CPS 9553/1 - Supporting Information - Cover Letter

PERTH OFFICE
Suite 4, 26 Railway Road
Subiaco
Western Australia 6008

P +61 8 9380 4988
F +61 8 9380 9636
emergeassociates.com.au

Emerge Environmental Services Pty Ltd ABN 57144772510 trading as Emerge Associates

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Emerge contact: Sarah Beukes

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Attention: Native Vegetation Regulation
Department of Water and Environmental Regulation
Locked Bag 10
JOONDALUP WA 6919

Delivered by email to: info@dwer.wa.gov.au

Dear Sir/Madam

CLEARING PERMIT (AREA PERMIT) APPLICATION TO UNDERTAKE BULK EARTHWORKS WITHIN A PORTION OF LOT 15 NICHOLSON ROAD, FORRESTDALE

Overview

Australian Islamic College (Perth) Inc. ('the applicant') has engaged Emerge Associates (Emerge) to provide environmental consultancy services to support a clearing permit application for a portion of Lot 15 on Diagram 226007 Nicholson Road, Forrestdale ('application area'). The total development footprint extends over 8.64 hectares (ha). Within this, 1.70 ha of native vegetation will be cleared in preparation for future development of an educational facility, as shown in **Figure 1**.

The educational facility will provide amenities for kindergarten, primary and high school students, along with ancillary services including a place of worship, head office, library, gym, and supporting maintenance infrastructure. The development will include a best practice waterwise approach to irrigation, landscaped areas, and on-site sewage treatment and disposal systems.

The application area (1.70 ha) consists of:

- 0.87 hectares (ha) of native plant community **BaBmSi** 'good' condition.
- 0.79 ha of native plant community **KgSi** in 'degraded' condition.
- 0.04 ha of scattered native vegetation populations of melaleuca and kunzea in 'completely degraded' condition.
- One Priority Ecological Community (PEC) was recorded during the detailed flora and vegetation survey.
- Plant community **BaBmSi** was considered to represent floristic community type (FCT) 21c.

It is noted that a total of 1.33 ha of potential black cockatoo foraging habitat exists within the application area, comprising 1.33 ha of low to moderate valued habitat for Carnaby's black cockatoo, and 0.66 ha of low valued habitat for Baudin's black cockatoo.

The following letter is provided in support of a clearing permit application (area permit) pursuant to Part V of the *Environmental Protection Act 1986* (EP Act) and includes the following attachments required by the Department of Water and Environmental Regulation (DWER):

- **Attachment 1** – Signed clearing permit application form
- **Attachment 2** – Certificate of Title for Lot 15 on Deposited Plan 226007
- **Attachment 3** – Meeting minutes from JDAP
- **Attachment 4** – Detailed Flora and Vegetation Assessment (Emerge Associates 2021b)
- **Attachment 5** – Basic Fauna and Targeted Black Cockatoo Assessment (Emerge Associates 2021a)
- **Attachment 6 –** Environmental Assessment and Management Plan (EAMP) (Emerge Associates 2021c)
- **Attachment 7** – Forrestdale Concept Plan (Marocchi Engineering Group 2021)
- **Attachment 8** – Landscape Master Plan (Australian Islamic College 2021)
- **Email attachments** – a .shp file of the application area has been submitted to DWER as part of the application.

1 INTRODUCTION AND BACKGROUND

The applicant is preparing to commence bulk earthworks to facilitate future commercial development over Lot 15 Nicholson Road, Forrestdale, and proposes the following development:

- Schooling facilities including kindergarten, primary and high school.
- Ancillary facilities including a place of worship, a head office, a library, a gym and maintenance facilities.
- Playing fields including covered courts, a soccer field and a large oval.
- Various outdoor areas and pathways.
- Various car parking and drop off/pick up locations.
- Nature play and outdoor learning nodes.
- Best practice waterwise approach to irrigation.
- Soft landscaped transitions to the surrounding landform.
- Planting with locally indigenous species within landscaped areas.
- Nutrient up-taking stormwater basins.
- Retention of the existing bushland to the east of the application area.
- On-site sewage treatment and disposal systems.

This clearing permit has been prepared subsequent to the Development Approval being issued by the Metro Outer Joint Development Assessment Panel (JDAP) on 10 December 2021. A copy of the minutes of this meeting have been included as **Attachment 3**.

The broader site encompasses an area of 16.74 ha and is zoned 'Other regional roads (reserve), rural (zone)' under the Metropolitan Region Scheme (MRS) and 'Rural living (Armadale) 4 ha' under the City of Armadale's (CoA) Town Planning Scheme No. 4. A key feature of the site is an existing power transmission easement that runs in a south-north direction and approximately bisects the site. The overarching development layout of the site has been prepared such that there has been no requirement to move this infrastructure. Due to this, development has been located on the western half of the site. Based on an initial assessment of the environmental values (discussed in **Section 3**), the development footprint was positioned on the portion of the site that corresponded to lower environmental values and degraded condition.

As such, the vegetation proposed to be cleared extends over 1.70 ha across the northern portion of the development footprint and is located approximately 25 kilometres (km) south of the Perth Central Business District (CBD), within the municipality of the City of Armadale. The application area is bound by broad acre rural land holdings zoned 'Rural living' to the east and south. Nicholson Road is situated to the west and Oxley Road to the north. The location and extent of the development footprint has been shown in **Figure 1**.

A total 4.96 ha of native vegetation will be retained and protected within the broader site (referred to as the 'Clearing Avoidance Footprint'). The extent of the clearing area will be clearly defined on the ground before any clearing activities commence to ensure there will be no inadvertent encroachment of disturbance into retained vegetation. The vegetation proposed to be retained comprises native vegetation representing a Threatened Ecological Community (TEC), and fauna habitat value suitable for numerous conservation significant fauna including the three species of black cockatoo.

2 SUMMARY OF ENVIRONMENTAL CONDITIONS

2.1 Historical clearing

A review of publicly available historical imagery from 1953 onwards indicates that the majority of the site was cleared of native vegetation between by 1965, with minimal scattered vegetation remaining. Between 1961 and 1965, a residential dwelling and larger ancillary buildings resembling tin-roofed sheds were constructed within the southern portion, along with several internal access tracks (**Plate 1** and **Plate 2**). Evidence of wetland features (perennial wetland-like vegetation and seasonally saturated soils occurring within low lying areas) can be seen within the site up to 1991, whereby these were almost entirely devoid of native vegetation (**Plate 3**). Between 1991 and 2011, the ancillary buildings were either destroyed or removed from the property. Native regrowth established along the eastern boundary and portion of the site by the early 2000s, through what appears to be natural revegetation (**Plate 3**). Hardstand appears to have been erected in the north-western corner of the site by December 2008, which is currently used for vehicle parking. Some stockpiling and subsequent spreading of imported soil/sand can be seen occurring in 2016 which appears to be used sporadically for vehicle laydown (**Plate 4**; Landgate 2021).

