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 10324/1
Permit type:	Area permit
Applicant name:	City of Albany
Application received:	1 September 2023
Application area:	0.96 hectares of native vegetation
Purpose of clearing:	Clearing drainage systems of *Typha orientalis*
Method of clearing:	Mechanical
Property:	Lot 329 on Deposited Plan 222010 (Crown Reserve 22058) Lot 16 on Plan 306 (Crown Reserve 43653) Lot 1263 on Deposited Plan 213586 (Crown Reserve 34381) Lot 1262 on Deposited Plan 27885 (Crown Reserve 34381) Lot 1435 on Plan 17902 (Crown Reserve 43574) Lot 1393 on Deposited Plan 190619 (Crown Reserve 34381) Lot 7807 on Deposited Plan 192246 Crown Reserve 43653) Lot 101 on Diagram 96001 Lot 7829 on Deposited Plan 192271 (Crown Reserve 36837) Lot 0 on Diagram 70604 Lot 333 on Deposited Plan 49076 (Crown Reserve 35088) Lot 501 on Deposited Plan 62377 (Crown Reserve 5163) Lot 3000 on Deposited Plan 64517 Crown Reserve 1299) Lot 300 on Deposited Plan 401416 (Crown Reserve 52014) Rufus Street road reserve (PIN 1254846) Unnamed Road Reserve (PIN 1266771) Troode Street road reserve (PIN 1266775) Closed Road Reserve (PIN 11499565) Coogee Street road reserve (PIN 11749733) Albany Highway road reserve (PIN 11749735) Unnamed Road Reserve (PIN 11817930)
Location (LGA area/s):	City of Albany
Localities (suburb/s):	Collingwood Park, Yakamia, Milpara, Centennial Park, Orana, Middleton Beach and Sepping

1.2. Description of clearing activities

The vegetation proposed to be cleared is spread across multiple drainage systems within the City of Albany (see Figure 1-9, Section 1.5). The application is to selectively clear 0.96 hectares of Typha species to prevent the drainage system blocking and causing localised flooding in the area. The clearing will involve mechanical removal using hand tools and excavators (City of Albany, 2023a).

1.3. Decision on application

Decision:	Granted
Decision date:	25 March 2024
Decision area:	0.96 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 14 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 purpose of the clearing is to remove *Typha orientalis*, an invasive native species capable of aggressive invasions that can transform ecosystems and clog drainage channels unless it is actively managed (Western Australian Herbarium 1998-), to increase water drainage in the area and reduce flooding. It is not expected that the removal of *Typha orientalis* to maintain the drainage system will result in significant impacts to environmental values in the application area.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for the blue billed duck (*Oxyura australis*) and the south western snake necked turtle (*Chelodina colliei*)
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation or significant impacts to the blue billed duck and south western snake necked turtle. The applicant has suitable demonstrated avoidance and minimisation measures.

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

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- undertake slow, progressive one directional clearing to allow fauna to move into adjacent habitat ahead of the clearing activity;
- 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 to adjacent habitat, the City of Albany is to cease works until the identified fauna has been translocated; and
- The permit holder must not clear within the south western snake necked turtle breeding season between September and January

