



Ashburton Salt Project Fauna Management Plan





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1.0 Executive Summary

This Fauna Management Plan (FMP) is submitted by K plus S Salt Australia Pty Ltd (K+S) in accordance with the content of the proposed Ashburton Salt Project Environmental Scoping Document (ESD) (EnviroWorks Consulting 2017) and Environmental Review Document (ERD) (K+S Salt Pty Ltd in prep.).

This FMP also follows the format set out in the current Environmental Protection Authority (EPA) Instructions and Templates for Part IV Environmental Management Plans (EPA 2021).

Table 1.1 below provides a summary table for the EMP, consistent with those instructions.

Table 1.1: Summary of key project details.

Proposal name:	Ashburton Salt Project.
Proponent name:	K plus S Salt Australia Pty Ltd.
Ministerial Statement number	Not issued at time of FMP preparation.
EPA assessment number:	2101.
EPBC Act reference number:	EPBC 2016/7793.
Purpose:	To mitigate and minimise residual impacts on terrestrial fauna arising from the implementation of the proposed Ashburton Salt Project.
Key environmental factors and objectives:	<p>Key environmental factor: Terrestrial Fauna.</p> <p>EPA objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</p> <p>Specific objectives of this FMP:</p> <ol style="list-style-type: none"> 1. Avoid or minimise clearing of the highest value fauna habitats. 2. Limit permanent clearing of habitat to that approved for the development envelope. 3. Minimise temporary clearing impacts on fauna habitats. 4. Maintain habitat quality in areas adjoining the project clearing footprint. 5. Avoid or minimise Impacts on fauna of significance. 6. Prevent feral predator distribution or abundance increasing.
Condition clauses:	No conditions to cite as Ministerial Statement not issued at the time of FMP preparation but based on expected requirements for the relevant key environmental factor.
Proposed construction date:	Not set.
FMP required pre-construction:	Yes.

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2.0 Context, Scope and Rationale

2.1 Proposal

K plus S Salt Australia Pty Ltd (K+S) proposes to construct and operate a 4.7 Mtpa solar salt project approximately 40 km southwest of Onslow, WA. The proposal includes the construction and operation of:

- solar salt evaporation and crystallisation ponds and associated infrastructure/activities (seawater intake pumps / channel / pipeline(s);
- seawater concentration ponds and salt crystallisation ponds;
- internal site roads;
- electricity generation and reticulation;
- fuel storage sites;
- a jetty and product loading facilities;
- a salt wash plant and associated ponds;
- salt stockpiles and conveyors;
- onsite buildings such as offices, storage, workshops and possibly accommodation;
- sewage treatment facilities and landfill;
- water management/monitoring bore(s);
- an airstrip and/or helipad;
- desalination plant;
- equipment parking and laydown areas;
- bitterns discharge infrastructure which may include a channel, dilution pond, pipeline and diffuser;
- drainage diversion(s);
- an access road;
- a haul road for construction materials;
- service corridor(s);
- borrow pit areas for rock, clay and other construction materials; and
- dredging and land-based dredge spoil disposal.

The proposal was referred to the EPA under s38 of the *Environmental Protection Act 1986* (EP Act) and to the Commonwealth Minister for the Environment in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPA determined that the proposal required Public Environmental Review and was also a controlled action under the EPBC Act; proceeding as an accredited assessment. An ESD for the project was subsequently approved for the assessment and the proponent is in the process of finalising the ERD for the proposal at the time of preparation of this FMP.

2.2 Key Environmental Factor

This FMP is limited to consideration of the Terrestrial Fauna factor. Table 2.1 describes the activities, values and potential impacts on this terrestrial fauna as identified by the proposal ERD (K+S Salt Pty Ltd in prep.).

Table 2.1: Proposed activities, site-specific values and actual or potential impacts on the Terrestrial Fauna factor.

