Australian Government
Department of the Environment

Referral of proposed action

Mt Gilead
Residential Development

Prepared by:

ecological AUSTRALIA

On behalf of:

Mt Gilead Pty Ltd

Referral of proposed action

Project title: Mt Gilead

1 Summary of proposed action

1.1 **Short description**

Mt Gilead Pty Ltd (the proponent) is proposing a residential development on part of Lot 2 Dp 807555, Lot 59 DP 752042, and part of Lot 1 DP 807555, with an indicative yield of 1,300 lots at Gilead, located off Appin Road and approximately 7 km south of the Campbelltown city centre. The proposed development is to follow from the rezoning of land on site, as well as the rezoning of land directly adjacent to the site (Lot 61 DP 752042), as an amendment to the Campbelltown Local Environment Plan (LEP) 2014, which Campbelltown City Council (CCC) has submitted to the NSW Department of Planning and Environment (DPE) for consideration and approval. The land on site and in adjacent land is proposed to be rezoned in accordance with the Standard Instrument – Principal LEP and consistent with the Campbelltown LEP 2014 to a predominantly R2 residential zone, along with areas for public open space and roads. This will allow for residential development with an indicative yield of 1,700 lots in total, of which 1,300 lots will be located on the site (approximately 400 lots will be located on adjacent land within Lot 61 DP 752042). In addition, an area is intended to be zoned as a neighbourhood centre in order to facilitate the future delivery of a community centre. Some land is proposed to be retained as rural land. Ecologically sensitive vegetation will be protected.

The total area of the site is 175.2 ha. Of this area, the proposal will impact on 128.5 ha of land, of which 9.2 ha is native vegetation, and 119.3 ha is cleared. A total of 46.7 ha will not be impacted. Parts of the area that will not be impacted will be protected and managed in conservation areas, while other parts will be landscaped. Some of the conservation areas extend off site into adjacent land in Lot 61 DP 752042.

It is intended that development of the site will deliver a range of lot sizes consistent with the natural features of the site, to enhance and expand housing supply close to the Campbelltown-Macarthur Major Centre.

1.2 **Latitude and longitude**

34° 7' 8.49" S	150° 47' 46.80" E	34° 7' 1.75" S	150° 46' 50.02" E
34° 7' 15.09" S	150° 47' 45.38" E	34° 7' 1.57" S	150° 46' 50.14" E
34° 7' 22.76" S	150° 47' 39.63" E	34° 6' 58.25" S	150° 46' 52.23" E
34° 7' 36.00" S	150° 47' 31.38" E	34° 6' 58.11" S	150° 46' 52.32" E
34° 7' 41.41" S	150° 47' 30.27" E	34° 6' 57.97" S	150° 46' 52.39" E
34° 7' 47.84" S	150° 47' 29.16" E	34° 6' 57.82" S	150° 46' 52.47" E
34° 7' 49.18" S	150° 47' 28.93" E	34° 6' 57.68" S	150° 46' 52.54" E
34° 8' 2.78" S	150° 47' 27.94" E	34° 6' 57.53" S	150° 46' 52.60" E
34° 8' 18.78" S	150° 47' 26.78" E	34° 6' 57.38" S	150° 46' 52.65" E
34° 8' 17.75" S	150° 47' 19.56" E	34° 6' 57.23" S	150° 46' 52.70" E
34° 7' 9.02" S	150° 46' 41.87" E	34° 6' 57.08" S	150° 46' 52.74" E
34° 7' 8.89" S	150° 46' 41.93" E	34° 6' 56.92" S	150° 46' 52.78" E
34° 7' 8.70" S	150° 46' 42.02" E	34° 6' 56.77" S	150° 46' 52.81" E
34° 7' 8.52" S	150° 46' 42.12" E	34° 6' 56.61" S	150° 46' 52.83" E
34° 7' 8.33" S	150° 46' 42.23" E	34° 6' 56.45" S	150° 46' 52.85" E
34° 7' 8.15" S	150° 46' 42.35" E	34° 6' 54.49" S	150° 46' 53.02" E
34° 7' 7.98" S	150° 46' 42.47" E	34° 6' 54.41" S	150° 46' 53.15" E
34° 7' 7.81" S	150° 46' 42.60" E	34° 6' 54.31" S	150° 46' 53.3" E
34° 7' 7.01" S	150° 46' 43.23" E	34° 6' 54.13" S	150° 46' 53.39" E
34° 7' 6.76" S	150° 46' 43.44" E	34° 6' 53.65" S	150° 46' 53.89" E
34° 7' 6.51" S	150° 46' 43.66" E	34° 6' 53.14" S	150° 46' 54.91" E
34° 7' 6.27" S	150° 46' 43.89" E	34° 6' 52.64" S	150° 46' 55.85" E
34° 7' 6.03" S	150° 46' 44.13" E	34° 6' 51.84" S	150° 46' 57.55" E
34° 7' 5.81" S	150° 46' 44.37" E	34° 6' 51.78" S	150° 46' 58.34" E
34° 7' 5.59" S	150° 46' 44.63" E	34° 6' 51.93" S	150° 46' 58.91" E
34° 7' 5.37" S	150° 46' 44.90" E	34° 6' 51.93" S	150° 46' 58.91" E
34° 7' 5.17" S	150° 46' 45.18" E	34° 6' 52.10" S	150° 46' 59.18" E
34° 7' 4.97" S	150° 46' 45.46" E	34° 6' 52.10" S	150° 47' 0.70" E
34° 7' 4.78" S	150° 46' 45.75" E	34° 6' 52.29" S	150° 47' 1.00" E
34° 7' 4.60" S	150° 46' 46.05" E	34° 6' 52.66" S	150° 47' 0.87" E
34° 7' 4.43" S	150° 46' 46.36" E	34° 6' 52.98" S	150° 47' 0.87" E
34° 7' 4.27" S	150° 46' 46.68" E	34° 6' 53.39" S	150° 47' 0.91" E
34° 7' 4.12" S	150° 46' 47.00" E	34° 6' 53.56" S	150° 47' 1.30" E
34° 7' 3.99" S	150° 46' 47.29" E	34° 6' 53.81" S	150° 47' 1.68" E
34° 7' 3.89" S	150° 46' 47.50" E	34° 6' 53.81" S	150° 47' 2.19" E
34° 7' 3.78" S	150° 46' 47.70" E	34° 6' 53.35" S	150° 47' 2.43" E
34° 7' 3.67" S	150° 46' 47.90" E	34° 6' 52.92" S	150° 47' 2.62" E
34° 7' 3.55" S	150° 46' 48.10" E	34° 6' 52.71" S	150° 47' 3.34" E
34° 7' 3.43" S	150° 46' 48.29" E	34° 6' 52.95" S	150° 47' 3.96" E
34° 7' 3.30" S	150° 46' 48.48" E	34° 6' 53.26" S	150° 47' 4.44" E
34° 7' 3.17" S	150° 46' 48.66" E	34° 6' 53.64" S	150° 47' 5.62" E
34° 7' 3.03" S	150° 46' 48.84" E	34° 6' 53.80" S	150° 47' 6.60" E
34° 7' 2.88" S	150° 46' 49.01" E	34° 6' 53.81" S	150° 47' 8.44" E
34° 7' 2.73" S	150° 46' 49.17" E	34° 6' 53.81" S	150° 47' 8.52" E
34° 7' 2.58" S	150° 46' 49.33" E	34° 6' 53.65" S	150° 47' 9.66" E
34° 7' 2.42" S	150° 46' 49.48" E	34° 6' 53.58" S	150° 47' 9.98" E
34° 7' 2.26" S	150° 46' 49.63" E	34° 6' 54.27" S	150° 47' 10.1" E
34° 7' 2.09" S	150° 46' 49.76" E	34° 6' 57.48" S	150° 47' 9.74" E
34° 7' 1.92" S	150° 46' 49.89" E	34° 7' 3.48" S	150° 47' 8.93" E

1.3 **Locality and property description**

The site is located in the Campbelltown LGA approximately 7 km south of the Campbelltown city centre (Figure 1). The site covers an area of approximately175.2 hectares, and forms part of the long-established Mt Gilead rural property (the remainder of the property lies to the west). The site is bounded by Appin Road to the east, Noorumba Reserve and Non-Urban land to the north, the Sydney Water Supply Canal (the Upper Canal) and rural land associated with the Mt Gilead homestead, Mill and farm to the west, and the Beulah Biobanking bushland (a registered Biobank site) to the south. The location of Noorumba Reserve and the Beulah Biobanking site, as well as future proposed biobank sites and conservation areas is shown in Figure 2. Access to the site is currently via a driveway entry off Appin road.

More broadly, the surrounding locality includes: the low density residential suburbs of Rosemeadow and St Helens Park located around 1 km to the north, the M5 motorway beyond the Mt Gilead Homestead and farm to the west, the Nepean River about 2 km west of the Mt Gilead Homestead, a number of rural land parcels along the eastern side of Appin Road adjoining the Dharawal State Recreation Area, the Georges River approximately 1 km to the east of Appin Road, and the Beulah Estate and rural residential land further to the south.

The site has been predominantly used for agricultural purposes and thus contains cleared paddocks with improved pastures. Pockets of residual vegetation are located along drainage lines and steeper slopes. The land is currently used for cattle grazing and other agricultural activities.

Topographically, the land is generally undulating throughout. The steepest land and the highest point in the site is in the north-western corner with a gradient greater than 1:6. Several drainage lines (dry creeks) traverse the site draining towards the Nepean River. A number of farm dams have been constructed to capture surface water flows.

1.4	**Size of the development footprint or work area (hectares)**	175.2 ha, of which 128.5 ha will be impacted
1.5	**Street address of the site**	Appin Road, Gilead

1.6 **Lot description**

Part of Lot 1 and all of Lot 2 in DP 807555 and Lot 59 DP 752042, owned by Mt Gilead Pty Ltd, a company of the MacArthur Onslow family that has held property around the area since the early 1940s.

