GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10294/1
Permit Holder:	WRS Bioproducts Pty Ltd
Duration of Permit:	From 20 June 2024 to 20 June 2029

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of expansion of an approved aquaculture operation (algae farm).

2. Land on which clearing is to be done

Lot 267 on Deposited Plan 93179, Gap Bridge

Lot 4229 on Deposited Plan 188048 (Reserve 30948), Gap Bridge

Lot 4204 on Deposited Plan 187755 (Reserve 40206), Gap Bridge

3. Clearing authorised

The permit holder must not clear more than 82.73 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

4. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

5. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

6. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in a single direction to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

7. Wind and water erosion management

The permit holder must commence construction activities no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for wind and water erosion.

PART III - RECORD KEEPING AND REPORTING

8. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) the direction of the clearing in accordance with condition 6; (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; (g) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 5; and (h) actions taken to conduct wind and water erosion measures in accordance with condition 7.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Jessica Burton
A/MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

28 May 2024

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

Figure 1: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10294/1
Permit type:	Purpose permit
Applicant name:	WRS Bioproducts Pty Ltd
Application received:	04 August 2023
Application area:	82.73 hectares of native vegetation
Purpose of clearing:	Expanding an existing aquaculture operation (algae farm)
Method of clearing:	Mechanical clearing
Property:	Lot 267 on Deposited Plan 93179 Lot 4229 on Deposited Plan 188048 (Reserve 30948) Lot 4204 on Deposited Plan 187755 (Reserve 40206)
Location (LGA area/s):	City of Karratha
Localities (suburb/s):	Gap Bridge

1.2. Description of clearing activities

This application is for the clearing of 82.73 hectares of native vegetation over three sites within Lot 267 on Deposited Plan 93179, Reserve 30948 and Reserve 40206, Gap Ridge, for the purpose of the expansion of a commercial-scale algae farming operation and associated infrastructure. Infrastructure includes algae lakes with bund walls, processing and harvesting buildings and maintenance sheds (WRS Bioproducts Pty Ltd, 2023a).

The vegetation proposed to be cleared is represented in Figure 1, Section 1.5. The application area largely consists of cleared mud tidal flats and open water associated with those tidal flats (WRS Bioproducts Pty Ltd, 2023b).

1.3. Decision on application

Decision:	Granted
Decision date:	27 May 2024
Decision area:	82.73 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (the department) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), supporting document provided by MBS Environmental (Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that:

- the applicant holds a Development Approval (DA) for the proposed development issued by the City of Karratha;
- the applicant holds a permit to obstruct or interfere under the *Rights in Water and Irrigation Act* 1914 (RIWI Act) for the modification of 7 Mile Creek by diversion;
- the mapped vegetation types within the application area retain more than 80 per cent of their pre-European vegetation extent; and
- the majority of the fauna recorded from the 50 kilometres radius local buffer are migratory shorebirds that breed in northern latitudes and inhibits coastal, estuaries and wetland habitats. Most species are coastal based, but some species will also utilise inland waters and flooded areas. Migratory birds are known to arrive in Australia during the summer months and depart during the winter months to breed in northern latitudes.

The department notes the applicant holds clearing permits CPS 9926/1 and CPS 8414/1 for an area immediately adjacent to the application area, which is also associated with the aquaculture operation. Given the reasons listed below, the applicant was required to apply for this clearing permit application (CPS 10294/1 (WRS Bioproducts Pty Ltd, 2023b) as:

- A portion of Lot 4229 (53 ha) will be utilised for operational activities with the remainder of the Lot to be utilised by the Karratha Airport. Changes to the boundaries of these Lots are currently being progressed, as is the lease arrangements authorising the use by WRS Bioproducts.
- A portion of Reserve R40206 (27 ha) to enable the flow of 7 Mile Creek so that it can flow towards the east through Lot 301.
- An additional portion of Lot 267 (8 ha) will be utilised for operational infrastructure and activities.

The assessment identified that the proposed clearing will result in:

- partial loss of foraging grounds for migratory bird species;
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- potential land degradation in the form of wind and water erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that the proposed clearing is unlikely to lead to appreciable land degradation, have long-term adverse impacts on environmental values and can be minimised and managed to unlikely lead to an unacceptable risk to the environment. The applicant has suitably demonstrated avoidance and minimisation measures to ensure there are no significant impacts to environmental values resulting from the proposed clearing.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity; and
- commence construction no later than three months after undertaking the authorised clearing to minimise risk of soil erosion.

