

**SUPPORTING INFORMATION
NATIVE VEGETATION CLEARING PERMIT
APPLICATION**

PREPARED FOR:

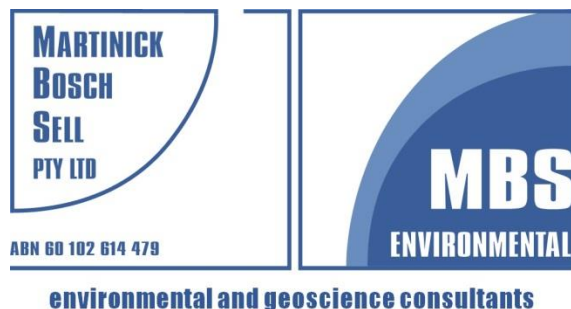
WRS BIOPRODUCTS PTY LTD

OCTOBER 2022

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NATIVE VEGETATION CLEARING PERMIT APPLICATION SUPPORTING INFORMATION

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1. INTRODUCTION

1.1 BACKGROUND

WRS Bioproducts Pty Ltd (WRS) are planning to develop an algae farm within the Pilbara Region of Western Australia, east of the Karratha airport in Gap Ridge. Previous planning and environmental approvals have been obtained over portions of Lot 267 on Deposited Plan 93179, Gap Ridge and Lot 300 on Deposited Plan 49873 Gap Ridge (Figure 1) for the construction of the various project components including algae ponds, the settling pond and sea water pond, along with various ancillary facilities. Clearing Permit CPS 8414/1 was issued by the Department of Water and Environmental Regulation (DWER) on 11 May 2020 permitting the clearing of no more than 115.39 ha of native vegetation to support the development of the Project. The GHD (2019) report *WRS Clearing Permit Application Clearing Permit Supporting Report* was submitted to DWER in support of the original clearing permit application and provided:

- Background information.
- An overview of legislative requirements.
- A description of the project and associated clearing.
- Assessment of the desktop environmental aspects and impacts, including the physical environment, land use, hydrology, flora and vegetation, and fauna.
- Assessment of the proposed clearing against the clearing principles.

It is noted that the GHD report initially anticipated the clearing of 151 ha that was later reduced to 115.39 ha to avoid mangrove habitats as per discussions with DWER.

Since preparation of the initial Project design and issue of the Clearing Permit, adjustments to the proposed Project have necessitated the preparation of an additional clearing permit application, documenting the increased area of vegetation to be cleared during the operational life of the Project. The nature of the environment in which the additional clearing area is located is consistent with that described in GHD (2019), indicating that impacts associated with clearing are unlikely to have a significant environmental impact

1.2 SCOPE OF WORKS

Martinick Bosch Sell Pty Ltd (MBS Environmental) was commissioned by consultant Alan Boynton on behalf of WRS to prepare a new clearing permit application and associated supporting document for submission to DWER. Works have included:

- Reviewing the GHD supporting document submitted with the original Clearing Permit application.
- Obtaining updated protected matters search tool (PMST) and NatureMap reports to capture any changes to indicative flora and fauna species and their conservation status.
- Reviewing and updating information relating to potential impacts and how they can be managed.
- Reviewing the Hydrologia 2022 hydrology study report.
- Documenting outcomes in this supporting document.

Figure 1: Project Location

2. PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION

WRS are in the process of developing a commercial scale algae farm along with associated processing facilities within portions of Lots 300 and 267 in Gap Ridge, in the Pilbara Region of Western Australia. The project involves four key phases:

- Cultivation of the unicellular green microalgae *Dunaliella salina* in open ponds filled with hypersaline water, sunlight, nutrients and trace elements.
- The pond water containing the algae is pumped to the harvesting facility where the algae is separated from the water.
- The algae will be harvested.
- The algal concentrate will be sent to offsite processing facilities where it will be formulated into products including, food colourant, or protein rich biomass suitable for animal and fish feed.

2.2 ADJUSTED PROJECT ELEMENTS

The following changes to the Project have necessitated the new Clearing Permit application to gain approval for the additional clearing area (Figure 2):

- Two cultivation ponds are now planned with each being approximately 75 ha in size.
- To accommodate the changes to the cultivation ponds, the boundary of Lot 300 is being extended approximately 230 m to the south. Changes to the boundaries of Lot 300 is currently being progressed by Rainstorm, as is the lease arrangements authorising their use by WRS Bioproducts.
- Construction of an onsite beta carotene extraction plant, purification and packaging will occur offsite.
- There is also the need for borrow pit(s) to provide material for the construction of pond walls, with two locations identified within a portion of Lot 267 (Figure 2).

The proposed plant layout and construction is consistent with that described in the original Clearing Permit application supporting document prepared by GHD (2019), including:

- Cultivation ponds constructed to a height of approximately 2 m from compacted impervious clay that will be armoured on the exterior faces.
- Pond height based on predicted 1:100-year flood event.
- High salinity levels necessary for algae cultivation will be maintained via the use of waste bitterns from the Dampier Salt Operations located to the west.
- The primary processing plant will be constructed adjacent to the northern cultivation pond in Lot 267 (Figure 2).

