Archived: Wednesday, 26 August 2026 11:45:37 AM
From: s. 22(1)(a)(ii)
Sent: Friday, 27 June 2025 4:22:51 PM
To: s. 22(1)(a)(ii)
Cc: s. 22(1)(a)(ii)
Subject: Black Footed Tree Rat Offset Plan for assessment [SEC=OFFICIAL]
Importance: Normal
Sensitivity: None
Attachments:
Attachment A BFTR offset plan.pdf; Attachment B - Letter to Approval Holder EPBC 2015-7591 BFTR Offset Plan.docx; Attachment C - EPBC-2015-7591 Lee Point Variation Conditions.pdf; Attachment D - Departmental Evaluation of BFTR Offset Plan 2015-7591.docx; Attachment F - EPBC 2015-7591 Referral Decision Notice.pdf; ; Lee Point - Black Footed Tree Rat Offset Plan [SEC=OFFICIAL].msg2015-7591 Black Footed Tree Rat Offset Plan Approal Brief.docx;

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Hi s. 22(1)(a)(ii)

As discussed grateful if you could take this assessment through to briefing and finalisation. It has been partially completed but you will need to finalise and complete the briefing package for delegate consideration. All relevant records that I have to hand are attached – if you need further info please reach out to discuss.

Regards,

s. 22(1)(a)(ii)

– Director |Post Approvals QLD
Nature Positive Regulation Division | Environment Assessments (VIC, TAS) and Post Approvals Branch
Location: Ngunnawal Country, John Gorton Building, King Edward Terrace, Parkes ACT 2600 Australia
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LEX 83555 Document 2

EPBC Referral
Lee Point Master-planned Urban Development
Darwin, NT

Prepared by: EcOz Environmental Consultants



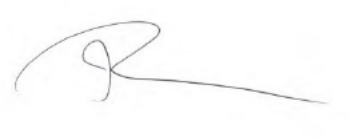
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1.1	23 Sept 2015	Address client and internal review comments	KW
1.2	24 Sept 2015	Issue to DLPE for review and approval	KW
1.3	7 Oct 2015	For submission to DoE	KW

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Referral of proposed action

Project title: Lee Point Master-planned urban development

1 Summary of proposed action

1.1 Short description

Defence Housing Australia (DHA) proposes to develop a master-planned urban area at the northern end of Lee Point Road on the outer edge of Darwin's northern suburbs. The area proposed for development is 132 ha of land located on the northern extent of Darwin's northern suburbs, approximately 14 km north-north-east of the Darwin city centre (Figure 1). The development will include urban residential housing at varying densities, rural residential allotments, land for community development including a primary school, a mixed use urban centre including a tourism precinct; and open space areas incorporating parklands and drainage reserves.

1.2 Latitude and longitude

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1	12	20	23	130	53	27
2	12	20	26	130	53	33
3	12	20	33	130	53	30
4	12	20	45	130	53	29
5	12	20	45	130	53	45
6	12	20	51	130	53	45
7	12	20	51	130	54	08
8	12	21	04	130	54	08
9	12	21	04	130	52	57
10	12	21	03	130	52	58
11	12	21	03	130	52	47

1.3 Locality and property description

The project area is located in the locality of Lee Point and comprises two properties, vacant Commonwealth land owned by DHA and vacant Crown Land owned by NT Government. The properties lie across Lee Point Road, which is currently a 2-lane (one lane in each direction) road that provides access to recreational areas at Lee Point and Buffalo Creek that are part of the Casuarina Coastal Reserve. The land is at the northern extent of Darwin's urban area and is bound to the east by coastal swampland that is unzoned for development; and to the north and west by land zoned for Conservation, Public Open Space and Community Purpose uses.

1.4 Size of the development footprint or work area (hectares) 132 ha of land under two separate titles

1.5 Street address of the site Lot 4873 is located at 577 Lee Point Road
Lot 9370 is located at 544 Lee Point Road

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1.6 Lot description

The proposed development will occur on Lots 4873 and 9370 Town of Nightcliff (the 'project area'). The location and boundaries of the project area are shown in Figure 2.

Lot 4873 is vacant Commonwealth land currently zoned Future Development (FD) under the NT Planning Scheme (NTPS). The site is referred to as the 2 Control and Reporting Unit (2CRU) site in reference to its previous use as a Defence communications facility and is owned by the proponent DHA. The land area of the lot is 81 ha if which approximately 61 ha will be developed as part of the proposed action.

The remaining area within Lot 4873 comprises land where development is 'restricted by constraints' in accordance with the Lee Point Area Plan approved under the NTPS. This area of land is proposed for future rezoning to CN (Conservation) and transfer to NT Government for incorporation into the Casuarina Coastal Reserve. The proposed action will include some works within the portion of land zoned CN for the purpose of providing pedestrian access into the Casuarina Coastal Reserve from the new urban area and establishing a mountain bike trail as requested by NT Parks and Wildlife.

Lot 9370 is Vacant Crown land currently zoned FD under the NTPS. The site is owned by the NT Government and is referred to as Muirhead North in reference to its location to the north of the existing DHA developed suburb of Muirhead. The lot has a total area of 51 ha of which most will be developed excepting an area of approximately 1.5 ha which will be retained for protection of a small monsoon rainforest patch (approximately 0.88 ha in size).

The NTPS was amended in September 2015 to introduce zone Future Development (FD) to Lot 4873, Town of Nightcliff (2CRU); and to rezone Lot 9370 Town of Nightcliff (Muirhead North) to Future Development (FD). The NTPS Part 8 was also amended to include the Lee Point Area Plan and Planning Principles, which are provided at Attachment A. The development Master Plan is provided at Attachment B.

1.7 Local Government Area and Council contact (if known)

The land proposed for development is located in the City of Darwin local government area. LGA's are not responsible for issuing subdivision and development permits in the NT; however, the *NT Planning Act* requires that Council be formally advised of development applications within the municipality.

DHA has engaged the City of Darwin early in the project planning phase conducting a number of meetings with Council staff and aldermen; and intends to continue engagement as the project progresses through the development planning and approvals process. Details of consultation with Council to date are provided in Attachment C.

Ownership of Lot 9370 currently resides with the NT Department of Lands, Planning and the Environment. The project contact officer within DLPE is:

Karen White
Manager Land Release
Land and Economic Development
ph: 08 8924 7201
email: Karen.white@nt.gov.au

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1.8 Time frame

Commencement of the first stage of civil construction is planned for early 2017 on the 2CRU site. The initial stages of construction will include the extension of services northward along Lee Point Road to the proposed main street. DHA also plans to commence construction of the main street in order to provide a suitable connection to the tourism precinct and to support early establishment of the mixed use area.

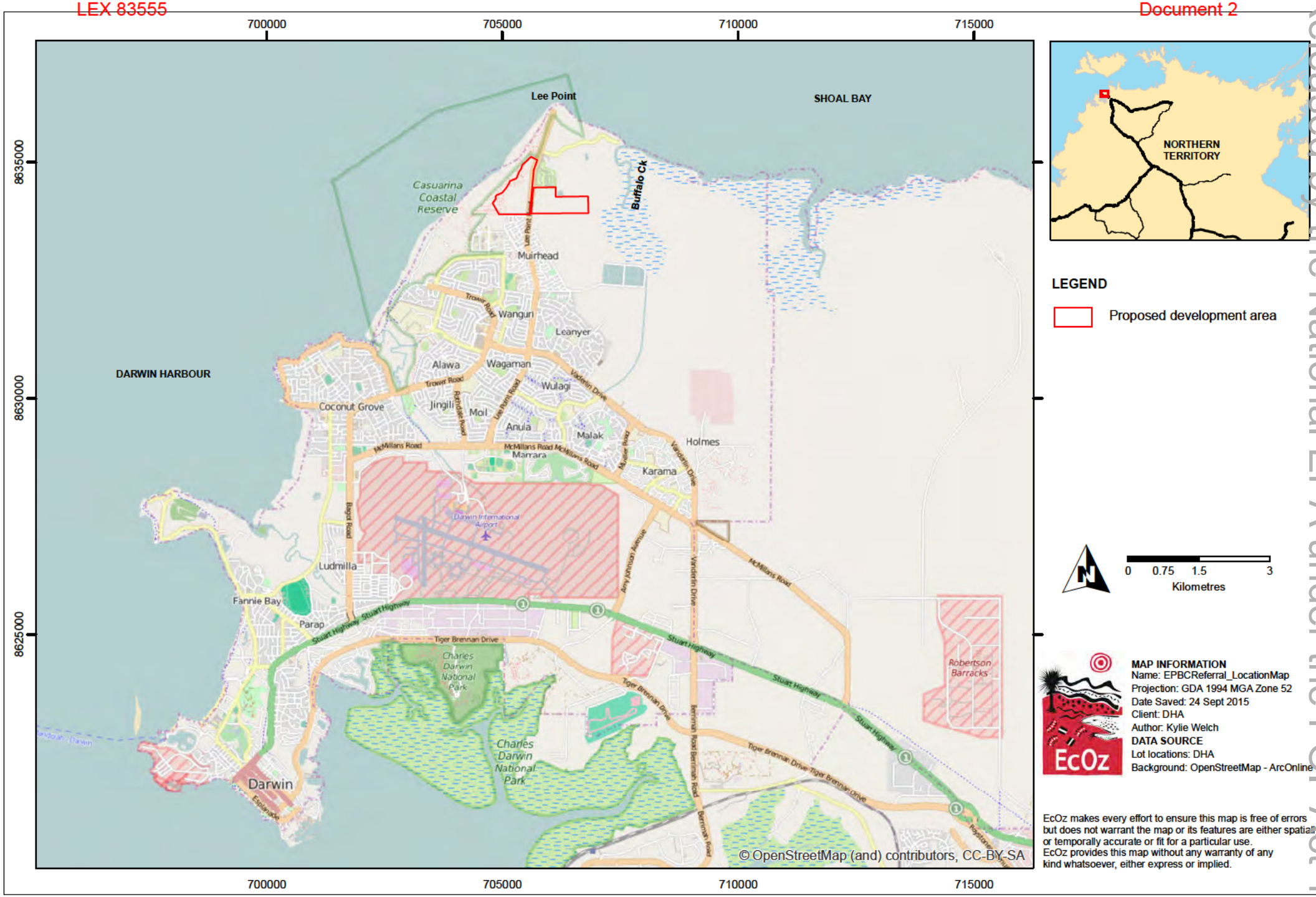
The overall development of 2CRU is expected to be staged over a four year period with the completion of the final stage in 2020. The development of Muirhead North is planned to be constructed in 3-4 stages concurrent with the 2CRU development program.

1.9	**Alternatives to proposed action** Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?	x	No
			Yes, you must also complete section 2.2
1.10	**Alternative time frames etc** Does the proposed action include alternative time frames, locations or activities?	X	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	**State assessment** Is the action subject to a state or territory environmental impact assessment?	X	Decision yet to be made. A Notice of Intent has been submitted to the NT EPA for consideration of assessment requirements.
			Yes, you must also complete Section 2.5
1.12	**Component of larger action** Is the proposed action a component of a larger action?	X	No
			Yes, you must also complete Section 2.7
1.13	**Related actions/proposals** Is the proposed action related to other actions or proposals in the region (if known)?	X	No
			Yes, provide details:
1.14	**Australian Government funding** Has the person proposing to take the action received any Australian Government grant funding to undertake this project?	X	No
			Yes, provide details:
1.15	**Great Barrier Reef Marine Park** Is the proposed action inside the Great Barrier Reef Marine Park?	X	No
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

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Document 2



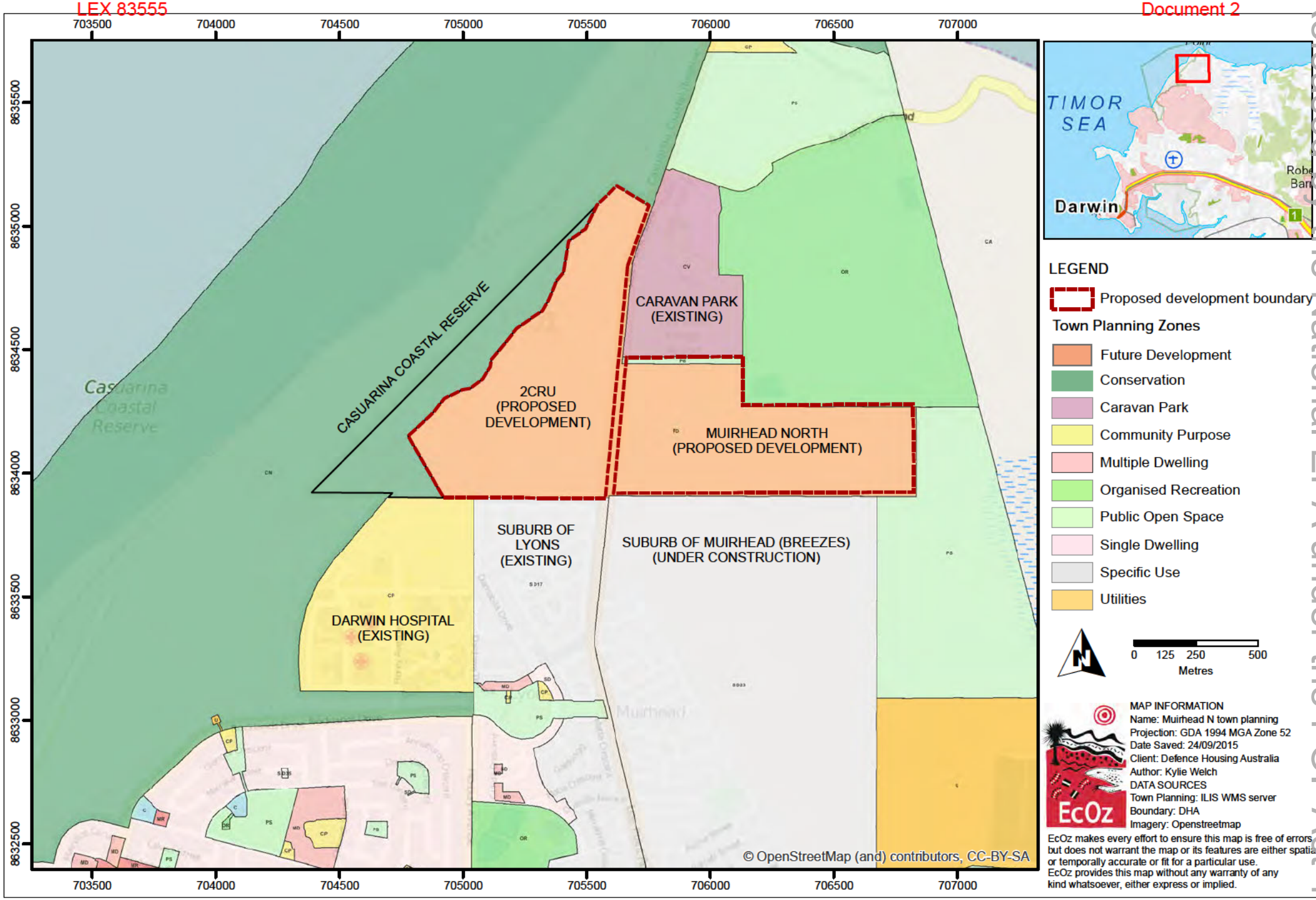
Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ14097 2CRU & Muirhead North NOI - LSA\01 Project Files\EPBCReferral_LocationMap.mxd

Figure 1. Map of project location

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Document 2



MAP INFORMATION
Name: Muirhead N town planning
Projection: GDA 1994 MGA Zone 52
Date Saved: 24/09/2015
Client: Defence Housing Australia
Author: Kylie Welch
DATA SOURCES
Town Planning: ILIS WMS server
Boundary: DHA
Imagery: Openstreetmap

EcOz makes every effort to ensure this map is free of errors but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use. EcOz provides this map without any warranty of any kind whatsoever, either express or implied.

Path: Z:\01 EcOz_Documents\04 EcOz Vantage GIS\EZ14097 2CRU & Muirhead North NOI - LSA\01 Project Files\Muirhead N town planning.mxd

Figure 2. Map **showing the project area and surrounds town planning zones**

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2 Detailed description of proposed action

2.1 Description of proposed action

This section provides details of the proposed development with reference to the Lee Point Area Plan (Attachment A) and DHA's proposed Master Plan for the development (Attachment B).

The proposed action will involve land clearing, earthworks and excavation for the purpose of creating land suitable for construction of residential housing, commercial infrastructure and community facilities; and the provision of transport infrastructure and connection to utilities services. The total land area that will be cleared / disturbed is approximately 111 ha.

Excavations will be required for the provision of civil engineering services including road works, stormwater drainage, sewerage reticulation, water reticulation, electrical provision and telecommunications. Utilities services will be provided through connection to existing power, water and sewage networks that terminate in the suburbs to the south of the proposed development. A stormwater drainage network will be installed and stormwater will be discharged into existing natural drainage lines in the catchments of Buffalo Creek and Sandy Creek.

The sections below provide further details in relation to each aspect of the proposed action.

Residential development

The Area Plan identifies land for residential development at General Urban, Sub-Urban and Rural Residential densities, in addition to medium-high density residential housing within a mixed-use neighbourhood centre. Nominal densities are provided below based on net developable area (i.e. residential areas exclusive of open space, road infrastructure and community facilities):

- Mixed-use Urban Centre: 60 - 80 dwellings per hectare, reflective of intended future development in the form of medium-high density housing as part of the mixed use neighbourhood centre.
- General Urban: 20 - 40 dwellings per hectare to facilitate a range of housing options including detached housing (single dwellings), duplex housing, units, townhouses, row dwellings and apartments.
- Sub-Urban: 10 - 20 dwellings per hectare reflective of a more traditional sub-urban residential area, whilst retaining the ability to provide a range of housing options. Within this zone small-lot housing (less than 400 m^2), townhouses, units and walk-up housing developments to be concentrated in areas of high amenity and/or in close proximity to public open space.
- Rural Residential: Provision of housing development with minimum lot size of 4,000 m^2 due to the need to retain the 1 kilometre biting insect buffer to urban development.

Based on the above densities and servicing requirements, it is anticipated that the area to be developed under the Lee Point Area Plan will accommodate approximately 700 ground-level dwellings, between 30 and 40 rural residential lots, and between 200 and 250 apartments.

Tourism and mixed use centre

The Area Plan identifies a mixed use neighbourhood centre with a main street accessed from Lee Point Road. The main street extends through the site in a north-westerly direction perpendicular to the coastline, terminating near the top of the escarpment located on the 2CRU site. The intended location of the neighbourhood centre seeks to maximise development opportunities in an area which

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provides the best combination of coastal views and access to the coastline, connectivity with Lee Point Road and suburban areas to the south, connectivity with the community precinct and central location to residential development.

The non-residential components of the project will include tourist accommodation and commercial and retail services within the neighbourhood centre located on the western side of Lee Point Road. The tourism component of the proposed development would comprise between 200 and 300 hotel / motel rooms and accommodation apartments and is an initiative of the NT Government that is being facilitated by the Proponent. The proposed commercial developments include a mix of retail aimed at servicing the local and broader community, and local convenience shopping.

The north-western side of the 2CRU site includes land identified for potential tourism and/or community activities, which is intended to facilitate recreational activities that take advantage of the natural setting and opportunities for integration with the Casuarina Coastal Reserve. Potential community purpose uses include a tourism related recreational facility, adventure playground and/or commercial uses such as a café, restaurant or club facility.

The centre is expected to take advantage of the ability to combine residential and non-residential opportunities in accordance with Zone C (Commercial), including medium-high density residential uses above ground level. Varied building heights along the main street, from 4, to 8 to 12 storeys, along with the setback requirements for residential buildings within the Planning Scheme, will prevent overbearing built form and ensure an appropriate transition of scale to urban residential areas. Mixed use development incorporating residential uses will extend the use of the neighbourhood centre beyond daylight hours and outside of the peak tourist season, and increase opportunities for a range of housing options to be co-located with goods and services.

Community purpose

A Primary School and Community Hub is proposed to be located on the eastern side of Lee Point Road. The area will comprise approximately 3.7 ha of land for community development including combined community and education facilities. Potential facilities include a primary school, after school-hours care facilities, pre-school / long day care / kindergarten and child care facilities, with the inclusion of school-specific play space and sports facilities.

Open space

The Area Plan indicates the following primary areas of open space as part of the proposed development:

- Esplanade parkland will run along the lineal extent of the western boundary of the development adjacent to Casuarina Coastal Reserve. The parkland will encompass a shared pedestrian/cycle trail and will provide a buffer between residential housing development and the escarpment edge bordering the expanded Casuarina Coastal Reserve.

- An Active Recreation Reserve (2 ha) will be located adjacent to the Primary School/Community Hub site on the eastern side of Lee Point Rd. This site will provide for larger organised recreation facilities such as an AFL / cricket oval.

- A rainforest patch located in the centre portion of the Muirhead North lot east of Lee Point Rd will be preserved and incorporated into 1.57 ha of open space. This proposal is consistent with the NT Land Clearing Guidelines which recognise rainforest as sensitive or significant vegetation and recommend that clearing of this community be avoided.

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The location and design of additional open space in the form of local and neighbourhood parks will be provided as part of the future master plan / subdivision proposal in accordance with the requirements of the NT Planning Scheme.

Conservation zone

The Area Plan shows an area of 21.8 ha on the 2CRU lot located below the escarpment edge where development is restricted by constraints. This area of land is zoned Conservation (CN) and ownership will be transferred to the NT Government to become part of the Casuarina Coastal Reserve. Excluding this land from development is intended to avoid impacts to the sensitive monsoon rainforest vegetation communities and provide buffers to potential storm surge inundation and biting insect breeding areas.

The Area Plan and Master Plan provide pedestrian access from the developed area through to the Casuarina Coastal Reserve in two defined locations as described below:

- A staircase and access trail will be constructed as an extension to the main street. The trail will traverse through the area zoned Conservation (CN) to provide access to the Casuarina Coastal Reserve and foreshore areas.

- A second pedestrian / cyclist trail will be constructed from the southern portion of the developed area through the area zoned Conservation (CN) and into the Casuarina Coastal Reserve. The trail will traverse through the Reserve to a location on the beach just to the north of the mouth of Sandy Creek.

The trails will be 3.5 m wide.

As requested by NT Parks and Wildlife a new (technical) mountain biking trail is proposed for construction within the area zoned Conservation (CN). The trail will traverse parallel to the coast between the foreshore and escarpment over a distance of approximately 1.5 km. The trail will be 1.5 m wide.

Roads and transportation

Road and transportation requirements for the proposed development are considered in the Engineering Services Report prepared by SMEC (2015) (Attachment D).

Both the 2CRU and Muirhead North sites front Lee Point Road, which currently consists of two lanes, one in each direction**.** It is proposed that Lee Point Road will be upgraded to 9 m wide comprising two 3 m wide lanes and two 1.5 m wide cycle lanes. Three main road linkages are proposed from Lee Point Rd into the development area, two links west into the 2CRU site and one link east into the Muirhead North site.

The Area Plan establishes the intent for a primary local road network that enables efficient access to and between all areas of the estate, with connections to the adjacent suburbs of Lyons, Breezes at Muirhead and the primary connections to Lee Point Road. Road connections heading west from Lee Point Road are generally aligned perpendicular to the coast to allow the creation of focal points at the western extent of the site. The main street will provide an efficient connection to Lee Point Road to encourage vehicles into the neighbourhood centre, whilst retaining fluid vehicle movements for those visiting destinations further north, including the Lee Point Village Resort, Lee Point coastal area and the Buffalo Creek boat ramp.

The intention for primary pedestrian and cycling routes are shown in the Area Plan (refer Attachment A). DHA engagement with the Public Transport Division within the NT Government

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Department of Transport has led to the development of a bus route that connects to the existing Lyons service through Damabila Drive, along the Coastal Esplanade within the 2CRU site and back along Lee Point Road.

Stormwater and drainage

Stormwater and drainage requirements for the proposed development are considered in the Engineering Services Report prepared by SMEC (2015a) (Attachment D). The project area traverses two distinct catchment areas, the western catchment (Sandy Creek) and eastern catchment (Buffalo Creek), which are divided by a north-south ridge west of Lee Point Road.

The stormwater drainage system will comprise a network of sealed roads, roadside kerb and channel, entry pits and piped drainage supplemented by a system of overland flow paths located in a public open spaces and drainage reserves. The Area Plan incorporates two drainage reserves, one located along the south-west boundary of the 2CRU site for treatment of stormwater flows from the western catchment area and one located on the eastern boundary of the Muirhead North site for treatment of stormwater flows from the eastern catchment area.

Design of the stormwater drainage system and structures will be in accordance with the requirements of Australian Rainfall and Runoff (IEAUST) and *City of Darwin Development Guidelines* and will be approved through the Development Application process administered under the *NT Planning Act*.

Western catchment – stormwater drainage

The western catchment (2CRU site) typically falls from east to west with a relatively consistent grade extending from the ridge to the south-west corner of the development area. It is envisaged that a pit and pipe stormwater system will be designed extending along the road network, and will convey stormwater to a detention basin constructed within a drainage reserve located in the south-west corner of 2CRU site. The detention basin will collect all post-development stormwater flow prior to discharge to an existing drainage line that flows into Sandy Creek approximately 1 km upstream from the creek mouth (point of discharge into Darwin Harbour).

Eastern catchment – stormwater drainage

The eastern catchment area combines the western side of the 2CRU site and the entire area of the Muirhead North site. Flows generated from the catchment area will be conveyed to a detention basin constructed within the drainage reserve located at the eastern boundary of the site. The detention basin will collect all post-development stormwater flow prior to discharge to an existing drainage line that flows into Buffalo Creek approximately 4.5 km upstream from the creek mouth (point of discharge into Shoal Bay).

The eastern catchment area within Muirhead North will be further divided into sub-catchments to allow for management of stormwater flows so that pre-development flows can be maintained to the rainforest patch located in the centre of the site. A hydrological review of the rainforest patch prepared by SMEC (2015) (Attachment E) determined the post-developed catchment area that is required to discharge into the rainforest in order to maintain pre-development flows. The remainder of the total catchment will be conveyed via a pit and pipe system around the rainforest, along the top of the Muirhead North site for discharge to the detention basin.

For the purpose of maintaining water quality entering the rainforest patch the post-development 'first flush' flows (i.e. ARI 3-month) will be conveyed into a bio-retention treatment basin before flowing into the rainforest. Flows greater than an ARI 3-month event will be discharge into a grassed overland flow swale, which will then flow to the rainforest.

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Utility services infrastructure

The utilities services infrastructure requirements for the proposed development are considered in the Engineering Services Report prepared by SMEC (2015a) (Attachment D). The report considers the serviceability of the proposed development, including the provision of potable water, reticulated sewerage, power supply and telecommunications.

Sewer

Reticulated sewerage services can be provided by connection to existing services located in the adjacent suburbs of Lyons and Breezes Muirhead with only minor upgrades required to ensure the capacity of these services to receive the anticipated loads from the new urban areas.

The Leanyer Sewerage Treatment Plant is located approximately 1.4 km south-east of the proposed development. Consultation with Power and Water Corporation (PWC) has indicated that the LSTP will have capacity to service the proposed development.

Water

The water supply authority for the development is PWC and the servicing of the land will be based on the PWC "*Guidelines for Developers and Consulting Engineers for the Provision of Water and Sewerage Infrastructure in Subdivisions*" manual. The existing water supply servicing the area is located in the adjacent road reserve of Lee Point Road and incorporates a private DN300 main servicing the Caravan Park along with a DN100 reticulation main. These water supply mains are insufficient in capacity to service the proposed development and a number of augmentation works are proposed within the existing utilities corridor. Subject to the planned undertaking of augmentation works, the Engineering Services Report (SMEC 2015a) concludes that the site can be connected to reticulated potable water mains.

Power

The 2CRU site is anticipated to require 3.6 MVA of load to power 400 residential lots and the proposed hotel accommodation facilities. The Muirhead North site is anticipated to require 2.5 MVA of load to power 220 residential lots and the potential school facilities. The required electrical load is expected to exceed the capacity in the Muirhead and Lyons existing circuits.

It is understood that PWC are working towards the design and construction of a Lee Point Zone Substation with an estimated completion date of 2017 - 2018. On this basis, further consultation will be required with PWC to identify the constraints and timing around servicing the Muirhead North development. Following determination of the base supply, design of the internal HV and LC reticulation will be undertaken.

Telecommunications

National Broadband Network (NBN Co.) have earmarked the area as a high priority and the rollout of services has commenced. Implementation and rollout within the development site will be subject to application and formal agreement with the NBN Co, and compliant pit and pipe infrastructure will be funded by the developer and designed / installed in conjunction with electrical reticulation.

2.2 Alternatives to taking the proposed action

None considered.

2.3 Alternative locations, time frames or activities that form part of the referred action

Not applicable

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2.4 Context, planning framework and state / local government requirements

The proposed Lee Point master-planned residential development will be primarily assessed under the *Planning Act (NT)*. The Act establishes the NT Planning Scheme (NTPS) and development assessment and approvals process that DHA are required to comply with in order to proceed with the proposed action.

The proposed development must also comply with NT environment and heritage legislation as described in the sub-sections below. At a local government level the *City of Darwin Subdivision and Development Guidelines* are applicable and the City of Darwin will be involved in assessing future development applications submitted for approval under the *NT Planning Act* and approval of certain works within Council's jurisdiction.

Planning Approvals

The NTPS was amended in September 2015 to introduce zone Future Development (FD) to Lot 4873, Town of Nightcliff (2CRU); and to rezone Lot 9370 Town of Nightcliff (Muirhead North) from zone SD26 to Future Development (FD). The NTPS Part 8 was also amended to include the Lee Point Area Plan and Planning Principles, which are provided at Attachment A to this referral.

The development will be required to comply with the development assessment and approvals process established under the *NT Planning Act*. The master plan and subdivision proposals will be further developed by DHA and ultimately a Development Application will be lodged with the Development Consent Authority (DCA). Upon the completion of the various stages of development within the site, the land will be rezoned from FD to the relevant Planning Scheme Zones likely to include (but not necessarily limited to):

- TC (Tourist Commercial) and C (Commercial)
- SD (Single Dwelling), MD (Multiple Dwelling), MR (Medium Density Residential) and HR (High Density Residential)
- CP (Community Purpose)
- PS (Public Open Space) and OR (Organised Recreation)
- CN (Conservation)
- SU (Special Use).

NT environment and heritage legislation and approvals

Other NT legislation under which approvals are required or considered against is summarised below.

Waste Management and Pollution Control Act

It is not anticipated that the proposed development would not require approval or licensing under the *Waste Management and Pollution Control Act (WMPC Act) (NT)*, however, the general environmental duty provisions of the Act are applicable.

Water Act

The proposed development is located in the Darwin Water Control District established under the *Water Act*. No extraction of surface water or groundwater is proposed, and consultation with PWC has occurred in relation to meeting any additional demand for water resources. The proposed action does not require licensing under the *Water Act*.

Territory Parks and Wildlife Conservation Act

The only species protected under the *TPWC Act* that is known to occur in the development area is the Darwin Cycad *Cycas armstrongii*. A permit to take or interfere with wildlife will be required prior to any works to salvage or clear Cycad plants.

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Weed Management Act

A weed survey of the 2CRU and Muirhead sites has been undertaken. Mapping identifies the presence of a number weed species listed under the Act, with Gamba Grass being the most abundant of the declared species present. The general duties provisions of the *NT Weeds Management Act* will be applicable to the proposed development.

Heritage Act

Various cultural heritage assessments have been undertaken across the 2CRU and Muirhead North sites over the past 5 years. Aboriginal archaeological objects protected under the *Heritage Act* were identified on the 2CRU site. The proponent intends to apply for a Works Permit as these objects will be disturbed or destroyed by the proposed development.

