GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9768/1
Permit Holder:	Fruitico Pty Ltd
Duration of Permit:	From 03 November 2023 to 03 November 2028

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 horticultural practices associated with the development for Gascoyne Food Bowl.

2. Land on which clearing is to be done

Lot 500 on Deposited Plan 412775, Inggarda

Lot 600 on Deposited Plan 420667, Inggarda

Lot 731 on Deposited Plan 418999, Inggarda and North Plantations

Lot 402 on Deposited Plan 419000, Inggarda and North Plantations

3. Clearing authorised

The permit holder must not clear more than 219.23 hectares of native vegetation within the area cross-hatched yellow in Figure 1 to Figure 4 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 03 November 2028.

PART II – MANAGEMENT CONDITIONS

5. 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.

6. 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.

7. Management of land degradation risks

The permit holder must commence horticultural activities no later than three (3) months after undertaking the clearing authorised under this permit.

8. Directional clearing

The permit holder must:

(a) conduct clearing activities in a slow, progressive manner towards adjacent *native vegetation*; and

(b) allow a reasonable time for fauna present within the area being cleared to move into adjacent *native vegetation* ahead of the clearing activity.

PART III - RECORD KEEPING AND REPORTING

9. 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 date horticultural activities commenced; (e) the size of the area cleared (in hectares); (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with *condition* 5; (g) actions taken to minimise the risk of the

No.	Relevant matter	Specifications
		introduction and spread of *weeds* in accordance with *condition* 6; and (h) direction of clearing in accordance with *condition* 8.

10. Reporting

The permit holder must provide to the *CEO* the records required under condition 9 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

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

10 October 2023

Schedule 1

The boundary of the areas authorised to be cleared are shown in the maps below (Figure 1 to 4).

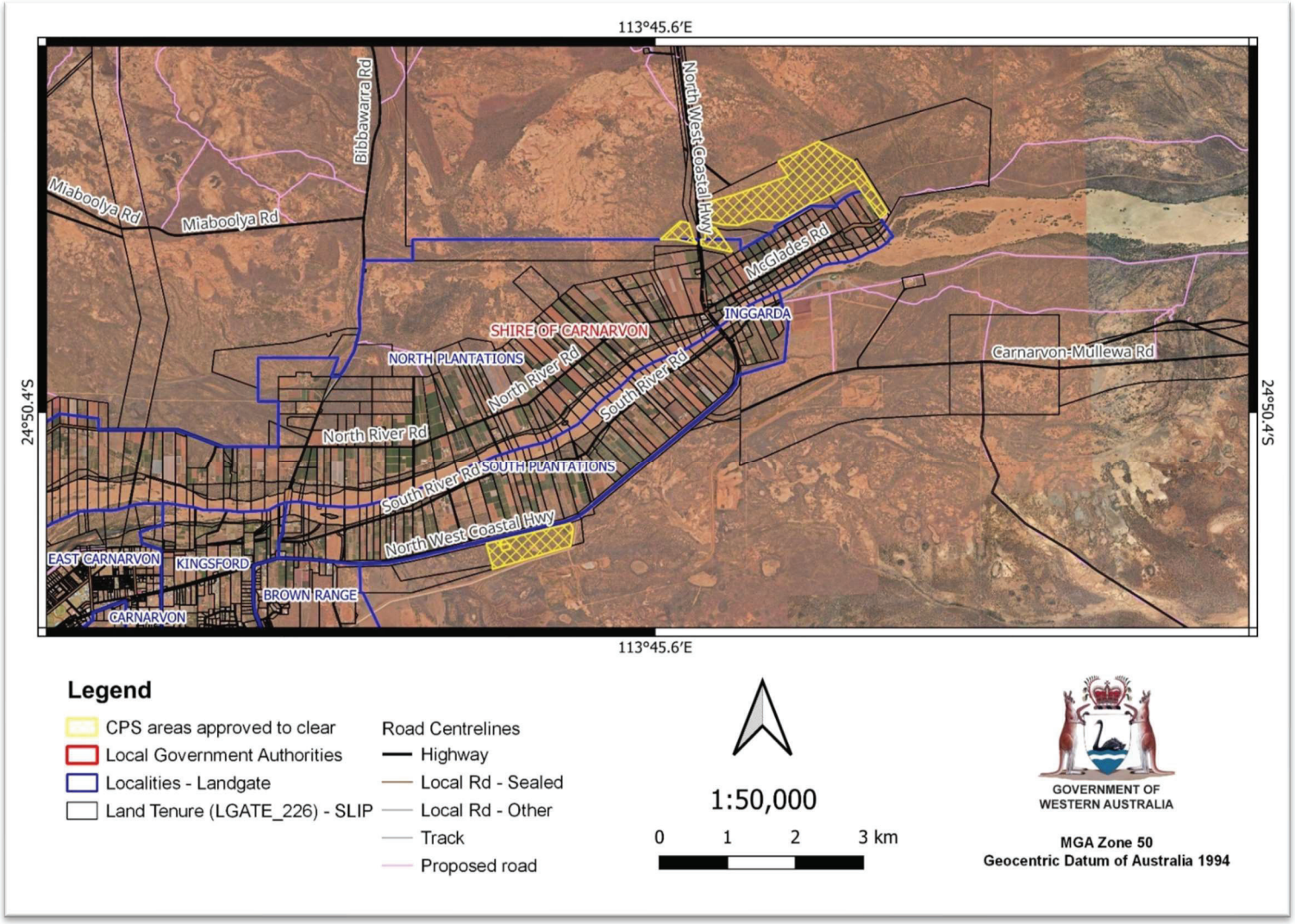

Figure 1: Map of the boundary of the areas within which clearing may occur

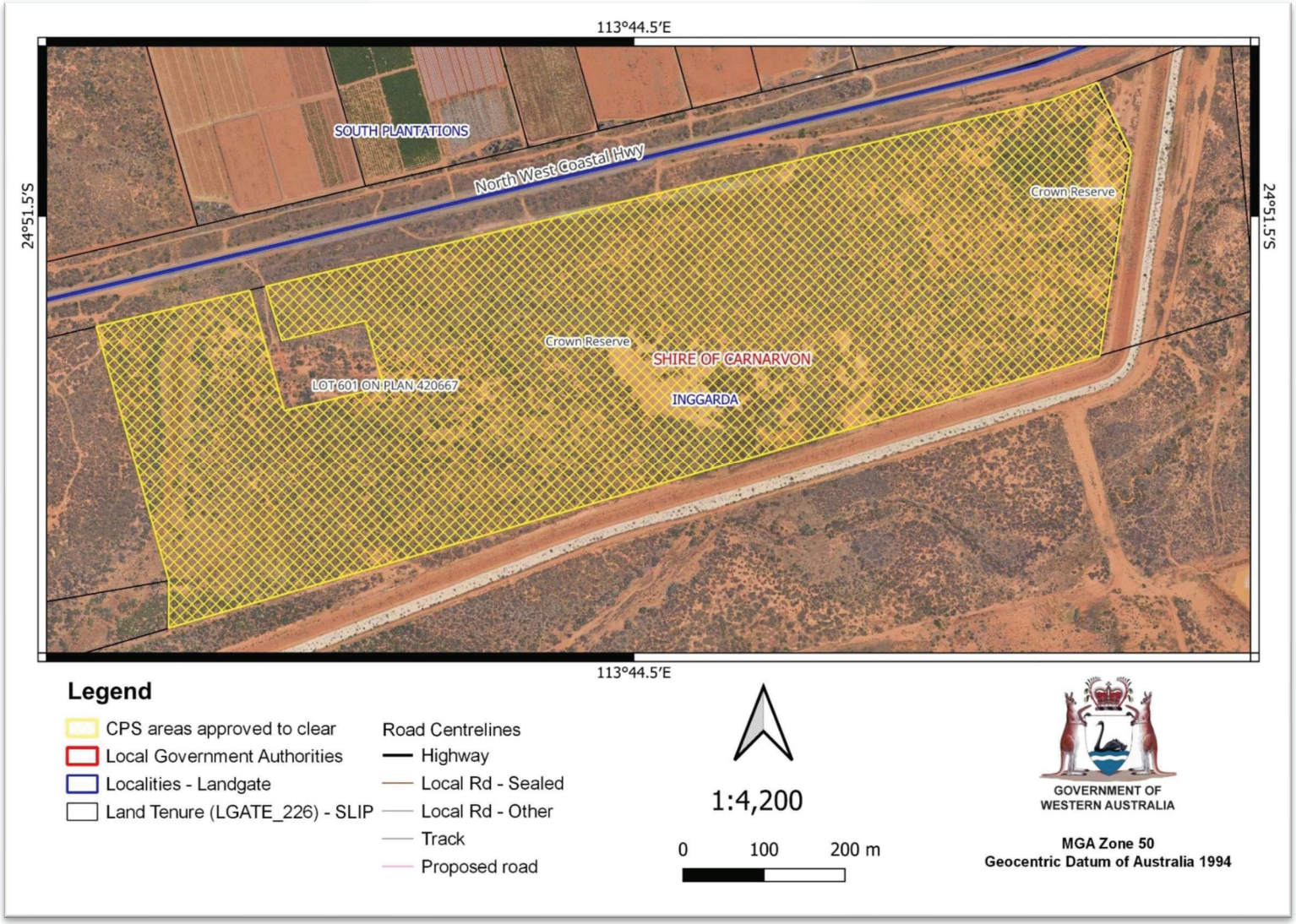

Figure 2: Map of Lot 600 on Deposited Plan 420667, Inggarda. The south-western area of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

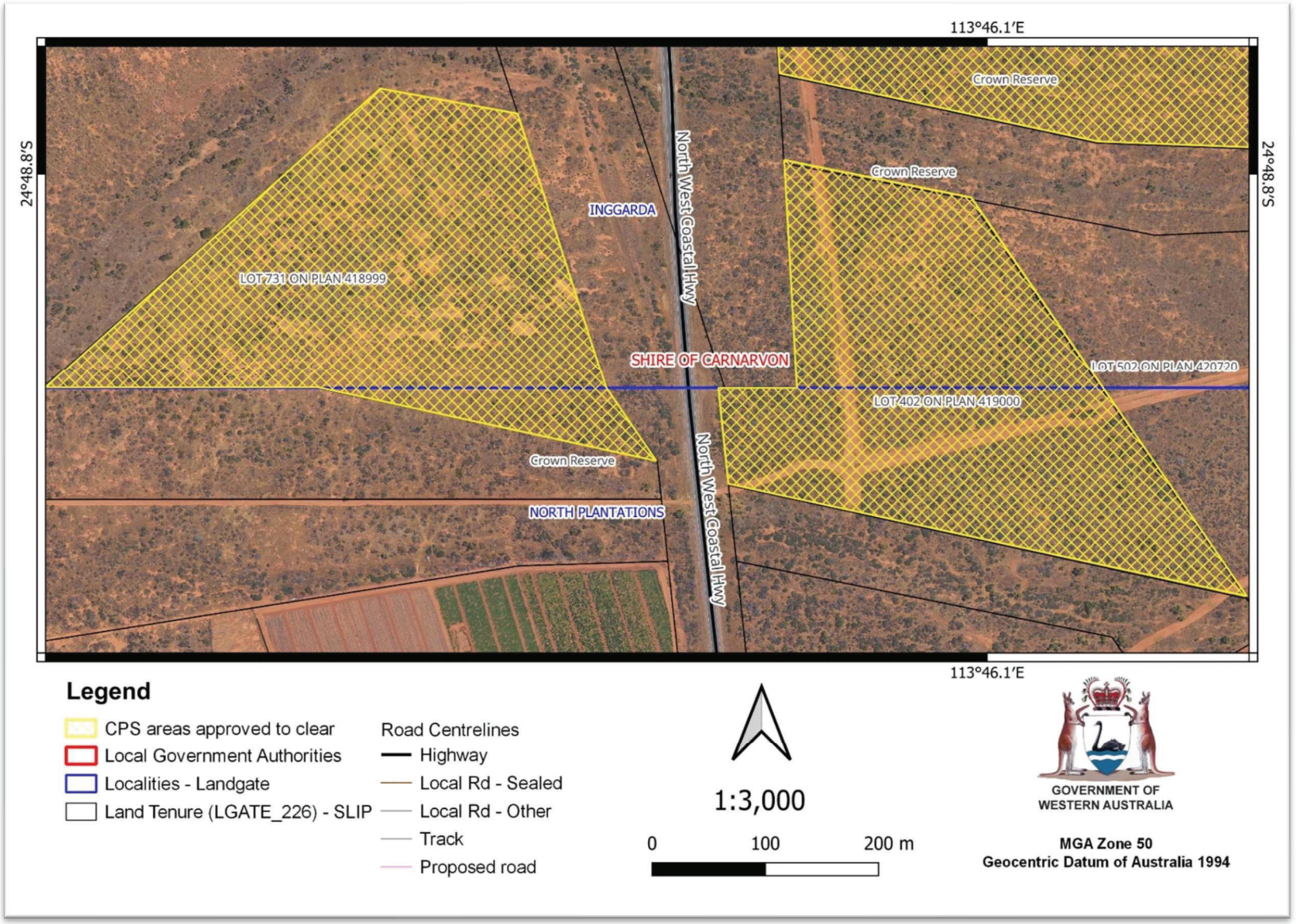

Figure 3: Map of Lot 731 on Deposited Plan 418999 and Lot 402 on Deposited Plan 419000, Inggarda and North Plantations. The most north-western areas of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