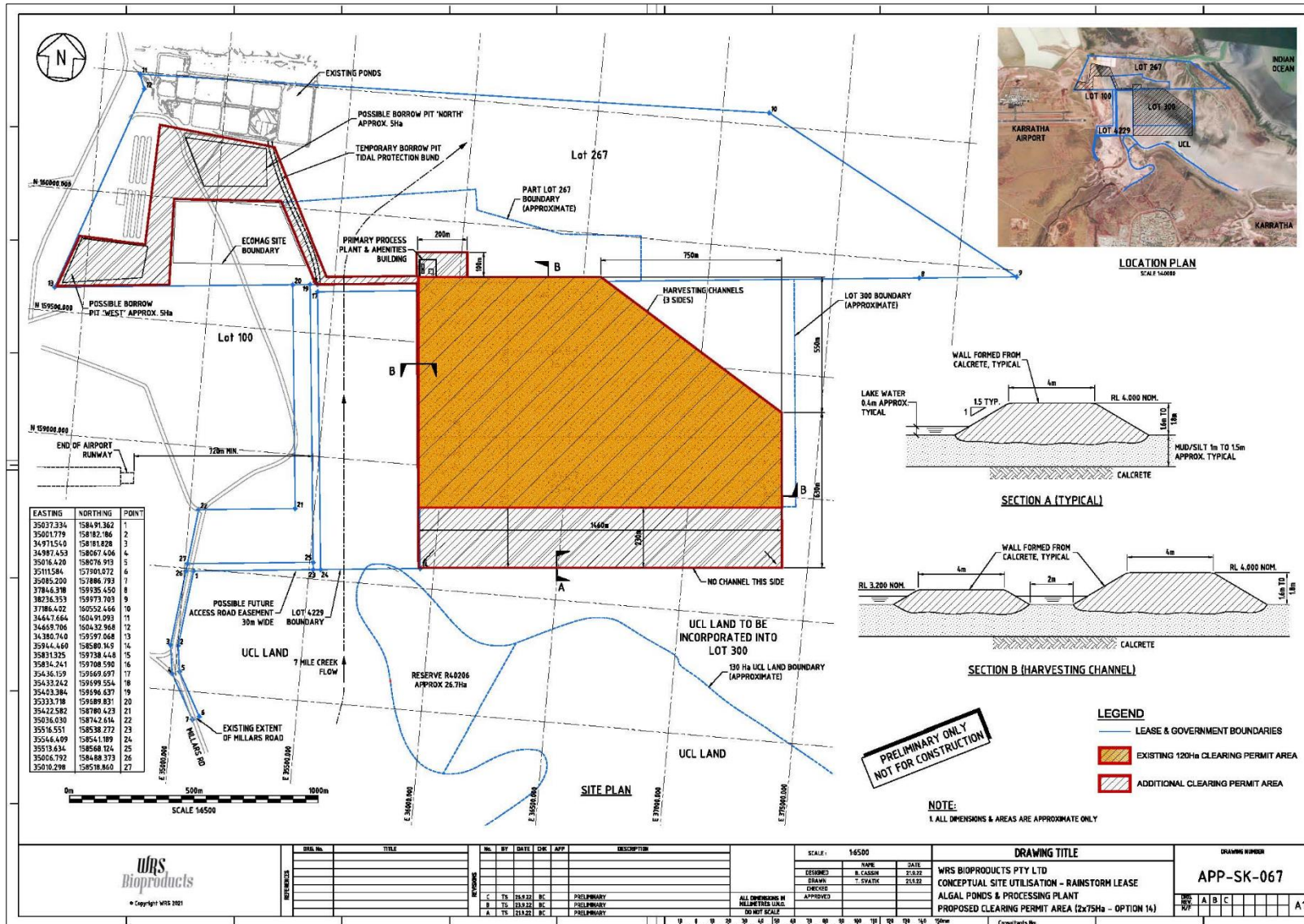


Figure 2: Site Plan

2.3 CURRENTLY APPROVED CLEARING AREA

CPS 8414/1 issued to WRS Bioproducts Pty Ltd on 11 May 2020 permits the clearing of no more than 115.39 ha within the approved clearing boundary that includes portions of Lot 267 on Deposited Plan 93179 and Lot 300 on Deposited Plan 49873, Gap Ridge (Figure 3).

2.4 INDICATIVE ADDITIONAL CLEARING AREAS

The indicative additional clearing will include portions of Lots 267 and 300, with areas summarised in Table 1 and shown in Figure 2.

Table 1: Proposed Additional Clearing Areas

Lot	Address	Area (ha)	Proposed Purpose Permit Area Within Which Clearing Will Occur (ha)	Project Clearing Footprint Area (ha)
Part Lot 267 on Plan 93179	Gap Ridge	243.69	24.37	17.65
Part Lot 300 on Plan 49873	Gap Ridge	176.45	37.27	37.27
Total		496.84	61.64	54.92