In addition there are a number of sites with identified military heritage values located on both the 2CRU and Muirhead North sites. These sites are not afforded any statutory protection under the *Heritage Act;* however, the proponent intends to work with NT Heritage Branch to develop appropriate conservation strategies for the heritage sites along Lee Point Road referred to as the 'Lee Point Bunkers' and 'Konfrontasi Cruciform.

Management of potential impacts to cultural heritage is addressed in addressed in Section 4 of this Referral.

NT Aboriginal Sacred Sites Act

All Aboriginal sacred sites recorded or not, are protected under the *Northern Territory Aboriginal Sacred Sites Act*. The Aboriginal Areas Protection Authority (AAPA) is the body established under the Act to be responsible for the protection of sacred sites. A Register Inspection lodged with the AAPA did not identify any known sacred sites in the area proposed for development; and the proponent intends to obtain an Authority Certificate from the AAPA prior to commencement of works.

City of Darwin Requirements

The proposed development will occur within the City of Darwin Council area. The Council is not responsible for issuing subdivision and development permits; however, the *NT Planning Act* requires that Council to be formally advised of development applications within the municipality. This allows Council the opportunity to comment on development applications within the public exhibition period defined under the Act.

Council has a wide range of responsibilities under the *Northern Territory Local Government Act (LGA)* in addition to its role under the *Planning Act*. Under the *LGA*, Council is specifically responsible for:

- Maintenance and management of most public roads and verges
- Traffic control
- On street and off street car parking;
- Footpaths and cycle-ways
- Foreshore protection
- Stormwater drainage
- Waste collection.

In the case of development of existing allotments, Council has the right under the *LGA* to require the upgrading of all assets such as roads and drains, street and public lighting and landscaping of verges or parks or public spaces.

City of Darwin Subdivision and Development Guidelines (Darwin City Council 2005) should be used by anyone wanting to develop or redevelop property within Darwin. The guideline provides council

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philosophies and policies when undertaking development works. It includes the planning process, construction requirements, maintenance and approvals.

In accordance with the advice provided in the Guidelines, the proponent commenced engaging with Council early in the project planning phase and intends to continue engagement with the Council as the project progresses through the development planning and approvals process. Details of consultation with Council to date are provided in Attachment C.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

Development proposals assessed under the *Planning Act (NT)* require referral under the *Environmental Assessment Act* (*EA Act*) (NT) if they have potential to cause significant impact to the environment. The *EA Act* (NT) is administered by the NT EPA.

A Notice of Intent (NOI) was lodged with the NT EPA on 7 September 2015 for determination of whether or not the proposed action requires assessment under the *EA Act*. As required by clause 8(I) of the *Environmental Assessment Administrative Procedures* the NT EPA will review the NOI in consultation with Northern Territory Government (NTG) advisory bodies. Following assessment of the NOI the NT EPA will notify DHA as to whether or not formal assessment is required under the *EA Act*. If assessment is required, the proponent may be directed to prepare either a Public Environment Report (PER) or Environmental Impact Statement (EIS).

If no further assessment is required, the NT EPA decision and recommendations from the review of the NOI will be forwarded to the Proponent and the NT Government Department of Lands Planning and Environment for consideration in decision-making in relation to future development applications submitted under the *Planning Act*.

The NT EPA contact details are provided below:
Dr Alana Mackay
Manager Environmental Assessments
(08) 8924 4020
Alana.mackay@nt.gov.au

2.6 Public consultation (including with Indigenous stakeholders)

DHA is committed to engaging with community and government stakeholders throughout the planning and design phases of the proposed development. A log of stakeholder engagement undertaken to date is provided in Attachment C.

In addition to the formal public comment opportunities provided through the processes of the *NT Planning Act,* engagement with residents in areas surrounding the proposed development has occurred through community newsletters and information sessions held in August and December 2014 at the Lyons Community Centre. Details of community engagement undertaken to date are also collated in Attachment C.

2.7 A staged development or component of a larger project

Not applicable – the proposed action is not a staged development or component of a larger project.

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3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

There are no World Heritage Properties in proximity to the proposed action.

Nature and extent of likely impact

Not applicable

3.1 (b) National Heritage Places

Description

There are no National Heritage Places in proximity to the proposed action.

Nature and extent of likely impact

Not applicable

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

There are no RAMSAR wetlands in the Darwin region.

Nature and extent of likely impact

Not applicable

3.1 (d) Listed threatened species and ecological communities

Description

Desktop and field ecological assessments undertaken in relation to the proposed development area are summarised in Attachment F. The assessments identified one EPBC listed threatened species, Black-footed Tree-rat (*Mesembriomys gouldii*) as 'likely' to occur within the terrestrial environments that constitute the project area. This species has not been recorded there; however, it has been recorded in previous surveys of adjacent analogue sites (Rankmore et al. 2001).

In addition, five EPBC listed threatened marine species (3 turtles and 2 fish) and two listed threatened migratory shorebird species have been recorded in the coastal and marine environments that adjoin the project area. These species are listed below:

- Olive Ridley (*Lepidochelys olivacea*)
- Green Turtle (*Chelonia mydas*)
- Flatback Turtle (*Natator depressus*)
- Dwarf Sawfish (*Pristis clavata*)
- Green Sawfish (*Pristis zijsron*)

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- Curlew Sandpiper (*Calidris ferruginea*)
- Eastern Curlew (*Numenius madagascariensis*).

The following EPBC listed threatened species were not confirmed to occur within or surrounding the project area and have not been recorded previously; however, applying the precautionary principle they may occur due to the presence of suitable habitat conditions:

- Bare-rumped Sheath-tailed Bat (*Saccolaimus saccolaimus*)
- False Water Mouse (*Xeromys myoides*)
- Freshwater Sawfish (*Pristis microdon*).

Table 1 below summarises the likelihood of occurrence assessment results for each EPBC listed threatened species identified during the desktop study as occurring in the Darwin region. The complete assessment for all EPBC listed species is provided in Attachment F.

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Table 1 Likelihood of occurrence assessment for EPBC listed Threatened species.

Criteria	Threatened Species	EPBC status	TPWC status
KNOWN	**Reptiles**		
	Olive Ridley (*Lepidochelys olivacea*)	EN	VU
	Green Turtle (*Chelonia mydas*)	VU	NT
	Flatback Turtle (*Natator depressus*)	VU	DD
	Birds		
	Curlew Sandpiper (*Calidris ferruginea*)	CR	VU
	Eastern Curlew (*Numenius madagascariensis*)	CR	VU
	Fish		
	Dwarf Sawfish (*Pristis clavata*)	VU	VU
	Green Sawfish (*Pristis zijsron*)	VU	VU
LIKELY	**Mammals**		
	Black-footed Tree-rat (*Mesembriomys gouldii*)	EN	VU
	Fish		
	Freshwater Sawfish (*Pristis microdon*)	VU	VU
MAY	**Mammals**		
	Bare-rumped Sheathtail Bat (*Saccolaimus saccolaimus*)	CR	NT
	False Water Mouse (*Xeromys myoides*)	VU	DD
UNLIKELY	**Reptiles**		
	Mertens' Water Monitor (*Varanus mertensi*)	-	VU
	Loggerhead Turtle (*Caretta caretta*)	EN	VU
	Leatherback Turtle (*Dermochelys coriacea*)	EN	CR
	Hawksbill Turtle (*Eretmochelys imbricata*)	VU	VU
	Fish		
	Speartooth Shark (*Glyphis glyphis*)	CR	VU
	Northern River Shark (*Glyphis garricki*)	EN	EN
	Great White Shark (*Carcharodon carcharias*)	VU	-
	Whale Shark (*Rhincodon typus*)	VU	DD
	Birds		
	Red Goshawk (*Erythrotriorchis radiatus*)	VU	VU
	Gouldian Finch (*Erythrura gouldiae*)	EN	VU
	Christmas Island Frigatebird (*Fregata andrewsi*)	VU	LC
	Partridge Pigeon (*Geophaps smithii smithii*)	VU	VU
	Masked Owl (northern) (*Tyto novaehollandiae*)	VU	VU
	Mammals		
	Blue Whale (*Balaenoptera musculus*)	EN	DD
	Northern Spotted Quoll (*Dasyurus hallucatus*)	EN	CR
	Humpback Whale (*Megaptera novaeangliae*)	VU	LC

Status key: - = Not Listed, CR = Critically Endangered, DD = Data Deficient, EN = Endangered, NT = Near Threatened, VU = Vulnerable, LC = Least Concern

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The remainder of this section focuses on describing the potential importance of the EPBC listed Threatened species populations that are 'Known' or 'Likely' to occur in and surrounding the area proposed for development. For the two EPBC listed species that 'May' occur despite never being recorded in the area, Bare-rumped Sheathtail Bat (*Saccolaimus saccolaimus nudicluniatus*) and False Water Mouse (*Xeromys myoides*), a precautionary approach has been applied and the potential for an 'important population' is discussed.

In accordance with the EPBC Guidelines, for Critically Endangered and Endangered species, any occurrence of the species within the project footprint constitutes a population, and all populations are 'important'. For Vulnerable species, an 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity
- Populations that are near the limit of the species' range.

SPECIES THAT ARE KNOWN OR LIKELY TO OCCUR WITHIN OR SURROUNDING THE PROJECT AREA

Black-footed Tree-rat *(Mesembriomys gouldii)* – LIKELY TO OCCUR

The Black-footed Tree-rat is listed as Endangered under the *EPBC Act*. The exact driver for the species decline is unknown, but is thought to be related to a changed fire regime which has modified prime habitats (Hill 2012). Within the Darwin area this species is known to occupy large territories (7-11 ha) and show a clear preference for using hollows in the Darwin Stringybark *Eucalyptus tetrodonta* (Griffiths et al. 2002), which is a common tree species recorded throughout the proposed development area.

The Black-footed Tree-rat has not been recorded in the proposed development area but is known from Casuarina Coastal Reserve (Chatto pers. comm. 2015) and from a previous survey of adjacent analogue sites (Rankmore et al. 2001). The location of Casuarina Coastal Reserve in relation to the project area is shown in Figure 2.

In 2005 the Black-footed Tree-rat was considered to have remained relatively abundant in the Darwin rural area (Price et al. 2005). Recent survey data suggests this is still the case, with records from Darwin Airport in 2013 and 2014 (records from EcOz biodiversity surveys for DIA), and from Charles Darwin NP, the RAAF base at Darwin Airport and Buffalo Creek (Stokeld & Gillespie 2015).

Given the large territories held by this species it seems reasonable to assume that the local population, known from records within the Casuarina Coastal Reserve, ranges across the greater Lee Point area (incorporating the project area). If the species was to occur in the project area, it would be considered an 'important population' as due to the species being listed as Endangered any occurrence constitutes a population, and all populations are 'important'.

Marine Turtles - Olive Ridley (*Lepidochelys olivacea*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Natator depressus*) – BREEDING KNOWN TO OCCUR

Casuarina Beach, which is located within the Casuarina Coastal Reserve adjacent to the project area, has been monitored by Parks and Wildlife for turtle nesting each year since the mid-1990's, with all nests being recorded from the 1999 season to present (Chatto & Baker 2008). Of 155 nests recorded to 2014 (data from two years are missing), 151 have been Flatback Turtles, three Olive Ridley's and a single Green Turtle (noting this Green Turtle nest was the only one recorded between Darwin and the West Australian border during a detailed survey of the NT coastline).

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Turtle nesting occurs anywhere between Rapid Creek and the Buffalo Creek side of Lee Point, which includes the section of Casuarina Beach adjacent to the project area. Once consistent monitoring of Casuarina Beach began in 1999, the number of Flatback Turtle nests recorded during each dry season (between March and November) varied from five (in 2012) to 20 (in 2006). Between the 1999 and 2006 seasons nests were laid in all months of the year from March to November. Most nesting occurred in the month of September (39), followed by August (26), October (18), June (17), May (15) and July (15). Fewer nests were found in March (7) and April (1).

Olive Ridley turtles are listed as Endangered under the *EPBC Act*. There are three nesting records (out of 155 total records) of this species on Casuarina Beach, which indicates this species nests infrequently in the area. The occurrence of three Olive Ridley nests on Casuarina Beach in the past 15 years constitutes an important population as due to the species being listed as Endangered any occurrence constitutes a population, and all populations are 'important'.

Green Turtles and Flatback Turtles are both listed as Vulnerable under the *EPBC Act.* There are nesting records of these species (predominantly Flatback) on Casuarina Beach, with between 7 and 20 nests being recorded each year since 1999. Whilst there is significance in the fact that marine turtles are nesting on a beach in a capital city, the number of nesting records compared to other locations along the NT coastline does not indicate that the populations present are likely to be key breeding populations; neither are the populations isolated in a way that would make them important for maintaining genetic diversity and the area is not at the extent of the species range.

Dwarf Sawfish (*Pristis clavata*), Green Sawfish (*Pristis zijsron*) – KNOWN TO OCCUR

Freshwater Sawfish (*Pristis microdon*) – LIKELY TO OCCUR

The three species of sawfish – Dwarf, Green and Freshwater – occur in the tropical waters of Australia and, for some species, South-East Asia (Cavenagh et al. 2003). These species are all listed as Vulnerable under the *EPBC Act* and a draft Recovery Plan has been prepared (DoE 2014).

They inhabit both marine and estuarine habitats, entering estuarine or fresh waters to breed during the wet season and moving into marine waters following the wet season (Peverell 2005). The main threatening processes for sawfish in Australia are fishing (targeted and incidental capture) and habitat degradation (Cavanagh et al. 2003).

Two specimens of Dwarf Sawfish (*Pristis clavata*) were recovered from Buffalo Creek east of the project area in 1997, as were five specimens of Green Sawfish (*Pristis zijsron*) – four in 1997 and one in 2002. Freshwater Sawfish (*Pristis microdon*) has not been recorded in the area, but has similar habitat requirements and so seems likely that it may occur in Buffalo Creek. There is a paucity of records of these species in the NT; the fact that there are records of this species in the area maybe a consequence of concentrated fishing activity or because the area is important habitat for sawfish.

Applying the precautionary principle the assumption is made here that Sawfish are Likely to occur in Buffalo Creek at times. The location of Buffalo Creek in relation to the project area is shown in Attachment G Figure 4-8.

Any population of sawfish occurring in Buffalo Creek would be considered 'important' as it may constitute a population that is necessary for maintaining genetic diversity. Sandy Creek is much shorter and more tidal than Buffalo Creek and is therefore unlikely to constitute suitable habitat for any of the sawfish species.

Shorebirds - Curlew Sandpiper *(Calidris ferruginea)* and Eastern Curlew *(Numenius madagascariensis)* – KNOWN TO OCCUR

The Curlew Sandpiper (*Calidris ferruginea*) and Eastern Curlew (*Numenius madagascariensis*) are listed

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as Critically Endangered under the *EPBC Act*. These species have been recorded at the mouth of Sandy Creek, which is located in the section of the Casuarina Coastal Reserve that adjoins the project area. Further details of the Sandy Creek migratory shorebird habitat is provided in section 3.1 (e) of this referral and the location of the shorebird site in relation to the proposed development is shown in Figure 3.

The occurrence of the Curlew Sandpiper and Eastern Curlew at the mouth of Sandy Creek constitutes and 'important' population as due to the species being listed as Critically Endangered any occurrence constitutes a population and all populations are 'important'.

SPECIES THAT MAY OCCUR WITHIN OR SURROUNDING THE PROJECT AREA

There are a further two EPBC listed threatened species that have not been confirmed as occurring within or surrounding the project area; however, they may occur based on the presence of suitable habitat conditions. The sections below assess the potential importance of any populations should they occur in the area.

Bare-rumped Sheathtail Bat (*Saccolaimus saccolaimus nudicluniatus*)

The Bare-rumped Sheathtail Bat is listed as Critically Endangered under the *EPBC Act* due to a decline in abundance (Milne et al. 2009). The species has never been recorded in the proposed development area, but is known to utilise the type of common *Eucalyptus tetrodonta* and *E. miniata* woodland that is present on both the 2CRU and Muirhead North sites. Within the Northern Territory this species is known from a few records from Pandanus woodland and eucalypt tall open forests (Friend *et al.* 1986; Churchill 1998; Milne et al. 2009) where it roosts in tree hollows and caves (Duncan et al. 1999).

The most recent local records of this species came from Howard Springs in December 2006, where a dead tree containing a colony of about 100 individuals was blown over during a storm (Milne *et al.* 2009). The surrounding area was dominated by *E. tetrodonta* and *E. miniata* woodland, which is a very common and widespread habitat in the greater Darwin region and across the Top End of Australia. This colony is considered highly significant as it is the only known roost site in the Northern Territory and contained neonates and juveniles (Milne et al. 2009).

A population of a Critically Endangered species' is defined under the *EPBC Act* as an occurrence of the species in a particular area. There are no recorded occurrences of this species in the area of the proposed development; however, applying the precautionary principle, due to the presence of a habitat type utilised by the species and the previous record of a breeding habitat in the Darwin region, the species may roost and/or feed in the area.

Given the species have a very sporadic distribution and the area of *E. tetrodonta* and *E. miniata* woodland within the project area is relatively small, the likelihood that a nesting site would occur is considered to be low.

False Water Mouse *(Xeromys myoides)*

The False Water Mouse (*Xeromys myoides*) is listed as Vulnerable under the *EPBC Act* due to a decline in abundance (Milne et al. 2009). The species requires mangrove communities and associated saltmarsh, sedgelands, clay pans, heathlands and freshwater wetlands with intact hydrology that provide adequate nest sites and prey resources (DEWHA 2009). The removal and degradation of habitat as a result of development actions is the principal threat to the survival of the False Water Mouse (Department of Environment 2015a). There is a recovery plan for this species (DERM 2009).

False Water Mouse has never been recorded in the proposed development area and would not occur there as there is no suitable habitat. The closest habitats to the development area that are potentially

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utilised by this species occur on the western bank of Buffalo Creek where there are mangroves and tidal salt-flats. The species has never been recorded in this area; and in the NT it is known only from ten records at six sites, including one in East Arnhem Land (Woinarski 2007), although many of these records are questionable (Trembath pers. comm. 2015).

There are no recorded occurrences of this species in the area; however, applying the precautionary principle, due to the presence of habitat that is utilised by the species, the False Water Mouse may occur in the coastal environments to the east of the project area. Given the sporadic distribution of the species and the fact that the Darwin area is comparatively well surveyed, the likelihood that the species occurs is considered to be low.

Nature and extent of likely impact

Black-footed Tree-rat *(Mesembriomys gouldii)*

The proposed development will not impact on any known 'important populations' of the Black-footed Tree-rat. However, as the home range of the population recorded in the Casuarina Coastal Reserve is likely to extend into the project area land clearing for the proposed development will remove habitats that are likely to be utilised by this species.

The project area is located within the urban boundaries of Darwin where, as is typical of urbanised areas, native fauna is generally restricted to reserved areas and/or larger land holdings. The 111 ha of land that will be cleared for the project occurs contiguous with the reserved habitats within the Casuarina Coastal Reserve where the Black-footed Tree-rat has been previously recorded, and these reserved habitats will be buffered from direct disturbance by the 21.8 ha of land within 2CRU that DHA has set aside to be zoned Conservation (CN) for expansion of the Casuarina Coastal Reserve. Therefore whilst it is expected that the development will further restrict the range of Black-footed Tree-rats in the local area, the proposed action is not expected to impact the local population as it is already largely confined to reserved areas as a result of urbanisation.

If the species is present in the development area at the time of land clearing there is potential for injury or death to occur. DHA proposes to engage a fauna spotter-catcher during land clearing and have demonstrated their ability to implement this control measure through their contractors on the previously approved Muirhead developments immediately to the south of the project area. This approach is expected to ensure that the proposed development does not negatively impact on any local populations of the Black-footed Tree-rat.

Marine Turtles - Olive Ridley (*Lepidochelys olivacea*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Natator depressus*)

The proposed development does not involve direct disturbance of beaches where marine turtle species are known to nest. It is anticipated that the beach areas near to the proposed development area will receive a higher level of use by people than is currently the case and there will be a general increase in light emissions from the residential areas and tourism precinct. If future development proposals include lighting on multi-storey buildings that may be visible from the beach the lighting will be designed in consultation with local marine turtle specialists at Charles Darwin University (CDU). It is expected that Parks and Wildlife will continue to monitor nesting activity and collect / protect as they currently do, and consequently the proposed development should not alter nesting success of the individuals that do nest along Casuarina and Lee Point Beaches.

Dwarf Sawfish (*Pristis clavata*), Green Sawfish (*Pristis zijsron*), Freshwater Sawfish (*Pristis microdon*) -

The proposed development does not involve direct disturbance of marine habitats utilised by Sawfish, however, the development area is within the catchment of the Buffalo Creek, from which there are species records. Stormwater from the eastern catchment of the proposed development could introduce

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increased sediment, contaminants and / or nutrients into the creek and degraded water quality could impact on Sawfish, although it should be noted that the Sawfish occurrence in Buffalo Creek is in an area where existing water quality is known to be poor due to discharge from the Leanyer Sanderson Wastewater Treatment Plant.

The key contaminant of concern from urban runoff is nutrients; and sediments are of concern during construction. Nutrient fate modelling undertaken for the Muirhead subdivision to the south (Aurecon 2013) and supplied to the Department of Environment (DoE) (the DEWHA) as preliminary documentation for the Muirhead (Breezes) subdivision (ref EPBC2010/5525), indicated that there is the potential for annual nutrient loads into Buffalo Creek to increase if the impact of urban development on stormwater and increased in-flows to the Leanyer Sanderson Wastewater Treatment Plant are not mitigated.

Modelling of water quality in-flows to Buffalo taking into account the PWC upgrade of the sewage treatment plant and implementation of a Stormwater Management Plan that includes Water Sensitive Urban Design (WSUD) principles (AURECON 2013), indicated that water quality of in-flows to Buffalo Creek would improve compared to the current (business-as-usual) scenario. DHA and their consultant engineers SMEC incorporated WSUD into the Muirhead Breezes development to the south; and similar measures have been incorporated into the Master Plan for the proposed development of the 2CRU and Muirhead North sites. The development Master Plan (refer Attachment B) shows a series of WSUD treatment trains and retarding basins designed to reduce the amount of sediment leaving the site and assist in reducing nutrient load. Based on the modelling prepared by AURECON (2013) these measures should be sufficient to prevent any impact on water quality in Buffalo Creek.

The Darwin Harbour Region Report Card (2014) indicates that the quality of water in Buffalo Creek has improved since last year but the creek still has consistently poor water quality due mainly to effluent discharged from the Leanyer Sanderson Wastewater Treatment Plant, compounded by the poor flushing of the creek (Fortune 2015). Over the monitoring period assessed in the report parts of the upper catchment were under construction as part of the Muirhead Breezes development, in which DHA have incorporated WSUD. Despite the urban development activities occurring in the catchment the water quality monitoring and reporting undertaken by DLRM in Buffalo Creek over the past 3 years has not attributed poor water quality in the creek to urban development.

Subject to implementation of the above-mentioned measures (which have been tested at the Muirhead Breezes development) the proposed action is not expected to cause a measurable change to water quality parameters in Buffalo Creek and therefore is not expected to impact on any Sawfish that utilise the area. The Proponent is committed to implementing a water quality monitoring program that will assess the effectiveness of the ESCP and WSUD measures implemented at the site.

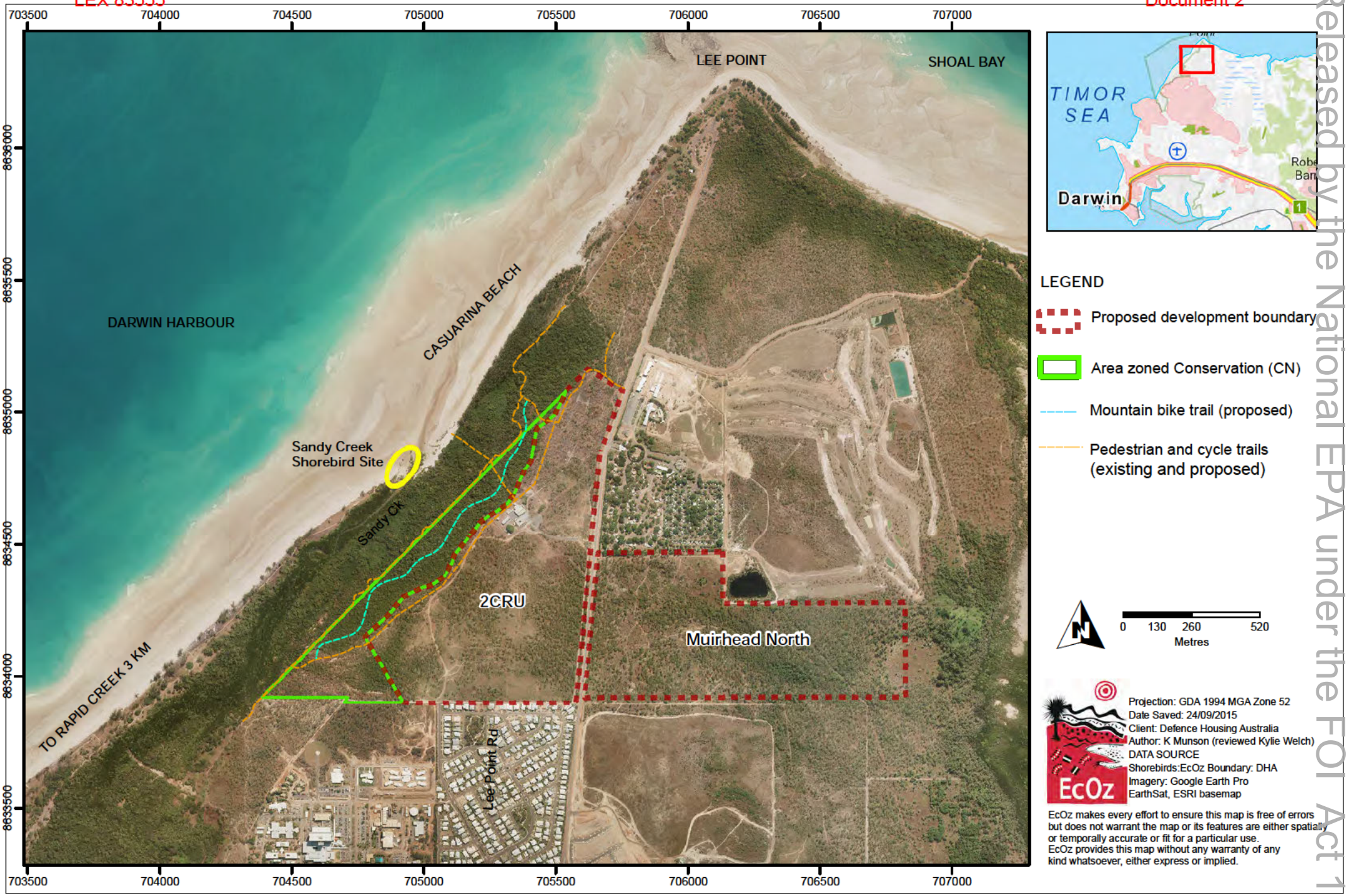
Shorebirds - Curlew Sandpiper *(Calidris ferruginea)* and Eastern Curlew *(Numenius madagascariensis)* –

The potential impacts of the proposed action on Migratory shorebirds, including the Curlew Sandpiper and Eastern Curlew, which are known to utilise the area around the mouth of Sandy Creek is discussed in section 3.1 (e) below. The location of the Sandy Creek shorebird site in relation to the project area is shown in Figure 3.

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Document 2



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Figure 3. Map showing location of Casuarina Beach **(used for turtle nesting)** and Sandy Creek **(**shorebird roost **)**

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3.1 (e) Listed migratory species

Description

The potential occurrence of migratory shorebirds, marine migratory species, terrestrial migratory species and wetland migratory species within and surrounding the area proposed for development is described in the sections below.

Migratory shorebirds

There are two significant shorebird sites within or near to the proposed development area – Sandy Creek mouth and Buffalo Creek mouth (refer Figure 3). Whilst the proposed development is not expected to have a direct impact on either creek, its proximity to Sandy Creek, and the creek mouth in particular, mean that potential impacts on the Sandy Creek mouth shorebird site must be considered.

Historic shorebird counts for Darwin Harbour (including Sandy Creek), which were used to identify the species and numbers of birds that utilise the Sandy Creek area. The BirdLife Australia database contains records from 89 shorebird surveys undertaken at Sandy Creek Point between 2009 and 2015. A total of 20 migratory shorebird species have been recorded at Sandy Creek – three of these have been recorded no more than twice (Asian Dowitcher, Curlew Sandpiper and Oriental Pratincole).

The largest congregation of shorebirds recorded at Lee Point is 5,376 and the largest number of species recorded in a single count is 15. Wet season surveys yield more birds and more species than in the Dry season, which is coincident with the migratory behaviour of these species. Generally the largest counts were recorded in October to January, and species diversity was highest in September to December.

The most abundant species are Great Knot, Greater Sand Plover and Red Knot. Whilst not occurring in as large numbers as the more abundant species, Eastern Curlew, Grey Plover, Sanderling and Whimbrel were frequently counted in surveys.

Migratory shorebirds feed in loose congregations along the sand flats of Casuarina foreshore. At high tide, Buffalo Creek, Lee Point, Sandy Creek, Nightcliff Rocks and East Point are the common shorebird roosts in this area of Darwin Harbour. Roost site utilisation depends on factors such as the height of the tide, the wind direction, and disturbances such as humans and dogs. When roosting at Sandy Creek, migratory shorebirds typically select the western side of the creek mouth.

All migratory shorebirds are protected under the *EPBC Act*, and two of the species recorded at Sandy Creek, the Curlew Sandpiper and Eastern Curlew, are also listed as Critically Endangered. In 2012 the Northern Territory Government amended the list of threatened fauna to include a number of migratory shorebirds whose populations are decreasing, primarily because of impacts on feeding habitat overseas. The statuses and the maximum counts of each species of migratory shorebirds recorded at Sandy Creek are listed in Table 1.

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Table 1. Status, maximum counts and *EPBC Act* important habitat criteria (0.1% of the flyway population) for shorebird species at Sandy Creek

Species	Scientific name	EPBC status	TPWC status	No. of surveys counted	0.1%	Max. no. counted
Asian Dowitcher	*Limnodromus semipalmatus*	-	VU	1	24	1
Bar-tailed Godwit	*Limosa lapponica*	-	VU	39	325	16
Black-tailed Godwit	*Limosa limosa*	-	NT	6	160	20
Common Greenshank	*Tringa nebularia*	-	LC	24	60	6
Common Sandpiper	*Actitis hypoleucos*	-	LC	23	25	3
Curlew Sandpiper	*Calidris ferruginea*	CR	VU	2	180	1
Eastern Curlew	*Numenius madagascariensis*	CR	VU	64	38	7
Great Knot	*Calidris tenuirostris*	-	VU	43	375	4215
Greater Sand Plover	*Charadrius leschenaultii*	-	VU	55	110	1300
Grey Plover	*Pluvialis squatarola*	-	NT	56	125	23
Grey-tailed Tattler	*Tringa brevipes*	-	NT	11	50	11
Lesser Sand Plover	*Charadrius mongolus*	-	VU	8	140	20
Oriental Plover	*Charadrius veredus*	-	LC	1	70	1
Red Knot	*Calidris canutus*	-	VU	26	220	590
Red-necked Stint	*Calidris ruficollis*	-	LC	28	325	96
Ruddy Turnstone	*Arenaria interpres*	-	NT	24	35	35
Sanderling	*Calidris alba*	-	LC	60	22	120
Sharp-tailed Sandpiper	*Calidris acuminata*	-	LC	4	160	17
Terek Sandpiper	*Xenus cinereus*	-	LC	4	60	2
Whimbrel	*Numenius phaeopus*	-	NT	53	100	16

LC = Least Concern; NT = Near Threatened; VU = Vulnerable; CR = Critically Endangered

The *EPBC Act Policy Statement 3.21* (DEWHA 2009) defines the criteria for 'important habitat for migratory shorebirds' as sites that support any of the following:

- **At least 0.1 per cent of the flyway population of a single species:** There are four species at Sandy Creek for which this is the case a highlighted red in the above table – Great Knot, Greater Sand Plover, Red Knot and Sanderling.