1.5. Site map

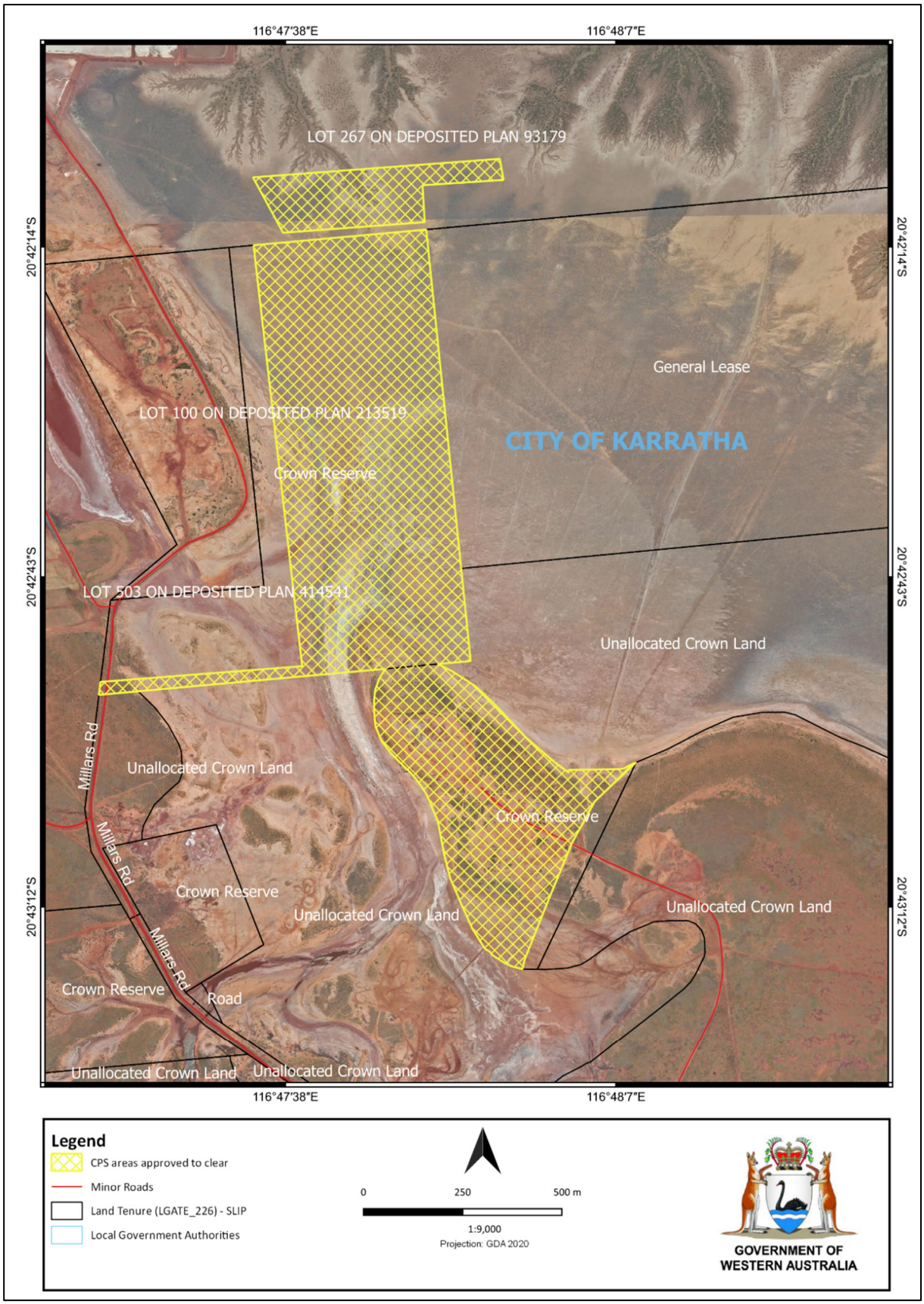

Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Rights in Water and Irrigation Act 1914 (*RiWI Act*)*
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Aboriginal Heritage Act 1972*
- *Contaminated Sites Act 2003 (CS Act)*

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Supporting information was submitted by the applicant, demonstrating that the following avoidance and mitigation measures will be implemented during the clearing, in order to mitigate and avoid any negative impacts to the local area (WRS Bioproducts Pty Ltd, 2023b):

- to avoid disturbance to the local mangrove community, the design and location of the ponds and infrastructure will avoid the known mangrove populations in the area; and
- to achieve the least disturbance to local native vegetation, the proposed clearing has also considered how much vegetation needs to be removed to enable the construction and operation of the facility.

Under the approved development approval (DA) for the proposal, the applicant is required to develop and implement a stormwater management plan and construction and operational environmental management plans to manage, avoid and mitigate environmental impacts of the proposal (City of Karratha, 2023). The DA further conditions the applicant to prepare a rehabilitation plan and undertake the rehabilitation in accordance with the approved rehabilitation plan.

The construction environmental management plan must include (not limited to the below) (WRS Bioproducts Pty Ltd (2024):

- mitigation measures in the event acid sulphate soils are encountered;
- impacts of artificial light on both the broader environment and karratha airport;
- management of dust, erosion and sedimentation;
- storage locations of construction waste on site;
- containment of earthworks, excavation, land retention/piling methods and associated matters within the approved development site; and
- details of temporary fencing or hoarding;

The operation environmental management plan must include (WRS Bioproducts Pty Ltd (2024):

- the management of any potential adverse impacts that the approved use may have on the surrounding environment either during normal operations or during a flooding event where the lakes may overtop and spill into the surrounding environment;
- the use of vertimec or other such insecticides for the control of invertebrate within the approved algae lakes;
- the management of light emissions during operation of the approved use both on the broader environment and the airport; and

- any other relevant matters as determined by the City of Karratha or Department of Biodiversity, Conservation and Attractions (DBCA) (City of Karratha, 2023).

The Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard conditions implemented on the clearing permit. Biological values (fauna) and land resources are further considered below.

