



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 8723/1

File Number: DWERVT3762

Duration of Permit: From 29 September 2020 to 29 September 2022

PERMIT HOLDER

Atlas Brick Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 820 on Deposited Plan 404602, Mirrabooka

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.496 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8723/1.

CONDITIONS

1. 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:

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

2. Dieback and 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* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

3. 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) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 2 of this Permit.

4. Reporting

The Permit Holder must provide to the *CEO* the records required under condition 4 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*;

dieback means the effect of *Phytophthora* species on native vegetation;

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

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

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 a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Meenu Vitarana
A/MANAGER
NATIVE VEGETATION REGULATION

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

3 September 2020

Plan 8723/1



CPS layers

- CPS areas approved to clear

base layers

- Road Centrelines
- Cadastre - LGATE 218

Map Layers

- Land Tenure LGATE - 226
- Local Government Authorities

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Officer delegated under Section 20
of the Environmental Protection Act 1986

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MGA Zone 50
Geocentric Datum of Australia 1994

**GOVERNMENT OF
WESTERN AUSTRALIA**



1. Application details

Permit application details

Permit application No.: 8723/1
Permit type: Area Permit

Applicant details

Applicant's name: Atlas Brick Pty Ltd
Application received date: 5 November 2019

Property details

Property: Lot 820 on Deposited Plan 404602, Mirrabooka
Local Government Authority: City of Stirling
Localities: Mirrabooka

Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.39		Mechanical	Industrial site development (bulk earthworks)

Decision on application

Decision on Permit Application: Grant

Decision Date: 3 September 2020

Reasons for Decision:

The clearing permit application was received on 5 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*. It has been concluded that the proposed clearing is may be at variance with principles (a), (b), (d) and (e), and is not likely to be at variance with any of the remaining clearing principles.

During the assessment, the applicant reduced the proposed clearing area from 1.39 hectares to 0.496 hectares, to align with Development Approvals for bulk earthworks obtained from the City of Stirling.

Through the assessment it was determined that the application area includes 0.15 hectares of native vegetation that may comprise high floristic diversity, is likely to provide suitable foraging habitat for black cockatoo species, is a significant remnant of native vegetation, and is consistent with the '*Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. (1994))' (SCP20a) threatened ecological community.

Through the assessment, the Delegated Officer determined that, given the 0.15 hectare patch is isolated from larger remnants of native vegetation through previous clearing activities, is surrounded by heavily disturbed and degraded industrial land uses, and is adjacent to a larger remnant of vegetation with similar environmental values (Bush Forever Site 385), the proposed clearing was unlikely to result in significant impacts to an occurrence of a threatened ecological community.

The assessment determined that the revised application area is not likely to significantly impact on foraging habitat for black cockatoo species or constitute a significant remnant of vegetation in an extensively cleared landscape.

The Delegated Officer determined that the proposed clearing may increase the spread of weeds and dieback into adjacent vegetation, including Bush Forever Site 385. To minimise this impact, a condition has been placed on the permit requiring the implementation of weed and dieback management measures.

In determining to grant a clearing permit subject to avoid and minimise, and dieback and weed management conditions, the Delegated Officer found that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description

The application is for the proposed clearing of 0.496 hectares of native vegetation within Lot 820 on Deposited Plan 404602, Mirrabooka, for the purpose of industrial site development (bulk earthworks) and associated bushfire hazard reduction.

Vegetation Description

The vegetation within the application area is mapped within the Swan Coastal Plain vegetation complex Karrakatta – Central and South, described as open forest and woodland (Heddle et al., 1980).

A level 2 flora and vegetation survey conducted by 360 Environmental identified six distinct vegetation associations within Lot 820 on Deposited Plan 404602, Mirrabooka (Table 1, Figure 2).

The 0.496 hectares proposed to be cleared was identified as predominantly BaMps, Em and NE/n (Figure 2).

Table 1. Vegetation associations recorded within Lot 820 on Deposited Plan 404602, Mirrabooka (360 Environmental Pty Ltd, 2015).

Vegetation Association Code	Description	Total Area (ha)
BaMps	Low Open Woodland of <i>Banksia menziesii</i> over <i>Mesomelaena pseudostygia</i> , <i>Daviesia nudiflora</i> subsp. <i>nudiflora</i> , <i>Xanthorrhoea preissii</i> , <i>Eremaea pauciflora</i> var. <i>pauciflora</i> , <i>Stirlingia latifolia</i> , <i>Acacia pulchella</i> and <i>Daviesia triflora</i> .	0.09
Em	Low Open Woodland of <i>Eucalyptus marginata</i> over <i>Mesomelaena pseudostygia</i> , <i>Jacksonia sternbergiana</i> and <i>Daviesia divaricata</i> subsp. <i>divaricata</i> (ms) over introduced species.	0.06
Bm	Isolated mature trees of <i>Banksia menziesii</i> .	0.02
NE	Non-endemic.	0.98
NE/n	Non-endemic over natives.	0.21
Pp	<i>Pinus pinaster</i> .	0.01

Vegetation Condition

The vegetation within the application area is considered to range from Excellent to Completely Degraded (Keighery, 1994) condition, defined as:

- Excellent: Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species (Keighery, 1994); and
- Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery, 1994).

Vegetation condition within the application area varies predominantly by vegetation association (Figure 3). Vegetation association BaMps is considered to be in Excellent (Keighery, 1994) condition, where vegetation structure is intact and floristically diverse, with minimal disturbance from activities on surrounding cleared land (360 Environmental Pty Ltd, 2015). Vegetation association NE/n is considered to be in Degraded (Keighery, 1994) condition, while vegetation association Em is considered to be in Degraded to Completely Degraded (Keighery, 1994) condition, where significant weed invasion and loss of native understorey species has occurred (360 Environmental Pty Ltd, 2015).

The vegetation condition of the application area was determined through photographs supplied by the applicant and a level 2 flora and vegetation survey (360 Environmental Pty Ltd, 2015).

Soil Type:

The soil type within the application area is mapped within the EnvGeol S8 Phase (212Bs_S8), described as sand - very light grey at surface, yellow at depth, fine to medium grained, sub-rounded quartz, moderately well sorted of eolian origin (DPIRD, 2017).

