Dampier Desalination Plant

Statement addressing the 10 clearing principles

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Statement addressing the 10 clearing principles

Hamersley Iron Pty Ltd on behalf of Rio Tinto Iron Ore proposes to construct a desalination plant and associated infrastructure adjacent to Parker Point at their Dampier operation (hereafter known as the Proposal). The Proposal area comprises 8.9 ha of native vegetation and 42.1 ha of previously cleared areas and open water (total 51.0 ha).

The Proposal and adjacent areas were subject to a multiple-phase detailed flora and vegetation assessment, inclusive of targeted flora searches, and basic fauna habitat assessment (AECOM Australia Pty Ltd, 2021) (hereafter known as the survey area). The survey area comprises 104 ha of native vegetation, open water, and disturbed areas, such as hardstand and historical extraction areas.

Approximately 6.8 ha (13.4%) of the Proposal area was not surveyed by AECOM (2021), therefore vegetation mapping was extrapolated using aerial photography and AECOM survey results. The areas for which vegetation mapping was extrapolated comprised 0.4 ha of native vegetation and 6.4 ha of previously cleared areas and open water. One vegetation unit was found to support a Priority 3 *Eragrostis surreyana* population, AaEgPr – disturbed artificial ephemeral wetland; however, this vegetation unit was encompassed by the AECOM (2021) survey and did not require extrapolation. For this reason, it is unlikely for any of the extrapolated areas to support Priority flora populations.

The extrapolated vegetation units comprised:

- EcScCc – minor flowline: *Eucalyptus camaldulensis* and *Melaleuca lasiandra* low woodland over *Sesbania cannabina, Acacia coriacea* and *Solanum horridum* mid open shrubland over **Cenchrus ciliaris* low open tussock grassland. This vegetation unit did not support Priority flora taxa. The extrapolated area accounted for less than 0.01 ha.
- SdSfTe – hummock grassland: *Solanum diversifolium, Indigofera monophylla* and *Acacia synchronicia* mid to low open shrubland with *Swainsona formosa, Boerhavia coccinea* and *Euphorbia australis* mid to low open herbland over *Triodia epactia* hummock grassland. This vegetation unit did not support Priority flora taxa. The extrapolated area accounted for 0.03 ha.
- ToAlTe – hummock grassland: *Trachymene oleracea* subsp. *oleracea*, *Trichodesma zeylanicum* var. *zeylanicum* and *Swainsona formosa* mid to tall herbland with *Abutilon lepidum*, *Crotalaria novae-hollandiae* and *Senna notabilis* low shrubland over *Triodia epactia* tall hummock grassland. This vegetation unit did not support Priority flora taxa. The extrapolated area accounted for 0.39 ha.

Based on specialist assessment of the survey area and discussion below, it is deemed that:

- Principles (c), (d), and (e) are not at variance;
- Principles (a), (b), (g), (h), (i) and (j) are not likely to be at variance; and
- Principle (f) may be at variance.

1. Principle (a) Comprises high level of biological diversity

Native vegetation should not be cleared if it comprises a high level of biological diversity.

The Pilbara is one of Australia's 15 national biodiversity hotspots (Government of Western Australia, 2018) and is a secondary centre of endemism and species richness for *Acacia*, *Triodia*, *Corymbia* and *Sida* species in Western Australia (Maslin, 2001; Maslin & van Leeuwen, 2008; Kendrick P. , 2001).

The Proposal occurs within the Roebourne sub-region of the Pilbara bioregion, which is described as: ‘Quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. Samphire, *Sporobolus* and mangal occur on marine alluvial flats and river deltas. Resistant linear ranges of basalts occur across the coastal plains, with minor exposures of granite’ (Kendrick & Stanley, 2001).

Special features of the Roebourne sub-region include rare features such as off-shore islands, the Burrup Peninsula and the Cane River (Peedamulla) Swamp (Cyperaceae) Community (Kendrick & Stanley, 2001).

Nine vegetation units were described from the survey area, which comprised two vegetation units in ephemeral creeks, two in intertidal and shoreline communities, three in hummock grasslands, and two in disturbed areas (artificial wetland and rocky shore) (AECOM Australia Pty Ltd, 2021). Additionally, open water and cleared areas were mapped. The vegetation units identified within the survey area are considered to be of low conservation value and are widely distributed both locally and throughout the Roebourne sub-region (AECOM Australia Pty Ltd, 2021). All vegetation units were in better condition outside the footprint, as notable disturbance was evident from the existing railway, access tracks, weed invasion, and the creation of disturbed artificial wetlands from material extraction (Rio Tinto, 2022).