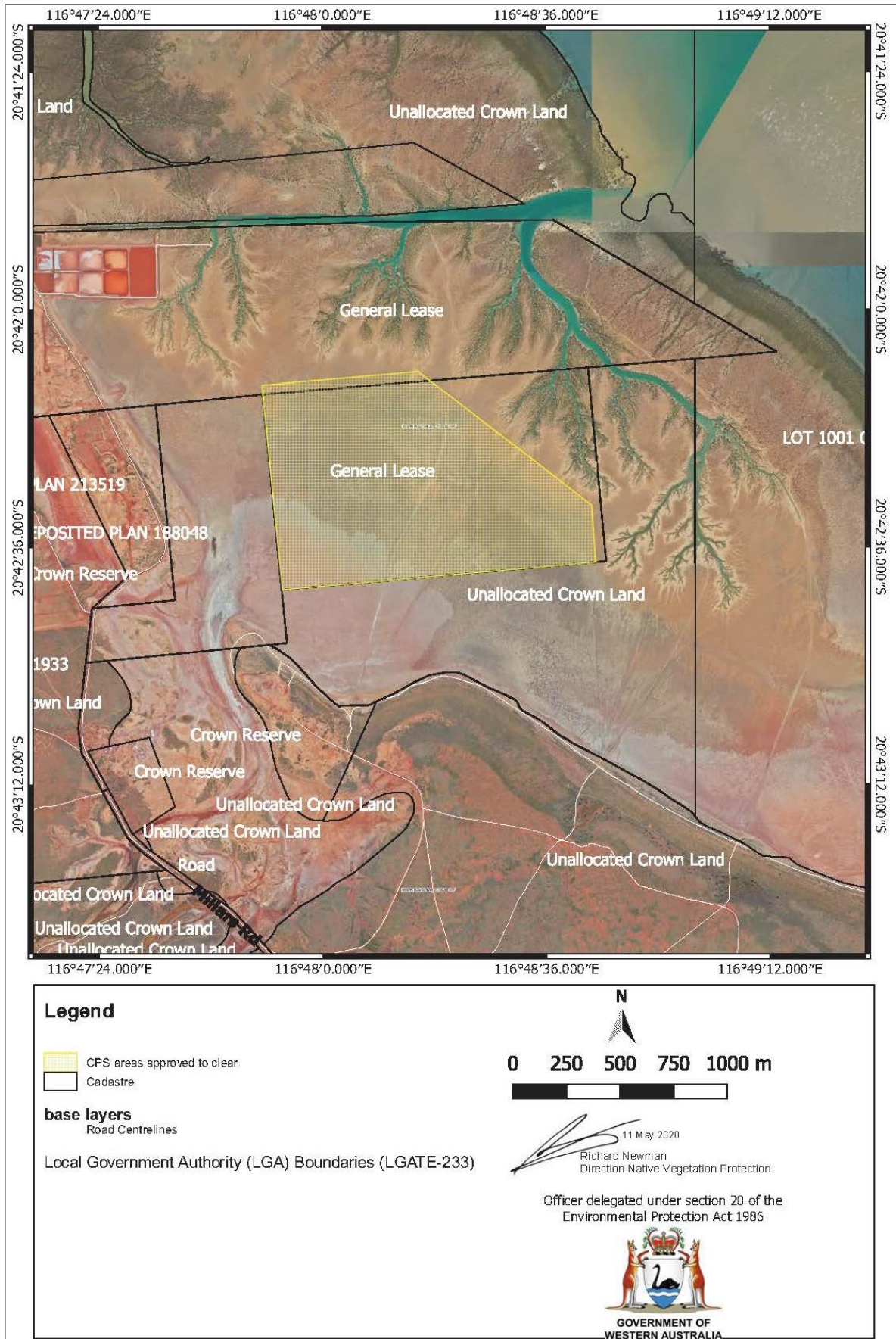


Figure 3: CPS 8414/1 Approved Clearing Area

3. METHODOLOGY

The assessment process applied to the additional Clearing Permit area was similar to that carried out by GHD (2019), and included:

- Review of the GHD 2019 WRS Bioproducts initial clearing permit supporting document; this document is included as an attachment to support the assessment process.
- Reviewing the currency of information included in the GHD (2019) document through accessing various publicly available databases and providing updated information where appropriate.
- Calculating the indicative clearing areas within the expanded project area; note that the clearing area approved in CPS 8414/1 is not considered in these calculations.
- Assessing the additional clearing areas against the ten clearing principles.
- Documenting outcomes of the review process along with their implications in this native vegetation clearing permit supporting document.

4. BIOPHYSICAL ENVIRONMENT

4.1 CLIMATE

Karratha is located in the Pilbara region of Western Australia, thus experiences an arid, semi-desert climate characterised by a distinct 'wet' and 'dry' period each year. According to the Bureau of Meteorology (BoM), the Karratha Airport weather station (ID 004083, 2022), approximately 2 km to the west of the site, experiences:

- An average maximum temperature that ranges from 26.5 °C to 36.2 °C; with its highest recorded temperature 48.4 °C.
- An average minimum temperature that ranges from 13.9 °C to 26.9 °C; with its lowest recorded temperature 6.9 °C.
- An average annual rainfall of 297.5 mm, with the majority falling between December and March, in the 'wet' season; cyclones are more likely between November and April, and which can be associated with higher rainfall occurring.
- Winds are typically easterlies or westerlies.

4.2 BIOREGIONALISATION

According to the Interim Biogeographic Regionalisation of Australia (IBRA), the Site is located in the Pilbara 4 Roebourne Subregion (PIL 4) and is characterised by (Kendrick and Stanley, 2001):

- Quaternary alluvial and older colluvial coastal and subcoastal plains.
- Grass savannah of mixed bunch and hummock grasses, with a dwarf steppe of *Acacia* sp.
- Upland areas dominated by *Triodia* hummock grasslands.
- Samphire, *Sporobolus* and mangroves are present on alluvial flats and river deltas

4.3 LAND SYSTEM AND SOILS

According to the *Soil and Landscape Mapping – Best Available* (DPIRD_027) dataset (Department of Primary Industries and Regional Development (DPIRD), 2022), the site is located within the Littoral System which is characterised by bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.

