

Scientific Name	Common Name	Habitat	Likelihood to occur on the site
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	The Chuditch have been known to occupy a wide range of habitats including woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. They are opportunistic feeders, and forage on the ground at night, feeding on invertebrates, small mammals, birds and reptiles.	Highly Unlikely due to surrounding disturbance
<i>Leipoa ocellata</i>	Mallee Fowl	Mallee fowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards in mallee bushland.	No – No suitable habitat is present on the site
<i>Setonix brachyurus</i>	Quokka	Quokkas were originally very common on the Swan Coastal Plain, however, their distribution is now limited to Rottnest Island and a few isolated areas in the south-west of WA. On the mainland, they prefer densely vegetated areas around wetlands and streams, whereas on Rottnest Island they inhabit low scrubby coastal vegetation where water is not readily available year-round.	No - this species is locally extinct
<i>Merops ornatus</i>	Rainbow Bee-eater	Populations that breed in northern Australia are considered to be resident, and in many northern localities the Rainbow Bee-eater is present throughout the year. The Rainbow Bee-eater nests in a burrow dug in the ground. It is found across the better-watered parts of WA including islands preferring lightly wooded, sandy country near water.	Likely – Intermittent visitor but highly unlikely to rely on the site for survival
<i>Phascogale calura</i>	Red-tailed Phascogale, Kenngoor	The Red-tailed Phascogale is a small, arboreal, carnivorous marsupial. The preferred habitats for this species are Allocasuarina woodlands with hollow-containing eucalypts (e.g. Eucalyptus wandoo) and Gastrolobium spp..	Highly Unlikely due to surrounding disturbance
<i>Falco peregrinus</i>	Peregrine Falcon	The Peregrine Falcon is found in a variety of habitats but nests on high cliff ledges or artificial structures. It feeds primarily on small-medium sized birds, but occasionally taking insects, such as moths, cicadas and locusts (Birdlife Australia, 2012).	Unlikely – This species is flighty and the site too disturbed for the species to occur on the site

Scientific Name	Common Name	Habitat	Likelihood to occur on the site
<i>Throscodectes xiphos</i>	Cricket	This species of cricket was described in the Jandakot region in Melaleuca dominated vegetation (ENV, 2009).	No – no suitable habitat on the site
<i>Lerista lineata</i>	Perth Slider, Lined Skink	The Lined Skink is a burrowing species that occurs in pale sandy soils with coastal heath and shrubland areas in isolated populations in the south-west and mid-west coast of Western Australia. It feeds on termites and other small insects (AROD, 2014).	Unlikely – the habitat on the site is not preferred by this species
<i>Neelaps calonotos</i>	Black-striped Snake	The Black-striped snake has a limited distribution, inhabiting areas with sandy soils that support heathlands and Banksia/Eucalypt Woodlands (Nevill, 2005) on the Swan Coastal Plain generally in the lower west coast from Lancelin to Mandurah (Storr et al, 1999).	Unlikely due to the surrounding disturbance
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle	This species occurs in high rainfall Jarrah, Karri and Tuart forests and coastal woodlands. They roost in hollows of trees, branches and stumps, and are insectivorous, feeding at night between the canopy and understorey of tall forest trees (Environment Australia, 1999).	No – No suitable habitat on the site
<i>Isoodon obesulus fusciventer</i>	Southern Brown Bandicoot, Quenda	Southern Brown Bandicoots are small grey marsupials that prefer dense scrub (up to one metre high). Their diet includes invertebrates (including earthworms, adult beetles and their larvae), underground fungi, subterranean plant material, and very occasionally, small vertebrates (DEC, 2012).	Likely – evidence has been recorded recently in the vicinity of the site
<i>Macropus eugenii derbianus</i>	Tammar Wallaby	The Tammar Wallaby prefers dense, low vegetation for daytime shelter and open grassy areas for feeding. This species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland (DEC, 2012).	Unlikely – may occur in the adjacent Bush Forever site
<i>Macropus irma</i>	Western Brush Wallaby	The Western Brush Wallaby is a medium sized marsupial and its optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets (DEC, 2012).	Unlikely – may occur in the adjacent Bush Forever site

Scientific Name	Common Name	Habitat	Likelihood to occur on the site
<i>Synemon gratiosa</i>	Graceful Sun-moth	The Graceful Sun-moth is a diurnal moth with dull coloured brown to black forewings and brightly coloured orange hind wings. The larvae burrow into the rhizomes of <i>Lomandra maritima</i> and <i>Lomandra hermaphrodita</i> exclusively and therefore require the presence of one or both of these species to be present in an area (Bishop et al., 2011).	Unlikely – habitat not present on the site
<i>Thinornis rubricollis</i> (also listed as <i>Charadrius rubricollis</i>)	Hooded Plover	The Hooded Plover primarily inhabits sandy, ocean beaches, with the highest densities on beaches with large amounts of beach-washed seaweed that are backed by extensive open dunes. In Western Australia the species also inhabits inland and coastal salt lakes (Birdlife International 2014)	No – not coastal habitat

