

EPBC Act referral



Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Title of proposal	2021/9056 - Atlas Mineral Sands Project
Section 1	
Summary of your proposed action	
1.1 Project industry type	Mining
1.2 Provide a detailed description of the proposed action, including all proposed activities	
<p>Image Resources NL (Image) are planning for the development of the Atlas Project (the Proposed Action) a mineral sands mine located approximately 170 km north of Perth and 18 km east of Cervantes in the Wheatbelt region of Western Australia (WA; Attachment 2_Figure 1). The current Atlas Mineral Resource has been identified as 18.1 Mt at 8.1% heavy mineral with an indicative mineral assemblage including 11% zircon, 50% ilmenite, 4.5% leucosene and 7.5% rutile. The Proposal will be developed within a Mine Development Envelope (DE) and an External Infrastructure DE (Attachment 2_Figure 2).</p> <p>Image originally referred the Atlas Project to the Department of Agriculture, Water and the Environment (DAWE) under the Environment Protection and Biodiversity Conservation Act 1999 (Cth; EPBC Act) on 12 October 2020. Recent mine plan changes and groundwater investigations required a significant change to the scope of the original referral, and therefore that referral was withdrawn on 26 July 2021. This referral differs from the original referral as it presents a revised mine plan, and includes dredge mining as an option, external water supply options and road infrastructure upgrades.</p> <p>Image propose to develop an open cut mine pit, processing plant, solar drying ponds and supporting infrastructure over an estimated mine life of three to four years. Mining and progressive rehabilitation is planned in stages using dry (Attachment 2_Figure 3) or dredge (Attachment 2_Figure 4) mining methods. The proposed project layouts for each mining option vary according to optimisation of the resource and logistical requirements associated with dry or dredge mining operations. The mining method will be determined following the completion of further feasibility studies, and an assessment of environmental and economic criteria.</p> <p>Both mining methods will require the removal of overburden by conventional earthmoving equipment, prior to accessing the ore. Overburden will initially be stockpiled external to the pit until sufficient mine voids are available to allow progressive backfill. Ore will be excavated by conventional earthmoving equipment from an open dry pit or by a dredger that will be floated on a dredge pond. The mining pit or dredge pond will be progressively filled and rehabilitated to pre-mining profile with the pre-existing land use reinstated as mining advances. Where feasible, disturbance will be minimised by utilising the backfilled mine footprint to locate supporting infrastructure prior to commencing rehabilitation.</p> <p>In the case of dry mining, ore will be transferred to stockpiles on the run-of-mine (ROM) pad and then progressively loaded into a feed preparation plant (FPP) where process water is introduced before being slurried and pumped to the Wet Concentrator Plant (WCP) for processing. Dredge mining delivers the slurried ore direct to the FPP before being pumped to the WCP. The WCP recovers the contained heavy minerals via gravity separation, producing sand tails and clay fines as waste products. Following cycloning and dewatering, sand tails may initially require temporary storage within an off-path tailings storage facility, however, will be returned to the pit once sufficient mine voids are available. Clay fines will be pumped to solar drying ponds before being placed back into the pit void. The implementation of co-disposal of sands and clay fines, as adopted at Image's Boonanarring Project, will be investigated through the early development of the Proposal. The final product will be a heavy mineral concentrate (HMC) that will be stacked on a drainage pad outside the WCP, where it will be allowed to drain and dry for a short period of time prior to being transported by trucks off site for export.</p> <p>Water supply will be sourced from dewatering and one or more abstraction bores within the External Infrastructure DE. The External Infrastructure DE will include transport infrastructure upgrades and water supply options. Three separate corridors are included in this DE which, pending further feasibility studies, will provide for one or more groundwater extraction bores and associated pipelines to supply water for the Proposal. Power supply will be sourced from onsite generation (approximately 3.5 MW), external power lines or a hybrid of both.</p>	
1.3 What is the extent and location of your proposed action?	
See Appendix B	
1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland)	
<p>The Proposed Action lies approximately 170 km north of Perth and 18 km east of the coastal town Cervantes, within the Shire of Dandaragan in WA (Attachment 2_Figure 1).</p> <p>All ground disturbance and indicative key Proposed Action elements occurs within the boundaries of the DEs (Attachment 2_Figure 2).</p> <p>There is multiple zoning across the DEs under the Shire of Dandaragan Local Planning Scheme. The northern portion of the Mine DE is zoned as Rural and is utilised for agriculture. The southern portion, which is predominantly unvested crown land, is zoned as Public Purpose.</p>	



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Site access is gained via Munbinea Road which connects to the Brand Highway via Bibby Road to the north of the Mine DE. The External Infrastructure DE comprises a series of narrow infrastructure corridors extending from and separate to the Mine DE. Land access agreements are currently being negotiated and miscellaneous Licences will be applied for those corridors that form part of the final project layout.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The Proposed Action will be developed within a Mine DE and an External Infrastructure DE requiring no more than 506 ha of disturbance within a total combined area of approximately 1,037 ha. The proposed Mine and External Infrastructure DEs outline the boundaries for the Proposed Action (Attachment 2_Figure 2), where all ground disturbance and indicative key Proposed Action elements listed below are proposed to occur:

- Mine DE: Disturbance of no more than 450 ha within the 981 ha Mine DE, including no more than 372 ha of native vegetation.
- External Infrastructure DE: Disturbance of no more than 56 ha within the 56 ha External Infrastructure DE, including no more than 24 ha of native vegetation.