Local Area:

The local area referred to in the assessment of this application is defined as a 10 kilometre (km) radius measured from the perimeter of the application area.

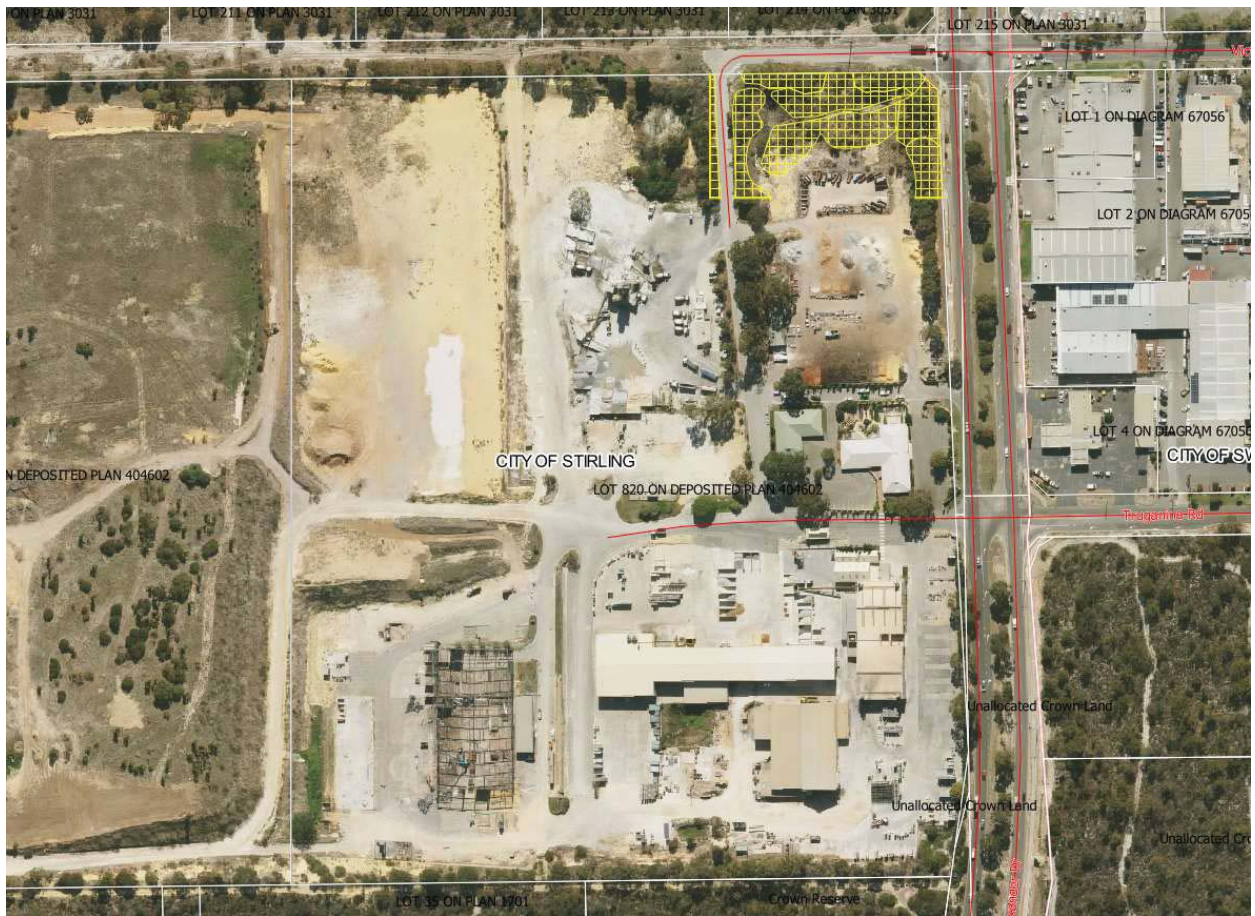


Figure 1. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

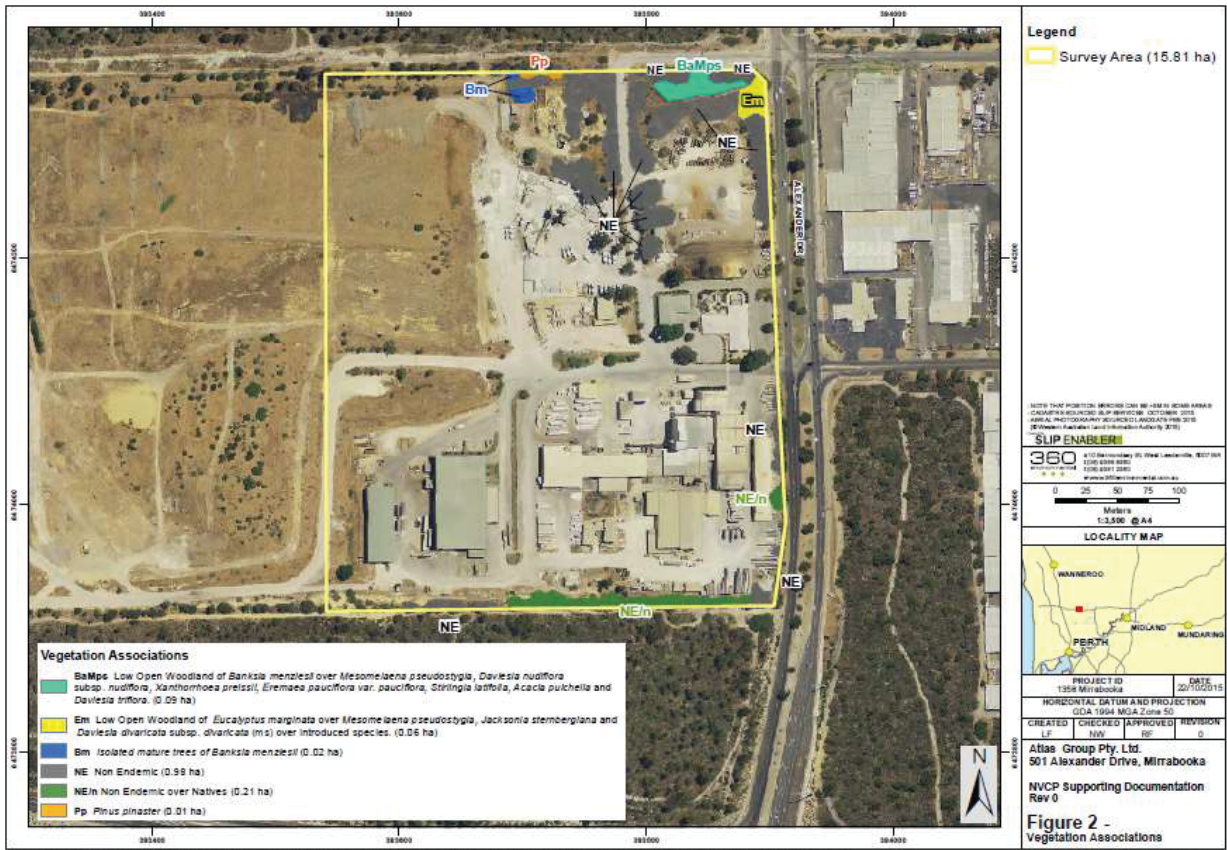


Figure 2. Vegetation associations recorded within Lot 820 on Plan 404602, Mirrabooka (360 Environmental Pty Ltd, 2015).

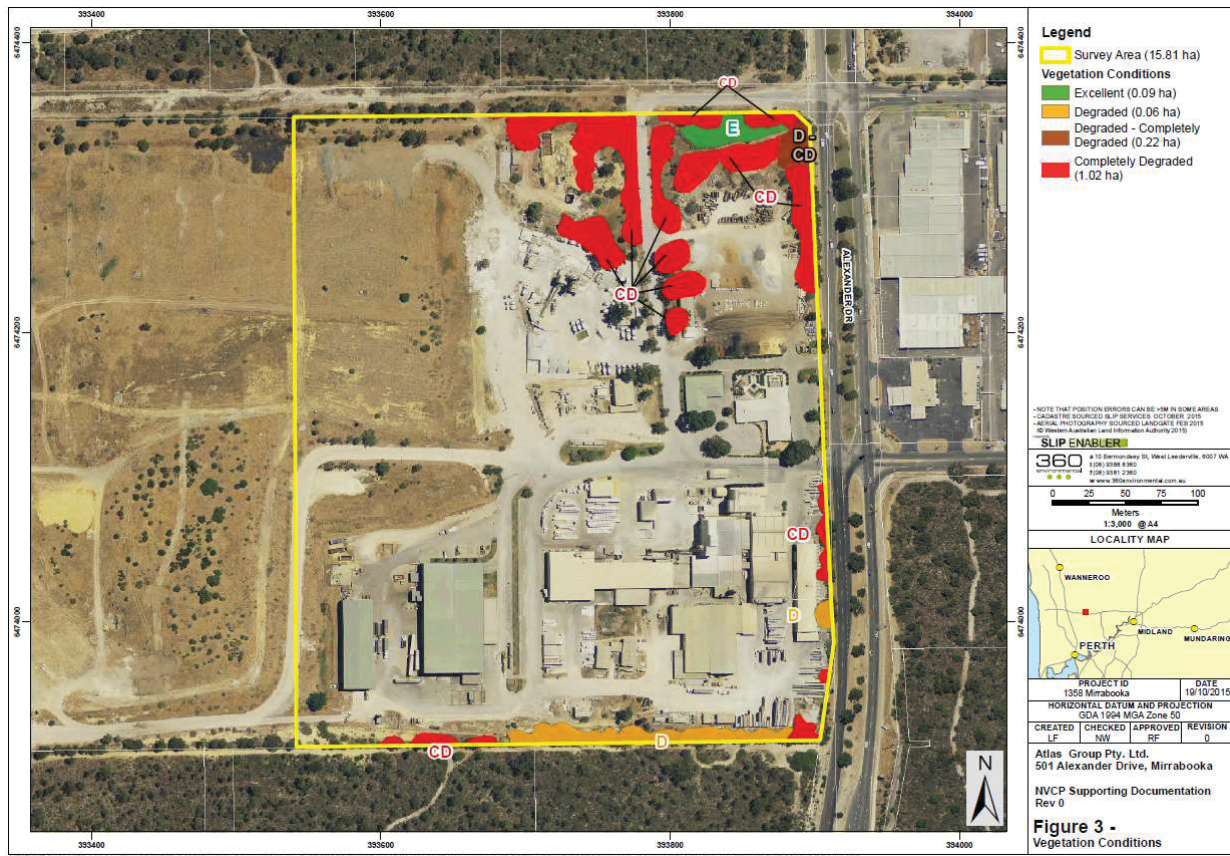


Figure 3. Vegetation condition (Keighery, 1994) recorded within Lot 820 on Plan 404602, Mirrabooka (360 Environmental Pty Ltd, 2015).

3. Avoidance and minimisation measures

The applicant originally applied to clear up to 1.39 hectares of native vegetation with Lot 820 on Deposited Plan 404602, Mirrabooka, for the purpose of industrial site development (bulk earthworks) and associated bushfire hazard reduction. During the assessment, the applicant modified the application area and reduced the area applied to clear to 0.496 hectares, to align with Development Approvals for bulk earthworks, received from the City of Stirling (360 Environmental Pty Ltd, 2020b; see section 4).

The applicant has advised that bulk earthworks including filling and levelling of the site are required to allow for additional vehicle parking facilities (360 Environmental Pty Ltd, 2020c). The applicant has also advised that the proposed clearing area occurs within a Bush Fire Prone Area, and clearing of degraded vegetation adjacent to the proposed earthworks is necessary to ensure fire hazard around the additional facilities is reduced (360 Environmental Pty Ltd, 2020c). In order to facilitate these works, the applicant has advised that the clearing of native vegetation within the application area cannot be avoided (360 Environmental Pty Ltd, 2020c). However, the applicant has expressed measures to reduce the impact of clearing on any environmental value, discussed below.

The applicant has advised that dieback and weed management procedures will be in place to minimise the risk of spread of dieback or weed species into the area or adjacent vegetation (Atlas Brick Pty Ltd, 2019).