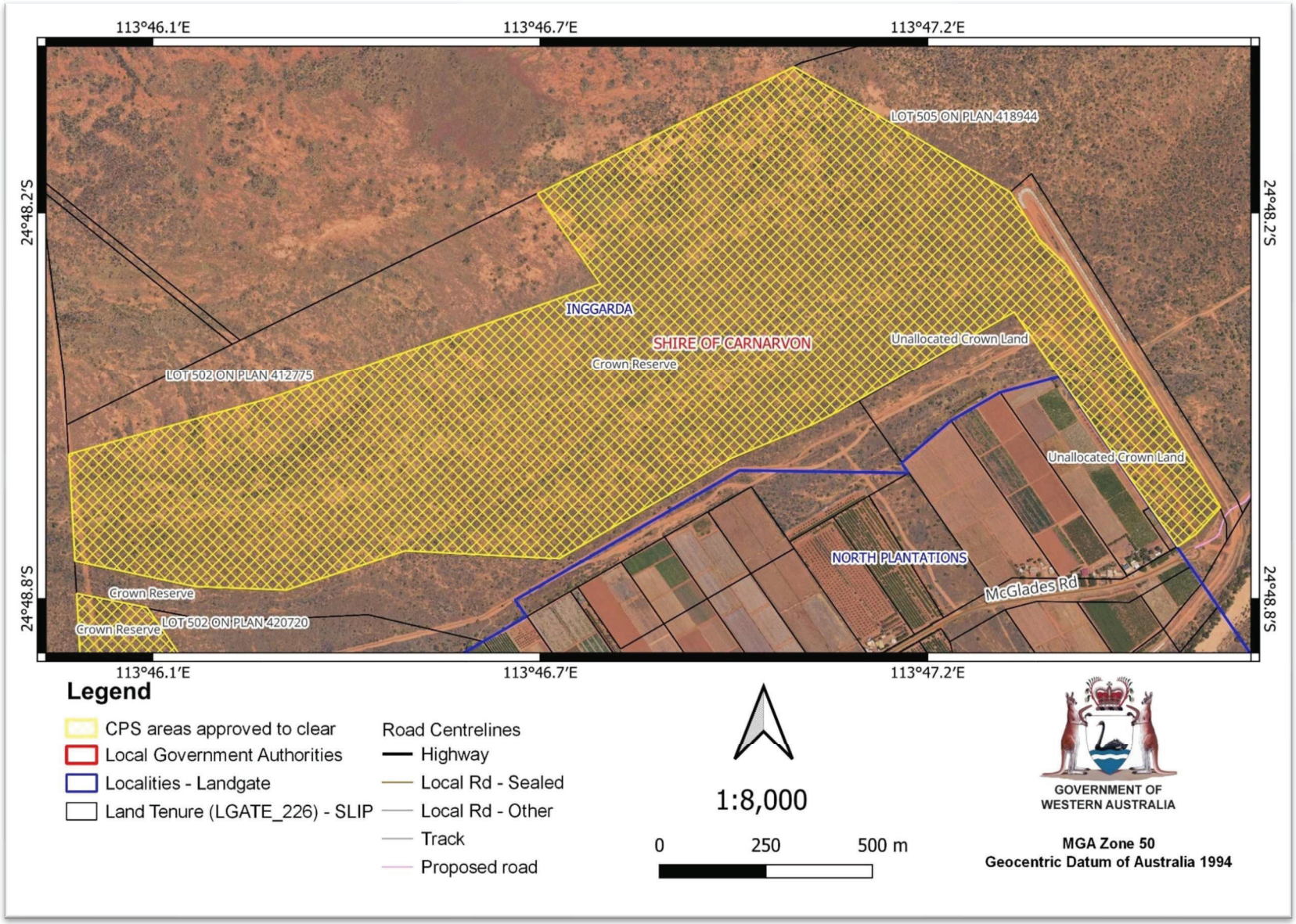

Figure 4: Figure 4: Map of Lot 500 on Deposited Plan 412775, Inggarda. the north-eastern area of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 9768/1
Permit type:	Purpose permit
Applicant name:	Fruitico Pty Ltd
Application received:	13 June 2022
Application area:	219.23 hectares of native vegetation
Purpose of clearing:	Horticulture
Method of clearing:	Mechanical and burning
Property:	Lot 500 on Deposited Plan 412775 Lot 600 on Deposited Plan 420667 Lot 731 on Deposited Plan 418999 Lot 402 on Deposited Plan 419000
Location (LGA area/s):	Shire of Carnarvon
Localities (suburb/s):	Inggarda and North Plantations

1.2. Description of clearing activities

The area proposed to be cleared is 219.23 hectares of native vegetation located between four parcels of land, on Lot 500 on Deposited Plan 412775 and Lot 600 on Deposited Plan 420667, Inggarda, and Lot 731 on Deposited Plan 418999 and Lot 402 on Deposited Plan 419000, Inggarda and North Plantations (see Figures 1-4, Section 1.5). The proposed clearing is to enable conversion of the application area to arable land, for the production of table grapes and other vegetable crops, as part of the horticulture development for the Gascoyne Foodbowl Development (Fruitico Pty Ltd (Fruitico), 2022).

1.3. Decision on application

Decision:	Grant
Decision date:	10 October 2023
Decision area:	219.23 hectares of native vegetation, as depicted in Figures 1 to 4 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 (DWER) 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.), the findings of flora and vegetation surveys, a fauna survey (see Appendix E), land

degradation advice provided by the Commissioner of Soil and Land Conservation (CSLC, 2022), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and other matters considered relevant to the assessment (see Section 3.3). The Delegated Officer also took into consideration that the land is being purchased and developed for intensive horticulture, as part of the Western Australian Government's Gascoyne Foodbowl Project with the objective to expand the Carnarvon horticulture industry (Fruitico, 2022). The development of this potential horticulture land is a key deliverable of this Gascoyne Food Bowl initiative which was implemented in 2008 under the Royalties for Regions scheme (CSLC, 2022).

The assessment identified that the proposed clearing may result in the following:

- may impact fauna utilising the application area at the time of clearing;
- may increase the risk of weeds spreading into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- potential for land degradation if land is not appropriately managed; and
- may impact the water quality within the Priority 3 Public Drinking Water Source Area (PDWSA) located on Lot 500 on Deposited Plan 412775, Inggarda.

After consideration of the available information, as well as the applicant's avoidance and minimisation measures (Section 3.1), the Delegated Officer considered that with appropriate management conditions, the proposed clearing is not likely to lead to an unacceptable risk to the environment. With the conditions imposed, impacts from land degradation, to the PDWSA or fauna present at the time of clearing will not likely be significant.

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

- avoid, minimise and reduce the impacts and extent of clearing.
- implement suitable weed management practices that are appropriate to mitigate the impact of spreading weeds into adjacent vegetation.
- must commence horticultural activities no later than three (3) months after undertaking the authorised clearing.
- required to adhere to the Water Quality Protection Notes and associated conditions, to reduce risks to the PDWSA
- undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

1.5. Site map

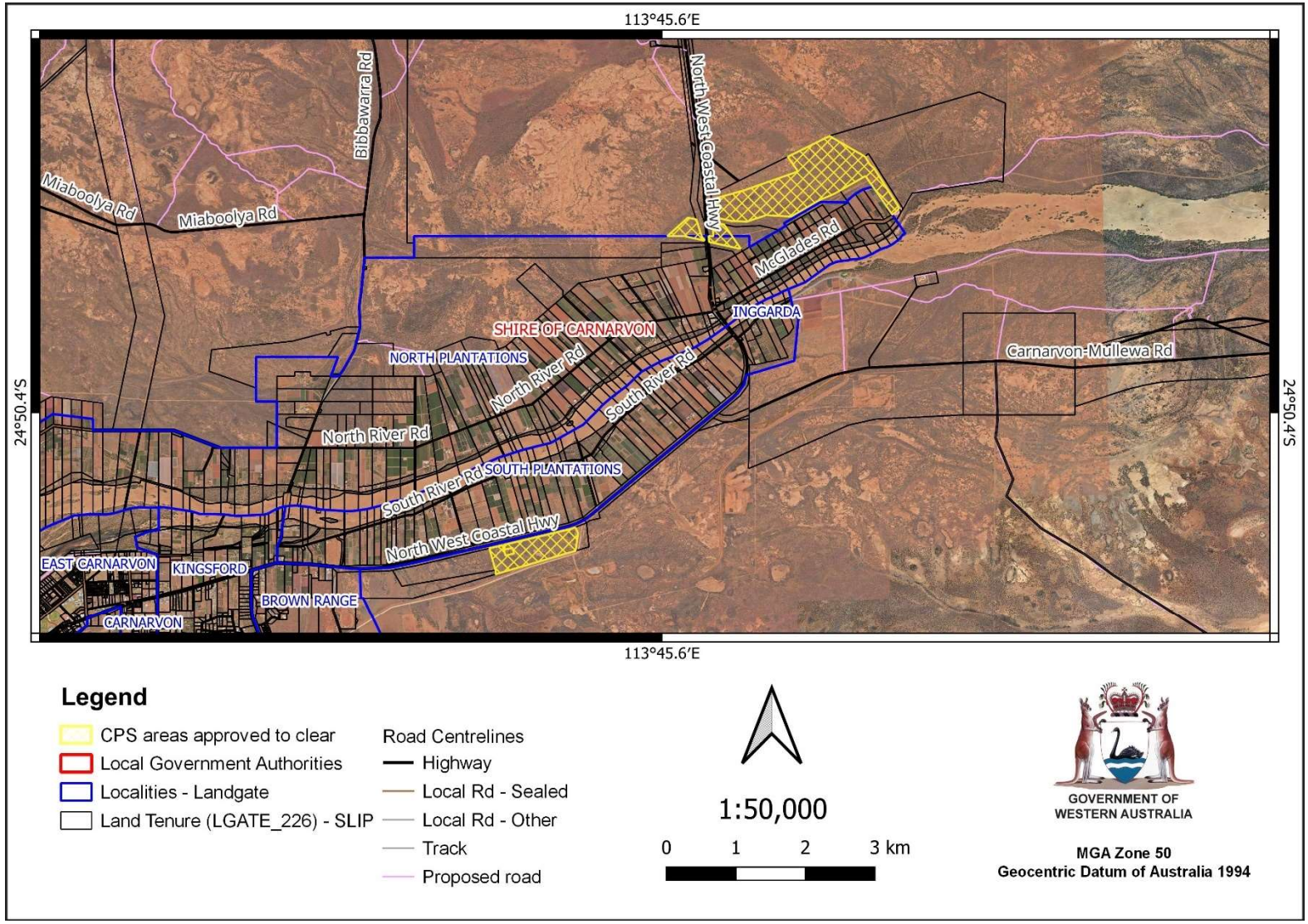

Figure 1: Map of the application area CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

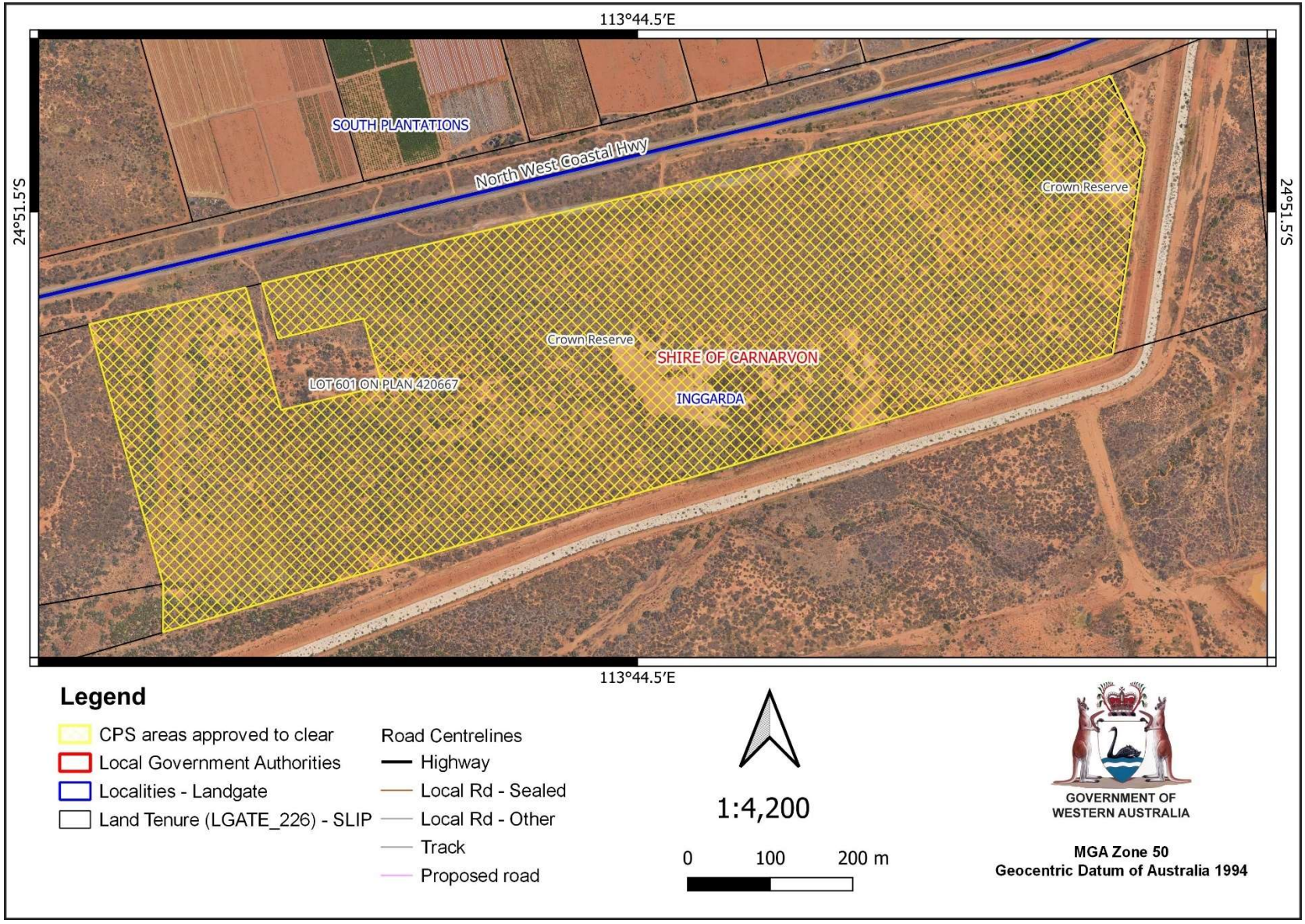

Figure 2: Map of Lot 600 on Deposited Plan 420667, Inggarda. The most south-western area of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