3.2.1. Biological values (fauna) - Clearing Principles (b)

Assessment

The application area is within the Pilbara bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) region and is mapped within two vegetation associations. Approximately 80 per cent of the application area is within the Abydos Plain -– Roebourne 127 vegetation association while approximately 20 per cent of the application area is within the vegetation association Abydos Plain -– Roebourne 589.

- Abydos Plain -– Roebourne 127, described as tidal mud flat; and
- Abydos Plain – Roebourne 589, described as short bunch-grass savanna and grass-steppe.

The desktop assessment identified 56 conservation significant fauna species within the local area (50-kilometre buffer of the application area, excluding the area which extends into the ocean). The most recorded fauna are two migratory birds, *Hydroprogne caspia* (Caspian tern) and *Tringa brevipes* (grey-tailed tattler). The fauna record identified closest to the application area is the *Pandion haliaetus* (osprey) recorded 1.02 kilometres from the application area.

In forming a view on the likelihood of these species identified during the desktop assessment occurring within the application area, the preferred habitat types of these species and their recorded proximity to the application area were considered, along with the vegetation/soil types and landforms within the application area.

According to the supporting documentation provided by MBS Environmental with the clearing permit application, the vegetation proposed to be cleared is largely mud tidal flats and open water associated with those tidal flats. The mangrove areas will not be impacted by the proposed clearing and are located 870 metres to the northeast of the application area (WRS Bioproducts Pty Ltd, 2023b).

One main fauna habitat has been recorded in the application areas, that being tidal mud flats, which include largely cleared mud tidal flat areas and open water associated with those tidal flats (WRS Bioproducts Pty Ltd, 2023). MBS Environmental advised that the mangrove habitats in the local area would provide significantly productive environments due to their root systems providing shelter for the young of many fauna species (WRS Bioproducts Pty Ltd, 2023b).

The habitat preferred by the fauna species identified through the desktop assessment are widepstread and well represented in in the surrounding area.

Birds

Numerous shorebirds species protected under international Agreements are within the local area with a total of 44 bird species identified. The majority of the recorded species were migratory shorebirds that breed in northern latitudes and inhibits coastal, estuaries and wetland habitats. Most species are coastal based, but some species will also utilise inland waters and flooded areas. Migratory birds are known to arrive in Australia during the summer months and depart during the winter months to breed in northern latitudes.

Calidris ferruginea (Curlew sandpiper) is a shorebird that is a critically endangered migratory species under the EPBC Act and BC Act associated with habitats in an around intertidal mudflats in sheltered coastal areas. *C. ferruginea* breeds on bare dry shingle, shell or sand beaches, as well as in and around coastal wetlands. Australia is not known to host any of this migratory species' breeding grounds. *C. ferruginea* forages on mudflats and in shallow water (DCCEEW, 2023). A number of *C. ferruginea* have been recorded less than one kilometre away from the proposed

clearing area. Based on the likelihood analysis, *C. ferrugineai* is likely to use the application areas for dispersal, however, is not solely restricted to the application area, as the habitat type within the application area is common throughout the local area.

There were two raptors identified within the 50-kilometre radius which may overfly the application area intermittently without utilising the habitat present. The migratory-listed Osprey (*Pandion cristatus*) as well as the Peregrine Falcon (*Falco peregrinus*) (other especially protected faun) are likely to be present in the region. The Osprey nests in large trees, offshore rocks and cliff faces (DCCEEW, 2023). The Peregrine Falcon does not build a nest but require cliffs, rocky outcrops, or large tree hollows to breed. Habitat for these raptor birds are not present within the application area. This species are widespread and highly mobile and is found in various habitats (Australian Museum, 2020)

Seven tern species are also recorded within the 50 kilometres local area. Most of these tern species breed and/or roost on islands or beaches. Birds such as *Limosa lapponica* (Bar-tailed godwit), *Numenius madagascariensis* (Eastern curlew) and *Calidris canutus* (Red knot), have no known breeding sites in Australia, however, have been observed to have foraging grounds within the local area of the area under application (DCCEEW, 2023). The application area and its surroundings are likely to constitute foraging habitat for these migratory species. These migratory waterbird species may occasionally visit the application area, however these species are not solely restricted to the application area, as the habitat type is locally common extending extensively to the northwest and southeast of the application area. The proposed clearing of 82.73 hectares of this habitat is not considered to significantly impact habitat for these migratory species.

The application area does not comprise of significant habitat that is critical for the survival of the bird species identified through the desktop assessment. These migratory waterbird species may occasionally visit the application area, however these species are not solely restricted to the application area as the habitat type is locally common extending extensively to the northwest and southwest of the application area.

Reptiles

Ctenotus augusticeps, (Northwestern coastal Ctenotus) is listed as a Priority three (3) species by the DBCA. *C. augusticeps* inhabits tussock grassland, acacia shrubland as well as samphire shrubland along mangrove margins around Karratha. *C. augusiceps* has been observed to exhibit a preference to open shrubland subject to tidal influences and dense vegetation in sandy soils (DCCEEW, 2023). A review of available databases determined this species occurs along the coastline of northern WA within the boundaries of the Shire of Ashburton to the Shire of Broome, as well as occurring on offshore islands (DBCA, 2007). On the mainland, this species generally inhabits the landward fringe of salt marsh communities in samphire shrubland or marine couch grassland in the intertidal zone along mangroves and mangrove margins, however, subtle differences in vegetation and topography exist among sites where the species has been recorded (DEE, 2019). On the Airlie Island C. augusticeps is strongly associated with samphire species *Tectornia halocnemoides* subsp. *tenuis* and *Suaeda arbusculoides*, which occur on clayey soils, and mixed herb and grass cover of *Muellerolimon salicorniaceum* and *Sporobolus virginicus*, which occur on sandy soils (DEE, 2019). The closest recorded occurrence of this species to the application area is situated roughly 10 kilometres away. The application area and its surroundings are likely to constitute suitable habitat for this species. *C. augusticeps* may occasionally visit the application area, however this species is not solely restricted to the application area, as the habitat types are common within the local area. A slow directional clearing is likely to mitigate negative effects the clearing may have on individuals of this species, if present at the time of clearing.