1.5. Site maps

Figure 1 Context Map of the application area

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

CPS 10324/1 - Plan A

Figure 2 Plan A of the application area

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

CPS 10324/1 - Plan B

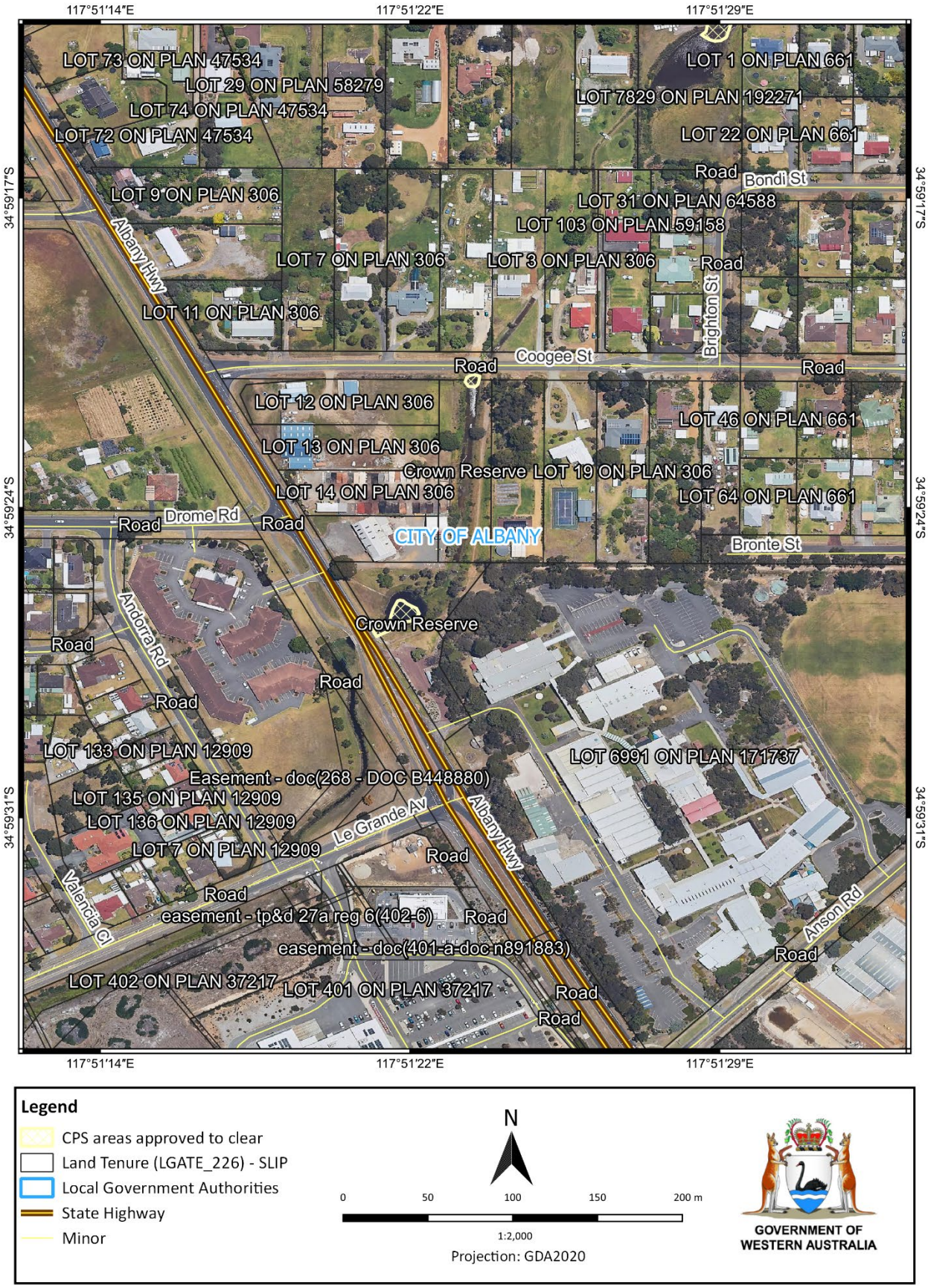

Figure 3 Plan B of the application area

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

CPS 10324/1 - Plan C

Figure 4 Plan C of the application area

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

CPS 10324/1 - Plan D

Figure 5 Plan D of the application area

