



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 8745/1
<b>Permit Holder:</b>	Boral Bricks Western Australia Pty Ltd (t/a Midland Brick)
<b>Duration of Permit:</b>	17 April 2020 – 17 April 2025

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

### **PART I – CLEARING AUTHORISED**

**1. Purpose for which clearing may be done**

Clearing for the purpose of expanding the existing hardstand and storage areas for the brickworks facility.

**2. Land on which clearing is to be done**

Lot 103 on Deposited Plan 54208, Middle Swan.

**3. Area of Clearing**

The Permit Holder must not clear more than 1.92 hectares of native vegetation within the area hatched yellow on attached Plan 8745/1.

**4. Application**

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

### **PART II – MANAGEMENT CONDITIONS**

**5. Avoid, minimise and reduce the impacts and extent of clearing**

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

**6. Weed control**

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared;
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared; and
- At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any weeds growing within areas cleared under this Permit.

### PART III - RECORD KEEPING AND REPORTING

#### 7. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) purpose for which clearing was undertaken: and
- (e) actions taken to minimise the risk of the introduction and spread of weeds in accordance with condition 6 of this Permit.

#### 8. Reporting

The Permit Holder must provide to the *CEO* the records required under Condition 7 of this Permit, when requested by the *CEO*.

### DEFINITIONS

The following meanings are given to terms used in this Permit:

*CEO*: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

*fill* means material used to increase the ground level, or fill a hollow;

*weed/s* means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;  
or
- (b) published in the Department of Environment and Conservation Regional Weed Assessments, regardless of ranking; or
- (c) not indigenous to the area concerned.



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Ryan Mincham  
MANAGER  
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*


18 March 2020

# Plan 8745/1




## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines

LGA Boundaries (LGATE-233)

0 20 40 60 80 100 m



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Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



# Clearing Permit Decision Report

## 1. Application details

### Permit application details

Permit application No.: 8745/1  
Permit type: Purpose Permit

### Applicant details

Applicant's name: Boral Bricks Western Australia Pty Ltd  
Application received date: 27 November 2019

### Property details

Property: Lot 103 on Deposited Plan 54208  
Local Government Authority: City of Swan  
Localities: Middle Swan

### Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.92		Mechanical Removal	To expand the existing hardstand/storage area for the brickworks facility.

### Decision on application

Decision on Permit Application: Grant

Decision Date: 18 March 2020

Reasons for Decision: The clearing permit application was received on 27 November 2019 and has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance with principle (f), may be at variance with principle (b), and is not likely to be at variance with the remaining clearing principles.

In determining to grant a clearing permit, the Delegated Officer gave consideration to the completely degraded condition of the vegetation (Keighery 1994), attributed to historical disturbance which has reduced the environmental values within the application area. The proposed clearing has the potential to provide ecological benefit to adjacent areas of native vegetation through the removal of a variety of weed species.

Given the above, the Delegated Officer has determined that the proposed clearing is unlikely to lead to any unacceptable risk to the environment.

## 2. Site Information

### Clearing Description

The application area is 4.95 hectares of which approximately 3.03 hectares comprises inundated disused clay-pit, cleared hardstand/storage areas and internal roads. The amount of vegetation proposed to be cleared within the application area is approximately 1.92 hectares. Vegetated areas proposed to be cleared are regrowth, with the application area having been previously cleared, sometimes repeatedly over the past fifty years. Mechanical removal of all the vegetation within the application area and filling of the historic clay-pit is proposed for the expansion of the existing hardstand and storage areas for the operating brickworks facility.

### Vegetation Description

The vegetation within the application area is mapped as the following Heddle vegetation complex:

Swan Complex: Fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).

### Vegetation Condition

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 (Keighery, 1994).

### Soil and Landform Type:

The application area is mapped as the following soil types:

**Acl&Ac – Andrew clay loam-clay**, Very shallow brown clay loam or clay over yellow-brown and grey mottled clay. (Mapping unit: 254WhV2) (the northern application area);

**Pcl – Pyrtton clay loam (Swan)**, Shallow brown mottled clay loam over layers of fine sand and mottled loam. (Mapping unit 213jPY\_Pcl) (North western portion of application area).

**VC – Valley complex (Pinjarra)**, Variable soils associated with drainage lines. (Mapping unit: 213Pj\_VC) (North eastern portion of application area).

**BL – Bellvue loam (Pinjarra)**, Shallow brown clay loam over yellow-brown mottled clay. (Mapping unit: 213PjBL\_BI) (Southern most section of application area).