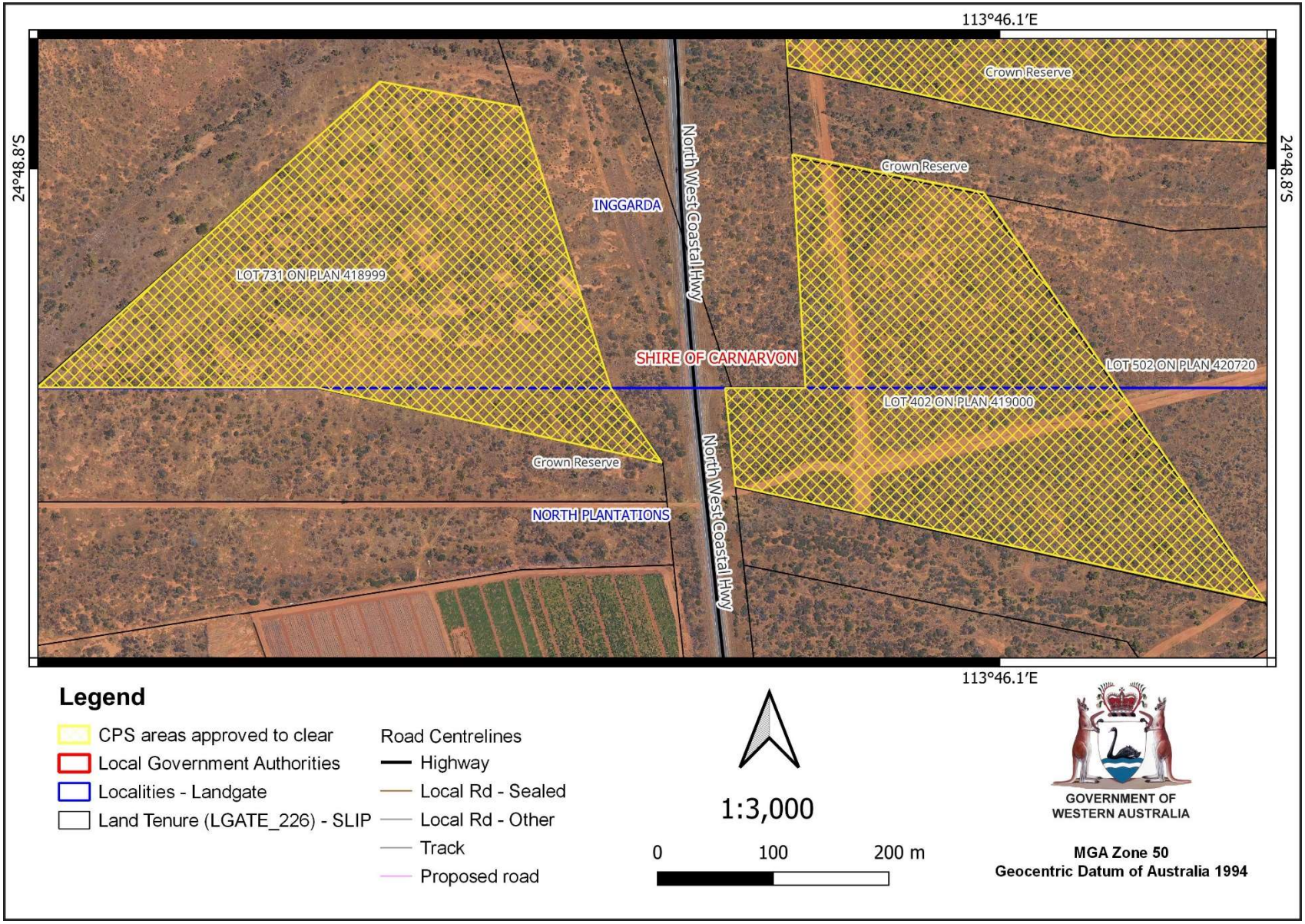

Figure 3: Map of Lot 731 on Deposited Plan 418999 and Lot 402 on Deposited Plan 419000, Inggarda and North Plantations. The most north-western areas of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

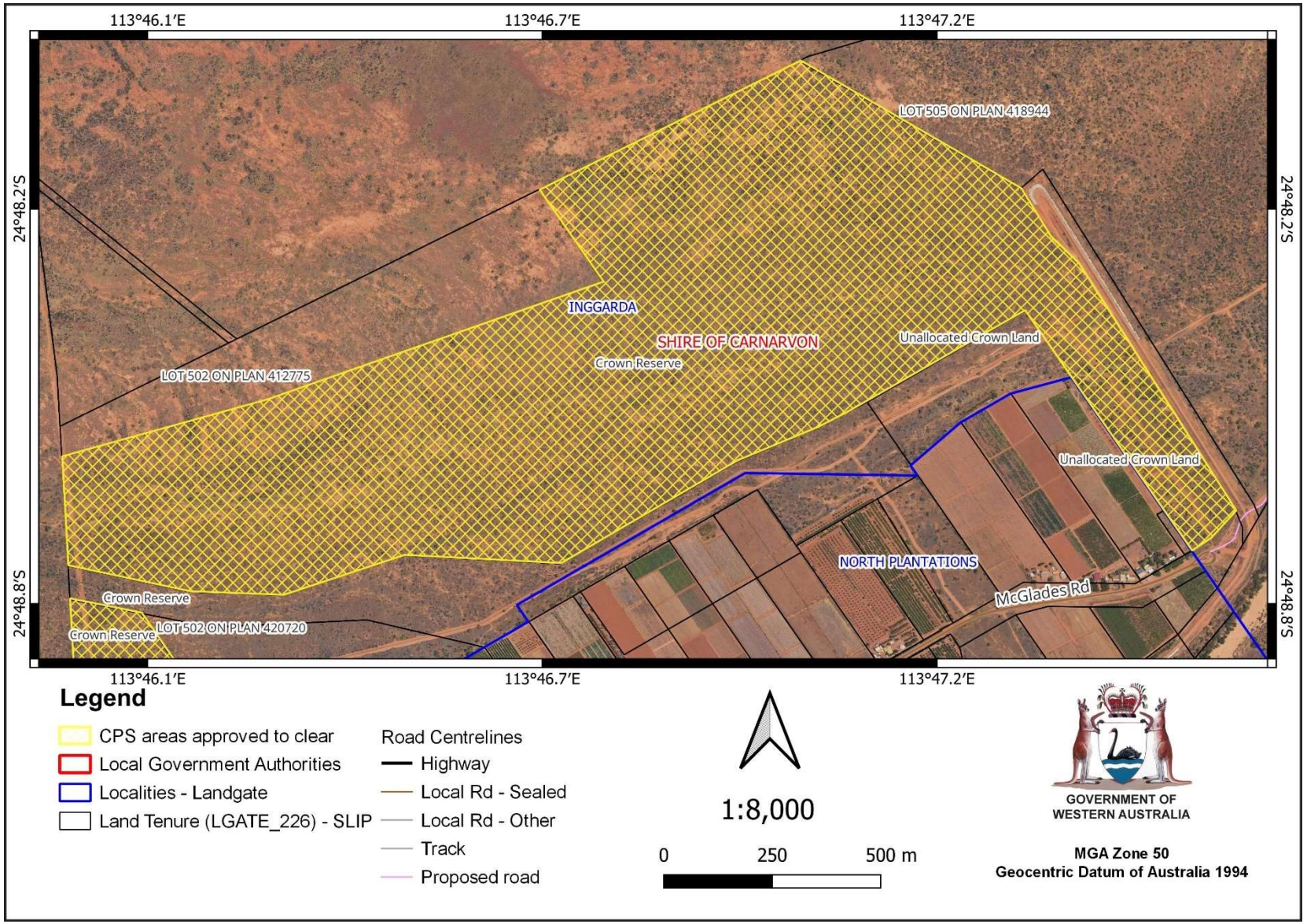

Figure 4: Map of Lot 500 on Deposited Plan 412775, Inggarda. the north-eastern area of clearing application CPS 9768/1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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)
- *Country Areas Water Supply Act 1947* (CAWS 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).

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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016).

3 Detailed assessment of application

3.1 Avoidance and mitigation measures

Avoidance

Fruitico provided evidence that avoidance measures have been taken to reduce and/or eliminate further risks to the environment.

- Fruitico does not apply granular fertiliser to the vines other than trace elements if required. Fruitico acknowledge that spreading of granule fertilizer is not best practice in Table grapes and is an inefficient method of application of nutrient to vines and therefore do not practice this application method (Fruitico, 2023b).
- Fertiliser is not applied when the soil profiles are full or when rainfall is forecast (Fruitico, 2023b).
- Fruitico has avoided the need to construct a dam. As an alternative, Fruitico are installing large water tanks as per all other growers in the area (Fruitico, 2023c).

Mitigation

Fruitico provided evidence that several measures have been taken to reduce and/or eliminate further risks to the environment.

- All pesticide applications made by Fruitico are made by trained and approved (Chemcert approved) applicators and all applications are made according to label applications. All labels and guidelines from the Australian Pesticides and Veterinary Medicines Authority (APVMA) are followed at all times, including spraying in suitable conditions (Fruitico, 2023c).
- All fertilisers are applied via micro drip systems and applied in consistent daily small applications to be kept in the rootzone of the vines at all times. Monitoring of this fertiliser in the rootzones is via Lysimeters placed throughout the vineyards which measure all applied water and fertilisers in the rootzones. The use of the Lysimeters also allows the measure of the nutrient in the lower root zones to prevent the risk of this nutrient entering the drainage system. (Fruitico, 2023c).
- Through soil and sap testing, nutrient applications are matched to the vines requirements (Fruitico, 2023b).
- Fruitico acknowledge the need to store diesel fuel at the location of the shed on the southern end of the property near McGlade road where the proposed shed and driveway access is located. This diesel storage tank will be 10,000 litre in capacity but will be in a self-bunded, new storage tank as per Australian standards, and the refilling area will be placed on a concrete pad. These mitigation measures will reduce the risk of rupture and spillage contamination (Fruitico, 2023c).
- The fertilisers are stored and batched in sheds with concrete floors, so the risk of export of nutrients from spillage are very low on this site (Fruitico, 2023b).
- Given the sensitive nature of the PDWSA located in the eastern portion of Lot 500, Fruitico propose to bund the fertiliser tank area, meaning any possible fertiliser tank leak or rupture will be contained within the bund

and can be recovered. Storage tanks meet Australian standards and are self-bunded, doubled skinned tanks to meet these requirements (Fruitico, 2023c).

- The PDWSA located in a portion of Lot 500 is now protected by the new levee bank system, meaning there is no chance of overland flow across this area. Inundation risk from flooding is very low reducing the risk of inundation flushing any nutrient into the sub soil (Fruitico, 2023b).
- The grading of Lot 600 to follow land contours and natural drainage lines will be established once clearing is done and detailed surveys can be carried out to determine the natural flow direction for this water (Fruitico, 2023c).

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 that the impacts of the proposed clearing may present a risk to conservation significant fauna and flora, land degradation and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.1.1. Environmental values (flora) - Clearing Principle (a)

Assessment

A total of six vegetation types were recorded within the Carnarvon horticulture expansion survey area of 921.6 hectares. Three vegetation types, ASL (1) Acacia shrubland, CDSL (6) Chenopodium and Duma shrubland and CSL (4) Chenopod shrubland were recorded within the application area (Appendix E: Table 2 and Figure 4). The condition of this vegetation was given a quality score of 2 – pristine or nearly so and 3 – shows signs of disturbance, as the structure of the vegetation has been altered from ongoing disturbance from livestock and human activities (Strategen, 2017; see Appendix E: Table 1 – Vegetation condition rating scale, Appendix E: Figure 9).