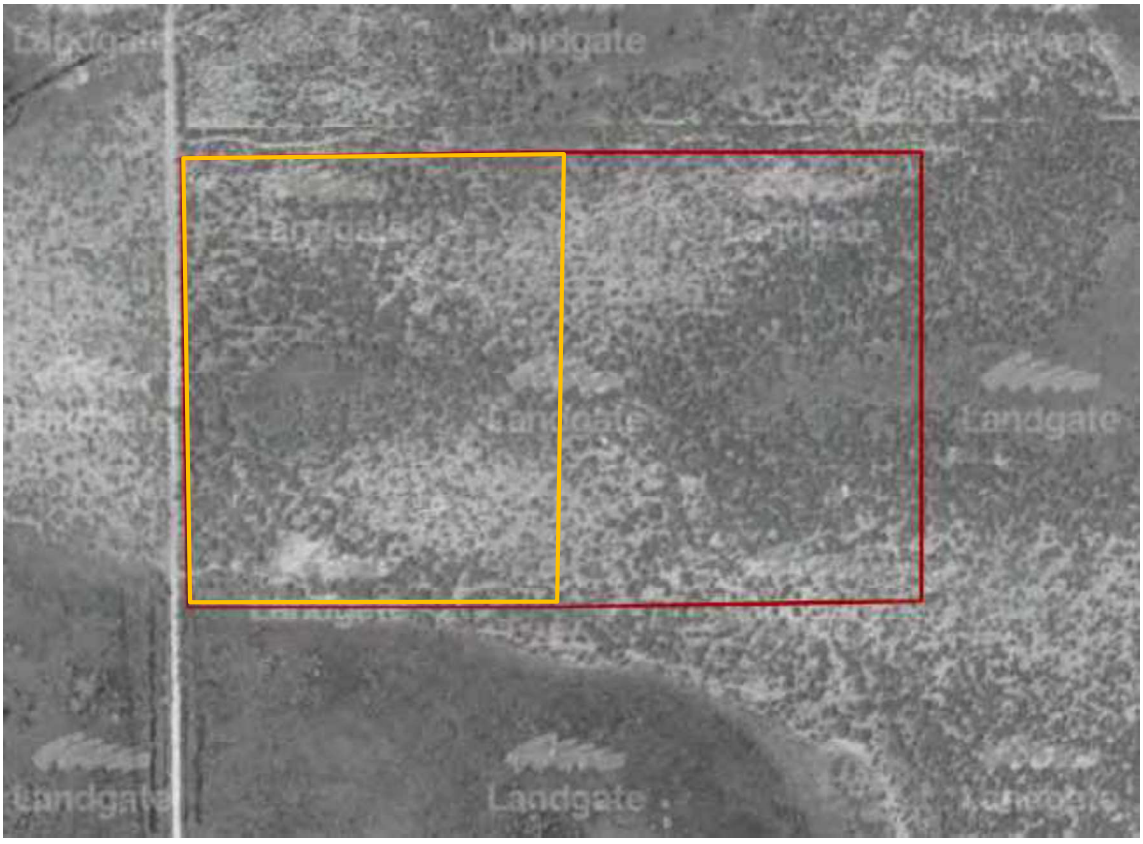

Plate 1: Aerial photograph of Lot 15 (red) and development boundary (yellow) in 1953, prior to the clearing of native vegetation (Landgate 2021).

Plate 2: Aerial photograph of Lot 15 (red) and development boundary (yellow) in 1965, post land clearing and the establishment of buildings (Landgate 2021).

Plate 3: Aerial photograph of Lot 15 (red) and development boundary (yellow) in 1991 with evidence of a wetland feature (Landgate 2021).

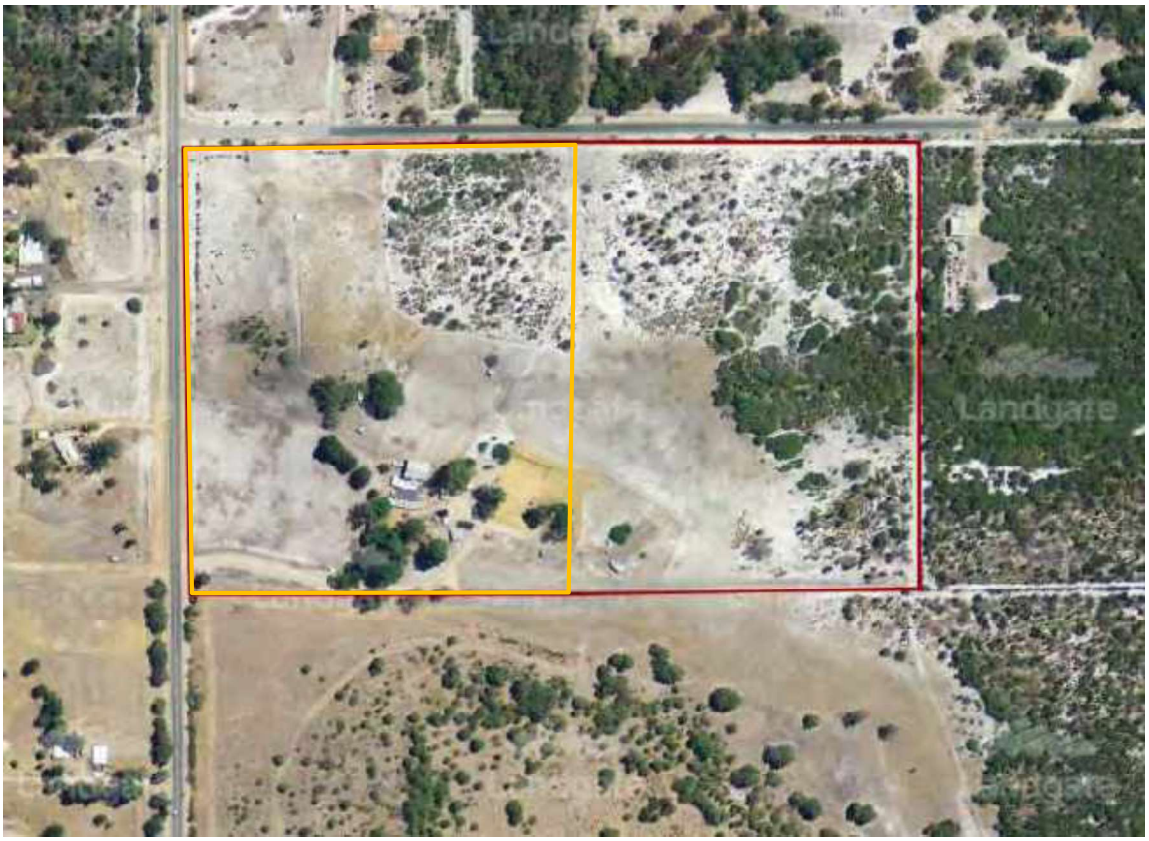

Plate 4: Aerial photograph of Lot 15 (red) and development boundary (yellow) in 2016 showing the regrowth of vegetation and location of imported soil/sand (Landgate 2021).

2.2 Site specific surveys

Historical terrestrial flora and fauna studies and investigations have occurred across the application area and the broader site (Lot 15 Nicholson Road). These have aided the understanding of the environmental attributes and values of the site. Specifically, the applicant has organised the following technical reports to support the development application submission:

- A detailed flora and vegetation assessment was undertaken in accordance with the Environmental Protection Authority's (EPA's) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) across the application area and broader site on 16 November 2020 and 11 March 2021 (Emerge Associates 2021b) and is provided as **Attachment 4**.
- A 'basic' fauna and targeted black cockatoo assessment was also undertaken in accordance with the EPA's *Technical Guidance – Terrestrial vertebrate fauna Surveys* (EPA 2020) and *Environment Protection and Biodiversity Conservation Act* black cockatoo referral guidelines (DSEWPaC 2012) across the application area on 11 May 2021 (Emerge Associates 2021a) and is provided as **Attachment 5**.

The findings of the recent detailed flora and vegetation assessment, and basic fauna and targeted black cockatoo assessment (Emerge Associates 2021b; Emerge Associates 2021a) is referred to in this clearing permit application from herein, given they provide the most up to date and comprehensive information of the site values. These surveys were taken over the entirety of Lot 15 Nicholson Road, Forrestdale. However, the environmental conditions identified through these assessments, pertaining to the application area only, has been provided below.

2.3 Flora and vegetation values

Regional vegetation complex mapping extending over the Darling Scarp undertaken by (Heddle *et al.* 1980) delineates the various vegetation complex types which would have occurred across the region

prior to European settlement in Western Australia. Based on this mapping, one vegetation complex has been mapped as occurring within the application area, as summarised below and shown on **Figure 2:**

- Southern River Complex (42) – Open woodland of *Corymbia calophylla - Eucalyptus marginata - Banksia* spp. with fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* along creek beds.

The 'Southern River' complex was determined to have 18.4% of its pre-European extent remaining, of which 1.2% is protected for conservation purposes (Government of Western Australia 2019). This percentage is below the 30% EPA threshold for unconstrained areas of the Perth and Peel regions (EPA 2008).

A flora and vegetation assessment to the standard required of a 'detailed' survey in the Environmental Protection Authority's (EPA's) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) was undertaken over the broader site, encompassing the application area, by (Emerge Associates 2021b) (**Attachment 4**). The survey included consideration of whether any conservation significant flora, such as threatened flora species or threatened ecological communities (TECs) listed under the EPBC Act occur within the site.