The applicant has advised that prior to conducting any clearing of native vegetation authorised, the area will be clearly outlined (by barrier tape or star pickets) and exact GPS coordinates provided to any contractors or personnel conducting the authorised clearing, to ensure that no over clearing occurs beyond the permitted area (Atlas Brick Pty Ltd, 2019).

The applicant has also advised that any clearing of native vegetation authorised will be scheduled to occur immediately before planned earthworks to minimise the potential for land degradation and dust, where practicable (Atlas Brick Pty Ltd, 2019).

4. Assessment of application against clearing principles

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

Proposed clearing may be at variance with this principle

A review of available databases determined that a total of 31 threatened or priority flora have been recorded within the local area, comprising seven Priority 1 (P1) flora, two Priority 2 (P2) flora, 13 Priority 3 (P3) flora, six Priority 4 (P4) flora, and three threatened flora (Western Australian Herbarium, 1998-). None of these records occur within the application area. Based on the habitat preferences of the above species, including soil type and vegetation association, the application area may contain suitable habitat for 14 priority species. Based on the number of records of these priority species and their distribution, the proposed clearing is

not likely to have an impact on the conservation status of the above priority species should they be present, with the exception of *Stachystemon* sp. Keysbrook (R. Archer 17/11/99). *Stachystemon* sp. Keysbrook (R. Archer 17/11/99), known from 5 records from Perth to Busselton, is a perennial shrub standing up to 1 metre tall with green-yellow flowers, associated with low *Eucalyptus* or *Banksia* woodland over mixed shrubs including *Acacia* and *Xanthorrhoea* species, within grey sandy soils. As assessed under Principle (c), the application area may also contain suitable habitat for two threatened flora species recorded within the local area. Although the application area may provide suitable habitat for these three species, an appropriately-timed targeted flora survey conducted in spring 2015 identified no threatened or priority species occurring within or directly adjacent to the application area (360 Environmental Pty Ltd, 2015).

While majority of the application area is considered to be in Degraded to Completely Degraded (Keighery, 1994) condition and has experienced significant disturbance, 0.09 hectares of *Banksia* woodland within the application area is considered to be in Excellent (Keighery, 1994) condition, where disturbance and invasion by non-endemic species is minimal (360 Environmental Pty Ltd, 2015). This section of the application area was found to contain a diverse range of native species, particularly in understorey species (360 Environmental Pty Ltd, 2015). Noting the above, the application area is not likely to comprise significant habitat for threatened or priority flora, but includes a patch of vegetation that may comprise a high level of floristic diversity.

According to available databases, there is one state-listed threatened ecological community (TEC) and three priority ecological communities (PECs) recorded within the local area. The closest state-listed PEC, *Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region, occurs directly adjacent to the application area, separated by roads and previously cleared access tracks. The flora and vegetation survey determined that the vegetation within the application area was not consistent with this or any other PEC (360 Environmental Pty Ltd, 2015). However, the proposed clearing is likely to impact vegetation representative of a TEC (360 Environmental Pty Ltd, 2015), further discussed under Principle (d). It is also noted that, as the application area has been subject to weed invasion, the proposed clearing may also facilitate the spread of weeds and dieback to adjacent vegetation, including local TECs and PECs. A weed and dieback condition is considered to minimise this risk.

The application area is mapped within the Gngangara Mound Ecological Linkages as part of the Perth Regional Ecological Linkage. However, as mentioned above, the application area is separated from surrounding bushland remnants by previously cleared roads and access tracks, consists of predominantly Degraded to Completely Degraded (Keighery, 1994) vegetation, and does not provide connectivity to any other bushland remnants in the local area. Further, the 0.09 hectare portion of Excellent (Keighery, 1994) condition *Banksia* woodland within the application area is isolated from other bushland remnants and surrounded by degraded vegetation or previously cleared area. Therefore, the application area is not likely to be significant as an ecological linkage and the proposed clearing is not likely to impact vegetation connectivity in the local area.

As assessed under Principle (b), the application area may contain suitable habitat for six threatened or priority fauna species; *Cacatua pastinator pastinator* (Muir's corrella), *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo), *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Isoodon fusciventer* (quenda), and *Synemon gratiose* (graceful sun moth). As discussed under Principle (b), the application area is also likely to provide a small fragment of high-quality foraging habitat for black cockatoo species. Based on assessment of their habitat preferences and habitat requirements, the application area is not considered likely to provide significant habitat for any other threatened or priority fauna species. As discussed above, the application area is not likely to be significant as an ecological linkage due to its isolation from larger bushland remnants in the local area, through previously cleared roads and access tracks, as well as predominantly degraded vegetation. Therefore, it is not likely that the application area provides significant linkage for fauna moving through the landscape.

Noting that a portion of the application area may comprise a high level of floristic diversity, is representative of a TEC, and includes high-quality foraging habitat for black cockatoo species, the proposed clearing may 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

A total of 27 threatened or priority fauna have been recorded within the local area, including nine threatened fauna, five priority fauna, 11 species protected under international agreement, one conservation dependent fauna species and one other specially protected fauna species (DBCAs, 2007-). None of these records occur within the application area. Based on the existing records, habitat preferences and habitat requirements of the above species, the application area may contain suitable habitat for six of the above threatened or priority fauna species; Baudin's cockatoo, Carnaby's cockatoo, forest red-tailed black cockatoo, graceful sun moth, Muir's corrella and quenda.

Black cockatoo species

'Breeding habitat' for black cockatoo species is defined as trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (Commonwealth of Australia, 2012). Suitable DBH for nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012). While breeding, black cockatoos also generally forage within a 6 to 12 kilometre radius of their nesting site (Commonwealth of Australia, 2012). According to available datasets, mapped potential black cockatoo feeding habitat is recorded within the application area and surrounding bushland, making it a suitable location for breeding if appropriate hollows are present. Supporting information provided by 360 Environmental Pty Ltd identified that the vegetation association Em (Table 1) may provide breeding and roosting habitat for black cockatoo species (Atlas Brick Pty Ltd, 2019). However, further information provided by 360 Environmental Pty Ltd indicated that the *Eucalyptus marginata* (jarrah) trees within the application area are predominantly juvenile trees and that the application area contains no trees of DBH greater than 500 millimetres (360

Environmental Pty Ltd, 2020c). Noting that the application area does not include suitable breeding trees, the proposed clearing is not likely to comprise significant breeding habitat for black cockatoo species.