1.7 **Local Government Area and Council contact (if known)**

Campbelltown LGA

Andrew Spooner, Senior Environmental Planner, Ph 02 4645 4598 e-mail: andrew.spooner@campbelltown.nsw.gov.au

1.8 **Time frame**

72 months (i.e. 6 years) following approval

1.9	**Alternatives to proposed action**	X	No – See 2.2

1.10	**Alternative time frames etc**	X	No
1.11	**State assessment**		
		X	Yes, land on site, as well as adjacent land within Lot 61 DP 752042, is proposed to be rezoned in accordance with the Standard Instrument – Principal LEP and consistent with the Campbelltown LEP 2014 to a predominantly R2 residential zone, along with areas for public open space and roads (Figure 3). This will allow for residential development with an indicative yield of 1,700 lots in total, of which 1,300 lots will be located on the site (approximately 400 lots will be located on adjacent land within Lot 61 DP 752042). In addition, an area is intended to be zoned as a neighbourhood centre in order to facilitate the future delivery of a community centre. Some land will be retained as rural land, and ecologically sensitive vegetation will be protected (Figure 3). The planning proposal was placed on exhibition by Campbelltown City Council between 28 April and 30 June 2015, and followed from extensive community and stakeholder consultation, including with the NSW Department of Planning and Environment (DPE) and the NSW Office of Environment and Heritage (OEH), that commenced in 2010. It is expected that the DPE will, if it so resolves to do so, approve the rezoning in late 2015/16 with preliminary subdivision plans submitted thereafter. Subject to all approvals being in place, construction is proposed to commence in 2017 and subject to demand for lots, be completed by 2021 with five development stages. An application for biocertification is currently being undertaken in parallel with the application to rezone the subject land.
1.12	**Component of larger action**	X	No
1.13	**Related actions/proposals**		
		X	Yes, an adjacent land area (Lot 61 DP 752042) with a different proponent is to be developed consistent with the proposed residential development of the proposed action. It is proposed that 400 lots will be located on this land, which together with the 1,300 lots on the site, totals 1,700 lots to be developed on land that will be rezoned (see section 1.11). This adjacent area will form part of the larger planned staged releases, however, is not considered as part of this referral.
1.14	**Australian Government funding**	X	No
1.15	**Great Barrier Reef Marine Park**	X	No

2 Detailed description of proposed action

2.1 Description of proposed action

Summary of Proposed Action

Mt Gilead Pty Ltd is proposing a residential development with an indicative yield of 1,300 lots (Figure 4). It is intended that development of the site will deliver a broad range of lot sizes consistent with the natural features of the site, environmental conservation areas, and a suitable street and community layout.

The key concepts of the development will be to:

- incorporate and maximise the existing landscape and topographical characteristics of the site
- retain existing native vegetation, much of which is in good condition, and protect and enhance biodiversity and sensitive habitats
- enhance the existing riparian corridors
- protect visually prominent features such as ridgelines
- enhance visual links to distant views, heritage features and open space
- encourage passive surveillance and increase safety
- facilitate sustainable transport access
- maximise solar access for future lots and sustainable design outcomes
- provide a walkable neighbourhood

The objectives of the development are to:

- permit low density residential development as well as public active and passive open space and associated community amenities and facilities
- provide an opportunity for a small area of retail development
- protect the environmental significance of the Beulah biobanking site
- protect environmentally sensitive land and provide a secondary ecological corridor linking Noorumba Reserve with the Beulah biobanking site and the Nepean River corridor
- reserve land on Appin road for acquisition by Roads and Maritime Services for future road infrastructure
- increase the supply of housing within the Campbelltown LGA with the addition of 1,300 new dwellings

Project Description

The development will be predominantly urban and consist of residential constructions and associated infrastructure. More specifically, the proposed action will involve:

- the delivery of new housing in proximity to existing residential urban land with access to public transport
- water and sewer infrastructure
- a community centre and small kiosk/store

Detailed information on the planning proposal can be found in the final planning proposal prepared by CCC (CCC 2015). A draft of this was placed on exhibition by CCC between 28 April and 30 June 2015. It is expected that the Department of Planning and Environment (DPE) will, if it so resolves, approve the rezoning in late 2015/16 with preliminary subdivision plans submitted thereafter. Subject to all approval being in place, construction is proposed to commence in the third quarter of 2016 and subject to demand for lots, be completed by 2021 with five development stages.

This referral has been based on an assessment of the total impacts of the proposed action to clear the site and construct the proposed structures.

2.2 Alternatives to taking the proposed action

The location of Mt Gilead has been previously identified as a key location to provide needed housing into the future for the predicted growth of Campbelltown – Macarthur as a Major Centre in accordance with strategic directions articulated by the Metropolitan Plan 2036 (The Plan). The Plan anticipates the South West Sydney region will need to provide an additional 155,000 dwellings and 141,000 new jobs by 2036, with Campbelltown – Macarthur Strategic Centre contributing 11,000 of these jobs. The following are the key issues in relation to the supply of housing and jobs of relevance to the proposed action:

- The LGA currently has a much higher proportion of public housing, and much lower private rental housing than the Sydney average
- unemployment in the LGA is above Sydney's average (8.5% in comparison to 6.1% for Sydney as a while in 2001) with high unemployment rates particularly concentrated in public housing suburbs
- Campbelltown has a much lower proportion of people in the white collar occupational categories (managers, administrators, professions) and higher proportion in the less skilled categories

A limitation in housing choice has been identified as a limiting factor to the attractiveness of the Campbelltown area as a place to live for professional and business people. The proposed development and average lot size at Mt Gilead will strategically address this issue, so contributing to the required growth of Campbelltown – Macarthur as a Major Centre.

More recently Mt Gilead has been identified as a priority precinct in the Greater Macarthur Land Release Investigation (DPE 2015).

Alternative footprints were considered during inception phase, which considered impacts to ecological values and footprints were revised to avoid or minimise impacts to ecological values.

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

There are no alternative locations, time frames or activities that form part of the referred action.

2.4 Context, planning framework and state/local government requirements

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal planning legislation that relates to the proposed development. It provides a framework for the overall environmental planning and assessment of development proposals. Various legislative instruments, such as the NSW *Threatened Species Conservation Act, Water Management Act 2000* (WM Act) and Rural Fires Act (2007) (RF Act) are integrated with EP&A Act and have been reviewed separately.

A substantial array of legislation, policies and guidelines apply to the subject site as listed below;

State

- Environmental Planning and Assessment Act 1979 (EP&A Act)
- Rural Fires Act 1997 (RF Act)
- Native Vegetation Act 1998 (NVCA Act)
- Noxious Weeds Act 1993 (NWA Act)
- Threatened Species Conservation Act 1995 (TSC Act)
- Protection of the Environment Operations Act 1997 (POEO Act)
- National Parks and Wildlife Act 1974 (NPW Act)
- Heritage Act 1977
- Water Management Act 2000 (WM Act)
- Contaminated Land Management Act 1997 (CLM Act)
- Catchment Management Act 1989 (CM Act)

- Local Government Act 1993 (LG Act)
- Fisheries Management Act 1994 (FM Act)
- Soil Conservation Act 1938
- Major Development SEPP 2005

Local

- Campbelltown Local Environmental Plan 2014
- Campbelltown (Sustainable City) Development Control Plan 2014
- Mt Gilead Development Control Plan (2014)

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

A Flora and Fauna Assessment was completed by ELA (2014) for the subject site and adjacent land as part of a rezoning investigation of this land to determine the extent of ecological values and any impacts to matters of NES. The planning proposal seeks to rezone the study site to a combination of residential, rural and conservation/riparian/open space land use. The proposal suggests it would afford conservation areas protection through the use of RE1 – Public Recreation Zone or RU2 – Rural Zone with a terrestrial biodiversity overlay clause included in the Campbelltown Local Environmental Plan 2014 (however it is noted these areas are now further proposed for protection under in perpetuity BioBank Agreements). The planning proposal was placed on public exhibition between 28 April and 30 June 2015 by CCC, and is currently being considered by the DPE and CCC.

A Biodiversity Certification Assessment for the site following the Biodiversity Certification Assessment Methodology (BCAM) is currently being reviewed and considered by the Office of Environment and Heritage (OEH). The BCAM compares the impact of the proposal on ecological matters to the conservation benefits. This comparison is measured using credits which are attributed for the extent of the existing vegetation, or for factors such as how land will be managed or protected. Biodiversity certification can only be conferred by the Minister where an "improve or maintain" biodiversity outcome is met. The proposed rezoning plan presents a plan that can achieve an "improve or maintain" outcome under the Biodiversity Certification Assessment Methodology (BCAM).

Additionally, it is noted that an agreement (Strategic Assessment) between the Commonwealth Minister for the Environment and the NSW Roads and Maritime Services (RMS) has been made whereby the majority of actions which encompass road and traffic management works assessed and determined by RMS under Part 5 of the NSW EP&A Act are endorsed under "the Program" (*Program Report – Environmental assessment and decision making by NSW Roads and Maritime Services Assessment under Part 10 of the Commonwealth EPBC Act, May 2015)*. The endorsement of "the Program" removes the need for referral (and assessment/approval) under the EPBC Act for such works.

Proposed road widening and subsequent clearance activities of the vegetation within the verges of Appin Road, could accordingly be endorsed under the Strategic Assessment agreement. However, components of the work are also required as part of the proposed Action and accordingly in lieu of RMS conducting assessments under Part 5 of the EP&A Act (at this time), it is deemed more appropriate to gain approval through the EPBC Act approval pathway to ensure project deliveries are met. As such, potential impacts associated with clearance within the road verges of the site have been considered within this referral.

2.6 Public consultation (including with Indigenous stakeholders)

The planning proposal to rezone the subject land at Mt Gilead has undergone extensive community and stakeholder consultation, including with indigenous groups, the Department of Planning and Environment (DPE) and the OEH, since 2010. Consultation with indigenous groups was noted in the planning proposal and formed part of a study by Navin Officer who prepared an Archaeological Assessment and Aboriginal Consultation Report for the planning proposal.

The planning proposal was placed on public exhibition between 28 April and 30 June 2015 by Campbelltown City Council. Further, consistent with section 126N of the *Threatened Species Conservation Act 1995* (TSC Act), the application for Biodiversity Certification will also be placed on public exhibition and a report prepared responding to any submissions received.

2.7 A staged development or component of a larger project

The current proposal seeks approval for the subdivision, early site establishment works and subsequent residential development. This referral has been written to consider the overall (total) impact on the site's environmental values for all stages of work and is based on the preferred indicative layout plan for the estate development (Figure 4). The proposed development will be rolled out in a series of five stages. It is not a component of a larger project.