None of the vegetation units occurring within the survey area are listed as Threatened Ecological Communities (TECs) under either the EPBC Act or under the State listing maintained by DBCA. None of the units represent PECs under the State listing maintained by DBCA.

The buffer boundary for the ‘Burrup Peninsula Rock Pile’ Priority Ecological Community (PEC)(P1) is 3.7 km northeast of the Proposal area. The survey area skirts edges of rock piles that have similar characteristics to the PEC, however the survey area follows existing tracks and pipelines and avoids all significant rock piles (AECOM Australia Pty Ltd, 2021). Therefore, this community will not be impacted by the Proposal. A further four PECs were identified by the database searches as occurring within 20 km of the survey area, however none of these were recorded during the survey, and due to the spatial separation, will not be impacted by the Proposal.

The desktop assessment undertaken by AECOM as part of the 2020 survey identified a total of 22 Priority flora taxa as potentially occurring within the survey area, of which three were considered likely to occur, one taxon may occur, and the remaining 18 taxa were considered unlikely to occur (AECOM Australia Pty Ltd, 2021). The flora taxa considered likely or may occur are defined in Table 1-1.

Table 1-1: Conservation significant flora species considered likely to occur or may occur within the survey area (AECOM Australia Pty Ltd, 2021).

Taxa	WA Status	Flowering Period	Habitat (Western Australian Herbarium, 2022; Rio Tinto and Western Australian Herbarium, 2015)	Likelihood of occurrence
Rhynchosia bungarensis	P4	May - Dec	Pebbly, shingly coarse sand amongst boulders. Banks of flow line in the mouth of a gully in a valley wall.	**Likely to occur** Suitable habitat is present within the survey area. Numerous records nearby the survey area. The field survey was undertaken during its flowering period.
Rostellularia adscendens var. *latifolia*	P3	Apr - May	Ironstone soils. Near creeks, rocky hills.	**May occur** Suitable habitat is present within the survey area. One record nearby the survey area. The field survey was undertaken during its flowering period.
Terminalia supranitifolia	P3	Nov - Dec	Sand. Among basalt rocks. Hill tops.	**Likely to occur** Numerous records nearby associated with rocky outcrops. The field survey was undertaken outside this taxon's flowering period, however this is a large tree and would have been recorded.
Vigna triodiophila	P3	May	Stony red-brown clay loam. Among boulders, steep slopes.	**Likely to occur** Suitable habitat is present within the survey area. Records nearby the survey area. The field survey was undertaken outside this taxon's flowering period, and as this is a small creeping species, it is possible that it was missed during the survey.

A total of 124 native flora taxa from 88 genera representing 39 families were recorded during the 2020 survey (AECOM Australia Pty Ltd, 2021). Additionally, six weed species were recorded, all of which are common in the Pilbara region. Flora was considered diverse, and this reflects the various landforms encountered including wetland/creeks, shoreline, grasslands, and rocky slopes.

No Threatened flora taxa were recorded within the survey area (AECOM Australia Pty Ltd, 2021).

One Priority flora taxon was recorded, *Eragrostis surreyana* (P3), for a total of 885 individuals (AECOM Australia Pty Ltd, 2021), of which none are within the Proposal area. Within the Rio Tinto database there are records of 16,809 individuals of *Eragrostis surreyana* (P3).

Seasonal conditions were above average due to the survey area receiving significant rainfall prior to the field surveys. The first phase of the survey coincided with the flowering period of numerous annual and

perennial species, while the second phase coincided with the ideal survey season in accordance with EPA guidelines (AECOM Australia Pty Ltd, 2021; Environmental Protection Authority, 2016).

Five broad fauna habitat types were recorded and mapped within the survey area: 'disturbed – artificial wetlands', '*Triodia* grassland on rocky slopes and flats', 'minor creeks', 'shoreline', and 'cleared' (AECOM Australia Pty Ltd, 2021). One of the habitat types, 'disturbed – artificial wetlands', does not occur within the Proposal area. None of the habitat types represent core habitat for conservation significant fauna species that potentially occur in the survey area. These fauna habitats are not considered to be restricted at a local or regional level.