Lerista nevinae (Nevin's slider) is an endangered species (EPBC Act) associated with the acacia shrubland over spinifex on the Pilbara coast (DCCEEW, 2023). *L. nevinae* have also been observed near mangrove inlets (Gaikhorst, 2015). The area of proposed clearing and its surroundings exhibits environmental characterises suitable to this species. However, habitat for this species is not solely restricted to the application area, as the habitat types are common within the local area. A slow directional clearing is likely to mitigate negative effects the clearing may have on individuals that may occur at the time of clearing.

Conclusion

Tidal mud flats and their associated habitats are well-represented in the vicinity of the application area. Given the extent of suitable habitats in the local area, extending well beyond the boundaries of the application area, the proposed clearing of tidal mud flats is unlikely to represent a significant habitat for the aforementioned conservation significant fauna species which have a scattered distribution across northern Australia.

Due to the presence of suitable habitats within, and adjacent to, the application area, these species may be present at the time of the clearing activities. Fauna management measures such as undertaking clearing in a slow, directional and progressive manner towards adjacent vegetation will mitigate potential impacts to fauna.

Based on the above assessment, and the avoidance and mitigation measures provided by the applicant (Section 3.1), the Delegated Officer has determined that the proposed clearing requires management conditions in relation to fauna values. For the reasons set out above, it is considered that direct impacts to fauna can be managed through the application of slow, directional clearing techniques.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- slow, directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity.

3.2.2. Land and water resources (land degradation and surface water) - Clearing Principles (f) (g) (i)

Assessment

The mapped soil units within the application area are the Littoral System soil landscape (286Li), described as bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests (DPIRD, 2019). The local topographic contours within the application area was also considered in determining the impacts to land degradation risks from the proposed clearing. Based on the topography, the proposed clearing is not anticipated to adversely impact the flooding regime of the local area. However, the proposed clearing may cause land degradation in the form of wind and water erosion and short-term sedimentation of surface water.

In relation to water erosion risks, the surface water is largely reliant on weather and waterways that generally only flow for parts of the year in response to larger cyclonic or rainfall events. Water erosion may occur as sheet flow in broad inter-drainage areas on alluvial plains, near the baselines of hills and ridges with the risk of soil erosion during rainfall events (DPIRD, 2019).

Advice from the Office of the Commissioner of Soil and Land Conservation (CSLC) with regard to the granted adjacent Clearing Permit CPS 8414/1 indicated that subject to the applicant restricting clearing to a minimum in areas with little native vegetation, any soil and land degradation impacts are not likely to be significant. The period between clearing and development should be kept to a minimum in order to avoid any soil and land degradation impacts.

The department also notes that the applicant holds a DA issued by the City of Karratha for the works associated with this clearing permit (City of Karratha, 2023). According to the conditions on the DA, the proposed works would be undertaken in accordance with an approved construction management plan, an environmental management plan and a stormwater management plan (WRS Bioproducts Pty Ltd, 2024). Implementation of these management plans would ensure that the proposed works does not result in an appreciable impact from the end land use. Given the wind and water erosion impacts associated with the actual clearing of native vegetation, the department propose to impose a condition on the clearing permit to undertake the proposed works within three months of the commencement of the clearing activities to ensure that the application area does not contribute to an increase in water and wind erosion.

According to the available datasets, the application area is mapped within the Pilbara Groundwater Area, which is a proclaimed groundwater area under the *Rights in Water Irrigation Act 1914* (WA) (RIWI Act). The application area is also located within an identified irrigation district in the Pilbara Surface Water Area that is proclaimed under the RIWI Act. The 7 Mile Creek is present within the most southern edge of the application area. The applicant holds a permit to obstruct or interfere with the 7 Mile Creek by diversion (Instrument No. PMB210151(1)), issued under the RiWI Act 1914.

According to the MBS Environmental supporting information, the proposed diversion of the 7-mile creek is unlikely to significantly impact on the water quality of the creek. The wider catchment area extends more than 10 kilometres south of the site past the North West Coastal Highway (WRS Biproducts, 2023b).

Conclusion

Based on the above assessment, the proposed clearing is likely to result in wind and water erosion from the proposed clearing. However, to ensure land degradation impacts do not result from the proposed clearing activities, the construction of the algae farm infrastructure should commence shortly after the completion of the clearing to minimise potential erosion and sedimentation of surface water impacts. Additionally, the department also notes that works would be undertaken in accordance with a construction management plan, an environmental management plan and a stormwater management plan that are approved by the City of Karratha.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- the permit holder must commence construction activities no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for water and wind erosion.