An adjacent area (Lot 61 DP 752042) on the eastern/central side of the project is expected to be developed in the future and will share roads and other residential infrastructure; however, this will be undertaken by a different proponent. The proposed development is not reliant on the likely future development of this adjacent area.

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

No World Heritage Properties occur within the vicinity of the proposed action.

Nature and extent of likely impact

N/A

3.1 (b) National Heritage Places

Description

No National Heritage Places occur within the vicinity of the proposed action as listed on the DotE Australian Heritage Database. The nearest listed National Heritage Place is the historic Camden Post Office.

Nature and extent of likely impact

N/A

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

Description

No Wetlands of International Importance (declared Ramsar wetlands) occur within the vicinity of the proposed action.

Nature and extent of likely impact

N/A

3.1 (d) Listed threatened species and ecological communities
Description

Five (5) listed Threatened Ecological Communities occur within 5 km of the proposed action and a total of forty (40) listed Threatened Species were identified as potentially occurring within the vicinity of the proposed action (EPBC Act Protected Matters Report, DotE 2015 **– Attachment 2**). An analysis of this list of species is provided below. There is no marine habitat on site, so marine species have been excluded from the lists below.

Nature and extent of likely impact

A flora and fauna assessment was completed by ELA (2014) for the subject site as part of a rezoning investigation to determine the extent of ecological values and any impacts to matters of NES. Further survey was undertaken for the subject site for a biodiversity certification assessment for the subject site (ELA 2015). The ecological assessment for this referral utilised the ELA reports (2014, 2015) as well as an assessment of the following:

- Review of all relevant literature
- Database search of the EPBC Protected Matters Search Tool (PMST) for matters of NES (accessed 23 April 2015 – **Attachment 2**)
- Assessment of statutory requirements

A summary of survey effort (i.e. ELA 2014, 2015) is included in the table below:

Survey	**Effort**
ELA (2014)	- Five-day survey on 25th and 26th March, 4th April, 27th June, and 20th September 2013. - Vegetation communities and their condition were validated through random meander to demarcate vegetation zones (a combination of vegetation communities and their conditions). - 18 plots surveying vegetation zones, flora species and habitat features (i.e. biometric plots in accordance with NSW survey methods), were undertaken in eight vegetation zones, which included 'cleared' areas. - Searches for threatened flora species were undertaken via random meander in suitable habitat and were all undertaken during appropriate survey times identified by the OEH impact assessment databases. - Birds were surveyed over 20-30 minute intervals at four sites over four mornings, depending on whether one or two observers were present. - Microbat surveys were undertaken using two ultrasonic Anabat detectors at three sites (one Anabat at two sites and one Anabat at one site) targeting areas where bats are likely to be present over two consecutive nights over a period of 12 hours between 1800 hours and 0600 hours. - Habitat features for fauna across the study area, such as hollow-bearing trees, rocks and rocky outcrops, water bodies and Koala feed/forage resources were opportunistically recorded. As some features were assessed to be unsuitable for the threatened frog target species *Heleioporus australiacus* (Giant Burrowing Frog) and *Litoria aurea* (Green and Golden Bell Frog), targeted survey for these were not undertaken. - Koala was surveyed opportunistically within potential habitat over all five survey days. - Riparian and aquatic habitat assessments included mapping the top of bank using a differential GPS, classifying the condition and recovery potential of steam reaches, categorising each stream using the Strahler method, and identifying heavily degraded streams or areas of overland flow that do not meet the definition of 'river' and are suitable for removal. Assessments were undertaken over one and a half days.
ELA (2015)	- Two-day survey on 9th and 10th April 2015. - Vegetation communities and their condition as determined by ELA (2014) were

	validated through random meander to demarcate vegetation zones (a combination of vegetation communities and their conditions). - 9 plots surveying vegetation zones, flora species and habitat features (i.e. biometric plots in accordance with NSW survey methods) were undertaken in five vegetation zones.

Using database or other records, presence or absence of suitable habitats, features of the proposed site, results of field surveys and professional judgement, the likelihood of occurrence of EPBC Listed species has been determined and is presented in the tables below. Five terms used for the likelihood of occurrence of species are defined as follows:

"Known" = the species was or has been observed on the subject site
"Likely" = a medium to high probability that a species uses or occurs on the subject site,
"Potential" = suitable habitat for a species occurs on the subject site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur,
"Unlikely" = a very low to low probability that a species uses the subject site or occurs on the site,
"No" = habitat on the subject site and in the vicinity is unsuitable for the species.

An analysis of the likely level of impact of the proposed action on species with a likelihood of occurrence of "known", "likely" or "potential" (highlighted in blue) is presented below.

Ecological Communities

Name	EPBC listing status	Likelihood of Occurrence
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	No
Cumberland Plains Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Known
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Known
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	Endangered	No
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	No

Cumberland Plains Shale Woodlands and Shale-Gravel Transition Forest

Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CPW) is listed as critically endangered under the EPBC Act. The CPW complex represents occurrences of the coastal plain grassy eucalypt woodlands that are endemic to shale hills and plains of the Sydney Basin Bioregion and predominantly occupies the Cumberland Sub-region.

The ecological community is predominantly associated with clay soils that are derived from Wianamatta Shale geology. A part of the ecological community is also associated with shale soils with high concentrations of iron-indurated gravel or overlain by Tertiary Alluvium and those sites are marked by the shale-gravel transition forest component of the ecological community (SEWPAC 2013). Under the EPBC Act, the community is characterised by the following structural features:

- a medium-height eucalypt woodland with a lower tree layer, dominated by a Grey Box – Forest Red Gum (*Eucalyptus moluccana – E. tereticornis*) canopy;
- an open, low shrub layer dominated by a Blackthorn (*Bursaria spinosa*) understorey;
- an abundant grassy groundcover comprised of a several different grass species (DEC 2006; DEWHA 2009).

The composition of the understorey (shrubby or grassy) can vary depending on the site's disturbance history, such as grazing or farming practices. Fire frequency is also known to affect the structure of associated plant species occurring within the community. In NSW, CPW is further defined as two sub-

communities - Shale Hills and Shale Plains Woodland. The composition of both of these sub-communities is consistent with the EPBC Act listing definition of CPW. Therefore, any references to Shale Hills and Shale Plains Woodland can be considered as references to the EPBC Act listed community of CPW, and considered as part of the EPBC Act listed community of CPW provided condition thresholds for patches are met.

The original extent of CPW has been significantly reduced since the introduction of agricultural and urban uses across the Cumberland Plain following European settlement. A field survey undertaken by Tozer (2003) coupled with detailed interpretation of colour aerial photography from between 1997 and 1998, determined that only 9% of the original extent (pre-1750) of the community remained with greater than 10% canopy cover, with a further 14% remaining as scattered trees across the landscape (NPWS, 2002a; NPWS, 2002b).

A more recent study by the NSW Scientific Committee and Simpson (2008) re-assessed the status of the community in order to determine changes in distribution since November 1998. Comparing the 1997-1998 mapping undertaken by Tozer (2003) with ortho-rectified digital photography obtained in 2007, it was found that the remaining extent of the community had declined by approximately 442 ha or around 5.2% of its distribution nine years ago. Such clearing is likely to be a consequence of dispersed, small-scale clearing associated with urban development.

As of 2008 the remaining community existed as around 1,857 fragmented patches with an average patch size of 3.3 ha. The largest remaining patch was 126 ha (NSWSC & Simpson, 2008) with an approximate remaining total of 11,000 ha (DECC, 2008). These patches are distributed among both private and public lands. Security from land clearing is provided for approximately 720 ha of the community through conservation in nature reserves, national parks, state conservation areas and regional parks.

Field surveys were conducted by Eco Logical Australia (2014 – Attachment 3) to validate the presence, and extent of vegetation occurring within the site and adjacent land (Lot 61 DP 752042). Additional field surveys were also undertaken by Eco Logical Australia in 2015 (ELA 2015 - Attachment 4) for a biodiversity certification assessment of the site and adjacent land (Lot 61 DP 752042). The presence of CPW on site was confirmed by both surveys. A long history of grazing, pasture improvement and weed invasion has fragmented and modified vegetation of this community.

ELA (2014, 2015) found that CPW, as recognised by the TSC Act, was present within the site in three locations, generally in the north of the site, totalling 8.8 ha (Figure 5). Where present along the northern boundary, in the west, CPW had an intact canopy dominated by *Eucalyptus tereticornis*, although *E. creber* and *E. moluccana* were also present. The shrub layer was dominated by *Olea europaea* var. *cuspidata.* The under-storey was composed of a mixture of native and introduced grasses, sedges, herbs and scramblers. Native species richness was low to moderate. Where present along the northern boundary, in the east, CPW had an intact canopy of *E. tereticornis*, *E. creber* and *E. moluccana,* with an extremely sparse to absent mid-storey. Groundcover was predominantly native and comprised of grasses and herbs. Native species richness was low to moderate. Remaining areas of CPW were composed of scattered trees, lacking a mid-storey layer, over an exotic ground cover.

Survey by ELA (2015) found that the patch of CPW along the northern boundary of the site, in the east, also formed part of the EPBC Act listed community, while the remaining two patches conformed to the TSC Act listing criteria only. This was due to the north eastern patch meeting the minimum patch size condition threshold criteria and having a perennial native understorey cover greater than 50% (Category A condition threshold), in contrast to the TSC Act CPW in the west which had less than 30%. The total area of EPBC Act listed CPW within the study area is 3.1 ha (Figure 6).

The proposed development at Mt Gilead will impact on 0.1 ha of CPW as recognised under the EPBC Act (Figure 6). This represents less than 0.001% of the total CPW vegetation (11,000 ha) estimated to

be remaining on the Cumberland Plain (DECC, 2009). This impact is considered to be very small in the context of the surrounding stands of CPW within the locality (Figure 7) and that are proposed to be protected by a Biobanking Agreement as part of the rezoning proposal (Figure 5), and future biobanking sites (Figure 5 and Figure 7).

The Significant Impact Guidelines were reviewed to assist in the impact assessment of the 0.1 ha of EPBC Act listed CPW that would be introduced from the proposed action (DotE 2013).

