Title of Proposal - Craigieburn Road West Upgrade - Split Referral

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Transport - Land

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The proposed action is part of a broader project and program of works which is described in further detail in Section 1.15 and 1.15.1. The proponent is seeking to split the referral in accordance with Section 74A of the EPBC Act, due to the potential impacts to MNES only occurring on a small portion of the broader project.

Overview

The Victorian State Government has committed to investing $2.2 Billion to upgrade twelve roads in the north and south-eastern suburbs of Melbourne. This initiative is known as the Suburban Road Upgrade program (SRU) and comprises the Northern Roads Upgrade (NRU) and the South-Eastern Roads Upgrade (SERU) (collectively, the Program). Major Road Projects Victoria (the Proponent) will oversee delivery of the Program. The Program involves the duplication of approximately 5.5 kilometres (km) of Craigieburn Road, between Mickleham Road and the Hume Highway.

NRU will include changes from two to four lanes between Vantage Boulevard to Mickleham Road (with provision in the cross section to cater for six lanes in the ultimate arrangement), from four to six lanes between Hume Highway and Hanson Road, and from two to six lanes between Hanson Road and Vantage Boulevard. The duplication also includes upgrades of approximately 1 km section of Mickleham Road and Aitken Boulevard, north and south of Craigieburn Road, and approximately 0.5 km section of Craigieburn Road west of Mickleham Road and Craigieburn Road intersection from two to four lanes. These works are referred to as the Craigieburn Project, one of six capital projects in NRU. The proposed action involves works that will cover approximately a quarter of the Craigieburn Project area (Referral Area).

Craigieburn Road is a primary east-west arterial road located in Melbourne’s Northern Growth Corridor, approximately 25 km north of Melbourne’s Central Business District (CBD). Craigieburn Road is a key strategic link that facilitates access to local employment and services around Craigieburn Town Centre and allows high capacity access to Melbourne’s CBD, the wider metropolitan area, as well as regional Victoria and interstate. Connections from Craigieburn Road to key north-south arterials, such as Mickleham Road, Aitken Boulevard and Sydney Road, provides access to other existing key activity centres, such as Broadmeadows and Melbourne Airport.

Description of Proposed Action and Referral Area

The proposed action is limited to works on and in close proximity to Mickleham Road. The proposed action includes upgrades to the following:

- approximately 1 km section of Mickleham Road north and south of the Craigieburn Road intersection; and
- a 0.5 km section of Craigieburn Road, west of the Mickleham Road intersection which stops at the boundary of the Melbourne Strategic Assessment (MSA) area immediately east of Mickleham Road (collectively, the Mickleham Road Works).

Much of the Craigieburn Project is located on highly modified and developed land, containing little or no native vegetation or fauna habitat; or it is within areas covered by the MSA, meaning that Matters of National Environmental Significance (MNES) have already been considered.

The Referral Area, in the western portion of the Craigieburn Project area (Attachments 6 and 7), contains native vegetation and suitable habitat for threatened species listed under the EPBC Act. Maps showing the location and context of the Referral Area where the proposed action will take place and how this relates to the Craigieburn Project are shown in Attachment 6 and 7. The Referral Area is where potential impacts may occur to MNES and is therefore the subject of this referral.

Justification of Split Referral

The Proponent acknowledges that the Referral Area is part of a larger program of works, the Craigieburn Project. The Proponent seeks to split this referral based on environmental risk and has consulted with the DoEE prior to making this submission on this basis. Further information of the justification for the split referral is included in Section 1.15 and 1.15.1.

Components of Proposed Action

The proposed action includes the following features:

- provision of new drainage and utility service upgrades/relocations;
- provision of new street lighting, road signage and landscaping along the project length;
- construction of a new signalised intersection including conversion of existing roundabout;
- provision of shared use path and continuous safety barrier along the project length; and
- provision of road safety barriers and fencing.

The proposed construction activities are expected to include:

- detailed investigations and baseline environmental monitoring as part of the environmental performance requirements of the Craigieburn Project;
- remediation of contaminated land and removal of hazardous material (only if required);
- vegetation lopping and removal;
- clearing and grubbing, temporary sediment and erosion control works;
- bulk earthworks and haulage;
- structures and drainage works;
- pavement works; and
- shared use path.

