geocentric Datum of Australia 1994 (GDA94).