- The proposed action will reduce the extent of the ecological community by a very small amount of 0.1 ha.
- Despite some of the clearance being for a proposed fire trail traversing the patch of CPW, the clearance of 0.1 ha will not fragment or increase fragmentation of CPW. Clearance for the fire trail will avoid trees and impact a narrow area (approximately 6 m) that will not disrupt connectivity through the patch.
- Other than the clearance for the proposed fire trail, the proposed action will impact on the edges of two patches of CPW (the largest of which will be reduced to a 2.6 ha patch) that is not considered critical to the survival of an ecological community.
- The proposed action will impact on the soil and potentially the soil seed bank within the 0.1 ha impacted. The 0.1 ha of soil impacted is unlikely to contain a significant amount of seeds. No ground water extraction is likely to impact on this community and no surface water changes are likely to occur.
- The proposed action will result in the removal of 0.1 ha of CPW. As above, this is less than 0.001% of the total estimated remaining CPW. The removal of this relatively small area would not remove any specific functionally important species from the study area.
- The proposed action is not considered likely to cause a substantial reduction in the quality or integrity of an ecological community by assisting any invasive species harmful to the ecological community becoming established. A Construction Environmental Management Plan will be developed and implemented to minimise the risks associated with the introduction of any invasive weeds or pathogens.
- The removal of 0.1 ha of CPW is considered to be very minor in area, however, the loss of 0.1 ha is not consistent with the recovery of the ecological community.

Considering the above, the impact to EPBC Act listed CPW is considered to be minimal in area and is not considered to represent a significant impact to the community.

Unavoidable biodiversity impacts to CPW as listed under both the TSC and EPBC Acts from the project are being addressed through a range of mitigation and management actions to be carried out before development, alongside all development, and into the future. These are outlined in more detail in section 4 and 5 and include:

- Retention and management of 2.6 ha of on-site EPBC Act listed CPW including exclusion fencing in a biobank site
- Retention and management of an additional 2.3 ha of on-site TSC Act listed CPW including exclusion fencing in a biobank site, which in time will be restored to CPW as recognised under the EPBC Act
- Retention of 0.4 ha of on-site EPBC Act listed CPW in proposed open space areas (to the north of Lot 61 DP 752042), which will be restored via landscape plantings, and will link existing scattered paddock trees
- Restoration and revegetation of 1.6 ha of land on site to CPW in a biobank site, which in time will be restored to CPW as recognised under the EPBC Act.

Shale Sandstone Transition Forest of the Sydney Basin Bioregion

Shale/Sandstone Transition Forest (SSTF) is listed as critically endangered under the EPBC Act. The SSTF occurs within the Sydney Basin Bioregion with an estimate of 9,950 ha remaining across the

Sydney Basin (22.6% of its original condition) (OEH 2013b). The ecological community is restricted to transitional areas between the clay soils derived from the Wianamatta shale and the sandy soils derived from Hawkesbury sandstone within the Sydney Basin Bioregion. The main tree species include Forest Red Gum (*Eucalyptus tereticornis*), Grey Gum (*E. punctata*), stringybarks (*E. globoidea*, *E. eugenioides*) and ironbarks (*E. fibrosa* and *E. crebra*). The boundaries are indistinct, and the species composition varies depending on the soil. The degree of sandstone influence increases with proximity to drainage zones, and with increasing stream order (Tozer 2003).

SSTF is divided into two sub-communities: low and high sandstone influence. SSTF (low sandstone influence) usually has a small tree stratum present, a shrub layer usually dominated by *Bursaria spinosa* and diverse array of forb species (Tozer 2003). It marks the start of the transition from the pure shale communities of the Cumberland Plain to the surrounding sandstone communities but contains relatively few common species from the sandstone derived soils and is typically found on the middle and upper slopes of gently undulating land. The boundary between low and high sandstone influence SSTF is indistinct. SSTF (high sandstone influence) usually has a small tree stratum present most often dominated by *Allocasuarina littoralis, Syncarpia glomulifera, Persoonia linearis* and *Acacia decurrens*, and a well-developed shrub layer which is more diverse in species than the low sandstone influence community (Tozer 2003).

Field surveys were conducted by ELA in September 2013 to validate the presence, and extent of vegetation occurring within the subject site and adjacent land (Lot 61 DP 752042). Additional field surveys were also undertaken by Eco Logical Australia in 2015 (ELA 2015) for a biodiversity certification assessment of the site and adjacent land (Lot 61 DP 752042). The presence of low sandstone influence SSTF on site was confirmed by both surveys. A long history of grazing, pasture improvement and weed invasion has fragmented and modified vegetation of this community. Farm dams are well represented within this vegetation community.

ELA (2014, 2015) found that SSTF, as recognised by the TSC Act, was present within the site, mainly in the south but also near the centre of the site, totalling 16.8 ha (Figure 5). Where present along the western boundary of the site, SSTF mostly had a mature over-storey of *E. tereticornis*, *E. creber*, *E. punctata* and *E. moluccana*. The shrub layer was absent. Groundcover was predominantly exotic and comprised of grasses and herbs. Native species richness was low. Also along the western boundary of the site, a small area of SSTF had an over-storey dominated by *Eucalyptus tereticornis* and *E. creber*. The shrub layer was largely absent. However, the under-storey was composed of a mixture of native and introduced grasses, sedges, herbs and scramblers. Native species richness was low. Near the centre of the site, the canopy was dominated by ironbark species, and a native mid-storey was present. The under-storey was native dominated with a low incidence of weeds. Vegetation in this area was contiguous with vegetation in adjacent land (i.e. within Lot 61 DP 752042). Along the eastern boundary of the site, SSTF had a native dominated ground layer and was less subject to disturbance from grazing due to the presence of a fence. Remaining areas in the south of the site were composed of scattered trees, lacking a mid-storey layer, over an exotic ground cover.

Survey by ELA (2015) found that the patch of SSTF along the eastern boundary of the site, as well as a small portion of a patch near the centre of the site, also formed part of the EPBC Act listed community, while the remaining patches of SSTF conformed to the TSC Act listing criteria only. This was due to SSTF in these areas either meeting the minimum patch size criteria, having a perennial native understorey cover greater than 30%, and being contiguous with native vegetation greater than 1 ha in size (Category A; moderate condition class), or meeting the minimum patch size criteria and having a perennial native understorey cover greater than 50% (Category B; moderate condition class). The total area of this patch and amount of EPBC Act listed SSTF within the site is 3.7 ha (Figure 6)

The proposed development at Mt Gilead will impact on 3.3 ha of SSTF as recognised under the EPBC Act (Figure 6). However, of this 3.3 ha, the majority (3.2 ha) was recorded as meeting the Category A condition, which is the minimum category that meets the condition thresholds for listing under the

EPBC Act. Accordingly, the majority of vegetation to be impacted (98.17%) is of lower condition EPBC Act listed SSTF. The loss of 3.3 ha represents approximately 0.03% of the remaining extent SSTF left in total on the Cumberland Plain (9,950 ha). This impact is considered to be very small in the context of the surrounding stands of SSTF within the locality (Figure 7) and that are proposed to be protected by a Biobanking Agreement as part of the rezoning proposal (Figure 5), and future biobanking sites (Figure 5 and Figure 7).

The Significant Impact Guidelines were reviewed to assist in the impact assessment of the 3.3 ha of EPBC Act listed SSTF that would be introduced from the proposed action (DotE 2013).

- The proposed action will reduce the extent of the ecological community by a small amount of 3.3 ha, the majority of which is represented by a thin linear extent of SSTF along the western road verge of Appin Road – which is generally no more than one tree in width.
- The clearance of 3.3 ha will not fragment or increase fragmentation of the SSTF as clearance is to occur (for the future upgrade of Appin Road which has been included as part of this action) only to a thin fringe of a linear strip of road verge vegetation along Appin road. Removal of this vegetation is not considered likely to decrease functionality of any biodiversity linkages as it is directly adjacent to contiguous woodland on the eastern side of Appin road which will not be impacted.
- 98.17% of impact to the 3.3 ha of SSTF is to occur to lower condition, fringing vegetation that is not considered critical to the survival of an ecological community.
- The proposed action will impact on the soil and potentially the soil seed bank. No ground water extraction is likely to impact on this community and no surface water changes are likely to occur.
- The proposed action will result in the removal of 3.3 ha of SSTF. As above, this is approximately 0.03% of the total estimated remaining SSTF. The removal of this relatively small area would not remove any specific functionally important species from the study area.
- The proposed action is not considered likely to cause a substantial reduction in the quality or integrity of an ecological community by assisting any invasive species harmful to the ecological community becoming established. The nearest vegetation is adjacent to the impacted 3.2 ha linear strip but is separated by Appin road which will act as a buffer for invasive species. A Construction Environmental Management Plan will be developed and implemented to minimise the risks associated with the introduction of any invasive weeds or pathogens.
- The removal of 3.3 ha of SSTF is considered to be very minor, primarily due to the geographical layout consisting mostly of a thin, fringing, linear strip of woodland which has been subjected to edge effects and under-scrubbing. The loss of 3.3 ha is not consistent with the recovery of the ecological community.

Considering the above, the impact to EPBC Act listed SSTF is considered to be minimal due to layout and condition and is not considered to represent a significant impact to the community.

Unavoidable biodiversity impacts to SSTF as listed under both the TSC and EPBC Acts from the project will be addressed through a range of mitigation and management actions to be carried out before development, alongside development, and into the future. These are outlined in more detail in Section 4 and 5 and include:

- Retention and management of 0.1 ha of on-site EPBC Act listed SSTF in a conservation area to be managed by Campbelltown City Council. This is part of a larger (3.5ha) conservation area; the majority of this conservation area lies in adjacent land in Lot 61 DP 752042
- Retention of 0.3 ha of on-site EPBC Act listed SSTF in proposed open space areas. This

will not be subject to any conservation actions, however, 0.04 ha will be restored via landscape plantings in the open space/recreation areas to the north of Lot 61 DP 752042, and will link existing scattered paddock trees
- Retention and management of 8.1 ha of on-site TSC Act listed SSTF including exclusion fencing in a biobank site, which in time will be restored to SSTF as recognised under the EPBC Act
- Restoration and revegetation of an additional 3.7 ha of land on site to SSTF in a biobank site, which in time will be restored to SSTF as recognised under the EPBC Act.