**CP – Clay-pits (Pinjarra)**, (Mapping unit: 213PjW\_CLAY-PIT) (South west application area).

**Bcl&Bc – Bellvue clay loam-clay (pinjarra)**, described as Shallow yellow-brown clay or clay loam over variable yellow-brown mottled clay. May contain gravels (DPIRD, 2017). (Mapping unit: 213jAn\_Acl&Ac) (Most of the application area, appart from eastern most and northern most areas).

**Comments:**

The local area referred to in the assessment of this application is defined as a 10 kilometre radius measured from the centre of the application area. The local area contains approximately 25 per cent native vegetation cover.

Vegetation condition was assessed based on the findings of the Flora and Vegetation Assessment surveys by Emerge Associates (2019a & 2019b), as well as site photographs supplied by Emerge Associates.

**Figures 1 - 7**



**Figure 1:** Area mapped as remnant vegetation in north of application area, completely degraded condition. Note: the large eucalyptus trees are not native to the Swan Coastal Plain. Completely degraded condition.



**Figure 2:** Drain in northern part of application area within area mapped as remnant vegetation showing *Typha orientalis* and young eucalyptus trees - not native to the Swan Coastal Plain and. Completely degraded condition.



**Figure 3:** Waterbody used by fauna including western snake necked turtle, showing fountain grass (*Cenchrus setaceus*) in the foreground. Completely degraded condition.



**Figure 4:** Vegetation in eastern part of application area showing *Typha orientalis* and some young eucalyptus trees which area not native to the Swan Coastal Plain and invasive couch grass (*Cynodon dactylon*). Completely degraded condition.



**Figure 5:** Earthworks in the northern part of the application area, adjacent to completely degraded vegetation.



**Figure 6:** Existing earthworks and fill within application area



**Figure 7:** Area extensively cleared – photo 1974

### 3. Assessment of application against clearing principles planning matters and other relevant matters

#### (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

##### Proposed clearing is not likely to be at variance with this principle

Although the application area is mapped as the Swan Complex vegetation complex, and the northern portion of the area is mapped as remnant vegetation, based on the information provided from on-site survey reports, photographs, current and historical aerial photography and available databases, it is considered highly unlikely that the application area supports any significant species biodiversity.

A floristic survey conducted by Emerge Associates (2019a) identified that the vegetation within the application area is dominated by non-native vegetation with scattered native plants in a 'completely degraded' condition (Figure 1 and Figure 2). Given no intact native plant communities were identified, no priority or threatened ecological communities are considered to occur within the application area. Most of the application area is currently cleared and the entire area has been heavily disturbed by earthworks in the past, including the excavation of the clay-pit and the formation of the soak in the north of the application area. Figure 5 and Figure 6 show earthworks and completely degraded vegetation, Figure 7 shows historical clearing throughout the entire application area and Plan 8745/1 (attached) shows the current inundated clay-pit.

Serious weed infestation and continuous disturbance from the operating brickworks significantly reduces the likelihood of priority or threatened species being present. Weed species that dominate the ground cover include couch grass (*Cynodon dactylon*) (Figure 4) and fountain grass (*Cenchrus setaceus*) (Figure 3). Eucalyptus trees that are not native to the area make up much of the vegetation (Figure 1 and Figure 2). Removal of the vegetation within the application area may result in a reduction of risk from a highly weed laden area, which may have environmental impacts upon surrounding environments such as the Swan River conservation area and the Gngangara Mound ecological linkage to the west.

According to available databases, 62 threatened flora species and 277 priority flora species have been recorded within the local area, with the closest priority species (*Thysanotus glaucus*) being approximately 500 metres away. No priority or threatened flora species are recorded on databases within the application area and none were observed during on-site surveys (Emerge, 2019a). Threatened flora are discussed in Principle (c).

The soil types mapped in the application area correspond with soils associated with some priority species, for example *Thysanotus glaucus* which is recorded on soil type CP – Clay-pits (Pinjarra) which makes up a small part of the western portion of the application area closest to the brickworks. However, because of the 'completely degraded' condition of the vegetation from impacts associated with historical clearing and continued disturbance from the surrounding heavy industrial area, biological diversity is minimal within the application area (Emerge, 2019a). Figure 7 provides illustration of historical clearing, with the entire application area extensively cleared by 1974. Due to the 'completely degraded' vegetation condition, it is very unlikely that any priority species occur within the application area.