1.7 Proposed action location

Other - Located in Nambung Western Australia - north of Wongonderrah Rd with access via Munbinea Road.

1.8 Primary jurisdiction Western Australia

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?
 Yes No

1.10 Is the proposed action subject to local government planning approval?
 Yes No

1.11 Provide an estimated start and estimated end date for the proposed action	Start Date	01/02/2023
	End Date	01/07/2029

1.12 Provide details of the context, planning framework and state and/or local Government requirements

Environmental Protection Act 1986 (WA)
 The Proposed Action is expected to require assessment under Part IV of the Environmental Protection Act 1986 (WA; EP Act). Image has submitted a referral under Section 38 of the EP Act to the Department of Water and Environmental Regulation (DWER) in parallel with this EPBC Referral. Image will be seeking that DWER conduct an accredited assessment for this Proposed Action if DAWE consider it to be a 'Controlled Action'.

Land Tenure
 The Proposed Action is to be implemented on tenements issued under the Mining Act.

Other Decision-Making Authorities, Approvals and Regulation

The following approvals will be required to implement the Proposed Action:

- Mining Proposal and Mine Closure Plan under the Mining Act for all proposed activities on Mining Act tenure – Department of Mines and Industry Regulation (DMIRS);
- Project Management Plan is required under the Mine Safety and Inspection Act 1994 (WA) for all proposed activities on Mining tenure - DMIRS;
- 26D Licence is required under the Rights in Water and Irrigation Act 1914 (WA; RIWI Act) for the exploration of groundwater sources - DWER;



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- 5C Licence is required under the RIWI for groundwater abstraction - DWER;
- Works Approval and Licence is required for Category 8 (mineral sands mining or processing) and Category 6 (dewatering discharge) of under Part V of the EP Act (WA) - DWER;
- Section 18 approval may be required under the Aboriginal Heritage Act 1972 (WA) for the disturbance of Aboriginal heritage sites (if recorded and cannot be avoided) – Department of Planning, Lands and Heritage; and
- Dangerous Goods Licence may be required under the Dangerous Goods Safety Act 2004 (WA) for Fuel and/or chemical storage (if above prescribed volumes) - DMIRS.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

This EPBC Referral has been prepared relatively early in the planning process however, Image has commenced stakeholder engagement, with pre-referral meetings held with DAWE and DWER. Stakeholder consultation will continue through the studies and project approval phase. Government will be engaged across all tiers, and a range of portfolios, as the project continues to advance.

Formal environmental impact assessment of the Proposed Action under the EPBC Act and Part IV of the EP Act includes public comment on the level of assessment, a public review of the environmental impact assessment document, and an opportunity for appeals on recommended approval conditions.

The RIWI Act provides for public participation in granting of groundwater well licences and Mining Act approvals require consultation with landholders. An agreement will be required with the landowners of the northern section of the Mine DE and the External Infrastructure DE.

Image and the Yued People Native Title Claimant Group have a fully-termed Native Title Agreement (NTA) for the Proposal.

The following stakeholders are expected to be consulted during the study and assessment phase of the Proposed Action:

Commonwealth Government

- DAWE – regarding submission of EPBC Referral, potential accredited assessment by the WA Environmental Protection Authority (EPA), potential impacts on Matters of National Environmental Significance (MNES);

State Government

- Department of Biodiversity, Conservation and Attractions (DBCA) – threatened and priority flora, ecological communities and fauna, offsets;
- Department of Planning, Lands and Heritage – potential impacts to Aboriginal heritage sites, heritage surveys, offsets;
- Department of Transport (WA) – haulage of product and shipping;
- DMIRS – Mining Act tenure; investigations and development approvals, closure and rehabilitation;
- DWER (EPA Services, Industry Regulation and Water Licensing) – Part IV EP Act assessment process, accredited assessment by the EPA, water supply approvals, works approvals and licences under Part V of the EP Act; and
- Relevant Members of Parliament where appropriate/required.

Other

- Shire of Dandaragan - Local Government Authority;
- Private Land Holders;
- Relevant Ports Authority – Export operations;
- Non-government organisations and community groups – impacts to species, habitats or areas of interest to organisations or groups; and
- The Yued People Native Title Group – Native Title rights and heritage agreements.

Consultation is expected to be ongoing with most of the stakeholders identified throughout the construction, operational and closure phases of the Proposed Action.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

The Proposed Action will require assessment under Part IV of the EP Act. Image has submitted a referral under Section 38 of the EP Act to the EPA in parallel with this EPBC Referral. Image will be seeking that DWER conduct an accredited assessment for this Proposed Action if DAWE considers it to be a 'Controlled Action'.

The 'Potential Key Environmental Factors' that may require assessment under Part IV of the EP Act have been identified as:

- Flora and Vegetation;
- Subterranean Fauna;
- Terrestrial Fauna;
- Terrestrial Environmental Quality;
- Inland Waters; and
- Human Health.



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1.15 Is this action part of a staged development (or a component of a larger project)?