- **At least 2000 migratory shorebirds:** There are nine records of shorebird congregations greater than 2000 birds at Sandy Creek (and a tenth record of 1972 birds).

- **At least 15 migratory shorebird species:** There is one instance of 15 species counted during one survey at Sandy Creek, one instance of 14 species, and five instances of 13 species.

Under each of these criteria Sandy Creek qualifies as an important habitat for migratory birds.

In addition, there are two Critically Endangered shorebird species that have been recorded at Sandy Creek, the Curlew Sandpiper (recorded on 2 occasions) and Eastern Curlew (recorded on 64 occasions). The occurrence of the Curlew Sandpiper and Eastern Curlew at the mouth of Sandy Creek constitutes and 'important' population as due to the species being listed as Critically Endangered any occurrence constitutes a population and all populations are 'important'.

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Marine migratory species

The *EPBC Protected Matters Search* report identifies ten marine migratory species (not including threatened species which are examined above) that occur in the marine environments adjacent to the project area. These are listed below:

- Fork-tailed Swift (*Apus pacificus*)
- Bryde's Whale (*Balaenoptera edeni)*
- Dugong *(Dugong dugon)*
- Irrawaddy Dolphin *(Orcaella brevirostris)*
- Indo-Pacific Humpback Dolphin *(Sousa chinensis)*
- Little Tern (*Sterna albifrons*)
- Green Turtle *(Crocodylus porosus)*
- Giant Manta Ray *(Manta birostris)*
- Killer Whale *(Orcinus orca)*
- Spotted Bottlenose Dolphin (*Tursiops aduncus).*

All of these species are common and/or widespread across tropical Australia. Their use of the marine waters surrounding the areas proposed for development is primarily for passage and incidental feeding, and therefore the area does not include important habitat for these species nor contain any known ecologically significant proportions of populations of these species. Furthermore, the proposed action is not expected to impact on marine areas.

Terrestrial migratory species

The *EPBC Protected Matters Search* report identifies four terrestrial migratory species (not including threatened species which are examined above) that may occur within the project area. These are listed below:

- White-bellied Sea-Eagle (*Haliaeetus leucogaster)*
- Rainbow Bee-eater (*Merops ornatus)*
- Barn Swallow *(Hirundo rustica)*
- Rufous Fantail *(Rhipidura rufifrons).*

These species are common and/or widespread across tropical Australia (apart from Barn Swallow which is a vagrant) and the proposed development area does not include important habitat for these species nor contain any known ecologically significant proportions of populations of these species.

Wetland migratory species

The *EPBC Protected Matters Search* report identifies eight species of wetland migratory species (not including threatened species and migratory shorebirds which are examined above) that may occur within or in areas surrounding the project area. These are listed below:

- Great Egret (*Ardea alba)*
- Oriental Pratincole (*Glareola maldivarum)*
- Little Curlew (*Numenius minutus)*
- Marsh Sandpiper (*Tringa glareola)*
- Cattle Egret (*Ardea ibis)*
- Broad-billed Sandpiper (*Limicola falcinellus)*
- Pacific Golden Plover (*Pluvialis fulva)*
- Wood Sandpiper (*Tringa glareola).*

Whilst there are seasonally inundated *Melaleuca* woodland areas within the Muirhead North lot, these do not constitute the type of open wetland habitat utilised by the above-mentioned listed wetland

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migratory species. The proposed development area therefore does not include important habitat for these species nor contain any known ecologically significant proportions of populations of these species.

Nature and extent of likely impact

Migratory shorebird roosting and feeding habitats

Urbanisation of the area and the creation of foreshore access trails through the Casuarina Coastal Reserve to the beach will increase beach use by people and dogs near to the Sandy Creek mouth. Disturbance has potential to alter the use of roost sites by shorebirds and is identified in EPBC Act Policy Statement 3.21 (DEWHA 2009b) as a conservation issue for migratory shorebirds:

"Disturbance is emerging as a major conservation issue for migratory shorebirds. Certain activities may interrupt migratory shorebirds during their limited foraging periods, such as during low tide, and prevent them from foraging effectively. Disturbance can also affect roosting birds and cause them to waste energy stored for migration."

The proposed development Master Plan rationalises access to the Casuarina Coastal Reserve by providing two well-defined access points from the 2CRU site into the reserve. The foreshore access trails have been sited to the east of the Sandy Creek mouth, which will mean that the roost area on the western side of the creek mouth is only accessible during the mid to low tide as during the high tide the creek mouth is impassable to walkers. It is the Proponent's intention to stop people accessing the coastal reserve outside these access points by closing off old access tracks and ensuring the new tracks are well sited and designed.

To manage disturbance to shorebirds the Casuarina Coastal Reserve Draft Plan of Management (Parks and Wildlife May 2015) indicates that the area of beach 100 m either side of Sandy Creek is a 'dog on lead' zone, where people are permitted to walk dogs as long as they are on a lead and under control. With these management measures in place shorebirds have persisted at the Sandy Creek site to date. However, shorebird roosting sites around the Casuarina Coastal Reserve and elsewhere in Darwin Harbour are under increased pressure from disturbance and hence there is likely to be a cumulative effect.

The proposed action will contribute to increasing beach use around the mouth of Sandy Creek, a trend set in motion as a result of urban development on the northern extent of Darwin's urban area and associated increase in use of the Casuarina Coastal Reserve. The trend of increasing use of the Reserve would be expected to continue as the NT Government has recently committed $10 million to infrastructure upgrades that will facilitate better access. It is unknown the extent to which the ongoing implementation and enforcement of the 'dog on lead' zones around Sandy Creek and continued monitoring of the shorebird population by Parks and Wildlife, will be sufficient to prevent a reduction in use of the Sandy Creek shorebird site as visitor numbers continue to increase.

The Sandy Creek catchment is largely urbanised and given that shorebirds have continued to utilise the creek mouth, it is not expected that the proposed action will cause water pollution or changes to the water regime that would affect the productivity of the feeding environment.

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3.1 (f) Commonwealth marine area

Description

There are no Commonwealth marine areas in proximity to the proposed action.

Nature and extent of likely impact

Not applicable

3.1 (g) Commonwealth land

Lot 4873 Town of Nightcliff (the 2CRU site) is owned by the Commonwealth and therefore part of Part of the action is on Commonwealth land. As the action will be undertaken on Commonwealth Land by a Commonwealth Agency, the nature and extent of likely impact on the whole environment has been assessed in accordance with the *EPBC Act Significant Impact Guidelines 1.2 Actions on, or impacting upon Commonwealth land, and actions by Commonwealth Agencies*. Refer section 3.2 (b) and section 3.2 (d) of this referral

Description

Refer section 3.2 (b) and 3.2(d) of this Referral.

Nature and extent of likely impact

Refer section 3.2 (b) and 3.2(d) of this Referral.

3.1 (h) The Great Barrier Reef Marine Park

Description

The area proposed for development is not located near the Great Barrier Reef Marine Park.

Nature and extent of likely impact

Not applicable

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

The proposed development is not a coal seam gas development or large coal mining development.

Description

Not applicable

Nature and extent of likely impact

Not applicable

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3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	**Is the proposed action a nuclear action?**	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

Not applicable

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**		No
		X	Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

The Proponent of the proposed action is Defence Housing Australia (DHA), a Commonwealth Agency.

The nature and extent of likely impact on the whole environment was assessed in preparing the Notice of Intent (NOI) for the proposed development submitted to the NTEPA on 7 September 2015. The assessment was prepared with reference to the following EPBC Guidelines:

- *EPBC Act Significant Impact Guidelines 1.1 Matters of National Environmental Significance*
- *EPBC Act Significant Impact Guidelines 1.2 Actions on, or impacting upon Commonwealth land, and actions by Commonwealth Agencies*.

The assessment of whole of environment impacts is presented at Attachment G, which is an extract of the NOI submitted to the NT EPA.

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

Not applicable

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**		No
		X	Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

The nature and extent of likely impact on the whole environment was assessed in preparing the Notice of Intent (NOI) for the proposed development submitted to the NTEPA on 7 September 2015. The assessment was prepared with reference to the

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following EPBC Guidelines:

- *EPBC Act Significant Impact Guidelines 1.1 Matters of National Environmental Significance*
- *EPBC Act Significant Impact Guidelines 1.2 Actions on, or impacting upon Commonwealth land, and actions by Commonwealth Agencies*.

The assessment of whole of environment impacts is presented at Attachment G, which is an extract of the NOI submitted to the NT EPA.

3.2 (e)

Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
		Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

Not applicable

3.3 Other important features of the environment

3.3 (a) Flora and fauna

Refer Attachment G *Section 4.6 Vegetation* and *Section 4.7 Fauna* for a description of the flora and fauna that are known from the area.

EPBC listed Threatened species are addressed in previous sections of this referral.

There are species present in the area proposed for development and surrounding areas that are not listed under the *EPBC Act* but are considered Threatened pursuant to the *NT Parks and Wildlife Conservation Act*. These are discussed at Attachment G *Section 4.8 Threatened* Species.

3.3 (b) Hydrology, including water flows

The areas proposed for development occur across the catchments of Buffalo Creek and Sandy Creek, which flow into Shoal Bay and Darwin Harbour respectively. Both catchment areas are partly urbanised; and Buffalo Creek currently receives discharge of treated sewage effluent from the Leanyer Sanderson Wastewater Treatment Ponds approximately 5 km upstream of the mouth.

A minor ephemeral drainage line traverses the Muirhead North site but there are no permanent waterbodies. The ephemeral drainage line flows through a rainforest patch located in the centre portion of the site, which will be retained as part of the open space network proposed as part of the development. A review of the hydrology of the rainforest patch has been undertaken to inform stormwater infrastructure design (refer Attachment E).

Refer Attachment G *Section 4.5 Water* for a complete description of the surface and groundwater and assessment of likely impacts.

3.3 (c) Soil and Vegetation characteristics

The area is typified by alluvium surface soils overlaying laterite gravels and claystone. Geotechnical investigations in the Muirhead North lot (eastern area of proposed development) reported that the area consisted of loose silty sandy top soils with organic material overlying dense residual sands, which were generally underlain by cemented sandy laterite. In the eastern half of the Muirhead

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North lot sandy loam soils are underlain by light clays, which contributes to seasonal waterlogging that occurs in some areas.

Refer Attachment G *Section 4.4 Soils and other substrates*.

The proposed development area contains the following vegetation communities:

- Woodland
- Rainforest
- Vine thicket
- Shrubland
- Grassland (introduced species).

The area contains a mix of remnant and regenerated vegetation communities that are common in the Top End but not all are well represented in the Darwin area because of clearing for urban development. Weeds are abundant.

Refer Attachment G *Section 4.6 Vegetation* for a complete description of the vegetation types present and assessment of likely impacts.

3.3 (d) Outstanding natural features

Not Applicable. For a general description of the landscape refer to Attachment G *Section 4.3 Landscapes and landforms*.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

Not Applicable.

3.3 (g) Current state of the environment

Refer Attachment G *Section 4.2 History, current use and condition of the environment*.

The 2CRU site contains an area of disused Defence radar communications facilities, which are in the process of being dismantled and removed. Site investigations undertaken by GHD (2014a) indicate there is no gross contamination of soils or groundwater. Although some metal concentrations were identified within the site soils and some minor petroleum hydrocarbon impacts in the vicinity of the underground storage tanks, nothing was identified that would render the site unsuitable (from a contamination perspective) for a residential end use.

The remainder of the 2CRU site comprises vegetation cover of varying stages of growth and condition, along with various disused structures associated with Defence operations within the site. There is a formal vehicle track from Lee Point Road to the compound, with other less formal tracks, including from the compound heading in a southerly direction connecting with the trails in the Casuarina Coastal Reserve. Vehicle tracks / firebreaks are present along the eastern and southern property boundaries. There is also evidence of itinerant camps within the site (GHD 2010).

The Muirhead North site appears to have always been Vacant Crown Land with no formal land use with the exception of a telecommunications tower and associated equipment shelter located near to Lee point Road. Historic aerial photos show that the site has been extensively cleared and excavated/borrowed in the past. Given the timing of the disturbance was pre-1970 this activity may have been related to the use of the site as part of an anti-aircraft battery established in the Lee Point area in the 1960's. Military remnants in the form of several steel drums are located in the north-west corner of the site, and there has been minor illegal dumping across the site.

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There is a large erosion gully located in the south-west corner of the 2CRU site. Both 2CRU and Muirhead North are infested with weeds.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

There are no Commonwealth Heritage Places or other heritage sites protected under either the *EPBC Act* or *NT Heritage Act* within the area proposed for development or surrounding areas.

The heritage assessment reports prepared by Crassweller (2010) and Jung (2014) (refer Attachments H1 & H2) identify places and items within Lot 4873 and Lot 9307 that whilst not formally protected under the *EPBC Act* or *NT Heritage Act* may hold cultural heritage value. A number of these heritage sites are proposed for retention and formalisation as interpretative sites as part of the proposed development; and this intent is reflected in the approved Area Plan and Planning Principles.

Refer Attachment G *Section 4.11 Heritage Places and Items* for a complete description of the heritage values present in the area proposed for development and assessment of likely impacts.

3.3 (i) Indigenous heritage values

A background scatter of isolated stone artefacts was recorded on the 2CRU site at grid location 705050E 8634250N (Heritage Surveys 2001a). This site was assessed as having low significance. Refer Attachment G *Section 4.11* for a description of the site location and assessment of likely impacts. It is proposed that the artefacts will be relocated by a qualified heritage consultant in consultation with the NT Heritage Branch.

The Aboriginal Areas Protection Authority has no record of sacred sites listed within the area of Lots 4873 and 9370 Town of Nightcliff.

3.3 (j) Other important or unique values of the environment

The proposed development area is located adjacent to the Casuarina Coastal Reserve and is within the catchment of Shoal Bay, which is recognised as a Site of Conservation Significance (SOCS). Refer Attachment G *Section 4.10 Conservation and special use areas* for details of the location of the proposed development in relation to these areas and assessment of likely impacts.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

Lot 4873 Town of Nightcliff (2CRU) is vacant Commonwealth land currently zoned Future Development (FD) and Conservation (CN).

Lot 9370 Town of Nightcliff (Muirhead North) is Vacant Crown land currently zoned Future Development (FD). The site is referred to as Muirhead North and is currently owned by the NT Government.

The NT Planning Scheme (NTPS) was recently amended to introduce zone Future Development (FD) to Lot 4873, Town of Nightcliff, and to rezone Lot 9370 Town of Nightcliff to FD. The Lee Point Area Plan and Planning Principles were also included in the NTPS as part of the recent amendment.

3.3 (l) Existing land/marine uses of area

The land area proposed for development is currently unused bushland. The land-use surrounding the area proposed for development is a mixture of residential, tourism and recreation, and conservation. The Darwin Regional Land-use Framework (Clause 4.2 of the NT Planning Scheme) categorises the area as 'Urban'. Over the past 10 - 15 years there has been rapid expansion of urban residential development on both the eastern and western sides of Lee Point Road. The

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proposed action will further expand the urban residential areas consistent with the 'Urban' land-use category assigned to the area under the NT Planning Scheme.

3.3 (m) Any proposed land / marine uses of area

The adjacent land areas to the south are currently being developed for urban residential land-use. The NT Government has recently committed $10 million to providing infrastructure upgrades in the Casuarina Coastal Reserve that adjoins the western boundary of the proposed development.

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4 Measures to avoid or reduce impacts

The site chosen for the Lee Point master-planned urban development is situated on land that is adjacent to existing urban areas and categorised as 'Urban' on the *Darwin Regional Land Use Framework (Clause 4.2 NT Planning Scheme)*. The site has been substantially disturbed by past land-use activities and is heavily infested with weeds, and the land is currently used informally for activities that do not contribute to maintaining the environmental values of the area and surrounds (i.e. off-road driving / dirt bike activities, illegal dumping and itinerant camping). Road access and utilities services connections are readily available through connection to the existing trunk services that terminate in the adjacent suburbs of Lyons and Muirhead to the south. For these reasons the site is a suitable choice for an urban development.

Through the process of establishing an Area Plan, Master Plan and Planning Principles, which have been formalised into the NT Planning Scheme, land-use zones have been put in place to guide the siting of activities and infrastructure on the site in a way that reduces or avoid impacts to the environment and community. All future Development Applications submitted under the *Planning Act* will be assessed in accordance with the Area Plan, Master Plan and Planning Principles.

Measures to avoid impacts

The key impact avoidance measures incorporated into the planning framework for the site are summarised below:

- 21.8 ha, or 26% of the 2CRU site area, is identified in the approved Area Plan as 'development restricted by constraints' and this area will be re-zoned to Conservation (CN) to become part of the Casuarina Coastal Reserve. In accordance with the approved Planning Principles, development below the escarpment will be limited to "community and/or tourism activity uses and public walking and cycling tracks that protect the environmental values of the coastal reserve and adjoining vegetation types." Restriction on development in this area will avoid impacts to the sensitive monsoon vine forest community and will provide a buffer between the development and the Casuarina Coastal Reserve.

- The proposed boundary between the development and the Casuarina Coastal Reserve is defined by the top of the existing escarpment within the 2CRU site. The Area Plan establishes a 50m buffer between new homes and the site boundary, which will comprise a linear public open space, a local road that will act as a promenade and a small area (0.65 ha) of non-residential land set aside for community/tourism use.

- The provision of access trails and a mountain biking trail through the Conservation (CN) zoned area connecting to the existing trails and foreshore / beach areas within the Casuarina Coastal Reserve will avoid impacts to the monsoon vine forest and beach dune areas associated with uncontrolled and unmanaged access.

- Access trails have been sited to provide beach access east of Sandy Creek mouth, which means that disturbance of the migratory shorebird roosting site on the western side of the creek mouth, during the high tide period when the largest numbers of birds congregate, will be limited by the creek being impassable at high tide.

- The regionally significant rainforest patch in Muirhead North has been designated for retention as Open Space in the approved Area Plan. The area is to be owned and managed by the NT Government, and stormwater drainage has been designed to maintain pre-development flows to the patch. A hydrological review of the rainforest patch prepared by

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SMEC (2015) (Attachment E) determined the post-developed catchment area that is required to discharge into the rainforest in order to maintain pre-development flows.

- The approved Area Plan maps pedestrian / cyclist routes and public transport services area identified in the Engineering Services Plan (refer SMEC 2015a). This infrastructure will provide a range of options for non-car-based transport and recreational activities.

- To avoid reducing access to community services and overcrowding of retail services the approved Lee Point Area Plan identifies a Primary School and Community Hub and retail floor space.

- Rural residential lots of minimum 4, 000 m^2 are the only development permitted on the east side of the 1 km urban biting insect buffer zone indicated by Medical Entomology (Warchot and Whelan 2008). This buffer will provide a diversion to biting midges and mosquitoes dispersing inland from Buffalo Creek.

- The proposed development will not occur within the Leanyer Sanderson Wastewater Treatment Plant 700 m buffer zone established for the purpose of minimising potential odour impacts to urban residential areas.

Measures to reduce impacts

As with all developments there are environmental impacts that cannot be entirely avoided through site selection and design. The likely impacts of the proposed action on EPBC listed matters and the whole of the environment are summarised below from the relevant sections of this Referral and Attachment G (Whole of environment assessment) respectively. For each likely impact the mitigation and management measures that are proposed to limit impact severity are described.

Some of the identified measures have been designed in detail and where this design detail is available it has been presented in the sections below. Other measures are conceptual at this stage for the purpose of confirming constructability and likely impacts, and these will be progressed through to detailed planning and design prior to submission of future Development Applications. The requirement for each stage of the subdivision and development to be approved under the NT *Planning Act* prior to commencement of construction establishes the process by which the mitigation and management measures proposed will be reviewed and approved by NT Government stakeholders, including the NT EPA.

Implementation of construction phase mitigation measures will occur through Construction Environmental Management Plan's (CEMP). DHA will ensure that contractors engaged for civil works provide a CEMP. The preparation of a CEMP is a standard requirement of DHA contracts and will need to be approved by DHA's Superintendent of works prior to commencement of works. DHA has demonstrated its ability to oversee environmental contractual requirements through their delivery of the Lyons and Muirhead subdivision developments to the south of the project area, including those requirements arising from assessment and approval of the Muirhead subdivision (Lot 9737 Lee Pt Rd) under the *EPBC Act* (refer EPBC 2010/5525).

Impacts on landscapes and soils

Mitigation and management measures to avoid or reduce impacts to landscapes and soils are presented below:

- *Impact: Land clearing and earth works are likely to cause erosion in some areas if surface water flows are not appropriately controlled and managed.*

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An Erosion and Sediment Control Plan (ESCP) will be prepared to manage erosion and sedimentation across the development site for each stage of construction. The ESCP will be developed by an appropriately qualified engineer in accordance with the *International Erosion and Association Guidelines*. The ESCP will be submitted for review and approval by the Department of Land Resources Management (DLRM) as part of future Development Applications, and in accordance with approval processes established under the *NT Planning Act* the development will not be given approval to proceed without an approved ESCP.

ESCP implementation will be addressed in the CEMP prepared for each subdivision. DHA will ensure that contractors engaged for civil works provide a CEMP. The preparation of a CEMP is a standard requirement of DHA contracts and will need to be approved by DHA's Superintendent of works prior to commencement of works. The CEMP is where staging of ESCP requirements will be addressed.

- *Impact: Land clearing and earthworks in the Muirhead North lot will occur in areas where seasonal ponding of water occurs*

The Stormwater Strategy Plan for the development area is provided in the Engineering Services Report (Attachment D) and summarised in Section 2 of this Referral. It is intended that the stromwater drainage system will prevent ponding of water within the Muirhead North site during the wet season and this will provide trafficability for development.

The Geotechnical Report (SMEC 2014) indicates that some measures may be required to maintain trafficability across the Muirhead North site during wet periods, especially in areas where the surface materials are in a loose state. If localised areas become too soft to be successfully proof rolled, the soft material could be excavated and replaced (ensuring that undercutting of existing earthworks and structures does not occur), or if larger areas become untrafficable then a working platform comprising granular material, possibly with geo-grid reinforcement, could be placed across the area to improve trafficability.

Impacts on the marine environment

Mitigation and management measures to avoid or reduce impacts on the marine environment are presented below:

- *Impact: Land clearing, earthworks and establishment of a stormwater drainage system could increase sediment and nutrient loads entering the marine environment via stormwater runoff*

The Stormwater Strategy Plan for the development area is provided in the Engineering Services Report (SMEC 2015a) (Attachment D) and summarised in Section 2 of this Referral. The Master Plan shows a series of WSUD treatment trains and retarding basins designed to reduce the amount of sediment leaving the site and assist in reducing nutrient load. The Stormwater Strategy Plan (SMEC 2014) indicates that stormwater management for the development would comprise the following features:

- Maximising on site storage and recharge of surface runoff into existing aquifers
- Limiting runoff to pre-development conditions by promoting filtration of runoff through enhanced natural vegetation and storage systems
- Provide erosion and sediment control by incorporating measures during construction and permanent sediment basins at outlets to natural waterways.

Detailed stormwater drainage designs will be developed in a Stormwater Management Plan (SMP) to be prepared and submitted with future Development Applications. Best practice design for the detention basins in both catchments will involve early consideration of design levels to ensure free-

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flowing outlets are achieved, road and allotment levels are adequately drained and the characteristics of the basin/s are such that they form a feature of the finished landscape design.

To gain Development Approval under the *NT Planning Act* design of any open trunk drainage and the detention basins will need to be completed in accordance with City of Darwin maximum depth and velocity requirements. Peak flood discharges within the subject site shall be established and documented in a "Hydraulic Impact Assessment" report. This report will determine the required drainage infrastructure needed for conveyance of post-development discharges through the site and will review the hydraulic impact of the development concept on existing flood levels.

The Planning Principles for the development approved under the *NT Planning Act* state:

Future Development within the Lee Point Area is to preserve and integrate areas and/or items of environmental and heritage significance by implementing appropriate environmental and engineering measures including but not limited to the application of principles of water sensitive urban design.

WSUD has been incorporated into the DHA's Breeze's Muirhead development to the south and it is intended that similar measures will be adopted in the proposed development area. The extent to which these measures are likely to be effective in maintaining the quality of post-development stormwater discharges to Buffalo Creek can be considered with reference to the water quality monitoring undertaken by the NT Government DLRM, which indicated minor improvements in Buffalo Creek water quality over the period 2013 to 2014 (Fortune 2015) when Muirhead Breezes was under construction. Whilst the water quality in Buffalo Creek is reported as 'Very Poor' the monitoring report attributes this to discharge from the Leanyer Sanderson Wastewater Treatment Plant with no changes reported in associated with urban development in the catchment.

As mentioned previously, an Erosion and Sediment Control Plan (ESCP) will be prepared to manage erosion and sedimentation across the development site for each stage of construction.

Impacts on water resources

Mitigation and management measures to avoid or reduce impacts on water resources are presented below:

- *Impact: Urbanisation has potential to alter the quality, quantity and velocity of stormwater in-flows to the downstream receiving environments of Sandy Creek and Buffalo Creek*

The Stormwater Strategy Plan for the proposed development area (SMEC 2015a) indicates that the design philosophy for drainage shall ensure that downstream discharges are limited to existing flows. By limiting stormwater discharge it is intended that the quantity of stormwater entering Sandy Creek and Buffalo Creek will not change.

Stormwater management will include compensation and nutrient stripping structures prior to discharge (SMEC 2015a). The Stormwater Strategy Plan indicates that stormwater management for the development would comprise the following features relevant to ensuring impacts to water quality are managed:

- limiting runoff to pre-development conditions by promoting filtration of runoff through enhanced natural vegetation and storage systems
- erosion and sediment controls incorporated during construction and permanent sediment basins at outlets to natural waterways.

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The approved Area Plan incorporates Open Space Areas (incorporating drainage features) and the Master Plan shows the location of stormwater detention basins.

Detailed design of the stormwater drainage network will be presented in a Stormwater Management Plan, which will comply with the approval requirements of NT Government and City of Darwin; and will be submitted for approval through the Development Application processes under the *NT Planning Act*.

To monitor the effectiveness of the stormwater management controls, ESCP's and WSUD measures the Proponent commits to implementing a water quality monitoring program that assesses nutrient and sediment loads in stormwater flowing off the 2CRU and Muirhead North sites.

- *Impact: Establishment of a stormwater drainage network will alter local hydrology, which has potential to alter the quality and quantity of flows entering the rainforest patch located within the Muirhead North site*

A hydrological review of the rainforest patch prepared by SMEC (2015) (Attachment E) determined the post-developed catchment area that is required to discharge into the rainforest in order to maintain pre-development flows. Further details on measures that will be implemented to reduce impacts to the rainforest patch are provided in the 'Impacts on plants' section below.

- *Impact: Groundwater quality could be degraded if shallow groundwater is intercepted by excavations.*

The Geotechnical Report (SMEC 2015b) indicates that if excavations are required in the Muirhead North site within sands to depths below the groundwater table then local de-watering measures are likely to be required to ensure their stability. Any requirement for dewatering has not yet been confirmed; however, mitigation and management measures for this activity will be included in the ESCP and SMP submitted for approval as part of future Development Applications. Implementation of controls for disposal of contaminated water will occur through CEMP's and consideration will be given to any requirements for a license under the *Waste Management Pollution Control Act*.

Pollutants, chemicals and toxic substances

Mitigation and management measures to avoid or reduce pollution are presented below:

- *Impact: There are a number of hazardous building materials present on the 2CRU lot that when disturbed have potential to contaminate surrounding areas if not appropriately handled*

Contamination Investigations were undertaken across the 2CRU and Muirhead North sites (GHD 2010, 2014b and EcOz 2015) and a Destructive Hazardous Material Survey prepared for the 2CRU site (2014a). All recommendations provided in those reports will be implemented.

To remove any hazardous materials and / or contamination on the 2CRU site prior to construction the Proponent has released a tender with the following stated scope of works:

"*to demolish and remove all the existing infrastructure including the removal of all hazardous materials within the site prior to general demolition, the removal and associated validation of two underground storage tanks, and the validation upon completion of demolition works that the site is suitable for residential use*."

The tender documents require the following hazardous materials and contamination plans and reports be provided to the satisfaction of the Superintendent:

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- Remediation Sampling Analysis Plan
- Site Remediation and Validation Investigation and Report
- Air Monitoring and Hazmat Report
- Independent Audit statement for site remediation and validation.

The Contractor must provide confirmation from a suitably qualified and experienced consultant that the plans and reports are appropriate for their intended use.

The tender documents require that the Contractor must provide certification from an appropriately qualified person under *Section 68 of the NT Waste Management and Pollution Act* that confirms the site is suitable for its intended use.

The works awarded under the tender will be completed and site validation reports provided prior to any development occurring at the site.

- *Impact: The accidental release of hydrocarbons or other hazardous substances and/or disturbance of pre-existing contamination have the potential to cause temporary degradation of soils and impact on the quality of receiving waters.*

Details of hydrocarbon and hazardous materials storage and handling requirements will be developed as part of the construction planning process. Management will be in accordance with Australian Standards with details of onsite storage and handling to be provided as part of CEMP's.

- *Impact: The disturbance of soils in coastal regions by excavation at depths below 5 m AHD from sea level increases the risk of exposing ASS*

The risk of exposing ASS is considered to be low as no earthworks are proposed that will require excavation below 5 m AHD in any part of the proposed development area. Service trenching in the low lying areas in the east of Muirhead North is expected to be relatively shallow and not extend below 5 m AHD. Stormwater attenuation basins proposed in the south-east corner of the Muirhead North lot will need to be constructed above the natural surface allowing free-draining discharge of stormwater from the site to the natural drainage channels.

Impacts on plants

Mitigation and management measures to avoid or reduce impacts on plants are presented below:

- *Impact: Land clearing will cause loss of approximately 111 ha of native vegetation*

To ensure land clearing is confined to those areas identified for development on the Master Plan, site boundaries will be accurately surveyed and pegged prior to construction. Areas of native vegetation to be retained in Open Space areas or parkland will be clearly demarcated. Requirements for pre and post land clearing surveys will be documented in CEMP's.

DHA has demonstrated its ability to implement these standard environmental management measures at its Muirhead Breezes development to the south of the project area where there has been no unauthorised land clearing.

- *Impact: Clearing corridors for construction of foreshore access and mountain bike trails will disturb monsoon vine forest habitat within the Casuarina Coastal Reserve and may make the habitats more susceptible to invasion by weed species which are prevalent in the surrounding areas.*

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- *Impact: Land clearing in areas surrounding the rainforest patch in Muirhead North will make the habitat margins more susceptible to invasion by weed species which are prevalent in the surrounding areas.*

Control of Gamba Grass on the 2CRU site along the boundary that interfaces with the Casuarina Coastal Reserve commenced in May 2015 through a DHA contract and will continue with the objective of reducing the area of infestation prior to commencement of construction activities. Prior to any works an up to date weed survey will be undertaken to inform preparation of a Weed Management Plan. The Plan will identify weed control requirements and specific measures to minimise the likelihood of transferring weeds from the infested areas of the 2CRU site into the adjacent areas of the Casuarina Coastal Reserve and from Muirhead North into the rainforest patch. Implementation of measures identified in the Weed Management Plan will occur through CEMP's.

Ongoing weed management within the expanded Casuarina Coastal Reserve and Muirhead North rainforest patch will be the responsibility of the NT Government.

