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 8500/3
Permit type:	Area permit
Applicant name:	AMG Pty Ltd
Application received:	10 May 2022
Application area:	An additional 0.53 hectares (the application area) has been applied for. The total area now comprises 11.78 hectares.
Purpose of clearing:	Sand extraction and landfill
Method of clearing:	Mechanical
Property:	Lot 3 on Diagram 35920 (Lot 3 Buller Road)
Location (LGA area/s):	Shire of Waroona
Localities (suburb/s):	Waroona

1.2. Description of clearing activities

AMG Pty Ltd proposes to clear an additional 0.53 hectares of native vegetation (the application area) to extract sand and create a landfill at Lot 3 on Diagram 35920, Waroona. The proposed clearing is in addition to the previous 11.25 hectares of clearing applied for and approved under CPS 8500/2, for the same purpose.

The applicant has advised that the application area occurs between two existing sand extraction areas associated with clearing permits CPS 6701/1 and CPS 8500/2, and is subject to edge effects and tracks that run throughout. The applicant notes that from a sand extraction operation perspective, it is preferable to link the two extraction areas through the proposed clearing of the application area, noting that machinery will be moving throughout the tracks in this area as part of the existing operations.

The applicant previously advised that the sand represents a valuable resource to meet current development demands in the local area.

The application area is located in the south-eastern portion of a larger patch of remnant vegetation within Lot 3 Buller Road, comprising around 210 hectares. It is bordered by remnant native vegetation to the north and north-west, and extractive sand industry operations immediately west. It is separated by a road and a vegetation strip from the sand industry operations to the east. The larger remnant occurs in a highly cleared portion of the Swan Coastal Plain which has been extensively used for agriculture.

During the assessment of the application, the applicant has revised the initial application area from 4.58 hectares to 2.94 hectares and then again to 0.53 hectares. This has reduced the size of the original application area by 4.05 hectares. The initial application area included 0.754 hectares of native vegetation that was previously approved under CPS 8500/2, and therefore this area was excluded, as were the already cleared tracks that run through the application area, which reduced the application area to 3.43 hectares. The applicant also excluded an additional area of 2.9 hectares to:

- avoid nine trees with a suitable diameter at breast height to provide future breeding habitat for black cockatoos;
- minimise the extent of impacts to the Banksia woodland on the Swan Coastal Plain Commonwealth listed threatened ecological community (TEC) (Banksia Woodland TEC);

- minimise the extent of impact to black cockatoo forging habitat;
- minimise the extent of impact to ecological linkage.

1.3. Decision on application

Decision:	Refused
Decision date:	15 May 2023
Decision area:	0.53 hectares of native vegetation as depicted in Section 1.5, below.

1.4. Reasons for decision

This application was accepted, assessed, and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and five public submissions were received. Consideration of matters raised in the public submissions is summarised in Appendix A.

In undertaking their assessment and in accordance with section 51O of the EP Act, the Delegated Officer considered the site characteristics (see Appendix B), the Clearing Principles in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and other matters (see Sections 3), the findings of biological surveys (see Appendix E), as well as relevant datasets available at the time of the assessment (see Appendix F).

The Delegated Officer determined that the proposed clearing of an additional 0.53 hectares would result in the following significant residual environmental impacts:

- the loss of 0.53 hectares of native vegetation in very good to excellent (Keighery, 1994) condition, that provides significant foraging habitat for Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo (collectively referred to as black cockatoos)
- the loss of 0.53 hectares of native vegetation that is representative of the Banksia Woodland TEC. This community is also a state listed priority ecological community (Priority 3)
- the loss of 0.53 hectares of native vegetation that is representative of a highly cleared vegetation complex (Southern River Complex) that provides a critical ecological linkage and provides an ecological stepping-stone for fauna moving north-south within a fragmented portion of the Swan Coastal Plain
- the cumulative loss (when considering the clearing already authorised under Clearing Permit CPS 8500/2) of:
    - 11.78 hectares of native vegetation that provides significant foraging habitat for black cockatoos;
    - 4.66 hectares of native vegetation representative of the Banksia Woodland TEC, where the current application area forms the highest quality portion of this community (noting the vegetation condition).

The Delegated Officer noted the applicant's efforts to avoid and minimise impacts, including excluding 2.9 hectares of native vegetation and avoid nine trees that may provide suitable future breeding habitat for black cockatoos. The Delegated Officer also acknowledged the applicant's willingness to provide an offset to address the above significant impacts, which was proposed to comprise:

- the long-term conservation, through a conservation covenant, of 29.31 hectares of remnant native vegetation immediately west within Lot 3 Buller Road, that provides:
    - preferred foraging habitat for black cockatoos
    - around two hectares of vegetation representative of the Banksia Woodland TEC
- The rehabilitation of a 5.9 hectare degraded portion of the above 29.31 hectare area, to improve the vegetation condition from degraded to good-very good. The rehabilitation would re-instate vegetation that is representative of the Banksia Woodland TEC and improve the quality of foraging habitat for black cockatoos.

However, it is deemed that the cumulative and residual impacts to environmental values within the amendment application area are significant, and an offset would not be appropriate to counterbalance the impacts. The applicability of offsets is determined on a project-by-project basis and the WA Environmental Offsets Policy and Guideline advises that environmental offsets are not appropriate in all circumstances. In the case where an impact is determined to be environmentally unacceptable, as is the case with the cumulative impact of this clearing proposal, the environmental values cannot be offset.

With regard to planning instruments or other matters considered relevant, in accordance with section 51O(4) of the EP Act, the Delegated Officer notes that a Development Approval (DA) was submitted to the Shire of Waroona (the Shire) for the proposed clearing of vegetation, extractive industry and landfill (Ref: TP2338). The Waroona Shire

Council determined to refuse the DA on 11 January 2023. This determination is a relevant planning or other matter to be considered in accordance with section 51O(4) of the EP Act. It is noted that the Shire's decision has been appealed and is currently going through mediation with the State Administrative Tribunal (SAT). Although SAT has not made a decision on the appeal, the Delegated Officer's determination to refuse the application is based on the significant residual environmental impacts of the proposed clearing.

Noting the significant environmental impacts that would result from the proposed clearing, the Delegated Officer considers that the proposed clearing presents an unacceptable risk to the environment, and that the application should be refused on that basis.

The Delegated Officers determination to refuse the application has also considered the following relevant matters:

- the condition of the vegetation within the application area has not degraded over time, despite its location between existing areas of disturbance. The patch appears to be resilient to surrounding disturbances and has recovered well from the 2016 Waroona fires. This points to the long-term viability of the site as an important black cockatoo foraging resource and vegetation representative of the Banksia Woodland TEC.
- the significance of cumulative impacts, noting the proposed clearing would be in addition to the 11.25 hectares of native vegetation clearing (including black cockatoo foraging habitat and Banksia Woodland TEC) within Lot 3 Buller Road that was previously approved by the department under CPS 8500/2.
- when combining the application area with that previously granted under CPS 8500/2, it is now largely the same as the area refused under CPS 7516/1. The Minister for Environment at the time noted, amongst other factors, that the decision to refuse was appropriate based on impacts to black cockatoo habitat in a highly fragmented landscape.
- Lot 3 Buller Road is not identified as a priority basic raw material resource area under State Planning Policy 2.4., and a decision to grant a clearing permit that presents an unacceptable risk to the environment in this instance is not supported from a planning perspective.
- the proposed clearing is not supported by the Shire of Waroona and the DA has been refused for the proposed end land use.

1.5. Site Map

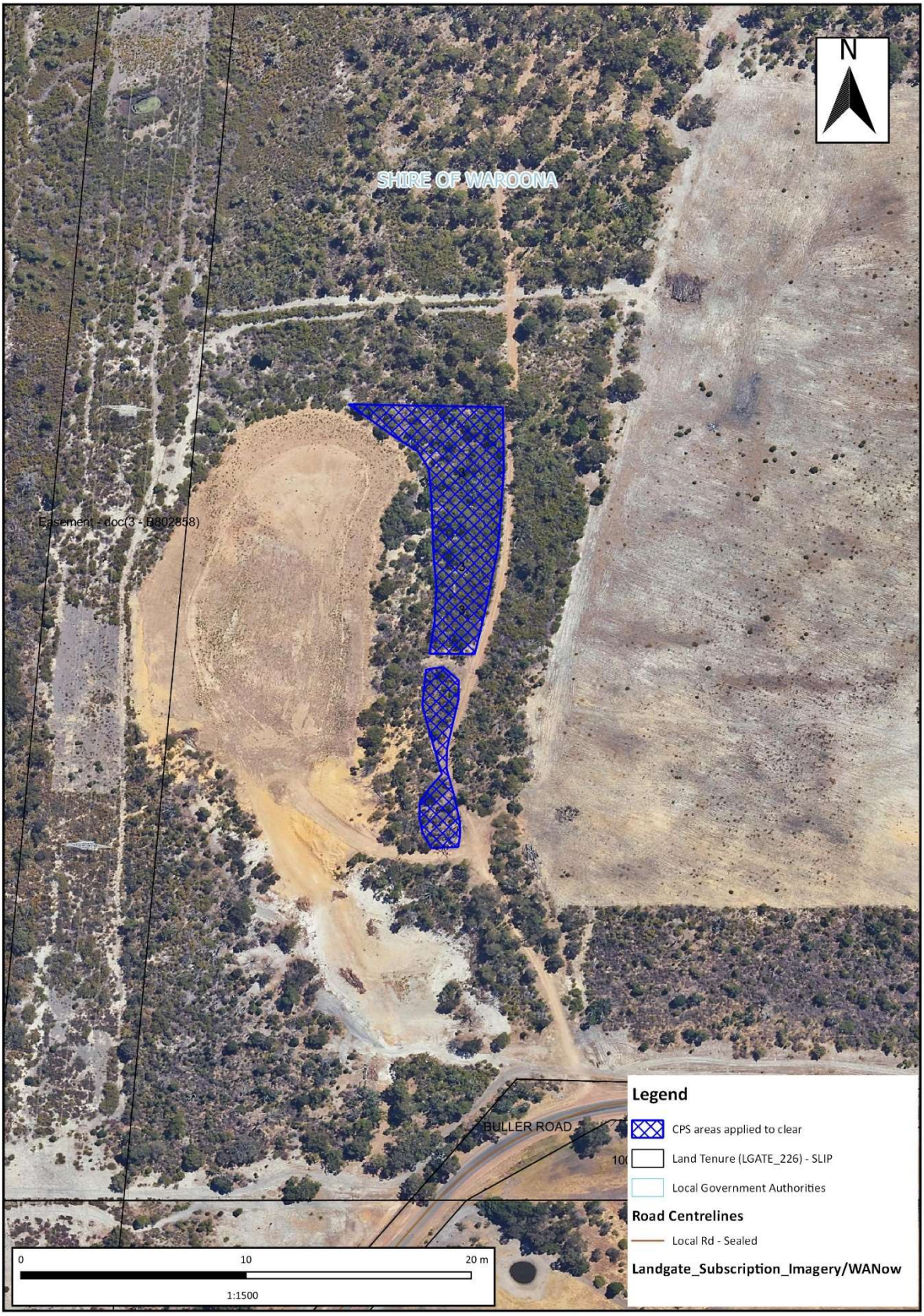

Figure 1. Map of the revised (current) application area

The area cross-hatched blue indicates the revised area applied to clear.