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

CPS 10324/1 - Plan E

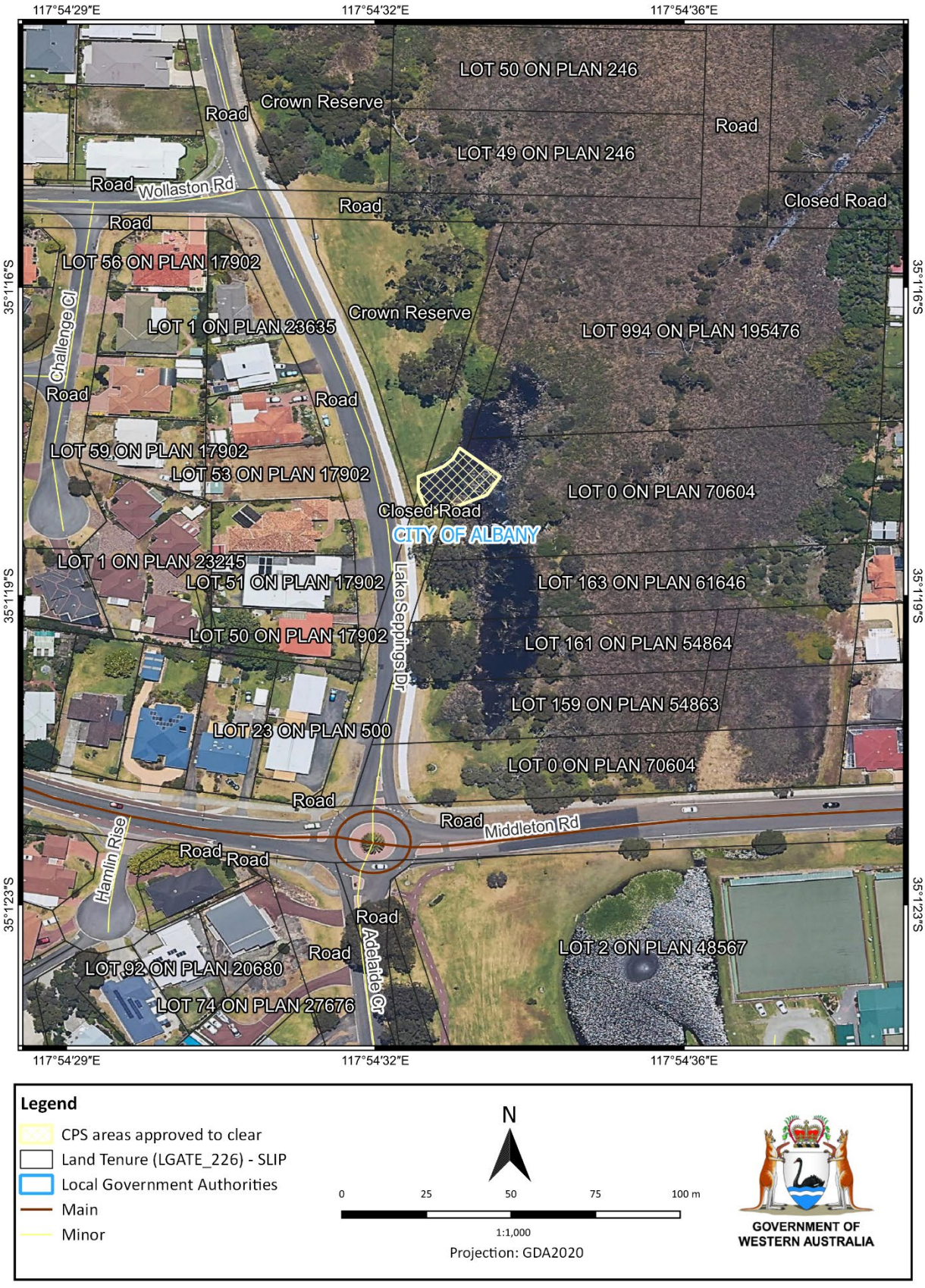

Figure 6 Plan E of the application area

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

CPS 10324/1 - Plan F

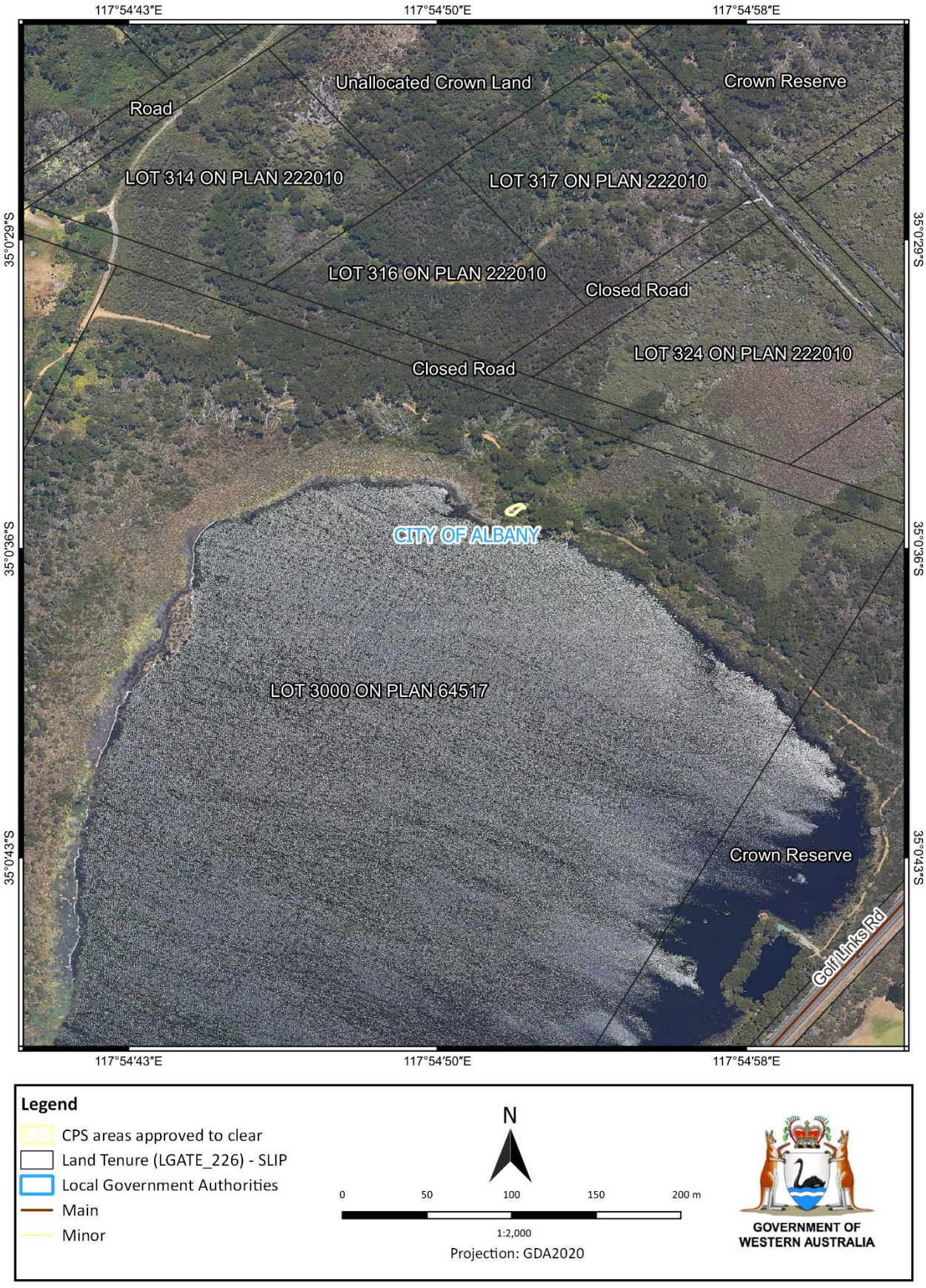

Figure 7 Plan F of the application area

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

CPS 10324/1 - Plan G

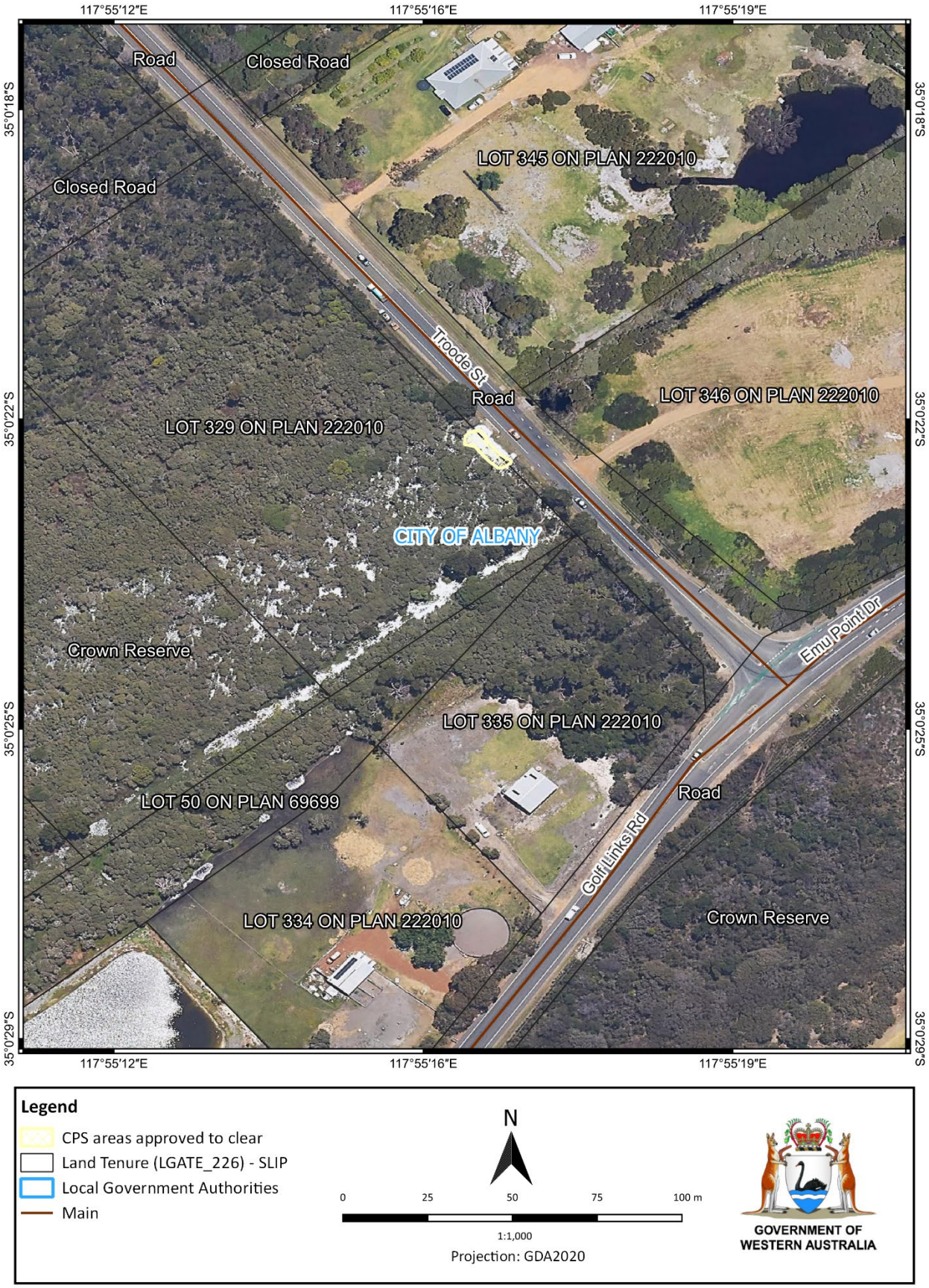

Figure 8 Plan G of the application area

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

CPS 10324/1 - Plan H

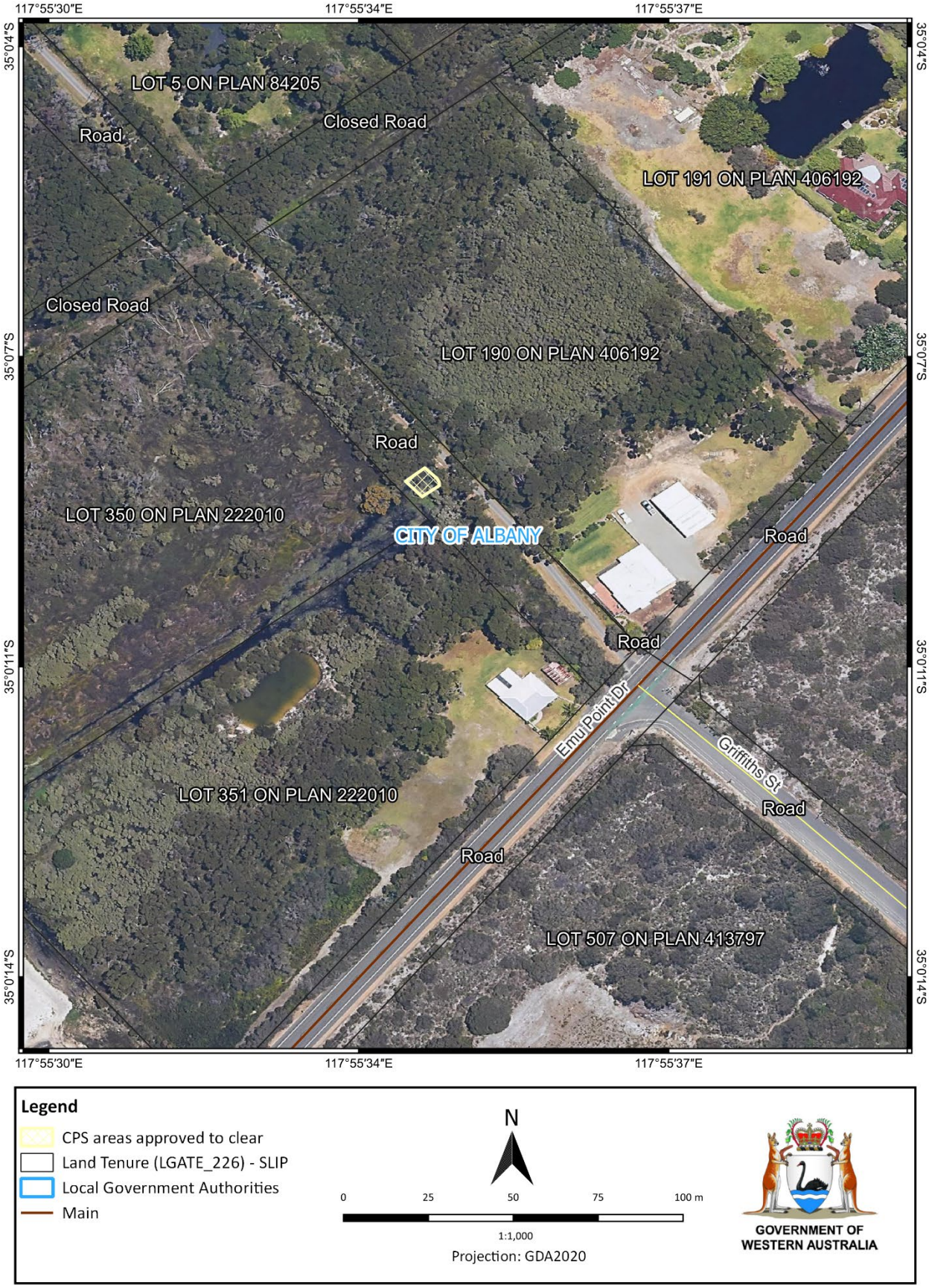

Figure 9 Plan H of the application area

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

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that only *Typha orientalis* would be targeted within the various settlement ponds, retention ponds and drains areas where the water flow is reduced. The applicant acknowledged the two Lake Seppings locations would require additional sensitivity due to the area being habitat for the Western Longneck Turtles and a Black cockatoo roosting area. No other native vegetation understory or trees would be impacted by the clearing of Typha (City of Albany, 2023a).