The following investigative and enabling works will also be undertaken as part of this proposed action:

- activities associated with design and assessment of the potential impacts of the Referral Area such as geotechnical and environmental investigations, site surveys and establishing the location of existing utilities and services;
- relocation of utilities and services, where such activities are comparable in scope and scale to renewal and maintenance, and are undertaken in accordance with applicable Victorian planning and environmental approval processes;
- site establishment, including (but not limited to) site offices and installation of site fencing; and
- road maintenance and improvement works where such works are undertaken in accordance with applicable Victorian planning and environmental approval processes.

Investigative and enabling works to be undertaken as part of the proposed action will be confined to within the boundaries of the Referral Area. These works have been included in the assessment of impacts on MNES, which is the subject of this referral.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
Craigieburn Road West	1	-37.579902865681	144.87537781326
Craigieburn Road West	2	-37.579426716245	144.8765794429
Craigieburn Road West	3	-37.603774454088	144.88447586624
Craigieburn Road West	4	-37.603842453372	144.88164345352
Craigieburn Road West	5	-37.589765276288	144.87743774978
Craigieburn Road West	6	-37.587316799725	144.85701004592
Craigieburn Road West	7	-37.58609253124	144.8571817073
Craigieburn Road West	8	-37.588268994626	144.87683693496
Craigieburn Road West	9	-37.579630780662	144.87537781326
Craigieburn Road West	10	-37.579834844519	144.87546364395
Craigieburn Road West	11	-37.579902865681	144.87537781326

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Referral Area for the proposed action traverses the suburbs of Yuroke, Mickleham and Craigieburn in the City of Hume. The Referral Area is situated approximately 25 km north of Melbourne’s CBD.

The land use within the Referral Area consists of predominantly existing road and road reserves. The proposed action covers two planning zones including Road Zone (RDZ1) and Green Wedge Zone (GWZ (UGZ1) in the Hume Planning Scheme (DELWP 2019a). Public Acquisition Overlay (PAO1) occurs along Craigieburn Road (DELWP 2019a).

The expanded road alignment and ancillary infrastructure areas encompass a few properties belonging to VicRoads, Council, and two privately-owned properties. The physical road is composed of bitumen, with road verges consisting of gravel and paved pathways, grassed swales and patches of habitat zones.

The MSA is directly adjacent to the Referral Area, running along the entire eastern boundary (Attachment 6).

There are numerous shopping centres, recreational reserves and a golf course within 2 km of the proposed action.

The nearest watercourse is Aitken Creek which is approximately 2 km from the Referral Area. This watercourse and land immediately surrounding it are within flood overlay areas.

For further detail, please refer to Section 1.2 of Attachment 1.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The Referral Area is 7.22 ha. Please refer to Attachment 6, for a map showing this Referral Area.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Two private lots are within the Referral Area, 1\LP3554 and 26\LP3554.

1.8 Primary Jurisdiction.

Victoria

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

Yes

1.9.1 Please provide details.

Yes. The Craigieburn Project is part of the government-funded Suburban Roads Upgrade program (Program of works described above), which received $1.14 billion in Commonwealth grant funding under the 2019-20 Commonwealth Government budget. Refer to Government

Website https://www.budget.gov.au/2019-20/content/community.htm

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 07/2020

End date 12/2025

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The following are the State and/or Local government requirements for the Craigieburn Project.

***Environment Effects Act 1978* (Vic)**

The *Environment Effects Act 1978* (Vic) (**EE Act**) applies to any public works '*reasonably considered to have or be capable of having a significant effect on the environment*'.

The total extent of vegetation removal within the Referral Area identifiable as Ecological Vegetation Class (EVC) 55: Plains Grassy Woodland is 0.332 ha (Arcadis 2019a). This is below the indicative area guideline of potential native vegetation of 10 ha that would require a referral under the EE Act as mentioned in the Ministerial Guidelines for Assessment of Environmental Effects (DSE 2006). This is also the case where extrapolated areas for tree loss are added to the amount of the endangered EVC, EVC 55: Plains Grassy Woodland that is to be removed (Arcadis 2019a).

Whilst there may be potential for a number of threatened fauna species listed under the *Flora and Fauna Guarantee Act 1988* (**FFG Act**) to utilise the habitat within the Craigieburn Project, it has been determined that impacts on these species from foraging habitat removal is of low significance with exception to the Golden Sun Moth (the subject of this referral) (Arcadis 2019a).