- *Impact: Localised changes to hydrology have potential to impact on the preservation of the rainforest patch in Muirhead North.*

The eastern catchment area within Muirhead North will be further divided into sub-catchments to allow for maintaining pre-development flows to the rainforest patch with the intent of preserving the ecological integrity of the area. A hydrological review of the rainforest patch prepared by SMEC (2015) (Attachment E) determined the post-developed catchment area that is required to discharge into the rainforest in order to maintain pre-development flows.

For the purpose of maintaining water quality entering the rainforest patch the post-developed 'first flush' flows (i.e. ARI 3-month) will be conveyed by pit and pipe system into a bio-retention treatment basin before flowing into the rainforest. Flow greater than an ARI 3-month event will be discharge into a grassed overland flow swale, which will then flow to the rainforest.

An Erosion and Sediment Control Plan (ESCP) will be prepared to manage erosion and sedimentation across the development site for each stage of construction. The ESCP will be submitted for review and approval as part of future Development Applications. ESCP implementation will be addressed in CEMP's.

Impacts on animals

Mitigation and management measures to avoid or reduce impacts on animals are presented below:

- *Impact: Land clearing will cause direct loss of fauna habitat within the clearing footprint*

To ensure land clearing is confined to those areas identified for development on the Master Plan, site boundaries will be accurately surveyed and pegged prior to construction. Areas of native vegetation to be retained in Open Space areas or parkland will be clearly demarcated. Requirements for pre and post land clearing surveys will be document in CEMP's.

DHA has demonstrated its ability to implement these standard environmental management measures at its Muirhead Breezes development to the south of the project area where there has been no unauthorised land clearing.

- *Impact: Noise / dust emissions from construction activities are likely to disturb habitats surrounding the development area resulting in temporary avoidance by fauna*

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Dust and noise controls will be documented in CEMP's. As there are no known sensitive habitat areas nearby, standard mitigation measures detailed in *Noise Guidelines for Development Site in the NT* (NT EPA 2013) will be referenced. Dust will be managed to ensure no adverse effect on the amenity of the surrounding areas in accordance with the *Waste Management and Pollution Control Act.*

- *Impact: Fauna disturbance, injury or mortality may occur during land clearing and construction activities*

Pre and post land clearing assessments will be undertaken, and fauna spotter – catchers will be engaged to be onsite during land clearing activities to rescue injured wildlife. The proponent will communicate this requirement to all contractors through tender documentation, and contractors will be responsible for addressing the requirement in CEMP's and engaging appropriately qualified personnel to undertake this role.

DHA has demonstrated its ability to implement pre-clearing surveys and fauna-spotter catcher measures on the Muirhead subdivision to the south of the proposed development. The construction contractor for that development, BMD constructions, engaged EcOz Environmental Consultants to undertake work at each stage of the subdivision clearing.

- *Impact: Stormwater could introduce increased sediment, contaminants and / or nutrients into Buffalo Creek and Sandy Creek with a subsequent decrease in the quality of habitats available for aquatic and marine fauna*

The Stormwater Strategy Plan (Attachment D) and the development Master Plan (Attachment B) show a series of WSUD treatment trains and retarding basins designed to reduce the amount of sediment leaving the site and assist in reducing nutrient load. Details of these mitigation measures and discussion of why downstream impacts are not expected to occur have been provided in earlier sections of this Referral.

An ESCP will be prepared to manage erosion and sedimentation across the development site for each stage of construction. The ESCP will be submitted for review and approval by NT Government stakeholders as part of future Development Applications submitted in accordance with the *NT Planning Act*. ESCP implementation will be addressed in CEMP's.

The extent to which the proposed measures are likely to be effective in maintaining the quality of post-development stormwater discharges from the site was discussed previously, where it was concluded that the DHA urban developments to the south of the project area have not caused any measurable change to the water quality in Buffalo Creek. To monitor the effectiveness of the stormwater management controls, ESCP's and WSUD measures the Proponent commits to implementing a water quality monitoring program that assesses nutrient and sediment loads in stormwater flowing off the 2CRU and Muirhead North sites.

Impacts on Threatened species

Mitigation and management measures to avoid or reduce impacts on Threatened species of plants and animals are presented below:

- *Impact: The proposed development has potential to create Cane Toad breeding habitat within the proposed drainage reserves if stormwater drainage and detention basis are not appropriately designed and maintained. Cane Toads are the main threatening process for Threatened fauna which may occur in areas surrounding the development area.*

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The Stormwater Management Plan overview provided in SMEC (2015a) states that "best practice design for the detention basins in both catchments will need to involve early consideration of design levels to ensure free outlets are achieved, road and allotment levels are adequately drained and the characteristics of the basin/s are such that they form a feature of the finished landscape design."
Detailed designs will be developed and submitted as part of the Stormwater Management Plan with future Development Applications. Design will comply with the *Guidelines for Preventing Biting Insect Problems for Urban Residential Developments or Subdivisions in the Top End of the NT* (Medical Entomology 2014), which includes specific requirements for free-draining infrastructure.

As detailed designs will be required for development approval, and the established development assessment processes involves review of plans by Council and Medical Entomology, the requirement for all drainage infrastructure to be free draining will need to be met prior to approval being granted and construction commencing.

- *Impact: The increase in users of Casuarina Coastal Reserve that will result from a new residential community could increase potential for disturbance to shorebird roosting habitats around Sandy Creek and turtle nesting along Lee Point Beach*

It is anticipated that the beach areas near to the proposed development area will receive a higher level of use by people than is currently the case and there will be a general increase in light emissions from the residential areas and tourism precinct. If the lights from multi-storey buildings will be visible from the beach, lighting will be designed in consultation with local marine turtle specialists at Charles Darwin University (CDU).

Details of measures that will be implemented to reduce impacts to the Sandy Creek shorebird site are provided in the 'Impacts to migratory species' section below.

- *Impact: Land clearing will result in the loss of habitat that may be utilised by an important population of the Black-footed Tree-rat. If this species, or any other fauna, is present in the development area at the time of land clearing there is potential for injury or death to occur if appropriate fauna spotter-catcher guidelines are not followed.*

Pre and post land clearing assessments will be undertaken, and fauna spotter – catchers will be engaged to be onsite during land clearing activities to rescue injured wildlife. The pre land clearing surveys will specifically target suitable roost trees for a range of species The proponent will communicate this requirement to all contractors through tender documentation, and contractors will be responsible for engaging appropriately qualified personnel to undertake this role.

DHA has demonstrated its ability to implement pre-clearing surveys and fauna-spotter catcher measures on the Muirhead subdivision to the south of the proposed development. The construction contractor for that development, BMD constructions, engaged EcOz Environmental Consultants to undertake work at each stage of the subdivision clearing.

- *Impact: Stormwater could introduce increased sediment, contaminants and / or nutrients into Buffalo Creek with a subsequent decrease in the quality of habitats available for Threatened species of Sawfish that may utilise the creek at stages of their lifecycle.*

Discussion of why downstream impacts to water quality are not expected to occur is presented in previously.

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Impacts on Migratory shorebirds

Mitigation and management measures to avoid or reduce impacts on Migratory shorebirds are presented below:

- *Impact: Urbanisation of the area and the creation of foreshore access trails will increase beach use by people and dogs near to the Sandy Creek mouth, which does have potential to impact on the use of the area by migratory shorebirds.*

The proposed development Master Plan rationalises access to the Casuarina Coastal Reserve by providing two well-defined access points from the 2CRU site into the reserve. The foreshore access trails have been sited to the east of the Sandy Creek mouth to avoid disturbance impacts to the high tide roosting sites located on the western side. It is the Proponent's intention to stop people accessing the coastal reserve outside these access points by closing off old access tracks and ensuring the new tracks are well sited and designed.

To manage disturbance to shorebirds the Casuarina Coastal Reserve Draft Plan of Management (Parks and Wildlife May 2015) indicates that the area of beach 100 m either side of Sandy Creek is a 'dog on lead' zone, where people are permitted to walk dogs as long as they are on a lead and under control. In consultation with Parks and Wildlife interpretative signage will be installed at the new beach access points advising visitors of the restrictions in place.

The proponent proposes to increase environmental awareness of visitors and residents through brochures that will accompany marketing material and through visual aids integrated in the sales and marketing suite. Educational information will focus on awareness of the local environment including flora and fauna species, highlighting ways to minimise human interference particularly in relation to shorebirds. It is intended that these materials will complement management activities implemented by Parks and Wildlife Commission in the Casuarina Coastal Reserve.

- *The development area is within the catchments of the Buffalo and Sandy Creeks where important populations of shorebirds are known to roost. Land clearing, earthworks and establishment of a stormwater drainage system could increase sediment and nutrient loads entering the creeks via stormwater runoff*

Refer to the 'Impacts on Water' section above for a summary of mitigation measures relevant to reducing likely impacts to Buffalo Creek and Sandy Creek. The Sandy Creek catchment is largely urbanised and given that shorebirds have continued to utilise the creek mouth, it is not expected that the proposed action will cause water pollution or changes to the water regime that would affect the productivity of the feeding environment.

Impacts on heritage

Mitigation and management measures to avoid or reduce impacts on heritage are presented below:

- *Impact: The proposed development has potential to disturb and/or destroy a number of cultural heritage places and items that whilst not protected under the NT Heritage Act have been indicated to have some heritage value.*

The approved Lee Point Area Plan identifies the heritage sites referred to as the 'Bunkers' within the 2CRU site and a Konfrontasi Cruciform site located on the eastern side of Lee Point Road. The approved Planning Principles indicate:

"*future Development within the Lee Point Area is to preserve and integrate areas and/or items of environmental and heritage significance by adopting measures that acknowledge the role of Lots*

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4873 and 9370 Town of Nightcliff in the Indonesia – Malaysia Confrontation including, where practicable, the retention of existing defence items or replacement with artistic/cultural interpretive works that reflect the historical significance of the land."

The Area Plan specifically demarcates the above-mentioned sites for retention. The proponent intends to develop conservation strategies in consultation with NT Heritage Branch.

- *Impact: The background scatter of stone artefacts recorded on the 2CRU site will be destroyed. These artefacts are prescribed Aboriginal heritage objects under Section 18 of the NT Heritage Act.*

The proponent intends to apply for an approval (a work approval) to carry out work on a heritage place or object in accordance with Section 72 of the *NT Heritage Act*. The artefacts will be relocated by a qualified heritage consultant in consultation with the NT Heritage Branch.

- *Impact: The proposed development will not impact on any recorded or registered Aboriginal Sacred Sites protected under the NT Aboriginal Sacred Sites Act.*

The proponent intends to apply for an Authority Certificate under section 19B of the *NT Aboriginal Sacred Sites Act* prior to commencement of works to further ensure there is no potential for disturbance of protected sites that are not currently recorded or registered with the AAPA.

Impacts on people and communities

Mitigation and management measures to avoid or reduce impacts on people and communities are presented below:

- *Impact: Air pollution generated by exhaust and dust emissions during construction has the potential to cause localised impacts to nearby residents and people utilising recreational and tourism facilities in the Lee Point area.*

Standard dust and noise controls will be implemented through CEMP's. The Proponent intends to comply with the requirements of the *Noise Guidelines for Development Sites in the NT (NT EPA January 2013)*. In accordance with the *Waste Management and Pollution Control Act*, the measures included in the CEMP's will be designed to reduce the potential for any adverse effect on the amenity of an area that is caused by noise, smoke, dust, fumes or odour; and unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by people. The effectiveness of controls will be monitored through standard inspection and auditing processes included in CEMP's and through any complaints received from neighbours and land users.

- *Impact: Increasing residential densities in areas close to the naturally occurring biting insects breeding areas that occur to the west of Muirhead North and in the Casuarina Coastal Reserve has potential to expose larger numbers of people to the public health issues associated with biting insects.*

- *Impact: Establishment of a stormwater drainage system has potential to create new biting insect breeding habitats if not appropriately designed and constructed.*

The biting insect assessment prepared for the Muirhead development (Warchot and Whelan 2008) provided the following recommendations that will be implemented:

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- An open wind buffer of around 200m should be provided on the east boundary of the rural residential lots, to provide some disruption to biting midge and mosquito dispersal to these areas.
- The subdivision should be constructed in accordance to the '*Guidelines for preventing biting insect problems for urban residential developments or subdivisions in the Top End of the Northern Territory*', and '*Construction practice near tidal areas in the Northern Territory-Guidelines to prevent mosquito breeding'*.
- Stormwater drainage designs, in particular the design of stormwater outfalls and drains in areas outside of residential areas should be forwarded to Medical Entomology for approval before construction commences.
- If Water Sensitive Urban Design is utilised for this development, all design plans should incorporate the avoidance of mosquito breeding in the design and plans should be forwarded to Medical Entomology for comment and approval.
- There should be a notification on the land titles for those blocks within 1.5km of the mangrove margin that there will be seasonal mosquito and biting midge problems.

Detailed designs for stormwater management will be developed in a Stormwater Management Plan to be submitted for review and approval by the Medical Entomology Branch with future Development Applications submitted under the NT *Planning Act*. As detailed designs will be required for development approval, and the established development assessment processes involves review of plans by Council and Medical Entomology, the requirement for the above measures to be implemented will need to be met prior to approval being granted and construction commencing.

- *Impact: The proposed development area is located approximately 1.2 km to the north-west of the Leanyer Sanderson Sewage Treatment Plant, managed by PWC.*

PWC has provided guidance to urban developments through establishment of a 700 m buffer zone from the treatment ponds. The south-eastern corner of the Muirhead North site (closest) is located approximately 650 m from the outer edge of the buffer zone. As the development is outside of the buffer zone no further odour mitigation measures are considered necessary.

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5 Conclusion on the likelihood of significant impacts

5.1 Do you THINK your proposed action is a controlled action?

X	No, complete section 5.2
	Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

To assess whether or not the proposed Lee Point master-planned urban development is likely to have a significant impact on the environment the following Guideline documents were referenced:

- *EPBC Act Significant Impact Guidelines 1.1 Matters of National Environmental Significance*
- *EPBC Act Significant Impact Guidelines 1.2 Actions on, or impacting upon Commonwealth land, and actions by Commonwealth Agencies.*

The assessment considered potential impacts on MNES protected under the *EPBC Act*. As the Proponent is a Commonwealth agency and part of the development will occur on Commonwealth Land, assessment of the likelihood of significant impact in accordance with the requirements of the *EPBC Act* considered the 'environment' more broadly, which also aligns with the requirements of the *NT Environmental Assessment Act*.

The proposed development is not expected to cause a significant impact to the environment for the following reasons:

Site selection

- The development is consistent with the surrounding land-use and the *Darwin Regional Land Use Framework* identifies the area as 'Urban'.

- The areas that will be developed have been substantially disturbed by past land-use activities. Large portions of the Muirhead North site were previously cleared and excavated and both sites contain dense weed infestations.

Landscapes and soils

- The proposed development does not involve medium or large-scale excavation of soils as the levels required for construction can be achieved by re-contouring. Excavations for services will be shallow (typically within 3 m of the ground surface) and there is no identified requirement for importation of fill material.

- Areas of high erosion risk on the 2CRU site along the existing low escarpment are in an area where development is restricted by the approved Area Plan and so these areas will not be developed. Impacts on the existing low escarpment are further avoided through the inclusion of open space buffers between developed areas and the escarpment; and the establishment of a formal access point (staircase) into the Casuarina Coastal Reserve.

- The Muirhead North lot has gradual slopes that pose a low erosion risk.

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Coastal and oceanic landscapes and processes

- There will be no direct disturbance of beach, dune or intertidal areas. The proposed development is not expected to cause off-site impacts that would alter the coastal or estuarine environments that occur in surrounding areas.

Water resources

- There is no requirement for extraction of surface water or groundwater. Changes to hydrology will be localised within the development area; and post-development stormwater discharges to Buffalo Creek and Sandy Creek will equal pre-development flows.

- Stormwater discharged from the development area to Buffalo Creek and Sandy Creek is not expected to increase sediment or nutrient levels in those creeks due to incorporation of WSUD treatment trains into the development design and the use of retention basins prior to discharge.

Pollutants, chemicals and toxic substances

- There is no requirement for storage or handling of large amounts of hazardous substances during construction and the development does not include industrial or commercial facilities that would produce pollution.

- Contamination assessments undertaken across the development area indicate the only potential source of existing contamination is the 2CRU compound area. Removal of hazardous building materials from the 2CRU compound area and site validation was in progress at the time of preparation of this Referral and will be finalised prior to commencement of construction.

- The development is not expected to cause a long-term change to the local air-shed. Impacts to air quality are expected to be confined to localised increases in dust nuisance to nearby residences and land-users during construction.

- ASS risk is low as there will be no excavation in areas below 5 m AHD.

Plants

- There are no EPBC listed Threatened plant species or ecological communities within or surrounding the area proposed for development.

- The vegetation and habitats that will be cleared / disturbed are common in the region and in the northern parts of the NT more broadly.

- Sensitive monsoon vine forest habitats that occur on the 2CRU site are protected as the approved Area Plan constrains development in the areas where the habitats occur. The habitats will be further protected through rezoning to Conservation (CN) under the NT Planning Scheme and transfer to the NT Government for inclusion in the Casuarina Coastal Reserve.

- The sensitive monsoon rainforest patch that occurs on the Muirhead North site will be retained in an Open Space area and stormwater management has been designed to maintain the quantity and quality of stormwater flows into the patch.

- The risk of spreading weeds into Casuarina Coastal Reserve during construction will be mitigated through pre-construction weed surveys and control programs on the 2CRU site

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boundary with the Reserve, which commenced 2015. The weed infestations in other parts of the proposed development area are located in areas that will be cleared prior to commencement of construction.

Animals

- Ecological assessments have concluded that there are no known important populations of any listed Threatened fauna species located in the area proposed for development.

- The proposed action is not expected to cause a long-term decrease in the size or area of occupancy of the Black-footed Tree-rat population as suitable habitats are present adjacent to the project area in the reserved areas of Casuarina Coastal Reserve.

- The potential for construction activities to cause death or injury to the Black-footed Tree-rat and other fauna will be mitigated through the use of fauna spotter-catchers during land clearing.

Migratory & Threatened Marine Species

- Off-site impacts to water quality are not expected to occur, and have not occurred in association with DHA's Muirhead Breezes subdivision to the south, and therefore any Sawfish that may utilise the aquatic and marine environments of Buffalo Creek will not be affected by the proposed development.

- Light emissions are not expected to be sufficiently visible from the beach that nesting success of marine turtles would be affected.

Migratory & Threatened shorebirds

- The approved Area Plan sites foreshore access trails to the east of the Sandy Creek mouth to avoid disturbance impacts to the shorebird roosting sites located on the western side during the high tide when the largest numbers of birds are generally present.

- To manage disturbance to shorebirds the Casuarina Coastal Reserve Draft Plan of Management (Parks and Wildlife May 2015) indicates that the area of beach 100 m either side of Sandy Creek is a 'dog on lead' zone, where people are permitted to walk dogs as long as they are on a lead and under control.

- In consultation with Parks and Wildlife interpretative signage will be installed at the new beach access points advising visitors of the restrictions in place.

People and communities

- Demand for community services; commercial and retail outlets, has been assessed (GHD 2014). Where additional services are required the development Area Plan and Master Plan provides for these.

- To minimise exposure of future residents to odours the proposed development has been sited outside of the 700 m odour buffer zone established by Power Water around the Leanyer Sanderson Wastewater Treatment Ponds.

- To minimise exposure of future residents to biting insects only 'Rural Residential / Max 5 dwellings per hectare' development will occur within the 1 km Biting Insect Buffer zone defined by Medical Entomology.

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Heritage

- The proposed development will not impact on any sites listed on the NT Heritage Register, National Heritage List, World Heritage List or Commonwealth Heritage List.

- Whilst there are no legislative requirements for protection of the heritage recorded in the area proposed for development, the Proponent proposes to retain the sites referred to as the 'Bunkers' located on the western side of Lee Pt Road and the Konfrontasi Cruciform anti-aircraft gun position located in the north-east corner of the Muirhead North site.

- There are no registered or recorded Aboriginal Sacred Sites protected under the NT Aboriginal Sacred Sites Act in the area proposed development and an Authority Certificate will be obtained by the Proponent prior to commencement of construction.

Strategic planning and sustainability

- The utilities servicing requirements have been assessed and the serviceability of the proposed development has been confirmed in consultation with PWC.

- The development will increase demand for power and water, and will result in more sewage waste processed through the Leanyer Sanderson plant; however, the servicing requirements are not anticipated to exceed the capacity of the existing networks subject to completion of upgrade works already planned by PWC.

5.3 Proposed action IS a controlled action

Not applicable

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6 Environmental record of the responsible party

		Yes	No
6.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** Defence Housing Australia is committed to sustainability. Since 1 July 2010, all of DHA's new housing has been built to a minimum six star energy rating (National Housing Energy Rating Scheme). Where possible, DHA housing complies with the Australian Government's Liveable Housing Design Guidelines - Silver Level. DHA's focus is on five key areas of sustainability: • low energy consumption • low water consumption • effective waste management • human wellbeing • biodiversity of local flora and fauna. The following recognition received for developments in the NT demonstrate DHA's commitment to the environment: • Finalist (highly commended) – 2014 NT Natural Resource Management Awards, Best collaboration in natural resource management for Breezes Muirhead Aboriginal landcare program • Finalist – 2014 Awards for Excellence, Environmentally sustainable development for Breezes Muirhead, Urban Development Institute of Australia. DHA have previously referred two development proposals under the *EPBC Act* and have constructed those developments in accordance with approval conditions. The Lyons and Muirhead developments in the NT are further evidence of DHA's record of responsible environmental management in the delivery of NT projects.	X	
6.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details** Not applicable		X
6.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?**		

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		Yes	No
	If yes, provide details of environmental policy and planning framework Not applicable		
6.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)** EPBC 2011/6163 Defence Housing Australia/Commonwealth/North of Heysen Street, Weston Creek/ACT/North Weston Residential Development, dated 31 Oct 2011 2010/5525 Defence Housing Australia/Residential development/Lot 9737, Town of Nightcliff, approx 18km NE of Darwin CBD/NT/Muirhead Subdivision, dated 03 Jun 2010	X	

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7 Information sources and attachments

(For the information provided above)

7.1 References

Documents that are readily available to the public online and those documents provided as attachments to the EPBC Referral are highlighted. Other documents referenced are either unpublished reports prepared by consultants for DHA (available on request) or books / journal articles that can be purchased.

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7.2 Reliability and date of information

The information presented in this Referral is largely taken from site and project specific assessments and reports prepared by consultants engaged by DHA. The ecological information has been supplemented by publically available information in relation to the flora and fauna present in the Casuarina Coastal Reserve and occurrence of Threatened species in the area; and information provided by NT Parks and Wildlife in relation to shorebirds and marine turtles.

The first project specific site assessments were undertaken in 2010 as part of the due diligence associated with transfer of the 2CRU site ownership from Department of Defence to DHA. These site assessments included ecological investigations, contamination reviews and heritage assessments (GHD 2010).

Over the period 2014 – 2015 DHA engaged numerous site specific assessments to inform development of the Area Plan, Planning Principles and Master Plan, which have subsequently been approved under the NT Planning Scheme. These assessments included geotechnical, engineering services, hydrology, community infrastructure requirements and retail requirements.

In early 2015 EcOz Environmental Consultants was engaged to prepare a NOI and EPBC Referral for the project. A gap analysis was undertaken of the existing environmental information and the following additional assessments were undertaken:

- Site characteristics assessment across 2CRU and Muirhead North (vegetation, soils, slope etc)
- Stage 1 Preliminary site investigation (Muirhead North).

Given that the information has been sourced mainly from project and site specific assessments the information is considered current and reliable.

7.3 Attachments

LeePt_boundary.shp (GIS file of project area boundary)

Attachment A: Approved Area Plan and Planning Principles
Attachment B: Development Master Plan
Attachment C: Stakeholder Consultations
Attachment D: Engineering Services Report
Attachment E: Hydrological review of Muirhead North rainforest patch
Attachment F: Ecological Assessment Report
Attachment G1: Description of environment and likely impacts (Part 1)
Attachment G2: Description of environment and likely impacts (Part 2)
Attachment H1: Heritage assessment 2 CRU
Attachment H2: Heritage Assessment Muirhead North

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		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Fig 1: Project location Fig 2: Project area and surrounds town planning zones
	GIS file delineating the boundary of the referral area (section 1)		LeePt_boundary.shp Attachment A Attachment B
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Attachment G1 & G2[1]
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		NA
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	Attachment C Attachment H1 Attachment H2
	copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment F
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	Attachment D Attachment E Attachment G
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	✓	Attachment C:

[1] Contains figures showing the location of the project in relation to MNES and important features

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8 Contacts, signatures and declarations

Project title: Lee Point Master-planned urban development

8.1 Person proposing to take action

1. Name and Title:	Shaun Barber, Senior Development Manager
2. Organisation:	Defence Housing Australia
3. EPBC Referral Number (if known):	Not assigned
4: ACN / ABN (if applicable):	72 968 504 934
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6. Telephone:	0417 540 963
7. Email:	shaun.barber@dha.gov.au
8. Name of designated proponent (if not the same person at item 1 above and if applicable):	NA
9. ACN/ABN of designated proponent (if not the same person named at item 1 above):	NA

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature S Barber Date 21/10/2015

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8.2 Person preparing the referral information (if different from 8.1)

Name	Kylie Welch
Title	Managing Consultant - Approvals
Organisation	EcOz Pty. Ltd.
ACN / ABN (if applicable)	ABN 81 143 989 039
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Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature  Date 7 Oct 2015

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Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC 2015/7591

Decision to approve action management plan

To: , Branch Head, Environment Assessments (Vic, Tas) and Post Approvals

Action required: For decision

Timing: Standard timing applies

Approval Holder: Defence Housing Australia

Lee Point Master-planned Urban Development, Darwin, Northern Territory

Recommendations

1) That you approve the action management plan Black Footed Tree Rat Offset Plan for the Lee Point Development, version 2, April 2025 at Attachment A, in accordance with Condition(s) 8a) of the approval for EPBC Ref 2015/7591.

Approved/Not approved/Please discuss

2) That you sign the letter at Attachment B advising the approval holder of your decision.

Signed/Not signed

Signature of delegate:

Date: [date]

Comments:

Key issues

1) The Lee Point Master-planned Urban Development was approved on 17 March 2019 and includes conditions that require offsets to be provided for impacts to the Black Footed Tree Rat (Attachment C). Approval condition 7 prescribes an outcomes-based approach to offsetting impacts at the 2CRU portion of the development and does not relate to the matters discussed in this brief.

2) Approval condition 8 prescribes a two-stage process for agreeing offsets at the Muirhead North portion of the development as follows:

   - Condition 8a) sets the requirements for a strategic offset framework

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- Condition 8b) sets detailed requirements for offset projects submitted in accordance with the overarching framework

3) The Black Footed Tree Rat Offset Plan (BFTR Offset Plan) that is the subject of this brief has been submitted in accordance with condition 8a).

Background

4) The Minister for the Environment and Water (the Minister) has delegated you as decision maker for these matters pursuant to section 515 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

5) On [date], [proponent] referred the proposed Action of [description of the action from the decision notice] (Attachment [X]).

6) On [date] [choose the Minister [or] a delegate of the Minister end] approved the Action under section 133 of the EPBC Act and attached conditions to that approval under section 134 of the EPBC Act (Attachment C).

7) [Choose The approval conditions were varied on [date(s)] [or] The conditions of approval have not been varied. End]

8) [Delete if not required] On [date] the approval was transferred to [current approval holder name] (Attachment [X]).

9) The approval has effect for the following protected matters and controlling provisions: [delete or copy and paste as needed]

   a) Choose controlling provision

   b) Choose controlling provision

   c) Choose controlling provision

10) The Black Footed Tree Rat Offset Plan (BFTR Offset Plan) has been submitted in accordance with condition 8 of the approval conditions (Attachment C) which requires offsets for Black Footed Tree Rat impacts at Muirhead North. Condition 8 is divided into two parts:

    - Condition 8a) sets the requirements for an offset framework that explains how offsets will be provided and;

    - Condition 8b) which sets the detailed requirements for offset proposals submitted in accordance with the framework.

11) [Insert any other relevant conditions relating to the AMP e.g. In accordance with Condition [X] of the approval, the Action must not commence until the AMP has been approved by the Minister in writing. *Note: if this is a condition of the approval include whether the Action has commenced.* e.g. The Action has not commenced, or the Action commenced on [date]].

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12) *[First approval of AMP only – delete if the brief is for a revised AMP that has previously been approved.]* On [date], the approval holder submitted the [plan name, version, and date] to the department for approval (Attachment A).

13) *[Include for both first time and revised AMPs]* The department's evaluation of the [plan name, version, and date], against the conditions of approval and other relevant requirements is at Attachment D. A list of other relevant requirements is at Attachment [X].

    [Include a link to each relevant statutory document and department policy used in the assessment process in this list of other relevant requirements.]

Consultation [delete if not required]

[Include reason for consultation and identify who has been consulted, including the approval holder, in assessing the AMP or revised AMP. Can also include internal consultation, just list sections, branch, or division.

Compliance issue – please consult with the Environmental Audit section for any compliance issues with the AMP and/or approval and include the advice and/or recommendations given, including if the recommendation is to not take action.

Note: if more appropriate include any consultation as part of your evaluation rather than a separate section.

Examples below – delete if not needed]

14) The department raised concerns with the approval holder regarding [X] (Attachment [X]).

15) The department sought expert advice from [name] who works for the department's [section]. [Name] recommended [X] (Attachment [X]).

16) The [name of department] has been consulted and is prepared to review the [revised] AMP once it has been confirmed this version can be implemented under the EPBC Act.

17) [Choose if the AMP or revised AMP was published for public comment] The [choose AMP [or] revised AMP end] was published on the department's website from [date] to [date]. [X] public comments were received. [Provide a summary of issues raised in the comments and how these have been addressed by the AMP or revised AMP].

    a)

Sensitivities [delete if not required]

[Include any sensitivities the delegate should be aware of when considering the recommendations of the brief – for example]

18) [The former Minister administering the EPBC Act approved the [X] plan. If you agree to Recommendation 1, the Minister's office should be notified of your decision.]

Cleared by

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Director, Post Approvals Queensland
Environment Assessments (Vic, Tas) and Post Approvals
April 2025

Attachments

A: Black Footed tree-rat (*Mesembriomys gouldii gouldii*) Offset Plan for the Lee Point Development (EPBC 2015/7591) FOR APPROVAL

B: Letter to approval holder FOR SIGNATURE

C: Conditions of approval as in force April 2025

D: Department evaluation of Black Footed tree-rat (Mesembriomys gouldii gouldii) Offset Plan

E: Defence Housing Australia request to approve Black Footed tree-rat (Mesembriomys gouldii gouldii) Offset Plan

F: EPBC 2015/7591 Referral for Lee Point Master-planned Urban Development, Darwin, Northern Territory

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Black-footed Tree-rat (*Mesembriomys gouldii gouldii*) Offset Plan for the Lee Point Development (EPBC 2015/7591)

Defence Housing Australia

4 elements

DECLARATION OF ACCURACY

In making this declaration, I:

- am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations). The offence is punishable on conviction of imprisonment or a fine, or both.
- am authorised to bind **Defence Housing Australia** to this declaration and have no knowledge of that authorisation being revoked at the time of making this declaration.