According to available databases, nine priority flora species have been recorded within the local area (50 kilometre radius from the application area). The vegetation and/or soils present within the application area have the potential to provide suitable habitat for the following species (Appendix B.3.):

- *Abutilon* sp. Quobba (H. Demarz 3858) (P2)
- *Chthonocephalus tomentellus* (P2)
- *Schoenia filifolia* subsp. a*renicola* (P1)
- *Sporobolus blakei* (P3)
- *Rumex crystallinus* (P2)

One priority flora species, *Corchorus congener* (P3), was potentially recorded during the Carnarvon horticulture expansion survey. Subsequent review of the specimen confirmed that the record was an *Acacia sp.,* and not *Corchorus congener* (P3) as initially thought (Strategen, 2017). No threatened or priority flora species were recorded during the surveys (Strategen, 2017; 2019; Strategen-JBS&G, 2020). The surveys were completed during the prime flowering time for the majority of the conservation significant species potentially occurring within the survey area (Strategen, 2017; 2019; Strategen-JBS&G, 2020). The survey was not undertaken at an optimal time for *Abutilon sp. Quobba* (H. Demarz 3858) (P2), which flowers between July to September. However, the soil type preferred by this species is sandplain, and along dune ridges (Western Australian Herbarium, 1998-), which is not present within the application area. It is not likely that the application area contains habitat for this species. If present, the remaining above-listed priority flora species would have likely been identified at the time of the survey. It is not likely that the proposed clearing will significantly impact on habitat availability of conservation significant species that may be present within the local area.

Conclusion

Based on the above, the Delegated Officer determined that the proposed clearing is not likely to impact on vegetation that is significant habitat for flora species, or impact on an area that contains high biodiversity, due to the extensive habitat available in the local area.

Conditions

No flora management conditions are required.

3.1.2. Environmental values (fauna) - Clearing Principles (a and b)

Assessment

Desktop Analysis

Coastal and wetland birds

The majority (54 taxon) of the conservation significant fauna species recorded in the local area (50 kilometre radius of the application area) have been recorded as being migratory wetland and shore birds (see Appendix B.4). The McNeill Claypan System is known to support a range of migratory water birds during long periods of inundation following heavy rains, or as a result of Gascoyne River flood events. The application area is mapped as Gascoyne Marshes 308, which was confirmed in Strategen's 2019 report (Strategen, 2019). This vegetation does not indicate wetland or riparian vegetation, therefore, the application area is unlikely to provide significant habitat for migratory wetland and shore bird species. In addition, the southern levee bank that borders Lot 600 to the south and east and northern levee bank which borders Lot 500 starting at the end of McGlades Road, now limits the water that enters the application areas during flood events, further reducing the suitability of these areas as a habitat for migratory birds.

Terrestrial birds

An additional three conservation significant birds were recorded in the local area.

Amytornis textilis textilis (Western grasswren) was once distributed across southern western Australia and is now confined to the Shark Bay region (DEH, 2006). Since 1910 this species has retracted in its range considerably (over 90 per cent), most likely due to over grazing (DEH, 2006). It is unlikely this species will be impacted by the proposed clearing.

There are three records for *Leipoa ocellata* (malleefowl) in the local area. These sightings are undated and have been on record since before 1984 (Benshemesh, 2007). Over the past century Malleefowl has contracted its range particularly in arid areas, and since 1981 Malleefowl has further contracted its range by 28 percent in Western Australia (Benshemesh, 2007). Given that Malleefowl has not been recorded in the local area for approximately 40 years, it is unlikely this species will be impacted by the proposed clearing.

Two birds of prey, *Falco peregrinus* (Peregrine falcon) and *Falco hypoleucos* (Grey falcon) have also been recorded within the local area. These species may utilise the application area for foraging prey such as small birds or mammals. However, given the land to the south and east of the southern application area and the north and east of the north-eastern application area, is adjoined by a large expanse of relatively undisturbed native vegetation, the proposed clearing is unlikely to significantly impact the available foraging habitat for the above species.

Other conservation significant Fauna

Egernia stokesii badia (western spiny-tailed skink) is associated with arid low heath with areas of *Spinifex longifolius* and is known to shelter in fallen logs and under loose sheets and boulders of limestone and in crevices formed by solution erosion of caprock (DEC, 2012b). It is noted that the application area may comprise some elements of the known habitat for this species. Western spiny-tailed skink has been recorded from a cluster of three records occurring approximately 35 kilometres southwest from the application area. This species has also retracted in its range (DEC, 2012b) and records in the local area represent the most northerly extreme of the species distribution (DEC, 2012b), therefore it is unlikely to occur within the application area.

Idiosoma incomptum (Carnarvon shield-backed trapdoor spider) is known from three records, in generally undisturbed vegetation. According to the known distribution of this species, the records occurring within the local area represent the western edge of the population range for this species (Rix *et al.* 2019). The above records occur within floodplains with associated sandy soils and alluvial plains. Soils mapped within the application area are composed of reddish-brown earthy loams. The ground layer vegetation proposed to be cleared is dominated by buffel grass, which is an aggressive introduced grass that tends to cover the ground with dense tussocks, unsuitable for the Carnarvon shield-backed trapdoor spider.

Fauna Survey

A fauna assessment report was submitted by the applicant that reported on the desktop and survey findings of field investigations that were undertaken by Bamford Consulting Ecologists from the 7 to 15 November 2016. The sampling sites were located throughout the Carnarvon horticulture expansion area, four of which were located within the application area for CPS 9768/1 (Pitfall traps - Site 5-1, 5-10, 6-1, 6-10, 7-1, 7-10, 8-1 and 8-10, as well as a motion sensitive camera at Site 5, 6, 7 and 8) (Appendix E: Figure 10) (Bamford Consulting Ecologists, 2017). A summary of the findings of the fauna survey is below.

*Leipoa ocellata (*Malleefowl) (VU)

The Malleefowl is known from mallee eucalypt woodlands, and dense *Acacia* shrublands. No mounds were recorded during the field survey. Carnarvon represents the northern limit of this species' distribution. Several historical records around Carnarvon are over 100 years old according to database searches. The closest recent recorded mounds are located approximately 200 kilometres south, from the Shark Bay area (Bamford Consulting Ecologists, 2017 and mapped on the Atlas of Living Australia). Some areas of Acacia thicket (Vegetation substrate association (VSA) 2 – approximately three kilometres north of the application area) within the survey area represent potentially suitable vegetation. However, the low elevation, alluvial topography and fine clay substrate, lacking gravel or pebble, is considered as a marginal or non-preferred area for nest mounds. Due to the northerly location of the survey area, the Malleefowl is considered to occur rarely as a vagrant (Bamford Consulting Ecologists, 2017).

Pandion cristatus (eastern osprey) (MI)

A common and widespread coastal species that also occurs along estuarine and riparian near-coastal areas. It was recorded along the Gascoyne River during the survey and is likely to nest locally in power poles or other tall infrastructure. The survey area lacks suitable open water for hunting and tall nesting structures, but due to local occurrence, the species is considered to be an irregular visitor (Bamford Consulting Ecologists, 2017).

Falco peregrinus (Peregrine falcon) (OS/MI)

This species is known to occur over a wide range of environments across Australia. Preferred nesting locations include a range of elevated locations with steep bisected topography such as rocky hills, breakaways, cliffs and high artificial structures. They will also nest in very large, horizontally-aligned tree hollows, and in old Raven nests in tall trees (Bamford Consulting Ecologists, 2017). The survey area lacks elevated landscapes and tall trees, and is marginal nesting habitat at best, but provides habitat for hunting (Bamford Consulting Ecologists, 2017).

Falco hypoleucos Grey Falcon (VU)

This species has an extensive but sparse distribution through much of northern Australia. It has been recorded in the wider Carnarvon area including along the Gascoyne River. The Acacia dominated shrublands and woodlands within the project area is potential habitat and proximity to Gascoyne River means that this species potentially visits the site on at least an irregular basis (Bamford Consulting Ecologists, 2017).

Hirundo rustica (barn swallow) (MI)

This species is regular in small numbers as a non-breeding summer migrant across northern Australia, and often occurs in association with man-made structures. It has previously been recorded in the Carnarvon region.

Migratory Waterbirds

This group includes an ibis, two egrets, two terns, and 32 waders (shorebirds) listed as Migratory under federal and/or state legislation and known to occur in the region. A number of species in this group were recorded outside the survey area but within the wider Carnarvon region and are included due to their potential local occurrence in claypan areas located in close proximity to the application areas, which are located approximately three kilometres north of the application area (Appendix B.4). These local claypans are extensive and expected to flood occasionally, providing shallow foraging habitat for a range of wetland species, any of which may occur as vagrants (Bamford Consulting Ecologists, 2017).

Amytornis textilis textilis (western grasswren) (P4)

This species is rare and has a patchy distribution restricted to the Carnarvon Basin area from Shark Bay north to about Exmouth. Whilst not expected to be a resident species of the survey area, it may visit due to local occurrence around Carnarvon and available open *Acacia* shrub land and grassy habitats in the application area (Bamford Consulting Ecologists, 2017).

Conclusion

Although recorded in the local area, a number of conservation significant species have since retracted from the local area. Therefore, the proposed clearing is unlikely to impact available habitat for these species. Due to unsuitable soil conditions and the dominance of buffel grass, the application area is unlikely to provide habitat for the Carnarvon shield-backed trapdoor spider. Barn swallow, fork-tailed swift, Peregrine falcon and grey falcon may utilise the application area for foraging and hunting prey, however, given the extent of relatively undisturbed vegetation in adjacent areas, the proposed clearing is unlikely to significantly reduce available feeding habitat.

Based on the above assessment, it is unlikely the clearing will significantly impact conservation significant fauna. The potential direct impact to fauna present at the time of clearing may be managed by the implementation of a fauna management condition of directional clearing. Weed management will also assist in ensuring that the adjacent fauna habitat is not impacted by the proposed clearing.

Conditions

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

- Clearing shall be undertaken in a slow, progressive manner in one direction to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- Implement weed management measures to mitigate impacts to adjacent vegetation.

3.1.3. Environmental values (land degradation and flooding) - Clearing Principles (g and j)

Assessment

The Commissioner of Soil and Land Conservation (CSLC) advised that the application areas of CPS 9768/1 may be at risk of land degradation (flooding, salinity, waterlogging and inundation) if cleared of vegetation. However, the risks are manageable using standard soil conservation measures (CSLC, 2022).

The risk of flooding on Lot 500 on Deposited Plan 412775 and Lot 600 on Deposited Plan 420667, Inggarda, has been reduced by the construction of the McGlades Road and Nickol Bay levee banks, respectively. However, the Lots may be subject to flooding during major flood events if the levee banks are breached (CSLC, 2022).

The clearing and development of 219.23 hectares of land is likely to cause increased burrow pits and drainage depressions which already exist on the properties, leading to increased risk of waterlogging and inundation. However, for horticultural purposes it is unlikely to result in land degradation with good management practices (CSLC, 2022). Waterlogging and inundation can be reduced through levelling and grading following soil conservation principles (Parr, 2003). This is especially relevant within Lot 600 (CSLC, 2022).

Although many soils in the application area have moderate to highly saline subsoils, they can be successfully ameliorated through leaching and the application of gypsum. Earlier land capability assessments did not take into consideration the potential for amelioration (CSLC, 2022).

The light to medium textured soils in the northern Lots 500, 731, 402, have a high capability for annual and perennial horticulture. The risk of salinity (subsoil salts) can be mitigated through leaching and the application of gypsum. Areas under development should be levelled and graded to reduce waterlogging and inundation (CSLC, 2022).

The southern application area, Lot 600, has a fair to high capability for the proposed land use. The heavy textured soils in this area may require amelioration with gypsum to support the leaching of subsoil salts. The area should be levelled and graded to reduce waterlogging and inundation (CSLC, 2022).

Fruitico confirmed that the horticulture crops they have selected are suitable for the soil types associated with the proposed location. The cultivation system is in ground with initial paddock preparation being ripping, cultivation and application of products for soil amelioration. After initial set up no cultivation will be required as permanent cover crops will be sown to maintain soil health throughout summer. All crops will be grown in a manner that the canopies are maintained throughout the growing season. All winter pruning will be mulched back into the soil to build carbon capacity in the soils (Fruitico, 2023c).

Conclusion

Based on the above assessment and associated land management practices proposed by the permit holder, the clearing and development of 219 hectares of land, for horticultural purposes is unlikely to result in land degradation. To minimise the risk of land degradation and extended exposure of bare soils, the permit holder must commence horticultural activities no later than three (3) months after undertaking the authorised clearing.

Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- The permit holder must commence horticultural activities no later than three (3) months after undertaking the authorised clearing.

3.1.4. Environmental values (public drinking water source area) - Clearing Principle (i)

Assessment

A small portion (~7.7 hectares) of the application area located within Lot 500 on Deposited Plan 412775 is mapped within the Carnarvon Water Reserve, constituted under the CAWS Act. This portion of the application area was originally allocated as a Priority 1 (P1) PDWSA (DWER, 2022). The objective of P1 areas is to avoid unnecessary water quality contamination risks (DWER, 2023a). At the time of the application being submitted, the proposed works was not supported in the P1 area, consistent with PDWSA policy.