It is possible that Carnaby's Black-Cockatoo forages on the areas containing *Banksia* trees on the site and possibly the Marri trees. There are no trees with hollows suitable for Carnaby's Black-Cockatoo breeding currently. No native trees occur on the site with a diameter of greater than 500mm that might produce suitable hollows in the near future. There are extensive areas of foraging habitat in the Jandakot area particularly in the nearby Jandakot Airport. Clearing of the remnant vegetation is highly unlikely to cause a significant impact on Carnaby's Black-Cockatoo and is unlikely to trigger the need to refer the action under the EPBC Act.

There are a few Marri trees on the site used by Forest Red-tailed Black Cockatoos for foraging. The number of trees is so small that the species is highly unlikely to be impacted by the proposed change in land use on the site.

The Rainbow Bee-eater can utilise relatively degraded areas as well as natural areas and therefore the species may use the site as habitat. Development of the site would be highly unlikely to cause a significant impact on the species due to the abundance of similar disturbed sandy areas immediately adjacent to the site and extensive areas of natural vegetation on sandy soils in the Jandakot area.

There was potential evidence of bandicoots being present on the site recorded in 2012 with cone like diggings. Development of the site is highly unlikely to cause a significant impact on the Bandicoot due to the large amount of suitable native vegetation remaining in the Jandakot area.

The areas of *Banksia* woodland are suitable habitat for the Black-striped Snake and may be present on the site. Development of the site is highly unlikely to cause a significant impact on the Black-striped Snake due to the large amount of suitable native vegetation remaining in the Jandakot area.

3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Previous Land Use

The site has largely been cleared in the past and the activity on the site is not likely to have contaminated the site. The site is not used for public purposes and therefore is not an impediment to the proposed change in land use.

3.2 Topography

The site is undulating and the final contours will be in accordance with the detailed design of the proposed hardstand area and will comply with the Development Application requirements. There are no topographical features on the site that would provide an impediment to the proposed development.

3.3 Geomorphology and Soils

The site has appropriate sand for the uses proposed and the soils on the site are not an impediment to the proposed development.

3.4 Hydrology

Groundwater is not at the surface of the site. Appropriate drainage methods in accordance with Better Urban Water Management (WAPC, 2008) will be required to be incorporated into the design of the hardstand. Details required will be the management of stormwater in swales up to the 1 in 100 Annual Recurrence Interval (ARI) for contaminants and gross pollutants. The design will also have to address the protection of groundwater quality and levels in the surrounding areas.

Although management of the hydrology of the site will be required the risks to the environment can be mitigated through appropriate planning and design therefore, the hydrology of the site is not an impediment to development. The wetland in the nearby Bush Forever site 388 will also need to be considered in the final design of the proposed development. A buffer of 30-50m as measured from the edge of the wetland is likely to be required. PGV Environmental considers that the boundary of the wetland is not accurately mapped on the DPaW geomorphic wetland database and the imposition of any buffer on the currently mapped wetland could adversely impact on the development potential. A wetland assessment has been scheduled to be undertaken to accurately determine the boundary.

3.5 Flora

There were no Declared Rare species recorded on the site however the areas of remnant native Banksia woodland vegetation could possibly contain *Caladenia huegelii*. A Level 2 Flora and Vegetation survey has been scheduled for Spring 2016 and will include a targeted search for this species. No priority species were recorded on the site and are not likely to occur on the site.

3.6 Vegetation

The vegetation in the revegetated area that is the majority of the site is not considered to be environmentally significant. The revegetation is a mixture of endemic and non-endemic species that is considered to be Completely Degraded.

The areas of remnant native vegetation are not considered to be representative of a TEC or PEC. Two of the areas have connectivity with Bush Forever site 388. The areas of vegetation are small compared to the amount of similar vegetation in the adjoining Bush Forever site. Therefore, the vegetation is not considered to be environmentally significant.

The vegetation in the buffer area is Degraded and is not considered to be representative of a TEC or PEC. The vegetation is isolated to approximately 12m to the east and 20m to the south in width and has a high proportion of weeds and therefore is not considered to be environmentally significant. The remainder of the vegetation is fragmented into small areas and likely to be impacted by edge effects upon the construction of Launderers Street and the associated required firebreaks.

3.7 Fauna

There are two Schedule 1 species identified on the database searches that are likely to, or have been recorded utilising the site. These are:

- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii* subsp. *naso*)
- Carnaby's Black Cockatoo (short-billed black-cockatoo) (*Calyptorhynchus latirostris*)

These species are listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as well as the *Wildlife Protection Act 1950*. The site has limited foraging for Forest Red-tailed Black Cockatoos. The site is in the range of Carnaby's Black Cockatoos however there are no recorded roosting sites within approximately 3km of the site and no recorded breeding sites within 10km (DoP, 2011).