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 polluter pays principle
- 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)
- *Planning and Development Act 2005* (WA) (P&D Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

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)
- *Environmental Offsets Guidelines* (August 2014)
- technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Avoidance measures

The applicant has revised the application area from 3.43 hectares to 0.53 hectares, excluding an additional area of 2.9 hectares to:

- avoid nine trees with a suitable diameter at breast height to provide future breeding habitat for black cockatoos
- minimise the extent of impacts to the Banksia Woodland TEC
- minimise the extent of impact to black cockatoo forging habitat
- minimise the extent of impact to ecological linkage

Mitigation measures

General

The following mitigation measures were proposed by the applicant for the previous clearing associated with CPS 8500/2 (Accendo, 2019) and the applicant notes that the same measures would be adhered to for the current application area:

- the clearing area is to be marked with white flagging tape attached to either pegs or tied to vegetation with each peg/marker clearly visible from the last. This is to ensure the prevention of any inappropriate clearing;
- no unauthorised movement of vehicles or personnel within the vegetation retention areas will be allowed;
- during clearing, a qualified fauna expert will be present to direct clearing operators, particularly when clearing trees are occupied by fauna, to ensure that these are cleared in a way that allows the animals to safely mobilise to adjacent areas. In addition, they will supervise any animal handling and the rescue of injured animals should this be required;
- no stockpiling of topsoil or other material is to occur outside of the clearing boundary;
- a two-metre separation distance to groundwater will be maintained during sand excavation and all surface water will be contained within the extraction area, where direct infiltration will occur;
- extraction will be undertaken progressively in stages to reduce the potential for stormwater erosion and dust by limiting the open pit area as far practical.

3.2. Assessment of impacts on environmental values

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

The assessment identified that the clearing presents a risk to flora, fauna, significant remnant vegetation and conservation area values, and that these required further consideration. The consideration of impacts to these values, 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. Environmental value: Biological values (fauna) – Clearing Principle (b)

Background

A basic fauna habitat assessment (Fauna Assessment) undertaken by Terrestrial Ecosystems in 2015 identified one broad fauna habitat type in the application area, being *Eucalyptus marginata* (jarrah), *Corymbia calophylla* (marri), *Allocasuarina fraseriana* and *Banksia* sp. woodland over sparsely vegetated shrubs over grasses and herbs on grey sands (Terrestrial Ecosystems, 2015). A site inspection undertaken by the department identified that the application area largely comprises *Banksia attenuata* and *Eucalyptus marginata* (jarrah) woodland, over a midstory dominated by *Acacia pulchella* and *Melaleuca thymoide* (DWER, 2022).

The following conservation significant fauna species have been identified as potentially occurring within the application area (see conservation status and scientific names of each species in Appendix B):

- Carnaby's cockatoo
- forest red-tailed black cockatoo
- Baudin's cockatoo
- quenda
- coastal plains skink
- western brush wallaby
- chuditch
- south-west brush-tailed phascogale

This assumption is based on the habitat requirements, distribution, mapped vegetation types and condition of the vegetation, and findings of the Fauna Assessment (Terrestrial Ecosystems, 2015), a Black Cockatoo Habitat Review (Black Cockatoo Assessment) undertaken by Harewood (2018) and a site inspection undertaken by the department (DWER, 2022).

The fauna habitat within the application area has undergone historical disturbance through (Harewood, 2018; DWER, 2022):

- January 2016 fires which left the application area badly burnt (the site is recovering well)
- dieback (*Phytophthora cinnamomi*) infestation
- minor edge effects from nearby cleared areas (extractive industry)
- tracks that run through the application area

Despite the historical fire disturbance and surrounding extractive industry, the vegetation within the application area shows considerable resilience, and largely remains in a very good to excellent (Keighery, 1994) condition (DWER, 2022). There is evidence of post-fire *Banksia* and jarrah recruitment throughout (DWER, 2022).

Black cockatoos (Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo)

Breeding Habitat

The application area is in the modelled distribution of Baudin's cockatoo and within the known breeding range of Carnaby's cockatoo and forest red-tailed black cockatoo. There are 14 confirmed and two potential white tailed black cockatoo breeding sites within 12 kilometres of the application site, with the closest confirmed breeding site located around 10.9 kilometres from the application area.

Black cockatoos generally breed in woodland or forest but may also breed in former woodland or forest now present as isolated trees (Commonwealth of Australia, 2022). They commonly breed in several different tree species, including jarrah and marri, which are utilised by all three species (Commonwealth of Australia, 2022).

Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species a suitable DBH is 500 millimetres (Commonwealth of Australia, 2022).

The Black Cockatoo Assessment identified 12 potential breeding trees (jarrah and marri), with a DBH of greater than 500 millimetres within the application area (Harewood, 2018). None of these trees contained suitably sized breeding hollows. Trees of DBH of greater than 500 millimetres however may develop hollows over time. The original application area contained 18 trees with a DBH of greater than 500 millimetres however the applicant reduced the extent of clearing by 2.9 hectares to avoid nine of these trees.

Given the lack of current suitably sized breeding hollows, the proposed clearing is unlikely to impact on significant breeding habitat for black cockatoos at this point in time. However, all trees of DBH of greater than 500 represent potential future breeding trees given time to develop hollows in the long term.

Roosting Habitat

The closest known Carnaby's cockatoo and forest red-tailed black cockatoo roost sites are around 9.1 kilometres and 10.2 kilometres from the application area respectively. The closest known Baudin's cockatoo roosting site is not known, given the lack of available data relating to confirmed roosting records for this species.

The Fauna Assessment and Black Cockatoo Assessment did not identify any evidence of roosting within the application area (Terrestrial Ecosystems, 2015; Harewood, 2018). However, the application area contains numerous tall trees, including 3 with a DBH of greater than 500 millimetres (Harewood, 2018), and therefore provides suitable roosting habitat for black cockatoos.

Foraging Habitat

Carnaby's cockatoo forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species (Valentine and Stock, 2008). The records of foraging activity for Carnaby's cockatoo on the SCP show that Banksia species account for nearly 50 percent of the diet for this species (Shah, 2006).

Baudin's cockatoos forage within Eucalypt woodlands and forest, and proteaceous woodland and heath. During the breeding season this species feeds primarily on marri, and to a lesser extent proteaceous trees and shrubs (Commonwealth of Australia, 2022).

Forest red-tailed black cockatoo forages within jarrah and marri woodlands and forest, and edges of karri forests including wandoo and blackbutt, within the range of the subspecies. This species mostly feeds on seeds of marri and jarrah (Commonwealth of Australia, 2022).

The vegetation within the application area comprises 0.63 hectares of *Banksia attenuata* and *Eucalyptus marginata* (jarrah) woodland (DWER, 2022) and therefore contains preferred foraging habitat for all three species. The density of foraging habitat varies throughout, and ranges from patchy to denser stands of *Banksia* sp., within the south-eastern portion of the application area. While the application was subject to intense fires in 2016, there is evidence of post-fire *Banksia* and jarrah recruitment throughout (DWER, 2022).

The Fauna Assessment identified evidence of Carnaby's or Baudin's cockatoos foraging in the form of chewed Banksia cones, in addition to marri nuts chewed by either forest red-tailed black or Carnaby's cockatoo within the larger survey area (Terrestrial Ecosystems, 2015). The Black Cockatoo Assessment identified evidence of forest red-tailed black cockatoo foraging in the form of chewed marri fruits at several locations within the larger survey area. No conclusive evidence of any other foraging activity by Carnaby's or Baudin's cockatoo was observed during this assessment (Harewood, 2018). The departments site inspection identified potential black cockatoo foraging evidence in the form of chewed banksia cones and marri nuts directly adjacent to the west border of the application area and further east of the application area respectively (DWER, 2022). A flora and vegetation assessment commissioned by the Shire of Waroona over the larger site (to inform the development application) also identified suspected Carnaby's cockatoo foraging evidence on jarrah fruit (Carnaby's and forest red-tailed black cockatoo) and *Banksia grandis* cones (Carnaby's cockatoo) (Just, 2022). The flora and vegetation assessment commissioned by the Shire of Waroona investigated a previous larger application area and did not note the exact locations of the foraging evidence. It cannot be assumed that the foraging evidence was not located within the current reduced application area. Further due to the occurrence of the primary foraging species within

the footprint, it can be reasonably expected that foraging activity would have taken place within the current reduced application area.

The forest red tailed-black cockatoo and Baudin's cockatoo recovery plan notes that habitat critical to the survival of these species includes all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving, on average, more than 600 millimetres of annual rainfall (Department of Environment and Conservation (DEC), 2008). The application area fits this description of critical habitat.

The Carnaby's cockatoo EPA technical advice notes that *Banksia* species provide the most important natural food resource on the Swan Coastal Plain, given Carnaby's cockatoo exploit all areas of available *Banksia* food resources on the Swan Coastal Plain (EPA, 2019). Banksia woodland in the Perth metropolitan area has been reduced to one third of its pre-European extent. The remaining portions are fragmented, with the majority (82 per cent) of remnant patches under 10 hectares (EPA, 2019).

The importance of foraging habitat for Carnaby's cockatoo increases when it occurs within foraging distance of nesting sites (12 kilometres), as it supports breeding effort (Department of Parks and Wildlife, 2013). There are 14 confirmed and two potential breeding sites within 12 kilometres, with the closest confirmed breeding site located around 10.9 kilometres from the application area. The distance of nearby water sources also increases foraging habitat value, and there are several wetlands mapped within 12 kilometres, including a conservation category sumpland located 100 metres west of the application area.

Food resources within the range of roost sites are also important to sustain populations of black cockatoos, and foraging resources should therefore be viewed in the context of the proximity to known night roosting sites (Commonwealth of Australia, 2017). Specifically, night roosting sites need suitable foraging habitat and water within six kilometres (EPA, 2019). Overlapping foraging ranges within 12 kilometres also support roosting sites and maintain habitat connectivity and movement across the landscape (EPA, 2019). While there are no known roost sites within six kilometres, there are four within 12 kilometres of the application area.

As discussed below, the application area forms part of a larger remnant of native vegetation which contributes to regionally significant ecological linkage values. When moving between roosting, water and food resources, black cockatoo flocks follow vegetation corridors and actively avoid cleared and open areas, including dense urban areas (EPA, 2019). Therefore, the application area may facilitate the movement of black cockatoos through the landscape between roosting, water and food resources.

The Black Cockatoo Assessment notes that on a regional scale there appears to be considerable areas of black cockatoo habitat with over 7,400 hectares of remnant native within 12 kilometres of the survey area, almost half of which is under DBCA management (Harewood, 2018).

While the extent of black cockatoo habitat in the local area is acknowledged, the Delegated Officer considers that the application area provides 0.53 hectares of significant foraging habitat for black cockatoos given the following:

- the application area provides preferred foraging habitat for black cockatoos, largely in a very good to excellent (Keighery, 1994) condition
- signs of foraging directly adjacent to the application area and in general vicinity
- there are confirmed Carnaby's cockatoo breeding sites within 12 kilometres of the application area
- there are multiple known water resources within one kilometre of the application area
- there are known Carnaby's cockatoo and forest red-tailed black cockatoo roosting sites within 12 kilometres of the application area
- the application area includes preferred foraging habitat for all species in a highly fragmented portion of the Swan Coastal Plain were remnant vegetation is of critical importance

Other Species

Noting the presence of higher quality native vegetation immediately west, lack of dense riparian habitat, lack of horizontal hollow logs and lack of direct evidence of confirmed use (Terrestrial Ecosystems, 2015), the application area is not likely to include significant habitat for the coastal plains skink, western brush wallaby, south-west brush-tailed phascogale, quenda or chuditch. Devastating fires took place in the area during the 2016 Waroona-Yarloop fire and destroyed large area of vegetation in the local area. Subsequent vegetation surveys over the larger survey area (Plantecology, 2018b, Just 2022, DWER, 2022 and Plantecology, 2023) have noted the successful recovery of the vegetation within the local area indicative of high quality bushland and, noting this resilience, it can be considered that the findings of the Terrestrial Ecosystems survey remain relevant. The significance of any impact

on habitat for other fauna species is also reduced by the reduction of the application size. However, these species may transiently visit the site, and individuals may be impacted should they occur at the time of clearing.