Signature s. 22(1)(a)(ii)

Full name (please print)

s. 22(1)(a)(ii)

Organisation (please print)

Defence Housing Australia

Revision History

Version	Purpose	Issued by	Date	Reviewer	Date
1	Draft	Patrick Tomkins	28/03/2025	Mellissa Brown	29/03/2025
2	Final	Patrick Tomkins	29/05/2025	Mellissa Brown	30/05/2025

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1.0 Introduction

1.1 Purpose of the Document

Four Elements Consulting was commissioned by Defence Housing Australia (DHA) to prepare a document outlining strategies to offset impacts of the Lee Point Master-planned Urban Development (the Project) on the nationally significant black-footed tree-rat (*Mesombriomys gouldii gouldii*), which is listed as Endangered under the *Environment Protection and Biodiversity Act 1999* (EPBC Act). Offsets for the black-footed tree-rat are required under the project's EPBC Act approval (EPBC 2015/7591), which is detailed in **Section 1.1.2** below.

1.1.1 Impacts Requiring Offsets

The project was subject to an Environmental Impact Statement (EIS) process in 2017, which confirmed presence of the black-footed tree-rat at Muirhead North and concluded that 17.5 ha of suitable habitat was present for the species within the disturbance footprint. This area was reduced to 10 ha when the project was granted EPBC approval in 2019. Thus, this Black-footed Tree-rat Offset Plan will outline a strategic framework to offset the loss of 10 ha of black-footed tree-rat habitat at Muirhead North.

1.1.2 Meeting the Project's EPBC Act Approval Conditions

The project's EPBC Act approval conditions state that offsets must be provided for the loss of black-footed tree-rat habitat at Muirhead North. Condition 8 a) of the EPBC Act approval states that a framework for the delivery of offsets (i.e., an offset plan) must be submitted to the Minister for approval within 12 months of commencement of the action at Muirhead North. Condition 8 b) states that when this offset plan has been approved, detailed management plans for each approved offset project must be developed and submitted to the minister. This document addresses Condition 8 a) of the project's EPBC Act approval only, with condition 8 b) to be addressed once this document is approved by the minister. These conditions are outlined in **Table 1** below.

Table 1 Lee Point Master-planned Urban Development EPBC Approval – Condition 8

Biodiversity Offset Condition	Location in this Document
8. To offset the loss of 10 ha of **Black-footed Tree-rat** habitat from **Muirhead North**, within 12 months of **commencement** of the action at **Muirhead North** the approval holder must submit a Black-footed Tree Rat Offset Plan to the **department** for the **Minister**'s approval. The approval holder must not undertake the action at **Muirhead North** for more than 24 months from the date of **commencement** of the action	**Entire document.**

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unless the **Minister** has approved the Black-footed Tree Rat Offset Plan in writing, and the provisions of condition 2A and 8B have been met.	
a) The Black-footed Tree-rat Offset Plan must provide a framework for how the **clearance** of **Black-footed Tree-rat** habitat will be offset, and must: i. Include a review of relevant **approved conservation advices, recovery plans and threat abatement plans**;	**Section 3**
ii. Identify threats to **Black-footed Tree-rat**, and potential recovery actions and research opportunities; and	**Section 3**
iii. Specify a process for developing Black-footed Tree Rat Offset Projects, and a staged process for submitting proposed Black-footed Tree Rat Offset Projects and milestones for completion of Black-footed Tree Rat Offset Projects to the **Department** for approval by the **Minister**.	**Section 5**
b) Offset Projects submitted to the Department for approval in accordance with Condition 8(a)iii must: i. specify the location and nature of Offset Project activities; ii. include project goal/s, budget and a detailed Black-footed Tree Rat Offset Project description, including timeframes for the elements of the Black-footed Tree Rat Offset Project, and reporting and publishing of the Black-footed Tree Rat Offset Project results; iii. demonstrate how the Black-footed Tree Rat Offset Project is consistent with the Black-footed Tree Rat Offset Plan; iv. describe advice obtained to develop the Black-footed Tree Rat Offset Project; v. explain how the Black-footed Tree Rat Offset Project complies with the principles of the **EPBC Act Environmental Offsets Policy** and, if relevant, provide details of how the Black-footed Tree Rat Offset Project meets the criteria for research and educational programs identified in Appendix A of the **EPBC Act Environmental Offsets Policy**; and	**To be addressed in future documents.**

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vi. identify and manage risks associated with implementing the Black-footed Tree Rat Offsets Project. The approval holder must not implement any Black-footed Tree Rat Offset Project until it has been approved in writing by the **Minister**. Each approved Black-footed Tree Rat Offset Project must be implemented. The approval holder must expend an amount equivalent to at least $78,750 (excluding GST) on implementation of the Black-footed Tree Rat Offset Projects approved in accordance with Condition 8(a) and 8(b).	

This document outlines strategies to offset impacts to the black-footed tree-rat at Muirhead North only. Impacts to the species from the 2CRU development will be offset according to condition 7 of the project's EPBC approval, which is outside the scope of this document.

1.2 Document Structure

This Black-footed Tree-rat Offset Plan is structured as follows:

- **Section 1** – Introduction
- **Section 2** – Overview of the project and species description
- **Section 3** – Threats facing the black-footed tree-rat and potential management strategies
- **Section 4** – Development of offset plan
- **Section 5** – Proposed offset projects
- **Section 6** - References

2.0 Project Overview

2.1 Project description

Defence Housing Australia is proposing an urban development (the Lee Point Master-planned Urban Development) on the outskirts of Darwin, which will establish a residential, tourism, community and commercial precinct in the suburb of Nightcliff. The 132.5 ha project site is bisected by Lee Point Road and comprises a former Department of Defence installation (referred to as the 2CRU site) on the western side, and a vacant parcel of crown land on the eastern side (referred to as Muirhead North). The project will provide affordable housing for both Defence families and for members of the public, as well as establish a tourism and community hub featuring restaurants, cafes, hotels, self-contained apartments, and retail shops. The project will also provide

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serviced allotments to the NT Government for essential community infrastructure, including a childcare centre, primary school, and sporting oval.

The project's proximity to popular public spaces at Lee Point and the Casuarina Coastal Reserve will ensure high traffic throughout the year, generating economic stimulus for a Darwin economy that is currently in decline after recent downturns in the mining and fossil fuel industries. In total, the project will contribute an estimated $350 million to the local economy, providing full time employment for up to 964 workers in the construction industry, 117 full-time and part-time employees in the hospitality industry, and 40 full-time employees in education. Furthermore, the project will prioritise training and employment opportunities for traditional owners, fostering economic participation and long-term benefits for the local community.

2.1.1 Relevant stakeholders

The project will proceed via an arrangement between the two major stakeholders – DHA, who are the landowners of 2CRU, and the Northern Territory Government, who is the controlling agency at Muirhead North via the Northern Territory Department of Infrastructure, Planning and Logistics (DIPL). In addition to the primary stakeholders, there are several key agency stakeholders involved with the project. These include:

- The Larrakia people - the traditional owners of the project site represented through the Larrakia Development Corporation and the Larrakia National Aboriginal Corporation.
- The City of Darwin - the relevant local government body.
- Northern Territory Parks and Wildlife Commission - the agency responsible for the Casuarina Coastal Reserve.

2.2 Species Description

2.2.1 Conservation Status

The black-footed tree-rat is listed as Endangered under both the EPBC Act and the *Territory Parks and Wildlife Conservation Act 1976*. At present, no Recovery Plan exists for the species. However, the Conservation Advice for the Kimberley and mainland Northern Territory subspecies of the black-footed tree-rat provides sufficient direction to implement priority actions for the species and mitigate against key threats.

2.2.2 Habitat and Distribution

The black-footed tree-rat is restricted to forests and woodlands in coastal regions of the Kimberley and the Northern Territory (Friend & Calaby, 1995; Rankmore, 2003). It prefers woodland dominated by *Eucalyptus miniata* (Darwin Woollybutt) and *Eucalyptus tetrodonta* (Darwin Stringybark), particularly in areas with a well-

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developed shrubby understorey (Friend, 1987; Friend & Taylor, 1985). These habitats are typically characterised by large-diameter trees, indicative of low fire frequency and intensity.

The black-footed tree-rat (*Mesembriomys gouldii*) comprises three subspecies with disjunct distributions - *M. g. rattoides* is found along the eastern and western coastal regions of Cape York Peninsula, *M. g. melvillensis* is restricted to Melville Island, and *M. g. gouldii* is distributed patchily across the Kimberley and the Top End. Historical records indicate a contraction of the species' range, particularly from Eastern Arnhem Land and the Gulf of Carpentaria (Friend & Calaby, 1995).

Multiple studies have documented a decline in population size across key regions in the black-footed tree-rat's distribution. For example, recent surveys have revealed very low numbers of black-footed tree-rats in Kakadu National Park, where the species was considered relatively common 30-40 years ago (Woinarski et al., 2010). Similar declines have been observed across the broader Top End region (Ziembicki et al., 2013) and on Melville Island (Davies et al., 2018a). However, the species appears to remain relatively abundant in the Darwin region, with studies recording stable numbers between 2001 and 2014 (Stokeld & Gillespie, 2015).

2.2.3 Ecology

The black-footed tree-rat is a large, nocturnal rodent weighing between 500 and 900 g. It is characterised by a robust body with grey fur, large black feet and ears, and a distinctive, elongated tail (30-40 cm) that terminates in a brush of white hairs. The species exhibits both arboreal and terrestrial foraging behaviours and is highly mobile, with an average home range of 67 ha in unfragmented forest and 27 ha in fragmented habitats (Rankmore, 2006). It is known to travel up to 2 km in a single night whilst foraging and is primarily frugivorous, consuming a range of fleshy and hard fruit seeds, with a strong preference for *Pandanus spiralis* fruit (Friend & Calaby, 1995). Its diet is supplemented with invertebrates, flowers, and grasses depending on seasonal availability (Morton, 1992; Rankmore, 2006; Rankmore & Friend, 2008).

The black-footed tree-rat is nocturnal, sheltering preferentially in tree hollows during the day. In areas where hollows are scarce, the species is known to nest in large *Pandanus spp.* (Pittman, 2003). Historically considered a solitary species (Friend, 1987), emerging evidence suggests that the black-footed tree-rat may exhibit more gregarious behaviours. A recent radio-tracking study reported that a significant proportion of retrieved collars had been chewed by other black-footed tree-rats (Rankmore pers. comm. as cited in EcOz, 2017). Additionally, recent camera-trapping studies have frequently documented multiple individuals at bait stations, further supporting the hypothesis of social tendencies within the species (Brydie Hill, Flora and Fauna Branch of the NT Department of Land and Resource Management, pers. comm. as cited in EcOz, 2017).

The black-footed tree-rat reproduces throughout the year, with peak breeding activity occurring during the late dry season (typically August–September) (Friend, 1987; Rankmore, 2006). They become sexually mature at approximately 80 days, with females reproducing every nine months. The species has a gestation period of 43–

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44 days, producing litters of one to three offspring, with juveniles weaned at around one month of age (Crichton, 1969; Friend, 1987).

3.0 Threats and Management Strategies

A combination of factors has contributed to the contraction and fragmentation of black-footed tree-rat populations across their range. These threats, as well as appropriate management strategies, are detailed in the Black-footed Tree-rat Conservation Advice and are outlined in **Table 2** and **Table 3** below. Other relevant documents considered when determining threats to the black-footed tree rat and potential mitigation strategies include:

- *Threat abatement plan for predation by feral cats 2024* (DCCEEW, 2024)
- *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses* (DSEWPC, 2012)
- *Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads* (DSEWPC, 2011)

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Table 2 Threats to the Black-footed Tree-rat

Threat	Consequence Rating	Evidence	Relevance to Greater Darwin Population
Inappropriate fire regimes (frequent, high-intensity, extensive fires)	Severe	Fire frequency is an important predictor of black-footed tree-rat abundance (Davies et al., 2018b). There is strong evidence that frequent, high-intensity fires reduce habitat quality for the black-footed tree-rat by decreasing food availability and the number of suitable hollows (e.g., Penton et al., 2020; Penton et al., 2021a; Penton et al., 2021b). Inappropriate fire regimes are also known to exacerbate predation pressures on small mammals (Leahy et al., 2015), particularly from feral cats (McGregor et al., 2014; 2015; 2016).	**High.** Intense, high-frequency fires are a known threat to ecological values in the greater Darwin region.
Predation by feral cats	Severe (if confirmed)	This has not been demonstrated but is highly likely. Feral cats are widespread across northern Australia and have been implicated in the decline of mammal populations throughout the black-footed tree-rat's range (e.g., Davies et al., 2018a; Fisher et al., 2014; Frank et al., 2014). A recent review of all known feral cat predation records in Australia identified 151 species of native Australian mammal, with medium-large rodents considered most at risk of predation (Woolley et al., 2019). Several species that are comparable in size and behaviour to the black-footed tree-rat were confirmed as prey for feral cats, including congener the golden-backed tree-rat (*Mesembriomys macrurus*).	**High.** Feral cats are common in the greater Darwin area and are likely to be impacting black-footed tree-rat populations.

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Habitat loss and fragmentation	Severe	The large tracts of tall, open Eucalypt woodland required by this species (Rankmore, 2006) are increasingly at threat from localised developments, particularly from the horticulture and mining sectors (TSSC, 2015). Urbanisation and expansion in the Darwin region are increasingly constricting and fragmenting remaining black-footed tree-rat habitat (S. Ward, pers. comm. as cited in TSSC, 2015).	**High.** Black-footed tree-rat populations in the Darwin region are becoming increasingly fragmented as urbanisation encroaches on the species' remaining habitat.
Habitat change due to exotic invasive grasses	Severe	This has not been demonstrated but is likely. Invasive grasses are spreading throughout the black-footed tree-rat's range (e.g., DEPWS, 2024; Kean & Price 2003) and are known to increase fuel loads, resulting in more frequent and higher intensity fires, which are known to be detrimental to the species. Invasive grass infestations are also likely to impede the black-footed tree-rat's ability to forage (TSSC, 2015).	**High.** Invasive grasses are present throughout the greater Darwin region and are likely to be impacting black-footed tree-rat habitat quality by reducing food availability, impeding foraging behaviours, and contributing to detrimental fire regimes.
Predation by wild dogs/dingoes	Moderate	This has not been demonstrated but is plausible. Wild dogs/dingoes are common throughout the black-footed tree-rat's range (ALA, n.d.) and are known to predate upon similar mammalian species.	**Medium.** Wild dogs are known to occur throughout the greater Darwin region, but their impact on the black-footed tree-rat is likely to be minor. Direct predation of feral dogs on black-footed tree-rats has not been demonstrated, and wild dog/dingo presence may provide indirect benefits to black-footed tree-rats be suppressing the activity of feral cats (Kennedy et al., 2012).
Habitat degradation and resource depletion due to livestock and feral herbivores	Minor	This has not been demonstrated but is possible. Feral herbivores exacerbate invasive grass and weed incursion (Hogan & Phillips, 2011), which can impact vegetation structure and may, in turn, alter fire regimes.	**Medium.** Feral herbivores occur throughout the greater Darwin region, but their impact on black-footed tree-rat populations is likely to be minor.
Poisoning by cane toads	Unknown	This has not been demonstrated but is possible. The decline of black-footed tree-rats in the Top End coincided with cane toad colonisation (TSSC, 2015), suggesting a possible correlation.	**Low.** Evidence suggests that impacts from cane toads are greatest at the invasion front, with these effects diminishing over time as wildlife adapts to their presence (DCCEEW, 2010). Given

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		Impacts to the black-footed tree-rat may be indirect (e.g., cane toad-related decreases in python and monitor populations resulting in more feral cats).	that cane toads have been present in the Darwin region for 20 years, and there is no evidence linking their colonisation to declines in black-footed tree-rat populations across their range, the impact of cane toads on black-footed tree-rats in the Darwin region is likely to be low.

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Table 3 Management Strategies for the Black-footed Tree-rat

Management Strategy Theme	Specific Actions	Priority	Relevance to Darwin Population
Active mitigation of threats	Develop or maintain regimes that reduce frequency and intensity of fire	High	**High.** Frequent, high-intensity fires are a major threat to biodiversity throughout the Darwin region. The implementation of appropriate fire regimes will improve habitat quality for the black-footed tree-rat and reduce the risk of catastrophic fire events.
	Implement cost-effective control measures to reduce the abundance or impacts of feral cats	High	**High.** Feral cats are prevalent throughout the greater Darwin region and are likely to be impacting black-footed tree-rat populations.
	Maintain habitat patch integrity and increase connectivity, especially in regions subject to clearing and intensification of land use	Medium-high	**High.** As urbanisation of the Darwin region continues, maintenance of habitat patch quality and connectivity is of vital importance.
	Seek to constrain further encroachments of invasive pasture grasses	Medium-high	**High.** Invasive grass control will lessen fuel loads and, in turn, reduce the likelihood of frequent, high-intensity fires. Reduction in invasive grass infestations is also likely to increase foraging opportunities for the black-footed tree-rat.
Captive breeding	Enhance captive breeding program	Medium-high	**Low.** Black-footed tree-rat populations in the Darwin region appear to be relatively stable (Stokeld & Gillespie, 2017; von Takach et al., 2023) and would benefit more from threat mitigation as opposed to re-population.
Translocation	May be required in the Kimberley	Low-medium	**Low.** Black-footed tree-rat populations in the Darwin region appear to be relatively stable (Stokeld & Gillespie, 2017; von Takach et al., 2023) and would benefit more from threat mitigation as opposed to re-population.

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Monitoring	Implement monitoring program linked to assessment of management effectiveness	High	**High.** The black-footed tree-rat population in the Darwin region remains poorly understood. An effective monitoring program will help inform management practices in the future.
Community engagement	Involve Indigenous ranger groups in survey, monitoring and management	Medium	**High.** Indigenous ranger involvement is likely to benefit both the environment and the local community.
	Increase the profile of the species in the Darwin peri-urban area to advocate for its protection	Medium	**Medium.** Recent media attention for the project has increased the profile of the black-footed tree-rat in the Darwin region, which is likely to increase as the project progresses. Increased awareness and community engagement will contribute to positive conservation outcomes for the species.
Habitat mapping	In the Northern Territory, particularly around Darwin, identify and map the highest quality habitat for this subspecies (including the maintenance of required connectivity) for consideration and protection under development pressure.	Medium-high	**High.** Habitat mapping in the Darwin area is important for the maintenance of patch integrity and connectivity as urbanisation in the region increases.

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3.1 Relevance to the Darwin Region

The Black-footed Tree-rat Conservation Advice identifies four threats with a consequence rating of severe that are all highly relevant to the greater Darwin population – habitat loss and fragmentation, inappropriate fire regimes, exotic grass incursion and feral cats (**Table 2**). These threats are discussed below.

3.1.1 Habitat Loss and Fragmentation

Rapid urbanisation in the greater Darwin area poses a significant threat to biodiversity. As Darwin's population grows and anthropogenic transformation of the landscape intensifies, once continuous expanses of native vegetation are becoming increasingly fragmented (Fischer et al., 2021), creating isolated patches of remnant bushland surrounded by a matrix of modified habitats. A number of threatened species, including the black-footed tree-rat, are dependent on these fragmented patches for survival (Griffiths et al., 2002), meaning their retention and management are vital for the preservation of biodiversity in the greater Darwin region.

Patch size is an important factor when considering the biodiversity value of fragmented habitat. It is widely accepted in the literature that species richness is positively correlated with patch size, as larger patches allow for greater habitat diversity (e.g., Angold et al., 2006; Larence et al., 2018; Szangolies et al., 2022). Larger patches are also less influenced by external forces (Saunders et al., 1991), meaning they are more resistant to edge effects and thus more stable (Rankmore, 2006). In northern Australia, where fire plays a major role in the landscape, patch size is even more important as small fragments (e.g., <1 ha) cannot support a diverse fire regime, meaning they become more homogenous as time since isolation increases (Andersen et al., 2012; Driscoll et al., 2021; Rankmore, 2006).

Patch size requirements vary greatly between species (Arroyo-Rodriguez et al., 2020; Johst et al., 2011). Although empirical data on minimum patch size requirements for the black-footed tree-rat is lacking, inferences can be drawn from the species' ecology. Specifically, the black-footed tree-rat is highly mobile, has a relatively large home range (Rankmore, 2006; Rankmore & Friend, 2008), and utilises large tracts of intact forest when foraging (Griffiths et al., 2002; Kerle et al., 2024). A study that radio-tracked black-footed tree-rats in the greater Darwin region found that individuals travelled up to 18 ha over a three-month period (Griffiths et al., 2002), indicating a strong dependence on large, intact woodland patches. This suggests that larger patches (e.g., >20 ha) are more valuable to the species than multiple, smaller habitat fragments.

3.1.2 Inappropriate Fire Regimes

The alteration of fire regimes across northern Australia is well documented in the literature (e.g., Bowman, 2003; Enright & Thomas, 2008; Russell-Smith et al., 2003). The breakdown of traditional burning practices has led to more frequent, high intensity fires (Mariani et al., 2022), which are further exacerbated by factors such as exotic

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grass invasion (Setterfield et al., 2010) and climate change (Canadell et al., 2021). This increase in the frequency of high intensity fires has been implicated in the decline of several mammal species across northern Australia (e.g., Davies et al., 2018b; Price et al., 2005; Woinarski et al., 2001) including the black-footed tree-rat (Davies et al., 2018b).

Several studies have identified fire frequency and intensity as a significant predictor of black-footed tree-rat abundance. Kerle et al. (2024) found that in the Kimberley, black-footed tree-rats preferred areas that were structurally diverse and protected from fire, while Davies et al. (2018b) observed an increase in black-footed tree-rat abundance in plots that were burnt less frequently. These findings can be explained by the species' habitat requirements, which are dependent upon longer fire intervals and reduced fire intensity. Specifically, the black-footed tree-rat prefers mature forest with a well-developed understorey (Davies et al., 2018a; Kerle et al., 2024), utilising hollows for day-time refuges and nesting (Griffiths et al., 2002; Wooley et al., 2024). Penton et al. (2020; 2021) found that black-footed tree-rats prefer mature den trees with large den cavities, while Wooley et al. (2024) demonstrated that hollows are a critical limiting resource for the species in areas that burn frequently. Intense, more frequent fires are also likely to reduce food resources for the species and increase susceptibility to feral cats (McGregor, 2017).

Altered fire regimes in the Darwin region pose a significant threat to the black-footed tree-rat. Due to its proximity to a major population centre, bushland in the greater Darwin region experiences frequent, deliberate burning (NAFI, 2025). This rise in fire frequency, combined with the increase in fuel loads associated with the proliferation of exotic grasses in the region (Keane & Price, 2002), highlights the increasing threat that fire poses to black-footed tree-rats in the greater Darwin area.

3.1.3 Invasive Grasses

Exotic grass invasion is a major threat to biodiversity across northern Australia (Cook & Grice, 2013; Gallagher & Leishman, 2015; Godfree et al., 2017; Rossiter-Rachor et al., 2023). Invasive grasses alter habitat structure, composition, and quality (D'antonio & Vitousek, 1992), which in turn impacts resource availability and disturbance regimes, often with far-reaching ecosystem-level consequences (Gordon, 1998). There are numerous exotic grass species currently invading northern Australia, and there is a plethora of literature documenting their adverse environmental impacts (e.g., Grice et al., 2013; Lonsdale, 1994; Rossiter et al., 2003; van Klinken et al., 2015; van Klinken & Friedel, 2018).

Of particular concern in Australia's northern savannah are transforming grasses such as gamba grass (*Andropogon gayanus*). Gamba grass outcompetes native grasses (Rossiter-Rachor et al., 2009), forming a monoculture that increases fuel loads and results in more frequent, high-intensity fires (Setterfield et al., 2010). One study attempted to quantify the impact of gamba grass on fire regimes in northern Australia, finding that areas dominated by gamba grass experienced fires eight times more intense than those recorded in native grass

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savannahs at the same time of year (Rossiter et al., 2003). Recent surveys in the greater Darwin area revealed a significant increase in gamba grass infestations, with an estimated 532,900 ha in the Darwin and Katherine regions affected (Northern Territory Government, 2024). This highlights the urgent need for effective management strategies in the region.

Exotic grass invasion poses a significant threat to the black-footed tree-rat. Invasive grasses contribute to more frequent, higher-intensity fires, which is consistently identified in the literature as the major threatening process for the species (Davies et al., 2018b; Kerle et al., 2024; Neave et al., 2024; Wooley et al., 2024). Invasive grasses outcompete native grasses and shrubs, reducing structural diversity and woodland complexity, which is likely to impact food availability (Grice et al., 2013) and impede black-footed tree-rat foraging behaviours. Accordingly, it is demonstrated throughout the literature that black-footed tree-rats prefer habitats with a well-developed shrubby understorey (Friend, 1987; Friend & Taylor, 1985). In recent studies, Davies et al. (2018) found that shrub density was a significant, positive predictor of site-occupancy for the black-footed tree-rat, and Kerle et al. (2024) demonstrated a preference for areas of high structural diversity. This suggests that exotic monocultures of invasive grasses may be detrimental to the species, regardless of their impact on fire regimes.

3.1.4 Feral Cats

Feral cats are a driving force behind the collapse of mammalian populations across northern Australia (Davies et al., 2017; Dickman 1996; Murphy et al., 2019; Tuft et al., 2021; Woinarski et al., 2011). They exert direct pressure on species through predation, and influence populations indirectly by compounding the impacts of other threats (Doherty et al., 2017). Feral cats are abundant throughout the greater Darwin region and represent a significant threat to the black-footed tree-rat. Although there is limited evidence demonstrating direct predation of cats on black-footed tree-rats, feral cats are generalists and are known to predate upon many similar species, including congener the golden-backed tree-rat (Woolley et al., 2019). This lack of direct evidence does not suggest an absence of predator-prey interactions between the species, but rather a lack of sufficient research into the impacts of feral cats on black-footed tree-rat populations.

The impact of feral cats in the Darwin region is likely exacerbated by other threats, including invasive grass incursion and altered fire regimes. In a study conducted by Neave et al. (2024), the impact of feral cats was found to be greatest in areas that were frequently burnt. This aligns with previous work suggesting that frequent, high intensity fire driven by invasive grass incursion can exacerbate the impact of feral cats in northern Australian savannahs (Leahy et al., 2015; McGregor et al., 2014, 2015). The synergistic effects of feral cats, altered fire regimes, and native grass incursion highlight the need for a wholistic approach when developing management actions in the greater Darwin region.

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3.2 Management Strategies Relevant to the Darwin Region

To mitigate the threats outlined above, the conservation advice identifies several high and medium-high priority management strategies that are highly relevant to the greater Darwin population of black-footed tree-rats - fire management, maintenance of habitat patch integrity and connectivity, feral cat control, invasive grass management, habitat mapping, and implementation of a monitoring program (**Table 3**). These management strategies are discussed below.

3.2.1 Maintenance of Patch Integrity and Connectivity

As urbanisation in the Darwin region intensifies and habitats become more fragmented, the maintenance of patch integrity becomes increasingly important. Threats such as weeds and feral animals are more prevalent closer to population centres (Gallagher & Leishman, 2015), meaning active management of patches in these areas is necessary for the maintenance of ecosystem functions. As discussed above, patch size is an important factor when assessing the value of habitat, with larger patches generally supporting greater biodiversity than smaller patches. Larger patches are also more resistant to the effects of fire, highlighting the importance of prioritising the protection of continuous tracts of habitat over multiple, smaller patches.

The impacts of habitat fragmentation can be mitigated by maintaining connectivity between habitat patches. This can be achieved through habitat corridors, which maintain or re-establish a link between two or more historically contiguous patches of habitat (Hobbs, 1992). Habitat corridors are beneficial in fragmented landscapes as they increase the amount of habitat available to species (Saunders & Hobbs, 1991), facilitate movement and dispersal between otherwise isolated populations (Saunders et al., 1991), and help to maintain ecosystem functions (Saunders & Hobbs, 1991). The benefit of habitat corridors is well established in the literature, and there is a plethora of research documenting their successful implementation in wildlife conservation (e.g., Brooker et al., 1999; Christie & Knowles, 2015; Gilbert-Norton et al., 2010).

The protection of larger habitat patches (i.e., >20 ha) and the maintenance of connectivity is particularly important for the black-footed tree-rat. The species has a relatively large home range and prefers expansive, intact tracts of mature forest (Rankmore, 2006; Davies et al., 2018b), meaning it may be more susceptible to the impacts of habitat fragmentation. This is particularly relevant to the greater Darwin population, where increased urbanisation is resulting in smaller, more fragmented patches of habitat, suggesting that management strategies in the region should prioritise protection of large, contiguous patches that preserve connectivity.

3.2.2 Fire Management

Fire management is one of the few tools available for conservation at the landscape scale (Davies et al., 2018). It is applied throughout northern Australia to conserve biodiversity, with the patch mosaic burning paradigm most often utilised. This burning strategy attempts to establish and maintain a fine-scale, heterogenous mosaic

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of varying fire histories (Parr & Anderson, 2006), with the goal of increasing the amount of long unburnt vegetation (Woinarski & Winderlich, 2014). Recent research suggests that fire management could benefit from a more tailored approach (Davies et al., 2018), with the success of management strategies increasing if they are developed in consideration of local environmental conditions and adapted to individual species.

Inappropriate fire regimes are having a detrimental impact on ecosystems in the greater Darwin area (Fischer et al., 2023; Price & Baker, 2007) and are likely to be impacting black-footed tree-rat populations. More frequent, high intensity fires are a key threat to the species, meaning effective fire management is crucial to the black-footed tree-rat's ongoing perseverance in the Darwin region. This can be best achieved through a fire management strategy that is tailored to the Darwin region and developed in consideration of black-footed tree-rat ecology.

3.2.3 Invasive Grass Management

Invasive grass management in northern Australia is guided by the *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses* (DSEWPC, 2012). This plan states that weed management is based on the principles of prevention, eradication, containment and asset protection, which establishes a hierarchy for weed management. Preventing the establishment of invasive plant species is the most cost-effective approach to weed management and should be the goal of all management programs. In areas with small or newly established infestations, the goal should be aggressive suppression with the aim of eradication. In cases where eradication is not feasible or economically viable, containment efforts should focus on limiting the spread of the invasive grasses and reducing their impact on unaffected areas. And finally, for core or large infestations, management should prioritise the identification and protection of key assets.

Invasion by invasive grasses is a major threat to biodiversity in the Darwin region. Gamba grass is of particular concern and must be managed according to the strategies outlined in the Management Plan for Gamba Grass 2020-2030 (DEPWS, 2020), which is a statutory document designated under Section 10 of the *Weeds Management Act 2001*. Proliferation of gamba grass and other exotic species is likely to be impacting local black-footed tree-rat populations, meaning invasive grass management is vital to the preservation of habitat for the species in the greater Darwin area.

3.2.4 Feral Cat Control

Feral cat control in Australia is guided by the *Threat abatement plan for predation by feral cats 2024*, which outlines methods for both the direct and indirect control of feral cats. Direct control methods are exclusion via purpose-built fenced areas, poisoning, and trapping and shooting, while indirect methods include management of fire and grazing, and manipulation of species interactions.

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Feral cats are a major threat to biodiversity in the greater Darwin area and are likely to be impacting the black-footed tree-rat. A reduction in feral cat numbers will directly benefit the species by reducing predation pressures. Further, inappropriate fire regimes, invasive grass incursion and feral cats are likely to be having synergistic effects, meaning black-footed tree-rat habitat cannot be managed successfully unless all three threats are addressed.

3.2.5 Habitat Mapping

Habitat mapping is an essential tool in wildlife management. It ensures informed decision-making during the development process and facilitates the protection of high value threatened species habitat. Habitat mapping is particularly important in urban areas, where connectivity between habitat patches is of greater importance (LaPoint et al., 2015), and small habitat patches can hold disproportionate value for threatened species (Bierwagen, 2007).

In the Darwin region, black-footed tree-rat populations occur in increasingly fragmented habitats. Mapping of black-footed tree-rat habitat in the area would facilitate decision-making during the development process, allowing for the protection of high value habitat and the maintenance of connectivity between habitat patches.

