GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9139/3
Permit Holder:	City of Wanneroo
Duration of Permit:	From 20 August 2021 to 20 August 2026

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)

Typha orientalis and *Typha domingensis* control

2. Land on which clearing is to be done

Crown Reserve (PIN 408326) Wanneroo
Lot 300 on Deposited Plan 106721 Wanneroo
Lot 740 on Deposited Plan 245969 Wanneroo
Crown Reserve (PIN 408324) Wanneroo
Crown Reserve (PIN 11377834) Wanneroo
Crown Reserve (PIN 1126271) Wanneroo
Crown Reserve (PIN 408314) Wanneroo
Crown Reserve (PIN 408313) Wanneroo
Crown Reserve (PIN 1088896) Wanneroo
Crown Reserve (PIN 408320) Wanneroo
Crown Reserve (PIN 408319) Wanneroo
Crown Reserve (PIN 408317) Wanneroo
Crown Reserve (PIN 408316) Wanneroo
Crown Reserve (PIN 1068) Wanneroo
Lot 2451 on Deposited Plan 133174 (Crown Allotment PIN 408319) Wanneroo
Lot 2385 on Deposited Plan 133173 (Crown Allotment PIN 408317) Wanneroo
Lot 2384 on Deposited Plan 133172 (Crown Allotment PIN 408320) Wanneroo
Lot 774 on Deposited Plan 246224 (Crown Allotment PIN 408313) Wanneroo
Lot 672 on Deposited Plan 245973 (Crown Allotment PIN 408316) Wanneroo
Crown Reserve (PIN 9407) Wanneroo
Crown Reserve (PIN 9360) Wanneroo
Crown Reserve (PIN 9359) Wanneroo
Lot 143 on Plan 10445 (Crown Allotment PIN 9360) Wanneroo
Lot 139 on Plan 9815 (Crown Allotment PIN 9407) Wanneroo
Lot 137 on Plan 10027 (Crown Allotment PIN 9359) Wanneroo
Lot 73 on Diagram 56768 Wanneroo
Lot 36 on Diagram 48067 Wanneroo

Lot 1 on Diagram 62246 Wanneroo
Lot 11524 on Diagram 56917 Wanneroo
Crown Reserve (PIN 4826) Mariginiup
Lot 300 on Deposited Plan 301991 Wanneroo
Easement on Deposited Plan 76721 (PIN 12033733) Wanneroo
Easement on Deposited Plan 68139 (PIN 11914148) Woodvale
Crown Reserve (PIN 11043623) Wanneroo
Lot 41 on Plan 32924 (Crown Allotment PIN 11043626) Wanneroo
Lot 40 on Plan 32924 (Crown Allotment PIN 11043625) Wanneroo
Lot 39 on Plan 32924 (Crown Allotment PIN 11043624) Wanneroo
Crown Reserve (PIN 11023502) Wanneroo
Crown Reserve (PIN 1359140) Wanneroo
Crown Reserve (PIN 1359137) Wanneroo
Lot 8 on Deposited Plan 231377 (Crown Allotment PIN 1069) Wanneroo
Crown Reserve (PIN 11043625) Wanneroo
Crown Reserve (PIN 11043624) Wanneroo
Crown Reserve (PIN 11043626) Wanneroo
Crown Reserve (PIN 1060196) Marangaroo
Lot 13968 on Plan 23449 (Crown Allotment PIN 1284672) Landsdale
Crown Reserve (PIN 12324956) Woodvale
Crown Reserve (PIN 11926159) Woodvale
Lot 300 on Deposited Plan 413701 Woodvale
Crown Reserve (PIN 1284672) Landsdale
Crown Reserve (PIN 12033732) Wanneroo
Lot 801 on Deposited Plan 76721 Wanneroo
Lot 800 on Deposited Plan 76721 Wanneroo
Crown Reserve (PIN 11914120) Wanneroo
Lot 3000 on Deposited Plan 69603 Woodvale
Crown Reserve (PIN 11921958) Wanneroo
Lot 8001 on Deposited Plan 68139 Woodvale
Crown Reserve (PIN 11841633) Madeley
Lot 555 on Deposited Plan 64232 Madeley
Lot 808 on Deposited Plan 50215 Woodvale
Crown Reserve (PIN 11480003) Tapping
Lot 705 on Deposited Plan 46781 Tapping
Lot 12421 on Plan 20358 (Crown Allotment PIN 1126271) Wanneroo
Lot 11921 on Plan 18933 (Crown Allotment PIN 1088896) Wanneroo
Lot 501 on Deposited Plan 73317 Wanneroo
Crown Reserve 33206 (PIN 11979362) Wanneroo
Lot 11 on Diagram 57099 Carramar
Lot 300 on Deposited Plan 413701 Woodvale
Crown Reserve 50955 (PIN 12324956) Woodvale
Lot 500 on Deposited Plan 422145 Landsdale
Lot 500 on Deposited Plan 418473Marangaroo

3. Clearing authorised

The permit holder must not clear more than 29.16 hectares of *native vegetation* within the combined areas cross-hatched yellow on Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7, Figure 8, Figure 9, Figure 10, Figure 11, Figure 12 and Figure 13 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 and dieback 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* and *dieback*:

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

(b) ensure that no known *dieback* or *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 from one direction only to allow fauna to move into adjacent *native vegetation* ahead of the *clearing* activity.

7. Fauna Management

(a) The permit holder must inspect the area authorised to be cleared under this permit prior to works commencing and for the duration of *clearing* for any native fauna that may be present.

(b) Where fauna have been identified under condition 7(a), works must cease until the fauna have escaped into adjacent habitat ahead of the *clearing* activity or translocated into adjacent *native vegetation*.

8. Weed Management – Chemical

(a) The permit holder must only undertake spot spraying and/or *contact application* of Roundup Biactive solution during the driest period of the year, between November to March/early April, and during *calm conditions*.

(b) Spot spraying must only be undertaken when the wetland water level is not in contact with the area being spot sprayed.

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 Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the direction that the *clearing* occurred; (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 4; (g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 5; (h) Fauna management actions taken in accordance with condition 7; and (i) The date that chemical weed control occurred 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 2 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*.
calm condition	a weather condition when no air motion (wind) is detected.
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.
contact application	means the application of herbicide by wiping.
dieback	means the effect of *Phytophthora* species on native vegetation.
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)
fill	means material used to increase the ground level, or to fill a depression.
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

Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

14 June 2023

Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below (Figures 1 to 13).