Overall the impact on EPBC Act listed SSTF is to occur only on a very thin strip along Appin Road and will not fragment or bisect any stands of the vegetation community. The vegetation here is not considered to be viable in the long-term, particularly considering the proposed expansion of Appin Road which would require the clearance of this roadside vegetation. Protection of the 0.1 ha of SSTF to be retained onsite and in adjacent land within a larger 3.5 ha conservation area to be managed by Campbelltown City Council, as well as protection and management of 8.1 ha of TSC Act listed SSTF in a biobank site which does not currently reach the EPBC Act condition class, and restoration of 3.7 ha of land on site to SSTF, is considered to provide a greater conservation outcome through proposed management and improvement of more consolidated vegetation compared to the strip of SSTF along Appin Road.

Birds

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Anthochaera phrygia	Regent Honeyeater	Endangered	Unlikely
Botaurus poiciloptilus	Australasian Bittern	Endangered	No
Dasyornis brachypterus	Eastern Bristlebird	Endangered	No
Lathamus discolour	Swift Parrot	Endangered	Potential
Rostratula australis	Australian Painted Snipe	Vulnerable	No

Swift Parrot (*Lathamus discolour*)

The Swift Parrot breeds in Tasmania and over-winters on mainland Australia (SEWPaC, 2013a). The principal over wintering habitat on the mainland is the box-ironbark forests and woodlands inland of the Great Dividing Range in Victoria and NSW. They occur in areas where eucalypts are flowering profusely and favoured feed trees including winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata,* Red Bloodwood C*. gummifera*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Key habitat for Swift Parrots on the coast and coastal plains of NSW include Spotted Gum *Corymbia maculata*, Swamp Mahogany *Eucalyptus robusta* and Forest Red Gum *E. tereticornis* Forests. It is a highly mobile species able to utilise a variety of nectar sources over large areas.

On the mainland the main threat to Swift Parrot is loss of habitat through clearing for agriculture, and urban and industrial development. Collisions with wire netting fences, windows and cars during the breeding season and winter migration (especially where such obstacles are in proximity to suitable habitat) are also a threat to this species.

While the Swift Parrot was not recorded during field surveys, potential habitat does occur on site in the form of 3.1 ha of CPW and 3.7 ha of SSTF as listed under the EPBC and TSC Acts, and an additional 1.2 ha of Alluvial Woodland (AW), 5.6 ha of CPW, and 13.1 ha of SSTF as listed under the TSC Act only. This totals 26.8 ha of potential habitat.

The proposed development will result in the removal of approximately 9.2 ha of potential habitat, representing 34.21% of potential habitat in the site. Potential habitat to be removed is comprised of 0.1 ha of CPW and 3.3 ha of SSTF as listed under the EPBC and TSC Acts, and 1.5 ha of CPW and 4.3 ha of SSTF as listed under the TSC Act only. Within a regional context, this loss comprises a very small proportion of the potential foraging habitat available for the Swift Parrot. Within the Campbelltown area alone, there are over 23,000 ha of similar woodland habitat, with large consolidated stands of vegetation surrounding the study area. The loss in relation to the amount of habitat in the Campbelltown area represents 0.04%.

Significant impacts to the Swift Parrot from the proposed development are therefore considered unlikely for the following reasons:

- the loss of native vegetation on site will be relatively small, particularly within a regional context, and native vegetation is already highly disturbed;
- the Swift Parrot has not been recorded on site and the area is not recognised as providing habitat critical to the survival of the species;
- the Swift Parrot is a highly mobile species that is able to utilise a variety of nectar sources over large areas, making them less sensitive to fragmentation;
- Any habitat removed is to be offset, managed, and protected within the local area.

Given the above, it is considered highly unlikely that any significant impacts, either direct or indirect will occur to Swift Parrot or its habitat within the proposed development.

Reptiles

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Hoplocephalus bungaroides	Broad-headed snake	Vulnerable	No

Amphibians

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	No
Litoria aurea	Green and Golden Bell Frog	Vulnerable	Unlikely
Litoria littlejohnii	Littlejohn's Tree Frog	Vulnerable	No
Litoria raniformis	Southern Bell Frog	Vulnerable	No

Mammals

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Potential
Dasyurus maculatus maculates (SE mainland pop)	Spotted-tailed Quoll	Endangered	No
Isoodon obesulus	Southern Brown Bandicoot	Endangered	No
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable	No
Phascolarctos cinereus	Koala	Vulnerable	Likely

Pseudomys novaehollandiae	New Holland Mouse	Vulnerable	No
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Potential

Large-eared Pied Bat (*Chalinolobus dwyeri*)
The Large-eared Pied bat is an insectivorous bat with a distribution from Shoalwater Bay in Queensland through to around Ulladulla in NSW (DotE, 2015). The species is largely restricted to the interface of sandstone escarpment for roosting habitat, and relatively fertile forests supporting woodlands and forests for foraging habitat. The species forages for insects in and around forest canopies.

Important populations for this species occur in the Hunter Valley, Sydney Basin and Southern Tablelands of NSW.

The species was not recorded during field surveys. However, the site does provide some potential foraging habitat for the species. This potential foraging habitat is comprised of 3.1 ha of CPW and 3.7 of SSTF as listed under the EPBC and TSC Acts and an additional 1.2 ha of AW, 5.6 ha of CPW, and 13.1 ha of SSTF as listed under the TSC Act only. This totals 26.8 ha of potential habitat. As described previously, this woodland is already heavily fragmented, at best - representing fringes of more consolidated patches, and the landscape has been extensively modified for pasture lands.

While the site does contain few hollow-bearing trees which may be utilised by the Large-eared Pied Bat for roosting, this would be marginal at best, as the species tends to use caves, sandstone overhangs, tunnels and culverts for roosting and breeding – none of which have been recorded within the study area.

The proposed development will result in the removal of approximately 9.2 ha of potential habitat, representing 34.21% of potential habitat in the site. Potential habitat to be removed is comprised of 0.1 ha of CPW and 3.3 ha of SSTF as listed under the EPBC and TSC Acts, and 1.5 ha of CPW and 4.3 ha of SSTF as listed under the TSC Act only. Within a regional context, this loss comprises a very small proportion of the potential foraging habitat available for the Large-eared Pied Bat, particularly when considering the large expanses of woodland surrounding the site and to the south-east.

Significant impacts to the Large-eared Pied Bat from the proposed development are therefore considered unlikely for the following reasons:

- the loss of native vegetation on site will be relatively small, particularly within a regional context, and is already highly disturbed;
- the Large-eared Pied Bat has not been recorded on site and the area is not recognised as providing habitat critical to the survival of the species;
- the Large-eared Pied Bat is able to utilise a variety of vegetation types over large areas, making them less sensitive to fragmentation.
- Any habitat removed is to be offset, managed, and protected within the local area.

Koala (*Phascolarctos cinereus*)
Koalas are associated with a wide range of temperate, tropical and sub-tropical forests as well as semi-arid communities. They feed almost exclusively on leaves of Eucalyptus species, although they have been known to forage on other genera as well (DotE 2015). Koalas have large overlapping home ranges with larger home ranges present in areas of poorer quality habitat (recorded up to 135 hectares in central Queensland).

The survey undertaken by ELA for the rezoning assessment confirmed the presence of Koala feed trees within the sites conservation area although no Koalas were recorded. This survey was undertaken over five days on 25th and 26th March, 4th April, 27th June, and 20th September 2013 (ELA 2014). This

survey was conducted in accordance with the DotE endorsed Survey Guidelines for Mammals (2011), taking into consideration the known habitat resources as outlined in the Departments Koala species profile (SPRAT). There are Koala records form Noorumba Reserve, on the northern boundary of the study area and the Beulah Biobank site, adjacent to the southern boundary of the study area. In addition there are several road kill records along Appin Road adjacent to the study area where Koalas are likely using habitat resources on both the eaten and western side of Appin Road. It is noted that most historic Koala records are along and east of Appin Road (Figure 8).

There are no Koala records on the study site or west of Appin Road in the project area. However, potential habitat occurs on site, with Koala food tree species, *Eucalyptus tereticornis, E. moluccana,* and *E. punctata*, identified in the study site. All three food tree species were recorded within some patches of SSTF, primarily along the western boundary of the site, in the north, while *E. tereticornis* and *E. moluccana* were recorded within patches of CPW and AW. Given the presence of food trees within all vegetation communities on site and Koala's use of scattered paddock trees, it is considered that approximately 26.8 ha of potential habitat occurs on site.

The proposed action will lead to the loss of approximately 9.2 ha of potential foraging habitat, mainly a thin strip of trees along Appin Road and scattered paddock trees, representing approximately 34% of habitat in the study area and 0.04% of habitat in the region, considering the amount of CPW and SSTF alone remaining in the Cumberland Plain (approximately 20,950 ha).

With reference to the *EPBC Act Significant Guidelines 1.1* and the *EPBC Act referral guidelines for the vulnerable koala* (DotE 2014), and application of the habitat assessment tool that assesses whether habitat critical to the survival of the koala exists in the study area (Table 4 within the referral guidelines), the project will impact habitat critical to the survival of the koala. This is because a score of '**7'** was calculated using the habitat assessment tool (see table below), and scores greater than five are considered to contain habitat critical to the survival of the koala according to Section 6 the referral guidelines (DotE 2014).

Attribute	Score	Discussion for coastal areas
Koala occurrence	+1 (medium)	There is evidence of one or more koalas within 2 km of the edge of the impact area within the last 5 years
Vegetation composition	+2 (high)	The site has forest or woodland with 2 or more known koala food tree species
Habitat connectivity	+2 (high)	The area is part of a contiguous landscape (≥ 500 ha)
Key existing threats	+1 (medium)	There is evidence of infrequent or irregular koala mortality from vehicle strike or dog attack is present in areas that score 1 or 2 for koala occurrence
Recovery value	+1 (medium)	It is uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1
Total	7	

According to Section 7 of the referral guidelines and Figure 2 within section 7, significant impacts depend on a number of factors in combination when clearing <20 ha of habitat containing known Koala food trees in an area with a habitat score >8. However, it is unlikely that impacts are significant as the score calculated for the impact area (7), was generated based largely on Koalas in the wider area, habitat connectivity of the wider area, and evidence of Koala strike on an existing road, Appin Road, outside the study area (Figure 8). A low amount (approximately 9.2 ha) of Koala habitat is proposed to be cleared. No Koalas have been recorded west of Appin Road (Figure 8) i.e. the density or abundance

of Koala on site is low. The level of fragmentation caused by the clearing is low.