3.2.6 Monitoring Program

The literature documenting the importance of monitoring in conservation is vast (Lindenmayer & Lykens, 2010). It is widely accepted in the scientific community that effective management goes beyond implementation and is fundamentally linked to well-designed monitoring and evaluation systems (Hockings, 2003; Stem et al., 2002; Woodhill, 2000). Monitoring allows for evaluation of a management strategy's efficacy, serving as an early warning system for potential problems and facilitating development of remedial ideas (Hatry, 1999; Stem et al., 2002). Effective monitoring programs provide public and internal accountability and are vital for informed decision-making (Buckley et al., 2008).

Monitoring black-footed tree-rat populations in the greater Darwin area is essential for effective management. Small, fragmented habitat patches are more susceptible to external forces than large, contiguous tracts of bushland (Saunders et al., 1991), increasing the importance of monitoring in urban areas. Monitoring is necessary to ensure management strategies are achieving their desired outcomes, ensuring accountability and allowing for remedial action if conservation goals are not being achieved. Conservation outcomes benefit from monitoring multiple variables, including population density, population movements, and food availability, as well as monitoring of threats such as predator presence, fire history, and weed presence.

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4.0 Development of Offset Plan

As discussed above, the Black-footed Tree-rat Conservation Advice identifies four severe, high-priority threats for the species – habitat loss and fragmentation, inappropriate fire regimes, exotic grass invasion, and predation by feral cats. This plan aims to mitigate these threats in the greater Darwin area through implementation of the management strategies identified in the conservation advice, thus achieving a conservation gain for the species.

4.1 Consistency with the EPBC ACT Offsets Policy

Appendix A details how the biodiversity offsets proposed for the project meet the requirements of the EPBC Act Offsets Policy (Department of Sustainability, Environment, Water, Population and Communities – DSEWPaC 2012). A complete offsets policy assessment will occur when individual offset projects are submitted under condition 8 b) of the project's EPBC approval. These projects will be developed in accordance with the EPBC Act Offsets Policy.

4.2 Consultation

This offset plan was developed in consultation with the Northern Territory Department of Lands, Planning and Environment (DLPE – formerly DEPWS Flora and Fauna Division).

5.0 Proposed Offset Projects

The EPBC Act approval for the project states that offsets must be provided for the black-footed tree-rat to achieve a conservation gain for the species. The offset programs proposed in this document were developed in consideration of the Northern Territory Government's Strategic Conservation Planning for the Greater Darwin Region, which aims to assess and manage cumulative impacts of development on biodiversity values. Following consultation with the Northern Territory Department of Lands, Planning and Environment, a multifaceted approach was identified as the most effective strategy to meet the offset requirements for this project. This approach consists of both direct and indirect offsets which, when implemented collectively, are expected to achieve a positive conservation outcome for the black-footed tree-rat. These offset projects are outlined below.

5.1 Direct Offsets

In accordance with the EPBC Act Environmental Offsets Policy, this offset plan is built around the delivery of direct offsets for the black-footed tree-rat. Specifically, DHA will secure a minimum of 40 ha of black-footed tree-rat habitat in the greater Darwin region to directly offset the loss of 10 ha of habitat at Muirhead North. This area will comprise a single, continuous patch of vacant, crown lease land that preserves connectivity in the region (i.e., within 50km of Darwin's city centre). DHA aims to have this area protected in perpetuity via

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proclamation of a reserve pursuant to the *Crown Lands Act 1992*. Once created, Section 79 of the Crown Lands Act states that protection can only be revoked by a decision of the Legislative Assembly of the NT. Implementation of protection through this mechanism will provide the highest level of protection for black-footed tree-rat habitat while allowing for continued use of the area for the mutual benefit of the community and the environment.

5.1.1 Offset Area Suitability

The conservation advice for the species identifies preferred habitat as lowland open forests and woodland dominated by *Eucalyptus miniata* and *E. tetrodonta* with a relatively dense, shrubby understorey. Areas that meet these criteria will be identified via a desktop assessment and surveyed to ground-truth vegetation communities and determine suitability as an offset. Specifically, habitat quality assessments will be conducted within potential offset areas using the following key habitat criteria:

- Denning/refuge site availability (i.e., density of large trees, hollows, and mature *Pandanus* sp.)
- Food resource availability (i.e., density of known food plants)
- Ground cover composition/density
- Disturbance (e.g., grazing, fire, weed incursion)

Habitat quality scores will be derived from these key criteria to determine suitability for the black-footed tree-rat. Detailed habitat assessment methodology will be provided when condition 8 b) of the project's EPBC approval is met (i.e., in future documents). To achieve a conservation gain for the species, the offset area will be managed using a combination of strategies (i.e., 'offset projects') that will improve habitat quality and maintain black-footed tree-rat habitat in perpetuity. These offset projects are outlined below.

5.1.2 Fire Management

The conservation advice identifies inappropriate fire regimes as a severe, high priority threat for the black-footed tree-rat. To mitigate impacts of fire on black-footed tree-rat populations in the greater Darwin area, targeted fire management strategies will be implemented within the proposed offset area to improve habitat quality for the species and protect it from catastrophic fire events. Active fire management is a requirement for landowners under Northern Territory legislation (*Bushfires Management Act 2016, Fire Emergency Act 1996*), and the management strategies employed at the proposed offset area will meet these requirements while simultaneously benefiting black-footed tree-rat populations.

In accordance with Condition 8 b) of the project's EPBC approval conditions, a detailed Bushfire Management Plan will be developed once this offset plan is approved by the minister. This plan will provide all details relevant to implementation of the Bushfire Management Plan, including project goals, budget, and timeframes, as well

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as detail the process for monitoring, reporting, and publishing of offset project outcomes. In summary, the Bushfire Management Plan will:

- Outline methods for assessing fire history in the proposed offset area.
- Outline methods for maintenance of fire breaks.
- Devise an appropriate burning regime that is tailored to local conditions and black-footed tree-rat habitat requirements.
- Describe the training and resources required for implementation of the Bushfire Management Plan.

5.1.2.1 Development of Bushfire Management Plan

The Bushfire Management Plan will be developed via a collaborative process involving multiple stakeholders. 4 Elements Consulting will coordinate development of the project, which will be implemented by local consultants with demonstrated experience in fire management in the greater Darwin region. During the planning phase, 4 Elements Consulting will engage with experts from the Darwin Centre for Bushfire Research (DCBR) at Charles Darwin University and Flare Wildlife Research, as well as specialists in black-footed tree-rat ecology, to ensure that the Bushfire Management Plan is informed by current scientific knowledge and is appropriately tailored to address the specific habitat requirements of the species. Experts that will be contacted during development of the Bushfire Management Plan include (but are not limited to):

- Professor Jeremy Russell-Smith - bushfire management expert (Professor of Research, Darwin Centre for Bushfire Research)
- Professor Trent Penman - bushfire management expert (Team Leader, Flare Wildlife Research)
- Dr Brooke Rankmore - black-footed tree-rat expert (CEO of AMRRIC – Animal Management in Rural and Remote Indigenous Communities)
- Professor John Woinarksi - black-footed tree-rat expert (NESP Research Professor, Charles Darwin University)
- Brydie Hill (Threatened Species Scientist, NT DLPE)
- Larrakia Development Corporation and the Larrakia National Aboriginal Corporation

Acacia Land Management, who currently implement fire management strategies at Lee Point, will be engaged to conduct the Bushfire Management Plan at the Offset Area. The plan will be coordinated by 4 Elements Consulting and implemented in collaboration with Larrakia rangers.

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5.1.2.2 Timeframe

Implementation of the Bushfire Management Plan will occur over a 10-year period. The project will be subject to a biennial review process to ensure conservation outcomes are being achieved. Milestones for the project are outlined in **Table 4** below.

Table 4 Timeframe For Bushfire Management Plan Milestones

Year	Milestones
0-3 months	▪ Secure Offset Area ▪ Consult with experts in the field ▪ Engage Larrakia Development Corporation and the Larrakia National Aboriginal Corporation ▪ Conduct desktop and field assessment of fire history in offset area ▪ Devise appropriate burning regime ▪ Finalise Bushfire Management Plan
1	▪ Maintain fire breaks ▪ Training and capacity-building for Larrakia Rangers ▪ Begin implementation of burning regime
2	▪ Conduct review of Bushfire Management Plan
4	▪ Conduct review of Bushfire Management Plan
6	▪ Conduct review of Bushfire Management Plan
8	▪ Conduct review of Bushfire Management Plan
2-10	▪ Implement burning regime and maintain fire breaks ▪ Provide annual monitoring report

5.1.3 Weed Management

The conservation advice identifies exotic grass invasion as a severe, high-priority threat for the black-footed tree-rat. To mitigate impacts of invasive grasses on black-footed tree-rat populations in the greater Darwin area, targeted weed management strategies will be implemented within the proposed offset area to limit the spread of exotic grasses, with a particular emphasis on "high priority weeds" (e.g., transforming grasses such as gamba grass). Active weed management is a requirement for landowners under Northern Territory legislation (*Weeds Management Act 2001*), with management strategies guided by the *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses* (DSEWPC, 2012), the Darwin Regional Weeds Strategy 2020-2026 (DEPWS, 2021), and the Management Plan for Gamba Grass 2020-2030 (DEPWS, 2024). Strategies employed at the proposed offset area will be developed in consideration of these documents to ensure they meet state legislative requirements while also benefiting local black-footed tree-rat populations.

In accordance with Condition 8 b) of the project's EPBC approval conditions, a detailed Weed Management Plan will be developed once this offset plan is approved by the minister. This plan will provide all details relevant to

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implementation of the Weed Management Plan, including project goals, budget, and timeframes, as well as detail the process for monitoring, reporting, and publishing of offset project outcomes. In summary, the Weed Management Plan will:

- Define high priority weeds (e.g., transforming grasses) for the purpose of the Weed Management Plan.
- Outline methods for mapping of current infestations of weeds in the proposed offset area, focusing on high priority weeds.
- Outline measures to prevent the introduction of weeds and control, reduce or eradicate existing weeds.
- Detail methods for monitoring weed infestations.
- Describe the training and resources required for implementation of the Weed Management Plan.

5.1.3.1 Development of Weed Management Plan

The Weed Management Plan will be developed via a collaborative process involving multiple stakeholders. 4 Elements Consulting will coordinate development of the project, which will be implemented by local consultants with demonstrated experience in weed management in the greater Darwin region. During the planning phase, 4 Elements Consulting will engage with invasive grass experts from Charles Darwin University, as well as specialists in black-footed tree-rat ecology, to ensure that the Weed Management Plan is informed by current scientific knowledge and is appropriately tailored to address the specific habitat requirements of the species. Experts that will be contacted during development of the Weed Management Plan include (but are not limited to):

- Dr Natalie Rossiter-Rachor - invasive grass expert (Senior Lecturer in Ecology, Charles Darwin University)
- Dr Brooke Rankmore - black-footed tree-rat expert (CEO of AMRRIC – Animal Management in Rural and Remote Indigenous Communities)
- Professor John Woinarksi - black-footed tree-rat expert (NESP Research Professor, Charles Darwin University)
- Brydie Hill (Threatened Species Scientist, NT DLPE)
- Larrakia Development Corporation and the Larrakia National Aboriginal Corporation

Acacia Land Management, who currently implement weed management strategies at Lee Point, will be engaged to conduct the Weed Management Plan at the Offset Area. The plan will be coordinated by 4 Elements Consulting and implemented in collaboration with Larrakia rangers.

5.1.3.2 Timeframe

Implementation of the Weed Management Plan will occur over a 10-year period. The project will be subject to a biennial review process to ensure conservation outcomes are being achieved. Milestones for the project are outlined in **Table 5** below.

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Table 5 Timeframe For Weed Management Plan Milestones

Year	Milestones
0-3 months	▪ Secure Offset Area ▪ Consult with experts in the field ▪ Engage Larrakia Development Corporation and the Larrakia National Aboriginal Corporation ▪ Finalise Weed Management Plan
1	▪ Map current weed infestations ▪ Training and capacity-building for Larrakia Rangers ▪ Begin implementation of weed management strategies
2	▪ Conduct review of Weed Management Plan
4	▪ Conduct review of Weed Management Plan
6	▪ Conduct review of Weed Management Plan
8	▪ Conduct review of Weed Management Plan
2-10	▪ Implement weed management strategies ▪ Provide annual monitoring report

5.1.4 Feral Cat Management

The conservation advice identifies predation by feral cats as a severe, high-priority threat for the black-footed tree-rat. To mitigate impacts of feral cats on black-footed tree-rat populations in the greater Darwin area, targeted feral cat management will be implemented within the proposed offset area to reduce predation pressure on the species. Management strategies will be guided by the *Threat abatement plan for predation by feral cats 2024* (DCCEEW, 2024), with emphasis on feral cat control through innovative techniques.

In accordance with Condition 8 b) of the project's EPBC approval conditions, a detailed Feral Cat Management Plan will be developed once this offset plan is approved by the minister. This plan will provide all details relevant to implementation of the Feral Cat Management Plan, including project goals, budget, and timeframes, as well as detail the process for monitoring, reporting, and publishing of offset project outcomes. In summary, the Feral Cat Management Plan will:

- Outline methods for monitoring of feral cat populations within the proposed offset area.
- Devise appropriate measures to control feral cat numbers within the proposed offset area.
- Describe the training and resources required for implementation of the Feral Cat Management Plan.

5.1.4.1 Development of Feral Cat Management Plan

The Feral Cat Management Plan will be developed via a collaborative process involving multiple stakeholders. 4 Elements Consulting will coordinate development of the project, which will be implemented by local consultants

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with demonstrated experience in feral animal management in the greater Darwin region. During the planning phase, 4 Elements Consulting will engage with feral cat experts from Charles Darwin University to ensure that the Feral Cat Management Plan is informed by current scientific literature and developed in consideration of local environmental conditions. Experts that will be contacted during development of the Feral Cat Management Plan include (but are not limited to):

- Professor Sarah Legge – feral cat management expert (Research Professor Conservation Management, Charles Darwin University)
- Professor John Woinarksi - feral cat and black-footed tree-rat expert (NESP Research Professor, Charles Darwin University)
- Dr Brooke Rankmore - black-footed tree-rat expert (CEO of AMRRIC – Animal Management in Rural and Remote Indigenous Communities)
- Brydie Hill (Threatened Species Scientist, NT DLPE)
- Larrakia Development Corporation and the Larrakia National Aboriginal Corporation

Local consultants will be engaged to implement the Feral Cat Management Plan once a methodology has been determined. DHA will seek advice on suitable local consultants during the consultation process.

5.1.4.2 Timeframe

Implementation of the Feral Cat Management Plan will occur over a 10-year period. The project will be subject to a biennial review process to ensure conservation outcomes are being achieved. Milestones for the project are outlined in **Table 6** below.

Table 6 Timeframe For Feral Cat Management Plan Milestones

Year	Milestones
0-3 months	▪ Secure Offset Area ▪ Consult with experts in the field ▪ Engage Larrakia Development Corporation and the Larrakia National Aboriginal Corporation ▪ Trial feral cat management strategies to determine efficacy ▪ Finalise Feral Cat Management Plan
1	▪ Training and capacity-building for Larrakia Rangers ▪ Begin implementation of feral cat control strategies
2	▪ Conduct review of Feral Cat Management Plan
4	▪ Conduct review of Feral Cat Management Plan
6	▪ Conduct review of Feral Cat Management Plan
8	▪ Conduct review of Feral Cat Management Plan
2-10	▪ Implement feral cat control strategies

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	▪ Provide annual monitoring report

5.2 Indirect Offsets

The EPBC Act Environmental Offsets Policy states that indirect offsets can form up to 10% of an offset proposal. To supplement the direct offsets outlined above, DHA proposes funding for a research project to improve our understanding of black-footed tree-rat populations in the greater Darwin area and to ensure that conservation outcomes in the proposed offset area are achieved. This research project is outlined below.

5.2.1 Research Project

The conservation advice identifies monitoring and habitat mapping as high and medium-high priority management actions for the species, respectively. Accordingly, DHA proposes funding for a research project designed to improve our understanding of habitat requirements, landscape use, and population viability of black-footed tree-rats in the greater Darwin area, as well as investigate the efficacy of the management strategies outlined above. The goals of this research project are:

- Conduct a meta-population analysis of the black-footed tree-rat in the greater Darwin region.
- Improve our understanding of black-footed tree-rat habitat requirements in the greater Darwin region through habitat assessments and mapping.
- Conduct a study investigating the efficacy of conservation management strategies by comparing the offset area (i.e., the treatment) to the surround landscape (i.e., the control). This will include:
    - Monitoring black-footed tree-rat densities in the proposed offset area and comparing them to the surrounding landscape.
    - Monitoring feral cat numbers in the proposed offset area and comparing them to the surrounding landscape.
    - Monitoring invasive grass incursions in the proposed offset area and comparing them to the surrounding landscape.
    - Conducting habitat assessments in the proposed offset area using key variables (e.g., food availability, den/refuge availability etc) and comparing them to the surrounding landscape.

In accordance with Condition 8 b) of the project's EPBC approval conditions, a detailed Research Project Proposal will be developed once this offset plan is approved by the minister. This document will provide all details relevant to implementation of the Research Project, including project goals, budget, and timeframes, as well as detail the process for monitoring, reporting, and publishing of research project outcomes.

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5.2.1.1 *Development of Research Project*

DHA aims for this research project to be developed and implemented by researchers at Charles Darwin University (CDU), with fieldwork supplemented by suitably qualified consultants if necessary. Preliminary discussions with CDU have begun, with early suggestions centred around this proposal forming part of a PhD project.

5.2.1.2 *Timeframe*

The Research Project will continue for a 5-year period. Milestones for the project are outlined in **Table 7** below.

Table 7 Timeframe For Research Project Milestones

Year	Milestones
0-3 months	▪ Engage researchers at CDU ▪ Engage Larrakia Development Corporation and the Larrakia National Aboriginal Corporation ▪ In-depth Literature review
1	▪ Meta-population analysis ▪ Begin habitat assessments in the greater Darwin region ▪ Begin monitoring program
2	▪ Provide habitat mapping ▪ Implement monitoring program ▪ Provide annual monitoring program report
3	▪ Implement monitoring program ▪ Provide annual monitoring program report
4	▪ Implement monitoring program ▪ Provide annual monitoring program report
5	▪ Implement monitoring program ▪ Provide report synthesising project findings

5.3 Delivery of Offset Projects

Once this offset plan is approved, DHA will submit each individual Management Plan and the Research Project Proposal to the Department for review to satisfy Condition 8 b) of the project's EPBC approval conditions. DHA proposes that each offset project is submitted as a revision of this document (i.e., each project will be submitted as an appendix to this Black-footed Tree-rat Offset Plan). Offset projects will be submitted individually with this offset plan as they are developed.

DHA aims to implement each offset project within 12 months of approval of this offset plan. This will be achieved by adhering to the timeline outlined it **Table 8** below, which will commence when this offset plan is approved (i.e., day 0).

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Table 8 Timeframe For Delivery of Offsets

Project Stage	Time Allocated
Development of offset projects (including expert consultation)	3 months
Departmental review	3-6months
Revisions and resubmission to the Department	3 months
Commencement date	12 months after approval of offset plan

5.4 Adaptive Management

DHA acknowledges that offset projects must be adaptable to changing circumstances. Situations that may require adaptation of offset projects include:

- Disconnect between theory and application. The efficacy of an offset program cannot be fully evaluated until it is implemented, meaning theoretical planning often requires real-world adjustment. While the offset strategies outlined in this offset plan are known to be effective in achieving conservation outcomes, their success cannot be guaranteed. Accordingly, the biennial review will identify if conservation outcomes are not being achieved, allowing for offset projects to be altered if necessary.
- Advancements in knowledge. The offset projects will be developed with expert consultation and built around current scientific literature. However, if new research emerges during implementation of the offset programs that may improve conservation outcomes, the projects will be modified. For example, if a new feral cat control technique is developed during the first year of the project's implementation, this will be identified in the offset project's biennial review and, if feasible, incorporated into the project the following year.

If the biennial review identifies changes that should be made to offset projects to achieve better conservation outcomes, an amended offset project plan will be submitted to the Department for review. If approved, these changes will be implemented immediately. The offset projects will also be held accountable by the research project, which will monitor their efficacy by comparing variables in the offset area to the surrounding landscape.

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Appendix A Consistency of Offset Plan with EPBC Act Offsets Policy

Requirement of EPBC Act Offsets Policy	Consistency of Offset Plan
Offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	This will be achieved by improving our understanding of black-footed tree-rat populations in the greater Darwin area, as well as improving the quality of available habitat for the species and protecting it in perpetuity. **Section 3** outlines threats and abatement strategies identified in the conservation advice that are relevant to the species in the greater Darwin area, while **Section 5** explains how these threats will be addressed by this Offset Plan.
Suitable offsets must be built around direct offsets but may include other compensatory measures	**Section 5** describes the proposed offset program, which is built around direct offsets.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	This is determined by the project's EPBC Act approval, which states that: "The approval holder must expend an amount equivalent to at least $78,750 (excluding GST) on implementation of the Black-footed Tree Rat Offset Projects approved in accordance with Condition 8(a) and 8(b)." The amount spent by DHA will exceed this dollar amount.
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	DHA will secure a minimum of 40 ha of black-footed tree-rat habitat as an offset, which will be managed in perpetuity, as well as fund a research project to improve understanding of the species in the area.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding	Offset projects will be subject to a biennial review. If this review identifies changes that should be made to the project to improve conservation outcomes, an amended offset project plan will be submitted to the Department for approval.
Suitable offsets must be additional to what is already required, determined by law or planning	The offsets outlined in this plan are additional to the duty of care required by DHA under environmental planning laws at all levels of government.

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regulations, or agreed to under other schemes or programs	
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	Offsets will be efficient and timely as they will adhere to the strict timelines outlined above. DHA understands that development at Muirhead North cannot proceed until offset plans are established, which will expediate their approval and implementation. They will be effective as they have been developed in consideration of the black-footed tree-rat conservation advice, as well as relevant abatement plans, recovery plans, and scientific literature. The offset projects must supply yearly monitoring reports and will undergo biennial review, ensuring transparency. They are scientifically robust and reasonable as they will be developed in consultation with experts in the field and built around current scientific literature.
Suitable offsets must have transparent government arrangements including being able to be readily measured, monitored, audited and reported	All offset projects will be transparent, measurable and monitored. They will be available to government auditing at all stages of delivery.

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Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC 2015/7591

Peter Gurkin
National Manager Developments
Property – Defence Housing Australia
Level 3/120 Bay Street Port
Port Melbourne Vic 3207

Approval of Action Management Plan for Lee Point Master-planned Urban Development, Darwin, Northern Territory

Dear Mr Gurkin,

Thank you for your email dated XX April 2025 to the Department of Climate Change, Energy, the Environment and Water (the department), seeking approval of an Offset Management Plan for the Lee Point Master-planned urban development project (EPBC 2015/7591) in accordance with the conditions of approval issued for this project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Officers of the department have advised me on the Offset Management Plan and the requirements of the conditions of the approval for this project. On this basis, and as a delegate of the Minister for the Environment and Water, I have decided to approve the *Black-footed tree-rat (Mesembriomys gouldii gouldii) Offset Plan for the Lee Point Development*.

Now this plan has been approved, it must be implemented. The approved plan must also be published in accordance with your conditions of approval.

As you are aware, the department has an active monitoring program which includes monitoring inspections, desk top document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the department on request.

Should you require any further information please contact Brendan Linton-Smith by email at PostApproval@dcceew.gov.au.

Yours sincerely

Rachel Short
Branch Head Environment Assessments (Vic and Tas) and Post Approvals Branch
Nature Positive Regulation Division
XX May 2025

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Australian Government
Department of Climate Change, Energy, the Environment and Water

Correction Notification

Variation Notice; 15 June 2023, Lee Point Master-planned Urban Development, Darwin, Northern Territory [EPBC 2015/7591]

The Variation Notice signed on 15 June 2023 contained the following errors.

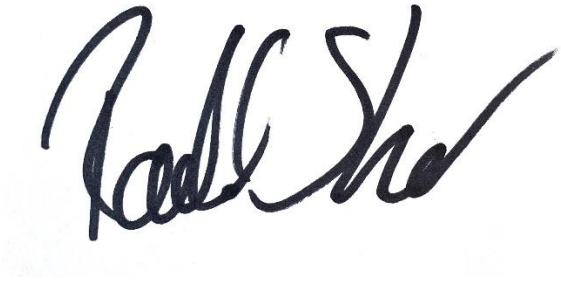
The notice incorrectly stated in the definition of **Konfrontasi Cruciform** that its location was marked with a pink cross in **Attachment B**. The correct text should read "**Konfrontasi Cruciform** is the area described in Muirhead North (Lot 9370 Town of Nightcliff) – Archaeological Survey Report (Jung 2015) submitted with the EPBC Act referral 2015/7591. Location labelled as 'Konfrontasi Cruciform site' and marked with a pink cross at **Attachment C**."

The notice incorrectly stated in reference to Attachment D that it contained Overall Concept Plan U. The correct text should read "Attachment D – Overall Concept Plan AD".

The notice inadvertently did not include Attachments A, B, C, D, E, F and G. The correct notice should include Attachments A, B, C, D, E, F and G.

A corrected version of the notice is at Annexure 1.

Person making the correction

name and position	Rachel Short Branch Head Environment Approvals (Vic/Tas) and Post Approvals
signature	
date of correction	**21** June 2023

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Australian Government
Department of Climate Change, Energy, the Environment and Water

Annexure 1

VARIATION OF CONDITIONS ATTACHED TO APPROVAL
Lee Point Master-planned Urban Development, Darwin, Northern Territory (EPBC 2015/7591)

This decision to vary conditions of approval is made under section 143 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Approved action

Person to whom the approval is granted	Defence Housing Australia ABN: 72 968 504 934
Approved action	To construct a master-planned urban residential development on Lot 4873 and Lot 9370 at Lee Point, approximately 14 km northeast of Darwin, Northern Territory [See EPBC Act referral 2015/7591]
Expiry date of approval	31 December 2035

Variation

Variation of conditions attached to approval	The variation is: Delete condition 2, 6, 7, and 8 attached to the approval and replace it with that specified in the table below. Add conditions 2A, 8A, 8B, 8C, 8D, 8E, 10A, 10B and 10C specified in the table below. Delete the definitions for **Department**, **EPBC Act listed species, New or increased impact, Project area** and **Shapefile(s)** attached to the approval and replace them with those specified in the table below. Revoke the definition for **Offset Area.** Add definitions for **Black-footed Tree-rat Offset area**, **Business day**, **Compliance report**, **Detail(s)**, **Environmental Management Plan Guidelines**, **Fauna Spotter Catcher, Functional loss / functionally lost**, **Gouldian Finch**, **Gouldian Finch breeding habitat**, **Gouldian Finch foraging habitat**, **Migratory Shorebirds**, **Plans**, **Sandy and Buffalo Creek Roosts**, **Stage 1**, **Stage 2**, **Stage 3**, **Suitably qualified independent expert(s)**, **Survey Guidelines for Australia's Threatened Birds**, and **Website** as specified in the table below.

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	Delete **Attachment D** and replace it with the **Attachment D** as specified in the table below. Add **Attachments E, F and G** as specified in the table below.
Date of effect	This variation has effect on the date the instrument is signed

Person authorised to make decision

Name and position	The Hon Tanya Plibersek MP Minister for the Environment and Water
Signature	
Date of decision	15 June 2023

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Date of decision	Conditions attached to approval
Original dated 17/03/2019	1. For the protection of **EPBC Act listed species** and **the Environment**, the approval holder must not **clear** more than 110 ha within the **project area**.
As varied on the date this instrument was signed	2. To mitigate and manage impacts to **EPBC Act listed species** and **the Environment**, the approval holder must comply with and implement the **Stormwater Management Plan - 2CRU**, **Stormwater Management Plan - Muirhead North** and **Water Quality Monitoring Plan**.
As varied on the date this instrument was signed	2A. To mitigate and manage impacts to **Gouldian Finch** in the **project area** and **Migratory Shorebirds** at the **Sandy and Buffalo Creek roosts**, the approval holder must submit to the **department,** for the **Minister's** approval, a revised version of the **Construction Environmental Management Plan**. The revised **Construction Environmental Management Plan** must include **details** of: a) measures to mitigate the impacts of **clearing** to **Gouldian Finch**, including but not limited to: i. pre-clearance surveys; ii. tree felling protocols; and iii. the oversight of all **clearing** by **fauna spotter catcher(s)**. b) additional measures to those in the **Construction Environmental Management Plan** that avoid, mitigate and manage impacts of the action to **Migratory Shorebirds**; c) measures to plant native grass species where gamba grass is removed in conservation areas; and d) activities to monitor and ensure the efficacy and integrity of these measures, including trigger values and corrective actions that will be implemented if trigger values are realised. The approval holder must not undertake any **clearing** in the **project area**, other than **stage 1A, stage 2** and **stage 3** and clearing up to 20 meters from the perimeters of these stages (as required to facilitate construction), unless the **Minister** has approved the revised **Construction Environmental Management Plan** in writing. The approval holder may undertake **clearing** where required for the removal of contamination, noxious weeds (including gamba grass), and/or the creation and maintenance of fire breaks. The approval holder must implement the revised **Construction Environmental Management Plan** approved by the **Minister**.
Original dated 17/03/2019	3. For the protection of the heritage values of **the Environment** on the **project area** the approval holder must:

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Date of decision	Conditions attached to approval
	a) retain the existing **Konfrontasi Cruciform** and **Lee Point bunkers** at their current location b) engage a **heritage expert** to develop and install signage and interpretation material for the **Konfrontasi Cruciform** and **Lee Point bunkers** which must be maintained until at least the expiry date of approval.
Original dated 17/03/2019	4. In the event of a discovery of a heritage place item (including an object) within the **project area**, the approval holder must: a) cease work within 20 meters of the discovery, fence and cover the area from further disturbance b) seek advice from the relevant authority administering the *NT Heritage Act*; and c) document, salvage and store the discovery consistent with advice received in accordance with condition 4(b), prior to any recommencement of work within 20 meters of the discovery.
Original dated 17/03/2019	5. To minimise light pollution impacts to **turtles**, the approval holder must restrict artificial lighting on buildings above 15 meters in height, and any other lighting directly visible from the beach, by: a) only permitting lights of a long-wavelength (560 nanometers or longer) to which **turtle** hatchlings are not sensitive b) ensuring lighting is directed in a downwards direction and faced away from the **Casuarina Coastal Reserve** and c) At least once each year prior to **turtle** hatching season, conducting an audit of compliance with 5.a) and 5.b) and replace or correct any non-compliant light source.
As varied on the date this instrument was signed	6. For the protection of **the environment** the approval holder must determine if **PFASs** are known or likely to be present on the **project area** using the procedures outlined in the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, which must include a desktop historical review of past fire suppression practices. If **PFASs** are known to be or likely to be present, prior to **commencement** of **clearing** or other works which have the potential to disturb areas of known or potential **PFAS** contamination, the approval holder must submit a **PFAS** Management Plan for the written approval of the **Minister**. If **PFASs** are known to be or are likely to be present the approval holder must not **commence** the action until the **PFAS** Management Plan is approved by the **Minister** in writing. The **PFAS** Management Plan must:

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Date of decision	Conditions attached to approval
	a) identify the extent and concentrations of possible contamination within the **project area** b) identify possible exposure pathways and ecological receptors including from stored material c) identify possible risks tailored to the identified concentrations, pathways and receptors d) outline management strategies to be undertaken, as well as any remediation action plans or strategies, to manage any identified or potential risks and provide for ongoing monitoring e) commit to: i. any **PFAS** contaminated material (including but not limited to excavated soil or sediment, leachate from soil or sediment, water arising from de-watering of soil or sediment, concrete, tarmac, appliances, pumps, pipes, hoses, fittings) will be handled in accordance with current best practice and disposed of in an approved receiving facility such that the **PFAS** content is unlikely to enter/spread into **the environment** ii. ii. any **PFAS** contaminated material with a **PFOS, PFHxS or PFOA** content above 50 milligrams per kilogram or litre (mg/kg or L) will be stored or disposed of in an approved receiving facility such that there will be no release of its **PFAS** content into **the environment**.
As varied on the date this instrument was signed	7. To offset the loss of **Black-footed Tree-rat** habitat from **2CRU**, the approval holder must provide the following to the **Department**: a) a title search demonstrating that the title for the **Black-footed Tree Rat offset area** has been transferred by the approval holder to the **Northern Territory Government**. The **Black-footed Tree Rat offset area** must contain at least 21.5 ha of **Black-footed Tree-rat** habitat; b) documentation demonstrating that the **Northern Territory Government** is satisfied with the **management funding** provided by the approval holder for the management and monitoring required by **Northern Territory Government** of the **Black-footed Tree Rat offset area;** c) the **offset attributes** and **shapefile** for the **Black-footed Tree Rat offset area** required by condition 7(a). Unless otherwise agreed to in writing by the **Minister**, the approval holder must not continue the action at **2CRU** for more than 36 months from the date of

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Date of decision	Conditions attached to approval
	commencement of the action unless the approval holder has provided the requirements of condition 7(a-c) to the **department**.
As varied on the date this instrument was signed	8. To offset the loss of 10 ha of **Black-footed Tree-rat** habitat from **Muirhead North**, within 12 months of **commencement** of the action at **Muirhead North** the approval holder must submit a Black-footed Tree Rat Offset Plan to the **department** for the **Minister**'s approval. The approval holder must not undertake the action at **Muirhead North** for more than 24 months from the date of **commencement** of the action unless the **Minister** has approved the Black-footed Tree Rat Offset Plan in writing, and the provisions of condition 2A and 8B have been met. a) The Black-footed Tree Rat Offset Plan must provide a framework for how the **clearance** of **Black-footed Tree-rat** habitat will be offset, and must: i. Include a review of relevant **approved conservation advices, recovery plans and threat abatement plans**; ii. identify threats to **Black-footed Tree-rat**, and potential recovery actions and research opportunities; and iii. specify a process for developing Black-footed Tree Rat Offset Projects, and a staged process for submitting proposed Black-footed Tree Rat Offset Projects and milestones for completion of Black-footed Tree Rat Offset Projects to the **Department** for approval by the **Minister**. b) Offset Projects submitted to the **Department** for approval in accordance with Condition 8.a)iii. must: i. specify the location and nature of Offset Project activities; ii. include project goal/s, budget and a detailed Black-footed Tree Rat Offset Project description, including timeframes for the elements of the Black-footed Tree Rat Offset Project, and reporting and publishing of the Black-footed Tree Rat Offset Project results; iii. demonstrate how the Black-footed Tree Rat Offset Project is consistent with the Black-footed Tree Rat Offset Plan; iv. describe advice obtained to develop the Black-footed Tree Rat Offset Project; v. explain how the Black-footed Tree Rat Offset Project complies with the principles of the **EPBC Act Environmental Offsets Policy** and, if relevant, provide details of how the Black-footed Tree Rat Offset Project meets the criteria for research and educational programs identified in Appendix A of the **EPBC Act Environmental Offsets Policy**; and vi. identify and manage risks associated with implementing the Black-footed Tree Rat Offsets Project.