Yes No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes No



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Section 2
Matters of national environmental significance
2.1 Is the proposed action likely to have any direct or indirect impact on the values of any World Heritage properties? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.2 Is the proposed action likely to have any direct or indirect impact on the values of any National Heritage places? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.3 Is the proposed action likely to have any direct or indirect impact on the ecological character of a Ramsar wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.4 Is the proposed action likely to have any direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Species or threatened ecological community
Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>)
Impact
<p>Likelihood of Occurrence: High (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85) Conservation Status: Endangered Potential impacts:</p> <ul style="list-style-type: none"> • Vegetation clearing resulting in direct disturbance of Carnaby's Cockatoo foraging habitat; and • Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination. <p>Significance of impacts: The Proposed Action is not within the Carnaby's Cockatoo breeding range and no recorded roosting habitat was identified within the DEs.</p> <p>Banksia woodland and heath habitats within the Mine DE represent foraging habitat (Attachment 2_Figure 6). This foraging habitat was rated by Spectrum (2021 – Att. 3, Section 4.4.1, pp 53) as being of very high quality. Evidence of Carnaby's Cockatoo foraging has been recorded in the area and the species has been well documented using similar habitats across the surrounding region. The region is considered important foraging habitat as juvenile cockatoos move into the area after fledging from breeding sites in the east.</p> <p>Two roost sites were identified within 12 km of the Proposed Action and an additional seven roost sites are located in the surrounding region (Attachment 2_Figure 7). The presence of these sites may increase the importance of the surrounding foraging habitat. Eucalypt Woodland recorded within the Study Area may also be considered potential roosting habitat although no Carnaby's Cockatoos have been observed utilising the area for this purpose (Spectrum 2021 – Att. 3, Section 4.4.1, pp 53).</p> <p>Based on the above the clearing of Carnaby's Cockatoo foraging habitat may be considered significant due to the conservation status of this species and the decline in available habitat within its range. Further assessment will be conducted during the Environmental Impact Assessment (EIA) phase to determine the scale of potential impacts to this species</p>
Species or threatened ecological community
Malleefowl (<i>Leiopa ocellate</i>)
Impact



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Likelihood of Occurrence: Medium (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85)

Conservation Status: Vulnerable

Potential Impacts:

- Direct disturbance of habitat, resulting in habitat loss and/or fragmentation; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

Suitable shrubland (Banksia Woodlands and Samphire) and heath habitat exists within the Mine DE (Attachment 2_Figure 4). The clearing of this potential habitat may be considered significant due to the conservation status of this species and the decline in available habitat within its range. Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to this species.

Species or threatened ecological community

- Bar-tailed Godwit (*Limosa lapponica*)
- Curlew Sandpiper (*Calidris ferruginea*)
- Great Knot (*Calidris tenuirostris*)
- Lesser Sand Plover (*Charadrius mongolus*)
- Red Knot (*Calidris canutus*)

Impact

Likelihood of occurrence: Medium (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85)

Potential impacts:

- Direct disturbance of portions of salt lakes that may represent temporary migratory shorebird habitat; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

Seasonally inundated salt lakes within the Study Area may represent temporary migratory shorebird habitat. The potential impacts to this potential habitat is unlikely to be considered significant given that:

- The habitat is unlikely to be extensively utilised by these species;
- The disturbance will be temporary with habitat values reinstated post-mining; and
- These species do not specifically utilise the Mine DE for feeding or breeding.

Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to these species.

Species or threatened ecological community

'Banksia Dominated Woodlands of the Swan Coastal Plain' Threatened Ecological Community (TEC)

Impact

Likelihood of Occurrence: Recorded (Brian Morgan 2020 – Att 4, Section 2.1.2, pp 2)

- An area of 903 ha within the Mine DE is mapped by the DBCA as 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC (EPBC Act) (Attachment 2_Figure 5).
- 'Banksia attenuata, Banksia menziesii low woodlands' and 'Banksia prionotes low woodlands' were mapped in the survey area by 360 Environmental (2012 - Att. 5, Section 6.2.2.1, pp 46) and Brian Morgan (2020 – Att 5, Section 2.1.3, pp 2). These vegetation units meet the vegetation condition and patch size criteria for this TEC.

Conservation Status: Endangered

Potential Impacts:

- Vegetation clearing, resulting in the direct disturbance of 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC; and
- Indirect impacts associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

The clearing of this TEC and potential indirect impacts may be considered significant. Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to this TEC.

2.4.2 Do you consider this impact to be significant?

- Yes No



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2.5 Is the proposed action likely to have any direct or indirect impact on the members of any listed migratory species or their habitat?

Yes No

Migratory species

Common Greenshank
(*Tringa nebularia*)

Impact

Likelihood of Occurrence: Recorded (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85)

Conservation Status: Migratory

Potential Impacts:

- Direct disturbance of portions of salt lakes that may represent temporary migratory bird habitat; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

The Common Greenshank was observed using the Ephemeral Wetland habitat on multiple occasions during the survey however, over the course of the survey the surface water evaporated and the birds moved on (Spectrum 2021 –section 5.2.7 page 70). This drying clearly illustrated the temporary nature of these wetlands and the short period that they may be of use to significant shorebird species. Similar, more extensive habitat is also available in the region, outside of the DEs (i.e., Lake Thetis) where many of these species have been previously recorded.

Seasonally inundated salt lakes within the Study Area may represent temporary migratory bird habitat. The potential impacts to this potential habitat is unlikely to be considered significant given that:

- The habitat is unlikely to be extensively utilised by these species;
- The disturbance will be temporary with habitat values reinstated post-mining; and
- These species do not specifically utilise the Mine DE for feeding or breeding.

Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to these species.

Migratory species

Fork-Tailed Swift (*Apus pacificus*)

Impact

Likelihood of occurrence: High. This species may occur infrequently over any part of the Study Area (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85).

Potential impacts:

- Direct disturbance of habitat; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

This species displays almost entirely aerial behaviour while in Australia. Utilises air space over a wide variety of habitat types including open plains, woodlands, salt marsh, rainforest, pasture and urban areas.