Accordingly, the proposal is not likely to adversely affect habitat critical to the survival of the koala (Section 7 of referral guidelines) or substantially interfere with the recovery of Koala (Section 8 of referral guidelines. This is because the following impacts are not likely to occur as a result of the project:

- *Increasing koala fatalities in habitat critical to the survival of the koala due to dog attacks to a level that is likely to result in multiple, ongoing mortalities*.

  Increased koala fatalities from dog attacks will not occur as, while there may be an increase in dog numbers associated with the proposal, dogs will be controlled by owners in public spaces e.g. kept on leash at all times as per standard dog ownership regulations. Proposed conservation areas (BioBank sites and Council conservation reserves) will not allow dogs. These areas will be actively managed and subject to enforcement powers under the Local Government Act.

- *Increasing koala fatalities in habitat critical to the survival of the koala due to vehicle-strikes to a level that is likely to result in multiple, ongoing mortalities*.

  Increased koala fatalities from vehicle strike may occur as there will be an increase in traffic volume in the area from population increase. However, all roads within the proposed development will be local roads with a maximum speed limit of 50 km/h and will be associated with traffic calming measures. It is likely that any increase in koala fatalities from vehicle strike would occur more from the proposed upgrade to Appin Road than the proposal.

  The upgrade of Appin Road does not form part of this proposal. It is understood that any upgrade of Appin Road by the NSW Roads and Maritime Services would include mitigation measures to minimise impacts to Koala. Such mitigation measures are likely to include imposing speed limits, signage, and incorporating crossing points.

- *Facilitating the introduction or spread of disease or pathogens for example Chlamydia or Phytophthora cinnamomi, to habitat critical to the survival of the koala, that are likely to significantly reduce the reproductive output of koalas or reduce the carrying capacity of the habitat*.

  Mitigation measures will be in place to prevent and minimise the introduction or spread of disease or pathogens as a result of the proposal and will be outlined in a CEMP.

- *Creating a barrier to movement to, between or within habitat critical to the survival of the koala that is likely to result in a long-term reduction in genetic fitness or access to habitat critical to the survival of the koala*.

  As part of the planning proposal (CCC 2015), a key objective is to provide a secondary environmental corridor that links the existing Noorumba Reserve to the north of the project site with the existing Beulah Biobank site to the south and the Nepean River Corridor to the west. The project will retain and enhance 19.68 ha of Koala habitat in two proposed Biobank sites in the north and west of the study area and enhance movement corridors for the Koala between the east and west. (Figure 8).

- *Changing hydrology which degrades habitat critical to the survival of the koala to the extent that the carrying capacity of the habitat is reduced in the long-term.*

  No streams will be impacted by the proposal, and it is unlikely that any changes in surface flows will be to the extent that it will degrade habitat critical to the survival of the Koala.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

The Grey-headed Flying Fox is known to occur along the eastern coast of Australia from Bundaberg in Queensland to Melbourne in Victoria (DotE 2015). Due to the high mobility of the species, there are no separate or distinct populations as individuals move between camps and throughout its geographic

distribution. This species may occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps and feeds on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, or in vegetation with a dense canopy.

The main threat to the survival of the species is habitat loss and disturbance through the clearing of foraging habitat and roosting locations for development and farming. Loss of important areas of habitat has also caused increased fragmentation of suitable habitat, resulting in the species having to travel greater distances for food or resorting to alternative sources such as food crops. Other threats to the species include unregulated shooting and electrocution on power lines.

While the Grey-headed Flying Fox was not recorded during field surveys, potential foraging habitat does occur on site in the form of 3.1 ha of CPW and 3.7 ha of SSTF as listed under the EPBC and TSC Acts, and an additional 1.2 ha of AW, 5.6 ha of CPW, and 13.1 ha of SSTF as listed under the TSC Act only. This totals 26.8 ha of potential foraging habitat. The areas of woodland that will be impacted at the site are already fragmented, and the landscape has been extensively modified for the past agricultural uses. The site does not provide suitable roosting habitat for the species.

The proposed development will result in the removal of 9.2 ha of woodland, representing 34.21% of potential habitat in the site. Within a regional context, this loss comprises a very small proportion of the potential foraging habitat available for the Grey-headed Flying Fox. The amount to be removed is fragmented and proportionately small in the context of the adjacent woodland to directly adjacent to the site.

Significant impacts to the Grey-headed Flying Fox from the proposed development are therefore considered unlikely for the following reasons:

- the loss of native vegetation on site will be relatively small, particularly within a regional context, and is already patchy and disturbed in areas;
- the Grey-headed Flying Fox has not been recorded on site and the area is not recognised as providing habitat critical to the survival of the species;
- the Grey-headed Flying Fox has a large home range and is able to utilise a variety of nectar sources over significant areas, making them less sensitive to fragmentation.

Plants

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Acacia bynoeana	Bynoe's Wattle	Vulnerable	No
Acacia pubescens	Downy Wattle	Vulnerable	No
Allocasuarina glareicola	-	Endangered	No
Asterolasia elegans	-	Endangered	No
Caladenia tessellata	Thick-lipped Spider-orchid	Vulnerable	No
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	No
Cynanchum elegans	White-flowered Wax Plant	Endangered	No
Eucalyptus benthamii	Camden White Gum	Vulnerable	No
Grevillea parviflora subsp. *parviflora*	Small-flower Grevillea	Vulnerable	No
Haloragis exalata subsp. *exalata*	Wingless Raspwort	Vulnerable	No

Hibbertia sp. Bankstown	Critically Endangered	Vulnerable	No
Leucopogon exolasius	Woronora Beard-heath	Vulnerable	No
Melaleuca deanei	Deane's Paperbark	Vulnerable	No
Parsicaria elatior	Knotweed	Vulnerable	No
Pelargonium sp. Striatellum	Omeo Stork's bill	Endangered	No
Persoonia bargoensis	Bargo Geebung	Vulnerable	No
Persoonia hirsuta	Hairy Geebung	Endangered	No
Persoonia nutans	Nodding Geebung	Endangered	No
Pimelea curviflora var. curviflora	-	Vulnerable	No
Pimelea spicata	Spiked Rice-flower	Endangered	No
Pomaderris brunnea	Rufous Pomaderris	Vulnerable	No
Pterostylis saxicola	Sydney Plains Greenhood	Endangered	No
Streblus pendulinus	Siah's Backbone	Vulnerable	No
Thelymitra sp. Kangaloon	Kangaloon Sun-orchid	Critically Endangered	No
Thesium australe	Austral Toadflax	Vulnerable	No

3.1 (e) Listed migratory species

Description

A total of 11 listed Migratory Species were identified as potentially occurring within the vicinity of the proposed action (EPBC Act Protected Matters Reports, DotE 2015 – **Attachment 2**). An analysis of this list of species is provided below. There is no marine habitat on site, so marine species have been excluded from the lists below.

Nature and extent of likely impact

The likelihood of occurrence was determined and expressed using the five terms as defined in section 3.1(d).

Migratory Birds

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence
Apus pacificus	Fork-tailed Swift	Migratory	Potential
Ardea alba	Great Egret	Migratory	Potential
Ardea ibis	Cattle Egret	Migratory	Known
Gallinago hardwickii	Latham's Snipe	Migratory	Unlikely
Haliaeetus leucogaster	White-bellied Sea Eagle	Migratory	Unlikely
Hirundapus caudacutus	White throated Needletail	Migratory	Potential
Merops ornatus	Rainbow Bee-eater	Migratory	Potential
Monarcha melanopsis	Black-faced Monarch	Migratory	Unlikely

Myiagra cyanoleuca	Satin Flycatcher	Migratory	Unlikely
Pandion cristatus	Eastern Osprey	Migratory	Unlikely
Rhipidura rufifrons	Rufous Fantail	Migratory	Unlikely

The likelihood of occurrence was determined and expressed using the five terms as defined in section 3.1(d). While it was found to be unlikely that many of the listed migratory species identified in the Protected Matters search report would occur on site, five of these species were identified to have the potential to occur.

However, each of the species considered have large natural distributions and are found in a large variety of areas throughout Australia. Any impacts on these species as a result of the development are therefore expected to be minor to nil. In addition, the site does not represent important habitat or support an ecologically significant proportion of any of the species listed below; accordingly a significant impact to any species will not result from the development.

Fork-tailed Swift (*Apus pacificus*)
The Fork-tailed Swift is a medium to large Swift with a slim body and long scythe-shaped wings that taper finely pointed tips. It is characterised by a long deeply forked tail, is mainly blackish with a white band across the rump. The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia. The bird is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton.

The Fork-tailed Swift is considered to have the potential to forage across areas of the site, however, the species was not detected during the survey (ELA 2015). Furthermore, the potential foraging habitat is degraded and partially cleared and is not considered to meet the criteria for 'important habitat' (DEWHA 2009) nor will the removal of this habitat seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of this species.

Great Egret (*Ardea alba*)
The Eastern Great Egret or Great Egret (*Ardea alba*) are widespread in Australia and occur in all States and Territories with the area of occupancy across Australia estimated at 408,400 km^2 (DotE 2015). The distribution of the Great Egret in Australia is not severely fragmented and this species is not considered especially susceptible to fragmentation effects because of their high mobility (DotE 2015). Breeding colonies in NSW are known from the Darling Riverine Plains and Riverina Regions (DotE 2015). Although birds move beyond Australian jurisdiction, the main threats to the Australian population, such as reduced water flow to breeding wetlands, are within Australia (DotE 2015).

The Great Egret is considered to have the potential to forage across areas of the site, however, the species was not detected during the survey (ELA 2015). Furthermore, the potential foraging habitat is degraded and partially cleared and is not considered to meet the criteria for 'important habitat' (DEWHA 2009) nor will the removal of this habitat seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of this species.

Cattle Egret (*Ardea ibis*)
The Cattle Egret is widespread and common according to migration movements and breeding localities surveys (DotE 2015). In Australia the principal breeding sites for Cattle Egret are the central east coast from about Newcastle to Bundaberg as well as major inland wetlands in north NSW (notably the Macquarie Marshes) (DotE 2015). Non-breeding Cattle Egret may remain in breeding areas, but most migrate elsewhere. The total non-breeding range comprises east and south Australia from the far north-east of Queensland to Tasmania and the Eyre Peninsula and in inland regions it extends to the

eastern parts of the Murray-Darling Basin (DotE 2015).