Regarding the south-western brush-tailed phascogale, the Fauna Assessment noted that this species had been recorded within the vicinity of the larger project area (not within). The Fauna assessment noted several trees with small hollows (Terrestrial Ecosystems, 2015), and while the 2016 fire may have destroyed a number of these hollows, the potential exists for this species to use any remaining small hollows on site.

Ecological Linkage

The application area forms part of a larger remnant of around 210 hectares (Lot 3 Buller Road) which is linked by contiguous vegetation to Buller Nature Reserve south which comprises around 301 hectares. The remnant forms part of an area mapped as a South West Regional Ecological Linkage (SWREL). The SWREL report defines an ecological linkage as a series of contiguous and non-contiguous patches which act as stepping stones of habitat that facilitate the maintenance of ecological processes and movement of organisms within and across a landscape (Molloy et al., 2009).

Remnant vegetation within the SWREL boundary can be assigned a 'proximity analysis' group. A patch of vegetation with an edge touching, or less than 100 metres from a linkage (axis line) is assigned to group 1(a) which is the highest category group. A SWREL axis line is mapped approximately 260 metres west of the application area. The application area is located within this contiguous native vegetation and is therefore within group 1(a). While it is acknowledged that the highest value portion of the linkage in this area between Buller Nature Reserve and remnant vegetation north is located further west than the application area, the application area nonetheless contributes value to the linkage as a steppingstone for fauna moving north-south.

Whilst the application area has been reduced in order to not sever the linkage corridor, the reduction in vegetation (especially width wise) and edge effect of continued clearing will in the long-term impact negatively on the viability and resilience of the vegetation corridor. Over time the edge effect of proposed land use (sand extraction and landfill) may lead to the loss of the integrity of the ecological linkage.

Conclusion

Based on the above assessment, and with consideration of the applicants measures to avoid and minimise impacts, the proposed clearing would result in:

- the loss of 0.53 hectares of significant foraging habitat, and suitable roost habitat for Carnaby's cockatoo, forest red-tailed black cockatoo and Baudin's cockatoo on a highly fragmented portion of the Swan Coastal Plain
- the cumulative loss (when considering the clearing already authorised under Clearing Permit CPS 8500/2) of 11.78 hectares of native vegetation that provides significant foraging habitat for black cockatoos
- a reduction in the patch size of native vegetation that forms part of a regionally significant ecological linkage
- potential direct impacts to south-western brush-tailed phascogale, quenda, coastal plains skink, chuditch and western brush wallaby, should they occur within the application area at the time of clearing.

Outcome

The Delegated Officer determined that the proposed clearing presents an unacceptable risk to black cockatoo habitat. The cumulative loss of 11.78 hectares of native vegetation (when considering the clearing authorised under Clearing Permit CPS 8500/2) within foraging distance of confirmed nesting sites on the highly cleared Swan Coastal Plain, represents a significant impact on foraging habitat for black cockatoos. In addition, the proposed clearing may also result in a potential direct impact to south-western brush-tailed phascogale, quenda, coastal plains skink, chuditch and western brush wallaby.

3.2.2. Environmental value: Biodiversity values (flora and ecological communities) – Clearing Principles (a) and (c)

Threatened and Priority Flora

The application area provides suitable habitat for six priority and three threatened flora species (see Appendix B for detailed information). This presumption is based on habitat suitability of the application area for these species, and the presence of known records within the local area.

MBS Environmental undertook a Level 1 Flora and Vegetation Survey over a 36.8 hectare area (encompassing the application area) in May 2015. The survey consisted of a desktop assessment and reconnaissance site survey. The survey did not identify any threatened or priority flora taxa. The timing of the survey was identified as a major constraint in identifying conservation significant flora, noting it was outside the spring flowering period of many species (MBS Environmental, 2015).

Woodman Environmental subsequently undertook a Level 2 spring flora survey between 22 to 25 September 2015 (Woodman Survey). The survey consisted of a desktop assessment and a reconnaissance survey followed by a detailed field survey including targeted searches of threatened and priority flora (Woodman Environmental, 2015). The survey covered an area of around 218 hectares, including the application area (Woodman Environmental, 2015). The spring survey was conducted at an appropriate time to identify most potentially occurring conservation significant flora known from the local area.

The Woodman Survey identified one priority flora species, *Acacia semitrullata* (Priority 4) around 500 metres from the application area (Woodman Environmental, 2015). Noting the distance to this species and lack of other priority flora species identified within the Woodman Survey, the proposed clearing is not likely to impact on priority flora.

The Woodman Survey did not identify any threatened flora species within the application area (Woodman Environmental, 2015). The survey timing was appropriate for all but one threatened flora species, *Drakaea elastica*. The most appropriate time to survey for this species is July/August when the orchids leaves are most evident. The Woodman survey involved a targeted search for this species on 2 September 2015, and Woodman Environmental noted that the leaves would still have been present in early September (Woodman Environmental, 2015).

Drakaea elastica is commonly found on white or grey sand in low-lying situations adjoining winter-wet swamps (Western Australian Herbarium, 1998-). The application area is 100 metres from the closest watercourse. The closest record of this species to the application area is 10.7 kilometres away.

Given the above, and the Woodman Survey findings, the proposed clearing is not likely to impact on *Drakaea elastica* or any other threatened flora species.

A further flora and vegetation assessment (Just, 2022) was commissioned by the Shire of Waroona over the application area to better inform the development application. The flora and vegetation assessment involved traversing the area on foot to delineate and characterise the flora present and the condition of the vegetation in relation to species diversity, ecosystem function and the presence of weeds. The flora and vegetation assessment noted that transects were run in parallel for the linear length of the site and provided a robust means for assessing the above vegetation parameters. The survey was done in the in the spring season. The flora and vegetation assessment did not identify any threatened or priority flora (Just, 2022).

Threatened and Priority Ecological Communities

The application area is mapped as the Banksia Woodlands of the Swan Coastal Plain ecological community (Banksia Woodlands), which is listed by the Commonwealth as a threatened ecological community (TEC) (endangered) and by the state as a Priority 3 ecological community.

This ecological community has undergone a decline of about 60 per cent in its original extent and most of the community that remains, occurs as highly fragmented patches less than 10 hectares in size (DotEE, 2016). This ecological community has a dominant *Banksia* component, which includes at least one of four key species—*Banksia attenuata*, *B. menziesii*, *B. prionotes* and/or *B. ilicifolia* (DotEE, 2016). The ecological community provides habitat for

many native flora and fauna reliant on *Banksia* Woodland. Remaining patches of the ecological community provide important wildlife corridors and refuges in a mostly fragmented landscape (DotEE, 2016).

The conservation advice for this TEC states that these Banksia woodland community types are fire prone habitats that include species with a range of life history traits that allow them to persist in a fire prone environment (DotEE, 2016).

The Woodman Survey described the vegetation as *Allocasuarina fraseriana, Eucalyptus marginata* and *Corymbia calophylla* woodland over *Banksia* woodland over taxon-rich shrubland on variable landforms from upper slopes to flats. Woodman Environmental (2015) stated that this vegetation type appears to have similarities to two floristic community types; SCP21c 'Low lying *Banksia attenuata* woodlands or shrublands', and SCP21a 'Central *Banksia attenuata*, *Eucalyptus marginata woodland*' than SCP21c. Both SCP21a and SCP21c are listed in the approved conservation advice as floristic community types representative of the Banksia Woodlands TEC.

A follow up survey by Plantecology in November 2018 was undertaken to assess whether the application area met the criteria for consideration as the Banksia Woodlands TEC. The survey covered the majority of the application area, with the exception of the south western portion, and identified that all vegetation in a good or better condition in the application is representative the Banksia Woodlands TEC (Plantecology, 2018b). This is based on the condition thresholds specified in the approved conservation advice for this TEC.

This presence of the Banksia woodland TEC was also confirmed during the departments site inspection (DWER, 2022). It was identified that the application area comprised *Banksia* and jarrah woodland largely in a very good to excellent (Keighery, 1994) condition.

A further follow up survey was done by Plantecology in January 2023 to assess the vegetation condition of the application area. The entire application area was traversed on foot on 26 January 2023 and observations made on the current vegetation condition at nine points. The survey found that condition of most of the vegetation within the site has improved since the fire of 2016 with the majority of the site rated as good or better condition (Plantecology, 2023).

Dieback and weeds risks to biodiversity

Glevan Consulting (2015) conducted a dieback (*Phytophthora cinnamomi*) assessment of a 36.8 hectare area within Lot 3, including the application area. The assessment identified that around sixty per cent of the application area is dieback infested.

The Woodman Survey recorded 46 weed species across the larger survey area encompassing the application area (Woodman Environmental, 2015). This includes *Zantedeschia aethiopica* (arum lily) which the Department of Primary Industries and Regional Development has classified as a declared pest.

The proposed clearing would increase the risk of weeds and dieback spreading into adjacent areas of native vegetation to the north and west. These areas provide important linkage and fauna habitat values, including conservation category wetlands, and are mapped as, and likely representative of the Banksia Woodlands TEC.

Conclusion

Based on the above assessment, and with consideration of the applicants measures to avoid and minimise impacts, the Delegated Officer has determined that the proposed clearing would result in the following impacts to biodiversity values:

- potential impacts to biodiversity values within adjacent native vegetation through the spread of weeds and dieback.
- the loss of 0.53 hectares of native vegetation that is representative of the Banksia woodland on the Swan Coastal Plain Commonwealth listed threatened ecological community (TEC) (Banksia Woodland TEC). This community is also a state listed priority ecological community (Priority 3)
- the cumulative loss (when considering the clearing already authorised under Clearing Permit CPS 8500/2) of 4.66 hectares of native vegetation representative of the Banksia Woodland TEC.

Outcome

The Delegated Officer determined that the proposed clearing presents an unacceptable risk to the Banksia Woodland TEC, particularly considering the cumulative loss (when considering the clearing authorised under Clearing Permit CPS 8500/2) of 4.66 hectares of native vegetation representative of the Banksia Woodland TEC.

3.2.3. Environmental value: Significant remnant vegetation – Clearing Principle (e)

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearing ecological communities below 30 per cent of that present pre-1750. Below this level, species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

As indicated in Appendix B.2, the application area is within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion which retains 38.6 per cent of its pre-European vegetation extent. The application area is mapped as the Southern River vegetation complex which retains 18.4 of its pre-European vegetation extent. The local area retains around 5 per cent native vegetation cover (Government of Western Australia, 2019a; Government of Western Australia, 2019b).

The Southern River Complex is described as open woodland of *Corymbia calophylla* (Marri), *Eucalyptus marginata* (Jarrah) and *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum), and *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds (Heddle et al, 1980). The application area is representative of this vegetation complex.

The local area and Southern River complex vegetation extents are both below the 30 per cent threshold target. The application area is within an extensively cleared agricultural band of the southern Swan Coastal Plain and is part of a larger remnant that provides important linkage and fauna habitat values, within a highly fragmented landscape. Therefore, the vegetation within the application area is a significant remnant within a highly cleared landscape.

The vegetation within the application area is considered a significant remnant as it provides foraging habitat for black cockatoos, is representative of the Banksia Woodland TEC/PEC and provides ecological linkage values.

Conclusion

Based on the above assessment, and with consideration of the applicants measures to avoid and minimise impacts, the Delegated Officer has determined that the proposed clearing would result in the loss of 0.53 hectares of significant remnant native vegetation in a highly cleared landscape.

Outcome

The Delegated Officer determined that the proposed clearing presents an unacceptable risk to the Banksia Woodland TEC, particularly considering the cumulative loss (when considering the clearing already authorised under Clearing Permit CPS 8500/2) of 11.78 hectares of native vegetation that is representative of the Southern River Complex and comprises significant remnant native vegetation in a highly cleared landscape.