The Dampier (2256) 1:100 000 Geological Series Map (Department of Mines, Industry, and Regulation Safety, 2018) indicates the presence of three soil types within the project site boundary:

- Qhmu, which is described as silt and mud in supratidal to intertidal flats and lagoons; this soil type is present in most of the project site.
- Qhms: which is described as shelly sand in coastal dunes and old beach deposits; this soil type occurs in the western portions of Lots 267 and 4229.
- Qs: which is described as eolian red-yellow windblown sand on local sand ridges; this soil type is present in the westerly portions of Lots 267 and 4229.

GHD (2019) reported that the project site and its surrounds is located in an area that has a high to moderate risk of acid sulphate soils occurring within 3 m of the natural soil surface that could be disturbed during land development.

4.4 VEGETATION ASSOCIATION

A review of the Pre-European Vegetation (DPIRD-006) dataset (Department of Primary Industries and Regional Development (DPIRD), 2019), the project site is entirely located within the Abydos Plain – Roebourne vegetation association (127) that is described as tidal mud flats (Figure 4). As the Pilbara IBRA region contains more than 99% of its pre-European clearing extent, with Vegetation Association 127 retaining approximately 95% of its pre-European clearing extent (Government of Western Australia, 2019), the proposed clearing is unlikely to adversely impact on species diversity or recruitment in these ecological communities.

4.5 VEGETATION TYPE AND CONDITION

GHD (2019) identified the following vegetation types in the vicinity of the project site:

- Mud flats that appear to be dominant vegetation type present within the site; these areas include vegetated areas such as Chenopod shrublands, blue-green algae mats, tidal sapphire communities, as well as areas devoid of vegetation.
- Mangroves that are present to the north and east of the site; mangrove habitats have been avoided in the design of the Project due to their high productivity and their designation as being regionally significant.

A review of aerial imagery held by NearMap suggests that the vegetation condition ranges from Excellent (areas with no obvious signs of damage resulting from human activities) to completely degraded (areas that are almost or totally lacking native species in their vegetative structure). The location of the site and the proposed Areas 1, 3 and 4 are likely to be in a Degraded condition due to disturbance, with Area 2 likely to be in Very Good or Excellent condition given its location.

4.6 ECOLOGICAL COMMUNITIES

A search of the Department of Biodiversity Conservation and Attractions (DBCA) Threatened and Priority Ecological Community (TEC, PEC) database commissioned by GHD (2019) indicated there were no TECs or PECs within the site listed under the *Biodiversity Conservation Act 2016* (WA) (BC Act). However, the site is within the 2 km buffer zone of several recorded occurrences of two Priority Ecological Communities:

- The P1 Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays, with the closest record approximately 600 m west.
- The P3 Horseflat Land System of the Roebourne Plains, with the closest record approximately 1.5 km south.

Occurrences of two other Priority Ecological Communities are present within 10 km of the Site:

- The P3 Coastal dune native tussock grassland dominated by *Whiteochloa airoides*, with the closest record approximately 6.5 km to the southeast.
- The P1 Burrup Peninsula Rock Pile Communities, with the closest record approximately 8 km north.

A review of the protected matters search tool (PMST) report (2022) indicated there were no ecological communities listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act).

Figure 4: Vegetation Associations

4.7 FLORA SPECIES

The original NatureMap report using a 20 km search radius obtained by GHD (2019) indicated the presence of 583 flora species from 86 families; of which 547 were native species and 36 were introduced. A NatureMap report provided by DBCA in 2022 using a 10 km search radius produced similar outcomes, with 504 flora species recorded.

4.8 CONSERVATION SIGNIFICANT FLORA

GHD (2019) carried out a search of the NatureMap report, the PMST Report, WA Herbarium (WA Herb) and the Threatened and Priority flora list (TPFL) database search outcomes to review the potential presence of conservation significant flora species. These search outcomes indicated the potential for nine conservation-significant flora species, with an assessment of the habitat requirements of each indicating their presence is unlikely within the Project area. This is likely to be the case with the expanded Project boundary, noting that a current PMST report indicated there are no conservation significant flora species likely within the Project site or the 5 km search radius (DCCEE, 2022).

The updated DBCA (2022) NatureMap report indicated seven conservation significant flora species, with one Priority 1 (P1) species, five Priority 3 species, and one Priority 4 species. Of these, six species were the same as those indicated within the GHD (2019) report. A review of the Threatened and Priority Flora (DBCA-036) dataset indicates that the closest record of Priority listed flora species is approximately 4.5 km northwest (DBCA, 2021).

The P1 species, *Gomphrena axillaris*, was listed in 2021 and appears to be known from three locations: one near Dampier; one west of Karratha; and the other west of Kumpupintil Lake in the East Pilbara (Western Australian Herbarium, 1998). According to Davis, Palmer, and Hammer (2021), it seems to prefer sub-saline (moderately salty) habitats or margins of salt lakes and hummock or tussock grasslands on sand. The limited habitat description and indicative locations shown on FloraBase (Western Australian Herbarium, 1998) suggest this species prefers more terrestrial locations than those present within the Project site, however, this has not been confirmed.

4.9 FAUNA HABITAT

The primary fauna habitats present within and in proximity to the site includes:

- Mangroves.
- Intertidal areas.
- Mud flats.