3.3. Relevant planning instruments and other matters

WRS Bioproducts Pty Ltd was granted with a clearing permit application (CPS 9926/1) on 29 November 2023 for the clearing of approximately 60.87 hectares of native vegetation for the purpose of expansion of an approved aquaculture operation (algae farm), which also relates to the same development under this clearing permit application. The applicant has advised the department that the initial project required revision due to economic matters. Given this, additional area to accommodate the algae farm was necessary (WRS Bioproducts Pty Ltd, 2023b).

The applicant is in the process of developing a commercial scale algae farm along with associated processing facilities. The project involves cultivation of unicellular green microalgae in open ponds filled with hypersaline water sunlight, nutrients and trace elements. The pond water is pumped to the harvesting facility where algae is separated and harvested. The algal concentrate is then 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 (WRS Bioproducts Pty Ltd, 2023b).

DA under the *Planning and Development Act 2005* (issued by the City of Karratha) is a relevant authorisations required for the proposed clearing. WRS Bioproducts Ltd was issued with the DA on the 28 November 2023 for an Algae farm, subject to number of conditions. The conditions of the DA requires that the WRS Bioproducts provide the following management plans:

- Stormwater management plan
- Construction environmental management plan
- Operational environmental management plan

The total area of the proposed clearing area is consistent with the area applied to the Shire of Karratha for a DA.

Contaminated sites

The application area intersects a contaminated site, and therefore was reported as a possible contaminated site – investigation required under the CS Act on the 16 January 2023. Advice was sought from department's Contaminated Sites Branch (CSB) who advised that the land had been used as a purpose-built evaporation facility for solar salt manufacturing, for approximately 53 years since 1968. The quality of soil, groundwater, surface water and sediment in the ponds and channels used for solar salt manufacturing is unknown. Additionally, a disposal channel for bitterns is present on Lot 267, discharging into Nickol Creek. Surface water investigations carried out in 2010 found that metal (lead) was present at concentrations exceeding assessment levels for fresh water and marine water ecosystems relevant at that time. However, quality assurance and quality control sampling indicated that the result may have been due to sampling equipment contamination. No further surface water sampling and sediment quality sampling has been carried out in the area (DWER, 2024b).

Land within Lot 4229 on Deposited Plan 188048 and Lot 4202 on Deposited Plan 187755 have not been reported under the CS Act (DWER, 2024b).

CSB advised that, with regard to the above, this information should not have any implications for clearing native vegetation within the application area (DWER, 2024b).

Groundwater and Surface water Area

The application area is located within the Pilbara Groundwater Area and the Pilbara Surface Water Area proclaimed under the RIWI Act. Advice received from the department's North-West Water licensing team advised that abstraction of groundwater or surface water will not be undertaken and no permitting by the department for groundwater or surface water extraction under the RIWI Act required (DWER, 2023). However, A bed and banks permit is required under the RiWI Act as the proposed work includes interreference with a watercourse mapped within the application area (DWER, 2023). The department has granted the applicant with a permit to obstruct or interfere with the authorised activity being modification of 7 Mile Creek by diversion, on the 08 May 2024. The permit is valid until the 07 May 2026 (DWER, 2024a).

Acid Sulphate Soils

With regard to the high-moderate risk of ASS occurring within three metres of the surface, the nature of the clearing as well as the construction activities, including the establishment of bunds surrounding the algae ponds, it is not considered likely for the proposed clearing to disturb the soil depth where the acid sulphate soils are deposited.

According to the Environmental management plan, the excavation will be limited to the borrow pits and Acid sulphate soil management strategies will be employed, including excavated material being lime dosed immediately following excavation to neutralise the potential for acid sulphate soil to form (WRS Bioproducts Pty Ltd, 2024).

Aboriginal sites

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Information	Description
Supporting document by MBS Environmental on behalf of WRS Biproducts (WRS Bioproducts Pty Ltd, 2023b)	This document provides background information about the project, information on the biophysical environment of the application area, project elements and potential impacts from the proposed clearing and an assessment against the ten clearing principles.
Stormwater management plan (WRS Bioproducts Pty Ltd, 2024)	According to the condition 5 of the DA, the applicant is required to prepare and submit a stormwater management plan for the works proposed. The applicant has forwarded a copy of this management plan to support the clearing permit application.
Environmental management plan (WRS Bioproducts Pty Ltd, 2024)	According to the condition 7 of the DA, the applicant is required to prepare and submit an environmental management plan for the works proposed. The applicant has forwarded a copy of this management plan to support the clearing permit application.

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characterises of the area proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

Characteristic	Details
Local context	The area proposed to be cleared is part of a 82.7-hectare expansive track of native vegetation within a tidal mudflat, located in the extensive land use zone of WA. The application area is situated to the immediate west of Nickol Bay, in the Pilbara region of WA. Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared, excluding areas intercepting the ocean) retains approximately 96.8 per cent of the original native vegetation cover.
Ecological linkage	No formal ecological linkages are mapped within the local area or the application area.
Conservation areas	Murujuga National Park is located approximately 3.8 kilometres north of the application area. An Unallocated Crown Land is located approximately 26 kilometres from the application area. No other conservation areas are mapped within the local area.
Vegetation description	Abydos plain – Roebourne vegetation association (tidal mud flats) comprises the location of the proposed clearing. mapped vegetation types within the application area are: • Beard Vegetation Association 127, which is described as a Tidal Mud Flat (Shepherd et al, 2001). • Beard Vegetation Association 589, which is described as Short bunch-grass savanna / Grass-steppe (Shepherd et al, 2001). The mapped vegetation types retain approximately 89 per cent and 99 per cent of the original extent respectively (Government of WA, 2019).