3.2.4. Environmental value: Conservation areas – Clearing Principle (h)

The application area is approximately 250 metres north west of Buller Nature Reserve. Hamel State Forest is located approximately 7.5 kilometres east and Myalup State Forest is located approximately 8.6 kilometres west.

As discussed under Section 3.2.1, the application area is mapped as part of a larger ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) which connects Buller Nature Reserve, Myalup State Forest and Hamel State Forest. The SWREL Report notes that patches of remnant vegetation which contribute to the maintenance, function and viability of conservation estate are high priorities for retention (Molloy et al, 2009).

The application area forms part of a larger patch that provides ecological linkage values and may assist in the maintenance of ecological process between conservation reserves in the local area. This value is heightened by the significant black cockatoo fauna habitat value present within the application area, which assists in the movement of these species between the connected reserves.

A phytophthora dieback occurrence assessment for Lot 3 reports that infestation of the application area (around 60 per cent) may have been due to the existing adjacent sand mining operation managed by the applicant. The disturbance caused by the proposed clearing may further spread dieback and weeds to Lot 3 and surrounding areas. Therefore, the proposed clearing may introduce dieback and weeds into Buller Nature Reserve in the long term.

Conclusion

Based on the above assessment, and with consideration of the applicants measures to avoid and minimise impacts, the Delegated Officer determined that the proposed clearing may result in the potential spread of weeds and dieback into Buller Nature Reserve, and the loss of 2.94 hectares of significant remnant native vegetation that contributes linkage values between Buller Nature Reserve, Hamel State Forest and Myalup State Forest.

3.3. Relevant planning instruments and other matters

Planning

The Shire of Waroona Town Planning Scheme No. 7 1996 maps the Application Area as being zoned as rural (Rural 1). In this zone, extraction 'is not permitted unless the local government has exercised its discretion by granting development approval after giving notice in accordance with clause 64 of the deemed provisions' (DoP, 1996). On 21 December 2020, the Shire of Waroona issued the applicant with an extractive industry licence and development approval over the CPS 8500/2 application area, subject to conditions.

The applicant has subsequently applied for an additional development application noting the proposed expansion of the sand extraction and landfill area. The Shire of Waroona provided advice to the department regarding the clearing permit application and has subsequently refused the development approval application. According to the Notice of Determination of Application for Development Approval the proposal is contrary to the following provisions of Clause 67(2) of the Planning and Development (Local Planning Schemes) Regulations 2015 (Shire of Waroona, 2023):

1. *Clause 67(2)(a). It is not consistent with the aims and provisions of Local Planning Scheme No. 7, specifically:*
   - *Clause 1.9 Aims of the Scheme: (ii), (vi}, (ix), (xi), (xvi), (xx), (xxi) & (xxvii); and*
   - *Clause 3.13 Rural zones - All: Cl 3.13.1 Objectives and Policies.*

   The proposal will not protect remnant vegetation, will not enhance the water quality of the Peel-Harvey Estuary catchment, it will result in the destruction of remnant landscapes that are valued by first nations people and the broader community, and will contribute to a cumulative loss of native vegetation.

2. *Clause 67(2)(c). Is contrary to the objectives, principles and provisions of State Planning Policies:*
   - *SPP 2 Environment and natural resources policy;*
   - *SPP 2.5 Rural Planning; and*
   - *Draft SPP 2.9 Planning for water.*

   The removal of remnant and deep-rooted perennial vegetation and substantial modification to the landscape in the context of the particular application is inconsistent with these Policies.

3. *Clause 67(2)(d). The subject proposal to clear remnant vegetation and substantially modify the natural landform within the Peel-Harvey catchment is not supportable under the Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992 and will likely have an effect on the water quality.*

4. *Clause 67(2)(f). No sufficient justification is put forward for the subject proposal to depart from the aims and principles of the Native Vegetation Policy for Western Australia, which seeks to protect and reduce the loss of native vegetation.*

5. *Clause 67(2)(fa). The proposal does not protect and enhance remnant vegetation and is contrary to the aims and principles of the Shire of Waroona Local Planning Strategy.*

6. *Clause 67(2)(1). The proposed earthworks and clearing will not be sympathetic to the cultural heritage values that local first nations people attribute to remnant bushland, landscapes and the ecological communities.*

7. *Clause 67(2)(m). The proposed 'Top of Waste' and finished ground level profiles exceed the natural ground levels and are not compatible with the desired future character and amenity of the area in terms of bulk, scale and overall appearance.*

8. *Clause 67(2)(0). This site's vegetated area is important for foraging and nesting. Clearing this would have an unacceptable impact on species. Deep-rooted perennial species, such as remnant vegetation, assist in filtering surface and sub-surface water. This function is important for nearby wetlands and the Peel-Harvey Catchment. Clearing this vegetation would reduce the catchment's capacity to filter nutrients and pollutants. The remnant vegetated area.has a level of significance which extends to the point of providing habitat for Threatened Ecological Communities.*

9. *Clause 67(2)(p). Banksia Woodlands of the Swan Coastal Plain, which are Threatened Ecological Communities, in this quality and size, should be preserved.*

10. *Clause 67(2)(y). The submissions received contains valid objections based on environmental grounds.*

11. *Clause 67(2)(za). Advice received from the Department of Fire and Emergency Services indicates that the applicant has not demonstrated that the proposal is compliant with the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas.*

12. *Clause 67(2)(zb). The subject application's proposal for clearing of remnant vegetation should not be supported having regard to:*
    - *The principles for clearing native vegetation under Schedule 5 of the Environmental Protection Act 1986;and*
    - *Bindjareb Djilba A plan for the protection of the Peel-Harvey estuary.*

13. *The proposal will have an unacceptable impact on threatened species/communities and biodiversity and will reduce remnant vegetation extent. This will also reduce and impact water quality capacity in the Peel Harvey catchment.*

14. *The subject development lacks sufficient detail as to staging and sectional profiles, dimensions/extent of areas, details of incidental development, and stormwater management for the clearing of vegetation, extractive industry and landfill components.*

The Waroona Shire Council determined to refuse the DA on 11 January 2023. It is noted that the Shire's decision has been appealed and is currently going through mediation with the State Administrative Tribunal (SAT). Although SAT has not made a decision on the appeal, the Delegated Officer's determination to refuse the application is based on the significant residual environmental impacts of the proposed clearing.

Lot 3 Buller Road is not identified as a priority resource area for extraction under State Planning Policy 2.4. The former Department of Mines and Petroleum (DMP) note that Lot 3 Buller Road has been identified and mapped as containing a Regionally Significant Basic Raw Material (RSBRM) for sand. DMP advised that the mapping serves as a useful tool to identify the more significant basic raw material resources in a regional context, however it cannot be taken as government endorsement of approval for mining, which needs to consider other matters such as environmental and planning approvals. The now Department of Mines, Industry Regulation and Safety (DMIRS) confirmed this advice on 6 August 2019 (DMIRS, 2019).

Clearing application history

<u>EPBC Act Approval</u>

- On 9 February 2018, the applicant applied for approval to clear under the EPBC Act 1999

- On 17 January 2019, the former Department of the Environment and Energy approved the proposal (reference EPBC 2018/8138) to clear (consistent with the 7516/1 refusal area) of native vegetation for sand extraction. The approval conditions required
    - the provision of a suitable offset, which involves the conservation of remnant vegetation immediately west of the application area
    - the applicant to provide an Environmental Management Plan for approval of the Commonwealth Minister prior to clearing
- A subsequent variation of conditions attached to the approval was undertaken and approved by the former DAWE on 27 July 2021. The variation covers an area of 10.04 hectares, consistent with that approved under CPS 8500/1, subject to offset conditions
- The applicant has subsequently applied for an additional variation to extend the clearing in line with the current clearing amendment application, for which the assessment is ongoing.

Clearing permit 6701/1

On 12 August 2015, AMG (WA) Pty Ltd applied for a permit to clear 6.02 hectares of vegetation in a degraded (Keighery, 1994) condition within Lot 3 Buller Road. DER's assessment did not identify any significant environmental impacts, and on 15 October 2015 the former DER granted a permit to clear, subject to conditions, including revegetation requirements of the extraction area, post-extraction. The applicant has advised that extraction activities have not yet been finalised, as sand resource remains, hence revegetation has not yet commenced.

Clearing permit CPS 6701/2

On 28 September 2021, AMG applied to amend CPS 6701/1 to increase the authorised clearing area by 1.46 hectares, change the purpose of clearing to include 'landfill facility' and remove a conditional requirement to revegetate the approved clearing area immediately post-extraction, noting the proposed landfill end land use.

The assessment identified that the additional area proposed for clearing comprises a largely cleared 1.46 hectare area, with the limited occasional regrowth vegetation in a completely degraded (Keighery, 1994) condition – no significant residual impacts were identified. Noting landfill was proposed post-extraction, the applicant would have been unable to comply with the previous CPS 6701/1 requirement to revegetate immediately post-extraction (to pre-cleared extent - degraded with limited occasional regrowth). As a result, the condition was removed, noting that the Shire's Development Approval (DA) requires revegetation post-landfill. On 8 April 2022, the amended clearing permit was granted.

Clearing permit application CPS 6620/1

On 17 June 2015, AMG (WA) Pty Ltd applied for a permit to clear 33.84 hectares of native vegetation within Lot 3 Buller Road, for sand extraction. During the assessment, the application was reduced to 20.8 hectares. The Delegated Officer determined that the proposed clearing would have resulted in the loss of 20.8 hectares of vegetation that contains high biodiversity, significant habitat for fauna, forms part of a regionally significant ecological linkage and is a significant remnant in a highly cleared area.

The applicant was provided an opportunity to further revise the application area to avoid significant environmental impacts. The applicant declined to revise, and on 10 August 2016, DER refused the application, noting that the residual environmental impacts were too significant to offset.

On 24 August 2016, the applicant appealed DER's decision. The appellant submitted that the environmental values could have been adequately offset, and the on-site values have been impacted by dieback and the Waroona fires in January 2016. The appellant submitted that the decision to refuse the permit was inconsistent with planning and other decisions made by DER in the area.

On 31 January 2017, the Minister for Environment dismissed the appeal noting that while some damage to vegetation was an inevitable consequence of fire, the values of the vegetation are capable of being re-established, specifically black cockatoo foraging habitat and linkage values. The Minister further advised that the applicable planning instruments do not identify the site as an area of regional or state significance for basic raw materials (Minister for Environment, 2017).

Clearing permit application CPS 7516/1

On 13 March 2017, the applicant applied to clear 14 hectares of native vegetation within Lot 3 for sand extraction (see figure 2).