Areas with mangroves present are typically very productive due to their root systems providing safe areas for the young of many species. The intertidal and mudflat areas provide habitat for a rich and diverse fauna assemblage that includes a range of burrowing invertebrates as well as supporting a range of migratory marine birds and mammals.

4.10 FAUNA SPECIES

The 2018 NatureMap report using a 20 km search radius obtained by GHD (2019) indicated the potential presence of 651 fauna species, of which 639 were native species and 12 were introduced; the search outcomes included a large number of marine species. An updated NatureMap report (DBCA, 2022) using a 10 km search radius identified reduced numbers of the various vertebrate faunal groups, with 454 fauna species recorded. Despite the lower numbers presented in the 2022 search outcomes, both the 2018 and 2022 searches demonstrate a high level of faunal diversity present within the area. A summary of the two searches is provided in Table 2.

Birds are the dominant vertebrate group and are attracted to the mudflats due to the presence of various invertebrates that contribute to their food source, with a similar number of records as birds (Table 2). Reptiles are the species group with the next highest number of records, with lizards being the most common.

Table 2: NatureMap Fauna Search Summaries

Species Group	2018 NatureMap Search (20 km search radius)	2022 NatureMap Search (10 km search radius)
Amphibians	4	5
Birds	206	186
Fish	88	46
Mammals	44	32
Reptiles	102	97
Invertebrates	207	88
Total	651	454

4.11 CONSERVATION SIGNIFICANT FAUNA SPECIES

Desktop data collected by GHD (2019) via PMST and NatureMap reports indicated:

- Five fauna species listed as Priority species by the DBCA; three mammal and two reptile species.
- 18 fauna species were listed as Threatened under the EPBC Act and/or the BC Act; 11 birds, four mammals and three reptiles.
- 41 fauna species were listed as migratory and/or marine species under the EPBC Act; with five migratory birds listed as protected by an international agreement under the BC Act.
- The assessment process excluded those species that were exclusively marine species.
- A likelihood occurrence assessment was carried out for all conservation significant fauna species considering the biology and habitat requirements of each, and the locations of previous recordings. That assessment determined:
 - 34 migratory/marine birds are likely to be opportunistic visitors to the area.
 - Nine birds listed under the EPBC Act and/or the BC Act, with some in common with the marine/migratory species, are also likely to be opportunistic visitors.
 - The reptile *Ctenotus angusticeps* (Airlie Island Skink) that was listed as Priority 3 under the BC Act and Vulnerable under the EPBC Act was considered as likely to occur within the Project site; note that this species is now listed as Threatened (vulnerable) under the BC Act (WA Museum, 2022) and no longer listed under the EPBC Act (Threatened Species Scientific Community, 2019).

The GHD (2019) information is consistent with the 2022 NatureMap (DBCA, 2022) and PMST reports (DCCEEW, 2022).

A review of the Threatened and Priority Fauna (DBCA-037) dataset (DBCA, 2020) indicates that the closest records of conservation significant species are migratory species located a minimum of 2 km to the north, northwest, south, southeast, and east of the site.

4.12 CONSERVATION ESTATE

Reserve R40206 is located to the immediate southwest of Lot 300 and is zoned Conservation Recreation and Natural Landscapes under City of Karratha Local Planning Scheme (LPS) 8, with the current version including amendment (AMD) 54 gazetted on 26 July 2022.

4.13 HYDROLOGY, WETLANDS, AND WATERWAYS

The Project area:

- Is located in the Pilbara Groundwater Area, which is a proclaimed groundwater area under the *Rights in Water Irrigation Act 1914* (WA) (RIWI Act).
- Is located within an identified irrigation district in the Pilbara Surface Water Area that is proclaimed under the RIWI Act.
- Supports no rivers within or near to the Site.
- Supports no permanent, seasonal, or ephemeral lakes.
- Is not located within a proclaimed public drinking water source area (PDWSA) gazetted under the *Country Area Water Supply Act 1947* (WA) (CAWS Act).
- Is not located within a Clearing Control Catchment as defined in the CAWS Act.
- Contains no RAMSAR wetlands.

The initial project design considered the City of Karratha Storm Surge Risk Policy (Local Planning Policy DP 19) that included mapping of the 100-year annual recurrence interval (ARI) flood depth of >2 m, and the Storm Surge Vulnerability Maps that indicated the Site was in a calculated 500-year Surge Inundation Depth.

One watercourse, 7 Mile Creek, is present to the south of the proposed additional clearing area (Figure 2). This is an ephemeral creek that flows after rainfall events and tidal movement. The proposed increased size and location of the algae ponds is unlikely to impact on the discharge and mixing of water from the creek beyond that anticipated during the assessment of the CPS 8414/1 as the western portion of what will become part of Lot 300 will be constructed on tidal flats that are predominantly bare ground (Figure 2).

A hydrological study carried out by Hydrologia (2022) assessed several options in relation to the creek, with the diversion to the east being the preferred option, with hydraulic modelling carried out for that option only. Hydraulic modelling carried out by Hydrologia (2022) for the creek diversion option determined that based on a projected 92 ha for each algae pond with Lots 300 and 4229:

- Under normal operating conditions, the algae ponds will be able to accommodate rainfall events up to at least the seven day 1% AEP, with discharge being possible through their supply channel network.
- Storm surge events greater than the 10% AEP could inundate the algae ponds, which would need to be drained then refilled ahead of production recommencing.
- The collection of water in residual estuarine area to the west of the algae ponds may require drainage, with a potential drainage pathway existing towards the north, past the plant site, and discharging into the estuarine channel network north of the lakes.
- Flood risk for the two proposed borrow pits to be located within Lot 267 can be managed through the construction of temporary levees that will be removed at the conclusion of the excavation, or timing of works so they are carried out during a drier period to minimise the potential for flooding.