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

Figure 2: Map of the boundary of the area within which *clearing* may occur

Figure 3: Map of the boundary of the area within which *clearing* may occur

Figure 4: Map of the boundary of the area within which *clearing* may occur

Figure 5: Map of the boundary of the area within which *clearing* may occur

Figure 6: Map of the boundary of the area within which *clearing* may occur

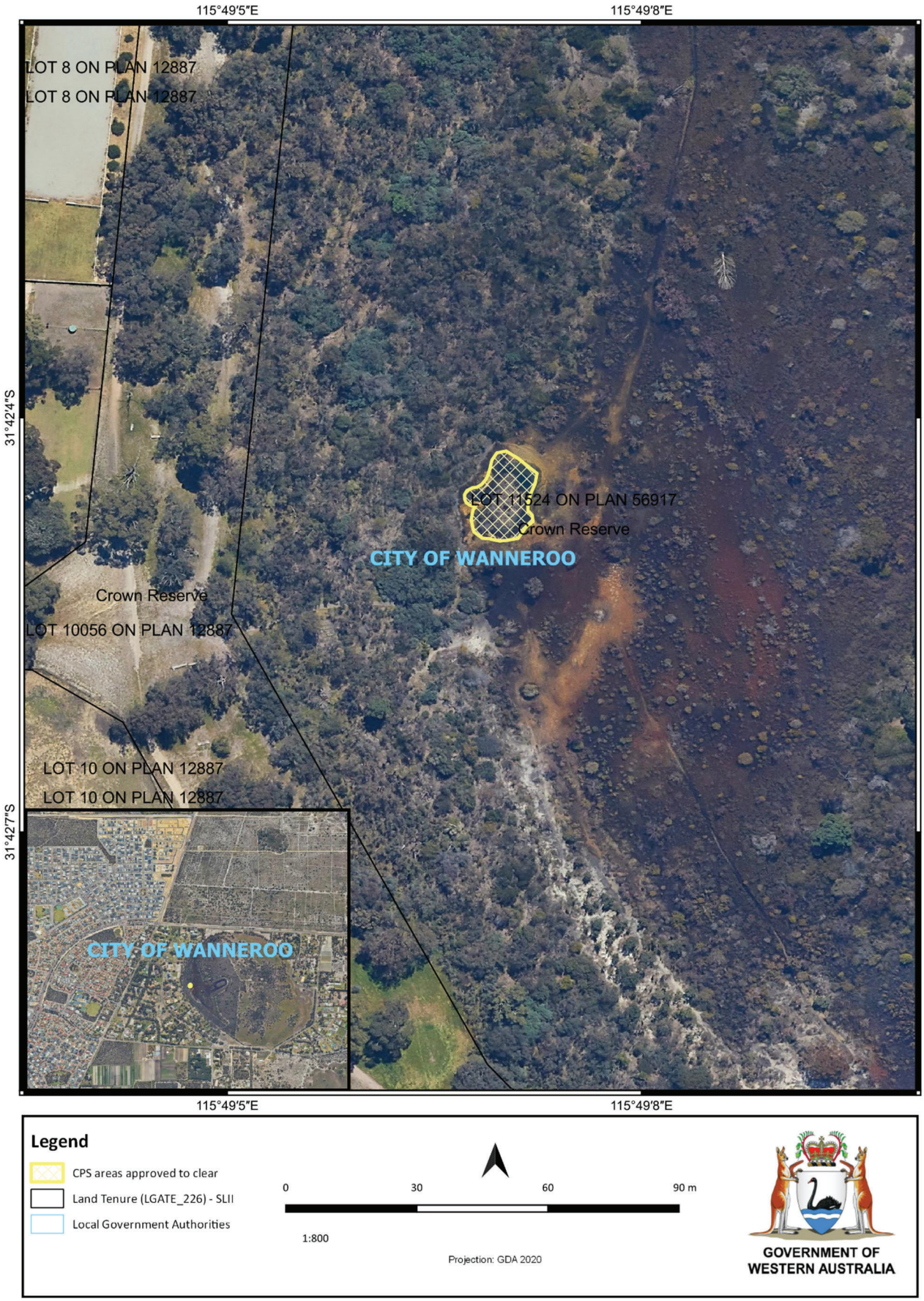

Figure 7: Map of the boundary of the area within which *clearing* may occur

Figure 8: Map of the boundary of the area within which *clearing* may occur

Figure 9: Map of the boundary of the area within which *clearing* may occur

Figure 10: Map of the boundary of the area within which *clearing* may occur

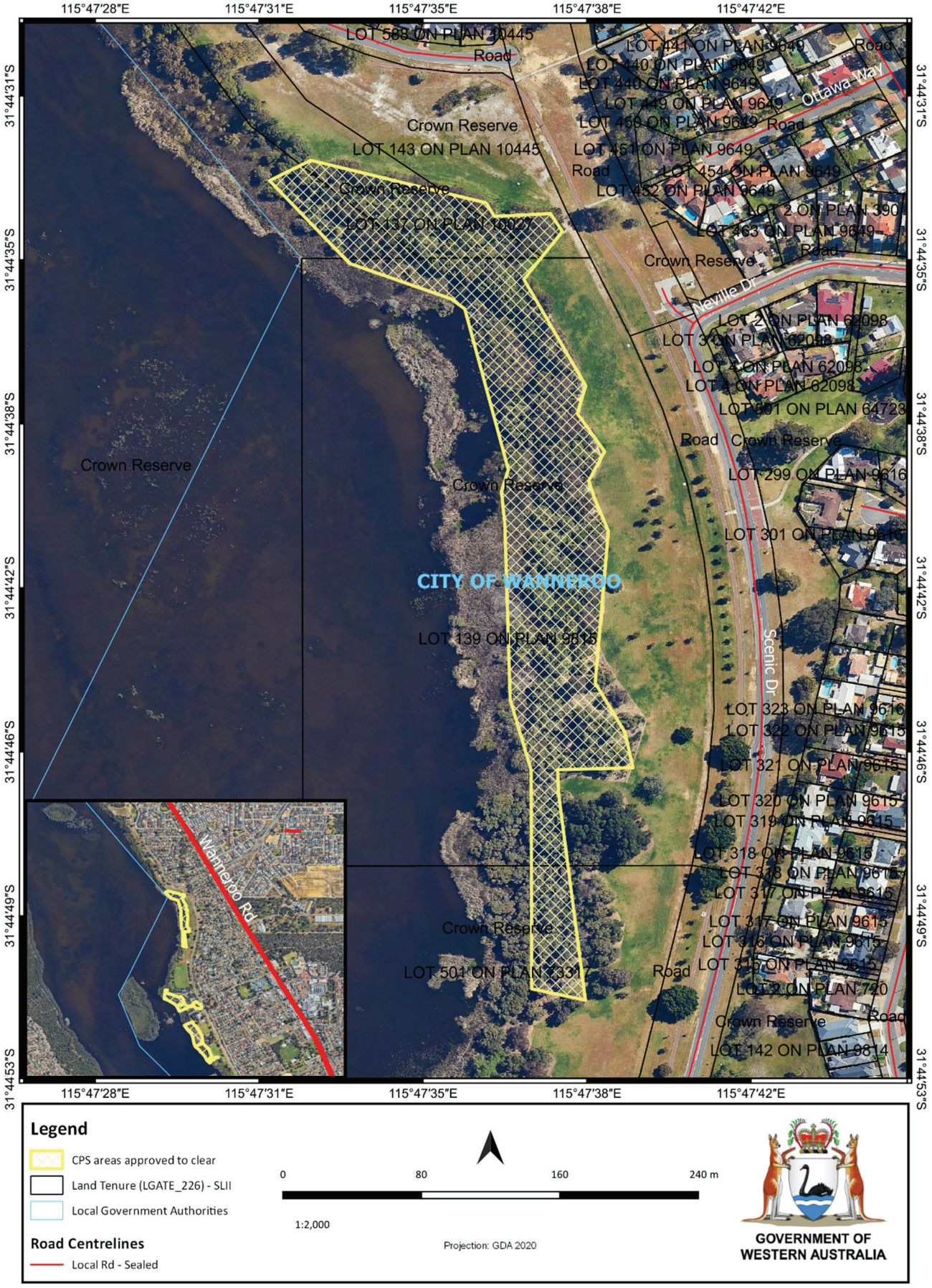

Figure 11: Map of the boundary of the area within which *clearing* may occur

Figure 12: Map of the boundary of the area within which *clearing* may occur

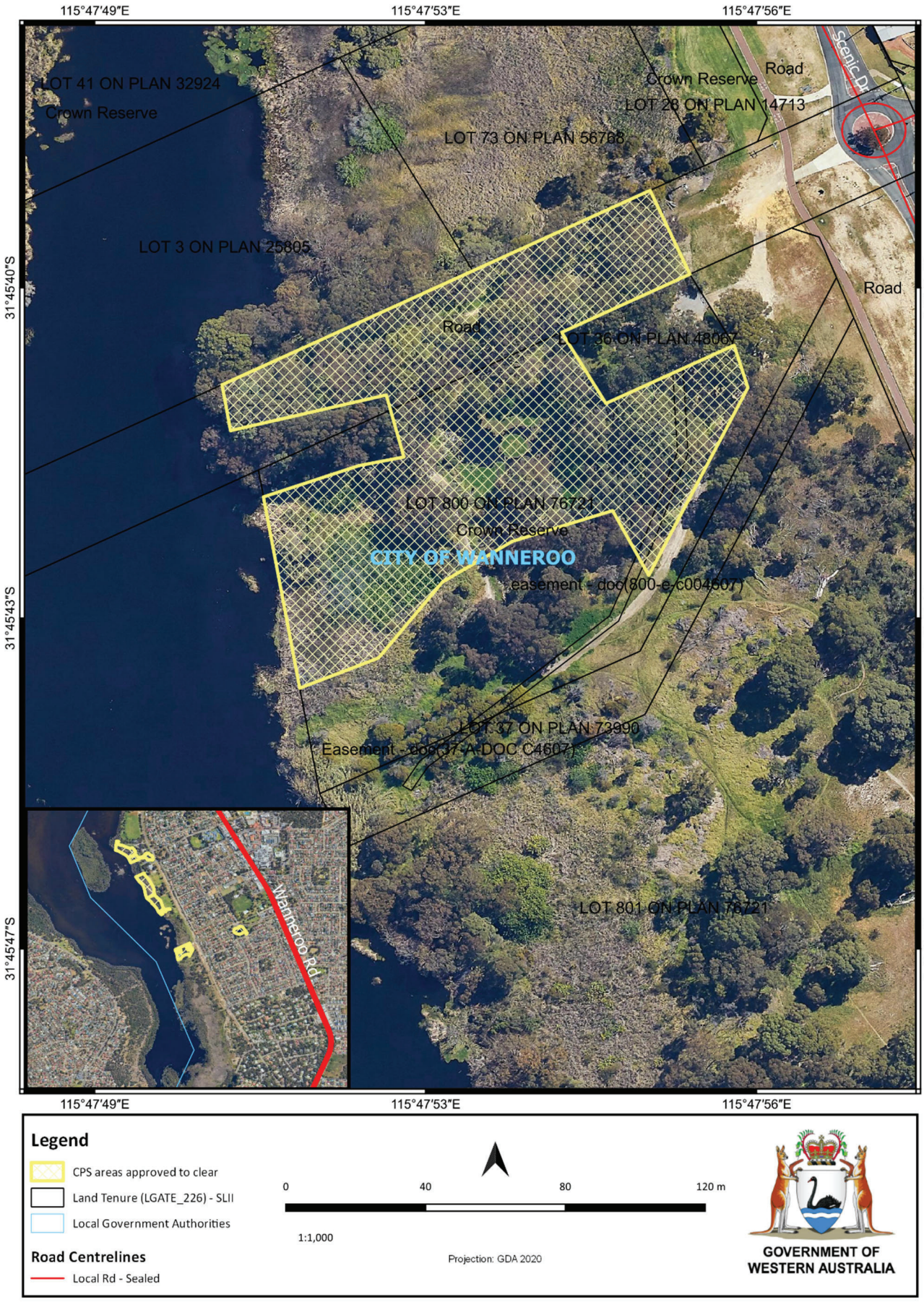

Figure 13: Map of the boundary of the area within which *clearing* may occur

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 9139/3
Permit type:	Purpose permit
Applicant name:	City of Wanneroo
Application received:	24 November 2022
Application area:	Up to 29.16 hectares of native vegetation within a 42.68-hectare footprint
Purpose of clearing:	*Typha orientalis* and *Typha domingensis* control
Method of clearing:	Mechanical and chemical
Property:	See Appendix A
Location (LGA area/s):	City of Wanneroo
Localities (suburb/s):	Within multiple properties in Carramar, Landsdale, Madeley, Mariginiup, Marangaroo, Tapping, Wanneroo and Woodvale

1.2. Description of clearing activities

The proposed amendment to CPS 9139/2 is to increase the size of the area permitted to be cleared by 0.93 hectares to include three additional areas (see Figures 1-4, Section 1.5).

CPS 9139/1 allowed for the clearing of 27.5 hectares of native vegetation within a 41.63-hectare footprint for the purpose of *Typha orientalis* and *Typha domingensis* control.

CPS 9139/2 was an administrative amendment initiated by the Department, to fix a clerical mistake in the permit. No change to the clearing footprint was made and the assessment remained unchanged.

The City of Wanneroo have since identified additional areas where clearing *Typha* will facilitate continued maintenance of the wetlands. The entire clearing permit footprint sought under CPS 9139/3 is 29.16 hectares of native vegetation within a 42.68-hectare footprint.