Activities	Values	Impacts
<ul style="list-style-type: none"> • Deployment of plant and equipment into the development envelope from other locations where introduced flora may be present. • Construction of the proposal infrastructure. • General construction and maintenance activity. • Flooding of the condenser ponds. • The long-term presence of access roads and within the landscape of the development envelope, including ongoing vehicle movements. 	<ul style="list-style-type: none"> • One species of Specially Protected Fauna within the development envelope: <ul style="list-style-type: none"> ○ Peregrine Falcon (Schedule 5); • 11 migratory shorebird species of significance (listed as Migratory under the EPBC Act and Schedule 5 under the <i>Biodiversity Conservation Act 2016</i>); • One species of Priority fauna within the development envelope: <ul style="list-style-type: none"> ○ Northern Coastal Free-tailed Bat (Priority 1); and • 8 potential short-range endemic (SRE) trapdoor spiders. 	<ul style="list-style-type: none"> • Clearing of 1,365 ha of terrestrial fauna habitats (excluding supratidal salt flats) within the development envelope to accommodate the proposal infrastructure. • Temporary habitat clearing during construction for short-term use as laydown areas. • Habitat loss due to hydrological change from elevated saline groundwater. • Changes to existing surface water regimes. • Potential direct and indirect impacts on Specially Protected and Priority fauna (including habitat loss and the risk of direct loss or displacement of individuals during clearing or as a result of operational vehicle movements). • Risk of weed introduction and spread during earthworks and construction activities, modifying fauna habitats with potential flow-on effects to fauna community structure. • Other impacts typically associated with construction and operations, such as risk of project-induced bushfires and off-road driving impacts on habitat. • Potential for increased feral fauna abundance and movement through the landscape, resulting in increased predation pressure on native species.

2.3 Condition Requirements

The EPA is currently assessing the proposal (assessment number 2101) and a Ministerial Statement is yet to be issued, with condition requirements therefore also pending at the time of preparing this FMP.

2.4 Rationale and Approach

2.4.1 Environmental Management Objectives

In order to meet the requirements of the ESD for the project, the proponent has committed to the development and implementation of an FMP. The purpose of this FMP is to document the environmental management objectives and mitigation measures to be implemented during the construction of the project relating to the Terrestrial Fauna factor, including:

- measures to avoid, reduce and minimise any potential environmental impacts of the proposal on terrestrial fauna;
- specifying timing and responsibilities for implementation of these measures; and
- specifying monitoring and reporting procedures to provide for continuous improvement, consistent with an adaptive management approach.

2.4.2 Basis of Provisions Choice

The proponent recognises that the EPA prefers outcome-based provisions. However, given the early stage of the project, and that no baseline monitoring data have been collected that could inform trigger and threshold levels for an outcomes-based approach, this FMP has adopted the alternative acceptable management-based provisions EMP structure provided for by EPA (2021).

Management objectives identified here relate to the EPA's environmental objective for the Terrestrial Fauna factor, management actions are designed to meet those objectives, and management targets aim to assess the effectiveness of management actions. This EMP also describes the monitoring and reporting approach that will be undertaken to assess the effectiveness of the management actions in meeting management-based objectives. As part of adaptive management and future review of the FMP, the proponent intends to assess whether it is possible to develop outcomes-based provisions in future versions of the FMP (Section 4.0).

The proponent has followed the example management-based provisions table in the EPA (2021) guidance to the extent possible at the present time. Key survey results, uncertainties and management approaches for the Terrestrial Fauna factor follow in Section 2.5.1, consistent with the template in EPA (2021).

The overall management approach for the proposal is to avoid direct disturbance, as far as practicable, to key environmental values (K+S Salt Pty Ltd in prep.). Where avoidance is not practicable, the management approach adopted is to minimise and reduce disturbance to key environmental values.

2.4.3 Survey Findings

Five landscapes and 16 associated landforms (fauna habitats) for vertebrate fauna occur within the development envelope (Biota 2020). None of the fauna habitats identified during the survey are confined to the development envelope, as they are common throughout the mainland east of Exmouth Gulf. Although their attributes are typical of similar habitat types in the wider locality, beach habitat, mangrove habitat and the Ashburton River represent the habitats of highest fauna value in the development envelope, being core habitat for the majority of significant species recorded, likely to occur or potentially occurring within the development envelope (Biota 2020).

The survey of the development envelope recorded a total of 171 vertebrate species, comprising 54 herpetofauna species, 97 avifauna species, 13 ground-dwelling mammal species and seven bat species (Biota 2020).

The recorded assemblage comprised four frog species, eight gecko species, four legless lizard species, three dragon species, 18 skink species, four monitor species, four blind snake species, one python species and eight front-fanged snake species.

Bird species from 40 families were recorded from the development envelope, comprising 36 passerine and 61 non-passerine species.