The application was revised during the validation process in response to a request for information. The applicant clarified that the initial area around the drainage lines needed to be redefined and was subsequently reduced from 2.4 hectares to 1.19 hectares.

The application was revised during the assessment process in response to advice from the contaminated sites branch advising that Lot 4743 on Deposited Plan 248843 was classified as ‘remediated for restricted use’ due to historical operations on the site as a municipal depot. The branch advised the use of a site management plan to address the human health risks associated with encountering soil impacted by polycyclic aromatic hydrocarbons and acid sulfate soil (DWER, 2023c). The applicant responded that Typha removal in that Lot was not high priority and requested it be removed from the application (City of Albany, 2023b). This further reduced the clearing area from 1.19 hectares to 0.96 hectares.

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

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 present a risk to biological values (fauna and adjacent flora) 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 sections 51H and 51I of the EP Act, is set out below.

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

Assessment

According to available databases, a total of 86 conservation significant fauna occur in the local area (10 kilometre radius). The area in which clearing is proposed may provide suitable habitat for 39 conservation significant fauna.

The application area may provide habitat for the following 26 migratory or wetland bird species. These species are:

- *Actitis hypoleucos* (common sandpiper)
- *Apus pacificus* (fork-tailed swift)
- *Ardenna carneipes* (flesh-footed shearwater)
- *Calidris acuminata* (sharp-tailed sandpiper)
- *Calidris canutus* (red knot)
- *Calidris ferruginea* (curlew sandpiper)
- *Calidris ruficollis* (red-necked stint)
- *Calidris subminuta* (long-toed stint)
- *Calidris tenuirostris* (great knot)
- *Charadrius leschenaultii* (greater sand plover)
- *Charadrius mongolus* (lesser sand plover)
- *Falco peregrinus* (peregrine falcon)
- *Hydroprogne caspia* (caspian tern)
- *Limosa lapponica* (bar-tailed godwit)
- *Limosa limosa* (black-tailed godwit)
- *Numenius madagascariensis* (eastern curlew)
- *Numenius phaeopus* (whimbrel)
- Pandion haliaetus (osprey)
- *Philomachus pugnax* (ruff)
- *Pluvialis fulva* (Pacific golden plover)
- *Pluvialis squatarola* (grey plover)
- *Thalasseus bergii* (crested tern)
- *Tringa glareola* (wood sandpiper)
- *Tringa nebularia* (common greenshank)
- *Tringa stagnatilis* (marsh sandpiper)
- *Xenus cinereus* (Terek sandpiper)

The abovementioned migratory or wetland bird species do not depend exclusively on foraging in habitats prone to Typha infestation, however, may be present at the time of clearing. The application area is not likely to provide significant habitat for these species, therefore impacts on these species are likely to be minimal.

Atrichornis clamosus (noisy scrub-bird, tjimiluk) is an endangered species with three records in the local area, the closest was recorded 3.09 kilometres from the application area. This species is a small bird with strong legs, has a limited capability of flight and is endemic to south-west of Western Australia (Threatened species scientific committee, 2018). While the species was recorded in the area in 2002 the only known extant population on the mainland occurs from Two Peoples Bay Nature Reserve to Cheyne Beach which is approximately 20 kilometres east of the application area. The preferred habitat for the noisy scrub bird is dense, unburnt understorey vegetation and can occur in drainage lines and uses dense clumps of sedges and shrubs for nesting with thick leaf litter for foraging. However, while the application area may provide suitable habitat, the targeted nature of the proposed clearing and the low likelihood of individuals still remaining in the area suggests the proposed clearing is unlikely to impact the noisy scrub bird.

Oxyura australis (blue-billed duck) is a Priority 4 species with 178 records in the local area. This species can breed from August to March, mostly between October to January (DBCA, 2021a). 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. Therefore, the proposed clearing may impact the breeding habitat of this species.

Botaurus poiciloptilus (Australasian bittern) is an endangered species with five records in the local area. This species favours permanent freshwater wetlands with tall, dense vegetation, particularly *Eleocharis* spp. (Spike rushes) and Typha (DBCA, 2018). The species is known to breed in Spring-Summer, with egg laying known to occur in September to December (DBCA, 2021a). The current range of the species includes the southern coastal region from Augusta to the east of Albany. Given the species has not been recorded in the local area since 1993 and the targeted nature of the proposed clearing, there is unlikely to be a significant impact to the Australasian bittern.

Dasyurus geoffroii (chuditch) is a vulnerable quoll species with three records in the local area including the application area. It is the largest carnivorous marsupial in Western Australia and occurs in jarrah forests and woodlands with

home ranges between 3-4 km for females and over 15 km for males (DEC, 2012a). While often found in higher densities in riparian vegetation, they are not associated with occurring in areas of Typha. Given the targeted nature of the proposed clearing, the chuditch is unlikely to be significantly impacted.

Isoodon fusciventer (quenda) is a Priority 4 species with 159 records in the local area including the application area. They are often found in swampy vegetation with a dense cover up to 1 metre high and have home ranges of 1- 3 hectares for females and 2-7 hectares for males (DEC, 2012b). While this species is not directly associated with Typha, they were recorded recently (2022) in the local area so may be present in the application area. However the Typha being cleared is not considered significant habitat for quenda.

Hydromys chrysogaster (water-rat, rakali) is a Priority 4 species with 14 records in the local area. Rakali are amphibious or semiaquatic mammals reaching up to 70 centimetres in length (from nose to end of the tail), feeding largely underwater, on a wide range of prey including large insects, crustaceans, mussels and fishes, and even frogs, lizards, small mammals and water birds. Although dependent on water for foraging, Rakali live on land, in burrows on low banks of rivers, lakes, wetlands, and estuaries including coastal areas. Intact riparian vegetation and associated bank stability is critical to their survival (DWER, 2023a). While not present in the application area, they may range through the application area, as ranging territory can be up to four kilometres of riverbank (DWER, 2023a).