As the clearing permit is being progressed based on a secondary changed design that no longer includes the use of land within Lot 4229 for site access or the extension of the algae ponds, the adjusted design will mean that the discharge from 7 Mile Creek will continue to the north and west of the proposed 75 ha algae ponds and flow to the

east will be obstructed (Figure 5). This changed design will also mean that Reserve 40206 will not be used to divert the flow from 7 Mile Creek to the south of the proposed infrastructure as originally anticipated. Accordingly, Hydrologia (2022) indicates that draining of excess water in the residual estuarine area to the west of the algae ponds to the Dampier Salt brine channel and estuary network to the north (Option 3 Drawing 058; Figure 5) will probably be the preferred drainage option and will be considered further during the preparation of the stormwater management plan.

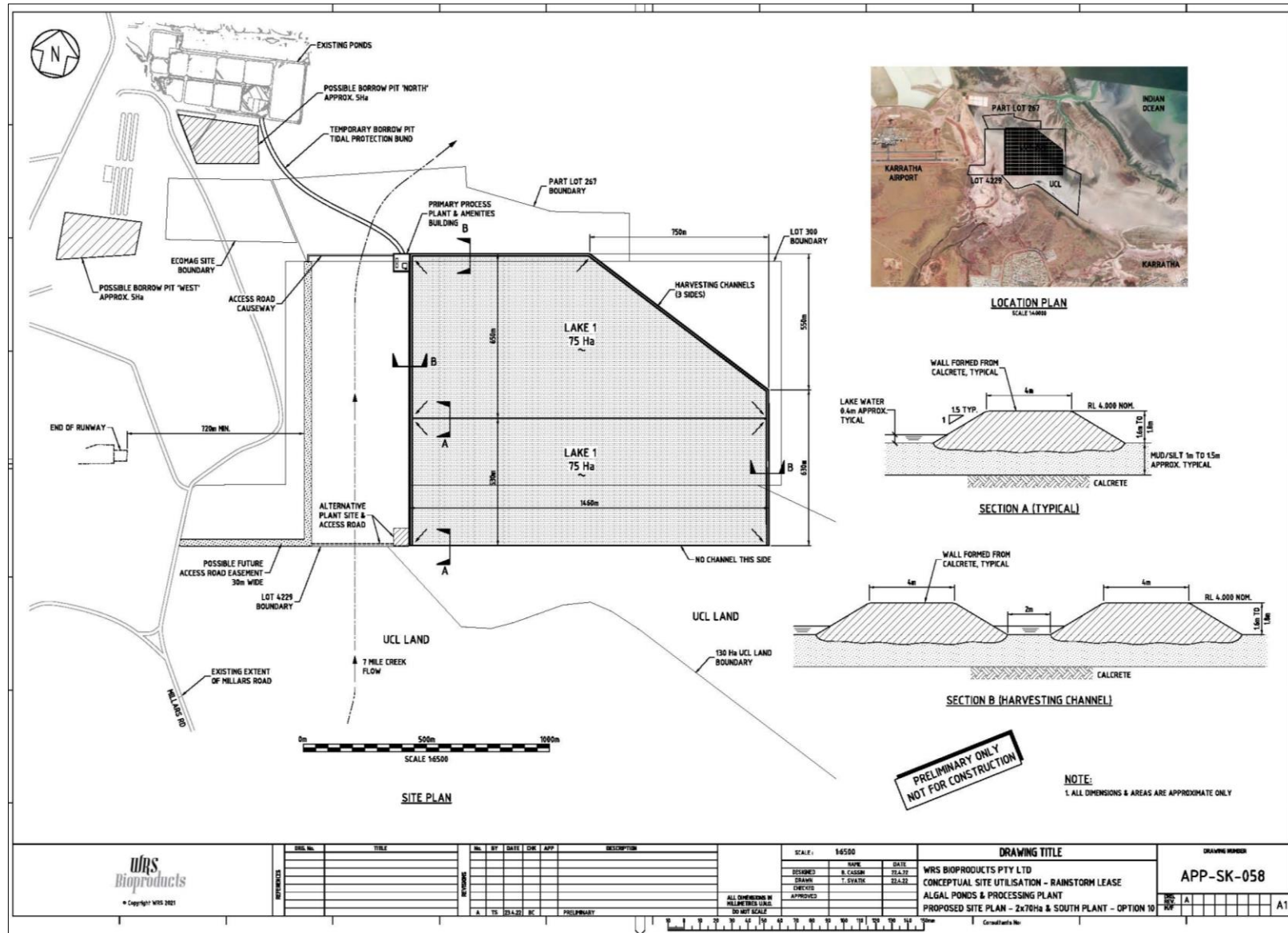


Figure 5: Option 3 – Drainage of 7 Mile Creek to the North

4.14 GROUNDWATER

The hydrogeology of the initially approved clearing area was assessed by GHD (2019), with a shallow alluvial aquifer and a fractured and weathered bedrock aquifer potentially being present. Groundwater is tidally influenced and flows to the east toward Nickol Bay. The coastal location and flat topography of the project area indicate that the water table is likely to be shallow and influenced by the tide.