The applicant advised that 0.21 hectares of clearing has been undertaken under CPS 9139/2, since the commencement of the permit in 2021.

1.3. Decision on application

Decision:	Granted
Decision date:	14 June 2023
Decision area:	Up to 29.16 hectares of native vegetation within a 42.68-hectare footprint

1.4. Reasons for decision

This clearing permit amendment 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 7 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 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 assessment was undertaken in 2021 and the purpose of the clearing is for Typha management. Therefore, reassessment of the original areas was not undertaken. Only the additional areas were assessed.

The assessmend of additional areas identified that the proposed clearing of these areas may result in:

- Potential removal/disturbance of nesting habitat for Priority 4 Oxyura australis (Blue billed duck).
- Potential incidental short-term impacts to adjacent conservation areas, fauna and flora resulting from the use of Glyphosate Biactive (Glyphosate).

It is not expected that the removal of Typha in order to maintain the functionality of the wetlands will result in significant impacts to environmental values within the additional area. Given the previously disturbed nature of some of the wetlands where Typha is required to be removed, included the nature of the Typha control, it is considered unlikely that trees or any flora of conservation significance would be located in or adjacent to the works. After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Sections 3.1), the Delegated Officer determined the proposed clearing in not likely to have any long-term adverse impacts on the hydrological and ecological values of the wetlands where clearing is to occur. The Delegated Officer decided to grant the amendment to the clearing permit subject to the conditions as imposed on CPS 9139/1. Condition 8 was updated to align with updated conditions for recent clearing permits for Typha removal, with the requirement to ensure that the water level is not in contact with the area beign spot sprayed. Due to practical issues in complying with this requirement, an additional option to undertake contact application of Glyphosite has been included, allowing the application of herbicide by wiping.

1.5. Site maps

The boundaries of the additional areas approved for clearing are outlined below.