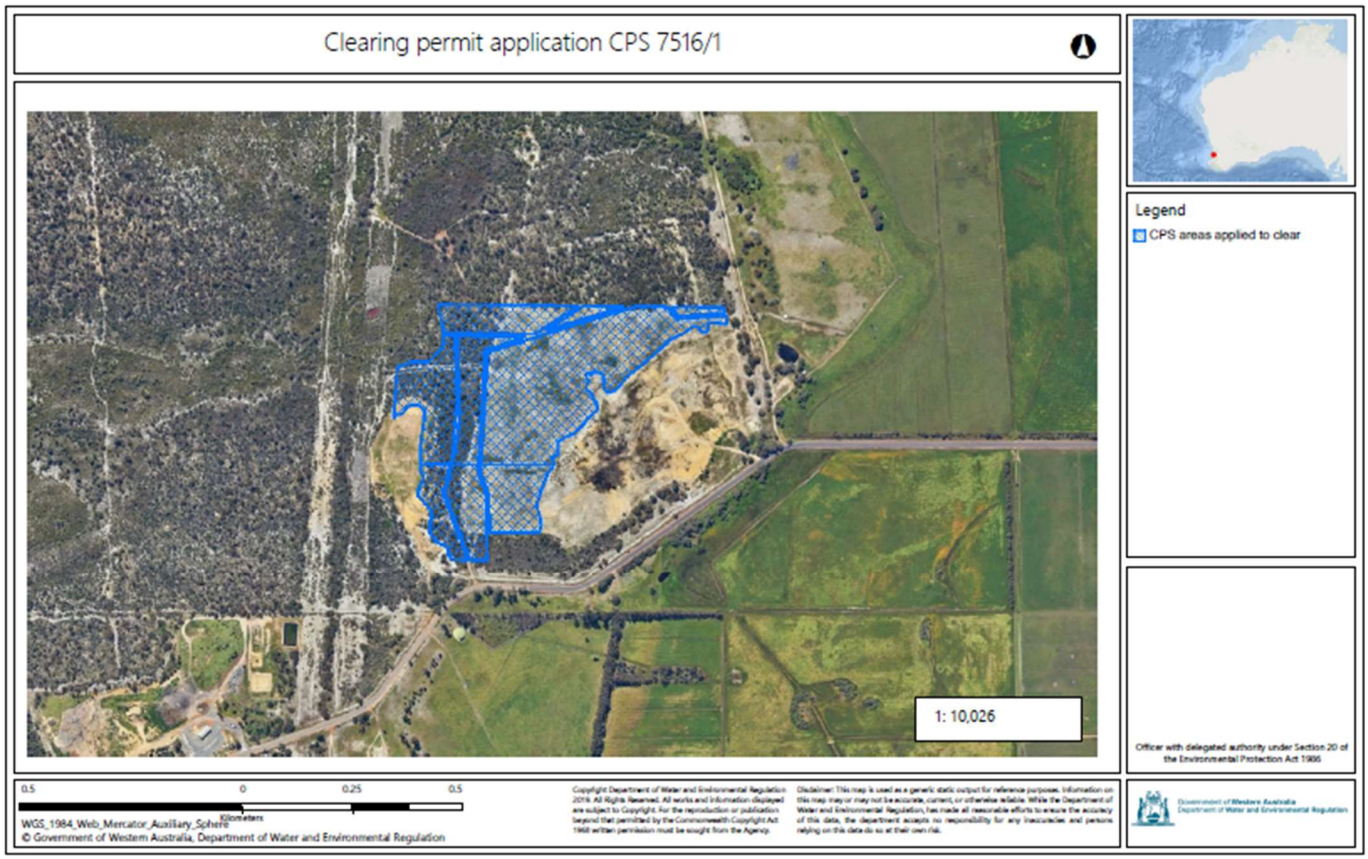

Figure 2: CPS 7516/1 application area refused.

The Delegated Officer determined that the proposed clearing contained high biodiversity, significant habitat for fauna, provides value to a regionally significant ecological linkage and is a significant remnant in a highly cleared area.

DWER determined that environmental offsets were not appropriate for the proposed clearing, given the significance of impacts. On 5 January 2018, the Delegated Officer determined to refuse the application. On 22 January 2018, DWER was notified of an appeal against the decision to refuse the application.

On the 9 July 2018, the Minister for Environment dismissed the appeal stating that (Minister for Environment, 2018):

> "*while the values of the vegetation to black cockatoos were negatively impacted by the Waroona fires, the Minister considered that the vegetation nonetheless retains habitat values for the identified species. The Minister also acknowledged the Appeals Committee's advice in respect to the status of the three species, and the impact posed by further clearing of vegetation that is of habitat value. It follows that the Minister agreed with the Appeals Committee that the 14 hectares of native vegetation proposed to be cleared forms part of a significant habitat for black cockatoos.*
>
> *The Minister also noted that the vegetation may form part of a habitat for brush-tailed phascogales and quendas. In coming to this conclusion, the Minister also noted that only 18 per cent of the pre-European Southern River vegetation complex on the coastal plain remains intact, and only 15 per cent of the original extent of native vegetation remains within a 10 kilometre radius of the property."*

The determination by the Minister for Environment further noted that (Minister for Environment, 2018):

> *"the Appeals Committee acknowledged that factors such as the powerline corridor, the adjoining landfill, the adjoining farmland and the previous un-remediated sand extraction pits may support the notion that the*

ecological linkage is not maintained. However, the Committee found that the subject area is clearly part of a patch of bushland within a regional linkage. Based on the information available, the Minister agreed with the Appeals Committee that while clearing the Application Area would not sever the regional linkage, it would make the linkage patch smaller and expose to edge effects a greater area that is in better condition. As such, the Minister was of the view that DWER appropriately considered ecological linkages in its assessment of the proposal."

In summary the Minister for Environment noted *(*Minister for Environment, 2018):

"Taking into account the values identified in respect to the entire Application Area, the Minister believed DWER was justified in forming the view that an offset was not appropriate in this instance. … It follows that the Minister considered DWER's assessment of the proposed clearing was appropriate, and adequately considered the environmental values and other relevant matters relevant to the proposal. The Minister has therefore dismissed the appeal."

When combined with the current application area, and those areas approved under CPS 8500/2, the area is largely consistent with the area refused under CPS 7516/1 (see Figure 3 below).

CPS 8500/1 and CPS 8500/2

In granting a clearing permit subject to conditions, including offset requirements, the Delegated Officer considered the following key differences between the environmental impacts of the current proposal relative to those assessed under the refused CPS 7516/1:

- the application area had been reduced from 14 hectares to 11.25 hectares
- the extent of impact on potential future breeding trees had reduced from 107 trees, of which 17 had potentially suitable breeding hollows, to 24 trees, of which none had potentially suitable breeding hollows
- the extent of impact to black cockatoo foraging habitat had reduced from 14 hectares to 11.25 hectares
- the extent of impact to vegetation in a good or better condition had reduced from 10.75 hectares to 3.68 hectares (based on revised vegetation condition mapping)
- the extent of impact to the Banksia Woodlands TEC had reduced from 10.75 hectares to 3.68 hectares
- the extent of impact to the Southern River Complex and vegetation contributing linkage values had reduced from 14 hectares to 11.25 hectares
- in addition to offset measures that involve placing a conservation covenant over 20.61 hectares of adjacent high quality remnant vegetation, the applicant also included rehabilitation measures as part of the proposed offset, including the rehabilitation of 8.2 hectares of native vegetation from a degraded to very good (Keighery, 1994) condition.

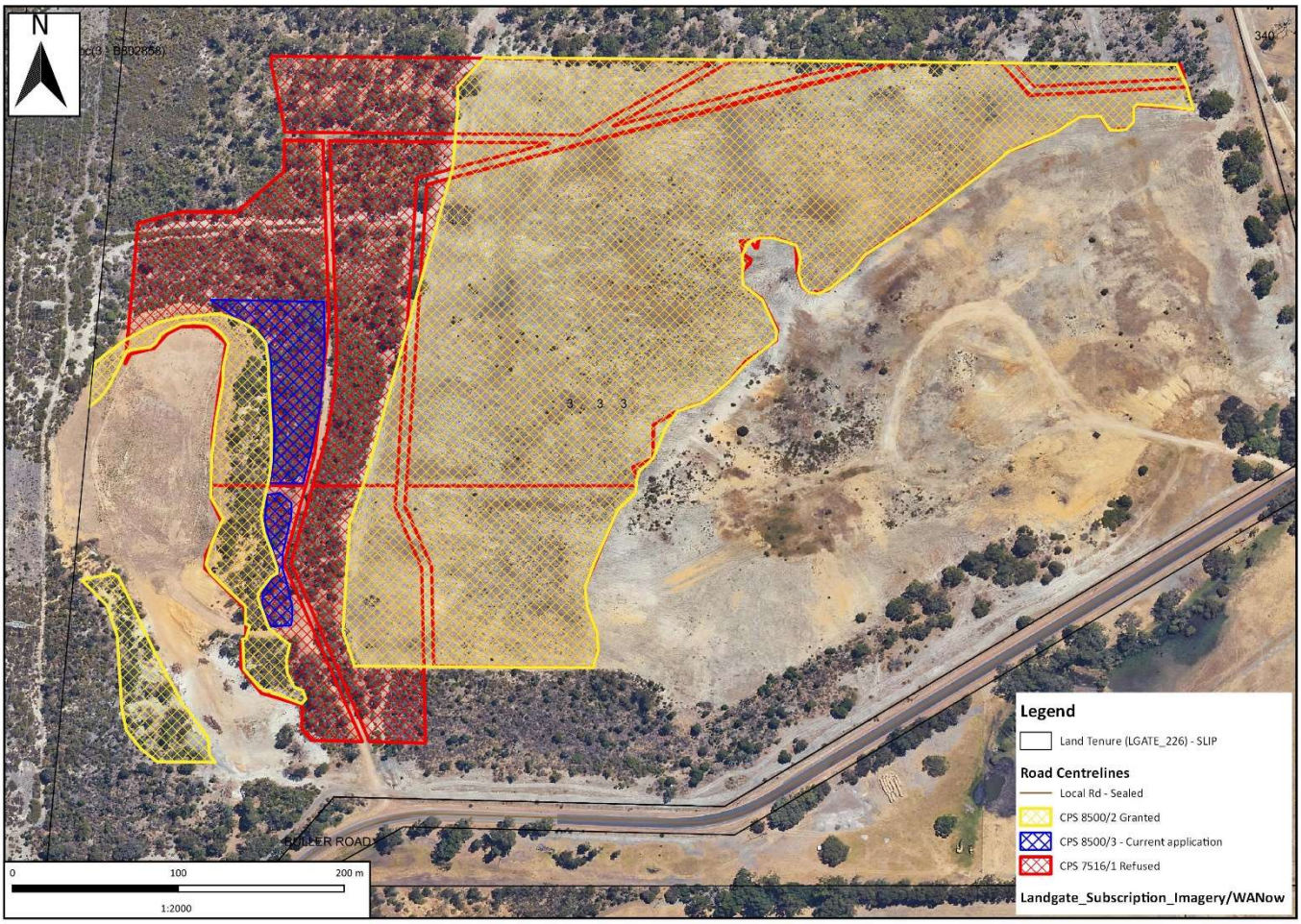

Figure 3: Area refused under CPS 7516/1 overlaid with area approved under CPS 8500/2 and current application amendment under CPS 8500/3.

Other relevant matters

Project Support

The applicant previously obtained letters of support for the original larger project from:

- Minister for Indigenous Affairs
- Peel Development Commission
- Josie Farrer – Member for the Kimberley
- Department of Aboriginal Affairs
- Minister for Employment
- Department of Training and Workforce Development

RIWI Act Approvals

The application area is mapped within the Murray groundwater area which is proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). Under the RIWI Act, if a bore is to be drilled and water taken for purposes other than those purposes exempt from licensing, a licence application must be made to DWER. The applicant has advised that the proposed extractive industry will remain above the groundwater level, and therefore will not require a RIWI licence to take groundwater.

Aboriginal Heritage

The application area is adjacent to one Aboriginal Site of Significance, Buller Road Camp. 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.

EPA Environmental Protection Bulletin (EPB) No. 12

Lot 3 Buller Road is identified as being part of a 'Peel Regionally Significant Natural Area' (RSNA) under the Environmental Protection Authority's Environmental Protection Bulletin (EPB) No. 12. EPB No.12 identifies regionally significant natural areas that should be considered during strategic planning. EPB No.12 notes that any developments in this area will be considered on their merits. However, those impacting on regionally significant natural areas will be subjected to higher scrutiny (EPA, 2013).

The EPA notes that (EPA, 2013)

- the primary protection of remnant native vegetation is best achieved by locating development in cleared areas in preference to un-cleared lands;
- the Peel RSNAs information provides a key resource to inform strategic regional planning;
- the information provides guidance to State and Local Government authorities, community, industry and developers in planning to firstly, avoid, and then minimise, the impacts of development proposals and planning schemes on natural areas; and,

Appendix A. Additional information provided by applicant and Public Submissions

Summary of Application – DWER comments

Applicant – 13 September 2022 - Revised application area

The applicant provided a revised application area to reduce environmental impact. The key changes in the proposal included a reduction in the application area from 3.43 hectares to 2.94 hectares to avoid six trees with a DBH that could provide future breeding habitat for black cockatoos.