Black cockatoo species are noted to forage on a range of plant species, predominantly the seeds and flowers of marri, jarrah and proteaceous species (e.g. *Banksia* spp., *Hakea* spp. and *Grevillea* spp.) (Commonwealth of Australia, 2012). As the application area includes 0.09 hectares of Excellent (Keighery, 1994) condition *Banksia* woodland (BaMps), 0.06 hectares of jarrah woodland (Em), as well as sparsely distributed jarrah trees (NE/n), occurs within the within the potential or known foraging areas for all three black cockatoo species (Commonwealth of Australia, 2012), and is mapped within 12 kilometres of known breeding sites, the application area is likely to provide suitable foraging habitat for black cockatoo species. Therefore, the proposed clearing is likely to result in the loss of 0.15 hectares of foraging habitat for black cockatoo species, of which 0.09 hectares is considered high quality foraging habitat in Excellent (Keighery, 1994) condition. As assessed under Principle (e), the application area is not considered extensively cleared as it falls within the constrained Perth Metropolitan Region (EPA, 2008). However, remnant vegetation is sparse within the local area and, according to available databases, potential foraging habitat for black cockatoo species in the local area is limited to a subset of these remaining remnants. While maintaining foraging habitat irrespective of size has been noted as particularly important within the Perth Metropolitan Region (Commonwealth of Australia, 2012), it is noted that the application area is isolated from larger remnants of vegetation and is directly adjacent to Bush Forever Site 385, which is likely to provide greater than 20 hectares of high quality black cockatoo foraging habitat. Therefore, while the application may provide a small fragment of high-quality foraging habitat, the proposed clearing is not likely to significantly impact black cockatoo foraging in the local area, given the extent of the proposed clearing and its proximity to larger remnants of significant foraging habitat.

Graceful sun moth

The graceful sun moth is a medium-sized diurnal moth, associated *Banksia* woodland that comprises the suitable host species *Lomandra hermaphrodita* or coastal heath comprising *Lomandra maritima* (TSSC, 2013). A flora survey conducted in spring 2015 by 360 Environmental Pty Ltd, identified 0.09 hectares of Excellent (Keighery, 1994) condition *Banksia* woodland that contained *Lomandra hermaphrodita* within the application area (360 Environmental Pty Ltd, 2015). Noting the above, it is likely that the application area provides suitable habitat for the graceful sun moth. The graceful sun moth was listed as Endangered under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 1997, however was delisted to a Priority 4 conservation significant fauna species in 2012 after extensive survey efforts identified new subpopulations located in coastal heathland (TSSC, 2013). The dispersal of this species is also thought to be very limited, with dispersal across unsuitable habitat extremely uncommon (TSSC, 2013). Given the above, and that the application area is isolated from other suitable remnants by previously cleared roads and access tracks, over which the species is unlikely to disperse, the proposed clearing is not likely to impact significant habitat for the graceful sun moth.

Muir's corrella

Muir's corrella is a large cockatoo, typically associated with dry woodlands dominated by *Eucalyptus* species that provide suitable tree hollows for nesting (TSSC, 2016b). Muir's corrella is a generalist feeder, recorded to forage on the ground for seeds and litter of both native and introduced species, including agricultural crops (TSSC, 2016b). Given the vegetation associations present (Table 1), the application area may provide suitable habitat for Muir's corrella. However, noting the species' generalist nature, the suitable habitat present within the application area is not likely to be significant or necessary for the continuation of the species. Muir's corrella was listed as Vulnerable under the EPBC Act in 2000, but was delisted to Conservation Dependent in 2016 following a revision of the species' distribution, population size and population factors (TSSC, 2016b). Noting the above, the application area is not likely to provide significant habitat for Muir's corrella.

Quenda

Quenda are ground-dwelling marsupials, typically associated with forest or woodlands near watercourses, where understorey consists of dense scrub and leaf litter is abundant (DEC, 2012a). Majority of the application area consists of vegetation in Degraded to Completely Degraded (Keighery, 1994) condition, with limited native understorey cover that would not provide suitable habitat for quenda. However, as discussed above, a 0.09 hectare portion of Excellent (Keighery, 1994) condition *Banksia* woodland with dense, floristically diverse understorey is present within the application area, and may to provide suitable habitat for quenda. However, given quenda are fairly well-recorded, typically rely on interconnected bushland remnants for dispersal and that the application area is isolated from other suitable remnants by previously cleared roads and access tracks, the application area is not likely to provide significant habitat for the species. Noting the above, and the extent of the proposed clearing of suitable habitat, the application area is not likely to provide significant habitat for quenda.

As discussed under Principle (a), the application area is mapped within the Gngara Mound Ecological Linkages as part of the Perth Regional Ecological Linkage. However, the application area is not likely to be significant as an ecological linkage due to its isolation from larger bushland remnants in the local area, through previously cleared lands, roads and access tracks, as well as predominantly degraded vegetation. Therefore, it is not likely that the application area provides a significant linkage for fauna moving through the landscape.

Given the application area provides a small fragment of high-quality foraging habitat for black cockatoo species but is unlikely to significantly impact black cockatoo foraging in the local area, the proposed clearing may be at variance with 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

As discussed in Principle (a), a review of available databases determined three threatened flora species have been recorded within the local area (Western Australian Herbarium, 1998-). None of these records occur within the application area. From available databases, an assessment of the habitat requirements of these species indicated that the vegetation association and

soil type present in the application area may provide suitable habitat for two of these species; *Caladenia huegelii* and *Conospermum undulatum*.