Thirteen ground-dwelling mammals were recorded from the development envelope, comprising one echidna four carnivorous marsupial species, one kangaroo species, four rodent species, three introduced predator species. Seven bat species were recorded.

The following 13 species of significance were recorded from the development envelope (Biota 2020):

- Fork-tailed Swift, *Apus pacificus* (Migratory);
- Eastern Osprey, *Pandion cristatus* (Migratory);
- Common Sandpiper, *Actitis hypoleucos* (Migratory);
- Common Greenshank, *Tringa nebularia* (Migratory);
- Red-necked Stint, *Calidris ruficollis* (Migratory);
- Common Tern, *Sterna hirundo* (Migratory);
- Little Tern, *Sternula albifrons* (Migratory);
- Gull-billed Tern, *Gelochelidon nilotica* (Migratory);
- Caspian Tern, *Hydroprogne caspia* (Migratory);
- White-winged Black Tern, *Chlidonias leucopterus* (Migratory);
- Crested Tern, *Thalasseus bergii* (Migratory);
- Peregrine Falcon, *Falco peregrinus* (Other Specially Protected Fauna); and
- Northern Coastal Free-tailed Bat, *Ozimops cobourgianus* (Priority 1).

Mygalomorph spiders and land snails were the only taxonomic groups recorded in the development envelope with the potential to include short-range endemic (SRE) species (Biota 2020). Of the 12 invertebrate taxa collected during the survey, eight mygalomorph spider taxa from four families are considered to be potential SREs but are unlikely to be restricted to the development envelope. The remaining taxa have been demonstrated to not be SREs.

2.4.4 Key Assumptions and Uncertainties

Systematic fauna sampling was completed in all fauna habitats present within the development envelope, but it was not possible to ground-truth every part of the project area. Some areas were inaccessible by vehicle, so installation and regular checking of fauna traps in these areas was not possible. This limitation was addressed by means of helicopter ground-truthing to confirm the habitats sampled systematically were representative of areas inaccessible for routine trap checking. Given this, there is a high level of certainty that the survey findings are representative of the terrestrial fauna values of the development envelope.

3.0 FMP Components

3.1 Objective

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

Specific objectives for this FMP within that overall objective comprise:

1. Avoid or minimise clearing of the highest value fauna habitats.
2. Limit permanent clearing of habitat to that approved for the development envelope.
3. Minimise temporary clearing impacts on fauna habitats.
4. Maintain habitat quality in areas adjoining the project clearing footprint.
5. Avoid or minimise Impacts on fauna of significance.
6. Prevent feral predator distribution or abundance increasing

Management actions to achieve these objectives are detailed in Section 3.2.

3.2 Management Actions

The management actions in this FMP have been developed to respond to residual impacts on terrestrial fauna arising from the proposal. These have been prioritised based on the risk that each potential impact source listed earlier in Table 2.1 will result in impacts on terrestrial fauna (Table 3.1).

Table 3.1: Risk-based prioritisation of management actions.

Potential Impact	Impact Likelihood	Management Priority	Management Actions
Clearing of 1,365 ha of habitat within the development envelope.	Certain	High	Final design of project footprint to reduce extent of habitat cleared, including utilising existing tracks and co-locating infrastructure, where feasible. Ground clearing control procedures. Cumulative extents cleared to be tracked via GPS technology.
Potential for increased feral fauna abundance and movement.	Very likely	High	Implementation of targeted feral fauna monitoring and control in areas of higher risk. Measures will include: a. waste management, particularly of food. b. prohibiting feeding of fauna or disposal of food outside of allocated disposal points. c. targeted pest species control.
Temporary habitat clearing for laydown areas.	Very likely	High	Immediate rehabilitation of temporary construction areas when no longer required.
Habitat loss due to elevated saline groundwater.	Likely	Moderate	Incorporate specific rehabilitation measures for affected areas as part of closure planning.

Potential Impact	Impact Likelihood	Management Priority	Management Actions
Weed introduction and spread modifying fauna habitats.	Likely	Moderate	Weed hygiene and topsoil management plan, including creation of formalised clean down points prior to plant and vehicles entering site. Monitoring and control program to eliminate any weed recruits.
Other general construction and operations impacts.	Possible	Low	Site environmental induction for all personnel to specify requirements for: <ul style="list-style-type: none"> a. ground clearing approval procedures. b. fire prevention and emergency response procedures. c. onsite speed limits and response and reporting protocols for fauna roadkill. d. prohibition of off-road driving over uncleared habitat.
Potential impacts on significant fauna.	Possible	Low	No unapproved clearing of mangrove or migratory shorebird habitat.