The extent of disturbances for the Proposed Action is unlikely to be significant given the footprint of the Proposed Action is relatively small in the context of the species range, and the species does not specifically utilise the Mine DE for feeding or breeding.

Migratory species

Bar-tailed Godwit (*Limosa lapponica*)
Curlew Sandpiper (*Calidris ferruginea*)
Great Knot (*Calidris tenuirostris*)
Lesser Sand Plover (*Charadrius mongolus*)
Red Knot (*Calidris canutus*)
Black-tailed Godwit (*Limosa limosa*)
Caspian Tern (*Sterna caspia*)
Common Sandpiper (*Tringa hypoleucos*)
Grey Plover (*Pluvialis squatarola*)
Gull-billed Tern (*Sterna nilotica*)
Long-toed Stint (*Calidris subminuta*)
Pacific Golden Plover (*Pluvialis fulva*)
Pectoral Sandpiper (*Calidris melanotos*)



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Red-necked Stint (*Calidris ruficollis*)
Ruddy Turnstone (*Arenaria interpres*)
Sanderling (*Calidris alba*)
Sharp-tailed Sandpiper (*Calidris acuminata*)

Impact

Likelihood of occurrence: Medium (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85)

Potential impacts:

- Direct disturbance of portions of salt lakes that may represent temporary migratory bird habitat; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

Seasonally inundated salt lakes within the Study Area may represent temporary migratory shorebird habitat.

The potential impacts to this potential habitat is unlikely to be considered significant given that:

- The habitat is unlikely to be extensively utilised by this species;
- The disturbance will be temporary with habitat values reinstated post-mining; and
- These species do not specifically utilise the Mine DE for feeding or breeding.

Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to these species.

Migratory species

Glossy Ibis (*Plegadis falcinellus*)
Wood Sandpiper (*Tringa glareola*)

Impact

Likelihood of occurrence: Medium (Spectrum 2021 – Att. 3, Table 5.1, pp 74-85)

Potential impacts:

- Direct disturbance of portions of freshwater wetland, salt lake and samphire habitat salt lakes that may represent habitat for these species; and
- Indirect impacts to habitat associated with Dieback, groundwater abstraction, excess water discharges, surface water alterations and contamination.

Significance of impacts:

Freshwater wetland, salt lake and samphire habitat occurs within the Study Area.

The potential impacts to this potential habitat is unlikely to be considered significant given that:

- The habitat is unlikely to be extensively utilised by these species;
- The disturbance will be temporary with habitat values reinstated post-mining; and
- This species does not specifically utilise the Mine DE for feeding or breeding.

Further assessment will be conducted during the EIA phase to determine the scale of potential impacts to these species.

2.5.2 Do you consider this impact to be significant?

- Yes No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

- Yes No

2.7 Is the proposed action likely to be taken on or near Commonwealth land?

- Yes No



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2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.9 Is the proposed action likely to have any direct or indirect impact on a water resource from coal seam gas or large coal mining development? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.10 Is the proposed action a nuclear action? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.11 Is the proposed action to be taken by a Commonwealth agency? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.12 Is the proposed action to be undertaken in a Commonwealth Heritage place overseas? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.13 Is the proposed action likely to have any direct or indirect impact on any part of the environment in the Commonwealth marine area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



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Section 3

Description of the project area

3.1 Describe the flora and fauna relevant to the project area

Flora

A single-season Level 2 Flora and Vegetation Survey was carried out by 360 Environmental in 2012 (Att. 5). The first phase of a two-season detailed survey was conducted by Brian Morgan in Spring 2019 (Att. 4) to provide targeted significant flora searches and updates to the 2012 survey report. The second phase has recently been conducted however, analysis and report preparation are yet to be completed. An interim memorandum has been completed by Brian Morgan. The following information has been sourced from these reports:

- A PMST search (September 2021) of the DEs and a 10 km radius identified 13 significant flora species listed under the EPBC Act (11 Endangered, two Vulnerable). Of these species 360 Environmental (2012 – Att. 5, Table 1, pp 15-19) previously assessed the following as moderate to highly likely to occur within the Mine DE:

- o Andersonia gracilis;
- o Anigozanthos viridis subsp. Terraspectans;
- o Macarthuria keigheryi; and
- o Patersonia spirifolia.

- No Threatened Flora have been recorded within the Mine DE. *Grevillea thelemanniana* (Threatened) was previously recorded within the Mine DE however, in January 2020 this record was discovered to be an erroneous entry by DBCA and was actually a record of *Grevillea* sp. Cooljarloo (B.J. Keighery 28 B; P1). This error has since been corrected. *Grevillea thelemanniana* (Threatened) is only currently known from the Perth area and south-east of Perth; and

- 360 Environmental (2012 –Att. 5, App. 4, pp 62-72) recorded 46 introduced species within the survey area.

Fauna

The following information on the receiving environment has been sourced from a single season, Level 2 Vertebrate Fauna Survey carried out by 360 Environmental (2012 – Att. 7) and a Detailed Fauna Assessment carried out by Spectrum Ecology (2021 – Att. 3):

Habitat

- Nine fauna habitats have been mapped within the Mine DE (Attachment 2_Figure 6; Spectrum 2021 – Att. 3, Section 4.2, pp 39-50);
- All habitat types are well represented within the local and regional area;
- There are drainage areas that are located across the northern section of the Mine DE. These areas form wetland habitats when inundated which may be utilised by significant migratory and wetland bird species. However, the Proposed Action is some distance (15 km) from the coast and therefore these small areas of habitat may have limited importance; and
- Due to the higher soil moisture associated with the low-lying habitats, the microhabitats may support Short Range Endemic (SRE) invertebrates.