The Proposal is located on reclaimed land that has been subject to considerable historical and ongoing disturbance from the construction and operation of infrastructure associated with the port. The Proposal is not likely to be at variance with this Principle.

2. Principle (b) Potential impact to any significant habitat for fauna indigenous to Western Australia

Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

A total of 61 fauna species were recorded within the survey area, including six mammal taxa, six reptile taxa, and 49 bird taxa (AECOM Australia Pty Ltd, 2021). Of these, two taxa are of conservation significance, the Caspian Tern (*Hydroprogne caspia*) and the Common Sandpiper (*Actitis hypoleucos*), which are listed as Migratory and Marine under the EPBC Act and Migratory under the BC Act.

The artificial wetlands habitat provides suitable foraging habitat for the two conservation significant fauna species recorded from within the survey area, Caspian Tern and Common Sand Piper (AECOM Australia Pty Ltd, 2021). However, it is expected that this habitat would be seasonally dry. Additionally, this habitat does not occur within the Proposal area.

A further 11 conservation significant fauna taxa were considered likely to occur within the survey area (AECOM Australia Pty Ltd, 2021):

- Northern Quoll (*Dasyurus hallucatus*).
- Pilbara Olive Python (*Liasis olivaceus barroni*).
- Lined Soil-crevice Skink (Dampier) (*Notoscincus butleri*).
- Ruddy Turnstone (*Arenaria interpres*).
- Large Sand Plover (*Charadrius leschenaultii*).
- Lesser Sand Plover (*Charadrius mongolus*).
- Peregrine Falcon (*Falco peregrinus*).
- Bar-tailed Godwit (*Limosa lapponica*).
- Pacific Golden Plover (*Pluvialis fulva*).
- Great Crested Tern (*Thalasseus bergii*).
- Grey-tailed Tattler (*Tringa brevipes*).

Conservation significant fauna taxa that may occur within the survey area included 28 birds and three mammals.

The Shoreline habitat of the survey area is considered suitable marginal habitat for 13 fauna taxa listed as Migratory and Marine, however this is not considered core habitat as it is not suitable breeding or nesting habitat. This habitat is also well represented outside the survey area (AECOM Australia Pty Ltd, 2021).

None of the conservation significant fauna taxa identified by the database searches are likely to be restricted to, or be reliant on, the habitat of the survey area (AECOM Australia Pty Ltd, 2021). Therefore, it is considered unlikely the Proposal will negatively impact on the conservation status of any of these species, on either a local or regional scale.

The majority of the survey area has been either previously cleared for placement of infrastructure, reclaimed for the plant area, or are habitats categorised as degraded (AECOM Australia Pty Ltd, 2021). The fauna habitat value needs to be considered in the context of the considerable historical and ongoing disturbance from the construction and operation of the existing port related infrastructure, including rail lines, roads, power lines and water pipelines.

The Proposal is not likely to be at variance with this Principle.

3. Principle (c) Potential impact to any rare flora

Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora.

No Threatened flora species were recorded, and none were identified by the database searches within 50 km of the survey area (AECOM Australia Pty Ltd, 2021).

The Proposal is not at variance with this Principle.

4. Principle (d) Presence of any threatened ecological communities

Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a threatened ecological community (TEC).

No TEC is known to occur within 50 km of the survey area, and none were recorded within the survey area (AECOM Australia Pty Ltd, 2021).

The Proposal is not at variance with this Principle.

5. Principle (e) Significance as a remnant of native vegetation in the area that has been extensively cleared

Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.

The majority of the Pilbara region has not been extensively cleared, however, grazing, inappropriate fire regimes and weed invasion have greatly altered the vegetation in some areas. The national target and objective for biodiversity conservation of ecological communities is to retain at least 30% of their pre-European extent (Department of the Environment and Heritage, 2001; Environmental Protection Authority, 2000; Department of Environmental Regulation, 2014).

The Proposal lies within the Abydos Plain – Roebourne 117 vegetation mapping unit mapped by Beard (1975). The current Western Australian extent of this mapping unit has been estimated to be over 94% of its pre-European extent, which is well over the national target of 30%. Vegetation units within the Proposal area would not represent remnant stands of extensively cleared vegetation.

None of the vegetation units identified by AECOM (2021) form significant connections with the surrounding environment. Additionally, the vegetation proposed for clearing is well represented within the region.