DWER – 19 October 2022 – Additional information required

DWER's review of the applicant's revised application identified that the revised application area would result in the following significant environmental impacts:

- The loss of 2.94 hectares of preferred foraging habitat for:
  - Carnaby's cockatoo (listed as Endangered)
  - forest red-tailed black cockatoo (listed as Vulnerable)
  - Baudin's cockatoo (listed as Endangered)
- The loss of 2.58 hectares of vegetation that is representative of the Banksia woodland on the Swan Coastal Plain (Banksia Woodland) Commonwealth listed threatened ecological community (TEC).
- The loss of 2.94 hectares of native vegetation that is representative of a highly cleared vegetation complex (Southern River Complex) and comprises significant remnant vegetation in a highly cleared landscape.

DWER subsequently requested an adequate offset to address the above significant residual impacts.

Applicant – 3 November 2022 – Offset provided

The applicant provided additional information to DWER, and noted the following:

- the applicant is prepared to commit to the required offset
- it is the applicant's view that the provision of a revegetation plan should only be required after a decision on the application is made and as a condition of approval, as the applicant should not need to incur costs engaging a consultant to prepare a plan before a decision, particularly if an approval is not forthcoming
- the applicant acknowledged the need for planning approval and a conservation covenant and was in the process of obtaining these
- a document detailing some potential rehabilitation measures was provided.

Shire of Waroona – 11 January 2023 – Notice of Determination of Application for DA

The Shire of Waroona refused the Development Approval for the proposed expansion of the sand extraction and landfill area (see discussion in Section 3.3 and *Notice of Intent to refuse* section below for details for refusal).

Applicant – 31 January 2023 – Vegetation condition report and proposed reduction in area.

The applicant provided DWER with a follow up survey by Plantecology undertaken in January 2023 to assess the vegetation condition of the application area. The survey found that condition of most of the vegetation within the site has improved since the fire of 2016, with the majority of the site rated as good or better condition (Plantecology, 2023).

The applicant also provided, while not as a formal application but as a discussion point, a map of a proposed reduced application area of 1.73 hectares.

DWER – 15 February 2023 – Notice of Intent to refuse

DWER provided the applicant with a notice of intent to refuse (NIR) stating the below:

Since the department's letter of 19 October 2022, the Shire of Waroona (the Shire) has provided the department with an ecological assessment of the application area, titled 'Flora and Vegetation Assessment, Lot 3 Buller Road, Waroona' (Flora and Vegetation Assessment). DWER notes that the Shire engaged Professor Kingsley Dixon and

Summary of Application – DWER comments
Dr Michael Just to undertake the survey to inform its assessment of the development application. DWER notes that the Flora and Vegetation Assessment identified the following: • the majority of the application area is in a very good to excellent condition; • the survey area (including the application area) comprises high quality vegetation which is floristically diverse; • the site is representative of the endangered Banksia Woodlands Ecological Community of the Swan Coastal Plain; • the site possesses species indicative of subcommunity FCT 20c, which is endorsed by the Western Australian Minister for Environment as critically endangered and listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC); • the site constitutes key foraging habitat for endangered black cockatoos, as evidenced by black cockatoo foraging evidence observed throughout on jarrah fruit and *Banksia* cones; • the site provides a critical ecological linkage between the class A Buller Road nature reserve and wetlands to the south of the application area and the vegetation north. The above Flora and Vegetation Assessment outcomes represent additional information that the department considers to be relevant in undertaking its assessment of the amendment application. The department undertook a site inspection to inform its assessment of the amendment application, and verify the information provided in the Flora and Vegetation Assessment. The site inspection identified the following: • the application area largely comprises *Banksia* and jarrah woodland ranging from an excellent to degraded condition, with the majority in a very good to excellent condition; • the density of black cockatoo foraging habitat varies throughout, with the south-eastern portion of the application area comprising the highest density *Banksia* sp., and thus the highest quality Carnaby's cockatoo foraging habitat; • the application area is partially representative of the Banksia Woodland TEC (the DWER site inspection covered a larger area than the revised application area, some of which was not determined to be the TEC). The department's site inspection identified that the condition of the vegetation within the application area is better than that indicated by the historical flora surveys of the site. Considering the site inspection findings, the department has concluded that the proposed clearing would result in the loss of 2.94 hectares of native vegetation largely in a very good to excellent (Keighery, 1994) condition, which: • is partially representative of the Banksia Woodland TEC; • comprises significant foraging habitat for black cockatoos within foraging range of known breeding and roosting sites on a highly fragmented portion of the Swan Coastal Plain; • provides a critical ecological linkage and provides an ecological stepping-stone for fauna moving north-south. • is representative of the Southern River Vegetation Complex, which retains only 18 per cent of its pre-European extent. In addition to its consideration of the environmental values of the application area, under section 51O(4) of the EP Act, the department is required to give consideration to planning instruments or other matters considered relevant. In this case, a Development Approval (DA) from the Shire to support the proposed end land use is required. Given that a DA is not currently granted, it would be unnecessarily harmful to the environment for the department to authorise native vegetation clearing. The department notes that the Shire refused the DA application for the proposed extension of the mining activity and landfill on 11 January 2023. The shire deemed the proposal as contrary to the provisions of *Clause 67(2) of the Planning and Development (Local Planning Schemes) Regulations 2015* for the following reasons: • the proposal will not protect and enhance remnant vegetation, will not enhance the water quality of the Peel-Harvey Estuary catchment, will result in the destruction of remnant landscapes that are valued by first nations people and the broader community, and will contribute to a cumulative loss of native vegetation. This is contrary to the aims and principles of the Shire of Waroona Local Planning Strategy;

Summary of Application – DWER comments

- the proposal will have an unacceptable impact on threatened species/communities and biodiversity and will reduce remnant vegetation extent. This will also reduce and impact water quality capacity in the Peel Harvey catchment;
- the subject proposal is not supportable under the Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992;
- no sufficient justification is put forward for the subject proposal to depart from the aims and principles of the Native Vegetation Policy for Western Australia;
- the proposed earthworks and clearing will not be sympathetic to the cultural heritage values that local first nations people attribute to remnant bushland, landscapes and the ecological communities and will not be compatible with the desired future character and amenity of the area in terms of bulk, scale and overall appearance;
- the submissions received contains valid objections based on environmental grounds;
- advice received from the Department of Fire and Emergency Services indicates that the applicant has not demonstrated that the proposal is compliant with the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas;
- the subject application's proposal for clearing of remnant vegetation is not to be supported having regard to:
    - the principles for clearing native vegetation under Schedule 5 of the EP Act; and
    - Bindjareb Djilba: A plan for the protection of the Peel-Harvey estuary;
- the subject development lacks sufficient detail as to staging and sectional profiles, dimensions/extent of areas, details of incidental development, and stormwater management for the clearing of vegetation, extractive industry and landfill components.

It is noted that the Shire's decision has been appealed and is currently going through mediation with the State Administrative Tribunal (SAT). Although SAT has not made a decision on the appeal, the Delegated Officer's determination to refuse the application is based on the significant residual environmental impacts of the proposed clearing.

Given the information presented above, the department considers that the proposed clearing presents an unacceptable risk to the environment, despite the applicant's willingness to provide an offset. In addition to the above significant environmental impacts and planning matters identified, the department's view also considers the following relevant matters:

- the condition of the vegetation within the application area has not degraded over time, despite its location between existing areas of disturbance. The patch appears to be resilient to surrounding disturbances and has recovered well from the 2016 Waroona fires. This points to the long-term viability of the site as an important black cockatoo foraging resource and vegetation representative of the Banksia Woodland TEC;
- the significance of cumulative impacts, noting the proposed clearing would be in addition to the 11.25 hectares of native vegetation clearing (including black cockatoo foraging habitat and Banksia Woodland TEC) within Lot 3 Buller Road that was previously approved by the department under CPS 8500/2;
- when combining the application area with that previously granted under CPS 8500/2, it is now largely the same as the area refused under CPS 7516/1. The Minister for Environment at the time noted, amongst other factors, that the decision to refuse was appropriate based on impacts to black cockatoo habitat in a highly fragmented landscape;
- Lot 3 Buller Road is not identified as a priority basic raw material resource area under State Planning Policy 2.4.

Although AMG has not formally applied to reduce the application area, note that the department has undertaken a comparative review of the modified clearing area as proposed in an email received from Lavan Legal on 30 January 2023. While the proposed area has been reduced, the environmental values which would be impacted are comparable to the current amendment application area under assessment. These include:

- comprises significant foraging habitat for black cockatoos within foraging range of known breeding and roosting sites on a highly fragmented portion of the Swan Coastal Plain
- the site provides a critical ecological linkage and provides an ecological steppingstone for fauna moving north-south.
- is representative of the Southern River Vegetation Complex which retains only 18 per cent of its pre-European extent.

Summary of Application – DWER comments
The department further notes that the extent of better-quality vegetation i.e. very good to excellent, to be cleared under the modified proposal, is proportionately greater than the original application area and the modification as proposed is unlikely to alter the department's assessment of the significant residual impacts of the proposed clearing. After having considered all this information, it is the Delegated Officers intention to refuse the amendment application.
Applicant – 6 April 2023 – Response to the NIR. The applicant submitted a further amended plan for DWER's consideration, noting that: • the amended plan seeks to significantly reduce the proposed clearing area down to 0.63 ha (later confirmed as 0.53 ha with relevant GIS shapefiles) whilst maintaining the intent of the proposal, namely it creates a better operational arrangement of the facility by facilitating better access between the western and eastern pits (in an area behind the vegetated bund to the south) and provides access to a limited sand resource. • the amended plan seeks to retain the majority of vegetation assessed as in good to excellent condition in the area east of the existing access track and maintains an ecological linkage that provides an ecological stepping-stone for fauna moving north-south. • in addition to the further minimisation of clearing and avoidance of better quality vegetation, our client is willing to maintain a similar offset and consider remediation of the completely degraded area identified at the south along Buller Road as a way to further mitigate the impact.

Summary of Submission comments	Consideration of comments
Concerns that the covenant and offset need to be increased to counter balance the increased impacts of the proposed clearing.	The impact of the proposed clearing was considered of such a nature that offsets are not deemed appropriate to counterbalance the significant residual impact of the proposed clearing and the application to amend has been refused.
Need for avoidance or mitigations measures.	The applicant's avoidance and mitigation measures, including the ultimate reduce application of 0.63 hectares are discussed in Section 1 and 3 of the report.
Cumulative impacts of the proposed clearing in already extensively cleared and fragmented landscape and with regards to the staged applications for clearing. The stage applications are not allowing proper assessment of entire proposal, including cumulative impacts, and is subsequently eroding remaining environment values of the area.	DWER considers that each subsequent application in the local area should be assessed on its merits, taking into account the cumulative impacts of past clearing in the region. DWER has included the application history and cumulative clearing within the application during the consideration of the amendment application. See Section 3.2 for details.
Confusion as to the clarity of the purpose extractive industry or landfill. the purpose, and justification of the additional clearing required.	The applicant has stated the purpose of the clearing is to allow for sand extraction and subsequent utilisation as a landfill site. Please see Section 1.
Lack of information regarding land capability assessments or the suitability of the site for landfill, comparative assessment of alternatives in the Shire. Landfill sites should be planned within a regional context based on land suitability, including assessment of public and private land.	It is not within the scope of the native vegetation clearing permit process to assess these factors. These factors are more relevant for the Works Approval Application under Part V, Division 3 of the *Environmental Protection Act 1986* that would need to be obtained for the establishment of a landfill.
Impact on the occurrences of Banksia Woodlands of the Swan Coastal Plain TEC.	See Section 3.2 for the assessment of impacts on environmental values.
Black cockatoos' habitat, specifically nearby potential habitat trees identified in the Black Cockatoo Habitat review report and direct impact on up to 21 hollows. Removing these reduces future	See Section 3.2 for the assessment of impacts on environmental values.