No Commonwealth listed threatened ecological communities (TEC) or State listed priority ecological communities (PEC) are mapped within the application area. The closest PEC (SCP21c – Low lying *Banksia attenuata* woodlands or shrublands) is approximately 2.3 kilometres away, with the closest threatened ecological community (SCP20c Shrublands and woodlands of the eastern side of the Swan Coastal Plain) being approximately 2.4 kilometres from the application area. The vegetation within the application area is not representative of either of these ecological communities.

The small extent of the application area which is immediately surrounded by heavy industrial activity and significant historical disturbance has resulted in all of the vegetation in the application area being in a 'completely degraded' condition, therefore providing poor habitat for fauna species. As a result, the application area does not support a high level of fauna diversity (Emerge, 2019c). The application area does not contain native vegetation which supports a high level of fauna diversity.

Based on the above, the proposed clearing is not likely to be at variance with this 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.

##### Proposed clearing may be at variance with this principle

According to available databases, 35 fauna species listed as being of conservation significance under the the Wildlife Conservation (Specially Protected Fauna) Notice 2018 have been recorded within the local area. Of these, three species of black cockatoo, including Carnaby's cockatoo (*Calyptorhynchus latirostris*) have potential to occur within the application area.

Available databases record the nearest confirmed Black cockatoo roost as being over seven kilometres south-east of the application area, with the nearest confirmed Carnaby's cockatoo breeding site located approximately 12.7 kilometres east of the application area. The level 1 Fauna and Targeted Black Cockatoo Assessment (Emerge, 2019c) identified three fauna habitats within the application area; 'scattered native and non-native trees and shrubs', 'cleared area' and 'water body'. Historical disturbance has significantly compromised the former habitat, and the application area does not provide significant breeding or foraging habitat for the three threatened species of black cockatoos due to the lack of preferred foraging plant species and suitable breeding trees (native eucalypt trees with diameter at breast height (DBH)  $\geq 50$  cm). The site is not considered to contain any roosting habitat of local or regional importance to Carnaby's Black Cockatoo, Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) or Baudin's Black Cockatoo (*Calyptorhynchus baudinii*), due to the scattered nature and limited number of large trees, in addition to the absence of any evidence of roosting activity.



The site does contain a number of mature flooded gum trees (*Eucalyptus rudis*) and other eucalypt trees such as red river gum (*Eucalyptus camaldulensis*). There is limited evidence that these species are foraged upon by species of Black cockatoo, however they are not priority species for foraging, breeding or roosting and no evidence of use by black cockatoos within the application area was observed (DEC, 2011; Emerge, 2019c). The Emerge targeted survey (Emerge, 2019c) found no evidence of Black cockatoo roosting, such as branch clippings, droppings and moulted feathers and no anecdotal records of Black cockatoo's roosting within the site were reported by Midland Brick staff (Emerge, 2019c).

Observations made by employees of Midland Brick and a level 1 Fauna Assessment that was conducted in November 2019 by Emerge Associates (2019c) indicate the potential presence of the Western snake-necked turtle *Chelodina (Macrodirmys) colliei* (*C. colliei*) within the application area .

Although the native vegetation is in a completely degraded condition, it may provide cover to female South-western snake-necked turtles when they leave the waterbody to lay eggs, which is part of their biological life cycle. The South-western snake-necked turtle is considered near threatened by the International Union for Conservation of Nature (IUCN, 2020) and is protected under the *Biodiversity Conservation Act 2016 (BC Act)*. The most recent survey of 35 urban wetlands revealed populations of *C. colliei* in Perth wetlands are alarmingly low and often have male dominated populations due to female turtles being killed by vehicular traffic and foxes when searching for suitable egg laying locations (DWER, 2020). Additionally a study conducted on the impact of urbanisation on the South-western snake necked turtle found that land use change has impacted relative abundance and population structures of the species in urban wetlands. The study identified that the accessibility of vegetation surrounding urban wetlands was a significant factor impacting upon the abundances of *C. colliei* and the presence of juveniles within the populations, likely owing to providing suitable nesting sites. This suggests that populations are declining through lack of recruitment (Santoro, 2017).

It should be noted that the waterbody is located within a heavy industrial area, surrounded by cleared hardstand and traffic within an operational brickworks. Emerge Associates have confirmed that the proponent has committed to engaging experts from Murdoch University under advice from the Department of Biodiversity, Conservation and Attractions (DBCA) to undertake a relocation program to transfer resident turtles to an appropriate waterbody nearby (Emerge, A1871926). Given the waterbody is in a high risk area for travelling female *C. colliei*, relocation of the species and filling of the clay-pit to prevent future colonisation is a considered to be an acceptable outcome.