Elapognathus minor (short-nosed snake) is a poorly known Priority 2 species with five records in the local area. The closest record is 780 metres from a site. The species is endemic to swamplands and coastlands with dense rushes and reed tussocks in the south west of Western Australia (Atlas of Living Australia, 2023). However, this species has not been recorded in the local area since 1979. Given the targeted nature of the proposed clearing, the short-nosed snake is unlikely to be significantly impacted.

Setonix brachyurus (quokka) is a small Vulnerable wallaby with seven records in the local area. They spend a large proportion of their time in riparian habitats while foraging in more open areas. They are found in high rainfall areas in forest, woodland and wetland habitats with a thick sedge understorey (DEC, 2013). There is a possibility of the species occurring within the application area but it is unlikely to be significantly impacted.

Westralunio carteri (Carter's freshwater mussel) is a Vulnerable species with four records in the local area. The current distribution of Carter's freshwater mussel is bounded by Gingin Brook in the north to the Kent, Goodga and Waychinicup Rivers in the south, within 50-100 kilometres of the coast. The species has been found to have undergone a 49 per cent reduction in extent of occurrence in less than three generations, due primarily to secondary salinisation. Apart from salinity, pereniality of stream flow was identified to be the other major limiting variable in the distribution of Carter's freshwater mussel, suggesting that habitat drying, inadequate provision of environmental stream flows and dewatering could pose further conservation constraints on the species (Klunzinger et al, 2015). While the mussel has not been recorded within the application area, suitable habitat may occur.

The applicant advised the Department that the south western snake necked turtle (*Chelodina colliei*) was present in Lake Seppings (City of Albany, 2023a; DWER, 2023b). This species has been listed as 'near threatened' by the IUCN although it has not been assessed for 20 years. The applicant advised that no works would be undertaken during the breeding season between October and December. According to the Department, the breeding season of the south western snake necked turtle lasts from September to January (DWER, 2023b). If turtles are sighted during works they will be trapped and moved by a licensed fauna handler. If any machinery is in use during the works then activities will cease until the individual is removed (City of Albany, 2023c). Any potential impacts to the south western long necked turtle will be covered by a fauna management condition and through not clearing during the breeding season.

Conclusion

Based on the above assessment, the proposed clearing may result in impacts to the blue billed duck and the south western snake necked turtle. It is considered that the impacts of the proposed clearing can be managed by conducting slow directional clearing, avoid clearing during the south western snake necked turtle breeding season, and pre-clearing site inspections. No significant impacts to fauna is expected to occur as a result of the clearing.

Conditions

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

- The permit holder must not clear within the south western snake necked turtle breeding season between September and January

- 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 Albany is to cease works until the identified fauna has left the clearing area; and
- Undertake slow, progressive one directional clearing to allow fauna to move into adjacent habitat ahead of the clearing activity.

3.2.2. Biological values (flora) - Clearing Principles (a) and (c)

Assessment

According to available databases, none of the 78 conservation significant flora recorded in the local area have been found within the application area. Ten conservation significant flora are associated with riparian habitat, these are:

- *Banksia biterax*
- *Banksia serra*
- *Boronia crassipes*
- *Conostylis misera*
- *Gonocarpus pusillus*
- *Lysinema lasianthum*
- *Microtis globula*
- *Microtis pulchella*
- *Microtis quadrata*
- *Prasophyllum paulinae*

None of the species are known to occur in stands of Typha. Given the dominance of Typha in the application area and the proposed clearing will only target Typha, it is unlikely any conservation significant flora will be negatively impacted during removal, due to the nature of the clearing.

Typha is capable of aggressive invasions that can transform ecosystems unless it is actively managed (Western Australian Herbarium 1998-). Without management, Typha can develop quickly into a monoculture and cover an entire water body. As the proposed clearing will only target Typha, it is unlikely any conservation significant flora will be negatively impacted during removal, due to the nature of the clearing. In addition, removing Typha will likely benefit the health of the ecosystem.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in a significant impact to conservation significant flora. Suitable habitat for the abovementioned species is unlikely to be significantly impacted by the proposed clearing. To minimise potential impacts of the clearing to adjacent vegetation, weed and diesback management will be required.

Conditions

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

- avoid and minimise clearing, to minimise the direct impacts to native vegetation; and
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback into adjacent native vegetation.

3.2.3. Land and water resources - Clearing Principles (f), (g), (i) and (j)

Assessment

The proposed clearing is for the purpose of controlling the occurrence of Typha due to its invasive nature and adverse impacts on wetlands in the absence of management. Given the proposed clearing will target Typha, the proposed clearing is not likely to result in any long-term impact to the ecological values of the riparian vegetation communities and associated wetlands within the application area.

The soil units mapped within the application area indicated a high risk of wind erosion, water repellence, waterlogging, subsurface acidification and phosphorus export risk. Given the selective clearing and that Typha has been found to assist in neutralising acidity on re-wetting in areas that are prone to acid sulphate soils, the proposed clearing is unlikely to cause an appreciable increase to the existing risks of wind erosion, subsurface acidification, phosphorus export and flooding (DBCA, 2019).

The removal of Typha has the potential to increase sedimentation and turbidity of the water within the application area, thereby possibly impacting surface water quality. However, due to the small scale of the clearing, it is not likely to cause long-term deterioration in the quality of surface water. Given the invasiveness of Typha, the proposed clearing may improve drainage of water and reduce the incidence or intensity of flooding.

Conclusion

The proposed clearing will not significantly impact the vegetation and is expected to enhance the habitat within the application area through the removal of Typha as the increased water drainage will reduce the risk of flooding. The selective clearing of Typha within the application area is not likely to lead to appreciable land degradation in the form of subsurface acidification, phosphorus export or wind erosion. No management conditions are required in relation to this environmental value.