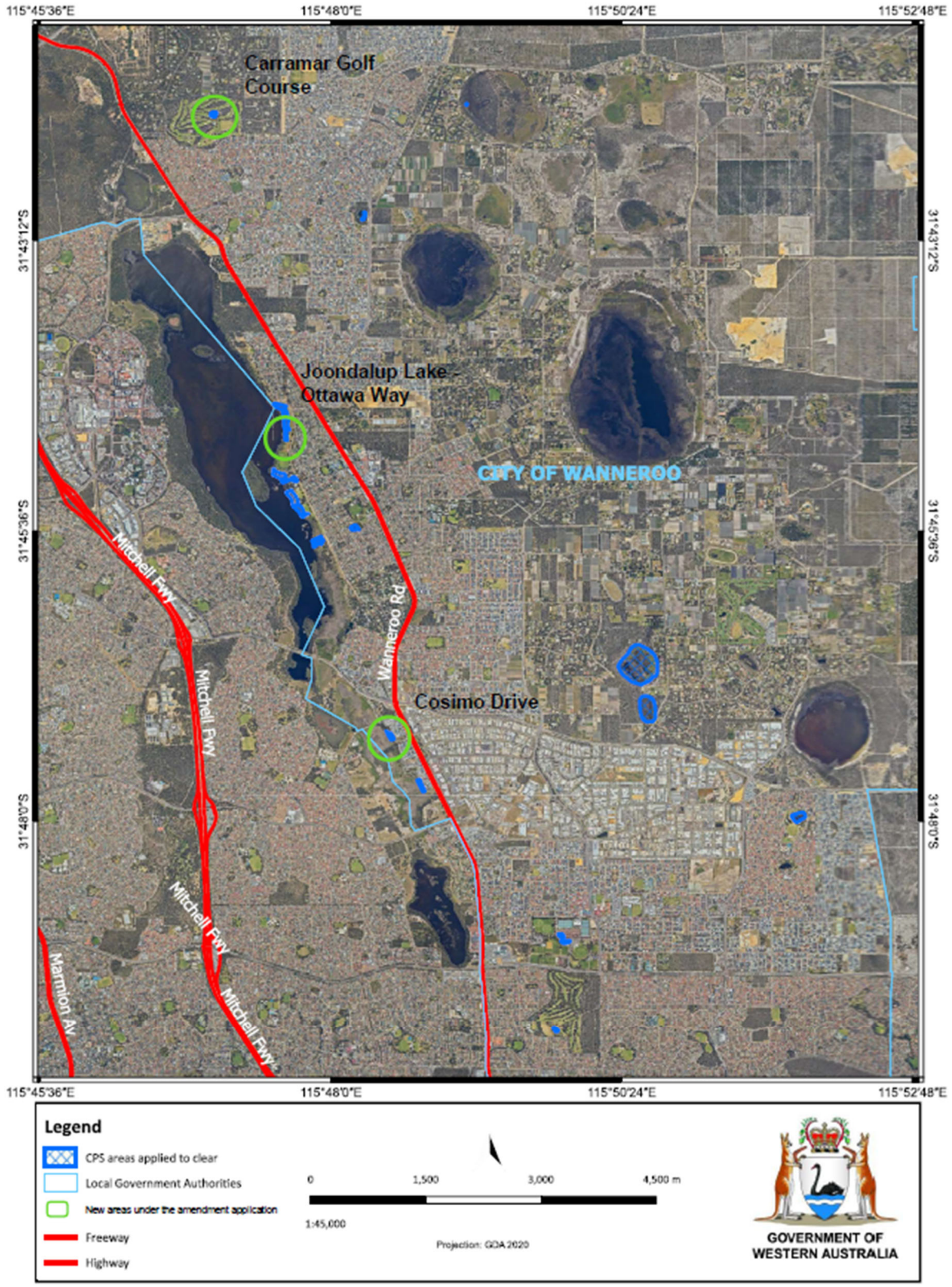

Figure 1. New areas under the amendment application (circled in green)