Fauna Species

- A total of 31 mammal (five introduced), 190 bird, 64 reptile and 11 amphibian species were identified within the region;
- Desktop searches identified 48 significant vertebrate fauna species and four significant invertebrate fauna species that may occur in the area. Two of these significant fauna species were assessed as having a high likelihood of occurring within the Mine DE and were listed under the EPBC Act (Spectrum, 2021 – Att. 3, Table 5.1, pp 74-85):
 - Apus pacificus (Fork-tailed Swift) - Migratory; and
 - Calyptorhynchus latirostris (Carnaby's Black Cockatoo) – Endangered.
- One species listed as Migratory under the EPBC Act was recorded within the Study Area. The *Tringa nebularia* (Common Greenshank) – Migratory was observed using the Ephemeral Wetland habitat on multiple occasions during the survey however, over the course of the survey the surface water evaporated and the birds moved on (Spectrum, 2021 – Att. 3, Section 5.2.7, pp 70);
 - The DEs are not within the Carnaby's Black Cockatoo breeding range and evidence of roosting has not been recorded within the DEs (Spectrum, 2021 – Att. 3, Section 4.4.1, pp 53);
 - Carnaby's Black Cockatoo foraging habitat within the Mine DE was rated by Spectrum (2021 – Att. 3, Section 4.4.1, pp 53) as being of very high quality. Evidence of Carnaby's Black Cockatoo foraging has been recorded in the area and the species has been well documented using similar habitats across the surrounding region. The region is considered important foraging habitat as juvenile cockatoos move into the area after fledging from breeding sites in the east;
 - Two Carnaby's Black Cockatoo roost sites were identified within 12 km of the Mine DE and an additional seven roost sites are located in the surrounding region (Att. 2, Figure 7) and the presence of these sites may increase the importance of the surrounding foraging habitat; and
 - A literature review and search of the WA Museum Invertebrate Database identified 28 potential SRE species and morphospecies in the region. This comprised of ten Arachnids (a mite, eight spiders and a scorpion), 13 Diplopods (millipedes), one Gastropod (snail), one Chilopod (centipede), two Isopods (wood lice) and an Oligochaeta (earthworm) (Spectrum, 2021 – Att. 3, Section 4.1.2, pp 35). None of these species are listed under the EPBC Act.

3.2 Describe the hydrology relevant to the project area (including water flows)



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The following information has been sourced from a Hydrogeological and Hydrological Scoping Study carried out by URS (2013 – Att. 8) and a Surface Water Assessment completed by MWES Consulting (2020 – Att. 9):

Groundwater

- The groundwater formations below the Mine DE comprise the Superficial Aquifer and the Yarragadee Aquifer; both aquifers are unconfined;
 - o The Guildford Formation in the Superficial Aquifer is relatively transmissive. Groundwater in this deposit is relatively shallow with water depths ranging from 2-5 m during the dry season. The water quality is fresh to brackish, fluctuating seasonally as the rainfall recharges the aquifer; and
 - o The Yarragadee Formation, around 10 - 15 m below ground level, is a multilayered, relatively transmissive aquifer with inter-beds of sand, clay and mudstone. The water is slightly saline in this aquifer.

Local Water Users

- The water supply for the Cervantes Township is provided by a borefield located about 4 km to the east of Cervantes. The current water source protection plan defines a water reserve which is located approximately 5 km west of the Proposed Action;
 - Water users are not abundant in the vicinity of the Proposed Action. The census conducted by MWES Consulting in May, July and November 2012 surveyed two bores owned by private users; and
 - An extensive borefield has been developed within the Yarragadee Aquifer source 6 km east of the Proposed Action. This borefield mainly supports Tronox's Cooljarloo Project.

Surface Water

- Geomorphic wetlands have been digitally mapped by DBCA over the Swan Coastal Plain, including the 'Geomorphic Wetlands Cervantes South' which intersect the northern section of the Mine DE (Att. 2_Figure 5);
- The Geomorphic Wetlands mapped over the Mine DE have not yet been allocated a Wetland Evaluation Category. 'Geomorphic Wetlands Moora West', which also intersects the DE, is currently under review by DBCA and all the geomorphic wetlands in the area are expected to be given a wetland evaluation category in the near future;
- Two watercourses, Mount Jetty and Bibby creeks, intersect the Mine DE and flow into the Nambung River. The Nambung River flows from east to west into the Nambung National Park. The flow then moves into a karstic cave system before filtering westward through underground channels and discharging into the Indian Ocean;
 - The Proposed Action intersects four sub-catchments of the Nambung River. These catchments are a small portion (12%) however, an important part of the Nambung Catchment, as they form the steepest and most direct surface flow paths. There is no continuous water course through the majority of the catchment area. Runoff rates are evidently very low and local runoff is mostly retained in seasonal swales and ponds;
 - MWES (2020 – Att. 9, Section 4.3, pp 11) did not record any surface water in the Nambung River during their survey. The bed and terminal pools were dry. The main channel width was typically 5 - 10 m wide with little indication of flow in recent years. The channel was set in a broader floodplain indicating historical floods of a large magnitude;
 - River flows in the region have been very much below long-term averages over the past 20 years (MWES, 2020 - Att. 9, Section 6, pp 21). Due to their recent rarity, small flows may be important in sustaining the riverine ecosystem; and
 - Groundwater and surface water interactions are considered important to the local flow regime. The water table during the wet season can eventually reach ground level. The Mount Jetty Creek area in the central part of the Mine DE has been identified as a groundwater discharge area, and there are numerous wetlands, some of which contain some potential Groundwater Dependant Ecosystems.