Characteristic	Details
Vegetation condition	Site consultation provided by MBS Environmental on behalf of the applicant and a review of the aerial photography of the application area, suggest that the vegetation condition ranges from Excellent (Trudgen, 1991) to Completely degraded (Trudgen, 1991) in the application area. The location of the proposed clearing within the short bunch-grass vegetation is likely to be in Excellent (Trudgen, 1991) condition, with some patches of vegetation within R40206 and the terrestrial portion of Lot 301 also likely to be in Very Good (Trudgen, 1991) to Excellent (Trudgen, 1991) condition. Remainder of the area are likely to be in Degraded (Trudgen, 1991) to Completely Degraded (Trudgen, 1991) condition due to disturbance. The full Trudgen (1991) condition rating scale is provided in Appendix D. The full survey descriptions are available in Appendix E.
Climate and landform	An arid, semi-desert climate characterises Karratha with distinct wet- and dry seasons on an annual cycle. The proposed clearing area experiences average maximum temperatures ranging from 26.5°C to 36.2°C, while average minimum temperatures range between 13.9°C to 26.9°C. The area experiences an annual average rainfall of 297.5 mm, most of which occurs during the wet season between December and March. Cyclones occur in the area between November and April. The dominant winds are typically easterlies or westerlies. The proposed clearing area is characterised by quaternary alluvial as well as older colluvial coastal and subcoastal planes.
Soil description	The application area is mapped as occurring within the Littoral Land System (DPIRD, 2019). This land system is defined as comprising bare coastal mudflats with mangroves on seaward fringes, samphire flats, sandy islands, coastal dunes and beaches.
Land degradation risk	Approximately 70 per cent of the Littoral system are highly susceptible to wind erosion if vegetation cover is disturbed. There is also potential for water erosion if soils are disturbed. The application area is located within an area with a high to moderate risk of acid sulphate soils occurring within 3 metres of the natural surface.
Waterbodies	The desktop assessment and aerial imagery indicated that a nonperennial minor river intersects the application area.
Hydrogeography	The application area is mapped within the Pilbara surface water area and ground water area, proclaimed under the RIWI Act. Groundwater salinity level (Total Dissolved Solids) is mapped as 1,000-3,000 milligrams per litre (fresh to brackish) (DWER-026).
Flora	According to the desktop assessment, 20 priority flora species were identified within the local area with the most abundant being *Terminalia supranitifolia* (41 recordings in the local area). The closest recorded species from the proposed clearing area is 11 hemed asp. Hamersley Station (M.E. Trudgen 11431).
Ecological communities	Priority Ecological Communities (PECs) – Horseflat Land System, and Roebourne Plains gilgai grasslands are mapped within the local area. Neither of these PECs are mapped within the application area. The Roebourne Plains gilgai grasslands is the closest PEC mapped from the application area, approximately 60 metres away from the application area.
Fauna	Primary fauna habitats in proximity to the proposed clearing area consist of mangroves, intertidal areas and mudflats. According to the desktop assessment, 56 conservation significant fauna species were recorded within the local area, which comprise of 44 bird species, 7 mammal species and 5 reptiles. The Northern quoll (*Dasyurus hallucatus*) has the highest number of fauna records within the local area. The application area does not contain suitable habitat for the northern quoll.

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.16
Vegetation association					
Abydos Plain -– Roebourne 127 *	177,749.75	159,595.04	89.79	3,703.79	2.32
Abydos Plain -– Roebourne 589 *	728,768.20	724,695.82	99.44	15,306.06	2.10
Local area					
50km radius	425026.15	411,373.78	96.8		

Pilbara

B.3. Flora analysis table

With consideration to the site characteristics set out above and relevant datasets (see Appendix F), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Eragrostis lanicaulis	Priority 3	N	N	Y	40.33	2	N/A
Stackhousia clementii	Priority 3	N	N	Y	3.64	4	N/A
Tephrosia rosea var. Port Hedland (A.S. George 1114)	Priority 1	N	N	Y	30.30	10	N/A
Terminalia supranitifolia	Priority 3	N	N	Y	4.17	41	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