The Rainbow Bee-eater (Schedule 3) were considered to possibly be intermittently present on the site. Quenda, or Southern Brown Bandicoot, a Priority 4 species, were identified in the database search as being possibly intermittently present on the site. These species are quite mobile and are highly unlikely to rely on the site for survival, given the large areas of habitat to the north.

A Level 2 Fauna survey as outlined by *Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56*. (EPA, 2004b) is not recommended for the site for general fauna assemblages. Two Schedule 1 listed species (Carnaby's Black Cockatoo and Forest Red-tailed Black-Cockatoo) have been determined to be present on the site. The habitat requirements for Carnaby's Black Cockatoo include foraging (*Banksia* species, Parrot Bush and other Proteaceous shrubs), roosting (tall eucalypts and pines) or breeding habitat (Eucalypt trees). There are some *Banksia* trees in the areas of remnant native vegetation and along the Jandakot Road buffer strip. There are no significant trees on the site which are suitable habitat for Carnaby's Black Cockatoo. If clearing of the vegetation were proposed, the clearing of native vegetation containing foraging habitat under 1ha is not likely to be significant and therefore will not require referral under the EPBC Act.

The Forest Red-tailed Black Cockatoo may feed on Marri seeds on the site. However, the removal of these trees is unlikely to have a significant impact on this species

4 CONCLUSIONS AND SUMMARY

This Environmental Assessment concludes the following with respect to the future development of Lots 101, 103 and 104 Jandakot Road:

- The previous land use is not an impediment to the proposed change in land use;
- The topography of the site is not an impediment to the proposed zoning;
- The soils on the site are not an impediment to the proposed land use;
- Stormwater will need to be managed in accordance with DoW policy and Better Urban Water Management (WAPC, 2008).
- The wetlands in the Bush Forever site 388 that are mapped as extending into the proposed redevelopment area are not mapped accurately and are highly likely to not occur on the redevelopment site. A wetland boundary and buffer study is scheduled to be undertaken in Spring 2016 to determine whether any buffer could impact on the development site;
- The majority of the site has been previously cleared of native vegetation and now consists of replanted Australian native species, generally not locally native to the site;
- The areas of remnant *Banksia* woodland are rated as being in Very Good to Excellent condition. All areas of remnant native vegetation on the site will be assessed during a spring 2016 flora and vegetation survey. Any areas assessed as having conservation significance will be considered in future planning of the site;
- The small amount of remnant *Banksia* woodland (approximately 1.5ha) adjacent to Jandakot Road is rated as being in Degraded condition due to the abundance of weeds;
- One Threatened or Endangered flora species, the Grand Spider Orchid, may occur on the site in the areas of *Banksia* woodland, although it is highly unlikely given the small area of vegetation. A Level 2 flora and vegetation survey will be undertaken in September/October in all areas of remnant vegetation outside of the Bush Forever site and particularly targeting any potential conservation significant species;
- Three Priority flora species and two Priority fungi species may possibly occur on the site due to the right habitat type. However, given the small area of native vegetation the potential for the species to occur on the site is considered very low;
- The remnant *Banksia* woodland areas are considered to be representative of Floristic Community Type 23a which is not listed as a Threatened or Priority Ecological Community. This will be further assessed during the Level 2 flora and vegetation survey to be conducted in 2016;
- The site mostly contains Disturbed fauna habitat in the replanted area small areas of Good fauna habitat in the *Banksia* woodland;
- The site has potential habitat for one Endangered fauna species (Carnaby's Black Cockatoo), one Vulnerable species (Forest Red-tailed Black Cockatoo) one Migratory species (Rainbow Bee-eater) and one Priority species (Southern Brown Bandicoot), however due to the small area of habitat and abundance of better quality habitat in the Jandakot region, it is considered that development would not have a significant impact on any of these species. Referral under the Commonwealth EPBC Act should not be required.

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APPENDIX 1

Proposed Rezoning Footprint



EXISTING ZONING MAP

- Region Scheme Reserves**
- CG Commonwealth Government
 - SEC Commonwealth Government
 - Water Catchments

- Local Scheme Reserves**
- Parks and Recreation
 - Local Road

- Local Scheme Zones**
- Development
 - Residential
 - Resource
 - Special Use

PROPOSED ZONING MAP

- Other Categories**
- R20 R Codes
 - AI Additional Uses
 - R1 Restricted Uses
 - SU1 Special Use Area
 - Building Envelopes

- BVA Bushfire Vulnerability Area
- JA Jandakot Airport
- DCA Development Contribution Area
- No Zone

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CITY OF COCKBURN
AMENDMENT No. —
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