3.3. Relevant planning instruments and other matters

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

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
No works will be undertaken during Western longneck turtle nesting season between October and December. If turtles are sighted during works then a licensed fauna trapper will remove the individuals and if machinery is being used the works will cease until the animals are removed (City of Albany, 2023c)	Additional condition on the permit to conduct works outside the Western longneck turtle breeding season between September and January. A fauna management condition will reduce any impact to fauna including the Western longneck turtle.

Appendix B. Site characteristics

B.1. 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.

Characteristic	Details
Local context	The proposed clearing is spread across 11 areas within various drainage systems in the intensive land use zone of Western Australia. It is mainly located in Parks and recreation zones with one in public use zone and is surrounded by agriculture, residential and special use zones. The proposed clearing area is mostly in the highly cleared landscape of the Albany urban area. Aerial imagery indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 43 per cent of the original native vegetation cover.
Ecological linkage	The application area is not within an ecological linkage, the closest is the south coast ecological linkage 5.5 kilometres from the north-east.
Conservation areas	The application area is not within a conservation area, the closest is a DBCA Conservation Park 2.5 kilometres south-west of the application area.
Vegetation description	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of *Typha orientalis*. Representative photos are available in Appendix G. This is broadly consistent with the mapped vegetation types: • Albany 3 vegetation association, which is described as forest with Mainly jarrah and marri Eucalyptus marginata, Corymbia calophylla • Albany 51 vegetation association, which is described as sedgeland with Cyperaceae, Restionaceae and Juncaceae (mainly in the South-West) • Albany 978 vegetation association, which is described as Low forest, woodland or low woodland with scattered trees with Jarrah, banksia or casuarina Eucalyptus marginata and Allocasuarina spp. (Shepherd et al, 2001) *The mapped vegetation types retain approximately 23.7, 38.35 and 24.85 per cent respectively of the original extent (Government of Western Australia, 2019).*
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in completely degraded to good (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	The climate of Albany has the highest mean maximum temperature in February at 22.9 degrees Celsius with the lowest in July at 15.8. The highest mean minimum temperature is in February at 15.6 and the lowest is in July at 8.3 degrees Celsius. The

Characteristic	Details
	rainfall is mostly received in winter between June to August with an average of 923.3 mm rainfall per year (BOM, 2023). The application area is generally flat at 35 metres above sea level further inland but is only five metres above sea level closer to the ocean. The application area is in two systems including: • King System: Dissected siltstone and sandstone terrain, on the southern edge of the Albany Sandplain Zone, with shallow gravel, sandy gravel, grey sandy duplex and pale deep sand. Jarrah-marri-sheoak woodland and mallee-heath • Torbay System: Narrow swampy coastal plain, on the southern edge of the Albany sandplain Zone. Non-saline wet soil and pale deep sand. Sedgelands, tea-tree heath and wattie-paperbark thickets.
Soil description	The soil is mapped as: • Minor Valleys S7 slope Phase, which is described as broad valleys in sedimentary rocks; 30 m relief with smooth slopes and deep sands and iron podzols on slopes. Podzols and yellow duplex soils on floors over colluvium sedimentary rocks. • Minor Valleys S7 floor Phase, which is described as footslopes and swampy valley floors of minor valleys with wet, pale deep sands and grey deep sandy duplexes with umus podzols and some yellow duplex soils on the floors over colluvial and alluvial deposits over weathered sedimentary rocks. • Owingup subsystem, which is described as Plains with swamps, lunettes and dunes. Yellow solonetzic soils, organic loams and diatomaceous earth. Podzols on dunes.
Land degradation risk	The three soil types of the application area have variable land degradation risk factors with two high risk for wind erosion and waterlogging and one with high in water repellence and phosphorus export risk. All three soil types were considered high risk for subsurface acidification.
Waterbodies	The desktop assessment and aerial imagery indicated that the application area is within manmade drainage lines, wetlands, settlement ponds, retention ponds and Lake Seepings.
Hydrogeography	The application area is not within the CAWS Act or RIWI Act water source protection areas.
Flora	78 conservation flora records in local area with the nearest record *Stylidium falcatum* 560 metres from the application area. There are 49 conservation significant flora in the same vegetation type and 27 in the same soil type. There are 10 conservation significant flora in similar habitat type to the application area.
Ecological communities	There are no significant ecological communities within the application area, with the closest, *Banksia coccinea* shrubland, *Eucalyptus staeri*, Sheoak open woodland in Community 14a as per Sandiford and Barrett 2010, 1.8 kilometres from the application area.
Fauna	86 conservation significant fauna records in local area, the closest record, the blue billed duck (*Oxyura australis*) is 30 metres from the application area. There are 51 conservation significant fauna within one kilometre of the application area. 39 conservation significant fauna are found in the same habitat. The applicant advised the Department that the south western snake necked turtle (*Chelodina colliei*) was present in Lake Seppings.

B.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Banksia biterax	3	Y	Y	Y	0.74	12	N/A
Banksia serra	4	Y	Y	Y	1.53	8	N/A
Boronia crassipes	3	Y	Y	Y	0.89	17	N/A
Conostylis misera	T	Y	Y	Y	0.85	1	N/A
Gonocarpus pusillus	4	Y	Y	Y	0.85	2	N/A
Lysinema lasianthum	4	Y	Y	Y	0.89	16	N/A
Microtis globula	T	Y	Y	Y	8.92	2	N/A
Microtis pulchella	4	Y	Y	Y	0.85	4	N/A
Microtis quadrata	4	Y	Y	Y	0.85	1	N/A
Prasophyllum paulinae	1	Y	Y	Y	3.52	2	N/A