DWER Water Source Protection Planning (WSPP) and Native Vegetation Regulation (NVR) met with the Department of Primary Industries and Regional Development (DPIRD) to work towards finding compatible uses for the P1 land. After further investigation and considering additional information supplied by the applicant, WSPP determined that the land priority should be considered as P3 and that the application can be supported, due to (DWER, 2023a):

- The identification and release of land was the result of a government-led strategic planning process. This land is held by DPIRD;
- The Gascoyne Food Bowl District Structure Plan and local water management strategy were consulted with DWER in 2016 and were supported at the time;
- The proposed land uses are consistent with the current zoning ('priority agriculture') in the local planning scheme;
- An internal hydrogeological assessment indicates this land is not highly connected to the aquifer and therefore activities do not pose a significant risk of contamination; and
- The risks to groundwater should be managed through best practice management conditions.

WSPP proposed that the next review of the Carnarvon Water Reserve drinking water source protection plan reflects Lot 500 as PDWSA Priority 3 (P3), in recognition of the history, strategic planning and the updated local planning zoning. The objective of P3 areas is to manage water quality contamination risks (DWER, 2023a). The small portion (~7.7 hectares) of the application area located within Lot 500 has now been reassigned to a P3 (Figure 5), with the proposal now being consistent with PDWSA policy.

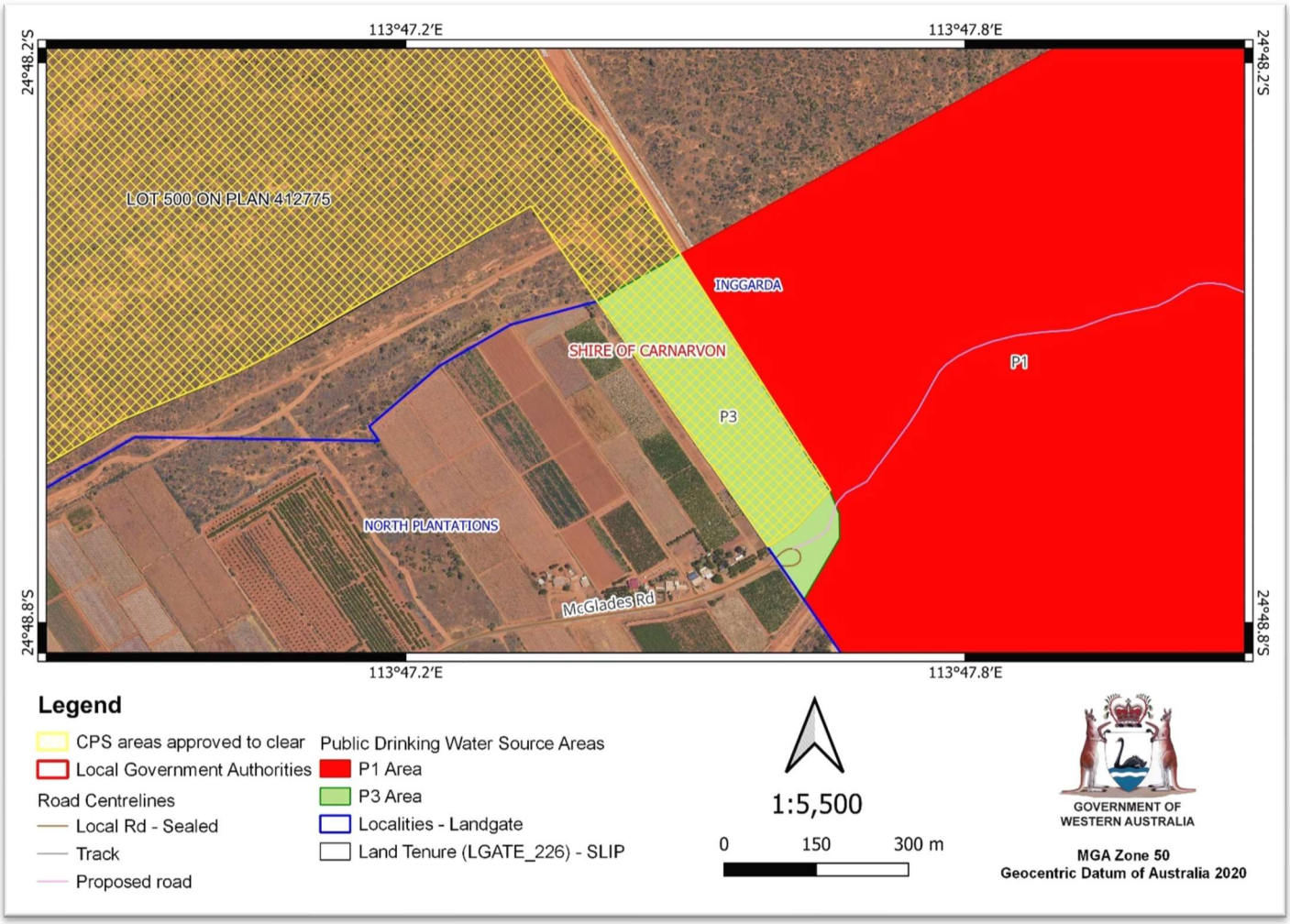

Figure 5: Map showing the area reassigned from a Priority 1 PDWSA to a Priority 3 PDWSA, during the time the assessment of the application was taking place (DWER, 2023a)

According to *Water Quality Protection Note 25 - Land use compatibility tables for public drinking water source areas* (DWER, 2021b), Fruitico's proposed land uses of intensive agriculture, and hydrocarbon and chemical storage are compatible with a P3 PDWSA, with conditions. These conditions include:

- No.6. Pesticides should be applied in accordance with best management practices (i.e. in accordance with label directions). For more information see brochure: *Liquid chemicals on agricultural land* and the Department of Health's website *Guides on pesticide use for industry and local government* and *Circular PSC88: Use of herbicides in water catchment areas*
- No.11. Fertilisers should be applied in accordance with best management practices. For information on fertiliser management refer to the activity-specific documents in the Guidance information column and our brochures *Fertiliser application on pasture or turf near sensitive water resources*, *Liquid chemicals on agricultural land*.
- No.17. Consider alternative energy sources that pose a lower water quality contamination risk (e.g. solar or gas) before progressing with the proposal.
- No.23. A nutrient and irrigation management plan should be prepared. See *WQPN 33: Nutrient and irrigation management plans* and *WQIS 4: Nutrient and irrigation management plan checklist*.
- No.24. Hydrocarbons, chemicals and other toxic or hazardous substances should be stored so there is no discernible risk of contamination of groundwater or surface water. This should include effective secondary barriers to contain the system, such as double-walled tanks and bunding. Restrictions apply for storage tanks as explained in *WQPN 56: Tanks for fuel and chemical storage near sensitive water resources*. See also *WQPN 65: Toxic and hazardous substances* for further information. A contingency plan for managing and responding to spills should be in place, as per *WQPN 10: Contaminant spills – emergency response plan*.
- No.28. This land use/activity may require assessment by this department under the EP Act. For a list of activities see the schedule 1 of the *Environmental Protection Regulations 1987*. For more information about licensing, refer to the *Industry regulation guide to licensing*. For activity-specific guidance, refer to the department's *industry regulation factsheets*.

Fruitico have advised the Department that they will meet all the conditions that apply to their activities and the local context and have shown they understand it is their responsibility to meet these conditions as the project progresses (Fruitico, 2023c).

Conclusion

Given the applicant's proposal is now consistent with P3 PDWSA policy, there is no outstanding issues regarding the proposed clearing and associated land use. The risk of contamination within the P3 PDWSA will be reduced with Fruitico adhering to the conditions of the Water Quality Protection Notes.

Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- The Permit Holder will be required to adhere to the Water Quality Protection Notes and associated conditions, to reduce risks to the PDWSA.

3.3 Relevant planning instruments and other matters

The Gascoyne Food Bowl District Structure Plan 2017 and supporting local water management strategy were endorsed by the Western Australian Planning Commission (WAPC). After this, this land in which the application area is located was changed from Crown to freehold land, rezoned for priority agriculture, and released for agricultural development (DWER, 2023a).

The Shire of Carnarvon advised DWER that local government approvals are required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme No. 13. The Shire did not have any objections to the proposed clearing (Shire of Carnarvon, 2022). The Shire advised:

- The subject land is zoned 'Priority Agriculture' with the main objectives to:
    - Identify land of State, regional or local significance for food production purposes;
    - Retain priority agricultural land for agricultural purposes;
    - Limit the introduction of sensitive land uses that may compromise existing, future or potential agricultural production; and
    - Protect and enhance wetlands and other ecological sensitive areas.
    - A Development Approval (DA) has been conditionally approved pursuant to *Clause 68(2)(b) of the Planning and Development (Local Planning Schemes) Regulations 2015* to use and/or develop the land on Lot 500 on Deposited Plan 412775, Inggarda, for the purpose of the construction of an irrigation pump, filter shed and water tanks (Fruitico, 2023d).

Lot 500, 402 and a portion of 600 of the application areas are located within the Gascoyne and Lyons River Aboriginal Heritage Site (Place ID: 39200 - Ceremonial, Mythological, Water Source). It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The applicant provided information in response to a formal Request for Further Information issued by DWER (Fruitico, 2023a).	The additional information provided was considered in *Assessment of impacts on environmental values* – PDWSA (see Section 3.2.4).
The applicant provided information in response to a formal Request for Further Information issued by DWER (Fruitico, 2023b).	The additional information provided was considered in *Assessment of impacts on environmental values – land degradation* (see Section 3.2.3).
The applicant provided information in response to a formal Request for Further Information issued by DWER (Fruitico, 2023c).	The additional information provided was considered in *Assessment of impacts on environmental values* – PDWSA (see Section 3.2.4).

Appendix B. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER 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.

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is a combination of four properties, totalling 219.23 hectares of native vegetation along North West Coastal Highway and McGlades Road, Inggarda and North Plantations, approximately five kilometres east of Carnarvon town centre in Western Australia. The surrounding land uses are intensive horticulture, pastoral leases and crown reserves. Based on aerial imagery, the application area is surrounded by vegetation of similar condition and extent. Available data indicates the local area (50 kilometre radius of the application area, excluding the ocean) retains approximately 98.53 percent of the original native vegetation cover.
Ecological linkage	The application area does not occur within any mapped ecological linkages. The application areas are connected to adjacent native vegetation on all Lot boundaries that are not directly adjacent to roads. The majority of the vegetation within the local area is relatively undisturbed, with little to no fragmentation.
Conservation areas	One Tree Point Reserve and Chinaman's Pool Nature Reserves occur at 6.9 and 4.3 kilometres respectively west of Lot 600. The proposed clearing will not impact these reserves.
Vegetation description	A vegetation survey conducted by Strategen (2019) indicates the vegetation within the application area is predominantly *Acacia* shrubland and to a lesser extent four other vegetation types, described as (Appendix E: Figures 8): • ASL (1): *Acacia* Shrubland - Tall Sparse to Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and / or *Acacia synchronicia* with a Sparse to Open Shrubland of *Rhagodia eremaea* and *Alectryon oleifolius* subsp. *oleifolius* and an Open Tussock Grassland of *Cenchrus ciliaris* (buffel grass) and / or *Chloris pumilio*. • ASL (2): *Acacia* Shrubland - Tall Sparse Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and / or *A. synchronicia* with a Sparse Chenopod Shrubland of *Atriplex amnicola* and *A. semilunaris* and Sparse Tussock Grassland of **Cenchrus ciliaris*. • CSL (4): Chenopod shrubland - Low Open mixed Chenopod Shrubland (*Atriplex holocarpa, A. amnicola, Threlkeldia diffusa*). • CSL (5): Chenopod shrubland - Open Chenopod Shrubland of *Maireana polypterygia* with a mixed Low Sparse Chenopod Shrubland (*Sclerolaena eurotioides, Atriplex codonocarpa, A. semilunaris*) with a Low Open Forbland of *Tetragonia diptera*.

Characteristic	Details
	• EWL (3): *Eucalyptus* woodland - Low Woodland of *Eucalyptus victrix* with a Sparse Tall Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and *Rhagodia eremaea* and an Open Tussock grassland of **Cenchrus ciliaris*. This vegetation type is consistent with the mapped Beard vegetation association Gascoyne Marshes 308, which is described as: • Mosaic: Shrublands; *Acacia sclerosperma* sparse scrub / Succulent steppe; saltbush and bluebush (Shepherd et al., 2001). The mapped Beard vegetation association retains approximately 99.22 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	The vegetation survey conducted by Strategen (2019) assessed the application area with a vegetation condition score of largely 3 'shows signs of disturbance' with smaller patches of 2 'pristine or nearly so' (Strategen, 2019). A map showing the distribution of these ratings can be found in Appendix E: Figure 9. This vegetation condition scale used by Strategen was based on the Eremaean and Northern Botanical Provinces indicated in EPA and Parks and Wildlife (2015) and shown in Appendix D: Table 1.
Climate and landform	Carnarvon experiences an arid climate with an average annual rainfall of 224.6 millimetres. Rainfall may occur at any time of year; however, most occurs in winter. Highest temperatures occur between December and April, with average monthly maximums ranging from 29.1 degrees celsius in April to 32.6 degrees celsius in February. Lowest temperatures occur between June and August, with average monthly minimums ranging from 10.9 degrees celsius in July to 12.3 degrees celsius in June. Evapotranspiration is on average 300 millimetres per annum. Lots 500, 402 and 731 are associated with Level alluvial plain, dissected by a few flow lines, on the broad upper terraces of the Gascoyne River. Level to very gently undulating microrelief of less than 30 centimentres. Small, scattered scalds are sometimes present (Tille and Smolinski, 2003; CSLC, 2022). Lot 600 is associated with a level alluvial plain that forms a backplain of the Gascoyne River. Erosional and depositional surfaces resulting from overland flow are often evident while bare and scalded surfaces are present (Tille and Smolinski, 2003; CSLC, 2022).
Soil description	According to available mapping databases, the application area lies within 19 different soil subsystems, which can be summarised into two soil systems: • 235De - Delta System - Flood plains and minor sandy banks, supporting low shrublands of bluebush and saltbush. • 235Ri – River System - Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex. Local advice was received from the CSLC informing the assessment that Lots 402, 500 and 731 are sited on the alluvial terraces and backplains of the Delta and River Land System and Lot 600 is associated with the backplains and drainage depressions of the Delta Land System (CSLC, 2022). The light to medium textured soils in Lots 500, 731 and 402 have a high capability for annual and perennial horticulture. The soils are predominantly brown or red tenosols and kandosols with minor hypercalcic calcarosols. Soil texture may range from clayey fine sand to loam within the topsoil. Subsoils are commonly loam to clay loam. Moderately high to extreme levels of salt commonly occur within the subsoil (EC1:5 at 50-100 cm is often in the 15-100 mS/m range, and at 100-200 cm is often 20-300 mS/m). Salt levels can be reduced by leaching and amelioration with gypsum (CSLC, 2022).