Summary of Submission comments	Consideration of comments
potential cockatoo breeding opportunities. Impact to threatened black cockatoos foraging habitat, future breeding and proximity to a tree with confirmed suitably sized hollow. The proposed amendment increases clearing and will result in a net loss of foraging habitat within the region.	
The South West portion of the application area was not included in the black cockatoos habitat and fauna survey.	This portion is not included in the proposed amendment area.
The role of the vegetation to be cleared as an ecological corridor and to prevent further land degradation. Disagree with the claim by the proponent that this area between the two sand mining areas would 'suffer from edge effects', 'it's condition would become variable', and 'retention will produce a discontinuous landform', is a rationalisation for the developer's clearing imperative	See Section 3.2 for the assessment of impacts on environmental values.
Despite the advice that 'slow directional clearing' would be carried out, there is the potential for direct and indirect impacts to Quenda, SW Brushtail Possum, Coastal Plains Skink, Chuditch and Western Brush Wallaby. The Chuditch has a National Recovery Plan 2012, that states (page 10) that 'Corridors of retained vegetation, e.g. road reserves, are also important to Chuditch as links between larger reserves' (as well as 'needing large natural areas because of their large home ranges and resource requirements.')	As the application to amend has been refused, no permit has been issued. See Section 3.2 for the assessment of impacts on environmental values.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The application area is in the Swan Coastal Plain Bioregion, and Shire of Waroona. It is bound by remnant vegetation to the north and north west, extractive industry immediately east and west and agricultural land uses south. The application area comprises part of a larger remnant of native vegetation (around 650 hectares) which occurs in a band of highly cleared agricultural land within the southern Swan Coastal Plain.
Climate and Landform	The application area is located on the Bassendean Dunes landform, comprising gently undulating dunes made up of well-bleached white-grey sands. The landform of the larger remnant within Lot 3 Buller Road ranges from 24 mAHD on top of a sand rise in the southwest part of the area to around 15.5 mAHD within the adjacent eastern extraction areas (MBS Environmental, 2015). The climate of the area is warm and temperate (Mediterranean). The winter months have higher rainfall than summer months with an annual rainfall of around 950 millimetres.
Vegetation description and condition	Flora surveys indicate that the application area comprises the following vegetation type: VT1 - Mid open woodland to open forest of *Allocasuarina fraseriana, Eucalyptus marginata* and *Corymbia calophylla* over low open woodland to woodland dominated by *Banksia attenuata, Banksia grandis* and *Banksia ilicifolia* over mid sparse to open shrubland dominated by *Xanthorrhoea preissii* over low to mid sparse shrubland to shrubland dominated by *Hibbertia hypericoides* over low sparse to open forbland dominated by *Dasypogon bromeliifolius* and *Desmocladus flexuosus* on grey sand on lower to upper slopes and flats (Woodman Environmental, 2015). A follow up site inspection of the application area by the department in (DWER, 2022) identified that the application area comprises *Banksia attenuata* and *Eucalyptus marginata* (jarrah) woodland, over a midstorey dominated by *Acacia pulchella* and *Melaleuca thymoides*. The *Acacia pulchella* and *Melaleuca thymoides* midstorey is particularly dense on the eastern side of the track running through the centre of the application area, where it forms dense thickets. *Xanthorrhoea preissii* was also relatively common. Other overstorey species noted include scattered occasional *Corymbia calophylla* (marri), *Xylomelum occidentale* (woody pear), *Banksia grandis* and *Banksia ilicifolia*. *Jacksonia sternbergiana* was common on the edges of the centre running track. Common understorey species included *Hibbertia* sp., *Mesomelaena pseudostygia, Stirlingia latifolia, Hemiandra pungens* and *Patersonia occidentalis*. The full survey descriptions and maps are available online at https://ftp.dwer.wa.gov.au/permit/8500/ . According to broad scale vegetation mapping of the Swan Coastal Plain, the application area is mapped as the Southern River Complex. This complex is described as open woodland of *Corymbia calophylla* (Marri), *Eucalyptus marginata* (Jarrah) and *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum), and *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds (Heddle et al, 1980). The application area is representative of this vegetation complex. The departments site inspection identified that the vegetation within the application area is largely in a very good to excellent (Keighery, 1994) condition (DWER, 2022). A further follow up survey by Plantecology in January 2023 found that condition of most of the vegetation within the site has improved since the fire of 2016 with the

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>majority of the site rated as good or better (Keighery, 1994) condition (Planteecology, 2023).
The full survey descriptions and maps are available online.

The full Keighery (1994) condition rating scale, with a description of each condition, is provided in 0.</td></tr>
<tr><td>Soil description</td><td>The application is mapped as the ‘Bassendean B2 Phase’ map unit, described as extremely to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or weak iron-organic hard pan at depths generally greater than 2 metres (DPIRD, 2017).</td></tr>
<tr><td>Conservation areas</td><td>The closest conservation area is Buller Nature reserve located around 400 metres from the application area.</td></tr>
<tr><td>Ecological linkage</td><td>The application area forms part of a South West Regional Ecological Linkage (SWREL). A patch of vegetation with an edge touching or less than 100 metres from a linkage (axis line) is assigned to proximity analysis group 1(a) which is the highest category group. The application area is within group 1(a).</td></tr>
<tr><td>Land degradation risk</td><td>According to land degradation risk mapping, the highest risk on site is associated with wind erosion, as 50-70 per cent of the application areas mapped land unit has a high to extreme wind erosion risk (see all categories below).

Groundwater salinity is mapped at between 500-1000 milligrams per litre total dissolved solids. This level is considered marginal.

<table>
<tr><th>Risk categories</th><th>Landform Unit S8</th></tr>
<tr><td>Wind erosion</td><td>>70% of map unit has a high to extreme wind erosion risk</td></tr>
<tr><td>Water erosion</td><td>3-10% of map unit has a high to extreme water erosion risk</td></tr>
<tr><td>Salinity</td><td>30-50% of map unit has a moderate to high salinity risk or is presently saline</td></tr>
<tr><td>Flood risk</td><td><3% of the map unit has a moderate to high flood risk</td></tr>
<tr><td>Water logging</td><td>3-10% of map unit has a moderate to very high waterlogging risk</td></tr>
</table>
</td></tr>
<tr><td>Waterbodies</td><td>According to available datasets, there are no wetlands mapped within the application area.

The closest wetlands to the application area are:
• UFI 5004 multiple use sumpland (seasonally inundated basin) – 115 metres west
• UFI 4807 conservation category sumpland – 210 metres west
• UFI 4636 conservation category sumpland – 480 metres west
• UFI 5005 resource enhancement dampland – 200 metres north

There are no natural watercourses mapped within, or close to the application area.</td></tr>
<tr><td>Flora</td><td>According to available datasets, there are records of four threatened and 21 priority flora species within the local area. These are presented below in section B.3. Of these, a likelihood of analysis identified six priority and three threatened species that may occur within the application based on habitat suitability (vegetation type, soil type and vegetation condition).

Caladenia huegelii is the closest known record of threatened flora to the application area, located 1.5 kilometres away.</td></tr>
</table>

Characteristic	Details
	Caladenia speciosa is the closest known record of priority flora to the application area, located one kilometre away. Flora surveys did not identify any threatened or priority flora species within the application area (Woodman Environmental, 2015; MBS Environmental, 2015, Just 2022). The Woodman Survey identified one priority 4 flora species, *Acacia semitrullata*, around 500 metres from the application area.
Ecological communities	Most of the application area is mapped as the 'Banksia woodlands of the Swan Coastal Plain' (Banksia Woodland) threatened ecological community (TEC) (endangered). These areas are also mapped as the state listed 'Banksia dominated woodlands of the Swan Coastal Plain IBRA region' priority ecological community (PEC) (priority 3). The application area is considered to meet the condition and size thresholds required under the diagnostic criteria for the Banksia Woodland TEC (DotEE 2016), and the 0.53 hectares application area forms part of a greater patch of over 2 hectares and is therefore considered representative of this TEC. Surveys by Plantecology (2018, 2023) and Just (2022) of the larger application area identified that all vegetation in a good or better condition is representative of the Banksia Woodlands TEC (Plantecology, 2018b). The current reduced application area consists entirely of vegetation in Good to Excellent condition. This presence of the Banksia woodland TEC was also confirmed during the departments site inspection on the (DWER, 2022).
Fauna	According to available datasets, there are records of 13 conservation listed fauna species within the local area, as presented in section B.4 below. Of these, a likelihood of analysis identified nine species that may occur within the application area based on habitat suitability. A Fauna and Black Cockatoo Habitat Assessment identified forest red-tailed black cockatoo and Carnaby's cockatoo foraging evidence within the application area. No evidence of other conservation listed species was definitively identified within the application area (Terrestrial Ecosystems, 2015; Harewood, 2018).

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	1,501,222	579,814	38.6	153,955	10.3
Vegetation complex					
Heddle vegetation complex 'Southern River Complex' **	58,781	10,832	18.4	940	1.6
Local area					
10km radius	31,962.77	1,796.83	5.62	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora records table

The below table shows threatened flora recorded within the local area. The table also includes four species recorded just outside (within three kilometres) the local area, given these species are known to commonly occur within this portion of the Swan Coastal Plain.

Threatened flora

Species name	Conservation status (state listing)	Number of known records in the local area (10km radius)	Suitable habitat present [Y, N, N/A]	Are surveys adequate to identify? [Y, N, N/A]	Did surveys identify? [Y, N, N/A]
Caladenia huegelii	Threatened (Endangered)	1	Yes	Yes	No
Diuris drummondii	Threatened (Vulnerable)	2	Yes	Yes	No
Diuris purdiei	Threatened (Endangered)	0	No	Yes	No
Drakaea elastica	Threatened (Endangered)	0	No	Yes	No
Drakaea micrantha	Threatened (Vulnerable)	0	Yes	Yes	No
Eleocharis keigheryi	Threatened (Vulnerable)	2	No	Yes	No
Synaphea sp. Fairbridge Farm (D.Papenfus 696)	Threatened (Critically endangered)	0	No	Yes	No
Synaphea stenoloba	Threatened (Endangered)	3	No	Yes	No

The below table shows priority flora recorded within the local area.

Priority Flora

Species name	Conservation status (state listing)	Number of known records in the local area (10km radius)	Suitable habitat present [Y, N, N/A]	Are surveys adequate to identify? [Y, N, N/A]	Did surveys identify? [Y, N, N/A]
Acacia semitrullata	4	1	Yes	Yes	Yes – but around 500 metres from the application area
Amanita fibrillopes	3	1	Yes	Yes	No
Angianthus drummondii	3	2	No	N/A	No
Aponogeton hexatepalus	4	2	No	N/A	No
Boronia capitata subsp. gracilis	3	2	No	N/A	No
Caladenia speciosa	4	6	Yes	Yes	No
Carex tereticaulis	3	1	No	N/A	No
Chamaescilla gibsonii	3	2	No	N/A	No
Conostylis pauciflora subsp. pauciflora	4	1	Yes	Yes	No
Diuris brevis	2	1	Yes	Yes	No
Grevillea bipinnatifida subsp. pagna	1	9	No	N/A	No
Hemigenia microphylla	3	2	No	N/A	No
Melaleuca viminalis	2	1	No	N/A	No
Ornduffia submersa	4	1	No	N/A	No
Phyllangium palustre	2	1	No	N/A	No
Pterostylis frenchii	2	1	Yes	Yes	No
Schoenus capillifolius	3	1	No	N/A	No
Schoenus natans	4	5	No	N/A	No
Schoenus sp. Waroona (G.J. Keighery 12235)	3	2	No	N/A	No
Stylidium aceratum	3	1	No	N/A	No
Synaphea odocoileops	1	3	No	N/A	No

B.4. Fauna records table

The below table shows conservation listed fauna recorded within the local area.