The Proposal is not at variance with this Principle.

6. Principle (f) Impact on any watercourse and / or wetlands

Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

The Proposal does not intersect any major watercourses mapped by the State GIS database (Department of Water and Environmental Regulation, 2018). One non-perennial minor creek mapped by Rio Tinto is located less than 1.0 km south of the Proposal.

Two vegetation units were mapped within minor flowlines; one of these, EcScCc, supported numerous creek flora species and a layer of herbs (AECOM Australia Pty Ltd, 2021). The other vegetation unit, GpTzTa, was largely barren. At the time of the survey, the flowlines were dry and were classified as ephemeral.

Several artificial wetlands were identified within the survey area, where two fauna taxa of conservation significance, the Caspian Tern (*Hydroprogne caspia*) and the Common Sandpiper (*Actitis hypoleucos*), were recorded, as well as a Priority 3 flora population of *Eragrostis surreyana* (AECOM Australia Pty Ltd, 2021). The Proposal area does not intersect the artificial wetlands habitat.

The Proposal is mapped on the Groundwater Dependent Ecosystem Atlas as a moderate potential Groundwater Dependent Ecosystem (GDE) from a national assessment (BoM, 2022). During the 2020 survey, it was identified that the survey area supports numerous flora taxa that are associated with, and indicative of, GDE, including:

- Low level (soil moisture availability or surface water availability is sub-perennial to ephemeral) species: *Acacia coriacea, Ammannia baccifera, Stemodia grossa* and *Stylobasium spathulatum*.
- Moderate level (soil moisture availability or surface water availability is sub-perennial) species: *Cyperus vaginatus, Eucalyptus camaldulensis, Flueggea virosa* subsp. *melanthesoides*, *Melaleuca lasiandra, Sesbania cannabina* and *Typha domingensis*.
- Moderate – High level (soil moisture availability or surface water availability is perennial or sub-perennial) species: *Adriana tomentosa* var. *tomentosa*, *Eleocharis geniculata, Eragrostis surreyana* (P3), *Ficus aculeata* and *Samolus repens*.
- High level (soil moisture availability or surface water availability is clearly perennial to sub-perennial) species: *Acacia ampliceps, Melaleuca argentea* and *Schoenus falcatus*.

Due to the presence of riparian vegetation and GDE indicative species within the survey area, the Proposal may be at variance with this Principle. However, most of the proposed clearing is associated with existing roads and cleared areas and is therefore unlikely to have a significant impact on surrounding vegetation or hydrological features.

7. Principle (g) Potential to cause appreciable land degradation

Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.

The Proposal lies within the Granitic Land System (286Gr), which is not susceptible to erosion (Van Vreeswyk, Payne, Leighton, & Hennig, 2004).

Topsoil and vegetation will be removed from the permanent infrastructure footprint, as well as the areas needed for temporary construction activities. Topsoil and vegetation will be temporarily stockpiled during

construction and be used to rehabilitate temporary construction areas before operations begin. Potential impacts to land degradation in the longer term as a result of the proposed clearing may be minimised by the implementation of rehabilitation.

Most of the proposed clearing is associated with existing roads and cleared areas and is therefore unlikely to cause any appreciable land degradation. The Proposal is not expected to result in soil erosion, nutrient export, water-logging/flooding, acidification, salinization or deep subsoil compaction.

The Proposal is not likely to be at variance with this Principle.

8. Principle (h) Potential to impact on the environmental values of adjacent or nearby conservation areas

Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

The Proposal overlaps the Dampier Archipelago (including Burrup Peninsula) National Heritage Place, which is listed as a sacred place that includes petroglyphs, artefact scatters and stone sites. The Proposal follows existing tracks and pipelines and avoids all significant rock piles, therefore is unlikely to have a significant impact on this National Heritage Place.

The closest conservation area is Murujuga National Park, which is located 1.3 km east of the Proposal area, however the Proposal does not represent a buffer or ecological linkage to this conservation area.

The Proposal is not likely to be at variance with this Principle.

9. Principle (i) Potential deterioration in the quality of surface or underground water

Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

The Proposal does not intersect any major watercourses mapped by the State GIS database, however several ephemeral watercourses are present. The artificial wetlands identified as part of the 2020 survey (AECOM Australia Pty Ltd, 2021) are not within the Proposal area.