Characteristic	Details
	The heavy textured soils in Lot 600 have a fair to high capability for the proposed land use (CSLC, 2022). The soils are predominantly brown or red tenosols and kandosols with secondary hypercalcic calcarosols and black vertosols. Subsoils are commonly loam to clay loam. Moderately high to extreme levels of salt commonly occur within the subsoil (EC1:5 at 50-100 cm is often in the 15-100 mS/m range, and at 100-200 cm is often 20-300 mS/m). Salt levels can be reduced by leaching and amelioration with gypsum. Soil complexity is a management consideration as topsoil texture may range from loam to clay over a short distance. Block design and drainage must consider the complexity of the soils (CSLC, 2022).
Land degradation risk	The application areas occur within the Nickol Bay and McGlades Road levee and thus are largely protected from flooding events. Waterlogging, inundation, and salinity are the main risks of land degradation if cleared of vegetation (CSLC, 2023).
Waterbodies	Available mapping databases indicate that the Directory of Important Wetlands in Australia (DBCA-045) - McNeill Claypan System covers some of the application area located on Lot 600, however, this mapping is unlikely to represent the true on ground hydrography due to the construction of the Nickol Bay levee bank. It is noted that this development is within the Gascovne River flood plain. However, the risk of flooding to the application areas has been reduced by the McGlades Road and Nickol Bay levee banks except during major flood events if the levees are breached. The levee banks significantly reduce the volume of water that will flow through the application areas (CSLC, 2022).
Hydrogeography	The application area is mapped within the Gascoyne River and Tributaries Surface Water Area, and the Gascoyne Groundwater Area, both proclaimed under the RIWI Act. The application area located on Lot 500 on Deposited Plan 412775, Inggarda is located within approximately 7.54 hectares of a P1 PDWSA.
Flora	According to available databases, the following conservation significant flora have been recorded within the local area (50 kilometre radius from the application area): • Fourteen flora species listed as Priority by DBCA; and • No records of flora species listed as threatened. According to available databases and surveys undertaken by Strategen, no Threatened flora species as listed Threatened under the EPBC Act or BC Act and as listed by Parks and Wildlife (2015) were recorded within the survey area. A large portion of vegetation within the survey area has experienced modification due to historical land use including clearing and cattle grazing over the area (Strategen, 2019). During the survey, one Priority flora species (*Corchorus congener* [P3]) as listed by Western Australian Herbarium (1998-) was potentially recorded within the application area (Strategen, 2019). Subsequent review of the specimen determined that it is likely an Acacia sp. A targeted survey was only undertaken over the additional areas (2019 survey areas), no conservation significant flora species were recorded (Strategen-JBS&G, 2020).
Ecological communities	No known threatened or priority ecological communities (TEC or PEC) occur within the application area. The closest TEC or PEC is the Subtropical and Temperate Coastal Saltmarsh listed as 'Priority 3' by DBCA and 'Vulnerable' under the EPBC Act, mapped approximately 4 kilometres west of Lot 500 on Deposited Plan 412775, Inggarda.
Fauna	According to available databases, 68 conservation significant fauna species have been recorded within the local area (50 kilometre radius of the application area). The boundary of the local area overlaps the ocean, Gascoyne River (including the river mouth), and wetlands listed in the directory of important wetlands in Western Australia. Forty-five bird species recorded within the local area are classified as migratory species, so are likely to frequent the area only in the case it is inundated with water, which is now quite unlikely due to the installation of the levee bank in 2015 (DWER, 2021). Eight of the recorded fauna species are exclusively associated with marine, estuarine or freshwater habitats that do not occur within the application area.

Characteristic	Details
	Noting the habitat requirements, distribution of the recorded species, the vegetation type and condition within the application area, the application area may comprise suitable habitat for several species as described in Section 3.2.2 of this report.

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*					
Carnarvon	8,382,890.35	8,360,801.46	99.74	12.14	12.17
Beard vegetation association *					
Gascoyne Marshes_308	445,197.57	441,704.55	99.22	0.87	0.87
Local area					
50km radius from application area	487,255.06	480,083.70	98.53	-	-

*Government of Western Australia (2019)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1.), the flora and vegetation survey information (Strategen, 2017; 2019), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	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]
Abutilon sp. Quobba (H. Demarz 3858)	Priority 2	Yes	No	2.58	5	No
Chthonocephalus tomentellus	Priority 2	No	Yes	5.99	3	Yes
Rumex crystallinus	Priority 2	No	Yes	4.00	1	Yes
Schoenia filifolia subsp. arenicola	Priority 1	No	Yes	2.10	3	Yes
Sporobolus blakei	Priority 3	No	Yes	6.59	1	Yes

B.4. Fauna analysis table

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]
Actitis hypoleucos (common sandpiper)	MI	No	No	0.38	412	Y
Amytornis textilis textilis (western grasswren, thick-billed grasswren (western))	P4	Yes	Yes	26.79	1	Y
Apus pacificus (fork-tailed swift)	MI	Yes	Yes	5.88	2	Y
Apus pacificus (fork-tailed swift, Pacific swift)	MI	Yes	Yes	5.88	5	Y

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]
Ardenna carneipes (flesh-footed shearwater, fleshy-footed shearwater)	VU/MI	No	No	42.52	1	Y
Ardenna pacifica (wedge-tailed shearwater)	MI	No	No	42.52	1	Y
Arenaria interpres (ruddy turnstone)	MI	No	No	1.81	59	Y
Botaurus poiciloptilus (Australasian bittern)	EN/MI	No	No	42.52	1	Y
Branchinella denticulata (a fairy shrimp (Carnarvon to Kalgoorlie))	P3	No	No	42.33	1	Y
Branchinella denticulata (a fairy shrimp (Carnavon to Kalgoorlie))	P3	No	No	42.48	1	Y
Branchinella wellardi (a fairy shrimp (Carnarvon and Murchison))	P3	No	No	43.68	3	Y
Calidris acuminata (sharp-tailed sandpiper)	MI	No	No	0.28	138	Y
Calidris alba (sanderling)	MI	No	No	3.65	66	Y
Calidris canutus (red knot)	EN/MI	No	No	4.81	99	Y
Calidris ferruginea (curlew sandpiper)	CR/MI	No	No	0.46	162	Y
Calidris melanotos (pectoral sandpiper)	MI	No	No	4.70	4	Y
Calidris ruficollis (red-necked stint)	MI	No	No	0.28	288	Y
Calidris subminuta (long-toed Stint)	MI	No	No	0.28	50	Y
Calidris tenuirostris (great knot)	CR/MI	No	No	2.59	132	Y
Caretta caretta (loggerhead turtle)	EN	No	No	5.88	4	Y
Charadrius dubius (little Ringed Plover)	MI	No	No	2.59	7	Y
Charadrius leschenaultii (greater sand plover, large sand plover)	VU/MI	No	No	0.58	219	Y
Charadrius mongolus (lesser sand plover)	EN/MI	No	No	3.65	54	Y
Charadrius veredus (oriental Plover)	MI	No	No	11.14	8	Y
Chelonia mydas (green turtle)	VU	No	No	5.88	4	Y
Chlidonias leucopterus (white-winged black tern, white-winged tern)	MI	No	No	1.46	11	Y
Dugong dugon (dugong)	OS	No	No	9.08	2	Y
Egernia stokesii badia (western spiny-tailed skink)	VU/EN	No	Yes	35.13	3	Y
Falco hypoleucos (grey falcon)	VU	Yes	Yes	2.05	5	Y
Falco peregrinus (peregrine falcon)	OS/MI	Yes	Yes	0.58	15	Y
Fregata ariel (lesser frigatebird)	MI	No	No	15.58	2	Y
Gelochelidon nilotica (gull-billed tern)	MI	No	No	0.58	82	Y
Glareola maldivarum (oriental pratincole)	MI	No	No	0.58	12	Y
Hirundo rustica (barn swallow)	MI	Yes	Yes	1.59	1	Y
Hydroprogne caspia (Caspian tern)	MI	No	No	0.64	303	Y
Idiosoma incomptum (Carnarvon shield-backed trapdoor spider)	P3	Yes	Yes	3.93	3	Y
Lagostrophus fasciatus fasciatus (banded hare-wallaby, mernine)	VU	No	No	5.88	1	Y
Leipoa ocellata (malleefowl)	VU	Yes	Yes	21.23	3	Y
Limicola falcinellus (broad-billed sandpiper)	MI	No	No	8.07	6	Y
Limnodromus semipalmatus (Asian dowitcher)	MI	No	No	7.01	8	Y
Limosa lapponica (bar-tailed godwit)	MI	No	No	1.81	288	Y
Limosa lapponica menzbieri (bar-tailed godwit (northern Siberian))	CR/MI	No	No	5.84	2	Y
Limosa limosa (black-tailed godwit)	MI	No	No	4.48	27	Y
Macronectes giganteus (southern giant petrel)	MI/EN	No	No	5.37	2	Y

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]
Megaptera novaeangliae (humpback whale)	CD/VU	No	No	5.88	2	Y
Numenius madagascariensis (eastern curlew)	CR/MI	No	No	1.81	203	Y
Numenius minutus (little curlew, little whimbrel)	MI	No	No	2.29	18	Y
Numenius phaeopus (whimbrel)	MI	No	No	1.81	207	Y
Oceanites oceanicus (Wilson's storm-petrel)	MI	No	No	42.52	3	Y
Pandion cristatus (osprey, eastern osprey)	MI	No	No	1.81	82	Y
Parartemia contracta (a brine shrimp (Wheatbelt))	P1	No	No	42.48	1	Y
Phaethon rubricauda (red-tailed tropicbird)	P4/MI	No	No	42.52	1	Y
Philomachus pugnax (ruff (reeve))	MI	No	No	2.59	9	Y
Plegadis falcinellus (glossy ibis)	MI	No	No	0.46	88	Y
Pluvialis fulva (Pacific golden plover)	MI	No	No	4.78	43	Y
Pluvialis squatarola (grey plover)	MI	No	No	2.96	173	Y
Rostratula australis (Australian painted snipe)	EN/MI	No	No	0.58	29	Y
Sterna dougallii (roseate tern)	MI	No	No	6.01	7	Y
Sterna hirundo (common tern)	MI	No	No	6.64	19	Y
Sternula albifrons (little tern)	MI	No	No	1.68	9	Y
Thalassarche chlororhynchos (Atlantic yellow-nosed albatross)	VU/MI	No	No	42.52	1	Y
Thalasseus bergii (crested tern)	MI	No	No	1.81	233	Y
Tringa brevipes (grey-tailed tattler)	P4/MI	No	No	0.58	288	Y
Tringa glareola (wood sandpiper)	MI	No	No	0.28	225	Y
Tringa nebularia (common greenshank, greenshank)	MI	No	No	0.28	409	Y
Tringa stagnatilis (marsh sandpiper, little greenshank)	MI	No	No	0.28	33	Y
Tringa totanus (common redshank, redshank)	MI	No	No	8.22	5	Y
Xenus cinereus (terek sandpiper)	MI	No	No	1.81	70	Y

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

B.5. Land degradation risk table

Risk categories	All soil types in application area (Note: these risk measurements were recorded prior to the installation of the levee banks)
Wind erosion	~99% of map unit has a high to extreme
Water erosion	~99% of map unit has a very high to extreme hazard
Salinity at surface	0 - 30% of map unit has a moderate to extreme risk
Subsurface acidification susceptibility	0% of map unit has a high susceptibility
Flood hazard	~99% of the map unit has a moderate to high hazard
Water logging and inundation	~99% of map unit has a moderate to very high risk

Natural Resource Information, WA (DPIRD, 2019)

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: The area proposed to be cleared is not likely to contain locally significant flora, fauna, habitats or assemblages of plants.	Not likely to be at variance	Yes *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 is not likely to contain significant habitat for conservation significant fauna. However, individuals may be present at the time of clearing.	May 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 does not contain threatened flora species or any suitable habitat.	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.	Not at variance	No
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 association and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001). The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not 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 nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
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: Watercourses have been mapped as occurring within the application areas. However, given the location of the Nickol Bay levee bank, the water courses mapped within the application area have been altered, and as a result the proposed clearing is unlikely to be significant.	At variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The rangeland survey information indicates that the soils of the application area are moderately to highly susceptible to both water and wind erosion when cleared of perennial vegetation. However, with the protection of the Nickol Bay levee bank around the application this risk has been decreased. Proposed clearing is not likely to be at variance for land degradation provided adequate land management practices are followed (CSLC, 2023).	May be at variance	Yes *Refer to Section 3.2.3, 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: A portion of the application area is located within a PDWSA, and as a result, the proposed clearing is likely to impact surface or ground water quality. Given the Nickol Bay and McGlades Road levee bank have altered the local watercourses mapped within the application areas and there are no wetlands or waterways likely to naturally flow within the application area, impacts are not likely to be significant.	May be at variance	Yes *Refer to Section 3.2.4, 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: The application area occurs in floodplains and adjacent to drainage zones. Due to the installation of the Nickol Bay levee bank in the southern area and the McGlades Road Levee in the northern area, the application area is mostly protected from intense flooding events. However, the proposed clearing may contribute to the impact of flooding that is naturally experienced within the area, should the flooding breach the levee.	May be at variance	Yes *Refer to Section 3.2.3, above.*

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. The vegetation condition scale used is that for the Eremaean and Northern Botanical Provinces indicated in the Environmental Protection Authority (EPA) and the Department of Parks and Wildlife (DPaW) (2015).