The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It has occasionally been seen in arid and semi-arid regions however this is extremely rare. It uses predominately shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora (DotE 2015). High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass. The population estimate for Australia, New Guinea and New Zealand is 100,000 birds (Maddock & Geering 1994) however there has been no systematic survey for the whole continent (DotE 2015).

One Cattle Egret individual was observed on site during fieldwork (ELA 2015). It is considered that the Cattle Egret would use the site in a transient opportunistic nature. The opportunistic foraging habitat is degraded and partially cleared and is not considered to meet the criteria for 'important habitat' (DEWHA 2009) nor will the removal of this habitat seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of this species.

White-throated Needletail (*Hirundapus caudactus*)

The White-throated Needletail is a large swift with a thickset, cigar-shaped body, stubby tail and long pointed wings. The species is widespread in eastern and south-eastern Australia where they spend the non-breeding season. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest (DotE 2015).

The White-throated Needletail is considered to have the potential to forage across areas of the site, however, the species was not detected during the survey (ELA 2015). The potential foraging habitat is degraded and partially cleared and is not considered to meet the criteria for 'important habitat' (DEWHA 2009) nor will the removal of this habitat seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of this species. Furthermore, the species is almost exclusively aerial.

Rainbow Bee-eater (*Merops ornatus*)

The Rainbow Bee-eater is a medium-sized bird, and the only species of bee-eater in Australia. The adults have green or blue-green colouring on the forehead and chestnut on the back of the head. The Rainbow Bee-eater is distributed across much of mainland Australia, and occurs on several near-shore islands. The rainbow Bee-eater occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation (DotE 2015).

The Rainbow Bee-eater is considered to have the potential to forage across areas of the site, however, the species was not detected during the survey (ELA 2015). Furthermore, the potential foraging habitat is degraded and partially cleared and is not considered to meet the criteria for 'important habitat' (DEWHA 2009) nor will the removal of this habitat seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a population of this species.

3.1 (f) Commonwealth marine area

Description
The Commonwealth Marine Area – EEZ and Territorial Sea stretches from three nautical miles to 200 nautical miles from the coast and hence is not within the subject site.

Nature and extent of likely impact

N/A

3.1 (g) Commonwealth land

Description
The subject site is not within Commonwealth Land.

Nature and extent of likely impact

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description
The subject site is not in the vicinity of the Great Barrier Reef Marine Park.

Nature and extent of likely impact

N/A

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

Description
The proposed action does not relate to coal seam gas development or coal mining.

Nature and extent of likely impact

N/A

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

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	X	No
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	X	No
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	X	No
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the**	X	No

Great Barrier Reef Marine Park?		

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

3.3 Other important features of the environment

3.3 (a) Flora and fauna

Being agricultural land, the site has a long history of grazing, pasture improvement and weed invasion. A total of 154 flora species were identified on the site, comprising 67 native and 87 introduced species. No threatened flora were recorded during field surveys.

In relation to avifauna, a total of 58 bird species were recorded on the site, including one migratory species.

Few native mammals were identified during field surveys – 13 native bat species including 6 TSC Act listed vulnerable species and a lone wallaby. Domestic livestock graze throughout the site.

3.3 (b) Hydrology, including water flows

There are a number of drainage lines/creeks and several farm dams across the site. Based on previous investigations for the site, these are likely to be classified as 1st, 2nd, and 3rd, order streams. Requisite riparian corridors and buffers have been incorporated into the concept plan for the site.

3.3 (c) Soil and Vegetation characteristics

The study area is underlain by the Triassic Ashfield Shale of the Wianamatta Group deposited over the Hawkesbury Sandstone. In general there are only limited bedrock outcrops across this area, with shale underlying the northern portion of the site and sandstone in the southern portion of the site. The existing soils within the study area are cohesive and potentially have low bearing strength when wet. A review of the available Acid Sulphate Soil Risk Map and an assessment of the topography and lithology of the site also confirmed there is a very low risk or potential acid sulphate soils.

The majority of the land is cleared of vegetation as a result of its continued agricultural use. However, the site does show the presence of woodland in the form of Alluvial Woodland, Shale Sandstone Transition Forest and Cumberland Plain Woodland.

3.3 (d) Outstanding natural features

The site is not considered to contain any outstanding native vegetation.

3.3 (e) Remnant native vegetation

The site comprises both remnant and degraded native vegetation and exotic pastures, and three native vegetation communities are located within the boundaries of the site:

- CPW (as discussed in section 3.1)
- SSTF (as discussed in section 3.1)
- AW/River-flat Eucalypt Forest (non-EPBC Act remnants).

The vast majority of the site is comprised of cleared and degraded pasture lands.

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

Topographically, the land is generally undulating throughout. The steepest land is in the north-western corner with a gradient greater than 1:6. The highest point is also in the north-western corner. Previous investigations indicate that there are no significant slope instability constraints to development on the gently sloping areas.

3.3 (g) Current state of the environment

The site and its surrounds currently contain areas of native vegetation and exotic pastures. The site has predominantly been used for grazing livestock and thus contains large areas of cleared paddocks with improved pastures. Pockets of residual vegetation are located along drainage lines and steeper slopes. The land is approximately 95% cleared.

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

The site does not contain any Commonwealth Heritage Places or other places recognised as having heritage values.

3.3 (i) Indigenous heritage values

The generally undeveloped nature of the site results in potential for Aboriginal cultural heritage sites and areas of archaeological sensitivity. As such, Navin Officer prepared an Archaeological Assessment and Aboriginal Consultation Report which examined the significance of existing Aboriginal Archaeological Sites on the site and provided an assessment on the potential impact of permitting residential development. A copy of the assessment report was forwarded to the State Office of Environment and Heritage (OEH) in September 2013..

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

The majority of the site is considered unremarkable.

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

The site is owned by Mt Gilead Pty Ltd, company of the MacArthur Onslow family that has held property around the areas since the early 1940s.

3.3 (l) Existing land/marine uses of area

The land is currently used for agricultural purposes.

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

The proposed use of the land is to be for residential purposes.

4 Environmental outcomes

Proposed environmental outcomes that will be achieved for Matters of National Environmental Significance (MNES) as a result of the proposed action include the following:

Environmental Outcomes for CPW
A cumulative total of 6.9 ha of CPW will be retained with the majority (6.5 ha) to undergo conservation management, regeneration and revegetation to ensure ecological benefits and improvements on the current condition of the vegetation communities to meet the EPBC Act thresholds. This outcome will be provisioned as follows:

- Retention and management of 2.6 ha of on-site EPBC Act listed CPW including exclusion fencing in a biobank site
- Retention and management of an additional 2.3 ha of on-site TSC Act listed CPW including exclusion fencing in a biobank site, which in time will be restored to meet the CPW EPBC Act condition thresholds
- Retention of 0.4 ha of on-site EPBC Act listed CPW in proposed open space areas (to the north of Lot 61 DP 752042), which will be restored via landscape plantings, and will link existing scattered paddock trees
- Restoration and revegetation of 1.6 ha of land on-site to CPW in a biobank site, which in time will be restored to CPW as recognised under the EPBC Act.

Environmental Outcomes for SSTF
A cumulative total of 12.2 ha of SSTF will be retained on site with the majority (11.9 ha) to undergo conservation management, regeneration and revegetation to ensure ecological benefits and improvements on the current condition of the vegetation communities to meet the EPBC Act thresholds. This outcome will be provisioned as follows:

- Retention and management of 0.1 ha of on-site EPBC Act listed SSTF in a conservation area to be managed by Campbelltown City Council. This is part of a larger (3.5 ha) conservation area; the majority of this conservation area lies in adjacent land in Lot 61 DP 752042
- Retention of 0.3 ha of on-site EPBC Act listed SSTF in proposed open space areas. This will not be subject to any conservation actions, however, 0.04 ha will be restored via landscape plantings in the open space/recreation areas to the north of Lot 61 DP 752042, and will link existing scattered paddock trees
- Retention and management of 8.1 ha of on-site TSC Act listed SSTF including exclusion fencing in a biobank site, which in time will be restored to SSTF as recognised under the EPBC Act
- Restoration and revegetation of an additional 3.7 ha of land on site to SSTF in a biobank site, which in time will be restored to SSTF as recognised under the EPBC Act.

Potential habitat for the Koala, Swift Parrot, Large-eared Pied Bat and Grey-headed Flying Fox will be managed and protected within the local area in the form of the abovementioned CPW and SSTF environmental outcomes. The total minimum area of habitat that will contribute to the environmental outcomes for these species is 19.1 ha.

The conservation areas will be improved through a range of ecological restoration works set out in management plans detailed further in Section 5. A minimum of 19.1 ha will be retained with 18.4 ha to be subject to formal management practices to be set out within a BioBank agreement.

BioBanking is the key conservation measure proposed to ensure biodiversity protection and management that will bring about an improved environmental outcome for the site. BioBanking delivers ongoing benefits through active management of BioBank sites through activities such as revegetation, strategic grazing, and control of weeds and feral animals. Under a BioBanking agreement, landholders are committed to improving or maintaining biodiversity values on a site in perpetuity under the TSC Act.

5 Measures to avoid or reduce impacts

The design of the proposed action has followed Step 4 of the *Guidelines for threatened species assessment* (DEC and DPI 2005) and importantly considered the Significant Impact Guidelines for MNES, which both identify important factors that must be considered when assessing the potential impacts on threatened species, populations, or ecological communities, or their habitats; namely to avoid, mitigate and finally to offset any residual impacts.

Layout Design

The ecological assessments conducted (ELA 2014 and 2015) have been used to inform avoidance and minimisation of direct and indirect impacts to biodiversity values. These principles include:

- the layout design selection process must include consideration and analysis of the biodiversity constraints of the proposed action
- the project should be located in areas where the native vegetation and threatened species habitat is in the poorest condition
- the project should be in areas which avoid EECs or CEECs
- the project should aim to minimise the amount of clearing or habitat loss
- the project should be located in areas that do not have native vegetation or require the least amount of clearing

The proposed action is the result of a series of redesigns taking into account the above.