3.3 Describe the soil and vegetation characteristics relevant to the project area

Soils

The following information has been sourced from a Baseline Soils and Landform Assessment prepared by Mine Earth (2021 – Att. 10):

- The site is predominantly comprised of pale deep Bassendean sands with minor components of yellow deep sand, gravelly sands, sandy duplexes and wet soils;
- A search of the ASRIS database indicates an extremely low probability of ASS occurring within the Site (September 2021). Examples of land units that are considered an ASS risk (wetland areas and creeklines / rivers) are however present within the Mine DE.
- Three soil-landform associations were identified within the study area. Soil characteristics present within the three soil-landform associations are summarised as follows:
 - o Low sandy rises:
 - Deep, single-grained, structureless sands to depths >1.5m.
 - Consistently non-saline, non-sodic and non-dispersive soils to >1.5m depth, with low nutrient status, low soil strength, 'very rapid' drainage class and low water holding capacity.
 - Topsoils (0 - 0.2m) characterised as 'moderately' to 'severely' water repellent.
 - Concentrations of all metals tested below the average crustal abundance.
 - o Sandy plains:
 - Single grained, structureless sandy soils (to variable depths of 0.6 - 1.3m) over weakly structured clayey sand horizon.
 - Consistently non-dispersive sandy soils to variable depths of 0.6 - 1.3m, with low nutrient status, low soil strength, 'very



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rapid' drainage class and low water holding capacity.

-Increased salinity at depths of 0.4 - 1.5m at some sampling locations.

-Topsoils (0 - 0.2m) characterised as 'Very low' to 'severely' water repellent.

-Minor elevations of Se above the average crustal abundance at some locations, throughout the soil profiles.

oDrainage line / flats:

-Single grained, structureless sandy soils (to average depth of 0.5m) over massive light clay horizons.

-Consistently non-dispersive sandy soils to approximately 0.5m, with low to moderate nutrient status, low soil strength, very rapid drainage class and low water holding capacity.

-Moderately saline, topsoil and subsoils classified as highly sodic, with minor dispersion of clay fraction upon saturation of some samples, low to moderate nutrient status, moderately slow drainage class and moderate water holding capacity.

-Topsoils (0 - 0.2m) characterised as 'Very low' to 'Moderately' water repellent.

-Minor elevations of Se above the average crustal abundance within the surface soils (to 0.5 m depth) at some locations.

-Clay-rich subsoil horizons exhibited elevated salinity, sodicity and poor structural stability (clay dispersion), 'extremely slow' drainage class and high water holding capacity.

-Elevations of As, Pb and Se above the average crustal abundance within the clay rich subsoils at some locations.

•Soils within the Mine DE may be prone to waterlogging and potentially high risk of wind erosion due to the existence of water repellent soils.

Vegetation

A single-season Level 2 Flora and Vegetation Survey was carried out by 360 Environmental (2012 – Att. 5). The first phase of a two-season detailed survey was conducted by Brian Morgan in Spring 2019 to provide updates to the 2012 survey report. The second phase has recently been conducted however, analysis and report preparation are yet to be completed. An interim memorandum has been completed by Brian Morgan (2020 – Att. 4). The following information has been sourced from these reports:

•The Proposed Action lies within an area of the Drummond Botanical Sub-district mapped by Beard (1981) as 'Banksia low woodland on white sand of coastal plain with numerous patches of heath in swamps';

•The DEs include portions of mostly cleared farmland and remnant native vegetation;

•13 vegetation units were described and mapped in the remnant bushland within the Mine DE. These were grouped into the five broad groupings:

oBanksia low woodlands on plains low rises (comprising *Banksia attenuata* - *Banksia menziesii* low woodlands and *Banksia prionotes* low woodlands);

oBanksia *telmatiaea* - *Regelia ciliata* heaths on seasonal damplands;

oMelaleuca shrublands along flowlines and flow areas and on adjacent dampland flats;

oSamphire low shrublands; and

oOther vegetation.

•Vegetation condition was assessed by 360 Environmental (2012 – Att 5, Section 5.3, pp 37-42) as varying from 'Completely Degraded' within the farmland area to 'Excellent to Pristine' within wetland areas; and

•A portion of the survey area is mapped by DBCA as 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC (EPBC Act) (Attachment 2_Figure 5). 'Banksia *attenuata*, *Banksia menziesii* low woodlands' and 'Banksia *prionotes* low woodlands' were mapped in the survey area by 360 Environmental (2012 – Att 5, Section 5.1.2, pp 17-26) and Brian Morgan (2020 – Att 4, Section 4.3, pp 6). These vegetation units meet the vegetation condition and patch size criteria for this TEC.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area

The Nationally Important Wetlands of the Lancelin Defence Training Area (WA119) are located immediately to the south and south-east of the Proposed Action (Att. 2_Figure 5). The wetland system within the Lancelin Defence Training Area is considered part of the regionally significant Bassendean Group and is recognised for its conservational values.

Nambung National Park is located approximately 1.4 km west of the Mine DE. The areas which make up the External Infrastructure DE are also predominately located more than 1 km from the Nambung National Park with the exception of a small portion of the PBA pipeline corridor, which passes within 20-30 m of the park's north-eastern boundary (Att. 2, Figure 2).