Caladenia huegelii is a perennial herb with green, cream and red flowers, associated with woodlands dominated by *Eucalyptus* spp., *Agonis flexuosa* (peppermint) and *Banksia* spp. over low heath or shrub, within brown to grey sandy soils (Western Australian Herbarium, 1998-). *Caladenia huegelii* flowers from September to October, and outside of this period, persists as an underground tuber (Western Australian Herbarium, 1998-). *Conospermum undulatum* is a perennial, compact shrub standing up to 2 metres tall, with white flowers occurring between May and October, and is associated with woodlands dominated by *Eucalyptus* spp. and *Banksia* spp. over heath, within orange to grey sandy soils (Western Australian Herbarium, 1998-). Given the above, the application area is likely to provide suitable habitat for *Caladenia huegelii* and *Conospermum undulatum*. However, targeted flora surveys undertaken in September 2015 identified no individuals occurring within or directly adjacent to the application area (360 Environmental Pty Ltd, 2015). Given that appropriately timed flora surveys identified no individuals within the application area and noting the extent of the proposed clearing, the application area is not likely to include or be necessary for the continued existence of *Caladenia huegelii* or *Conospermum undulatum*.

It should also be noted that the flora survey undertaken in September 2015 identified no other threatened or priority flora species within the application area or adjacent vegetation (360 Environmental Pty Ltd, 2015).

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

Proposed clearing is may be at variance with this principle

According to available databases, one state-listed TEC, '*Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. (1994))' (SCP20a), is recorded within the local area and occurs directly adjacent to the application area in Bush Forever Site 385. It should be noted that the application area also occurs within the mapped buffer zone for SCP20a. Bush Forever Site 385 comprises greater than 20 hectares of mapped SCP20a and is separated from the application area by roads and previously cleared access tracks. Given the above, the proposed clearing is unlikely to result in significant impacts to the adjacent TEC, other than through facilitating the spread of weeds and dieback to adjacent vegetation. A weed and dieback condition is considered to minimise this risk.

However, a flora and vegetation survey identified that the vegetation associations within the application area, BaMps and Em (Table 1), are representative of SCP20a, based on surrounding occurrences, landform, soil type, and the dominant species present (360 Environmental Pty Ltd, 2015). SCP20a is currently listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is soon to be listed as Endangered under the state *Biodiversity Conservation Act 2016* (BC Act). Given the above, the proposed clearing will result in the loss of 0.15 hectares of native vegetation that is representative of a state and Commonwealth-listed TEC, SCP20a. Noting the extent of the proposed clearing, the application area falls below the minimum patch size of 0.5 hectares for Excellent (Keighery, 1994) condition vegetation to be considered as part of the EPBC Act listed TEC (TSSC, 2016a). However, Approved Conservation Advice for SCP20a advises that the areas considered critical to the survival of the TEC cover all patches that meet the key diagnostic characteristics and condition thresholds, plus the buffer zones (TSSC, 2016a). Further, additional areas that do not meet the minimum condition thresholds may also be critical to the survival of the TEC depending on factors such as size and shape, landscape linkages to other patches and landscape position, because they could retain some biodiversity or habitat values (TSSC, 2016).

Given the proposed clearing will result in the clearing of vegetation that comprises a state-listed TEC, the proposed clearing is may be at variance with this principle. However, it is noted that the application area is isolated from adjacent occurrences of SCP20a and bordered by vegetation in Degraded to Completely Degraded (Keighery, 1994) condition. Further, noting that the application area occurs on an industrial site that is highly disturbed and has been subject to heavy weed invasion, it is likely that the 0.15 hectares of vegetation consistent with SCP20a will be subject to further degradation from edge effects of surrounding cleared areas. Given the above, while the proposed clearing will result in the loss of 0.15 hectares of native vegetation that is representative of a state and Commonwealth-listed TEC, the application area is not considered necessary for the continued existence of SCP20a and is not likely to significantly impact the conservation status of this community. This is consistent with advice received from the Department of Biodiversity Conservation and Attractions (DBCA), which advised that given the small patch size of the occurrence, its isolation from other remnant vegetation, and the highly disturbed surrounding industrial land use, the 0.15 hectare patch consistent with SCP20a was unlikely to be viable in the future (DBCA, 2020).

(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 may be at variance with this principle

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). The application area is located within the mapped extent of the Perth Metropolitan Region Scheme. Noting that the EPA considers a constrained area to be an area where there is an expectation

that development will proceed, and that the cleared area is zoned 'Industrial' in the Perth Metropolitan Region Scheme, the 10 per cent threshold applies in this instance.

The application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion which retains approximately 38.6 per cent of its pre-European vegetation extent (Government of Western Australia, 2019). The mapped Swan Coastal Plain vegetation complex, Karrakatta Complex – Central and South, retains 23.49 per cent of its pre-European extent within the Swan Coastal Plain IBRA Bioregion (Table 1). The local area retains approximately 13.61 per cent of vegetation cover.

Noting that the current vegetation extent for the Swan Coastal Plain IBRA Bioregion, the Karrakatta complex and the local area are all above the 10 per cent threshold for constrained areas, the proposed clearing is not considered likely to have a significant impact on the extensively cleared local area.

However, the application area includes vegetation in an Excellent (Keighery, 1994) condition that may contain suitable foraging habitat for black cockatoo species, and is representative of a state-listed TEC, the application area is considered to be a significant remnant.

Given the above, the proposed clearing may be at variance with this principle.

Table 1: Vegetation representation statistics (Government of Western Australia, 2018)

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Current Extent in DBCA Managed Lands	
				(ha)	(%)
IBRA Bioregion					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Swan Coastal Plain vegetation complex					
Karrakatta complex	53,080.99	12,467.20	23.49	4,383.73	8.07
Local Area					
10 kilometre radius	30,583.71	4,163.58	13.61	-	-

(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 not likely to be at variance with this principle

According to available databases, the application area is mapped within the Jandakot Consanguineous Wetland Suite, however the closest watercourse, a non-perennial tributary of the Swan River, occurs approximately 3.8 kilometres east of the application area, separated by industrial and residential properties. Further, the flora survey conducted by 360 Environmental Pty Ltd identified no characteristic riparian vegetation or evidence of wetland vegetation within the application area (360 Environmental Pty Ltd, 2015).

Given the above, the vegetation within the application area is not considered to be growing in association with a watercourse or wetland and the proposed clearing is not likely to be at variance with this principle.