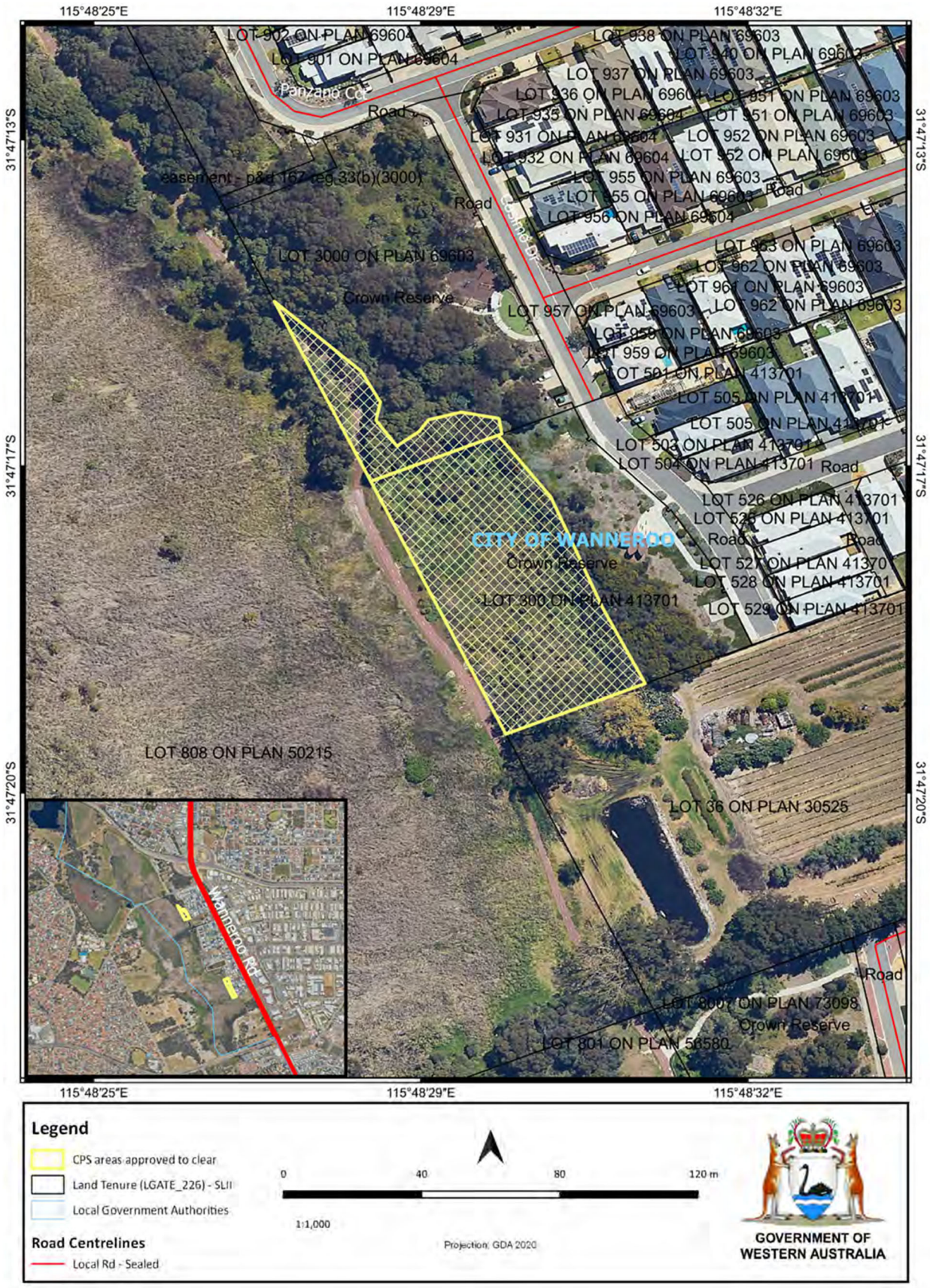

Figure 2. Cosimo Drive

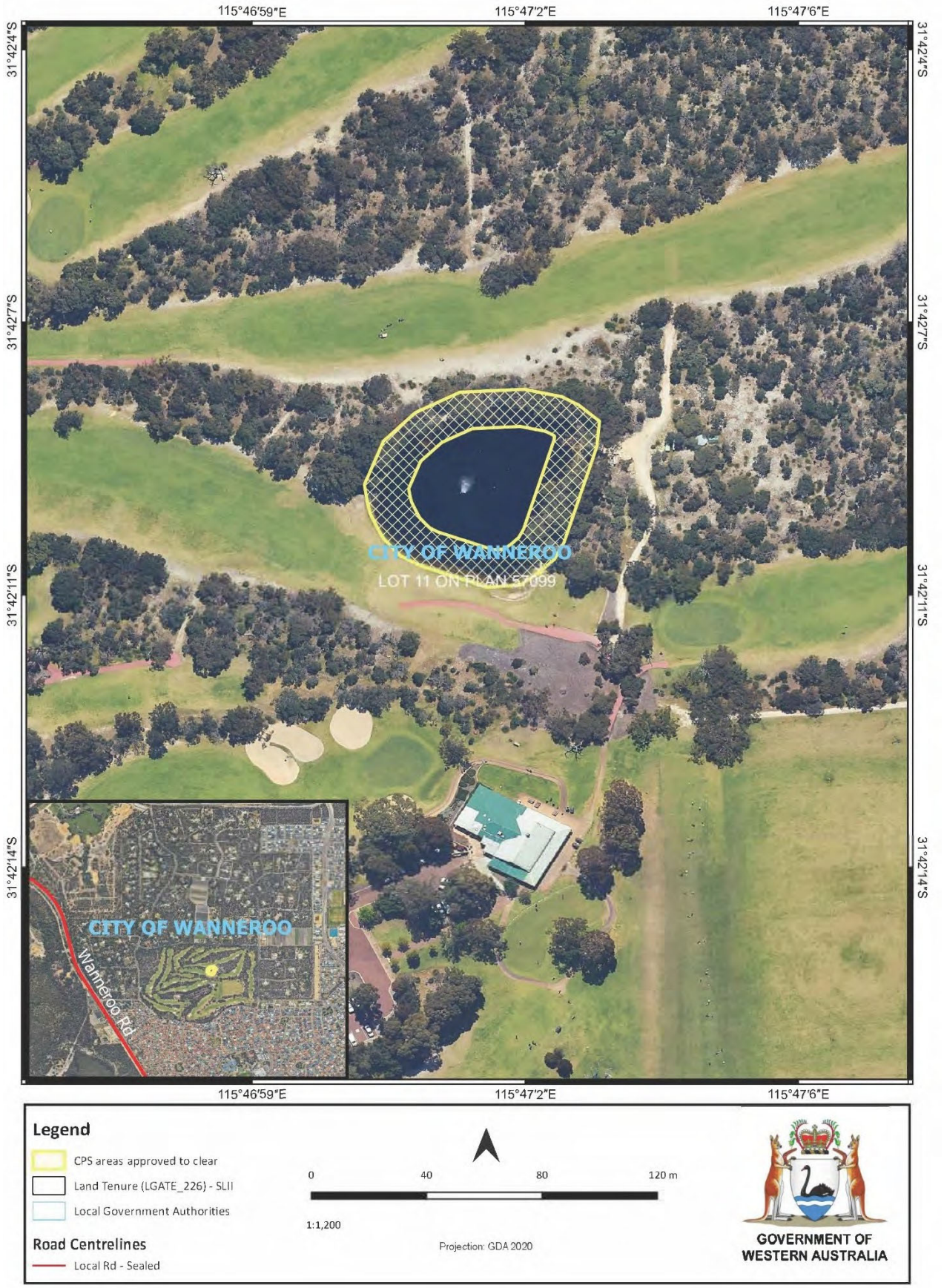

Figure 3. Carramar Golf Course

Figure 4. Lake Joondalup

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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC 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

"The clearing of Typha sp. within all submitted proposed clearing areas is required as part of the ongoing management and maintenance of the wetlands and associated infrastructure. As Typha orientalis has been reclassified as a naturalised species within Western Australia, the City is unable to adequately maintain these natural and constructed wetlands. Typha is an invasive species and can form monocultures within wetlands, therefore allowing it to grow without management will cause a decline in the condition of the wetlands and prove difficult to maintain drainage or irrigation areas. *Typha domingensis* has also been included in this application as it can be difficult to discern between *T. orientalis* and *T. domingensis*. The City has determined there is no other option than to apply for the clearing of *T. orientalis* and *T. domingensis* in order to maintain wetlands to the standards required, to prevent a decline in the biodiversity values of natural wetlands and to maintain drainage and irrigation infrastructure." (City of Wanneroo, 2022).

The need to undertake control of Typha sp. in additional areas (0.93 hectares) under this amendment were to:

<u>Lake Joondalup site</u>

- The City has commenced the clearing of *Typha*. Within approved clearing areas (under CPS 9139/2) and has identified that the extent of *Typha* at Lake Joondalup exceeds the current approved area, in particular the sites identified as: Turtle Nesting Site, Frogs Hollow and Wanneroo Recreation Centre Site.
- An additional extension of the site identified as the Ottawa Revegetation Site area at Lake Joondalup has been included in the amendment to facilitate revegetation activities undertaken by the City as part of the annual Capital Works program.
- Clearing of *Typha* will be undertaken utilising the same methodology as the other conservation areas: a combination of mechanical and chemical treatments will be utilised to manage and control *Typha* The City intends to firstly brushcut the *Typha* to remove the biomass which will subsequently be removed from site. *Typha* will then be treated with Glyphosate Biactive through directly spraying on the foliage. Follow up treatment will occur for any remaining *Typha*. For *Typha* that is located within other native vegetation, Glyphosate Biactive will be applied to the leaves by wiping equipment.
- The clearing of *Typha* will reduce the likelihood of monocultures of *Typha*, increase density of native riparian and wetland vegetation and improve the biodiversity values of the wetland (City of Wanneroo, 2022).

<u>Chianti Estate, Woodvale – 26 Cosimo Drive</u>

- This site has recently been handed to the City by the developer of the Estate and contains significant amounts of *Typha* within a planted revegetation area. The total clearing area of the site is 0.42 hectares. The site is adjacent to the Yellagonga Regional Reserve and the associated wetlands.

- Methods to clear *Typha* are proposed to be the same as methods used at the Lake Joondalup sites (as described above).
- The clearing of *Typha* will reduce the likelihood of monocultures of *Typha*, increase density of native riparian and wetland vegetation and improve the biodiversity values of the wetland.

Carramar Golf Course, Carramar

- Within this land parcel is a man-made lake which has been created for the purposes of water management and irrigation of the golf course. This area was not included in the original permit, however, the control of *Typha* sp. is required as part of the maintenance of the irrigation lake. The total clearing area for the Carramar Golf Course is 0.311 hectares.
- Within the proposed clearing area, the City will only be undertaking the clearing of *Typha* through draining of the constructed lake and cutting *Typha* at ground level. The lake is deep enough to allow for an amount of water to be retained while still being able to remove *Typha*.
- The lake will then be refilled. The removal of *Typha* will reduce the likelihood of monocultures of *Typha*, enhance the condition of the man-made lake, allow for the maintenance of the irrigation lake and allow for recruitment of native riparian and wetland vegetation (City of Wanneroo, 2022).

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

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix B) reveals that the assessment against the clearing principles has not changed from the Clearing Permit Decision Report CPS 9139/1 for the areas approved under the original permit.

Noting this and that the assessment was undertaken in 2021 and the purpose of the clearing is for Typha management (only clearing typha), a detailed reassessment of the original areas was not required. Only the additional areas were assessed; Joondalup Lake, Cosimo Drive and Carramar Golf Course (See Section 1.5). The assessment against the clearing principles (See Appendix C) identified that the impacts of the proposed clearing may present a risk to fauna, flora, conservation areas, and land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with section 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (biodiversity) – Clearing Principle (a, b and d)

Assessment

According to available databases, 11 threatened flora species were mapped as possibly occurring within the local area of which the survey provided in the application recorded two flora species as being present n the application area; *Poranthera moorokatta* and *Jacksonia sericea* (Carramar 2023).