Cumberland Plain Woodland, Shale Sandstone Transition Forest, and fauna habitat, particularly Koala habitat

Indirect Impacts

Indirect impacts to both TSC Act and EPBC Act listed CPW and TSC Act listed SSTF to be retained and restored in future Biobank sites, as well as EPBC Act listed SSTF to be retained and restored in a conservation area managed by Campbelltown City Council (mostly contained in adjacent land in Lot 61 DP 752042) (Figure 2, Figure 4), have been considered. They have been determined to be negligible on the basis that all direct impacts have been assessed as a worst case scenario – on the assumption of complete loss of all biodiversity values including where these losses are only partial e.g. for Asset Protection Zones (APZs) and the outer perimeter of the proposed residential footprint largely adjoins cleared rural land (and thus negligible in direct impacts) or areas that will be used for recreational purposes and include landscape plantings and active ongoing management. In effect the APZ areas will provide a buffer between the development lands and the adjacent conservation area supporting EPBC Act listed SSTF to be managed by Campbelltown City Council, and biobank sites supporting both TSC Act and EPBC Act listed CPW and TSC Act listed SSTF, thereby mitigating and buffering any indirect impacts such as increased weeds, run-off, changed noise and light conditions.

Biodiversity Certification Assessment

Key to the offsetting the impacts to CPW, SSTF, and Koala habitat will be the establishment and in-perpetuity management of biobank sites. ELA completed a Biodiversity Certification Assessment (BCA; ELA 2015) to determine the required offsets for the unavoidable impacts to the CEECs and Koala habitat in accordance with the Biodiversity Certification Assessment Methodology (BCAM). It is considered that the outcomes of the assessment will suitably address any residual impacts to the EPBC Act listed vegetation communities and Koala.

Impacts to SSTF, CPW, and Koala are to be offset via the purchase and retirement of biodiversity and species credits from conservation areas and BioBank sites registered in the project area (Figure 4). A total of 0.1 ha of EPBC Act listed SSTF within the study area is to be retained and managed as a conservation area by Campbelltown City Council as part of a larger patch of SSTF in Lot 61 Dp

752042 under a Plan of Management (Figure 2). The remainder of the offsets will be met by the purchase and retirement of credits from the soon to be registered Biobank sites, Noorumba-Mt Gilead and Macarthur-Onslow Mt Gilead Biobank Sites (Figure 2). A total of 4.9ha of CPW, including 2.6 ha of EPBC Act listed CPW, will be retained within the Noorumba-Mt Gilead Biobank site, with 1.6 ha restored, while a total of 8.1 ha of SSTF (which currently is recognized under the TSC Act only) will be retained within the Macarthur Onslow-Mt Gilead Biobank site, with 3.7 ha restored.

Construction Environmental Management Plan

A Construction Environmental Management Plan will be prepared for the project and will incorporate all mitigation measures required for retained vegetation and fauna habitat, including buffer zones and delineation fencing. The plan will span the project duration and be adaptive to subsequent building stages to allow for phased removal of vegetation where appropriate.

Conservation and Retention Areas

As indicated above, a total of 0.1 ha of EPBC Act listed SSTF will be retained in a conservation area and managed by Campbelltown City Council as part of a larger patch of SSTF in Lot 61 Dp 752042 under a Plan of Management (Figure 2). A total of 4.9 ha of CPW, including 2.6 ha of EPBC Act listed CPW, will be retained within the Noorumba-Mt Gilead Biobank site, with 1.6 ha restored, while a total of 8.1 ha of SSTF (which currently is recognized under the TSC Act only) will be retained within the Macarthur Onslow-Mt Gilead Biobank site, with 3.7 ha restored (Figure 2). A further 0.4 ha of EPBC Act listed CPW will be restored via landscape plantings, and will link existing scattered paddock trees (Figure 2 within RE1 zoning, to the north of Lot 61 Dp 752042). Similarly, 0.3 ha of EPBC Act listed SSTF will be retained within the study area, with 0.04 ha restored via landscape plantings to link existing scattered paddock trees (Figure 2 within RE1 zoning, to the north of Lot 61 Dp 752042). The remaining 0.28 ha of EPBC Act listed SSTF that will be retained in the study area (in the south) will not be managed formally under any management plans.

The conservation areas and Biobank sites will be improved through a range of ecological restoration works set out in management plans. The restoration works will include fencing, removal of weeds, maintenance of drainage, and replanting. The biobank sites will follow specific management, mitigation, and monitoring procedures to be conducted in these areas in accordance with the aforementioned biobank agreement.

It is noted that most of the vegetation in the biobank sites do not currently meet the EPBC Act listing criteria for CPW or SSTF – primarily due to the percentage of native groundcover recorded at less than the minimum threshold for the relevant MNES criteria. It is highly likely that, through the management that accompanies the creation of a Biobank, the vegetation in these areas will become high quality stands of CPW or SSTF in the near future, therefore increasing the extent of the MNES throughout the study area. The non-EPBC Act CPW has an added advantage as it is contiguous with a larger patch of vegetation within the adjacent Noorumba reserve (Figure 2).

Implement Street Trees of Suitable Species

Eucalyptus tereticornis, which forms part of CPW and SSTF and is a Koala feed tree and a habitat tree for other MNES, is to be utilised in streetscapes where appropriate through the Mt Gilead residential streetscape. This will create further foraging habitat throughout the development, provide feeding possibilities, and improve connectivity between woodland communities.

6 Conclusion on the likelihood of significant impacts

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

✓	No, complete section 5.2
	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

The proposed action is not considered a controlled action for the reasons listed in section 3.1(d) and section 4.

6.3 Proposed action IS a controlled action

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

7 Environmental record of the responsible party

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** Not applicable. **Provide details** Mount Gilead Pty Ltd, the party taking the action, is new and as such does not have a record of environmental management. However, in building a strong record of responsible environmental management, the party is keen to follow all best practice environmental procedures and follow all necessary environmental legislation throughout the course of the proposed action.		
7.2	**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?** No. **If yes, provide details**		
7.3	**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?** Not applicable. **If yes, provide details of environmental policy and planning framework**		
7.4	**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?** No **Provide name of proposal and EPBC reference number (if known)**		

8 Information sources and attachments

8.1 References

Campbelltown City Council (CCC) 2015. *Mt Gilead Planning Proposal*. Prepared January 2015.

Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest EPBC Act policy statement 3.31 (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010) [Admin Guideline]

Department of the Environment (DotE) 2013. *Matters of National Environmental Significance – Significant impact guidelines 1.1*. [Online] Available from: http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf

Department of the Environment (DotE) 2014. *EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*. Commonwealth of Australia, Canberra.

Department of the Environment (DotE) 2015. *Species Profile and Threats Database.* [Online] Available from: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Department of Environment and Conservation (DEC) 2004. Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2009). Draft Significant impact guidelines for 36 migratory shorebirds Draft EPBC Act Policy Statement 3.21. [Online]. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/epbc/publications/migratory-shorebirds.html.

Eco Logical Australia ELA 2014. *Mt Gilead Rezoning: Ecological Asessment*. Report prepared for Mt Gilead Pty Ltd and S and A Dzwonnik.

Eco Logical Australia ELA 2015. *Mt Gilead – Biodiversity Certification Assessment Report and Biocertification Strategy*. Prepared for Mt Gilead Pty Ltd and Mr and Mrs Dzwonnik.

Marchant, S. & P.J. Higgins, eds. (1990). Handbook of Australian, New Zealand and Antarctic Birds. Volume One - Ratites to Ducks. Melbourne, Victoria: Oxford University Press.

NSW NPWS (New South Wales National Parks and Wildlife Service) (2002). Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney, Final Edition. NSW NPWS, Hurstville. Accessed 11May 2014. http://www.environment.nsw.gov.au/resources/nature/cumbPlainMappingInterpguidelines. pdf

OEH (2015) NSW BioNET: Atlas of NSW Wildlife online search tool. Available: (http://www.bionet.nsw.gov.au/)

Tozer M (2003). The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities. *Cunninghamia* 8(1), 1–75.

Tozer,MG, Turner K, Simpson CC, Keith DA, Beukers P, Mackenzie B, Tindall D & Pennay C (2006). Native Vegetation of Southeast NSW: A Revised Classification and Map for the Coast and Eastern Tablelands. Version 1.0. Department of Environment & Conservation and Department of Natural Resources, Sydney.

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P & Cox S (2010). Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. Cunninghamia 11(3), 359–406.

8.2 Reliability and date of information

Filed studies have been undertaken at the site by Eco Logical Australia since 2014 and most recently in 2015.

8.3 Attachments

Attachment 1 – Figures

Attachment 2 – Protected Matters Search Tool (DotE 2015)

Attachment 3 – Mt Gilead Rezoning: Ecological Assessment ELA (2014)

Attachment 4 – Mt Gilead Biocertification Assessment Report and Biocertification Strategy (ELA 2015)

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Attachment 1, Figure 1
	GIS file delineating the boundary of the referral area (section 1)		
	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 1, Figure 5 through to Figure 8
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 3 and Attachment 4
	copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment 2, Attachment 3 and Attachment 4
	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 2, Attachment 3 and Attachment 4
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	NA	-

9 Contacts, signatures and declarations

Project title: Mt Gilead Residential Development

9.1 Person proposing to take action

1. Name and Title:	LOC MACARTHUR-ONSLOW DIRECTOR STEPHEN ROGERS DIRECTOR
2. Organisation	Mount Gilead Pty Ltd
3. EPBC Referral Number	
4: ACN / ABN	ABN 92 008 499 189
5. Postal address	PO Box H195, Australia Square, NSW, 1215
6. Telephone:	02 9251 4600
7. Email:	srogers@nexiacourt.com.au
8. Name of designated proponent (if not the same person at item 1 above):	
9. ACN/ABN of designated proponent (if not the same person named at item 1 above):	

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

- ☐ an individual; OR
- ☐ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR
- ☐ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:

- ☐ not applicable.

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 [signature] Director [signature] Director Date 20/10/15

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

Name	Brendan Dowd
Title	Senior Approvals Consultant
Organisation	Eco Logical Australia Pty Ltd
ACN / ABN (if applicable)	87 096 512 088
Postal address	Suite 204, Level 2, 62 Moore Street, Austinmer NSW 2515
Telephone	02 4201 2202
Email	brendand@ecoaus.com.au
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 15/10/2015