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) *NatureMap* database (DBCA 2021), as well as the threatened and priority flora database (reference 26-0321FL) was conducted to determine the distribution of flora within a 10 km radius of the site. Separately, a search of the *Protected Matters Search Tool* (DAWE 2021) was also undertaken.

The database search results identified one extinct, 13 threatened and 39 priority flora species as occurring or potentially occurring within the site and/or surrounding 10 km area. This list has been further refined to those species known to have habitat preferences aligned with site conditions. As such, nine threatened flora species and 18 priority flora species are considered to have potential to occur within the application area.

A search was also conducted for TECs and PECs that may occur or have been recorded within a 10 km radius of the site using the *Protected Matters Search Tool* (DAWE 2021), the *weed and native flora dataset* (Keighery *et al.* 2012) and DBCA's threatened and priority ecological communities' databases (reference 38-0321E).

TECs and PECs were identified within the application area and broader site during the database search and supported by the recent detailed flora and vegetation survey. The 'low lying *Banksia attenuata* woodlands and shrublands' is situated within the application area in the north-eastern corner and occupies and area of 0.87 ha. No threatened or priority flora species have been identified within the application area during recent surveys (Emerge Associates 2021b).

Plant communities identified within the application area are described below and shown in **Figure 3**:

- **KgSi** – Tall shrubland to closed tall shrubland of *Kunzea glabrescens* over shrubland to open shrubland of *Scholtzia involucrata* over sparse forbland *Conostylis aculeata*, *Lyginia barbata* and *Lomandra caespitosa*. Extends over 0.79 ha (**Plate 5**).
- **BaBmSi** – Low sparse to open woodland of *Banksia menziesii*, *B. attenuata*, *B. ilicifolia*, *Eucalyptus todtiana* and *Nuytsia floribund*a over sparse to open shrubland of *Kunzea glabrescens*, *Scholtzia involucrata*, *Acacia pulchella* var. *glaberrima*, *Macrozamia riedlei* and *Macarthuria australis* over sparse forbland of *Desmocladus flexuosus*, *Conostylis aculeata*, *Lyginia barbata* and *Lomandra* spp. and open grassland of *Ehrharta calycina* and *Briza maxima*. Extends over 0.87 ha (**Plate 6**).
- **Non-native** – Heavily disturbed areas comprising weeds with occasional native shrubs and forbs and planted vegetation. Extends over 0.04 ha (**Plate 7**).

*Plate 5: Plant community **KgSi** in 'degraded' condition*

*Plate 6: Plant community **BaBmSi** in 'good' condition*

*Plate 7: **Non-native** vegetation in 'completely degraded' condition*

The vegetation condition within the application area ranges from 'good' to 'completely degraded' using methods from Keighery (1994). The 'completely degraded' **non-native** vegetation extends across 0.034 ha, whereby the structure of the vegetation is no longer intact, and the area is completely or almost completely without native species, with the exception of interspersed species of melaleuca and kunzea. The 'degraded' **KgSi** exists within two patches, one of which is located on the western periphery of the development footprint (0.10 ha) and the other in the north-eastern corner (0.68 ha). The rating is reflecting a basic vegetation structure that has been severely impacted by disturbance, commonly caused by frequent fires, the presence of highly aggressive weeds, partial clearing, dieback and/or grazing. A small area of the 'good' **BaBmSi** vegetation was identified within the north-eastern portion of the development footprint, comprising a basic vegetation structure that has been significantly altered by obvious signs of multiple disturbance (**Figure 4**).

Plant communities **BaBmSi** and **KgSi** have been determined to be representative of floristic community type (FCT) 21c 'low lying *Banksia attenuata* woodlands and shrublands' at sampling points R1 and R2 within the application area (**Figure 4**). This FCT is listed as 'well reserved' and 'susceptible' by Gibson *et al.* (1994). The structure and composition of FCT21c indicates that it is associated with the state listed 'low lying *Banksia attenuata* woodlands and shrublands' (PEC), however, this is only applicable for plant community **BaBmSi.**

2.4 Fauna values

The *Basic Fauna and Targeted Black Cockatoo Assessment* (Emerge Associates 2021a) has been prepared in accordance with the EPA's *Technical Guidance – Terrestrial vertebrate fauna Surveys* (EPA 2020) and *Environment Protection and Biodiversity Conservation Act* black cockatoo referral guidelines (DSEWPaC 2012). This report described fauna habitats according to the dominant flora species and vegetation type present, as determined from observations made during the field survey and information provided in the *Detailed Flora and Vegetation Assessment* (Emerge Associates 2021b), and further assessed the quality of black cockatoo habitat within the site.

A search of DBCA's *NatureMap* database (DBCA 2021) and the *Protected Matters Search Tool* (DAWE 2021) was conducted to determine the distribution of fauna within a 10 km radius of the site. A

separate search was undertaken within DBCA's conservation significant fauna database using a 5 km radius, as advised by DBCA (reference no. FAUNA6634).

The database searches identified a total of 446 fauna species as occurring or potentially occurring within 10 km of the site, of which 64 are conservation significant fauna species, including 20 threatened, 17 priority, 26 migratory fauna and one other specially protected species.

With regard to specially protected, migratory, priority or threatened fauna species, one conservation significant species was considered 'likely' to occur and 13 species were considered 'possible' to occur in the application area, since potentially suitable habitat for the species in question was identified of marginal quality and/or extent, and the site lies within or close to the known distribution of the species. These species have been included in **Table 1** below.

The remainder of the conservation significant fauna species identified in the desktop assessment are not considered likely to occur in the site due to lack of suitable habitat or because the site lies outside of the species known distribution.

Table 1: Conservation significant fauna species

Species	Common name	Level of Significance		Likelihood
		State	EPBC Act	
Birds				
Apus pacificus	Pacific swift	Migratory	Migratory	Possible
Falco peregrinus	Peregrine falcon	Other specially protected species	-	Possible
Calyptorhynchus banksii naso	Forest red-tailed black cockatoo	Vulnerable	Vulnerable	Possible
Calyptorhynchus latirostris	Carnaby's black cockatoo	Endangered	Endangered	Likely
Calyptorhynchus baudinii	Baudin's black cockatoo	Endangered	Endangered	Possible
Invertebrates				
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	Priority 3	-	Possible
Leioproctus contrarius	Short-tongued bee	Priority 3	-	Possible
Leioproctus douglasiellus	Short-tongued bee	Endangered	Critical	Possible
Neopasiphae simplicior	Short-tongued bee	Endangered	Critical	Possible
Synemon gratiosa	Graceful sunmoth	Priority 4		Possible
Mammals				
Isoodon fusciventer	Quenda	Priority 4	-	Possible
Notamacropus irma	Western brush wallaby	Priority 4	-	Possible
Reptiles				
Lerista lineata	Perth Slider	Priority 3	-	Possible
Neelaps calonotos	Black-striped snake	Priority 3	-	Possible

No evidence (primary or secondary) of any of these species being present or utilising the application area was observed.

Three fauna habitats have been identified within the application area: '**Woodland - upland**', '**shrubland**', and '**predominantly cleared area'**. The classification and the area of each habitat is provided in **Table 2** and the extent is shown in **Figure 5.**

Table 2: Fauna habitats and total area within the application area.

Fauna habitat classification	Area (ha)
Woodland – upland	0.67
Shrubland	0.78
Predominantly cleared area	0.25
TOTAL	**1.70**

The highest fauna habitat values are associated with the **Woodland - upland** habitat. In particular, where this vegetation remains in 'good' condition (Keighery 1994), it provides a cover of low sparse to open woodland of native trees and shrubs, dense ground cover and contains microhabitats such as logs, rocks and leaf litter. This habitat was considered likely to provide value to a range of native species including some that are of conservation significance, such as species of black cockatoo (discussed in further detail below). Whilst the **Shrubland** habitat remains in a 'degraded' condition and lacks contiguous vegetation cover, it may provide limited cover for ground-dwelling species.

The extent of the **Woodland – upland** and **Shrubland** vegetation within the application area is relatively small (1.44 ha) compared to that in the local area, in particular the native vegetation within the bush forever site 345 'Forrestdale Lake and Adjacent Bushland', located south and east of the application area, and the native vegetation within the bush forever site 344 'Denis De Young Reserve and Gibbs Road Swamp Bushland', located north-west of the site, **Figure 1**. The balance of the development footprint (7.19 ha) has been subject to considerable historical disturbance and therefore supports low habitat values from a fauna perspective.