3.3 Management Targets

The management targets for this FMP respond to the potential impacts of the project and are intended to measure the success of the management actions and the degree to which those actions were effectively implemented.

Table 3.2 sets out the management targets relevant to the key impacts and risk for the proposal.

3.4 Monitoring

K+S will implement monitoring to measure the effectiveness of the management actions and to identify when additional mitigation may be needed (Table 3.2).

Table 3.2 sets out the monitoring needed to measure the effectiveness of the management actions in meeting their related targets.

3.5 Reporting

An Annual Environmental Report (AER) will be prepared and submitted to the EPA and other regulators where relevant in accordance with anticipated Ministerial Conditions. The AER will be structured and include required content as defined in the former Office of the Environmental Protection Authority's (OEPA) (now EPA Services within the Department of Water and Environmental Regulation) Post Assessment Guideline No. 3, Preparing a Compliance Assessment Report (Office of the EPA 2012).

In relation to this FMP, the AER will contain:

- Information demonstrating compliance with the content of this FMP and any relevant future Ministerial Conditions;
- results of monitoring programs and performance reviews associated with the implementation of the FMP; and
- any improvements to management actions and planned revisions to this FMP (Section 4.0).

Table 3.2: Summary of objective-based management for Terrestrial Fauna.

EPA Factor: Terrestrial Fauna
EPA Objective: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Objectives: <ol style="list-style-type: none"> 1. Avoid or minimise clearing of the highest value fauna habitats. 2. Limit permanent clearing of habitat to that approved for the development envelope. 3. Minimise temporary clearing impacts on fauna habitats. 4. Maintain habitat quality in areas adjoining the project clearing footprint. 5. Avoid or minimise Impacts on fauna of significance. 6. Prevent feral predator distribution or abundance increasing.
Key environmental values: Vertebrate and invertebrate fauna, including Specially Protected Fauna, Priority listed fauna, and potential SRE species, high value habitat types
Key impacts and risks: <ul style="list-style-type: none"> • Clearing of 1,365 ha of habitat within the development envelope. • Potential for increased feral fauna abundance and movement. • Temporary habitat clearing for laydown areas. • Habitat loss due to elevated saline groundwater. • Changes to existing surface water regimes. • Weed introduction and spread modifying fauna habitats. • Other general construction and operations impacts. • Potential impacts on significant fauna.

Management Targets	Management Actions	Monitoring	Timing/Frequency	Reporting
No more than 1,365 ha of fauna habitat cleared within the development envelope.	<ol style="list-style-type: none"> 1. Final design of project footprint to reduce extent of habitat cleared, including utilising existing tracks and co-locating infrastructure where feasible. 2. Ground clearing approval procedure to be implemented as part of project Environmental Management System (EMS). 3. On-site survey and Differential GPS controlled clearing limits to comply with final design. <p>Management Priority: High</p>	Cumulative extents cleared tracked via GPS technology.	Monthly during construction phase.	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>