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. One ecological linkage, the Gnangara Mound ecological linkage to the west intersects a small portion of the application area, this area is predominantly cleared road surface and a small section of 'completely degraded' vegetation. Vegetation outside the Boral Brickworks along the Swan River is in far better condition and is more contiguous with the Gnangara Mound ecological linkage, so it is not considered that this small section of 'completely degraded vegetation fringing the clay-pit provides any significant contribution to the ecological linkage.

The application area may comprise part of a habitat which is significant for South-western snake-necked turtle breeding purposes. Any relocation of turtles by suitably qualified personnel will mitigate the impacts of the proposed clearing on this species.

Based on the above, the proposed clearing may be at variance to this principle.

**(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, Threatened flora.**

**Proposed clearing is not likely to be at variance with this principle**

The detailed flora and vegetation survey did not identify any threatened flora species within the application area. In addition, there are no records of threatened flora species within the application area. A database search conducted over the application area identified several threatened species as having potential to occur in the application area, based on landscape and soil mapping. However, the field survey conducted by Emerge Associates (2019b) determined that the application area does not provide suitable habitat for the identified species due to the high level of historical disturbance and predominantly 'completely degraded' vegetation condition.

As no threatened flora species have been identified within the application area, it is unlikely that any threatened flora will occur and the proposed clearing is not likely to be at variance with Principle (c).

**(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.**

**Proposed clearing is not likely to be at variance with this principle**

A database search indicated that no State listed threatened ecological communities (TEC) are mapped within the application area. There are ten TEC's within the local area, the nearest located approximately 2.4 kilometres from the application area:

- Shrublands and woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20c as originally described in in Gibson et al. (1994)) which is listed as an 'endangered' TEC under the *EPBC Act* and as a 'critically endangered' TEC under the *BC Act*.

As previously discussed, the flora and vegetation survey (Emerge, 2019b), determined that due to the high level of disturbance through vegetation clearing, no representative floristic communities are present. As no State listed TECs have been identified within the application area, the proposed clearing is not likely to be at variance with Principle (d).

**(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.**

**Proposed clearing is not likely to be at variance with this principle**

The local area contains approximately 25 per cent native vegetation cover.

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region to be a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008). As the application area is within a constrained area, the 10 per cent threshold applies in this instance.

Although the available databases show that there may be remnant vegetation in the northern portion of the application area, historical aerial photography and on-site photography provided by Emerge Associates shows that this area has been heavily disturbed over the years and that the vegetation present in this area is not remnant vegetation, but rather regrowth of predominantly non-native species.

Based on the results of the flora and vegetation survey, vegetation within the application area is not an intact plant community, given the significant previous clearing and historical and ongoing industrial land uses, which have resulted in its 'completely degraded' condition (Emerge, 2019b). This assessment of the vegetation condition is well depicted in on-ground photographs of the area within the vegetation survey report, as well as additional photos provided by. As the vegetated areas within the application area are not considered to represent remnant native vegetation, are unlikely to provide any significant ecological linkage functionality and do not represent significant habitat for flora or fauna, the application area is not considered to be a significant remnant within an extensively cleared area

Based on the above, the proposed clearing is not likely to be at variance with Principle (e).

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Proposed clearing is at variance with this principle**

The *Geomorphic Wetlands of the Swan Coastal Plain* dataset does not identify any mapped wetlands within the application area. However through assessment it was identified that vegetation within the application area is growing in an environment associated with a wetland, that being an artificial drain/soak constructed within the last twenty years, as well as the inundated historic clay-pit.

As is illustrated in historical aerial photography (Figure 7), the clay-pit, is a sizable body of water comprising about 3.03 hectares of the application area. Amongst the predominantly weed and introduced species that surround the waterbody, there are sporadic examples of native riparian vegetation, notably *Typha orientalis* and *Eucalyptus rudis* (Flooded Gum). The proposed clearing of a weed infested area which has been previously cleared is unlikely to have a significant impact. Additionally clearing this vegetation will remove the environmental threats associated with a weed infested area.