Black Cockatoo Foraging Habitat

Based on habitat requirements, species distribution and site conditions; two threatened species of black cockatoo have potential to occur within the application area (referred to herein collectively as 'black cockatoos'):

- *Calyptorhynchus latirostris* (Carnaby's cockatoo), listed as 'endangered' under the EPBC Act and the BC Act.
- *Calyptorhynchus baudinii* (Baudin's cockatoo) which is listed as 'endangered' under the EPBC Act and the BC Act.

The Targeted Black Cockatoo Assessment was undertaken as part of the Basic Fauna Survey and included an assessment of black cockatoo foraging, roosting and breeding habitat values within the application area and wider Lot 15 (Emerge Associates 2021a).

The assessment classifies foraging habitat by identifying whether the plant species present are known to be foraged upon by black cockatoo species. Primary food plants are defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary foraging plants are defined as plants that black cockatoos have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource.

The value of foraging habitat is further classified based on the proportion of primary or secondary food plants present within the area, as described below:

- Habitat with a high value has greater than 50% primary food plants.
- Habitat with a moderate value has between 10% and 50% primary food plants.

- Habitat with a low value has 10% or less primary food plants (this includes areas with 1-100% of secondary food plants, where no primary food plants are mapped).
- Habitat with a nil value has no primary or secondary foraging plants.

A total 1.33 ha of foraging black cockatoo habitat has been identified within the application area, which contains vegetation that supports at least one of the three species of black cockatoo. A summary of foraging habitat for all three species within the application area is provided in **Table 3** and further illustrated in **Figure 6**.

Table 3: Proportion of high, moderate and low foraging plants within patches of foraging habitat in the application area

	Black cockatoo species and foraging habitat area (ha)	
	Carnaby's black cockatoo	Baudin's black cockatoo
High	0	0
Moderate	0.66	0
Low	0.67	0.66
TOTAL	**1.33**	**0.66**

No foraging evidence attributed to the two species of black cockatoos was recorded within the site.

Black Cockatoo Habitat Trees

No habitat trees have been recorded within the application area.

Black Cockatoo Roosting Habitat

A search of the Great Cocky Count Roosting Records (Peck et al. 2019) identified that there a no roost sites within the application area, nor within the broader Lot 15. Within a 12 km radius, 35 roost sites have been identified.

During the field survey, no evidence of roosting, such as droppings, moulted feathers or branch clippings were observed within the application area. Nevertheless, the site contains tall trees and groups of tall trees that have the potential to provide roosting habitat for black cockatoos (Emerge Associates 2021a).

3 APPLICATION OF MITIGATION HIERARCHY

In accordance with *A guide to the assessment of applications to clear native vegetation* (DER 2014), the impact mitigation sequence has been considered in order to ensure the environmental impact from the proposed clearing for the project was kept to a minimum.

The purpose of the mitigation hierarchy is targeted to achieve a no net loss (NNL), which is defined as the point at which project related impacts are balanced through measures from the hierarchy, so no loss is incurred, or a net positive impact (NPI), whereby the gains are greater than the losses. The hierarchy involves four key actions (CSBI 2015):

- Avoidance
- Mitigation
- Rehabilitation
- Offset

A summary of the mitigation hierarchy is provided below and addressed with relevance to the EP Act Clearing Principles in **Section 4.**

3.1 Avoidance

The first and crucial step of the mitigation hierarchy involves measures to avoid clearing impacts, which is undertaken during the early phase of project planning. This is achieved through three key approaches.

Avoidance through site selection involves the relocation of the project site away from areas with high or significant biodiversity and ecological values. Lot 15 is considered an appropriate location for an educational facility, owing to the high historical disturbance of the land and limited environmental values. Avoidance through project design involves consideration of operational methods and infrastructure, in addition to the project layout. The project has been designed to limit the extent of disturbance by utilising, where possible, existing impacted areas with more degraded environmental values. Avoidance through scheduling involves consideration of seasonal and diurnal patterns of species behaviour including breeding and migratory seasons.

3.2 Mitigation

Where avoidance is not possible, mitigation measures will be undertaken to reduce the duration, intensity and/or extent of impacts on conservation significant species (including direct, indirect and cumulative impacts). The clearing of 1.33 ha of native vegetation representing habitat for the black cockatoo is required to occur to prepare the application area for the construction of the educational facilities. Due to the site layout and proposed works, this is considered unavoidable.

An Environmental Assessment and Management Plan (EAMP) (Emerge Associates 2021c) has been prepared in support of the DA application and addresses the various mitigation measures to be implemented (**Attachment 6**).

3.3 Rehabilitation

Rehabilitation of the application area is aimed to return specific biodiversity features to an area following exposure to impacts that cannot be completely avoided or minimised. Rehabilitation efforts will be aimed at restoring the maximum environmental value that is reasonably practicable through revegetation, control of weeds, disease and feral animals.

The clearing of 1.70 ha will occur to facilitate the development of various buildings and structures. The landscape plan for the application area and broader development footprint has endeavoured to retain 29 existing trees and will additionally provide endemic vegetation planting of 310 trees.

3.4 Offset

Environmental offsets address significant environmental impacts that remain after on-site avoidance and mitigation measures have been undertaken. According to Principle Two of the *WA Environmental Offsets Policy* (Government of Western Australia 2014); while environmental offsets may be appropriate for significant residual impacts or risks, they will not be applied to minor environmental impacts (i.e. where the residual impact is not considered to be significant, no offset will be required). Environmental offsets will only be applied where the residual impacts of a project are determined to be significant, after avoidance, minimisation and rehabilitation have been pursued.

The proponent has applied the first three steps in the mitigation hierarchy; Avoid, Minimise and Rehabilitation within the design of the educational facility development to reduce the environmental impact and therefore the residual impacts. The requirement for environmental offsets has been considered unnecessary, as the project will have no significant residual impacts upon the ten clearing principles. The application of the mitigation hierarchy has been demonstrated under each of the ten clearing principles as far as they are relevant to the proposed expansion in **Section 4** below.

4 RESPONSE TO EP ACT CLEARING PRINCIPLES

Under Section 51C of the EP Act, clearing of native vegetation is an offence unless a clearing permit has been obtained or an exemption applies. When assessing clearing permit applications, DWER has regard to the ten clearing principles contained in Schedule 5 of the EP Act so far as they are relevant to the matter under consideration.

In support of this area permit clearing application, we have considered and responded to the ten clearing principles in the following sections.

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

4.1.1 Flora and Vegetation Assessment

Based on the results of the flora and vegetation assessment (Emerge Associates 2021b), the site has been exposed to a history of anthropogenic disturbances within the last 60 years for agricultural/residential use. The broader site contains four native plant communities comprising approximately 72 species, whilst the clearing permit application will necessitate the removal of two native plant communities comprising approximately 64 species, in addition to cleared and revegetation areas associated with non-native and/or planted vegetation, as described in **Table 4**.

Table 4: Extent of flora and vegetation conditions within the application area and across the remainder of the site

Plant Community	Vegetation Condition	Application Area (ha)	Lot 15 (ha)	% of vegetation removed
KgSi	Degraded	0.79	2.41	32.78
BaBmSi	Good	0.87	2.17	40.09
Cleared	Completely degraded	0.04	10.11	0.39

As outlined above, the clearing permit application will necessitate the removal of 1.70 ha of native plant community **KgSi** in 'degraded' condition, **BaBmSi** in 'good' condition and interspersed species of melaleuca and kunzea in 'completely degraded' condition, whereby all communities show obvious signs of disturbance, potentially caused by frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback, and/or grazing.

The flora and vegetation assessment (Emerge Associates 2021b) identified that plant community **BaBmSi** represents the state listed 'low lying *Banksia attenuata* woodlands and shrublands' PEC Priority 3 (P3). Noting, however, that this community is well reserved locally outside of the application area within the broader Lot 15, as well as the nearby Bush Forever site 345 (Forrestdale Lake and Adjacent Bushland) which is contiguous with the site. Given that the application area is small in size and highly fragmented, these plant communities are not considered to represent a plant community with a high level of biological diversity (Emerge Associates 2021b). Furthermore, the application area is not located within a national biodiversity hotspot, as identified by the Threatened Species Scientific Committee (Douglass 2019).