The Proposal is mapped on the Groundwater Dependent Ecosystem Atlas as a moderate potential Groundwater Dependent Ecosystem (GDE), and numerous flora taxa that are associated with, and indicative of, GDE were recorded (AECOM Australia Pty Ltd, 2021).

Vegetation units FvTdIc and PaTiEo are mapped over the tidal flats of the survey area (AECOM Australia Pty Ltd, 2021), which are habitats that may potentially result in acid sulfate soils and low pH waters. Of the two vegetation units, only FvTdIc is represented within the Proposal area. The extent of these vegetation units within the Proposal and survey area is displayed in Table 9-1.

Table 9-1. Tidal vegetation units and their extent within the 2020 survey area and the Proposal

Vegetation Unit	Mapped Extent (ha) (AECOM Australia Pty Ltd, 2021)	Extent to be cleared under this Proposal (ha)	Proportion of the mapped extent to be cleared under this Proposal (%)
FvTdIc	3.25	0.51	15.73
PaTiEo	0.30	0.00	0.00

A desktop assessment for acid sulfate soils was completed using the Acid Sulfate Soils Risk Maps published by the Department of Water and Environmental Regulation. Two areas of the development envelope are considered to have low to moderate risk of acid sulfate soils occurring, of which the largest area is not expected to be disturbed (Rio Tinto, 2022).

The Proposal does not lie over a Public Drinking Water Source.

The Proposal is not likely to be at variance with this Principle.

10. Principle (j) Potential of clearing to cause, or exacerbate, the incidence or intensity of flooding

Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.

Local flooding occurs seasonally in the Pilbara region as a result of cyclonic activity and sporadic thunderstorm activity.

Several minor ephemeral drainage lines but no major streams are present within the survey area (AECOM Australia Pty Ltd, 2021). The drainage line channels are not well defined, and instances of flooding extend over the adjacent floodplains.

The small scale of clearing proposed is not expected to exacerbate the incidence or intensity of flooding in the area.

The Proposal is not likely to be at variance with this Principle.

11. Conclusions

Hamersley Iron Pty Ltd on behalf of Rio Tinto Iron Ore's Proposal is to clear native vegetation to support the construction of a desalination plant and associated infrastructure adjacent to Parker Point at their Dampier operation. The Proposal area comprises 8.9 ha of native vegetation and 42.1 ha of previously cleared areas and open water (total 51.0 ha).

The Proposal and adjacent areas were surveyed in 2020 by AECOM. The landforms, vegetation, and fauna habitats are well represented within the Dampier locality and the broader Roebourne sub-region. Nine vegetation units were identified across the survey area, which comprised two vegetation units in ephemeral creeks, two in intertidal and shoreline communities, three in hummock grasslands, and two in disturbed areas (artificial wetland and rocky shore).

The survey area does not contain any TECs or PECs and is not within any ESAs. The vegetation units identified within the survey area are considered to be of low conservation value and are widely distributed both locally and throughout the Roebourne sub-region.

A total of 124 native flora taxa from 88 genera representing 39 families were recorded during the survey. Flora was considered diverse, and this reflects the various landforms encountered including wetland/creeks, shoreline, grasslands and rocky slopes.

No species of Threatened flora were recorded by the study, or were expected to occur within the survey area. One species of Priority flora was recorded during the survey, *Eragrostis surreyana* (P3), however none of the records fell within the Proposal area.

Six weed species were recorded, all of which are common in the Pilbara region. None are considered Declared Pests or Weeds of National Significance.

Five broad fauna habitat types were recorded and mapped within the survey area: 'disturbed – artificial wetlands', '*Triodia* grassland on rocky slopes and flats', 'minor creeks', 'shoreline', and 'cleared'. These fauna habitats are not considered to be restricted at a local or regional level.

Two fauna taxa of conservation significance, the Caspian Tern (*Hydroprogne caspia*) (MI, MI) and the Common Sandpiper (*Actitis hypoleucos*) (MI, MI), were recorded within the survey area, however these records were outside the Proposal area. It is unlikely that these species would rely on the habitats described within the survey area solely for survival, and therefore the Proposal is unlikely to negatively impact the two fauna taxa of conservation significance.

An assessment against the 10 Clearing Principles determined that:

- Principles (c), (d), and (e) are not at variance;
- Principles (a), (b), (g), (h), (i) and (j) are not likely to be at variance; and
- Principle (f) may be at variance.

12. References

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