Poranthera moorokatta (Priority 2) is an erect herb growing to 4.7cm. It ranges between Kings Park and Ellenbrook (Carramar 2023). Given that the proposed clearing is targeted towards the removal of Typha, it is not likely that this species will be affected.

Jacksonia sericea (Priority 4) was not mapped during the spatial assessment, however the survey provided by the applicant records the presence of this species within the Carramar application area. *Jacksonia sericea* is a low spreading shrub that ranges along the near-coast areas between Pinjarra and Wanneroo with multiple populations across the Swan Coastal Plain. Given that the proposed clearing is targeted towards the removal of Typha, it is not likely that this species will be affected.

Spatial data also indicated that the area proposed to be cleared may contain habitat for threatened fauna species (Appendic C.4). Of the listed species, only the Priority 4 *Oxyura australis* (Blue-billed duck) is most likely to occur in association with Typha stands.

The Priority 4 Blue-billed duck has 73 records within the local area. This species can breed from August to March, mostly between October to January (DBCA 2021). Breeding habitat is typically secluded densely vegetated situations, with the nest constructed in Typha beds or other vegetation, in permanent water. Nests are usually constructed from dead Typha leaves and sometimes thinly lined with down (Birdlife Australia, 2020a). According to aerial imagery, the above nesting is likely to occur within close proximity to the application area. Considering the

number of records associated with the application area and the availability of habitat, Blue billed duck may use these areas for breeding and are therefore unlikely to have a significant impact from the Typha clearing.

Calyptorhynchus baudinii (Baudin's black cockatoo), *Calyptorhynchus latirostris* (Carnaby's cockatoo), and *Calyptorhynchus banksii naso (Forest Red-tailed Cockatoo)* have been recorded in the local area, however as Typha does not provide suitable foraging or breeding habitat for any of these species, it is considered that the proposed clearing will not impact these species.

The additional area proposed for clearing; Lake Joondalup, Cosimo Drive and Carramar Golf Course are all mapped within or adjacent to a threatened ecological community (TEC) - Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Banksia Dominated Woodlands). The Banksia Dominated Woodlands are defined by regions being predominately dominated by one of four Banksia sp – *Banksia attenuate, Banksia menziesii, Banksia prionotes or Banksia ilicifolia* (DCCEEW 2021). As the clearing is targeted explicitly towards Typha, which is not representative of the Banksia Dominated Woodlands, the proposed clearing is not likely to negatively impact this TEC.

Conclusion

Based on the above assessment, stands of Typha located at Joondalup Lake, Cosimo Drive and Carramar Golf Course does not provide a key habitat for threatened flora species. The Blue-billed duck may utilise Typha for its breeding habitat within the Carramar Golf Course region, however with the abundance of habitat available the removing of Typha is not expected to impact this species. For these reasons set out above, it is considered that the impacts of the proposed clearing can be managed by conducting pre-clearing site inspections and slow directional clearing.

The three application areas are mapped within a Banksia Dominated Woodland TEC. However, as Typha is not representative of this TEC, it is considered that this clearing will not have any environmental impact on this TEC.

Conditions

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

- Pre-clearing site inspections prior to works commencing and ongoing during works for any fauna that may be present. If found and are not able to escape into adjacent habitat, the City of Wanneroo is to cease works until the identified fauna has been translocated.
- Undertake slow, progressive one directional clearing to allow terrestrial and avian fauna to move into adjacent habitat ahead of the clearing activity.
- Undertake spraying of Glyphosate during the driest period of the year when the water level is at its lowest, with spot spraying allowed only when the wetland water level is not in contact with the area being sprayed; where this is not possible, contact application (the application of herbicide by wiping) is allowed.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

3.2.2. Environmental value (conservation areas) – Clearing Principle (h)

Assessment

The application area includes a portion of Joondalup Lake Nature reserve and Yellagonga Regional Park which are both within the Lake Joondalup application areas. The application area within Lake Joondalup also intersects a bush forever site (site ID: 299).

The application area in Cosimo Drive is adjacent to a DBCA legislated tenure (Crown Allotment) but does not intersect the application area. The application area is also mapped adjacent to the bush forever site mentioned above (site ID: 299).

The application within Carramar Golf Course does not impact any conservation areas.

As discussed in section 1.2, the proposed clearing will only target Typha. Although typha is a native species it is impacting on native ecosystems across the swan coastal plain. The proposed clearing is part of a management plan subscribed to improve the conservation value of the above reserve and regional park. The applicant has proposed specific methods of Typha control to mitigate impacts within these areas, including;

- Clearing activity to occur in the low water season, October to March.
- Typha will be cleared in a staged mosaic pattern, clearing and removing only small areas at a time.
- Using a wiping/contact chemical control method for Typha stands growing amongst native vegetation.

- Cleared areas will be rehabilitated with endemic reed species during winter.

The adjacent vegetation is susceptible to weed invasion and dieback in which the clearing process may exacerbate thereby reducing quality of native vegetation present in the above-mentioned reserves.

Conclusion

Given the nature of the clearing, Typha removal will be beneficial to the maintenance of species composition and structure of the fauna and flora habitats of conservation areas adjacent to the proposed clearing. Weed dieback management practises will mitigate against any potential impacts to the adjacent native vegetation.

Conditions

To address the above impacts, the implementation of weed and dieback management strategies as a condition on the permit will mitigate the impacts to adjacent vegetation and fauna habitat.

The following conditions will also further mitigate potential impacts from the nature of the clearing (chemical removal):

- Undertake spraying of Glyphosate during the driest period of the year when the water level is at its lowest, and in calm conditions, with spot spraying allowed only when the wetland water level is not in contact with the area being sprayed; where this is not possible, contact application (the application of herbicide by wiping) is allowed.

3.3. Relevant planning instruments and other matters

There are no additional planning or other matters that have arisen since the grant of Clearing Permit CPS 9139/1 that would influence the decision to approve the amendment in this instance.

As stated in the decision report for CPS 9139/1, several 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. List of properties where clearing is to occur