4.1.2 Application of Mitigation Hierarchy

4.1.2.1 Avoid

As part of the development process, alternative locations were initially considered. The avoidance of impacting the highest environmental values within the site has been achieved through positioning of the proposed development to the west of the existing transmission line as shown in **Attachment 6**. The area to the east of the transmission line (the land within the 'clearing avoidance footprint') is to be avoided, as this land encompasses the majority of existing native vegetation, including 0.51 ha of the 'Banksia woodlands of the Swan Coastal Plain' TEC/PEC and 0.79 ha of the 'Low lying *Banksia attenuata* woodlands and shrublands' PEC (P3) area. Whilst 64 species are proposed to be removed,

the broader Lot 15 will ensure the perpetuation of 72 species, an outcome that will ensure that the level of biodiversity is not negatively impacted.

4.1.2.2 Mitigate

The extent and intensity of the impacts will be mitigated through the preservation of the remaining native vegetation onsite, and the implementation of various measures to prevent unauthorised clearing, as well as the spread of invasive weed species and *Phytophthora* dieback from the application area to the retained vegetation located to the east of the application area. Temporary fencing delineating the construction work area from the remainder of the site will ensure retained vegetation is not impacted. In addition, all machinery will be cleaned prior to site entry to minimise impacts from dust and weed encroachment. The **BaBmSi** and **KgSi** community is well reserved locally outside of the application area and within the clearing avoidance footprint. A total 1.62 ha and 1.30 ha, respectively, is scattered along the eastern periphery of the broader site (Lot 15), along with two other native plant community types in 'degraded' condition.

4.1.2.3 Revegetation

In accordance with the EAMP (Emerge Associates 2021c) and the Landscape Master Plan (Australian Islamic College 2021), a total of 29 trees are proposed to be retained and protected in accordance with the *Australian Standard 4970-2009 Protection of Trees on Development Sites*. An additional 310 native trees will be planted, for the purpose of protecting and reinforcing the surrounding environmental values. The revegetation activities will establish a variety of endemic species within the application area and across the broader development footprint, with the exact species selection to be determined as part of future discussions between the proponent, the City of Armadale and DBCA. Whilst the species to be used in revegetation have not yet been defined, their establishment will ultimately increase the biodiversity of the site.

4.1.2.4 Residual Impact

In consideration of the above measures, it is unlikely that clearing will cause a significant residual impact and therefore, an offset is not deemed necessary.

Since the application area does not provide an area of high biological diversity, clearing is not considered to be at variance with principle (a).

4.2 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 indigenous to Western Australia

As outlined above, the fauna assessment (Emerge Associates 2021a) concluded that fauna habitat values within the application area are generally limited, likely to be utilised by common and widespread native species without specific habitat requirements. As denoted within **Table 1**, one threatened species is likely to occur within the application area, and possible that four threatened, one migratory, seven priority and one other specially protected species may occur within the application area. These species would primarily be associated with the **woodland – upland** and to a lesser extent, the **shrubland** habitats, if they occur at all.

4.2.1 Overview of habitat values

Within the application area, the highest fauna habitat values are associated with the **woodland - upland** habitat, which comprises 39.05% of the application area. In particular, where this vegetation remains in 'good' condition, it provides a cover of native trees and shrubs, dense ground cover and contains microhabitats such as logs, rocks and leaf litter (Emerge Associates 2021a).

No evidence of black cockatoo breeding, roosting, or foraging within the application area was recorded during the site visits. No secondary evidence (chewed marri, jarrah, or banksia fruits, moulted feathers, droppings, branch clippings and chew marks) was identified for Carnaby's black cockatoo or Baudin's black cockatoo within the application area. Hence, clearing within the

application area is unlikely to have a significant impact upon the potential habitat of the two black cockatoo species.

4.2.2 Black cockatoo foraging habitat

Foraging habitat is classified as primary or secondary foraging habitat, by identifying those plant species known to be foraged upon by the black cockatoos. Within the wider site, primary foraging plants predominately comprise of marri, jarrah and *Banksia grandis* (bull banksia), whilst secondary foraging plants comprise primarily *Xanthorrhoea preissii* (grass trees) and *Grevillea manglesii* subsp. *manglesii* as well as scattered individuals of *Eucalyptus camaldulensis* (river gum).

The value of foraging habitat is further classified into 'high', 'medium', and 'low' categories, based on the proportion of primary and secondary foraging habitat mapped within the area.

The application area supports 1.33 ha of foraging habitat for Carnaby's black cockatoo and Baudin's black cockatoo. The extent of the proposed clearing impact has been further described in **Table 5** and shown in **Figure 6**.

Table 5: Extent of black cockatoo foraging habitat conditions within the application area and across the clearing avoidance area

	Black cockatoo species and foraging habitat area (ha)					
	Carnaby's			Baudin's		
	Application area (ha)	Clearing Avoidance (ha)	% removed	Application area (ha)	Clearing Avoidance (ha)	% removed
High	0	0.48	0	0	0	N/A
Medium	0.66	0.7	48.53	0	0	N/A
Low	0.67	0.001	99.80	0.66	1.18	35.87
Total	**1.33**	**1.18**	**52.99**	**0.66**	**1.18**	**35.87**

The black cockatoo habitat quality score for the broader Lot 15 was determined to be two (Baudin's), and three (Carnaby's) out of ten, due to the limited availability of foraging habitat within the site. The full results and methodology of the foraging habitat quality assessment is provided in **Attachment 5.**

However, there is large amounts of potential foraging habitat within local and regional proximity to the application area. The nearby 'Forrestdale Lake and Adjacent Bushland' and 'Denis De Young Reserve and Gibbs Road Swamp Bushland' situated to the east and north, respectively, comprise extensive areas of potential foraging habitat. Due to the existing edge effects and minimal amount of foraging habitat present within the site, it is unlikely that the removal of 1.33 ha will fragment an existing foraging source, nor represent a key local or regional resource for the species. For example, 2837.48 ha of potential Carnaby/Baudin's black cockatoo foraging habitat is mapped within 6 km of the application area, which equates to a loss of 0.047% of habitat loss for those species. The habitat present within the broader area is illustrated within **Figure 7.** Given that significant areas of foraging habitat are located within 6 km of the application area, it is not likely that cumulative impacts would result in significant local impacts to the extent that the occurrence of the species locally would be affected.

4.2.3 Black cockatoo breeding and roosting habitat

A habitat tree is defined as a native eucalypt that is known to support black cockatoo breeding with a diameter at breast height (DBH) of ≥50 cm (marri, jarrah, blackbutt, tuart, wandoo, salmon gum, flooded gum) or a DBH ≥50 cm (wandoo, salmon gum).

No habitat trees were recorded within the application area. A total of three habitat trees, none of which contain a suitable hollow representative of a breeding habitat, are present within the clearing avoidance footprint (**Figure 12**).

The black cockatoo breeding habitat quality score for the broader Lot 15 was determined to be zero out of ten (no habitat) for Carnaby's and Baudin's black cockatoo. For these species, Lot 15 is located outside of its known and predicted breeding range. As such, the application area it is not considered to support breeding habitat significant to the black cockatoo species, as discussed within the *Basic Fauna and Targeted Black Cockatoo Assessment*.

Whilst native and non-native trees within the application area have the potential to provide roosting habitat for black cockatoos, no roosts or secondary evidence of roosting was observed during the field surveys. Given that there are large areas of better-quality vegetation located north and east of the clearing permit, the application area is not considered to support a significant habitat for a metapopulation. A database search through BirdLife Australia (2021) further identifies 35 roost sites within 12 km of the site, none of which are detected within the application area (**Figure 7**). Due to this, the black cockatoo roosting habitat quality score was calculated as two out of ten (low).