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Date of decision	Conditions attached to approval
	The approval holder must not implement any Black-footed Tree Rat Offset Project until it has been approved in writing by the **Minister**. Each approved Black-footed Tree Rat Offset Project must be implemented. The approval holder must expend an amount equivalent to at least $78,750 (excluding GST) on implementation of the Black-footed Tree Rat Offset Projects approved in accordance with Condition 8(a) and 7(b).
As varied on the date this instrument was signed	8A. The approval holder must not **clear** more than 94.64 ha of **Gouldian Finch breeding habitat** and 62.05 ha of **Gouldian Finch foraging habitat** within the **project area**. All **clearing** of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat** within the **project area** must be offset in accordance with the requirements of conditions 8B and 8C.
As varied on the date this instrument was signed	8B. To compensate for the loss of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat** within the **project area**, the approval holder must submit to the **department** a Gouldian Finch Strategy and Offset Plan (GFSOP) for the **Minister's** approval. The approval holder must implement the GFSOP approved by the **Minister**. The approval holder must not undertake any **clearing** in the **project area**, other than **stage 1A**, **stage 2** and **stage 3**, and **clearing** extending no more than 20 meters from the perimeters of these stages (as required to facilitate construction), unless the **Minister** has approved the GFSOP. The approval holder may undertake minor **clearing** where required for the removal of contamination, noxious weeds (including gamba grass), and/or the creation or maintenance of fire breaks
As varied on the date this instrument was signed	8C. The GFSOP must be prepared by a **suitably qualified independent expert**, and must: a. be consistent with the **department's** published **Environmental Management Plan Guidelines**; b. include an ecological survey of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat** within the **project area**, conducted by a **suitably qualified independent expert**; c. specify the actual area of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat** that will be **cleared**; d. for any areas of **Gouldian Finch breeding habitat** and / or **Gouldian Finch foraging habitat** to be retained within the **project area**: i. identify and assess the likelihood and consequence of potential project-related impacts that may lead to the **functional loss** of retained areas of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat**;

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Date of decision	Conditions attached to approval
	ii. include **details** of measures that will be implemented to avoid, mitigate, monitor and manage risks for the period of effect of approval to prevent the **functional loss** of retained areas of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat**. Where applicable, activities must be consistent with **the Survey Guidelines for Australia's Threatened Birds**; and iii. include **details** of contingency responses, including triggers, corrective actions and reporting requirements that will be implemented in the event retained areas of **Gouldian Finch breeding habitat** and / or **Gouldian Finch foraging habitat** are **functionally lost**; e. identify suitable environmental offsets to provide compensation for the actual area of **Gouldian Finch breeding habitat** and **Gouldian Finch foraging habitat** that has been or will be **cleared**, that are consistent with the **EPBC Act Offsets Policy**; f. specify outcomes for **Gouldian Finch** habitat quality that will be attained for each offset; g. specify timebound and measurable completion criteria that will be achieved and maintained and demonstrate the attainment of outcomes; h. specify timebound and measurable performance targets that will be achieved and maintained and demonstrate the likely achievement of completion criteria; i. include **details** of measures that will be implemented to achieve and maintain performance targets and completion criteria; j. include **details** of activities to monitor the achievement and maintenance of performance targets and completion criteria, and the attainment of outcomes; k. specify timebound actions that will be implemented in the event performance targets and/or completion criteria are not achieved or maintained, with the capacity to correct this failure; and l. include **details** of reporting requirements, including triggers for different reporting types.

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Date of decision	Conditions attached to approval
As varied on the date this instrument was signed	8D. The approval holder must legally secure the environmental offset(s) for **Gouldian Finch** identified in the GFSOP approved by the **Minister**, within 48 months of the **Minister** approving the GFSOP.
As varied on the date this instrument was signed	8E. The approval holder must not transfer the ownership or long-term management responsibility of the area marked as conservation area in **Muirhead North** as shown in **Attachment D** to another entity unless the proposed transfer has been approved by the **Minister** in writing. Note: The proposed arrangement must serve to protect that part of the **project area** in perpetuity from any impact on **EPBC Act listed species** or **the Environment.**
Original dated 17/03/2019	9. Within 30 days of **commencement** of the action, the approval holder must advise the **Department** of the actual date of **commencement.**
Original dated 17/03/2019	10. The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.
As varied on the date this instrument was signed	10A. The approval holder must prepare a **compliance report** for each 12-month period following the date of **commencement**. Each **compliance report** must include: a. accurate and complete details of compliance and any non-compliance with the conditions and the **plans**, and any **incidents**; b. one or more **shapefile** showing all **clearing** of any **protected matters**, and/or their habitat, undertaken within the 12-month period at the end of which that **compliance report** is prepared; and c. a schedule of all **plans** in existence in relation to these conditions and accurate and complete details of how each plan is being implemented.
As varied on the date this instrument was signed	10B. Each **compliance report** must be consistent with the department's *Annual Compliance Report Guidelines (2014),* or any subsequent official version, and include: a. accurate and complete details of compliance and any non-compliance with the conditions and the **plans**, and any **incidents**; b. one or more **shapefile** showing all **clearing** of any **protected matters**, and/or their habitat, undertaken within the 12-month period at the end of which that **compliance report** is prepared; and

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Date of decision	Conditions attached to approval
	c. a schedule of all **plans** in existence in relation to these conditions and accurate and complete details of how each plan is being implemented.
As varied on the date this instrument was signed	10C. The approval holder must: a. publish each **compliance report** on the **website** within 60 **business days** following the end of the 12-month period for which that **compliance report** is required; b. notify the **department** electronically, within 5 **business days** of the date of publication that a **compliance report** has been published on the **website**; c. provide the weblink for the **compliance report** in the notification to the department; d. keep all published **compliance reports** required by these conditions on the **website** until the expiry date of this approval; e. exclude or redact **sensitive ecological data** from **compliance reports** published on the **website** or otherwise provided to a member of the public; and f. if **sensitive ecological data** is excluded or redacted from the published version, submit the full **compliance report** to the **department** within 5 **business days** of its publication on the **website** and notify the **department** in writing of what exclusions and redactions have been made in the version published on the website. **Note**: **Compliance reports** may be published on the **department's** website.
Original dated 17/03/2019	11. Upon the direction of the **Minister**, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor and audit criteria must be approved by the **Minister** prior to the commencement of the audit. The audit report must address the criteria to the satisfaction of the **Minister.**
Original dated 17/03/2019	12. The approval holder may choose to revise a management plan specified in condition 2 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the action in accordance with the revised plan would not be likely to have a **new or increased impact**. If the approval holder makes this choice it must notify the **Department** in writing that the management plan has been revised and provide the **Department**, at least four weeks before implementing the revised plan, with: i. an electronic copy of the revised plan; ii. an explanation of the differences between the revised plan and the management plan; and iii. the reasons the approval holder considers that the taking of the action in accordance with the revised plan would not be likely to have a **new or increased impact.**

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Date of decision	Conditions attached to approval
Original dated 17/03/2019	12A. The approval holder may revoke its choice under condition 12 at any time by notice to the **Department.** If the approval holder revokes the choice to implement a revised plan, without approval under section 143A of the **EPBC Act**, the plan approved by the **Minister** must be implemented.
Original dated 17/03/2019	12B. If the **Minister** gives a notice to the approval holder that the **Minister** is satisfied that the taking of the action in accordance with the revised plan would be likely to have a **new or increased impact**, then: i. Condition 12 does not apply, or ceases to apply, in relation to the revised plan; and ii. The approval holder must implement the plan approved by the **Minister.** To avoid any doubt, this condition does not affect any operation of conditions 12 and 12A in the period before the day the notice is given. At the time of giving the notice the **Minister** may also notify that for a specified period of time, that condition 11 does not apply for one or more specified plans required under the approval.
Original dated 17/03/2019	12C. Conditions 12, 12A and 12B are not intended to limit the operation of section 143A of the **EPBC Act** which allows the approval holder to submit a revised plan to the **Minister** for approval.
Original dated 17/03/2019	13. Unless otherwise agreed to in writing by the **Minister**, the approval holder must publish all management plans referred to in these conditions of approval on their website. Each management plan must be published on the website within one (1) month of being approved by the **Minister** or being submitted under condition 12 and must remain published for the life of the approval.
Original dated 17/03/2019	14. If, at any time after five (5) years from the date of this approval, the approval holder has not substantially **commenced** the action, then the approval holder must not substantially **commence** the action without the written agreement of the **Minister.**

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Date of decision	Definitions attached to approval
Original dated 17/03/2019	**2CRU** is the area shown in **Attachment A**, where it is depicted as '2CRU Development Site', and marked with a red dashed perimeter line.
Original dated 17/03/2019	**Approved conservation advices, recovery plans and threat abatement plans** is a threat abatement plan/s, conservation advice/s and/or recovery plan/s made or adopted by the Minister under the EPBC Act.
Original dated 17/03/2019	**Black-footed Tree-rat** is the **EPBC Act** listed Black-footed Tree-rat (Kimberley and mainland Northern Territory) (*Mesembriomys gouldii gouldii*)
As varied on the date this instrument was signed	**Black-footed Tree-rat Offset area** means the area represented in **Attachment B**, as 'Portion of Lot 4873 to be added to Casuarina Coastal Reserve', and marked with a light blue perimeter line with a solid green fill titled in the legend as 'CN – Conservation'.
As varied on the date this instrument was signed	**Business day** means a day that is not a Saturday, a Sunday or a public holiday in the Northern Territory.
Original dated 17/03/2019	**Casuarina Coastal Reserve** is the area shown in **Attachment B**, where it is depicted as 'Casuarina Coastal Reserve', and marked with a solid green fill titled in the legend as 'CN – Conservation'.
Original dated 17/03/2019	**Clearing/clear/cleared** means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of native vegetation.
Original dated 17/03/2019	**Commencement/commence/commenced** means the clearing of any vegetation or construction of any infrastructure, excluding fences and signage, associated with the proposed action.
As varied on the date this instrument was signed	**Compliance report** means a written report of compliance with, and fulfilment of, the conditions attached to the approval.
Original dated 17/03/2019	**Construction Environmental Management Plan** is the document entitled 'Construction Environmental Management Plan (CEMP): Lee Point Master-planned Urban Development', dated July 2018, authored by Ecology and Heritage Partners Pty Ltd, which was provided to the **Department** with the final assessment documentation; or as revised under these conditions or under section 143A of the **EPBC Act**.
As varied on the date this instrument was signed	**Department** means the Australian Government agency administering the **EPBC Act**.
As varied on the date this instrument was signed	**Detail(s)** means specific information that clearly identifies, as relevant to each activity or measure: i. its purpose; ii. where it will be implemented; iii. the duration, frequency and timing, calendar year and/or season, of implementation; iv. the personnel responsible for implementation; and

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Date of decision	Definitions attached to approval
	v. the method of implementation.
As varied on the date this instrument was signed	**Environmental Management Plan Guidelines** means the *Environmental Management Plan Guidelines, Commonwealth of Australia 2014*.
Original dated 17/03/2019	**EPBC Act** is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).
Original dated 17/03/2019	**EPBC Act Environmental Offsets Policy** is the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October, 2012), or subsequent revision, including the Offsets Assessment Guide. Available at: http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.
As varied on the date this instrument was signed	**EPBC Act listed species** means the **Black-footed Tree-rat**, **Gouldian Finch**, Dwarf Sawfish (*Pristis clavata*), Green Sawfish (*Pristis zijsron*), Largetooth Sawfish (*Pristis pristis*), Eastern Curlew (*Numenius madagascariensis*), Gouldian Finch (*Erythrura gouldiae*) and **Turtles**.
As varied on the date this instrument was signed	**Fauna spotter catcher(s)** means a person who has demonstrable identification and handling skills, and behaviour knowledge (including nesting requirements) for **EPBC Act listed species** that have the potential to occur, are likely to occur, or are known to occur, in the area being impacted by the relevant **clearing**.
As varied on the date this instrument was signed	**Functional loss / functionally lost** means, as relevant to **Gouldian Finch breeding habitat**, habitat that is no longer utilised by **Gouldian Finch** for breeding, as evidenced by: i. 3 consecutive years without an observation of **Gouldian Finch**, and ii. The absence of obvious factors other than the action that can be attributed for the lack of observation.
As varied on the date this instrument was signed	**Gouldian Finch** means the **EPBC Act** listed Gouldian Finch (*Erythrura gouldiae*)
As varied on the date this instrument was signed	**Gouldian Finch breeding habitat** means all land comprising the following vegetation types as shown at **Attachment E**: iii. B. *Eucalyptus tetrodonta* Woodland, in the dark-yellow shaded polygon; iv. C. Low *Eucalyptus tetrodonta* Woodland with Monsoon Vine Thicket elements, in the light-yellow shaded polygon; v. D. Disturbed *Eucalyptus tetrodonta* Woodland with *Calytrix exstipulata* shrubland, in the brown shaded polygon; vi. 2. Darwin Stringybark (*Eucalyptus tetrodonta*) and Woollybutt (*E.miniata*) Open Forest over *Sarga intrans* Grassland, in the pinkish-orange shaded polygon; vii. 3. Darwin Stringybark (*Eucalyptus tetrodonta*) Open Woodland over *Sarga intrans* grassland understorey, in the light-green shaded polygon;

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Date of decision	Definitions attached to approval
	viii. 4. Eucalyptus and Corymbia Open Woodland (mixed species) over introduced grasses, in the light-blue shaded polygon; and ix. 6. *Lophostemon lactifluus* and *Pandanus spiralis* open woodland to low open woodland, in the lavender shaded polygon.
As varied on the date this instrument was signed	**Gouldian Finch foraging habitat** means all land identified at **Attachment F** as: i. Very High, in polygons with a dark-green hash; ii. High, in polygons with a dark-blue hash; iii. Medium, in polygons with an orange hash; and iv. Low, in polygons with a light yellow hash.
Original dated 17/03/2019	**Heritage expert** is a heritage expert with relevant qualifications and expertise appointed and funded by the approval holder.
Original dated 17/03/2019	**Konfrontasi Cruciform** is the area described in *Muirhead North (Lot 9370 Town of Nightcliff) – Archaeological Survey Report* (Jung 2015) submitted with the **EPBC Act** referral 2015/7591. Location labelled as 'Konfrontasi Cruciform site' and marked with a pink cross at **Attachment C**.
Original dated 17/03/2019	**Lee Point bunkers** is the area described in *Heritage and Archaeologial Investigations over block 4873 Lee Point Road, Darwin Final Report* (Crassweller, 2010) submitted with the **EPBC Act** referral 2015/7591. Location labelled as 'Concrete Bunker' and marked with a yellow box in **Attachment C**.
Original dated 17/03/2019	**Management funding** is a monetary contribution made by the approval holder for the implementation of management measures on the **offset area**.
As varied on the date this instrument was signed	**Migratory Shorebirds** means species of **EPBC Act listed** migratory shorebirds found at Lee Point.
Original dated 17/03/2019	**Minister** means the Minister administering the **EPBC Act** and includes a delegate of the Minister.
Original dated 17/03/2019	**Muirhead North** is the area shown in **Attachment A**, where it is depicted as 'Muirhead North Development Site', and marked with a red dashed perimeter line.
As varied on the date this instrument was signed	**New or increased impact** means any direct or indirect increase in the impacts of an action, an increase to the likelihood of an impact occurring, a reduction to the monitoring or mitigation measures for a protected matter, and/or a change to the nature or management of an environmental offset as outlined in the *Guidance on 'new or increased impact' relating to changes to approved management plans under EPBC Act environmental approvals* (2017).
Original dated 17/03/2019	**Northern Territory Government** means Northern Territory body responsible for the administration of the *Parks and Wildlife Commission Act 2013* (NT) or the *Territory Parks and Wildlife Conservation Act 2014* (NT).

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Date of decision	Definitions attached to approval
Original dated 17/03/2019	**Offset attributes** means electronic files including '.xls' files and ESRI shapefiles containing '.shp', '.shx' and '.dbf' files capturing the relevant attributes of the **offset area**, including the **EPBC Act** reference number, the physical address of the **offset area**, coordinates of the boundary points in decimal degrees, the **EPBC Act** protected matters that the **offset area** compensates for, any additional **EPBC Act** protected matters benefiting from the offset and the size of the **offset area** (in hectares).
Original dated 17/03/2019	**PFAS/PFASs** means a per-and poly-fluoroalkyl substance or per-and poly-fluoroalkyl substances. **PFAS** substances include **PFOS**, **PFOA**, **PFHxS**, and their precursors. Where the identity of **PFOS**, **PFOA**, and PFHxS precursors are unknown, the suite of analytes in Eurofins (method LTM-ORG-2100) or other equivalent laboratory techniques is appropriate for the measurement of **PFAS** substances and may be reported as 'Sum of PFASs (n=28)'.
Original dated 17/03/2019	**PFOS** means perfluorooctane sulfonate.
Original dated 17/03/2019	**PFOA** means perfluorooctanoic acid.
Original dated 17/03/2019	**PFHxS** means perfluorohexane sulfonate.
As varied on the date this instrument was signed	**Plan(s)** means any action management plan or strategy that the approval holder is required by these conditions to implement.
As varied on the date this instrument was signed	**Project Area** means the area represented in **Attachment D** by all zones enclosed by a solid blue perimeter line.
As varied on the date this instrument was signed	**Sandy and Buffalo Creek roosts** means the areas shown at **Attachment G**, within the pink polygons identified as roosting location.
As varied on the date this instrument was signed	**Shapefile(s)** means location and attribute information about the Action provided in an Esri shapefile format. Shapefiles must contain '.shp', '.shx', '.dbf' files and a '.prj' file that specifies the projection/geographic coordinate system used. Shapefiles must also include an '.xml' metadata file that describes the shapefile for discovery and identification purposes.
As varied on the date this instrument was signed	**Stage 1A** means undertaking the Action within the area represented at **Attachment D** by the zone labelled '1A' and enclosed by a solid blue line.
As varied on the date this instrument was signed	**Stage 2** means undertaking the Action within the area represented at **Attachment D** by the zone labelled '2' and enclosed by a solid blue line.
As varied on the date this instrument was signed	**Stage 3** means undertaking the action within the area represented at **Attachment D** by the zone labelled '3' and enclosed by a solid blue line.

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Date of decision	Definitions attached to approval
Original dated 17/03/2019	**Stormwater Management Plan – 2CRU** is the document entitled '2CRU - Lee Point Road, Lee Point - Stormwater Management Plan - DC1603/R1/V3', dated 11 October 2017, authored by Cardno (Qld) Pty Ltd, which was provided to the **Department** with the final assessment documentation; or as revised under these conditions or under section 143A of the **EPBC Act.**
Original dated 17/03/2019	**Stormwater Management Plan – Muirhead North** is the document entitled 'Muirhead North - Lee Point Road, Lee Point - Stormwater Management Plan - DC1603/R1/V2', dated 11 October 2017, authored by Cardno (Qld) Pty Ltd, which was provided to the **Department** with the final assessment documentation; or as revised under these conditions or under section 143A of the **EPBC Act.**
As varied on the date this instrument was signed	**Suitably qualified independent expert(s)*** means a person(s) or firm that: i does not have any individual, financial**, employment** or family affiliation or any conflicting interests with the project, the approval holder or the approval holder's staff, representatives, or associated persons; and ii has relevant professional qualifications and at least 3 years of work experience designing and implementing surveys for threatened birds and can give an authoritative assessment and advice on the presence of **Gouldian Finch** and their habitat using relevant protocols, standards, methods and/or literature. *the approval holder may use the services of a team to fully meet the requirements. **other than for the purpose of undertaking the role for which an independent person is required
As varied on the date this instrument was signed	**Survey Guidelines for Australia's Threatened Birds** means the *Survey guidelines for Australia's threatened birds; Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999, 2010,* or a published successor document.
Original dated 17/03/2019	**The Environment** means the *environment* as defined under section 528 of the **EPBC Act.**
Original dated 17/03/2019	**Turtles** are the **EPBC Act listed** Flatback Turtle (*Natator depressus*), Olive Ridley Turtle (*Lepidochelys olivacea*) and Green Turtle (*Chelodina mydas*).
Original dated 17/03/2019	**Water Quality Monitoring Plan** is the document entitled 'Lee Point Master-planned Urban Development – Water Quality Monitoring Plan', dated October 2017, authored by Ecology and Heritage Partners Pty Ltd, which was provided to the **Department** with the final assessment documentation; or as revised under these conditions or under section 143A of the **EPBC Act.**
As varied on the date this instrument was signed	**Website** means a set of related web pages located under a single domain name attributed to the approval holder and available to the public.

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Date of decision	Attachments
Original dated 17/03/2019	Attachment A – Lee Point and Surrounds Area Plan
Original dated 17/03/2019	Attachment B – Lee Point Urban Development and Casuarina Coastal Reserve
Original dated 17/03/2019	Attachment C – Historical Sites
As varied on the date this instrument was signed	Attachment D – Overall Concept Plan AD
As varied on the date this instrument was signed	Attachment E – Vegetation Types (strata) sampled
As varied on the date this instrument was signed	Attachment F – Understorey mapping
As varied on the date this instrument was signed	Attachment G – Lee Point showing migratory shorebird habitat

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Attachment A



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DHA Defence Housing Australia

2CRU Development • Darwin NT

LEE POINT AND SURROUNDS AREA PLAN

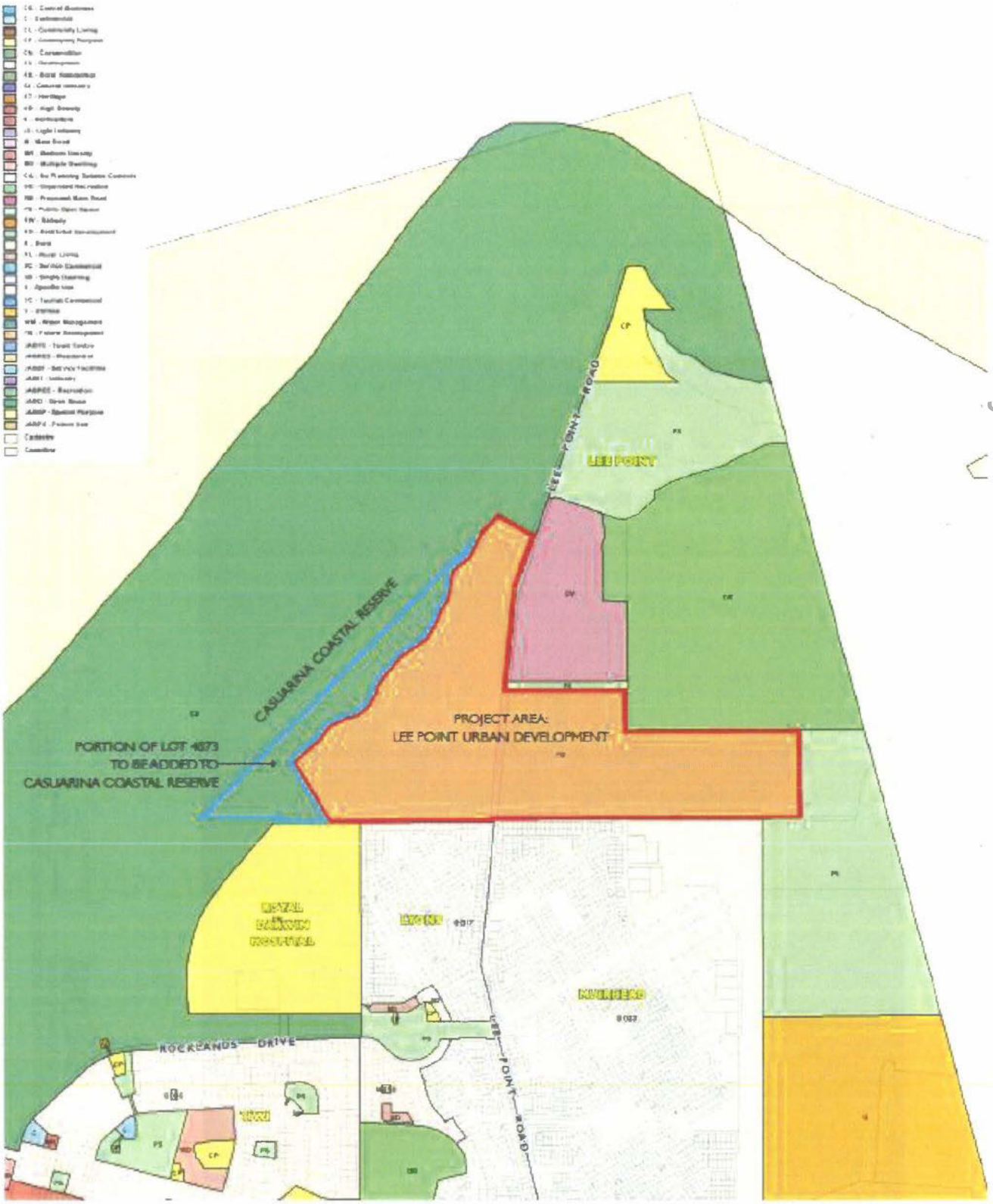
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29/08/2018 Issue A

CLOUSTON associates

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Attachment B



Context Plans

LEE POINT URBAN DEVELOPMENT &
CASUARINA COASTAL RESERVE
-LAND ADDED TO RESERVE - TOWN PLANNING ZONES-

Lee Point Road
LEE POINT

(Created 30 August 2018)

Northern Planning Consultants
Darwin Corporate Park, Unit 6, T212
631 Stuart Highway
BERRIMAH
Mobile: 0427 796 140
Email: brad.cunningson@northernplanning.net
www.facebook.com/northernplanning

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Figure 34
Historical sites
Environmental Impact Statement water quality monitoring plan, Lee Point, Northern Territory

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Attachment C

LEGEND

- STAGING
- LOTS 4000m² & larger (40m frontage min.)
- LOTS 600-750m² (20m x 30-31m)
- LOTS 540-599m² (18-19m x 30-31m)
- LOTS 450-539m² (15-17m x 30-31m)
- LOTS 360-449m² (12-14m x 30-31m)
- COMMUNITY USES
- PARK/OPEN SPACE
- DRAINAGE RESERVE
- CONSERVATION AREA
- LC — LOCAL CENTRE
- TP — TOURISM PRECINCT
- MU — MIXED USE RESIDENTIAL
- GU — MEDIUM DENSITY RESIDENTIAL
- POSSIBLE WATER FEATURE
- WWII HERITAGE AREA
- PROPOSED MOUNTAIN BIKE TRAIL
- ACCESS TO BEACH
- MILITARY HERITAGE SITE (KONFRONTASI)
- TELECOMMUNICATION TOWER
- DETENTION STORAGE
- MONSOON RAINFOREST
- SEWER

PROPERTY DESCRIPTION
LOT 4873 ON S78/107 &
LOT 9370 ON S901068
TOTAL AREA 132.5 ha

NOTES

(1) This plan was prepared for the purpose and exclusive use of DEFENCE HOUSING AUSTRALIA as an Investigation into the Development Potential of the land described in the plan and is not to be used for any other purpose or by any other person or corporation.
JFP URBAN CONSULTANTS PTY LTD accepts no responsibility for any loss or damage suffered howsoever arising to any person or corporation who may use or rely on this plan in contravention to the terms of this clause or clauses 2, 3, 4, 5, 6 or 7 hereof.

(2) The contours on this plan are approximate and are suitable only for the purpose of this application. The accuracy of the contours has not been verified and no reliance should be placed upon such contours for any purpose other than for the purpose of this application.