Table 1: Vegetation condition scale (EPA and DPaW, 2015)

Vegetation Condition	Eremaean and Northern Botanical Provinces
1	
2	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
3	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.
4	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.
5	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.
6	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.
7	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. Biological survey information excerpts / photographs of the vegetation

To support the Gascoyne Food Bowl Initiative, a detailed flora and vegetation survey was undertaken during 17-20 October 2016 (Strategen, 2017), with additional areas being surveyed on 5 December 2018 (Strategen, 2019). A targeted survey for priority flora species was also undertaken on 3 September 2020, of the additional areas surveyed in 2019 (Strategen-JBS&G, 2020).

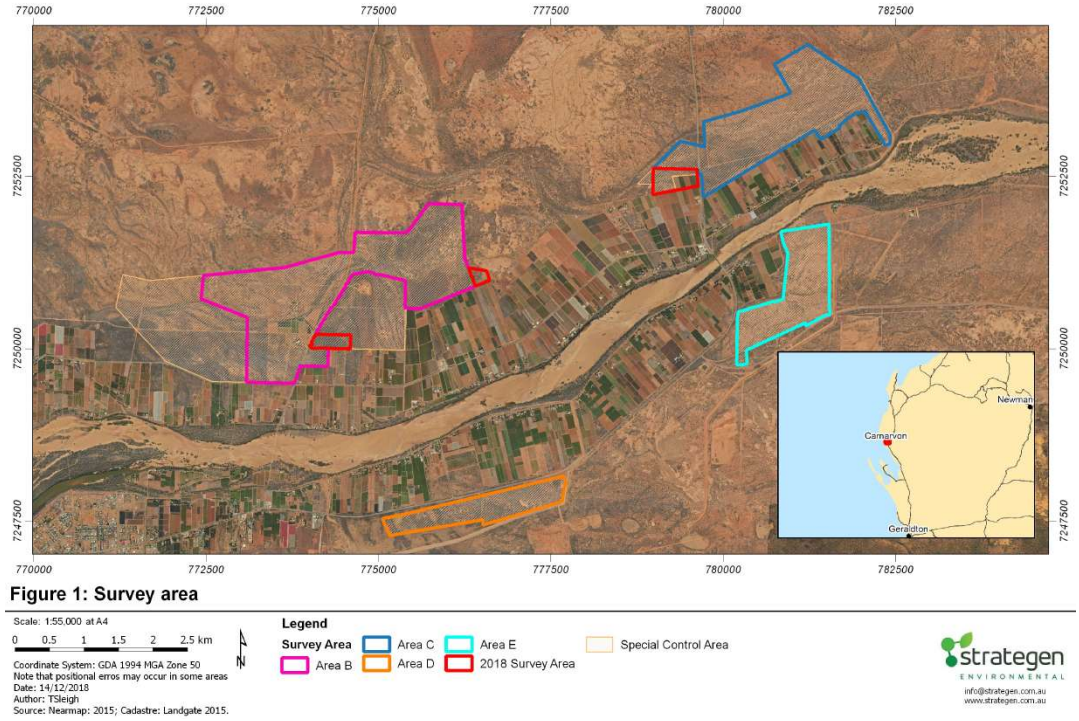

Figure 6: Boundaries of the survey area where red areas indicate 2019 survey efforts (Strategen, 2019)

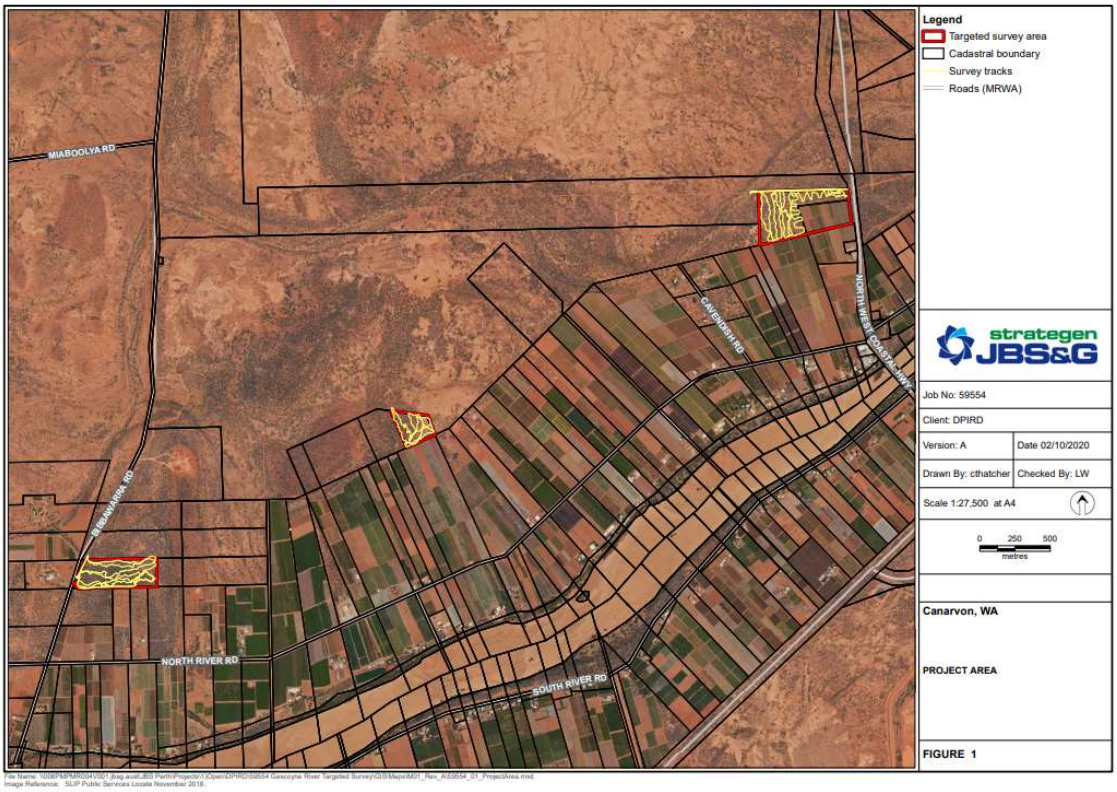

Figure 7: Boundaries of the targeted flora survey (Strategen-JBS&G, 2020)

Table 2: Six vegetation types were recorded within the survey area (Strategen, 2017 and 2019)

Vegetation Type	Description
ASL (1): *Acacia* Shrubland	Tall Sparse to Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and / or *A. synchronicia* with a Sparse to Open Shrubland of *Rhagodia eremaea* and *Alectryon oleifolius* subsp. *oleifolius* and an Open Tussock Grassland of **Cenchrus ciliaris* and / or *Chloris pumilio*.
ASL (2): *Acacia* Shrubland	Tall Sparse Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and / or *A. synchronicia* with a Sparse Chenopod Shrubland of *Atriplex amnicola* and *A. semilunaris* and Sparse Tussock Grassland of **Cenchrus ciliaris*.
EWL (3): *Eucalyptus* woodland	Low Woodland of *Eucalyptus victrix* with a Sparse Tall Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and *Rhagodia eremaea* and an Open Tussock grassland of **Cenchrus ciliaris*.
CSL (4): Chenopod shrubland	Low Open mixed Chenopod Shrubland (*Atriplex holocarpa*, *A. amnicola*, *Threlkeldia diffusa*).
CSL (5): Chenopod shrubland	Open Chenopod Shrubland of *Maireana polypterygia* with a mixed Low Sparse Chenopod Shrubland (*Sclerolaena eurotioides*, *Atriplex codonocarpa*, *A. semilunaris*) with a Low Open Forbland of *Tetragonia diptera*.
CDSL (6): *Chenopodium* and *Duma* shrubland	*Chenopodium* and *Duma* Shrubland Open Shrubland of *Chenopodium auricomum* and *Duma florulenta* with a Low Sparse mixed Tussock grassland (*Eulalia aurea*, *Panicum decompositum*, *Sporobolus mitchellii*) and +/- Isolated Low Trees of *Eucalyptus victrix*.
Cleared	Cleared areas.

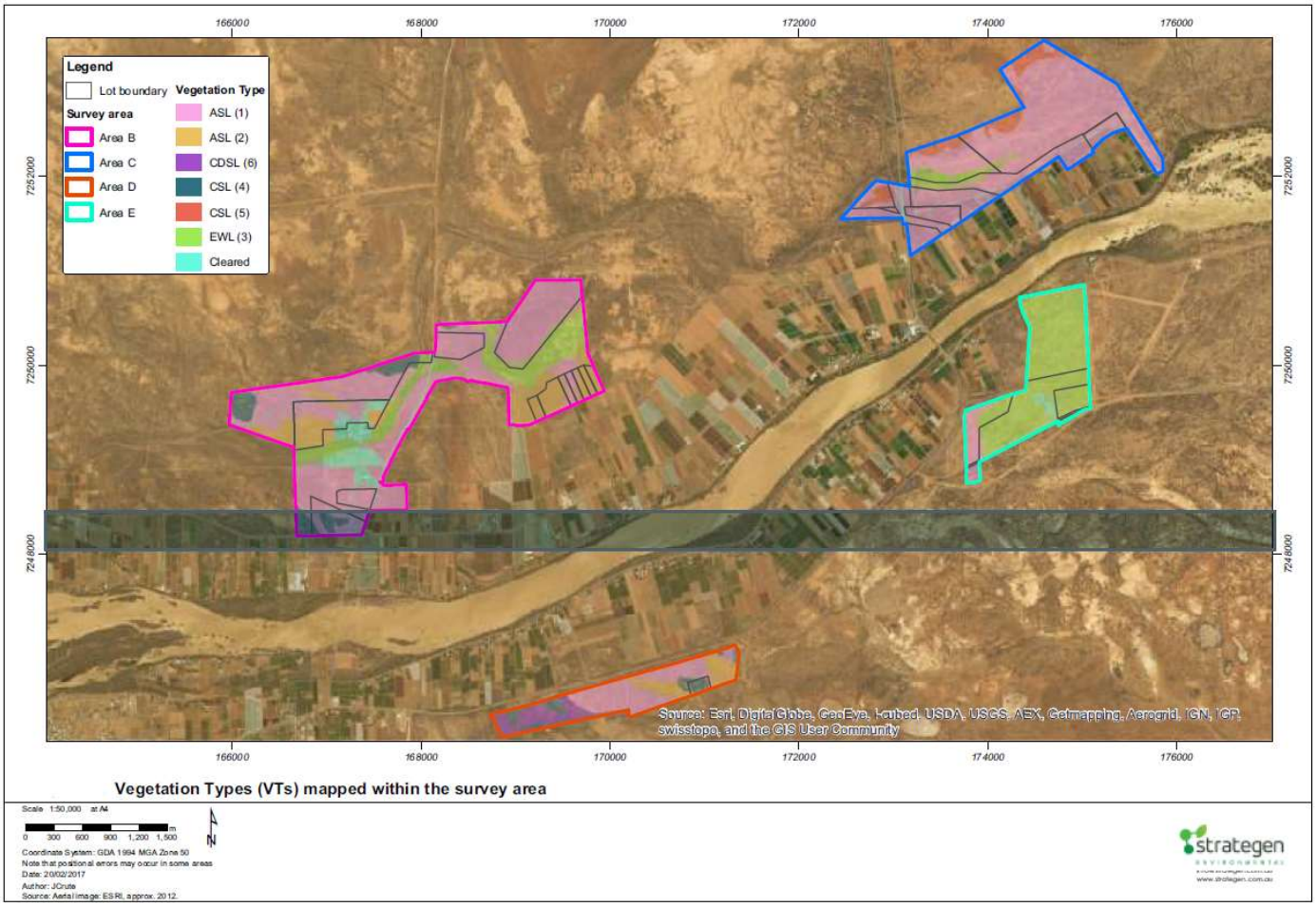

Figure 8: Vegetation Types (VTs) mapped within the survey area (Strategen, 2017 and 2019)

The majority of the survey area (89 per cent) showed signs of degradation due to historical clearing and grazing by livestock. The remaining area was recorded as being pristine, or nearly so (Figure 4).