4.2.4 Application of Mitigation Hierarchy

4.2.4.1 Avoid

The clearing avoidance footprint comprises 4.96 ha of native vegetation, representing suitable habitat for the two species of black cockatoo. The extent of the clearing area will be clearly defined on the ground before any clearing activities commence to ensure there will be no inadvertent encroachment of disturbance into retained vegetation. This will be achieved through the erection of temporary fencing around the work area. This vegetation supports fauna habitat values, including:

- A total of three black cockatoo habitat trees, none of which contain a suitable hollow.
- A total 4.81 ha of fauna habitat will be protected within the broader Lot 15, contiguous with the similar vegetation present within the protected conservation reserve Bush Forever Site 345 (Forrestdale Lake and adjacent bushland, Forrestdale).
- At least 1.18 ha of Carnaby's cockatoo foraging habitat and 1.18 ha of Baudin's cockatoo foraging habitat.

4.2.4.2 Mitigate

To protect terrestrial fauna so that biological diversity and ecological integrity are maintained within the native vegetation proposed to be retained and adjacent conservation areas, the measures presented within **Table 6** are to be applied during site works.

Table 6: Mitigation measures for conservation significant species

Impact	Mitigation	Purpose
Native Fauna	A pre-disturbance fauna inspection.	To identify potential fauna interactions, including an inspection of trees for hollows and signs of use.
	Undertake a fauna trapping program.	To capture and translocate small to medium sized native fauna, if such fauna is present and translocation is practical.
	An experienced fauna specialist will be present as a fauna spotter during clearing of vegetation, in areas to be cleared, and areas just cleared.	To identify the presence of bird or marsupial species in trees and more common ground dwelling fauna species, such as small mammals, lizards and snakes. If encountered, these animals will be assisted to disperse to nearby vegetation, if appropriate, or translocated.

Whilst several conservation significant species have potential to occur within the site, including the threatened (endangered) Baudin's cockatoo and (endangered) Carnaby's cockatoo, the likelihood that the application area would provide important habitat for these species is low, due to the relatively poor condition and limited extent of habitat within the site.

4.2.4.3 Revegetation

In accordance with the EAMP (Emerge Associates 2021c) and the Landscape Master Plan (Australian Islamic College 2021) provided by the proponent, the revegetation measures will focus on improving vegetation values and providing functional fauna habitat following exposure to impacts that cannot be completely avoided or minimised.

The revegetation activities will establish a variety of endemic species within the application area and across the broader development footprint, with the exact species selection to be determined as part of future discussions between the proponent, the City of Armadale and DBCA. The selected species will have a low bushfire risk and will be appropriate to the soil and hydrological conditions present.

The typical plant mix that has been provided in the interim (**Appendix 8**) incorporates species known to provide foraging habitat for Carnaby's and Baudin's black cockatoos. This includes *Agonis flexuosa* and *Banksia grandis*.

4.2.4.4 Residual Impact

Given the small magnitude of proposed clearing and modification of vegetation; and the extensive availability of habitat at both a local and regional scale in proximity to the site; the impact of clearing on the black cockatoos are not considered significant and thus, an offset is not required.

Clearing is therefore not considered to be at variance with principle (b).

4.3 Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

A flora and vegetation assessment (Emerge Associates 2021b) was undertaken within the application area on 16 November 2020, 11 March 2021 and 13 October 2021. The assessment included consideration of whether any conservation significant flora, such as threatened flora species or TECs listed under the EPBC Act occur within the application area.

No priority or threatened flora species were observed within the application area. Overall, the flora species diversity within the application area is lower than what would be expected if the land had not been subject to the high levels of disturbance and modification observed. As outlined in the assessment report (Emerge Associates 2021b), the survey was conducted within the main flowering season and identified 58 native and 40 non-native (weed) species. One priority annual species (*Schoenus pennisetis*) however, would not have been visible at that time of the surveys, with further details pertaining to the species habitat and flowering period provided within **Table 7.** However, during the field survey, neither this species nor any potential species was recorded, and ecologists did not identify any evidence that this species is present within the site.

Table 7: Potential occurrence of priority species present within the application area

Species	Life Strategy	Habitat	Flowering Period
Schoenus pennisetis (P3)	Annual	Grey or peaty sand in swamps and winter-wet depressions.	August – September

With the current information, the proposed clearing is not considered to be at variance with principle (c).

4.4 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.

As previously discussed, the plant community **BaBmSi** and **KgSi** was determined to be representative of floristic community type 21c 'Low lying *Banksia attenuata* woodlands and shrublands'.

Plant communities **KgSi** and **BaBmSi** are considered to represent FCT 21c 'Low lying *Banksia attenuata* woodlands and shrublands', with a similarity between 33% and 34%, respectively. As listed

by Gibson *et al.* (1994), this ecological community is 'well reserved' and 'susceptible' and forms a component of the 'Banksia woodlands of the Swan Coastal Plain' TEC (DBCA 2017b).

These areas of native vegetation were compared against the criteria adapted from DoEE (2016), which assess the structure, composition, patch size and surrounding context of the environment to determine the presence of a TEC. The 0.79 ha of **KgSi** does not include the key diagnostic features of a tree layer of *Banksia* spp. Based on historical aerials and some of the vegetation currently present in the Oxley Road reserve and the adjacent Lot 13, these communities may have once contained *Banksia* spp. This portion of vegetation has additionally been subjected to multiple clearing events, which has resulted in dense strands of the native *Kunzea glabrescens*. Due to the absence of *Banksia* spp. the **KgSi** vegetation is not considered to represent the Banksia woodland TEC or PEC. The 0.87 ha of plant community **BaBmSi** that stretches across the north-eastern portion of the application area did not meet the minimum patch size criteria of 2 ha for vegetation in 'good' condition and is additionally not connected to other banksia woodland vegetation outside of the site (within the broader Lot 15). Thus, this does not represent a TEC. However, DBCA has historically applied 'good' condition as a threshold for the identification of PEC vegetation. On this basis, 0.87 ha of the state listed 'low lying *Banksia attenuata* woodlands and shrublands' PEC Priority 3 (P3) exists within the application area, as shown in **Figure 11**.

However, there is no conservation advice for PECs. Whilst PECs provide an indicator of a higher level of biodiversity and environmental values worthy of protection, the overall significance of the vegetation within the application area is relatively low. Community **BaBmSi** is small (0.87 ha) and exhibits characteristics of both 'good' and 'degraded' condition categories, which has been conservatively mapped as being in 'good' condition. Whilst this area does not have particularly high weed cover, the overstorey and understorey species are sparse and native species density is low. As such, the removal of this is not considered to have a significant impact.

4.4.1 Application of Mitigation Hierarchy

4.4.1.1 Avoidance

Consistent with the EPA mitigation hierarchy, impacts to the contiguous vegetation within the site which includes the 'Banksia woodlands of the Swan Coastal Plain' TEC has been avoided. The avoidance of impacting the highest environmental values within the site has been achieved through positioning of the proposed development to the west of the existing transmission line as shown in the development layout provided in **Attachment 7**.

4.4.1.2 Mitigate

The extent and intensity of the impacts will be mitigated through the preservation of the remaining native vegetation onsite, and the implementation of various measures to prevent unauthorised clearing, as well as the spread of invasive weed species and *Phytophthora* dieback from the application area to the retained vegetation located to the east of the application area. Temporary fencing delineating the construction work area from the remainder of the site will ensure retained vegetation is not impacted. In addition, all machinery will be cleaned prior to site entry to minimise impacts from dust and weed encroachment. The **BaBmSi** and **KgSi** community is well reserved locally outside of the proposed application area and within the clearing avoidance footprint. A total 1.62 ha and 1.30 ha, respectively, is scattered along the eastern periphery of the broader site (Lot 15), along with two other native plant community types in 'degraded' condition.

4.4.1.3 Residual Impact

With the information provided, clearing is not considered to cause a significant impact and therefore, an offset is not required. Clearing is not considered to at variance with principle (d).

4.5 Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

The application area is contained within the Swan Coastal Plain 'SWA02' or Perth subregion, as defined by the Interim Biogeographic Regionalisation of Australia (IBRA) (Environment Australia 2000). The Perth subregion is characterised by mainly banksia low woodland on leached sands with melaleuca swamps where ill-drained; and woodland of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah) and *Corymbia calophylla* (marri) on less leached soils (Beard 1990). This subregion is recognised as a biodiversity hotspot and contains a wide variety of endemic flora and vegetation types.