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

B.3. Fauna analysis table

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

Species name	Common Name	Conservation status	Year	Number of known records (total)	Distance of closest record to application area (km)	Suitable habitat features? [Y/N]	Are surveys adequate to identify? [Y, N, N/A]
Actitis hypoleucos	common sandpiper	MI	2018	120	0.70	Y	N/A
Apus pacificus	fork-tailed swift	MI	2001	2	5.81	Y	N/A
Ardenna carneipes	flesh-footed shearwater	VU	2022	26	0.78	Y	N/A
Atrichornis clamosus	noisy scrub-bird, tjimiluk	EN	2002	3	3.09	Y	N/A
Botaurus poiciloptilus	Australasian bittern	EN	1993	5	0.89	Y	N/A
Calidris acuminata	sharp-tailed sandpiper	MI	2018	60	0.70	Y	N/A
Calidris canutus	red knot	EN	2018	93	1.67	Y	N/A
Calidris ferruginea	curlew sandpiper	CR	2015	22	2.07	Y	N/A
Calidris ruficollis	red-necked stint	MI	2018	264	0.70	Y	N/A
Calidris subminuta	long-toed stint	MI	2006	1	7.19	Y	N/A
Calidris tenuirostris	great knot	CR	2018	185	1.63	Y	N/A
Charadrius leschenaultii	greater sand plover, large sand plover	VU	2018	176	0.83	Y	N/A
Charadrius mongolus	lesser sand plover	EN	2015	19	1.87	Y	N/A
Dasyurus geoffroii	chuditch, western quoll	VU	1995	3	0.41	Y	N/A
Elapognathus minor	short-nosed snake	P2	1979	5	0.78	Y	N/A

Species name	Common Name	Conservation status	Year	Number of known records (total)	Distance of closest record to application area (km)	Suitable habitat features? [Y/N]	Are surveys adequate to identify? [Y, N, N/A]
Falco peregrinus	peregrine falcon	OS	2018	20	0.89	Y	N/A
Galaxias truttaceus (Western Australian population)	western trout minnow, western spotted galaxias	EN	1914	1	1.55	Y	N/A
Geotria australis	pouched lamprey	P3	2012	4	0.70	Y	N/A
Hydromys chrysogaster	water-rat, rakali	P4	2017	14	0.48	Y	N/A
Hydroprogne caspia	caspian tern	MI	2018	385	0.32	Y	N/A
Isoodon fusciventer	quenda, southwestern brown bandicoot	P4	2022	159	0.29	Y	N/A
Limosa lapponica	bar-tailed godwit	MI	2018	209	0.70	Y	N/A
Limosa limosa	black-tailed godwit	MI	2017	7	5.31	Y	N/A
Notamacropus irma	western brush wallaby	P4	1999	4	0.85	Y	N/A
Numenius madagascariensis	eastern curlew	CR	2012	22	5.31	Y	N/A
Numenius phaeopus	whimbrel	MI	2018	50	4.51	Y	N/A
Oxyura australis	blue-billed duck	P4	2018	178	0.03	Y	N/A
Pandion haliaetus	osprey	MI	2018	201	0.51	Y	N/A
Pezoporus flaviventris	western ground parrot	CR	1900	3	0.85	Y	N/A
Philomachus pugnax	ruff	MI	1963	1	0.87	Y	N/A
Pluvialis fulva	Pacific golden plover	MI	2018	125	0.89	Y	N/A
Pluvialis squatarola	grey plover	MI	2018	332	0.70	Y	N/A
Setonix brachyurus	quokka	VU	1905	7	0.89	Y	N/A
Thalasseus bergii	crested tern	MI	2018	522	0.27	Y	N/A
Tringa glareola	wood sandpiper	MI	2001	1	5.99	Y	N/A
Tringa nebularia	common greenshank	MI	2018	301	0.70	Y	N/A
Tringa stagnatilis	marsh sandpiper	MI	2017	14	1.88	Y	N/A
Westralunio carteri	Carter's freshwater mussel	VU	2017	4	5.59	Y	N/A
Xenus cinereus	Terek sandpiper	MI	2018	21	4.01	Y	N/A

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

B.4. Land degradation risk table

Risk categories	*Minor Valleys S7 slope phase*	*Minor Valleys S7 floor phase*	*Owingup subsystem*
Wind erosion	H2	H1	M1
Water erosion	L2	M1	L2
Water repellence	H1	M2	L2
Salinity	L1	L1	L2
Subsurface Acidification	H2	H2	H2
Flood risk	L2	M1	M1
Water logging	L1	H2	H2
Phosphorus export risk	M1	H2	M2

L1: <3% of map unit has a high to extreme risk, L2: 3-10% of map unit has a high to extreme risk, M1: 10-30% of map unit has a high to extreme risk, M2: 30-50% of map unit has a high to extreme risk, H1: 50-70% of map unit has a high to extreme risk, H2: >70% of map unit has a high to extreme 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 proposed clearing will target Typha. This species is capable of aggressive invasions that can transform ecosystems unless it is actively managed (Western Australian Herbarium, 2019). Without management, Typha can develop quickly into a monoculture and cover an entire water body. Given the application area comprises predominantly of Typha and its tendency to colonise ecosystems, it is not anticipated that the proposed clearing will significantly impact fauna habitat or conservation significant assemblages of plants. The application area may contain suitable habitat and soils for a number of conservation significant fauna and flora species.	Not likely to be at variance	Yes *(Refer to Section 3.2.1 and Section 3.2.2 above.)*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared may contain significant habitat for conservation significant fauna.	May be at variance	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 for threatened flora.	Not likely to be at variance	Yes *(Refer to Section 3.2.2, above.)*
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 likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Water courses or wetlands are recorded within the application area.	At variance	Yes *(Refer to Section 3.2.3, above.)*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are moderately to highly susceptible to wind and water erosion, nutrient export and subsurface acidification. Noting the extent of the proposed clearing, the works are unlikely to have an appreciable impact on land degradation.	Not likely to 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: Given the application area intersects water courses and wetlands, as Typha is a riparian species, the proposed clearing may impact surface water quality.	May be at variance	Yes *(Refer to Section 3.2.3, 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 purpose of the clearing permit is to remove Typha to increase water flow which would reduce the likelihood, incidence and intensity of flooding in the area.	Not likely to 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. 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.
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 (City of Albany, 2023a)

Lake Seppings - South

Havoc Street Drain

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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