Species name	Conservation status (state listing)	Did surveys identify? [Yes, No, N/A]	Suitable habitat present [Yes, No, N/A]
Calyptorhynchus latirostris (Carnaby's cockatoo)	Endangered	Yes – evidence of foraging	Yes
Calyptorhynchus baudinii (Baudin's cockatoo)	Endangered	No	Yes
Myrmecobius fasciatus (numbat)	Endangered	No	Yes (foraging only)
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	Vulnerable	Yes – evidence of foraging	Yes
Westralunio carteri (Carter's freshwater mussel)	Vulnerable	No	No

Species name	Conservation status (state listing)	Did surveys identify? [Yes, No, N/A]	Suitable habitat present [Yes, No, N/A]
Dasyurus geoffroii (chuditch)	Vulnerable	No	Yes (foraging only)
Phascogale tapoatafa wambenger (south-western brush-tailed phascogale)	Conservation dependant	No	Yes
Ctenotus ora (coastal plains skink)	P3	No	Yes
Geotria australis (pouched lamprey)	P3	No	No
Notamacropus irma (western brush wallaby)	P3	No	Yes
Isodoon fusciventer (quenda)	P4	No	Yes
Thinornis rubricollis (hooded plover)	P4	No	No
Hydromys chrysogaster (water-rat)	P4	No	No

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biodiversity values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The application area comprises a high level of biodiversity as it contains: • significant foraging habitat for black cockatoos • 0.53 hectares of vegetation representative of the Commonwealth listed Banksia Woodlands TEC and state listed Priority 3 'Banksia dominated woodlands of the Swan Coastal Plain IBRA region' ecological community • regionally significant ecological linkage values within a highly cleared landscape • cumulative impacts on biodiversity values through staged clearing	At variance	Yes *Refer to 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 application area contains 0.53 hectares of preferred foraging habitat for black cockatoos, within a highly cleared area of the Swan Coastal Plain which is within foraging range of known breeding sites and roost sites. The application area also contains suitable habitat for an additional eight species of conservation significant fauna.	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 application area provides suitable habitat for three threatened flora species. A targeted spring flora survey did not identify any threatened flora (Woodman Environmental, 2015).	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 application area is part of a larger tract of vegetation that is representative of the Commonwealth listed Banksia Woodlands TEC (Plantecology, 2018a; DWER, 2022).	At variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation complex and native vegetation in the local area is less than the national objectives and targets for biodiversity conservation in Australia. The application area provides significant habitat for fauna, ecological linkage values and is representative of the Banksia Woodland TEC/PEC. Therefore, it is considered a significant remnant within a highly cleared area.	At variance	Yes *Refer to Section 3.2.3, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: The application area is around 400 metres from Buller Nature Reserve. The application area forms part of a larger remnant which provides linkage values between Buller Nature Reserve and other remnants within the local area. The proposed clearing would impact on these linkage values and may increase the risk of weeds and dieback spreading into the Reserve.	May be at variance	Yes *Refer to Section 3.2.4, 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: There are no wetlands or watercourses mapped within the application area. The proposed clearing is not likely to impact on the closest water feature (multiple use wetland) which is located around 115 metres west of the application area. The application area is separated from the vegetation adjoining this wetland through an access track/firebreak. A re-classification of mapped wetlands on the Swan Coastal Plain was undertaken by DBCA, with the results of that re-classification not yet published. The re-classification mapping indicates that the multiple use wetland referred to above is likely to be representative of a conservation category wetland (CCW), extending from the original CCW mapping location further west. However, the re-classification mapping extends beyond any riparian vegetation identified in the previous biological surveys, which was also confirmed via site inspection. The closest area of riparian vegetation occurs around 65 metres north west (DWER, 2022), which is likely to be the start of the wetland occurrence. As noted above, Flora surveys did not identify any riparian vegetation within the application area, and the proposed clearing is not likely to be at variance to this Principle.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Due to the sandy soil types, the application area has an increased risk of wind erosion, although this is not expected to be significant given that the application area is bordered by remnant native vegetation to the north and further east and assuming that dust suppression measures would be required as part of the development application process (if approved).	May be at variance	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: Groundwater salinity levels are marginal, and there is not expected to be any surface expression of salinity due to clearing. There are no wetlands or watercourses mapped within the application area. The proposed clearing is not likely to impact on the closest water feature	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
(multiple use wetland) which is located around 115 metres west of the application area, although the departments site inspection indicated that the true wetland occurrence may be closer, given the presence of riparian vegetation around 65 metres north west (DWER, 2022). The application area is separated from the vegetation adjoining this wetland through an access track/firebreak and existing native vegetation, which provides a 65-metre buffer. Noting the distance and extent of vegetation between the application area and the closest wetland/watercourse, the proposed clearing is unlikely to result in surface water quality impacts through sedimentation or otherwise.		
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 mapped soils are highly permeable, and noting the lack of hydrological features on site, the proposed clearing is not likely to exacerbate flooding.	Not likely to be at variance	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.
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. Biological survey information excerpts / photographs of the vegetation / DWER site inspection report

The application area has been subject to several biological surveys, which are detailed below:

MBS Environmental (2015)

MBS Environmental undertook a Level 1 Flora and Vegetation survey of the 'Jackson Block Survey Area' located in the southeast corner of Lot 3 (Diagram 35920) Buller Road in Waroona. The survey area covered around 36.8 hectares, including the application area. The survey involved two main components:

- a desktop assessment to collect background information on flora and vegetation of the target area
- a reconnaissance site visit to verify the accuracy of the desktop assessment and delineate and characterise the flora and range of vegetation units present.

The Level 1 reconnaissance site survey was undertaken by a senior environmental scientist on 5 May 2015. The reconnaissance survey involved traversing the survey area on foot to verify the accuracy of the desktop assessment, and delineate/characterise the flora and range of vegetation units present. Five 10 by 10 metre quadrats were surveyed. Photographs were taken of the quadrat sites and of additional photo points across the site. Opportunistic observations of the species present, vegetation type and condition were also made outside the quadrats.

The report identified the timing of the survey as a major constraint as it was conducted in May, noting the preferred survey season in the southwest is the main flowering period, which occurs in spring.

Woodman Environmental (2015)
Woodman Environmental undertook a detailed Level 2 Flora and Vegetation survey of the 'Jackson Block Survey Area' which encompasses the application area. This involved a desktop study and reconnaissance survey, followed by a detailed field survey.

An initial reconnaissance visit to the study area was conducted by two experienced botanists on 2 September 2015. The reconnaissance survey included targeted searches for *Drakaea elastica* (threatened). This was considered necessary, as the desktop review indicated that appropriate habitat was likely to be present in the atudy area. It is considered that *Drakaea elastica* searches should be undertaken in July / August when the orchid leaves are visible. However, Woodman Environmental noted that a survey in very early September remains appropriate for identifying this species, as its leaves are still likely visible.

Searching was conducted on foot and all areas of appropriate habitat, particularly grey sand areas adjacent to winter-wet areas, and thickets of *Kunzea glabrescens* (Spearwood), were inspected.

The detailed field survey was conducted in Spring, from the 22 to 25 of September 2015. It is considered that this visit was conducted in the most appropriate time to survey in the Swan Coastal Plain Bioregion, as most species in the region flower at this time.

16 permanently marked 10 x 10 metre flora survey quadrats were established during the survey. All vascular flora taxa that were visually identifiable within each quadrat were recorded.

Additional flora taxa, as well as any locations of known significant flora taxa and introduced taxa, were also recorded opportunistically in the study area via a search around the general vicinity of each quadrat or detailed recording site, and during searches on foot between quadrats or detailed recording sites.

In addition, specific, targeted searching for significant flora in the study area was undertaken. This included the threatened orchid taxon *Caladenia huegelii*, which is known to occur in close (within 1 km) proximity to the study area. Transects at 20 metre intervals were traversed through appropriate habitat, after considering known habitat.

Plant Ecology (2018a)
This survey was undertaken to map the vegetation condition over the larger Jackson Block Survey Area. The purpose of the survey was to assess whether the vegetation condition within the subject area had returned, or was returning, to that which existed prior to the fire of January 2016.

The subject area was traversed on foot and the condition of the vegetation assessed at eight points. Observations were made of the dominant species present, the cover and presence of weed species, the influence of disturbance factors and the cover and type of the three main strata.

Plant Ecology (2018b)
This survey was undertaken to assess whether any or all the vegetation within the application area met the criteria for consideration as part of the Commonwealth listed threatened ecological community (TEC) "Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region' (Banksia Woodlands).

The survey notes that the site was traversed on foot and the condition of the vegetation assessed at sixteen points. Observations were made of the dominant species present, the cover and presence of weed species, the influence of disturbance factors and the cover and type of the three main strata.

Harewood (2018)
This survey was undertaken to carry out a review of black cockatoo habitat/site use (habitat trees, existing and potential nest hollows, foraging and roosting habitat).

The field survey work was undertaken on 26 July 2018 by a senior zoologist and field assistant. The survey involved the following components:

<u>Black Cockatoo Habitat Tree Review</u>
The black cockatoo breeding habitat assessment involved the re-inspection of all 73 of the previously identified black cockatoo breeding trees (any suitable tree species with a Diameter at Breast height (DBH) of greater than 50 centimetres) (Terrestrial Ecosystems, 2015) within the defined survey area, with an emphasis on the 14 trees previously reported as possibly having hollows of a size suitable for nesting.

Identified hollows were examined using binoculars for evidence of use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches). A drone was also utilised to examine and photograph hollows whenever possible.

Black Cockatoo Foraging Habitat Review
The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey was recorded. The nature and extent of potential foraging habitat present was also documented irrespective of the presence of actual foraging evidence.

Black Cockatoo Roosting Habitat Review

Direct and indirect evidence of black cockatoos roosting within trees within the survey area was noted if observed (e.g. branch clippings, droppings or moulted feathers).

Accendo Site Inspection (2022)
Accendo undertook a site visit of the application area to confirm vegetation type and condition noting the time between previous surveys and the current application. The site inspection noted that the vegetation condition was largely good (Keighery, 1994) and overstorey species are restricted and species diversity of understorey limited.

Dr Just and Dr Dixon Flora and Vegetation Assessment (2022)

The Shire of Waroona commissioned a Flora and Vegetation Assessment of the application area on 28 September 2022, to better inform its assessment of the development application.

The Flora and vegetation Assessment comprised a reconnaissance that involved traversing the Survey Area on foot to delineate and characterise the flora present and the condition of the vegetation in relation to species diversity, ecosystem function and the presence of weeds. The following data was collected:

- Identification of characteristic flora;
- Opportunistic species identification;
- Supplementary data;
- Vegetation transition and boundaries;
- Vegetation condition;
- Evidence of disturbance;
- Introduced pests/weeds and disease.

Transects were run in parallel for the linear length of the site and provided a robust means for assessing the above vegetation parameters.

Plantecology (2023)

This survey was undertaken to again assess the vegetation condition within the site.

The site was traversed on foot by an experienced botanist on the 26th January 2023 and observations made on the current vegetation condition at nine points (Figure 2). At each point, photographs of the vegetation were taken and an assessment of the vegetation condition made using the criteria defined in Table 1, taking into account the integrity of the vertical structure, the presence and density of weeds, signs of disturbance and the ability of the vegetation to maintain, or regenerate to, a natural state.

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)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Consanguineous Wetlands Suites (DBCA-020)
- 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)
- 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)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- South Coast Significant Wetlands (DBCA-018)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- RIWI Act, Groundwater Areas (DWER-034)

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

F.2. References

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