Vegetation complex mapping extending over the Darling Scarp (Heddle *et al.* 1980) indicates that the application area occurs across the 'Southern River complex (42)'. This complex is characterised by an open woodland of *Corymbia calophylla – Eucalyptus marginata – Banksia* spp. with fringing woodland of *Eucalyptus rudis – Melalueca rhaphiophylla* along creek beds (**Figure 2**). Native vegetation within the application area in a 'good' condition is considered representative of the Southern River complex.

The 'Southern River complex' has 18.40% of its pre-European extent remaining on the Darling Plateau (Government of Western Australia 2018). The Environmental Protection Authority's (EPA) (2008) *Guidance Statement No. 33. Environmental Guidance for Planning and Development* identified a standard level of native vegetation retention of at least 30% of the pre-clearing extent of the vegetation complex in a bioregion. Therefore, this complex falls below the 30% EPA threshold for unconstrained areas of the Perth and Peel regions (EPA 2008).

Whilst this complex falls below the EPA criteria, only 51% (0.87 ha) of the mapped native vegetation is characteristic of the 'Southern River Complex' and as such, the application area is not considered to provide a representative vegetation community.

Furthermore, the vegetation complex is well reserved within the nearby conservation reserves, namely within the bush forever site 345 'Forrestdale Lake and Adjacent Bushland', located immediately south and east of the site, and bush forever site 344 'Denis De Young Reserve and Gibbs Road Swamp Bushland', located north-west of the site, as depicted in **Figure 1**.

4.5.1 Application of Mitigation Hierarchy

4.5.1.1 Avoid

A total of 4.96 ha of native vegetation in 'degraded' to 'good' condition of the mapped 'Southern River complex' will be retained in the clearing avoidance footprint, as shown in **Figure 12**. No machinery or support vehicles will enter these areas. This will ensure the values of vegetation representative of the Southern River complex is maintained and will further ensure no disturbance activities will occur within this area during development activities.

4.5.1.2 Mitigate

Phytophthora cinnamomi (dieback) and other soil-borne, foliar and canker pathogens have the potential to decrease the quality of remnant Southern River vegetation.

Phytophthora dieback and weed management will therefore be undertaken, including the cleaning of all machinery prior to site entry and the provision of water carts if required. Access and land disturbing activities will be restricted to the application area, to reduce the spread of weeds and dieback to areas of retained vegetation within the broader Lot 15. In addition, no soil and/or vegetation will be brought onto the site.

4.5.1.3 Residual Impact

In consideration of the above management measures and the limited extent of 'good' native vegetation, clearing is not considered to be significant and an offset is not required.

Clearing is therefore not considered to be at variance with principle (e).

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

Wetlands of national or international significance may be afforded special protection under Commonwealth or international agreements. As part of this assessment, the following lists were checked:

- *Ramsar List of Wetlands of International Importance* (DBCA 2017c).
- *A Directory of Important Wetlands in Australia* (DBCA 2018).

No Ramsar wetlands or listed important wetlands occur within the application area.

The detailed flora and vegetation survey (Emerge Associates 2021b) however, confirmed that a multiple use category wetland extends across the central region of the development footprint and into a portion of the application area. This is further supported by the *Geomorphic Wetlands of the Swan Coastal Plain* (Locate 2021) dataset.

The Forrestdale Sumpland is a multiple use category wetland (MUW UFI 7236), which is described as a wetland with a few remaining important attributes and functions (DBCA 2017a) and scores poorly on both natural and human use attributes (WAPC 2005). This identified wetland landform experiences seasonal inundation and is in a 'completely degraded' condition, supporting pasture weeds. Given the current condition of the wetland, it is unlikely that this is relied upon by fauna species as a source of water and habitat.

Numerous conservation category wetlands (CCW) are situated within the nearby environment, including UFI 7237 located approximately 140 m south of the application area, UFI 7235 located approximately 250 m east of the application area, and UFI 7233 located approximately 45 m north of the application area.

4.6.1 Application of Mitigation Hierarchy

4.6.1.1 Avoid

The presence of a MUW within the application area does not require a specific spatial response within the development layout as this category contains few wetland attributes and are suitable for development if hydrological considerations are addressed appropriately.

In comparison, the nearby CCWs are afforded protection through various state policies and guidelines. A 50 m buffer has been applied to prevent the disturbance to riparian vegetation, in accordance with the *Operational policy 4.3: Identifying and establishing waterways foreshore areas* (DoW 2012). The application area is situated outside the 50 m buffer for CCW UFI 7237 and 7235, whilst the application area extends approximately 5 m into the CCW UFI 7233 buffer. However, the buffer area that incurs within this site is a minor portion of the overall generic wetland buffer area applied to UFI 7233 which extends to the north and east by approximately 1,000 m and 800 m respectively.

4.6.1.2 Mitigate

The management of surface water runoff from the proposed development, including management of uncontrolled surface water runoff into the nearby conservation category wetland has been addressed through the preparation of the EAMP. The measures presented within **Table 8** are to be applied during site works.

Table 8: Mitigation measures for nearby conservation category wetlands

Impact	Mitigation	Purpose
CCWs	Implementation of a drainage strategy.	To ensure the natural hydrological regime is maintained.
	Manage public access to the CCW UFI 7235.	To minimise the potential for people to impact on the environmental values of the CCW.
	Planting of flora species appropriate to the soil and hydrological conditions present.	To protect and maintain the values of the wetland.
	Establishment of temporary fencing prior to construction/clearing works surrounding the existing vegetation which is to be retained.	This will encompass the CCW to the east of the site (UFI 7235) and ensure riparian vegetation is retained.
	Induction for personnel.	Ensure employees understand the location and extent of the vegetation to be retained and now access is restricted.
Sewerage	On-site sewerage systems will be located at least 100 m from the outer edge of any nearby conservation category wetland and appropriate consideration of functional buffer requirements and the sensitive use of fertilisation in sporting and landscaped areas will be applied.	This is consistent with the requirements of the *Government Sewerage Policy* (DPLH 2019). The provision of this setback will ensure that sewage is disposed of in a manner that protects the adjacent wetlands.
Surface runoff	Any runoff from the entry roads and car parks will be treated and retained within the site and will not be discharged into the wetland.	This approach will maintain the existing hydrological regime and ensure that no surface water pollutants enter the wetland from the development.

4.6.1.3 Residual Impact

In consideration of the above management measures and the limited environmental attributes associated with the MUW UFI 7236, a negative impact on wetlands and watercourses is not anticipated and in turn, an offset is not required.

Clearing of the application area is not considered to be at variance to principle (f).

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

The assessment of land degradation has identified a potential risk associated with the proposed clearing activity.

An examination of broad scale soil mapping places the application area within the Southern River soil association (SR) (Churchward and McArthur 1980).

Closer analysis of mapping supplied by the Department Primary Industries and Regional Development (DPIRD) indicates that the application area is underlain by the following soils, as shown in **Figure 2**:

- Bassendean B1 – Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m. *Banksia* dominant.
- Bassendean B3 – Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

Soil landscape mapping indicates that the majority of the application area is identified as sandplain with low dunes and occasional swamps (DPIRD 2019). Due to the features of this soil, the key risk is associated with soil erosion, with further details summarised below.

4.7.1 Application of Mitigation Hierarchy

4.7.1.1 Mitigate

The proposed clearing of vegetation is unlikely to cause substantial soil erosion within the application area, given the small amount of vegetation to be cleared (1.70 ha), reducing the risk of land degradation.

The topography of the application area is relatively flat, ranging in elevation from approximately 29 m Australian Height Datum (mAHD) at the north-eastern extents to 25 mAHD within the central western portion (DWER 2021). Whilst the Bassendean sands provide poor drainage, the future development of the site is not expected to cause appreciable land degradation, as areas will largely be covered by paving, landscaping, and buildings. Thus, the proposed clearing of the site is unlikely to increase the risk of land degradation.

Despite this, any risk of land degradation will be mitigated through controls and surface stabilisation applied during clearing (including the provision of water carts) where required.

4.7.1.2 Revegetation

The application area and broader development footprint will be rehabilitated using various native trees, shrubs, and herbs, with the species to be determined between the proponent, the City of Armadale and DBCA. This is not expected to cause appreciable land degradation, as areas will largely covered by hardstand and buildings, along with sporadic populations of native vegetation.