A search of the DWER Water Information Reporting database on 13 February 2018 indicated there is one registered private bore within 3 km of the Rainstorm Leasehold. The bore is located approximately 2.5 km southwest of the lease area, was drilled in 1931 for the purpose of agricultural irrigation and is likely now decommissioned.

4.15 CONTAMINATION

A basic summary of records (BSR) relating to the presence of contamination within the initial proposed clearing area (part of Lots 257 and 300) was obtained by GHD (2019). This record indicated that portions of Lot 267 are classified as 'Possibly contaminated – investigation required'. This classification suggests that continued use of the land in an industrial context is acceptable.

5. PROJECT ELEMENTS AND POTENTIAL IMPACTS

5.1 CLEARING OF NATIVE VEGETATION

5.1.1 Clearing Area

The expanded Project area is largely cleared mud tidal flats and open water associated with those tidal flats. Four vegetated areas with an indicative area of 54.62 ha have been identified on current aerial imagery available from Nearmap as having the potential to be impacted by the Project. Their indicative clearing area and the vegetation association in which it may occur has been identified as it relates to the changed project design, namely:

- 17.35 ha of vegetation association 127 within Areas 1, 2 and 3 (Lot 267).
- 37.27 ha of vegetation association 127 within Area 4 (Lot 300)

Overall, the maximum clearing area is expected to be 54.62 ha within a broader purpose permit area of 65.47 ha (Table 3, Figure 6). Note that information relating to Lot 127 and Lot 300 has been confined to those portions of each Lot that relate to the WRS Bioproducts lease holding that are the subject of this clearing permit application only.

Table 3: Clearing Areas

Area	Vegetation Type	Vegetation Association	Location	Indicative Clearing Area (ha)	Purpose Clearing Permit Footprint	Lot Area (ha)	Clearing Footprint as a (%) of Lot Area
1	Tidal mud flat	127	Lot 267	3.95	3.95	24.37	16.21
2	Tidal mud flat	127	Lot 267	11.70	11.70		48.00
3	Tidal mud flat	127	Lot 267	2.00	2.00		8.21
4	Tidal mud flat	127	Lot 300*	37.27	37.27	37.27	100
Total				54.92	54.92	65.47	

* Note: Planned addition to Lot 300 only

5.1.2 Potential Impacts and their Significance

The Project will result in the clearing of up to 54.62 ha of native vegetation in an overall Purpose Permit Area of 65.47 ha, with all that area located in tidal mud flat vegetation (Vegetation Association 127). This is unlikely to be significant as the Pilbara IBRA region retains more than 90% of its pre-European clearing extent of this Vegetation Association (Government of Western Australia, 2019). On that basis, the proposed clearing is unlikely to adversely impact on species diversity or recruitment in each of these ecological communities.

While the clearing will result in the direct loss of individual flora species that make up the vegetation type, there are no known conservation significant flora species present within the proposed clearing area. Database searches carried out by GHD indicate that those known are located in locations with habitat requirements different to those associated with tidal mudflat communities.

The introduction of non-native (weed) species is a possibility due to the clearing and on-going project activities. The implementation of hygiene management activities consistent with those required by Condition 5 Weed Control of approved clearing permit CPS 8414/1 will mean this risk can be adequately mitigated.

The presence of mangrove populations north of the approved clearing area associated with CPS 8414/1 is noted, along with an acknowledgement of their local/regional significance and their productivity. These populations were avoided through an adjustment to the proposed CPS 8414/1 clearing area (Figure 3), with all potential clearing areas associated with the expanded operation area also avoiding all mangrove populations.

The upgraded expanded pond design is consistent with that proposed for the original Clearing Permit, with the height of the bunds surrounding the algae ponds along with their proposed construction meaning there is a low likelihood of leakage or overflow from the site. Accordingly, there is little risk of impact to groundwater, disturbance of acid sulphate soils, and/or the offsite transport of sediment, other materials, and/or contamination.

5.2 FAUNA

Fauna habitat present within and near to the Project site includes native vegetation, open water areas, and tidal mud flats. The tidal mud flats are known to be utilised as a feeding area by migratory birds due to the presence of burrowing invertebrates (GHD, 2019), accordingly, there is likely to be a direct impact on fauna and fauna habitat as a result of the Project. Impacts will include:

- Increased habitat loss and fragmentation as a result of the clearing of up to an additional 54.62 ha of native vegetation. Impacts are not expected to be significant as Vegetation Association 127 retains more than 90% of its pre-European extent. The nature of tidal areas means that flushing and tidal movement moves sand/soils around on a daily basis.
- Habitat loss for migratory birds that utilise the site as feeding area. Impacts to migratory birds are not expected to be significant due to their mobility and because most species are transitory visitors with alternative feeding areas present close to the site.
- Secondary impacts associated with dust, noise and/or vibration during clearing and construction. These activities will be temporary over a short timeframe, with permanent impacts on local faunal populations considered to be unlikely.
- Weed colonisation that result in changes to habitat conditions. The presence of weeds will be managed in accordance with approval conditions documented on the currently approved Clearing Permit, CPS 8414/1, meaning the likelihood of significant impacts occurring is considered to be low.