Within the survey area, 103 native flora taxa representing 29 families and 68 genera were recorded during the survey, including the additional areas surveyed in 2019 (Strategen, 2019). A total of 14 introduced taxa were recorded in the survey area, of which none are a Declared Plant species pursuant to section 22 of the *Biosecurity and Agriculture Management Act 2007*. No EPBC Act or BC Act listed flora were recorded within the survey area (Strategen, 2017; 2019). One Priority flora species, *Corchorus congener* (P3), was potentially recorded during the survey. Subsequent review of the specimen determined that it is likely an *Acacia* sp. A targeted survey was only undertaken over the additional areas (2019 survey areas), no conservation significant flora species were recorded (Strategen-JBS&G, 2020).

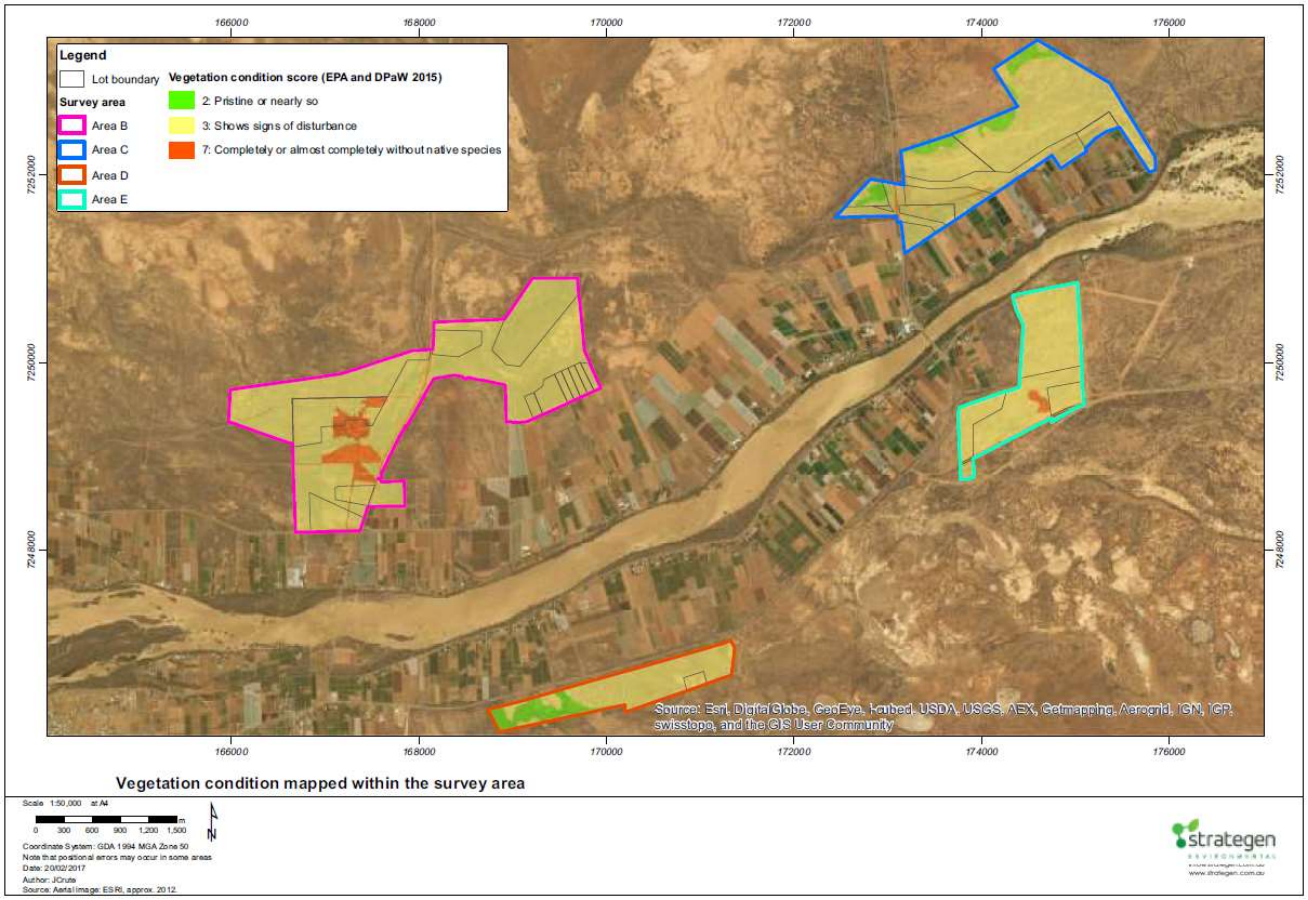

Figure 9: Vegetation condition (VC) within the survey area (Strategen, 2017 and 2019) (see Appendix C: Table1 for VC scale details)

Limitations

A review of the survey limitations identified no constraints that might have affected the flora and vegetation assessment. However, it is noted that the survey was conducted in October (spring), which is slightly later than what is recommended within the Eremaean Province, that is, 6-8 weeks post-wet season (August-September). While the survey was conducted slightly later than recommended, annual species were still present and able to be identified in most cases, therefore this factor is not considered to be a constraint (Strategen, 2019).

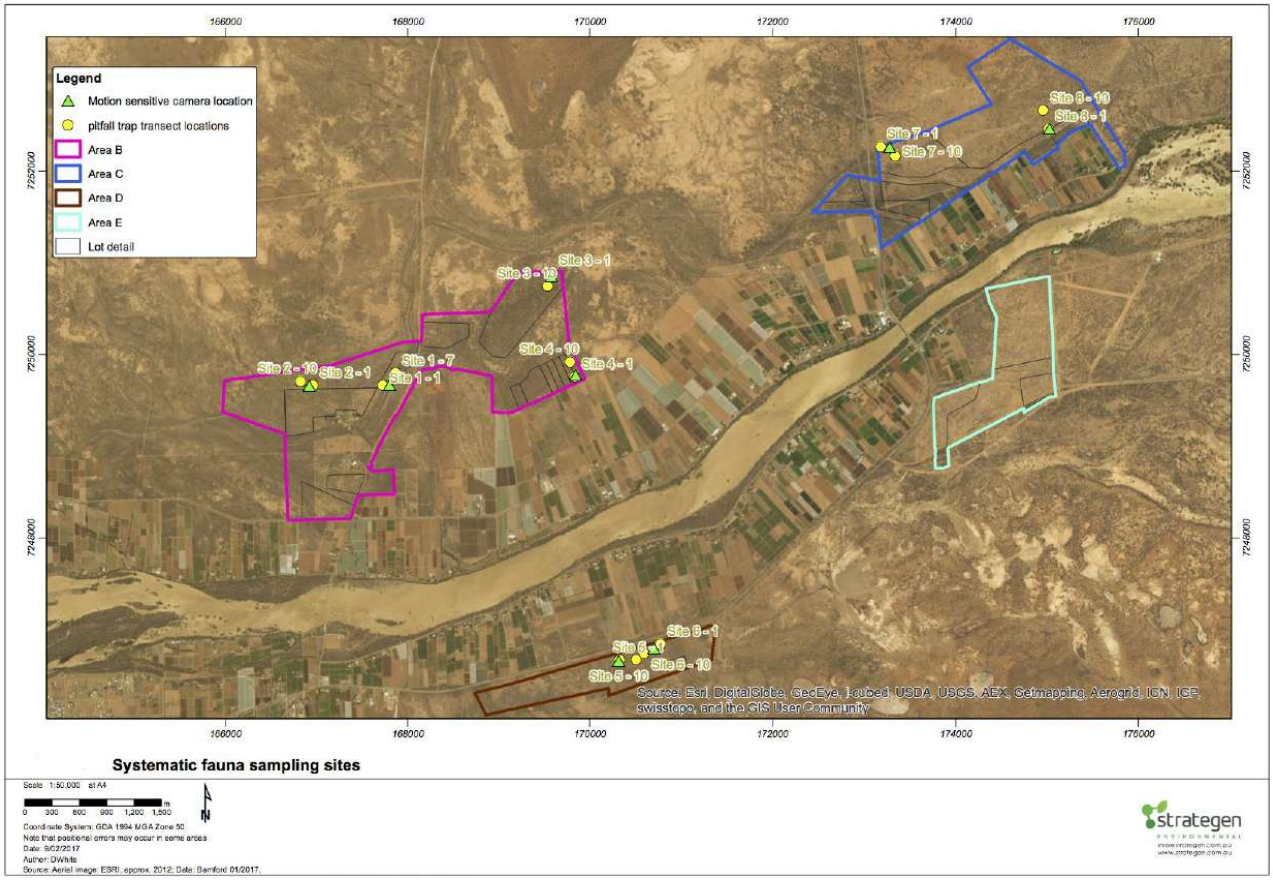

Figure 10: Locations of fauna sampling sites in 2016 field investigations (Bamford Consulting Ecologists, 2017)

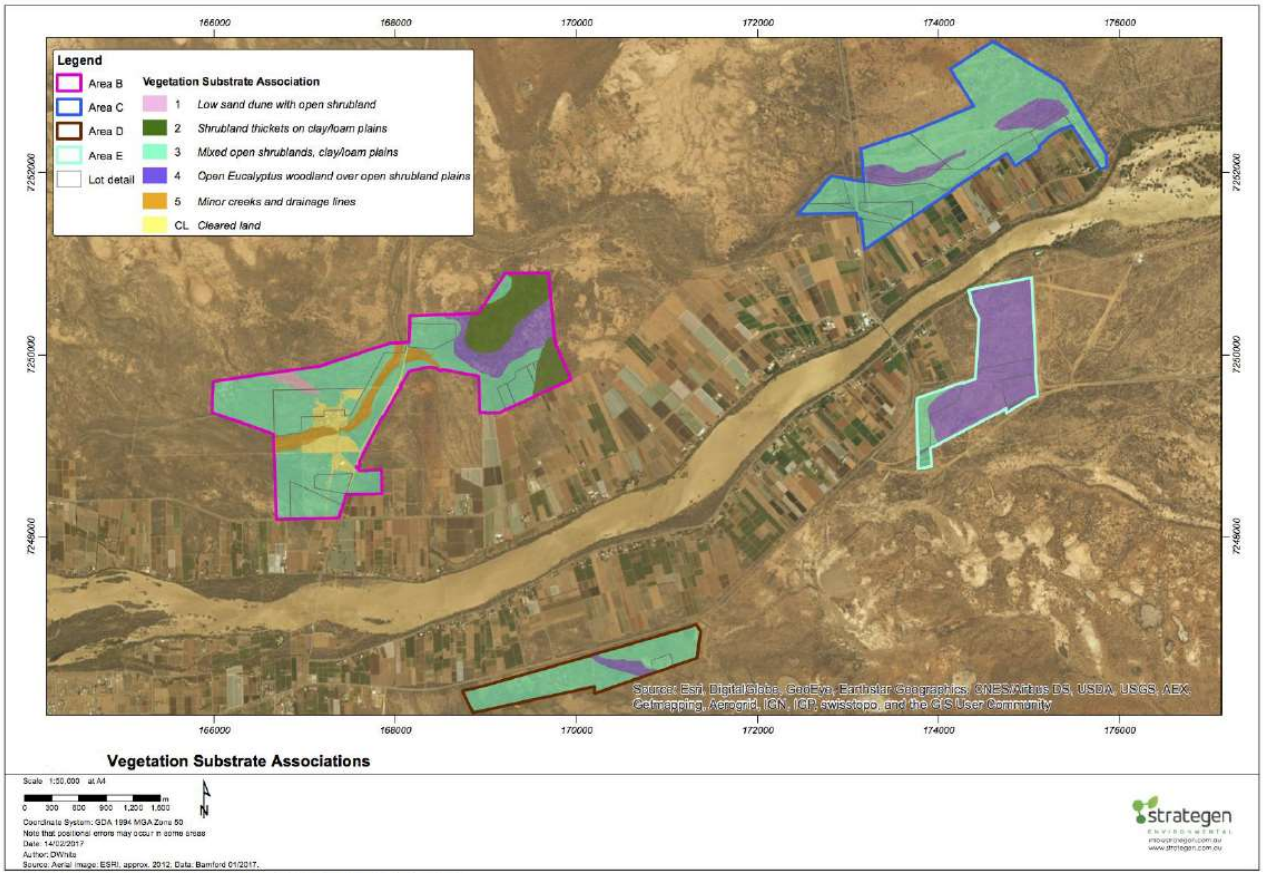

Figure 11: The distribution of vegetation substrate associations (VSA) across the Gascoyne Foodbowl project area, including the application area (Area D) (Bamford Consulting Ecologists, 2017).

Figure 12: Photographs supplied by applicant to demostrate ASL(1) vegetation types habitats (Strategen, 2017)

Figure 13: Photographs supplied by applicant to demostrate ASL(2) vegetation types habitats (Strategen, 2017)

Figure 14: Photographs supplied by applicant to demostrate CSL(4) vegetation types (Strategen, 2017)

Figure 15: Photographs supplied by applicant to demostrate CSL(5) vegetation types (Strategen, 2017)

Figure 16: Photographs supplied by applicant to demostrate EWL(3) vegetation types (Strategen, 2017)

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

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)

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