4.7.1.3 Residual Impact

The clearing of native vegetation is not considered to be at variance to principle (g).

4.8 Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Intact native vegetation is present immediately east and south of the site (Forrestdale Lake and Adjacent Bushland, Forrestdale, 892.98 ha) and immediately east of the site (Dennis De Young Reserve and Gibbs Road Swamp Bushland, Banjup/Forrestdale, 653.29 ha) (**Figure 1**).

4.8.1 Application of Mitigation Hierarchy

4.8.1.1 Avoid

These conservation reserves are separated from the application area through existing road reserves, fencing and vegetation in 'good' to 'degraded' condition to the east, along with the 'Banksia woodlands of the Swan Coastal Plain' TEC/PEC.

A biodiversity linkage (no. 52) extends over the north-eastern corner of the site, running east to west and intersects with another ecological linkage (no. 57) running north to south over Forrestdale Lake. These ecological linkages connect areas of Bush Forever and wetlands located in the wider local area. The portion that intersects with the eastern portion of the site will be retained within the 'clearing avoidance footprint'. The location of the biodiversity linkage associated with the site is shown in **Figure 1**.

4.8.1.2 Mitigate

The EAMP has been prepared to provide a synthesis of information regarding the environmental values and attributes of the site, as well as outline the environmental management procedures to be implemented by the applicant during development activities and mitigate any indirect impacts resultant from clearing. Section 4 of the EAMP provides an environmental assessment and management framework, informed by the Environmental Management and Improvement Strategy guidelines detailed within Local Planning Policy PLN 2.7 *Environmental Management Improvement Policy for Development of Constrained Land* (CoA 2020).

Clearing areas will be clearly identified to ensure no inadvertent disturbance or unauthorised access occurs. *Phytophthora* dieback and weed management will be undertaken, including the cleaning of all machinery prior to site entry and the provision of water carts if required.

The Proponent has additionally committed to an endemic landscaping approach and long term weed eradication program to protect the values of the retained vegetation.

4.8.1.3 Residual Impact

With the proposed management measures, the clearing of vegetation is unlikely to impact upon the environmental values of the nearby conservation areas, and thus an offset is not required.

Clearing is not considered to be at variance to principle (h).

4.9 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.

Deterioration in quality of surface water or underground water can occur as a result of activities that result in sedimentation, increased nutrient levels, changes to pH (through acid sulphate soils), salinity or changes in water regimes of groundwater dependent ecosystems.

Acid sulphate soil (ASS) risk mapping prepared by DWER (2021) indicates that the application area is within an area mapped as having a moderate to low risk of ASS occurring within 3 m of the natural soil surface. The Bassendean (B1 and B3) soil units mapped as occurring within the application area are comprised of poor drainage capabilities. However, it noted that the soils identified across the extent of the application area as part of the vegetation survey were sandy, and peaty soils were not identified.

Based on information provided by Perth Groundwater Atlas (2021), depth to groundwater fluctuates between 6 m bgl (below ground level) and 4 m bgl.

4.9.1 Application of Mitigation Hierarchy

4.9.1.1 Mitigate

Various mitigation measures are to be employed during clearing, including the provision of water carts where required. Post clearing, the application area will be covered with hardstand, which is not likely to cause a deterioration in water quality.

4.9.1.2 Residual Impact

As no potential contaminants will be brought into the application area from the proposed clearing, the proposal is unlikely to have an effect on the quality of surface or underground groundwater.

The clearing is not considered to be at variance with principle (i).

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

A review of publicly available data and site-specific investigations did not identify any environmental factors that would increase the incidence of flooding, as discussed below:

- The application area is not mapped as occurring within a floodplain area (DWER 2020).
- The application area will be covered with hardstand.
- Whilst the Bassendean sands provide poor drainage, the flood risk is minor. The percentage of the map unit with a moderate to high flood risk is 0% for B1 and 46% for B3.

The proposed removal of native vegetation within the application area and laydown of hardstand will not cause or exacerbate an incidence of flooding within the site or broader area and therefore, an offset is not required.

The clearing is not considered to be at variance with Principle (j).

5 SUMMARY AND CLOSING

A summary of the response to each clearing principle has been provided within **Table 9** below.

Table 9: Summary and response to the clearing principles

Clearing principle	Response to clearing permit principle
Principle (a)	The application area does not support a high level of biological diversity. Clearing is not at variance with principle (a).
Principle (b)	The application area contains 1.33 ha of 'medium' and 'low' quality foraging habitat for the Carnaby's black cockatoo and Baudin's black cockatoo. However, there is large amounts of potential foraging habitat within local and regional proximity to the application area. The regional area supports 2,837.48 ha of potential Carnaby/Baudin's black cockatoo foraging habitat within a 6 km radius. Due to the amount of foraging habitat in the broader Lot 15 and the broader bushforever sites 344 and 345, it is unlikely these species are reliant on vegetation within the clearing permit area. The proposed clearing is not at variance with principle (b).
Principle (c)	No threatened or priority flora species were recorded within the application area as part of the flora surveys undertaken in November 2020, March 2021, and October 2021. The proposed clearing is therefore not at variance with principle (c).
Principle (d)	Plant communities **KgSi** and **BaBmSi** represent FCT 21c 'Low lying *Banksia attenuata* woodlands and shrublands'. In addition, the 0.87 ha of plant community **BaBmSi** meets the DBCA state listed criteria to be classified as the 'low lying *Banksia attenuata* woodlands and shrublands' PEC Priority 3 (P3). Whilst conservation advice regarding this PEC is limited, the overall condition of the FCT and PEC vegetation is 'degraded' and 'good'. As a result, the clearing is unlikely to cause a significant impact and thus, clearing is not at variance with principle (d).
Principle (e)	The vegetation complex identified within the application area is below the 30% EPA threshold for unconstrained areas. However, due to the limited availability of vegetation in 'good' or better condition, the application area is not considered to provide a representative vegetation community of the 'Southern River complex'. Clearing is not at variance with principle (e).
Principle (f)	A multiple use wetland extends across the application area and various conservation category wetlands are within close proximity to the application area. The proposed management measures are considered appropriate and therefore, clearing is not at variance with principle (f).
Principle (g)	The proposed clearing will not cause appreciable land degradation. Soil erosion is the primary concern for the application area, and the proposed management measures will reduce potential for this to occur. Clearing is not at variance with principle (g).
Principle (h)	The proposed clearing of vegetation is unlikely to impact the environmental values of the nearby Forrestdale Lake and Adjacent Bushland, and Dennis De Young Reser4ve and Gibbs Road Swamp Bushland. Clearing is not at variance with principle (h).
Principle (i)	The proposed clearing is not considered to pose a risk in terms of the deterioration of surface or groundwater. The proposed clearing is not at variance with principle (i).
Principle (j)	The proposed clearing is not likely to cause or exacerbate a risk of flooding. The proposed clearing is not at variance with principle (j).

Emerge believe that the proposed clearing is consistent with the EP Act Clearing Principles, as detailed in this letter.

Should you have any questions regarding the content of this letter, please do not hesitate to contact the undersigned.

Yours sincerely
Emerge Associates

Sarah Beukes
ENVIRONMENTAL CONSULTANT

Encl: Figure 1: Site Location and Application Area
Figure 2: Vegetation Complex Mapping
Figure 3: Plant Communities
Figure 4: Vegetation Condition
Figure 5: Threatened and Priority Ecological Communities
Figure 6: Fauna Habitat
Figure 7: Black Cockatoo Foraging Habitat
Figure 8: Black Cockatoo Context
Figure 9: Geomorphic Wetlands
Figure 10: Soil Landscape Mapping
Figure 11: Acid Sulfate Soils
Figure 12: Clearing Avoidance Area
Attachment 1 – Signed clearing permit application form (Form C1)
Attachment 2 – Certificate of Title for Lot 15 on Deposited Plan 226007
Attachment 3 – Meeting minutes from JDAP
Attachment 4 – Detailed Flora and Vegetation Assessment
Attachment 5 – Basic Fauna and Targeted Black Cockatoo Assessment
Attachment 6 – Environmental Assessment and Management Plan
Attachment 7 – Forrestdale Concept Plan
Attachment 8 – Landscape Master Plan
Email attachments – a .shp file of the application area has been submitted to DWER as part of the application.

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