B.4. Fauna analysis table

With consideration to the site characteristics set out above and relevant datasets (see Appendix F), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Ctenotus angusticeps	P3	Y	Y	10.93	6	N/A
Lerista nevinae	EN	Y	Y	24.37	90	N/A
Calidris ferruginea	CR	Y	Y	0.57	23	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Limosa lapponica	VU	Y	Y	1.76	48	N/A
Numenius madagascariensis	CR	Y	Y	1.76	39	N/A
Calidris canutus	EN	Y	Y	4.29	10	N/A
Ctenotus angusticeps	P3	Y	Y	10.93	6	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: A review of available databases determined 23 priority flora and no threatened flora species of conservation significance have been recorded within the 50-kilometre radius of the application area. No occurrences of the above species have been recorded within the application area. A review of these species' habitat requirements determined that the application area does not comprise suitable habitat for the flora species of conservation significance. No adverse impacts to the conservation status or distribution of any flora species of conservation significance are anticipated to result from the proposed clearing. No conservation significant ecological communities are mapped within the application area. The Priority one Priority Ecological Community, that is the Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands) is mapped approximately 60 metres to the west of the application area. Given the works within the application area are undertaken in accordance with construction/environmental management plans, it is unlikely that the proposed work will impact on this PEC. A weed management condition has been placed on the permit to manage potential impact of the introduction of weeds into adjacent vegetation.	Not likely to be at variance	No *Refer to Section 3.2.1 above.*
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."* Assessment: The area proposed to be cleared may provide foraging habitat for some bird species and serve as a stopover for some migratory birds. However, the habitat within the application area is not considered significant given the abundance of suitable habitat outside of the application area and the lack of previous records of conservation fauna occurring within the habitat similar to the application area.	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act. No threatened flora was identified within the local area.	Not likely to be at variance	No .
Principle (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."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community (TEC) and does not contain suitable habitat for TEC's that have been mapped within the local area.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: significant remnant vegetation and conservation areas		
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."* Assessment: The extent of the mapped vegetation types and the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance	No
Principle (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."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of conservation areas that are mapped within the local area.	Not likely to be at variance	No
Environmental value: land and water resources		
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."* Assessment: The 7 miles creek water course is mapped to the southern edge of the application area. The proposed clearing long this waterway is subject to a bed banks permit issued by the department. Given the permit, a stormwater management plan, environmental management plan and a construction management plan are prepared for the proposed work, the proposed work is unlikely to impact on- or off-site hydrology and water quality.	May be at variance	*Yes* *Refer to Section 3.2.2 above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are highly susceptible to wind and water erosion. Noting the location of the application area and the management measures that are implemented by the applicant, the proposed clearing is not likely to have an appreciable impact on land degradation.	At variance	Yes *Refer to Section 3.2.2, above.*
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."* Assessment: Given that the proposed clearing and construction activities are unlikely to intercept groundwater, as well as the implementation of mitigation measures with regard to land degradation, the proposed clearing is unlikely to significantly impact surface or ground water quality. However, there may be a minor short-term impact to surface water quality through sedimentation during clearing. These impacts can be mitigated through management conditions imposed on the permit.	May be at variance	Yes *Refer to Section 3.2.i, above.*
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."* Assessment:	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
The application area occurs within a tidal mudflat and therefore is susceptible to natural intermittent inundation. The proposed clearing is not considered to exacerbate the existing potential for flooding or water logging given the limited amount of native vegetation occurring within the application area.		

Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. excerpts from supporting documentation (WRS Biproducts, 2023b).