A drain or constructed soak occurs in the northern part of the application area, within the area mapped as remnant vegetation. The artificial drain can be seen in aerial photography but is noticeably absent in an earlier aerial photograph (Figure 7). There is no historical evidence of this drain prior to 2000. According to supporting documents provided by Emerge, it is possible that the drain was not deliberately constructed but is simply a low point within the application area where water has accumulated and was never a natural watercourse. Nonetheless, the area has been colonised by *Typha orientalis*, a native wetland species. A small amount of vegetation planted by Midland Brick over the past 10-20 years is also present around this area, in particular *Eucalyptus camaldulensis* (river red gum) and *Eucalyptus rudis* (flooded gum)(Emerge, 2019a).

Based on the above, the proposed clearing is at variance with Principle (f).

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

**Proposed clearing is not likely to be at variance with this principle**

Six soil types have been mapped within the application area. These are described as:

- **Acl&Ac – Andrew clay loam-clay**, Very shallow brown clay loam or clay over yellow-brown and grey mottled clay. (Mapping unit: 254WhV2) (the northern application area);
- **Pcl – Pyrtan clay loam (Swan)**, Shallow brown mottled clay loam over layers of fine sand and mottled loam. (Mapping unit 213jPY\_Pcl) (North western portion of application area).
- **VC – Valley complex (Pinjarra)**, Variable soils associated with drainage lines. (Mapping unit: 213Pj\_VC) (North eastern portion of application area).
- **BL – Bellvue loam (Pinjarra)**, Shallow brown clay loam over yellow-brown mottled clay. (Mapping unit: 213PjBL\_BI) (Southern most section of application area).
- **CP – Clay-pits (Panjarra)**, (Mapping unit: 213PjW\_CLAY-PIT) (South west section of the application area).
- **Bcl&Bc – Bellvue clay loam-clay (pinjarra)**, described as Shallow yellow-brown clay or clay loam over variable yellow-brown mottled clay. May contain gravels (DPIRD, 2017). (Mapping unit: 213jAn\_Acl&Ac) (Most of the application area, apart from eastern most and northern most areas).

All soil types mapped within the project area have a wind and water erosion risk below 3%, except for VC – Valley complex (Pinjarra). The area of this soil type within the application area is almost entirely cleared and either bituminised or hardstand. The small remainder of the soil type that is not cleared (about 0.05 hectares) is currently part of the open infiltration sump in the northern part of the application area and surrounding vegetation. However it is highly unlikely that this area is representative of this soil type due to historical earthworks including the spread of waste material, including discarded and broken bricks from the brickworks which can be seen in Figure 6. During clearing and earthworks, there will be a period within which the underlying soils may be exposed. However as most of the area is already cleared or comprises an existing waterbody, the increased risks of erosion are not considered to be of environmental significance.

Currently the clay-pit receives water directly from rainfall, in addition to stormwater runoff from the surrounding un-vegetated hardstand. As the clay-pit will be filled to make way for hardstand, two swales will be constructed within the application area to receive surface water runoff. The draining of surface water into the swales will minimise the potential for surface water to contribute to erosion and sedimentation to the surrounding environment. The swales will include a pumped system to allow for water to be occasionally used in dust suppression on site, with excess water during high rainfall periods being transferred to the existing stormwater management system, which includes an oil-water separator and sequence of sedimentation ponds before reporting to a tributary of the Swan River (Emerge, 2019b).

In addition the purpose of this clearing will result in all six mapped soil types being covered by hardstand using clean fill which will prevent the exposure of these mapped soil types from wind or water and other land degradation impacts. Given the small area of vegetation proposed to be cleared, it is not likely to have any impacts with regard to subsurface land degradation or flooding, especially considering the nearby significantly larger and contiguous vegetation within the Swan River conservation area.

Based on the above, the proposed clearing is not likely to be at variance with Principle (g).

**(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.**

**Proposed clearing is not likely to be at variance with this principle**

According to available databases, the nearest conservation area is the Swan River Reserve, which is approximately 50 metres west of the application area.

The proposed clearing may indirectly impact on the environmental values of the Swan River conservation area through the spread or introduction of weed species. Noting the size of the application area and the extensive infestation of weed species, clearing of this vegetation is unlikely to have a significant impact on the environmental values of the nearby conservation area. Clearing may in fact have a positive effect by the removal of weed species such as couch grass (*Cynodon dactylon*) (Figure 4) and fountain grass (*Cenchrus setaceus*) (Figure 3) by reducing the proliferation of seed dispersion. A weed management condition will mitigate impacts to nearby conservation areas.