Downgradient of the Proposed Action, beneath the Nambung National Park, is the Tamalla Limestone, which is highly vulnerable to variations in the surface water flows and quality entering the aquifer via karstic features.

3.5 Describe the status of native vegetation relevant to the project area

The Proposed Action occurs within the Bassendean 1030.2 vegetation association. The current extent of Bassendean 1030.2 is 79,561 ha representing 69.7% of its European extent. Of this area 11,029 ha (9.7%) is protected for conservation and managed by DBCA.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area

Site ground elevation is in the range 40 - 45 m AHD with a very slight overall gradient of about 0.2% west toward the coast. The local surface is bisected by a widely spaced array of low fixed dunes. Many of the dunes are oriented parallel to the



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coast however, some are perpendicular and other orientations are present.

3.7 Describe the current condition of the environment relevant to the project area

Vegetation condition within the Mine DE was assessed by 360 Environmental (2012 – Att 5, Section 5.3, pp 37-42) as varying from 'Completely Degraded' within the farmland area to 'Excellent to Pristine' within wetland areas.

Rainfall and river flow data obtained from DWER indicated that flows within the local catchments have been very much below long-term averages over the past 20 years.

Some areas surrounding the Proposed Action are remnant bushland however, the majority is cleared land utilised for grazing and agricultural purposes. This greater agricultural area is located between the Badgingarra and Nambung National Park.

3.8 Describe any Commonwealth Heritage places or other places recognised as having heritage values relevant to the project

There are no Commonwealth Heritage places or other places recognised as having heritage values relevant to the project area.

3.9 Describe any Indigenous heritage values relevant to the project area

Horizon Heritage completed a desktop assessment of Aboriginal heritage values and traditional uses in September 2020. The following information has been sourced from this report:

- The Proposed Action lies within traditional land held by the Yued 'Noongar' People;
- No significant sites have been previously identified within the Mine DE;
- A search of the Aboriginal Heritage Enquiry System returned no known registered Aboriginal heritage sites within the Mine DE;
- The Mine DE is located on land subject to the Yeud Indigenous Land Use Agreement;
- Numerous Yued Noongar camps have previously been identified within proximity of the Mine DE, and potential remains for contemporary Yued to hold knowledge of any possible Yued land use of the area;
- The northern agricultural land use portion of the Mine DE has been highly disturbed from its original natural environment and it is unlikely any surface expressions of in situ cultural material (artefacts) or sites would be present;
- The southern portion of the Mine DE remains in a predominantly natural environment and has some potential for surface expressions of in situ cultural material (artefacts) or sites;
- Mount Jetty Creek and the ephemeral lakes and clay pans that are within the Mine DE are important landscape features connected with Noongar mythological associations; and
- The Mine DE has potential to have flora and fauna resources that would be used by Yued Noongar people as traditional bush tucker and bush medicine.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area

The Proposed Action occurs on Unallocated Crown Land and freehold farmland subject to Tenements and Licences issued under the Mining Act.

The Mine DE aligns with the boundaries of the Mining Lease M70/1305 with a short access corridor extending to the west, connecting to Munbinea Road.

The External Infrastructure DE intersects various tenure and cadastre. Land access agreements are currently being negotiated and miscellaneous Licences will be applied for those corridors that form part of the final project layout.

3.11 Describe any existing or any proposed uses relevant to the project area

The northern portion of the Mine DE and the External Infrastructure DE intersect freehold land currently utilised for agriculture. Access agreements will need to be finalised with the landholders prior to commencement of the Proposed Action.

The southern portion of the Mine DE and small sections of the External Infrastructure DE intersect remnant vegetation.



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Section 4

Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action

The Proposed Action is currently in the planning stage and as such measures to avoid or reduce the potential impacts to MNES will continue to be refined as studies are completed and potential impacts are fully investigated and assessed. There are however some specific measures and industry-standard measures designed to avoid or reduce potential impacts on MNES and mitigate environmental impacts that will or already have been implemented:

- Provide flexibility in the DEs to allow the avoidance of Threatened flora and fauna habitat, and minimise disturbance of the 'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC;
- Minimise clearing by locating infrastructure on the future mine pit footprint or on cleared farmland and utilising existing access tracks and disturbance where practicable;
- Clearing is to be conducted on an as-needed basis, followed by progressive rehabilitation of cleared areas as soon as is practicable;
- The mine pits will be progressively backfilled as the mine progresses, allowing for continuous rehabilitation;
- Stockpile cleared vegetation and topsoil from Carnaby's Cockatoo foraging habitat and the TEC separately to other cleared areas to contain seedbank;
- Incorporate impacted TEC and Carnaby's Cockatoo food species into rehabilitation;
- Implement Ground Disturbance Permit system; and
- The introduction and spread of weeds will be minimised through strict operational hygiene practices;
- A dieback survey, risk assessment and management plan will be implemented to determine risks associated with the Proposal and to guide development management actions;
- Maintain existing surface water flow volumes during mining and post-closure;
- Manage groundwater drawdown to minimise impacts to groundwater dependent vegetation;
- Develop and implement surface water and groundwater management plans.
- Water abstraction and dewatering / dredge water supplementation managed in accordance with 5C water licences applied for under the RIWI Act; and
- Implement industry-standard controls for dust, waste management, sedimentation and spillages.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved

The proposed action is currently in the planning stage and as such the proposed environmental outcomes for MNES will continue to be refined as studies are completed and potential impacts are fully investigated and assessed. Some proposed outcomes are able to be confirmed at this early stage:

Carnaby's Cockatoo

- Potential impacts to foraging habitat may be significant;
- Suitable offsets will be required to counterbalance these impacts; and
- Indirect impacts are expected to be able to be managed to a low level of impact by using design and management controls.