Management Targets	Management Actions	Monitoring	Timing/Frequency	Reporting
No significant risk of increased feral fauna impacts on native fauna within the development envelope, particularly threatened species.	<ol style="list-style-type: none"> Implementation of targeted feral fauna monitoring and control in areas of higher risk, such as around accommodation and at access points to salt field bund walls from adjacent habitat remnants. Measures will include: <ol style="list-style-type: none"> Best practice waste management, particularly of putrescible waste. Prohibiting feeding of fauna or disposal of food outside of allocated waste disposal points. Targeted pest species control. Implementation of feral fauna monitoring and control in areas of higher risk, such as around accommodation and at access points to salt field bund walls from adjacent habitat remnants. <p>Management Priority: High</p>	<p>Waste management procedure compliance records.</p> <p>Records of engaging appropriately licensed feral fauna control contractor and scope of activities.</p> <p>Deploy automated cameras or other equivalent feral fauna detection methods at higher risk areas.</p>	Quarterly throughout construction and operation.	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>
Minimise the impact of fauna habitat temporarily cleared during construction.	<ol style="list-style-type: none"> Topsoil stockpiling and management adjacent to temporary clearing areas. Develop and implement a topsoil direct return procedure as part of the project EMS to facilitate natural revegetation of closed temporary laydown areas. <p>Management Priority: High</p>	<p>Develop and maintain a register of temporary clearing areas, including location, extent, date of clearing and closure status.</p> <p>Rehabilitation monitoring to measure success of natural revegetation and identify any other management issues such as erosion or weed invasion.</p>	<p>Within one month of a given temporarily cleared area having been completed.</p> <p>Ongoing; requirement reassessed after every monitoring phase.</p>	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>
Minimise the long-term loss of terrestrial fauna habitat due to saline groundwater rise.	<ol style="list-style-type: none"> Incorporate specific rehabilitation measures for affected areas as part of closure planning <p>Management Priority: Moderate</p>	Follow up revegetation monitoring against criteria to be set in final closure plan.	Annual, post-closure.	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>

Management Targets	Management Actions	Monitoring	Timing/Frequency	Reporting
Minimise establishment and spread of weeds throughout the development envelope.	<ol style="list-style-type: none"> 1. Weed hygiene and topsoil management plan, including creation of formalised clean down points prior to plant and vehicles entering site. 2. Monitoring and control program to eliminate any weed recruits. <p>Management Priority: Moderate</p>	<p>Inspection and auditing of clean down point facilities and cleaned equipment.</p> <p>Targeted weed monitoring at higher risk locations and current earthworks areas.</p> <p>Targeted weed monitoring on completion of works.</p>	<p>Quarterly review of clean down records.</p> <p>Quarterly weed monitoring during construction and annual weed monitoring on completion of construction.</p>	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>
Minimise risk of impact to fauna habitats beyond authorised extents.	<ol style="list-style-type: none"> 1. Site environmental induction for all personnel to specify compulsory project procedures for: <ol style="list-style-type: none"> a. Ground clearing approval procedures. b. Fire prevention and emergency response procedures. c. Onsite speed limits and response and reporting protocols for fauna roadkill. d. Prohibition of off-road driving over uncleared habitat. <p>Management Priority: Low</p>	<p>Audits for compliance with authorised procedures.</p>	<p>As required during construction and operation.</p>	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions.</p>
No unapproved disturbance to significant fauna species or their habitat.	<ol style="list-style-type: none"> 1. Construction coastal infrastructure in accordance with the approved design in mangrove and migratory shorebird foraging areas. 2. Prohibit unapproved access to mangrove and migratory shorebird foraging. <p>Management Priority: Low</p>	<p>Compliance with final project design during construction.</p> <p>Audits for compliance with authorised procedures.</p>	<p>Once during construction and then ongoing during construction and operations.</p>	<p>Annual environmental compliance reporting</p> <p>Reporting on any exceedance of management target</p> <p>Review management actions (and revise if required)</p> <p>Reporting on the review and revision of management actions</p>

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4.0 Adaptive Management and Review

K+S recognises that incremental knowledge gain over time, and the evolving nature of proposal implementation, may lead to varying risk profiles for potential impacts over the duration of the project.

An adaptive management approach will therefore be adopted for this FMP, involving:

- implementing additional mitigation measures (should these become necessary);
- monitoring and evaluating data in comparison to management targets and environmental criteria, noting that these targets and criteria will be developed based on future monitoring data specific to the development envelope; and
- systematically adapting, as necessary, management and mitigation measures and monitoring to meet the environmental objectives.

This will be supported by the implementation of an EMS for the project and associated procedures, to ensure that management actions are embedded in all work practices.

Revision of this FMP will be undertaken on an as-needs basis following annual review and reporting of relevant monitoring data and the adequacy with which existing management measures are achieving the related targets.

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5.0 Stakeholder Consultation

K+S has consulted with, and will continue to consult with, all stakeholders who are affected by, or are interested in, the proposal.

This includes the decision-making authorities, relevant state (and Commonwealth) government agencies, local government authorities, the local community and environmental non-government organisations.

This will be continued with the finalisation and future revisions of this FMP, with the Department of Biodiversity, Conservation and Attractions identified as a key stakeholder (K+S Salt Pty Ltd in prep.).

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6.0 References

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