Crown Reserve (PIN 408326) Wanneroo
Lot 300 on Deposited Plan 106721 Wanneroo
Lot 740 on Deposited Plan 245969 Wanneroo
Crown Reserve (PIN 408324) Wanneroo
Crown Reserve (PIN 11377834) Wanneroo
Crown Reserve (PIN 1126271) Wanneroo
Crown Reserve (PIN 408314) Wanneroo
Crown Reserve (PIN 408313) Wanneroo
Crown Reserve (PIN 1088896) Wanneroo
Crown Reserve (PIN 408320) Wanneroo
Crown Reserve (PIN 408319) Wanneroo
Crown Reserve (PIN 408317) Wanneroo
Crown Reserve (PIN 408316) Wanneroo
Crown Reserve (PIN 1068) Wanneroo
Lot 2451 on Deposited Plan 133174 (Crown Allotment PIN 408319) Wanneroo
Lot 2385 on Deposited Plan 133173 (Crown Allotment PIN 408317) Wanneroo
Lot 2384 on Deposited Plan 133172 (Crown Allotment PIN 408320) Wanneroo
Lot 774 on Deposited Plan 246224 (Crown Allotment PIN 408313) Wanneroo
Lot 672 on Deposited Plan 245973 (Crown Allotment PIN 408316) Wanneroo
Crown Reserve (PIN 9407) Wanneroo
Crown Reserve (PIN 9360) Wanneroo
Crown Reserve (PIN 9359) Wanneroo
Lot 143 on Plan 10445 (Crown Allotment PIN 9360) Wanneroo
Lot 139 on Plan 9815 (Crown Allotment PIN 9407) Wanneroo
Lot 137 on Plan 10027 (Crown Allotment PIN 9359) Wanneroo
Lot 73 on Diagram 56768 Wanneroo
Lot 36 on Diagram 48067 Wanneroo
Lot 1 on Diagram 62246 Wanneroo
Lot 11524 on Diagram 56917 Wanneroo
Crown Reserve (PIN 4826) Mariginiup
Lot 300 on Deposited Plan 301991 Wanneroo
Easement on Deposited Plan 76721 (PIN 12033733) Wanneroo
Easement on Deposited Plan 68139 (PIN 11914148) Woodvale
Crown Reserve (PIN 11043623) Wanneroo
Lot 41 on Plan 32924 (Crown Allotment PIN 11043626) Wanneroo
Lot 40 on Plan 32924 (Crown Allotment PIN 11043625) Wanneroo
Lot 39 on Plan 32924 (Crown Allotment PIN 11043624) Wanneroo
Crown Reserve (PIN 11023502) Wanneroo
Crown Reserve (PIN 1359140) Wanneroo
Crown Reserve (PIN 1359137) Wanneroo
Lot 8 on Deposited Plan 231377 (Crown Allotment PIN 1069) Wanneroo
Crown Reserve (PIN 11043625) Wanneroo
Crown Reserve (PIN 11043624) Wanneroo
Crown Reserve (PIN 11043626) Wanneroo
Crown Reserve (PIN 1060196) Marangaroo
Lot 13968 on Plan 23449 (Crown Allotment PIN 1284672) Landsdale
Crown Reserve (PIN 12324956) Woodvale
Crown Reserve (PIN 11926159) Woodvale
Lot 300 on Deposited Plan 413701 Woodvale
Crown Reserve (PIN 1284672) Landsdale

Crown Reserve (PIN 12033732) Wanneroo
Lot 801 on Deposited Plan 76721 Wanneroo
Lot 800 on Deposited Plan 76721 Wanneroo
Crown Reserve (PIN 11914120) Wanneroo
Lot 3000 on Deposited Plan 69603 Woodvale
Crown Reserve (PIN 11921958) Wanneroo
Lot 8001 on Deposited Plan 68139 Woodvale
Crown Reserve (PIN 11841633) Madeley
Lot 555 on Deposited Plan 64232 Madeley
Lot 808 on Deposited Plan 50215 Woodvale
Crown Reserve (PIN 11480003) Tapping
Lot 705 on Deposited Plan 46781 Tapping
Lot 12421 on Plan 20358 (Crown Allotment PIN 1126271) Wanneroo
Lot 11921 on Plan 18933 (Crown Allotment PIN 1088896) Wanneroo
Lot 501 on Deposited Plan 73317 Wanneroo
Crown Reserve 33206 (PIN 11979362) Wanneroo
Lot 11 on Diagram 57099 Carramar
Lot 300 on Deposited Plan 413701 Woodvale
Crown Reserve 50955 (PIN 12324956) Woodvale
Lot 500 on Deposited Plan 422145 Landsdale
Lot 500 on Deposited Plan 418473 Marangaroo

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The three additional areas are distributed across various properties managed by the City of Wanneroo. Two areas are extensions of areas approved under CPS 9139/1 (Lake Joondalup (Figure 4) and Cosimo Drive (Figure 2) and one additional wetland (Carramar Drive) (Figure 3). The application area is in the intensive land use zone of Western Australia. It is surrounded by highly cleared residential areas. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 22.32 per cent of the original native vegetation cover.
Ecological linkage	Cosimo Drive & Joondalup lake is mapped within an Ecological linkage, Gnangara Ecological linkage, a bush forever associated conceptual linkage / Perth regional ecological linkage. Carramir drive is not within a mapped ecological linkage.
Conservation areas	Cosimo Drive: Adjacent to DBCA legislated tenure and Bush Forever site 299 Joondalup lake: Partially within DBCA legislated tenure "Lake Joondalup Nature Reserve". Within Yellagonga regional park. Within bushforever site 299 Carramir drive: not within or adjacent to a conservation area
Vegetation description	Photographs and surveys supplied by the applicant indicates the vegetation within the proposed clearing area consists of the information as follows. Representative photos are available in Appendix E. Cosimo Drive: Predominantly open forest of *Eucalyptus gomphocephala* (tuart) - *Eucalyptus marginata* subsp. *marginata* (jarrah) - *Corymbia calophylla* (marri) and

Characteristic	Details
	woodland of *Eucalyptus marginata* subsp. *marginata* (Jarrah), Banksia species and *Agonis flexuosa* (peppermint) Joondalup lake: Sedgelands and fringing woodland of *Eucalyptus rudis* (flooded gum) - Melaleuca species. Carramir drive: constructed lake and open woodland to open forest of *Eucalyptus marginata* subsp. *marginata* (jarrah), *Banksia attenuata, B. menziesii* and/or *Allocasuarina fraseriana* over modified understorey. This is broadly consistent with the mapped vegetation type(s): • Karrakatta Complex-Central and South, which is described as Predominantly open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) - *Banksia* species. *Agonis flexuosa* (Peppermint) is co-dominant south of the Capel River. The mapped vegetation type retains approximately 23.5 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing areas are in the following (Keighery 1994) conditions, described as: • Good: Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing. • Degraded: Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing. • Completely degraded: the structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. Cosimo Drive: mostly in Good condition Joondalup lake: In Good to Degraded condition Carramir drive: In Completely Degraded condition The full Keighery (1994) condition rating scale is provided in Appendix DD. Representative photos are available in Appendix EE.
Climate and landform	The climate is classified as Mediterranean, with dry, hot summers and cool, wet winters. • Average rainfall is 789.1 mm per annum, with the majority falling between May and August.
Soil description	The soils within the new areas are mapped as • Spearwood wet, swamp phase, • Spearwood wet, lake phase, and • Karrakatta sand yellow phase, described as Low hilly to gently undulating terrain, yellow sand over limestone at 1-2 m, *Banksia* spp. woodland with scattered emergent *E. gomphocephala* and *E. marginata* and a dense shrub layer. Cosimo drive: Spearwood wet, swamp Phase (211SpW_SWAMP) and Karrakatta Sand Yellow Phase (211Sp__Ky) Joondalup lake: Spearwood wet, lake Phase (mu_system 211Sp) Carramir: Karrakatta Sand Yellow Phase (211Sp__Ky)

Characteristic	Details
Land degradation risk	Summarised in table C.6
Waterbodies	*A*ll sites that comprise the application area intersect inland waterbodies and wetlands, including: Cosimo drive: - Within mapped geomorphic wetland - Wallubuenup Swamp - conservation category sumpland Joondalup lake: - Application area is within a mapped wetland in the directory of important wetlands "Joondalup Lake", a perennial lake Carramir drive: - The application area is mapped as perennial manmade waterbody
Hydrogeography	Cosimo drive - Within Perth Groundwater Area - Within Perth Coastal and Gwelup Underground Water Pollution Control Area (Public Drinking Water Source Area) Joondalup lake: - Within Perth Groundwater Area - Within a Priority 3 Public Drinking Water Source Area (PDWSA) Carramir drive: - Within Wanneroo Coastal Lakes catchment - Within Wanneroo Groundwater Area
Flora	The nearest conservation significant flora record in the local area (of the additional areas) is *Poranthera moorokatta*. This species is recorded 1.55 kilometres from the application area. A total of 11 species of conservation significant flora occur within the local area. There are five species of conservation significant flora that are known to be associated with wetland habitats and could possibly occur adjacent to Typha stands (Appendix B.3).
Ecological communities	All three additional areas are mapped within or adjacent to Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region, state listed as priority 3 and federally listed as endangered.
Fauna	There are 20 fauna species of conservation significance within the local area. In the local area there are four records for *Calyptorhynchus baudinii* (Baudin's cockatoo) and 486 records for *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo), there are also a large number of records of *Calyptorhynchus latirostris* (Carnaby's cockatoo). A total of 20 species were identified to be potentially associated with freshwater wetland habitats (Section D.4).