(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

The soil type within the application area is mapped within the EnvGeol S8 Phase (212Bs_S8), described as sand - very light grey at surface, yellow at depth, fine to medium grained, sub-rounded quartz, moderately well sorted of eolian origin (DPIRD, 2017).

As indicated in Table 2, the soil type mapped within the application area presents a low risk of land degradation resulting from water erosion, salinity, flooding, waterlogging, and phosphorous export. The application area is mapped at upwards of 50 per cent, high to extreme risk for wind erosion and subsurface acidification. Given the proposed clearing is for the purpose of bulk earthworks, there is potential for the application area to be subject to land degradation in the form of wind erosion and subsurface acidification if areas are left exposed over time. However, the applicant has advised that any clearing of native vegetation authorised will be scheduled to occur immediately before planned development to minimise the potential for land degradation and dust, where practicable (Atlas Brick Pty Ltd, 2019).

Noting the above, the extent of the proposed clearing, that majority of the application area is in Degraded to Completely Degraded (Keighery, 1994) condition, and that much of the surrounding landscape has been cleared for industrial or residential use, the proposed clearing is not likely to result in appreciable land degradation.

It is noted that, as the application area has been subject to significant weed invasion, the proposed clearing may facilitate the spread of weeds and dieback to remnant vegetation in the local area. A weed and dieback condition is considered to minimise this risk.

Given the above, the proposed clearing is not likely to be at variance with this principle.

Table 2: Land degradation risk levels

Risk categories	EnvGeol S8 Phase (212Bs_S8)
Wind erosion	50-70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to very high flood risk
Waterlogging	3-10% of map unit has a moderate to high waterlogging risk
Phosphorus export risk	30-50% of map unit has a high to extreme phosphorus export risk

(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 closest conservation area, Bush Forever Site 385, occurs directly adjacent to the application area. However, as discussed above, the application area is separated from surrounding bushland remnants, including Bush Forever Site 385, by previously cleared roads and access tracks, persists of predominantly Degraded to Completely Degraded (Keighery, 1994) vegetation, and does not provide connectivity to any other bushland remnants in the local area. Given the above, the application area is not likely provide avenues for dispersal into or out of local conservation area or to contribute to the environmental values of the adjacent Bush Forever Site.

It is noted that, as the application area has been subject to weed invasion, the proposed clearing may facilitate the spread of weeds and dieback to adjacent vegetation, including local conservation area. A weed and dieback condition is considered to minimise this risk.

Noting the above, the extent of the proposed clearing, and that a weed and dieback condition will be applied, the proposed clearing is not likely to be at variance with this 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.

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

The application area does not occur within a proclaimed surface water area and does not intersect any natural source of surface water. The closest source of surface water, a non-perennial tributary of the Swan River, occurs approximately 3.8 kilometres east of the application area, separated by previously cleared industrial and residential properties. Given the extent of the proposed clearing, the condition of the vegetation, and the separation from the nearest surface water source, the proposed clearing is not likely to cause deterioration in the quality of surface water.

Groundwater salinity within the application area is mapped at less than 500 milligrams per litre total dissolved solids. The application area lies within the Perth Groundwater Area, a groundwater area proclaimed under the *Rights in Water and Irrigation Act 1914* (the RIWI Act). However, noting the extent of the proposed clearing, that majority of the vegetation is in Degraded to Completely Degraded (Keighery, 1994), that the application area is mapped at a low risk of land degradation resulting from salinity, and that the applicant has advised that any clearing of native vegetation authorised will be scheduled to occur immediately before planned development, the proposed clearing is not likely to cause deterioration in groundwater quality.

The application area is mapped within the West Mirrabooka Public Drinking Water Source Area (PDWSA) proclaimed under the *Metropolitan Water Supply, Sewerage, and Drainage Act 1909*, a Priority 3 underground source of drinking water. Priority 3 PDWSAs are defined and managed to maintain the quality of the drinking water source for as long as possible, with the objective of risk management (DWER, 2016). The Department of Water and Environmental Regulation (DWER) considers development in PDWSAs by the level at which a proposed development will intensify land use and activities, as intensification often leads to greater risks to drinking water quality and public health (DWER, 2016). As discussed above, the proposed clearing is not considered likely to cause deterioration in groundwater quality and is therefore unlikely to result in impacts to the West Mirrabooka PDWSA.

Given the above, the proposed clearing not likely to be at variance with this principle.

(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

The mean annual rainfall for the local area is 800 millimetres, however, as discussed under Principle (g), the soil type within the application area is mapped as a low risk of flooding and waterlogging. Further, the application area consists of permeable sandy soils, and the nearest source of surface water occurs approximately 3.8 kilometres east of the application area, separated by industrial and residential properties. Noting the above, the extent of the proposed clearing, and that majority of the application area is in Degraded to Completely Degraded (Keighery, 1994) condition, the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance with this principle.

Planning instruments and other relevant matters.

The clearing permit application was advertised on the Department of Water and Environmental Regulation's website on 11 February 2020, inviting submissions from the public within a 21 day period. No submissions were received in relation to this application.

The City of Stirling (the City) advised that the area proposed to be clearing is zoned Industrial under the Metropolitan Region Scheme, zoned Development under Local Planning Scheme No. 3 (LPS3) and is subject to Local Planning Policy 4.4 Mixed Business Design Guidelines (LPP4.4) (City of Stirling, 2020a). The City advised that Aim (d) of LPS3 specifies 'to protect and enhance the environmental values and natural resources of the local government area and to promote sustainable land use and development' (City of Stirling, 2020a). Given LPS3 is supported by a number of Local Planning Policies facilitating the retention of vegetation, the City recommended that, at a minimum, the 'Excellent' (Keighery, 1994) condition vegetation be excluded from any clearing approvals, until such time as a development application is approved that demonstrates that its retention is not possible (City of Stirling, 2020a; City of Stirling, 2020b).