'Banksia Dominated Woodlands of the Swan Coastal Plain' TEC / PEC

- Potential impacts associated with clearing this TEC may be significant;
- Suitable offsets will be required to counterbalance these impacts;
- Drawdown impacts on groundwater dependant vegetation will be mitigated to ensure that they do not result in a significant reduction in health; and
- Unintentional indirect impacts on vegetation are expected to be rare and if they occur the impacts will be short-term and restricted in size.



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Section 5

Conclusion on the likelihood of significant impacts

5.1 You indicated the below ticked items to be of significant impact and therefore you consider the action to be a controlled action

- World Heritage properties
- National Heritage places
- Wetlands of international importance (declared Ramsar wetlands)
- Listed threatened species or any threatened ecological community
- Listed migratory species
- Marine environment outside Commonwealth marine areas
- Protection of the environment from actions involving Commonwealth land
- Great Barrier Reef Marine Park
- A water resource, in relation to coal seam gas development and large coal mining development
- Protection of the environment from nuclear actions
- Protection of the environment from Commonwealth actions
- Commonwealth Heritage places overseas
- Commonwealth marine areas

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action

Not Applicable



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Section 6

Environmental record of the person proposing to take the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail

Yes. Image have had a satisfactory record of environmental management since their inception. No environmental non-compliances have been identified to-date.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application

There are not currently any past or present proceedings against either the person proposing the action or the person making the application.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes No

6.3.1 If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework

Image has developed an Environmental Management System (EMS) based on the structure and recommendations detailed in ISO 14001. The EMS has been developed to manage those activities, products and services that may have an impact on the environment. The EMS applies to all of Image Resource's activities in WA. The EMS utilises a risk management process and approach to enable Image to identify, prioritise and manage environmental risks.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes No

6.4.1 EPBC Act No and/or Name of Proposal

Image has referred the following Proposed Actions under the EPBC Act:

- Boonanarring Mineral Sands Mine in 2014 (EPBC 2014/7127); and
- Atlas Project (this Proposed Action) in 2020 (EPBC 2020/8813) (recently withdrawn and replaced with this EPBC Referral).



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Section 7

Information sources

Reference source

CSIRO Land and Water (April 9, 2013). Australian Soil Resource Information System. CSIRO. <https://www.asris.csiro.au/index.html>

Reliability

Reliable

Uncertainties

None

Reference source

Beard, J. S. (1981). Vegetation Survey of Western Australia. Swan -The vegetation of the Swan area. University of Western Australia Press.

Reliability

Reliable

Uncertainties

None



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Section 8

Proposed alternatives

Do you have any feasible alternatives to taking the proposed action?

Yes



No



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Proposed designated proponent

9.2.1 Is the proposed designated proponent an organisation or business?

Yes No

Organisation

Organisation name (as registered for ABN/ACN) IMAGE RESOURCES NL
 Business name
 ABN 57063977579
 ACN
 Business address 2, 7 Ventnor Ave, West Perth, 6005, WA, Australia
 Postal address
 Main Phone number 0894852410
 Fax
 Primary email address tcolton@imageres.com.au
 Secondary email address

9.2.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name Todd
 Last name Colton
 Job title Chief Operating Officer
 Phone (08) 9485 2410
 Mobile
 Fax
 Email tcolton@imageres.com.au
 Primary address 2, 7 Ventnor Ave, West Perth, 6005, WA, Australia
 Address

Declaration: Proposed Designated Proponent

I, Todd Colton, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: Todd Colton Date: 22/9/2021



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Referring party (person preparing the information)

9.3.1 Is the referring party an organisation or a business?

Yes No

Organisation

Organisation name (as registered for ABN/ACN) IMAGE RESOURCES NL
 Business name
 ABN 57063977579
 ACN
 Business address 2, 7 Ventnor Ave, West Perth, 6005, WA, Australia
 Postal address
 Main Phone number (08) 9485 2410
 Fax
 Primary email address tcolton@imageres.com.au
 Secondary email address

9.3.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name Todd
 Last name Colton
 Job title Chief Operating Officer
 Phone (08) 9485 2410
 Mobile
 Fax
 Email tcolton@imageres.com.au
 Primary address 2, 7 Ventnor Ave, West Perth, 6005, WA, Australia
 Address

Declaration: Referring party (person preparing the information)

I, TODD COLTON, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: Todd Date: 22/9/2021



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Appendix A	
Attachment	
Document Type	File Name
action_area_images	Att 2_Atlas Project_Figures 1-7.pdf
supporting_tech_reports	Att 3_Detailed Fauna Assessment _Spectrum Ecology_2021.pdf
supporting_tech_reports	Att 4_Interim Report Flora and Vegetation Survey_Morgan_2020.pdf
supporting_tech_reports	Att 5_Flora and Vegetation Survey Report_360 Environmental_2012.pdf
supporting_tech_reports	Att 6_Radiation Review Memo_Calytrix_2020.pdf
flora_fauna_investigation	Att 7_Vertebrate Fauna Survey_360 Environmental_2012.pdf
hydro_investigation_files	Att 8_Hydrogeological and Hydrological Scoping Study_URS_2013.pdf
hydro_investigation_files	Att 9_Surface Water Assessment_MWES_2020.pdf

Appendix B
Coordinates
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