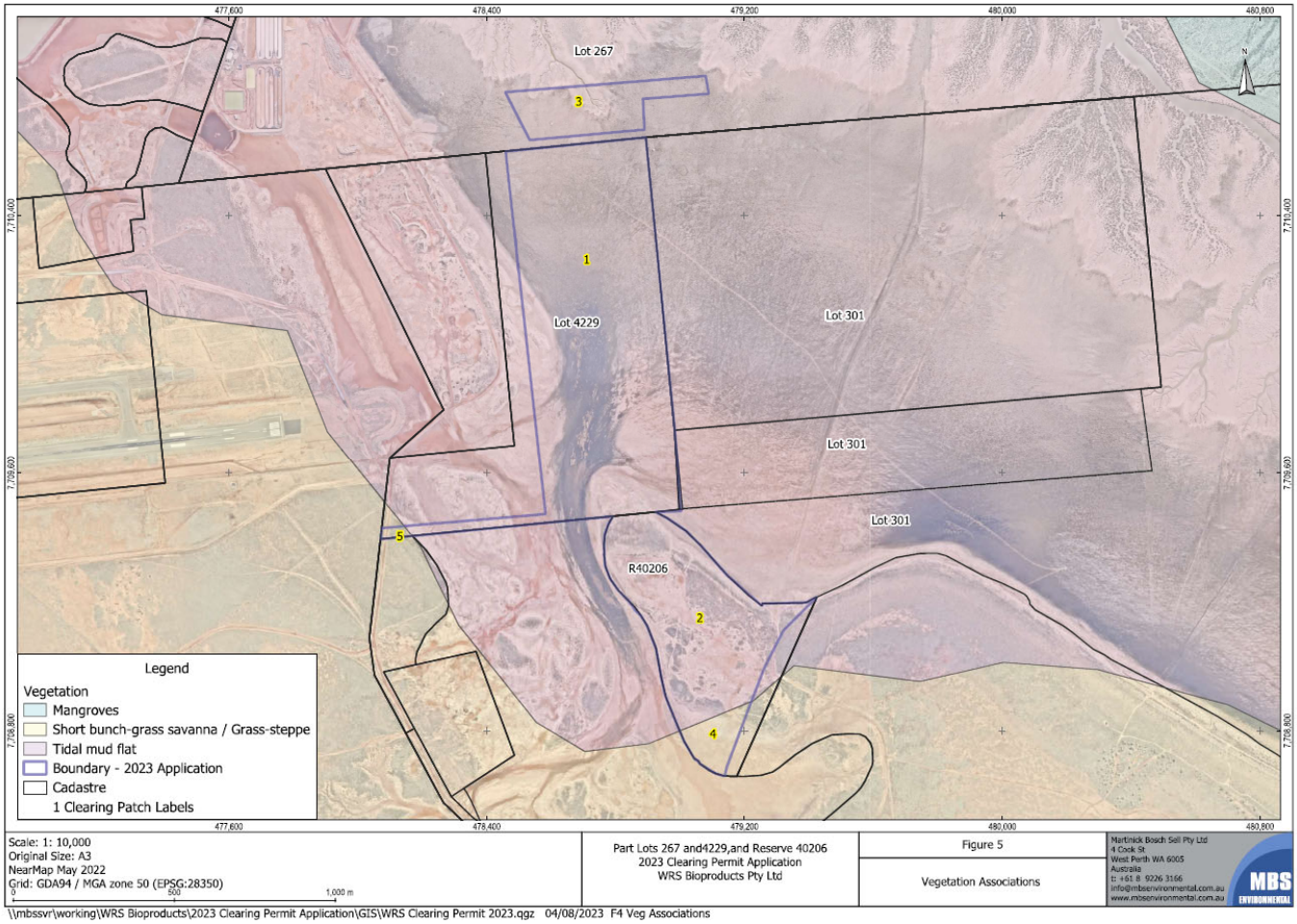

Figure 2: A map representing the vegetation mapping within the application area and its surroundings.

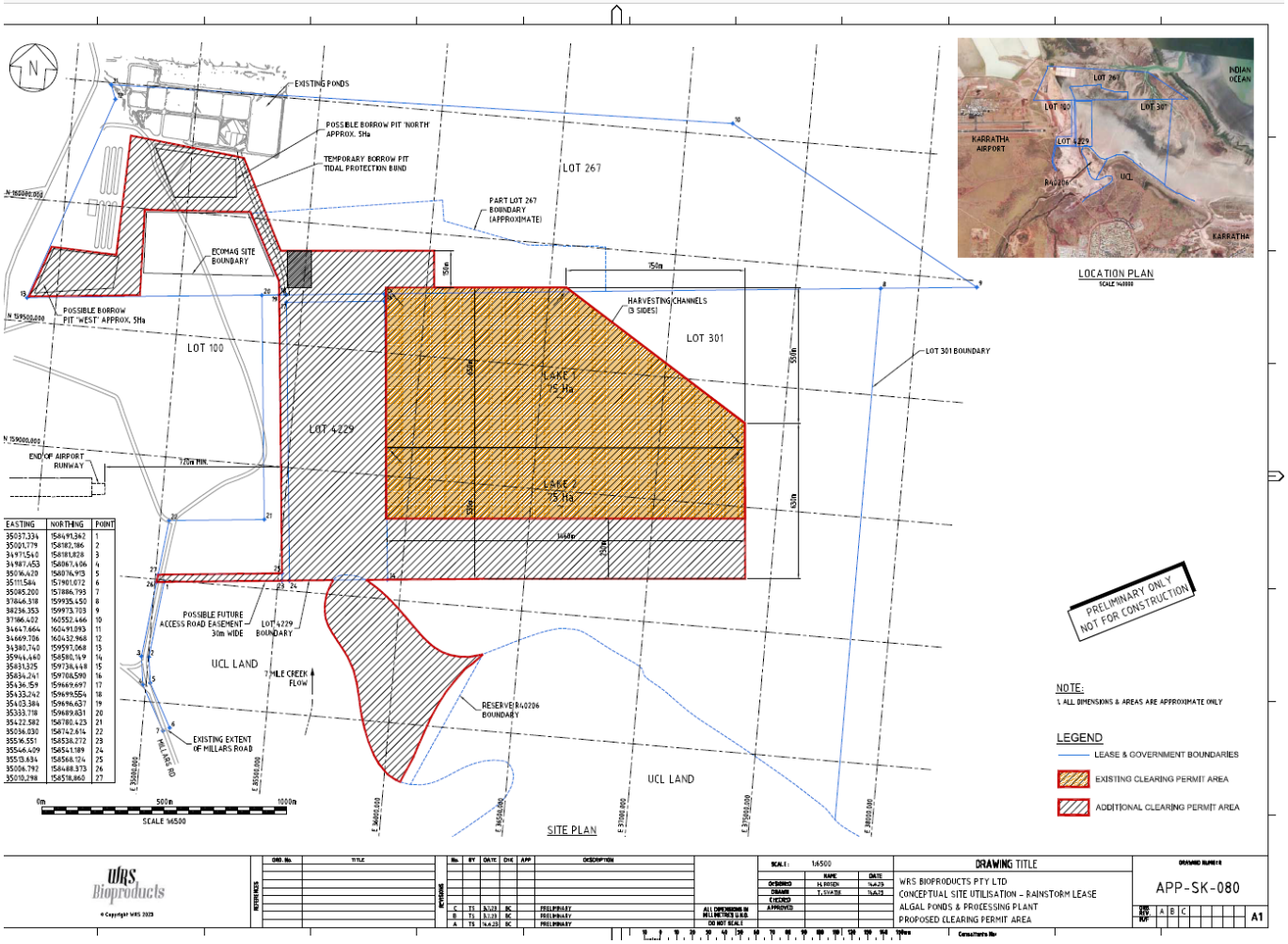

Figure 3: A map representing the extent of the proposed work.

Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)

- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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