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*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex**					
Karrakatta Complex-Central and South (system 49)	53,080.99	12,467.20	23.49	4,282.73	8.07
Local area					
10km radius	44,805	10,002	22.32	-	-

*Government of Western Australia (2019)

B.3. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix F.1), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)
Poranthera moorokatta	P2	Y	1.55
Stylidium paludicola	P3	Y	2.55
Drosera x sidjamesii	P1	Y	4.19
Cyathochaeta teretifolia	P3	Y	4.26
Stylidium paludicola	P3	Y	5.74
Stylidium longitubum	P4	Y	7.62
Netrostylis sp. Chandala (G.J. Keighery 17055)	P2	Y	8.65

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

B.4. Fauna analysis table

Species name	Conservation status
Calyptorhynchus baudinii	EN
Calyptorhynchus latirostris	EN
Dasyurus geoffroii	VU
Hydromys chrysogaster	P4
Isoodon fusciventer	P4
Ixobrychus dubius	P4
Oxyura australis	P4

Species name	Conservation status
Plegadis falcinellus	MI
Sternula nereis nereis	VU
Tringa glareola	MI
Tringa nebularia	MI
Tringa stagnatilis	MI

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

B.5. Land degradation risk table

Risk categories	Cosimo drive	Joondalup lake	Carramir drive
Wind erosion	>70% of map unit has a high to extreme wind erosion risk	<3% of map unit has a high to extreme wind erosion risk	>70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid	<3% of map unit has a high subsurface acidification risk or is presently acid	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of map unit has a moderate to high flood risk	>70% of the map unit has a moderate to high flood risk	<3% of map unit has a moderate to high flood risk
Water logging	>70% of map unit has a moderate to very high waterlogging risk, and <3% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk	<3% of map unit has a moderate to very high waterlogging risk
Water repellence	3-10% of map unit has a high water repellence risk, and <3% of map unit has a high water repellence risk	<3% of map unit has a high water repellence risk	3-10% of map unit has a high water repellence risk
Phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk, and 3-10% of map unit has a high to extreme phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk	3-10% of map unit has a high to extreme phosphorus export risk

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 additional area proposed to be cleared may contain locally or regionally significant assemblages of plants. Spatial data indicated that the area proposed for clearing may contain 11 threatened flora species of which site inspection reports from the applicant references two species within the application area; *Poranthera moorokatta* and *Jacksonia sericea.*	Not likely to be at variance (as per CPS 9139/2)	Yes *Refer to Section 3.2.1, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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 contain foraging and breeding habitat for conservation significant fauna.	May be at variance (as per CPS 9139/2)	Yes *Refer to Section 3.2.1, 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 may contain habitat flora species listed under the BC Act.	Not likely to be at variance (as per CPS 9139/2)	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 additional areas proposed to be cleared are all mapped within or adjacent to Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region TEC/PEC, however does not contain species assemblages that are representative of the TEC/PEC.	Not likely to be at variance (as per CPS 9139/2)	Yes *Refer to Section 3.2.2, above.*
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 native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia for constrained areas. The vegetation proposed to be cleared is not considered to sever any ecological linkage in the local area.	Not at variance (as per CPS 9139/2)	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 may have an impact on the environmental values of adjacent and nearby conservation areas. Given the purpose of the proposed clearing is to create and improve wetland habitats, it is not likely to have an impact on the environmental values of the reserves and conservation schemes within the local area.	Not likely to be at variance (as per CPS 9139/2)	Yes *Refer to Section 3.2.3, above.*
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 application area is within a watercourse/wetland.	At variance (as per CPS 9139/2)	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Noting the definition of the principle, the proposed clearing is at variance with this principle. Typha forms a natural component of native wetland and watercourse vegetation. However, Typha can dominate wetland ecosystems. Given the nature of the proposed clearing, it is unlikely to significantly impact wetlands or watercourses.		
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: There is a high degree of variation between soils within the application area. A number of soils are susceptible to one or more variability of degradation risk, including wind, water erosion, phosphorus export and Subsurface Acidification. Typha control methods proposed are not likely to have an appreciable impact on land degradation.	May be at variance (as per CPS 9139/2)	No
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: The removal of Typha may increase water turbidity. However impacts are likely to be minimal and short term.	May be at variance (as per CPS 9139/2)	No
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: In addition to improving wetland habitats, the purpose of the proposed clearing is to improve water flow, by monitoring and removing dense stands of Typha. Therefore, the proposed clearing is unlikely to contribute to waterlogging or increase incidence of flooding.	Not at variance (as per CPS 9139/2)	No

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 Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.

Condition	Description
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Photographs of the vegetation

Figure 5. Example of vegetation at Lake Joondalup (City of Wanneroo, 2022)

Figure 6. Example of vegetation at Carramar Golf Course

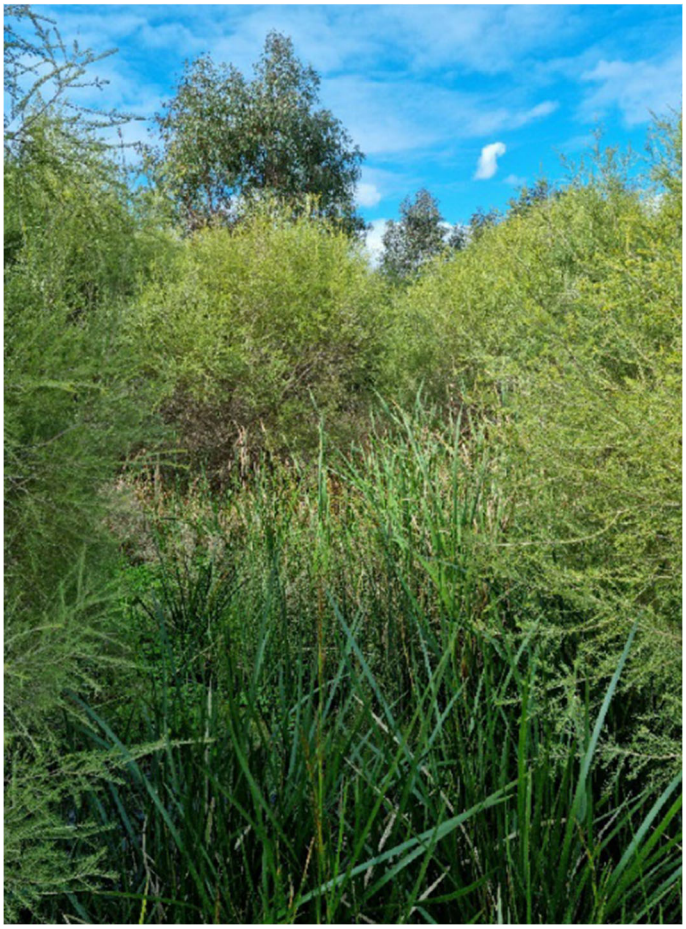

Figure 7. Example of vegetation at Cosimo Drive

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)

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