A Development Approval for Commercial - Bulk Earthworks (DA20/0665) for the north-eastern portion of Lot 820 on Deposited Plan 404602, Mirrabooka, was granted subject to conditions on 12 August 2020 (360 Environmental, 2020a). Following the grant of DA20/0665, the City advised DWER that, given the relevant Local Planning Policies, only the clearing within the area subject to this development approval was approved by the City, and recommended that all remaining vegetation within Lot 820 on Deposited Plan 404602, Mirrabooka, should be excluded from clearing approvals until such time as a development application is approved that demonstrates that its retention is not possible (City of Stirling, 2020c). Following this advice, the applicant modified the clearing area to exclude all vegetation outside of the approved development envelope for DA20/0665 (360 Environmental Pty Ltd, 2020b).

Modification to an occurrence of the '*Banksia attenuata* woodlands over species rich dense shrublands (floristic community type 20a as originally described in Gibson et al. (1994))' (SCP20a) also has requirements under the BC Act, where such an action 'will require authorisation from the Minister under section 45 of the BC Act if the action will, or is likely to, modify an occurrence of a threatened ecological community' (DBCA, 2019). The applicant submitted an Application to the Minister for Authorisation under section 45 of the *Biodiversity Conservation Act 2016* (BC Act) to modify an occurrence of a threatened ecological community (TEC) to the Department of Biodiversity Conservation and Attractions (DBCA) on 11 May 2020 (360 Environmental Pty Ltd, 2020c). DBCA advised that, given the patch of vegetation consistent with SCP20a was unlikely to be viable in the future, as discussed under Principle (d), the proposed clearing was not considered to result in the 'Modification'; of a TEC as defined under the BC Act, and therefore, authorisation was not required (DBCA, 2020).

It is noted that Atlas Brick Pty Ltd hold a current Groundwater license under the *Rights in Water and Irrigation Act 1914*. If the proposed industrial site development will result in an alteration of water use under this license, consultation with the Department of Water and Environmental Regulation's Swan Avon region will be required.

There are no Aboriginal Sites of Significance mapped within the application area.

5. References

360 Environmental Pty Ltd (2015) Level 2 Flora and Vegetation Survey Report. DWER Ref: A1881355.

360 Environmental Pty Ltd (2020a) Development Approval for Commercial – Bulk Earthworks for Lot 820, 501 Alexander Drive Mirrabooka WA 6061 on behalf of Atlas Brick Pty Ltd. DWER Ref: A1922661.

360 Environmental Pty Ltd (2020b) Proposed modifications to clearing area for CPS 8723/1 on behalf of Atlas Brick Pty Ltd. DWER Ref: A1927290.

360 Environmental Pty Ltd (2020c) Response to DWER Request For Information in relation to CPS 8723/1 on behalf of Atlas Brick Pty Ltd. DWER Ref: A1894330.

Atlas Brick Pty Ltd (2019) Clearing permit application CPS 8723/1 and supporting information prepared by 360 Environmental Pty Ltd. DWER Ref: A1838533.

City of Stirling (2020a) Comment from the City of Stirling regarding CPS 8723/1. DWER Ref: A1877946.

City of Stirling (2020b) Correspondence from the City of Stirling regarding a Development Application in relation to the works proposed under CPS 8723/1. DWER Ref: A1895913.

City of Stirling (2020c) Subsequent comments from the City of Stirling regarding Development Approval DA20/0665. DWER Ref: A1923978.

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, Canberra.

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

Department of Biodiversity Conservation and Attractions (DBCA) (2019) Guidance note – Modification of an occurrence of a threatened ecological community, Biodiversity Conservation Act 2016. Department of Biodiversity Conservation and Attractions, Western Australia.

Department of Biodiversity Conservation and Attractions (DBCA) (2020) Correspondence from the Department of Biodiversity Conservation and Attractions regarding an application to modify an occurrence of a threatened ecological community in relation to the works proposed under CPS 8723/1. DWER Ref: A1901220.

Department of Environment and Conservation (DEC) (2012) Fauna profiles: Quenda, *Isoodon obesulus fusciventer*. Department of Environment and Conservation, Western Australia.

Department of Parks and Wildlife (DPAW) (2016) *Banksia attenuata* woodlands over species rich dense shrublands (Swan Coastal Plain community type 20a – Gibson et al. 1994). Interim Recovery Plan No. 359. Parks and Wildlife, Kensington, Western Australia.

Department of Primary Industries and Regional Development (DPIRD) (2017). NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Available from: <https://maps.agric.wa.gov.au/nrm-info/> (accessed February 2020). Government of Western Australia.

Department of Water and Environmental Regulation (2016) Water quality protection note no. 25, Land use compatibility tables for public drinking water source areas. Department of Water, Western Australia.

Environmental Protection Authority (EPA) (2008) Environmental Guidance for Planning and Development Guidance Statement No 33. Environmental Protection Authority, Western Australia.

Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

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

Threatened Species Scientific Committee (TSSC) (2013). Commonwealth Listing Advice on *Synemon gratiosa* (Graceful Sun Moth). Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Threatened Species Scientific Committee (TSSC) (2016a). Approved Conservation Advice (incorporating listing advice) for the *Banksia* Woodlands of the Swan Coastal Plain ecological community. Department of the Environment and Energy, Canberra.

Threatened Species Scientific Committee (TSSC) (2016b). Commonwealth Listing Advice on *Cacatua pastinator pastinator* (Muir's corella). Department of the Environment, Canberra.

Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Biodiversity, Conservation and Attractions. Available from: <http://florabase.dpaw.wa.gov.au/> (accessed February 2020).

5. GIS Datasets

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Aboriginal Heritage Places (DPLH-001)
- Bush Forever Areas 2000 (DPLH-019)
- Cadastre Address (LGATE-002)
- CAWSA Part 2A Clearing Control Catchments (DWER-004)
- Consanguineous Wetlands Suites (DBCA-020)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- DBCA Statewide Vegetation Statistics
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography Linear (Hierarchy) (DWER-031)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Vegetation Extent (DPIRD-005)

- Pre-European Vegetation (DPIRD-006)
- Public Drinking Water Source Areas (DWER-033)
- Regional Parks (DBCA-026)
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Rivers (DWER-036)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil and Landscape Mapping – Best Available
- Soil Landscape Land Quality datasets
- Vegetation Complexes - Swan Coastal Plain (DBCA-046)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System)– Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)