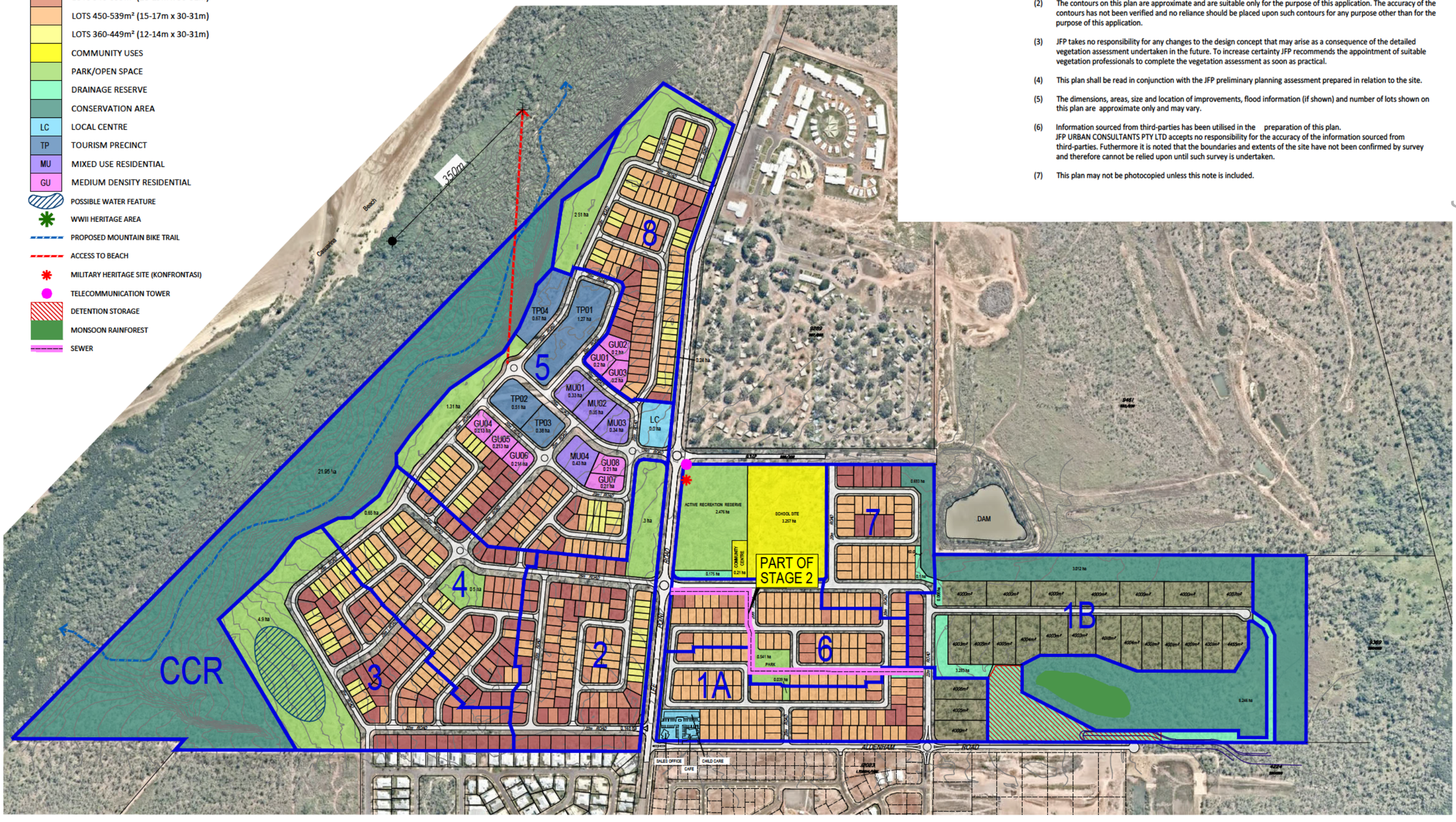
(3) JFP takes no responsibility for any changes to the design concept that may arise as a consequence of the detailed vegetation assessment undertaken in the future. To increase certainty JFP recommends the appointment of suitable vegetation professionals to complete the vegetation assessment as soon as practical.

(4) This plan shall be read in conjunction with the JFP preliminary planning assessment prepared in relation to the site.

(5) The dimensions, areas, size and location of improvements, flood information (if shown) and number of lots shown on this plan are approximate only and may vary.

(6) Information sourced from third-parties has been utilised in the preparation of this plan.
JFP URBAN CONSULTANTS PTY LTD accepts no responsibility for the accuracy of the information sourced from third-parties. Futhermore it is noted that the boundaries and extents of the site have not been confirmed by survey and therefore cannot be relied upon until such survey is undertaken.

(7) This plan may not be photocopied unless this note is included.



JFP URBAN CONSULTANTS
PLANNERS
URBAN DESIGNERS
SURVEYORS
ENGINEERS
LANDSCAPE ARCHITECTS

OVERALL CONCEPT PLAN AD

LEE POINT ROAD, LEE POINT, DARWIN
DEFENCE HOUSING AUSTRALIA

JOB NUMBER: M2737P_Overall Concept AD
ISSUE:
NORTH:
SCALE: 1:7000 @ A3
DATE: 25th May 2023

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LEX 83555

Attachment E

Document 6

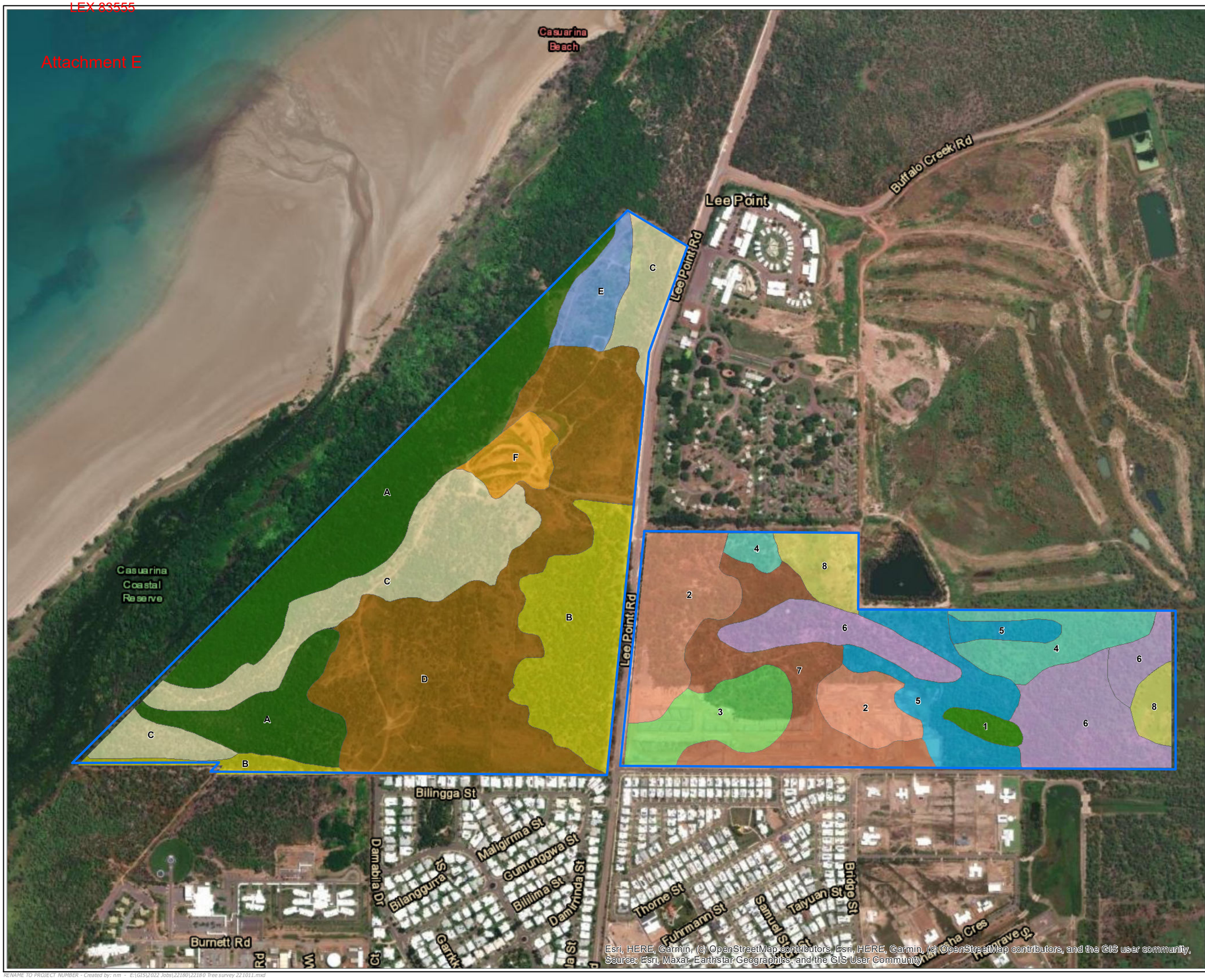


Figure 15: Vegetation types (strata) sampled

Project: Defence Housing Lee Point Development
Client: Defence Housing Australia
Date: 14/10/2022

Development area

Muirhead North Vegetation

- 1, Mixed species monsoon rainforest
- 2, Darwin Stringybark (Eucalyptus tetrodonta) and Woollybutt (E. miniata) Open Forest over Sarga intrans Grassland
- 3, Darwin Stringybark (Eucalyptus tetrodonta) Open Woodland with Sarga intrans grassland understorey
- 4, Eucalyptus and Corymbia Open Woodland (mixed species) over introduced grasses
- 5, Melaleuca viridiflora low woodland over introduced grasses
- 6, Lophostemon lactifluus and Pandanus spiralis open woodland to low open woodland
- 7, Acacia shrubland with scattered Stringybark (Eucalyptus tetrodonta) over introduced grasses.
- 8, Grassland of Gamba Grass (Andropogon gayanus) and Mission Grass (Pennisetum polystachion). Introduced species

Lee Point Rd Vegetation

- A, Monsoon Vine Forest
- B, Eucalyptus tetrodonta Woodland
- C, Low Eucalyptus tetrodonta Woodland with Monsoon Vine Thicket elements
- D, Disturbed Eucalyptus tetrodonta Woodland with Calytrix exstipulata shrubland
- E, Disturbed Acacia auriculiformis Woodlandwith dense introduced Grassland
- F, Disturbed area

N

Metres
0 130

Nature Advisory
PO Box 337, Camberwell, VIC 3124, Australia
www.natureadvisory.com.au
03 9815 2111 - info@natureadvisory.com.au

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Attachment F

Document 6

Figure 10: Understorey mapping

Project: Defence Housing Lee Point Development
Client: Peter Briggs (Partner)
Date: 18/08/2022

- Study area
- Calytrix shrubland
- Closed woodland with Gamba/Sarga understorey
- Dense forest thicket (dry/wet)
- Eucalyptus open forest over Sarga grassland
- Eucalyptus woodland with shruby understorey
- Eucalyptus/Melaleuca over low density Gamba grassland
- Eucalytus open woodland over diverse native grassland
- Lophostemon/Eucalytus woodland
- Low density Gamba grassland
- Melaleuca woodland with Gamba understorey
- Disturbed - high weed cover

GF Habitat Suitability

- Very High
- High
- Medium
- Low
- Unsuitable

N

Metres
0 125

Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Nature Advisory
PO Box 337, Camberwell, VIC 3124, Australia
www.natureadvisory.com.au
03 9815 2111 - info@natureadvisory.com.au

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LEX 83555
Attachment G
Document 6

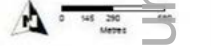




Shorebirds
- Feeding location
- Roosting location

Project data
- Proposed development boundary

The remainder of Lee Point is considered suitable for occasional roosting and feeding





Projection: GDA 1994
Date Saved: 25/08/2016
Client: Defence Housing
Author: K Munson (rev
DATA SOURCE
Shorebirds: EcOz Boundary Data
Imagery: Google Earth Pro
Earthfast, ESRI basemap

EcOz makes every effort to ensure this map is free of errors but does not warrant the map or its features is spatially or temporally accurate or fit for a particular use. EcOz provides this map without any warranty of any kind whatsoever, either express or implied.

National EPA Under

Australian Government
Department of Climate Change, Energy, the Environment and Water

Attachment D

EPBC 2015/7591

Review of plan against conditions of approval and other relevant regulatory matters

Lee Point Master-planned Urban Development, Darwin, Northern Territory

Approval holder	Defence Housing Australia
Name of document	Black Footed Tree Rat Offset Plan – Rev 2 (30 May 2025)
Reviewing officer(s)	[officer name(s)]
Date assessment finalised	[date]

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Australian Government
Department of Climate Change, Energy, the Environment and Water

General comments

Relevant Approval Conditions	Department Evaluation
8. To offset the loss of 10 ha of Black-footed Tree-rat habitat from Muirhead North, within 12 months of commencement of the action at Muirhead North the approval holder must submit a Black-footed Tree Rat Offset Plan to the department for the Minister's approval. The approval holder must not undertake the action at Muirhead North for more than 24 months from the date of commencement of the action unless the Minister has approved the Black-footed Tree Rat Offset Plan in writing, and the provisions of condition 2A and 8B have been met.	Adequately Addressed The action commenced at Muirhead north on 21 September 2021. The first draft of the BFTR Offset Plan was submitted on 21 September 2022. The Department notes that due to the operation of this condition, the approval holder is currently unable to continue construction at Muirhead North.
8a) The Black-footed Tree Rat Offset Plan must provide a framework for how the clearance of Black-footed Tree-rat habitat will be offset, and must:	Adequately Addressed The BFTR Offset Plan contains a framework for offsetting that includes a direct offset that will be managed to deliver conservation gain through fire management, weed management and pest management activities as well as a research component that will deliver indirect offsets by improving scientific understanding of species ecology in the Darwin region.
8a)i Include a review of relevant approved conservation advices, recovery plans and threat abatement plans;	Adequately Addressed The BFTR draws on the following advices xxxx as well as other scientific literature including xxxx to justify and explain the offsetting proposal.
8a)ii Identify threats to Black-footed Tree-rat, and potential recovery actions and research opportunities; and	Adequately Addressed The BFTR Offset plan includes a table of likely threats to the species as well as a summary of evidence (including citations) that justify the overall risk of these threats to the species. These are

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	discussed in further detail throughout the plan to support the conclusions and overall approach to offsetting.
8a)iii Specify a process for developing Black-footed Tree Rat Offset Projects, and a staged process for submitting proposed Black-footed Tree Rat Offset Projects and milestones for completion of Black-footed Tree Rat Offset Projects to the Department for approval by the Minister.	Adequately Addressed The BFTR Offset Plan includes a timeframe for development of projects proposed within the framework and lists the relevant consultations that have occurred to support each proposal. The BFTR Offset plan commits to addressing relevant areas of the EPBC Act offset policy in detail as the projects are submitted to the Department for approval. The department is satisfied that this….

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Archived: Wednesday, 26 August 2026 11:47:51 AM
From: Gurkin, Peter
Mail received time: Thu, 12 Jun 2025 21:54:18
Sent: Thu, 12 Jun 2025 21:53:18
To: Brendan LINTON-SMITH Brendan LINTON-SMITH
Subject: Lee Point - Black Footed Tree Rat Offset Plan [SEC=OFFICIAL]
Importance: Normal
Sensitivity: None
Attachments:
DHA BFTR offset plan.pdf;

OFFICIAL

OFFICIAL

Good morning Brendan,

Please find attached the Black Footed Tree Rat Offset Plan.

Regards

Peter Gurkin
National Manager Developments
Property | Defence Housing Australia
Level 3 / 120 Bay St Port Melbourne Vic 3207
M. s. 22(1)(a)(ii)
peter.gurkin@dha.gov.au | dha.gov.au

DHA

Important:

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DHA

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Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC 2015/7591

Decision to approve action management plan

To: Brendan Linton-Smith, A/g Branch Head, Environment Assessments (Vic, Tas) and Post Approvals

Action required: For decision

Timing: Standard timing applies

Approval Holder: Defence Housing Australia

Lee Point Master-planned Urban Development, Darwin, Northern Territory

Recommendations

1. That you approve the action management plan Black Footed Tree Rat Offset Plan for the Lee Point Development, Version 2, 29 May 2025 at Attachment A, in accordance with Condition 8 of the approval for EPBC Ref 2015/7591.

Approved/Not approved/Please discuss

2. That you sign the letter at Attachment B advising the approval holder of your decision.

Signed/Not signed

Signature of delegate:

Brendan Linton-Smith
A/g Branch Head, Environment Assessments (Vic, Tas) and Post Approvals
Environment Regulation Division
1 August 2025

Comments: I note that condition 8 of the approval for this development splits offset evaluation across two sub-conditions - condition 8(a) and condition 8(b) . I have considered the departments evaluation of the Black Footed Tree Rat Offset Plan (29/5/2025) within this context and am satisfied it contains the detail required to guide the submission and future approval of the detailed offsetting projects required under condition 8(b).

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Key issues

1) The Lee Point Master-planned Urban Development was approved on 17 March 2019 and includes conditions that require offsets to be provided for impacts to the Black Footed Tree Rat (BFTR) (Mesembriomys gouldii gouldii). The BFTR Offset Plan (BFTR Offset Plan) that is the subject of this brief has been submitted in accordance with condition 8 and specifically 8(a). Condition 8 outlines a two-stage process for approving offsets in an area of the project known as Muirhead North.

2) The project has faced opposition from conservation groups and traditional owners (Larrakia, custodians of the Darwin region) due to the risks posed to cultural heritage and threatened species. The Minister has been urged by these groups to revoke the Lee Point approval.

3) The Department fined the approval holder ($18,780) for unlawfully clearing land as a result of the project. There are no outstanding compliance issues and the matter has received close ongoing oversight by the Department.

Background

4) The Minister for the Environment and Water (the Minister) has delegated you as decision maker for these matters pursuant to section 515 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

5) On 7 October 2015, Defence Housing Australia (DHA) referred the proposed action to construct a master-planned urban residential development on Lot 4873 and Lot 9370 at Lee Point, approximately 14 km northeast of Darwin, Northern Territory (Attachment C).

6) On 17 March 2019 a delegate of the Minister approved the Action under section 133 of the EPBC Act and attached conditions to that approval under section 134 of the EPBC Act. The Action commenced on 21 September 2021.

7) The approval conditions were varied on 15 June 2023. Current Conditions are shown at Attachment D.

8) The approval has effect for the following protected matters and controlling provisions

   a) 18 and 18A (Listed threatened species and communities)

   b) 20 and 20A (Listed migratory species)

   c) 28 (Commonwealth Actions)

9) On 13 June 2025, the approval holder submitted the BFTR Offset Plan for the Lee Point Development, Version 2 dated 29 May 2025 to the Department for approval (Attachment E).

10) The BFTR Offset Plan has been submitted in accordance with condition 8 of the approval which requires offsets for BFTR impacts at Muirhead North. Condition 8 is divided into two stages:

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a) Condition 8(a) which sets-out the requirements for an offset framework that explains how offsets will be provided through the identification of threats to the BFTR and the process for submission of specific Offset Projects for approval; and,

b) Condition 8(b) which sets-out the detailed requirements for specific Offset Projects submitted in accordance with the framework required by 8(a).

11) The BFTR Offset Plan is not required to meet Condition 8(b). Condition 8(b) requires the approval holder to propose specific offset projects under the framework approved in the BFTR Offset Plan. Projects proposed under 8(b) should comply with the principles of the EPBC Act Environmental Offsets Policy and describe the nature and location of proposed offset projects.

Evaluation

12) The Department's evaluation of the BFTR Offset Plan for the Lee Point Development, Version 2 dated 29 May 2025, against the conditions of approval and other relevant requirements is at Attachment F.

13) The BFTR Offset Plan complies with Condition 8(a) of the EPBC approval. The plan contains an effective framework for offsets that will likely deliver a conservation gain through direct offsets incorporating fire management, weed control and pest management activities, as well as a research component to deliver an indirect offset by improving the scientific understanding of relevant species ecology in the Darwin region.

14) The plan includes a description of the threats, management strategies and severity of the consequences of these threats on the BFTR. The described threats are habitat loss and degradation, predation by feral animals, inappropriate fire regimes and effects of invasive species.

15) The BFTR plan proposes an offset framework of four (4) project plans to be submitted in relation to Fire Management, Weed Management, Feral Cat management and a research proposal (Attachment A - Section 5).

16) The BFTR Offset Plan includes a 10-year timeframe for implementation of approved projects proposed and provides sufficient detail including milestones and relevant consultations that have occurred to support each proposal. The approval holder lists the timeframe for specific management actions within each project to manage threats to the BFTR (para 15 above).

17) The BFTR draws on the Conservation Advice and threat abatement plans as well as other scientific literature to justify and explain the offsetting proposal.

18) The approval holder commits to assessing the habitat quality of the Offset Area (which is yet to be assessed for future proposals for Offset Projects) and to evaluating its suitability by applying appropriate criteria to estimate habitat quality under condition 8(b), with the aim of achieving a conservation gain for the BFTR (Section 5.1.1 of the plan).

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Cleared by

s. 22(1)(a)(ii)

s. 22(1)(a)(ii)
Acting Director, Post Approvals Queensland
Environment Assessments (Vic, Tas) and Post Approvals
25 July 2025

Attachments

A: Black Footed tree-rat (*Mesembriomys gouldii gouldii*) Offset Plan for the Lee Point Development (EPBC 2015/7591) FOR APPROVAL

B: Letter to approval holder FOR SIGNATURE

C: EPBC 2015/7591 Referral for Lee Point Master-planned Urban Development, Darwin, Northern Territory dated 7 October 2015

D: Conditions of approval as in force April 2025

E: Defence Housing Australia request to approve Black Footed tree-rat (Mesembriomys gouldii gouldii) Offset Plan

F: Department's evaluation of Black Footed tree-rat (*Mesembriomys gouldii gouldii*) Offset Plan

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Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC 2015/7591

Peter Gurkin
National Manager Developments
Property – Defence Housing Australia
Level 3/120 Bay Street Port
Port Melbourne Vic 3207

Approval of Action Management Plan for Lee Point Master-planned Urban Development, Darwin, Northern Territory

Dear Mr Gurkin,

Thank you for your email dated 20 March 2025 to the Department of Climate Change, Energy, the Environment and Water (the department), seeking approval of an Construction Environmental Management Plan for the Lee Point Master-planned urban development project (EPBC 2015/7591) in accordance with the conditions of approval issued for this project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Officers of the department have advised me on the Construction Environmental Management Plan and the requirements of the conditions of the approval for this project. On this basis, and as a delegate of the Minister for the Environment and Water, in accordance with condition 12 and specifically 12(b) of the conditions of approval, I have decided to approve the *Construction Environmental Management Plan (CEMP): Lee Point Master-planned Urban Development*.

Now this plan has been approved, it must be implemented. The approved plan must also be published in accordance with your conditions of approval.

As you are aware, the department has an active monitoring program which includes monitoring inspections, desk top document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the department on request.

Yours sincerely

Branch Head Environment Assessments (Vic and Tas) and Post Approvals Branch
Nature Positive Regulation Division

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Australian Government
Department of Climate Change, Energy, the Environment and Water

Attachment F

EPBC 2015/7591

Review of plan against conditions of approval and other relevant regulatory matters

Lee Point Master-planned Urban Development, Darwin, Northern Territory

Approval holder	Defence Housing Australia
Name of document	Black Footed Tree Rat Offset Plan – Version 2 (29 May 2025)
Reviewing officer(s)	s. 22(1)(a)(ii)
Date assessment finalised	02/07/25

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Australian Government
Department of Climate Change, Energy, the Environment and Water

General comments

Relevant Approval Conditions	Department Evaluation
8. To offset the loss of 10 ha of Black-footed Tree-rat habitat from Muirhead North, within 12 months of commencement of the action at Muirhead North the approval holder must submit a Black-footed Tree Rat Offset Plan to the department for the Minister's approval. The approval holder must not undertake the action at Muirhead North for more than 24 months from the date of commencement of the action unless the Minister has approved the Black-footed Tree Rat Offset Plan in writing, and the provisions of condition 2A and 8B have been met.	Adequately Addressed The action commenced at Muirhead north on 21 September 2021. The first draft of the BFTR Offset Plan was submitted on 21 September 2022. The Department notes that due to the operation of this condition, the approval holder is currently unable to continue construction at Muirhead North.
8a) The Black-footed Tree Rat Offset Plan must provide a framework for how the clearance of Black-footed Tree-rat habitat will be offset, and must:	Adequately Addressed The BFTR Offset Plan contains a framework for offsetting that includes a direct offset that will be managed to deliver conservation gain through fire management, weed management and pest management activities as well as a research component that will deliver indirect offsets by improving scientific understanding of species ecology in the Darwin region.
8a)i Include a review of relevant approved conservation advices, recovery plans and threat abatement plans;	Adequately Addressed The BFTR draws on the Conservation Advice and threat abatement plans as well as other scientific literature to justify and explain the offsetting proposal.
8a)ii Identify threats to Black-footed Tree-rat, and potential recovery actions and research opportunities; and	Adequately Addressed The BFTR Offset plan includes a table of likely threats to the species as well as a summary of evidence (including citations) that justify the overall risk of

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	these threats to the species. The mentioned threats are habitat loss and degradation, predation by feral animals, Inappropriate fire regimes and effects of invasive species. These are discussed in further detail throughout the plan to support the conclusions and overall approach to offsetting.
8a)iii Specify a process for developing Black-footed Tree Rat Offset Projects, and a staged process for submitting proposed Black-footed Tree Rat Offset Projects and milestones for completion of Black-footed Tree Rat Offset Projects to the Department for approval by the Minister.	Adequately Addressed The BFTR Offset Plan includes a 10-year timeframe for implementation of projects proposed within the framework and lists the relevant consultations that have occurred to support each proposal. The approval holder mentions the timeframes for specific management actions to manage threats to the BFTR such as feral cats, weeds and fire regimes. The BFTR plan proposes an offset framework of four (4) project plans to be submitted in relation to Fire Management, Weed Management, Feral Cat management and a research proposal (Section 5). The BFTR Offset plan commits to addressing relevant areas of the EPBC Act offset policy in detail as the projects are submitted to the Department for approval. The Department is satisfied that the plan outlines clear processes for developing BFTR Offset Projects, including a staged approach for submitting proposed projects and associated milestones for completion.

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Archived: Wednesday, 26 August 2026 11:48:35 AM
From: Brendan LINTON-SMITH
Sent: Friday, 1 August 2025 6:43:17 PM
To: s. 22(1)(a)(ii)
Cc: s. 22(1)(a)(ii)
Subject: RE: For Branch Head Approval : EPBC 2015/7591 Brief package: Black Footed Tree Rat Offset Plan for your review [SEC=OFFICIAL]
Importance: Normal
Sensitivity: None

\ri100OFFICIAL

Thanks s. 22(1)(a)(ii) – I have signed the brief and attachments. Please let the approval holder know first thing on Monday, and remind them to check the publication obligations that are included in their approval conditions.

I note that condition 8 of this approval is poorly worded, with the BFTR Offset Plan required under condition 8a) being a strategic document which would be conditioned as an Offset Strategy in contemporary condition sets. I am satisfied the BFTR plan I reviewed meets the intention of condition 8a).

I further note that the condition set was revised to include condition 8B in 2023. I have never understood why we do that as it has the potential to be confused with condition 8(b). For completion I note that condition 8B (uppercase) has absolutely nothing to do with the BFTR offset requirements, except to serve as a partial construction limitation.

Cheers

Brendan

Brendan Linton-Smith

A/g Branch Head | Environment Assessments (Vic and Tas) and Post Approvals Branch

ERD | DCCEEW | s. 22(1)(a)(ii) | **M** s. 22(1)(a)(ii)

EA: s. 22(1)(a)(ii) /*M* s. 22(1)(a)(ii)

\ri100\sb100OFFICIAL

\sb100From: s. 22(1)(a)(ii)
Sent: Friday, 25 July 2025 12:26 PM
To: Brendan LINTON-SMITH
Cc: s. 22(1)(a)(ii)
Subject: For Branch Head Approval : EPBC 2015/7591 Brief package: Black Footed Tree Rat Offset Plan for your review [SEC=OFFICIAL]

\qc\ri100\sb100OFFICIAL

\sb100

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Hi Brendan

Please find below links to approval decision brief and letter for the management plan titled Black Footed Tree Rat Offset Plan required for Lee Point Master-planned Urban Development, Darwin, Northern Territory Project (EPBC 2015/7591).

Many thanks to s. 22(1)(a)(ii) for putting together the brief.

Note the brief is best viewed in the Word App, which will display as it should (with no gaps).

Regards

s. 22(1)(a)(ii)

– A/g Director | Post Approvals (Qld)

Environment Regulation Division | Environment Assessments (VIC, TAS) and Post Approvals Branch

Postal address: GPO Box 3090, Canberra ACT 2601

Department of Climate Change, Energy, the Environment and Water

M s. 22(1)(a)(ii) **E** s. 22(1)(a)(ii)@dcceew.gov.au

\qc\ri100\sb100OFFICIAL

\sb100From: s. 22(1)(a)(ii) @dcceew.gov.au>
Sent: Wednesday, 2 July 2025 4:23 PM
To: s. 22(1)(a)(ii) @dcceew.gov.au>
Subject: EPBC 2015/7591 Brief package: Black Footed Tree Rat Offset Plan for your review [SEC=OFFICIAL]

\qc\ri100\sb100OFFICIAL

\sb100

Hi s. 22(1)(a)(ii)

Please find below links an approval decision brief and letter for the management plan titled Black Footed Tree Rat Offset Plan required for Lee Point Master-planned Urban Development, Darwin, Northern Territory Project (EPBC 2015/7591) with the email to Brendan for your review.

Best regards,

s. 22(1)(a)(ii)

Hi Brendan,

Please find below links an approval decision brief and letter for the management plan required for Lee Point Master-planned Urban Development, Darwin, Northern Territory Project (EPBC 2015/7591). The management plan is specific to the species being offset. The decision is potentially contentious. This plan outlines a strategic framework to offset the loss of 10 ha of black-footed tree-rat habitat at Muirhead North and as such I anticipate Ministerial interest in this decision.

2015-7591 Black Footed Tree Rat Offset Plan Approval Brief.docx

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Link to notification letter for your signature: Attachment B - Letter to Approval Holder EPBC 2015-7591 BFTR Offset Plan.docx

If you elect to agree with the recommendations, here is a summary of the decision which you can share as appropriate.

On xx/xx/2025 I decided to approve the offset management plan for Lee Point Master-planned Urban Development, Darwin, Northern Territory Project (EPBC 2015/7591). This project is the development of an urban area at Lee Point Road on the outer edge of Darwin's northern suburbs. The area proposed for development is 132 ha of land and will include urban residential housing, rural residential allotments, land for community development, a mixed use urban centre including a tourism precinct; and open space areas incorporating parklands and drainage reserves. My decision will enable offsetting the loss of 17.5 ha of Black-footed Tree-rat habitat resulted from the project. The approved offset plans will compensate for impacts to the Black-footed Tree-rat. I am satisfied this plan meets the conditions of approval and EPBC Act Offset Policy requirements and as such I agreed to approve this OAMP. The Department anticipates media interest in this decision and is ready to respond to any enquiries.

Best regards

s. 22(1)(a)(ii)

Assessment Officer | Post Approval Section

Environment Approvals Division

Department of Climate Change, Energy, the Environment and Water

E s. 22(1)(a)(ii) @dcceew.gov.au

\qc\ri100\sb100OFFICIAL

\sb100From: s. 22(1)(a)(ii) @dcceew.gov.au>
Sent: Friday, 27 June 2025 4:21 PM
To: s. 22(1)(a)(ii) @dcceew.gov.au>
Cc: s. 22(1)(a)(ii) @dcceew.gov.au>
Subject: Black Footed Tree Rat Offset Plan for assessment [SEC=OFFICIAL]

\qc\ri100\sb100OFFICIAL

\sb100

Hi s. 22(1)(a)(ii),

As discussed grateful if you could take this assessment through to briefing and finalisation. It has been partially completed but you will need to finalise and complete the briefing package for delegate consideration. All relevant records that I have to hand are attached – if you need further info please reach out to discuss.

Regards,

s. 22(1)(a)(ii)

– Director | Post Approvals QLD

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Nature Positive Regulation Division | Environment Assessments (VIC, TAS) and Post Approvals Branch

Location: Ngunnawal Country, John Gorton Building, King Edward Terrace, Parkes ACT 2600 Australia

Postal address: GPO Box 3090, Canberra ACT 2601

Department of Climate Change, Energy, the Environment and Water

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