Based on the above, the proposed clearing is not likely to be at variance with Principle (h)

**(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.**

**Proposed clearing is not likely to be at variance with this principle**

The application area is already highly disturbed and given the relatively small area of vegetation coverage, it is not considered that the existing vegetation significantly contributes to the protection of ground or surface water. The application area will not be exposed after clearing as the area will be made into a compacted hardstand area using clean fill and water infiltration will be minimal. Surface water is currently directed to the existing clay-pit and existing surface water management system, which is described above.

Based on the above, the proposed clearing is not likely to be at variance with Principle (i)

**(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

**Proposed clearing is not likely to be at variance with this principle**

As discussed in principle (g), the six mapped soil types within the application area will not be exposed to wind or water as a result of any clearing, as the area will be made into a compacted hardstand area using clean fill. Therefore, the flooding risk susceptibility of the mapped soil types will not be relevant to the final land use.

The area will also have internal surface water drainage management, therefore it is unlikely flooding from stormwater will be an issue. Stormwater and surface runoff within the catchment will be contained and as described above will not result in significant impacts. Noting this, the removal of remnant vegetation from the application areas is not likely to contribute to flooding.

Based on the above, the proposed clearing is not likely to be at variance with Principle (j)

**Planning instruments and other relevant matters.**

As outlined under clearing principle (b), the western snake necked turtle (*C. colleei*) is protected under the *BC Act*. A relocation licence issued by the DBCA is required to relocate the turtles under regulation 28 of the Biodiversity Conservation Regulations 2018. A licence must be issued to a person or organisation conducting the relocation, in this case personnel from Murdoch University for this specific relocation project. The licence application assessment process includes a review of competency in relation to the species and methods so that the fauna relocation is conducted by suitably qualified and experienced personnel. The release site must also be discussed with and confirmed as suitable by the DBCA regional office, prior to the submission of the licence application, and is usually a 'nearby suitable habitat'. In this case a wetland (natural or artificial) suitable in quality for freshwater turtles and with a maximum carrying capacity able to take the potential number of turtles to be relocated will be required (DBCA, 2020).

A development application has been approved by the City of Swan for hardstand construction and associated infrastructure, which is the purpose of this clearing permit.

No Aboriginal sites of significance have been mapped within the application area and the Lot within which clearing is to occur is freehold land.

The clearing permit application was advertised on the DWER website on 9 January 2020 with a 21 day submission period. No public submissions were received in relation to this application.

**4. References**

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.

Commonwealth of Australia (2012). EPBC Act referral guidelines for three threatened black cockatoo species. Department of Sustainability, Environment, Water, Populations and Communities, Canberra.

Department of Biodiversity, Conservation and Attractions (DBCA) (2007- ) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed 13 February 2020.

Department of Water and Environmental Regulation (DWER, 2020) South-Western Snake Necked Turtle – (*C. (Macrodiremys) colliei*), DBCA URL:<https://rivers.dwer.wa.gov.au/species/chelodina-colliei/>. Accessed 12 February 2020.

Emerge Associates (2020) Email (A1871926), Re Turtle Relocation Commitment, 14 February 2020.

Emerge Associates (2019a) Technical memorandum Flora and Vegetation Assessment Part Lot 103 Great Northern Highway, Middle Swan.

Emerge Associates (2019b) Detailed Flora and Vegetation Assessment - Middle Swan Brickworks.

Emerge Associates (2019c) Level 1 Fauna and Targeted Black Cockatoo Assessment - Middle Swan.

International Union for Conservation of Nature (IUCN) (2020).

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

Land insights (2018) Clearing Permit Application Lot 103 Great Northern Highway, Middle Swan.

Santoro, Anthony (2017) The impact of urbanisation on the south-western snake-necked turtle (*Chelodina colliei*). Honours thesis, Murdoch University.

Valentine L. and Stock W. (2008) Food Resources of the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gnangara Sustainability Strategy Study Area. Edith Cowan University and the Department of Environment and Conservation.

Western Australian Herbarium (1998-). FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> Accessed March 2019.

## **5. GIS Datasets**

- Aboriginal Sites of Significance
- Clearing Regulations - Environmentally Sensitive Areas
- Carnaby's cockatoo: breeding, roosting, feeding
- Geomorphic Wetlands, Swan Coastal Plain
- Hydrology, linear
- IBRA Australia
- Land for Wildlife
- PDWSA, CAWSA, RIWI Act Areas
- Remnant vegetation
- Soils, state wide
- Town Planning Scheme Zones