5.3 CONTAMINATION

GHD (2019) assessed the potential for contamination associated with previous activities within Lot 267, along with proposed site and plant construction, and the likely presence of acid sulphate soils that could result in contamination if disturbed and exposed to the atmosphere. The nature of the Project and its associated construction meant that there was unlikely to be any significant increase in the risk of contamination and impacts associated with the Project, and this is likely to remain the case with the implementation of an increased clearing and operational area.

Figure 6: Indicative Additional Clearing Areas

6. ASSESSMENT AGAINST CLEARING PRINCIPLES

When preparing a Clearing Permit application, an assessment of the proposed clearing against the ten clearing principles is required to inform the decision-making process. The assessment as it relates to the proposed additional clearing of portions of Lots 267 and 300 are provided in Table 4. This assessment suggest that the proposed clearing is unlikely to be at variance with any of the clearing principles.

Table 4: Assessment of Clearing Against the Clearing Principles

No.	Principle	Assessment	Outcome
a	Native vegetation should not be cleared if it comprises a high level of biological diversity	<ul style="list-style-type: none"> • Previous NatureMap, DBCA, and PMST database searches indicate the wider Project location is diverse and supports a range of flora and fauna species. • A review of the extent of Vegetation Association 127 indicates that it retains more than 90% of its pre-European extent, indicating that impacts on that community is not likely to result in a significant impact to diversity. • The Project area is located within an area previously used for various commercial/industrial purposes and has been subject to previous disturbance. • The proposed additional clearing areas are considered unlikely to comprise greater biological diversity than surrounding areas. 	Not at variance with this principle
b	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	<ul style="list-style-type: none"> • The Project area is located within an area previously used for various commercial/industrial purposes and has been subject to previous disturbance. • The Project area does not support habitat that is important or necessary for the conservation significant fauna or the maintenance of indigenous fauna that is not present in other nearby areas. • On this basis, the proposed clearing is not likely to be at variance with this principle. 	Not at variance with this principle
c	Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare (Threatened) flora	<ul style="list-style-type: none"> • Previous NatureMap, TPFL, WAHerb, PMST database searches, along with a 2022 NatureMap and PMST database searches indicate that there are no flora species listed as Threatened under the BC Act and/or the EPBC Act. • On this basis, the proposed additional clearing of native vegetation will not result in the clearing of any vegetation that is considered necessary for the continued existence of rare (Threatened) flora species. 	Not at variance with this principle

No.	Principle	Assessment	Outcome
d	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a Threatened Ecological Community	<ul style="list-style-type: none"> • Previous DBCA TEC/PEC and PMST database searches, along with a 2022 PMST and NatureMap database search reports indicates there are no Threatened or Priority Ecological Communities present that are listed under the EPBC Act and/or the BC Act within or close to the Project site. • On this basis, the proposed clearing of native vegetation will not result in the clearing any vegetation that is considered necessary for the continued existence of a Threatened Ecological Community. 	Not at variance with this principle
e	Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	<ul style="list-style-type: none"> • One pre-European vegetation association has been indicated for the Project site (127), with a review of the Statewide Vegetation Statistics for this association indicating more than 90% are present within the Pilbara Region. • On this basis, the proposed additional clearing will not occur within a native vegetation community that has been extensively cleared. 	Not at variance with this principle
f	Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland	<ul style="list-style-type: none"> • The proposed additional clearing is not planned for areas associated with wetlands or rivers. • Impacts to drainage associated with the approved clearing area included creek lines that drain into Nickol Bay and drainage channels associated with the presence of mangroves, with these locations being avoided ahead of issuing CPS 8414/1. The designs to avoid and minimise impacts were assessed as being acceptable and are expected to be so for the proposed additional clearing area into what will become the additional area of Lot 300. • 7 Mile Creek located to the south west drains into a portion of Lot 4229. As the creek line is associated with tidal flats that are largely devoid of vegetation, the proposed clearing is unlikely to result in a significant impact to vegetation associated with a wetland or waterway. 	Not at variance with this principle
g	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	<ul style="list-style-type: none"> • The Project area is located within an area previously used for various commercial/industrial purposes and has been subject to previous disturbance. • The limited clearing area is unlikely to result in significant impacts to the species diversity of the tidal flats vegetation type due to the more than 90% pre-European level remaining • Impacts to acid sulphate soils will be avoided with construction of the algae ponds using methods that will not require disturbance of ASS materials. 	The proposed clearing is not likely to be at variance with this principle

No.	Principle	Assessment	Outcome
h	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	<ul style="list-style-type: none"> The proposed clearing of native vegetation will not occur in any conservation areas, with the planned extended operational area of the algae farm avoiding Reserve R40206 zoned conservation and recreation located to the southwest of Lot 300. 	Not likely to be at variance with this principle
i	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	<ul style="list-style-type: none"> Sea water tidally inundates parts of the proposed clearing area. Groundwater at the project area is saline and likely modified by surrounding salt ponds. Disturbance of ASS is not expected due to the planned construction method. Thus, impacts to surface or groundwater quality are not expected. 	Not likely to be at variance with this principle
j	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding	<ul style="list-style-type: none"> The additional proposed clearing would result in the 7 Mile Creek discharge area being impacted, with flow being directed to the north only rather than into the fan-shaped estuary. It is expected that flow will be directed to the Dampier Salt brine channel and estuary network to the north of Lot 267 to minimise the potential for flooding. 	Not likely to be at variance with this principle

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