A separate Environment Effects Statement (EES) self-assessment was prepared under the EE Act for this proposed action. The EES self-assessment determined that the proposed action does not meet the criteria in the Ministerial Guidelines for an EES to be prepared.

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

***Environment Protection Act 1970* (Vic)**

The *Environment Protection Act 1970* (Vic) (**EP Act**) is the key legislation in Victoria providing protection to the environment. The EP Act requires that a works approval application must be submitted to the Victorian Environment Protection Authority (**EPA**) before any activity with the potential to have a significant impact on the environment can be undertaken.

The *Environment Protection (Scheduled Premises) Regulations 2017* (Vic) specifies the activities that require works approval and licensing in Victoria.

A review of these Regulations has confirmed approval of the works under the EP Act will not be required for the proposed action (Arcadis 2019a).

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

***Flora and Fauna Guarantee Act 1988* (Vic)**

The *Flora and Fauna Guarantee Act 1988* (Vic) (**FFG Act**) is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. The Act's objectives aim to conserve all of Victoria's native plants and animals.

Five patches of EVC 55: Plains Grassy Woodland will be directly impacted by the proposed action and are in line with descriptions of the FFG Act listed community, *Western Basalt Plains (River Red Gum) Grassy Woodland*. A permit is required for the removal of vegetation representative of an FFG Act listed community (Arcadis 2019a).

An FFG Act permit to take 'protected flora' from the road reserves is also required for plants growing within the road reserve (public land) which have been declared to be protected under Section 46 of the FFG Act.

There are three (3) FFG listed fauna species that have a moderate or higher likelihood of occurrence within the Referral Area. However, no FFG Act listed threatened flora were recorded in the Referral Area and there is a low likelihood that any previously recorded flora, or flora predicted to occur within 5 km of the Referral Area would occur (Arcadis 2019a).

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

***Wildlife Act 1975* and *Wildlife Regulations 2013* (Vic)**

The *Wildlife Act 1975* (Vic) (**Wildlife Act**) provides for the protection and conservation of native wildlife (fauna) within Victoria. Under this Act a person must not hunt, take or destroy endangered, notable or protected wildlife. This includes all native vertebrate animals, all kinds of deer, non-indigenous quail, pheasants, and partridges, and all terrestrial invertebrate animals listed under the FFG Act.

It is unlikely a separate permit is required under this Act as damage should only be to wildlife habitat and not wildlife. However, if any wildlife is identified within the habitat immediately prior to or during works, the construction contractor will be responsible for obtaining any permits for clearance, salvage and translocation as part of their work package. Any persons involved in fauna removal, salvage capture or relocation of fauna during mitigation measures must hold a current Management Authorisation under the Wildlife Act.

The above impacts from the proposed action will be addressed in accordance to the

requirements of this State legislation and do not trigger referral under the EPBC Act.

***Catchment and Land Protection Act 1994* (Vic)**

The *Catchment and Land Protection Act 1994* (Vic) (**CaLP Act**) is the main legislation in Victoria covering noxious weed and pest animal management. Under this Act, species of plants and animals can be declared as noxious weeds and pest animals.

The Referral Area supports nine exotic species that are declared noxious under the CaLP Act (Arcadis 2019a). Measures to manage noxious weeds within the Referral Area and to avoid and minimise weed dispersal from the works site will be addressed during the construction of the proposed action, through appropriate management measures which are to be included under a Construction Environmental Management Plan (**CEMP**) (Arcadis 2019a).

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

***Water Act 1989* (Vic)**

In Victoria, the *Water Act 1989* (Vic) provides a legal framework for managing Victoria's water resources. The main purpose of the Act is to promote equitable and efficient use of water resources, ensure water resources are conserved and properly managed and increase community involvement in water resource conservation and management.

Under the *Water Act 1989*, a "Permit to Work" (also known as a "Work on Waterways Permit") is likely to be required for works within flood overlay areas and works on or in the vicinity of Melbourne Water assets as a result of the proposed action (Arcadis 2019b). There are no flood overlay areas within the Referral Area, with the closest overlay approximately 2 km east of the proposed action. Liaison with Melbourne Water will occur to determine the location of water resource assets before the commencement of works and will adhere to the permit requirements of the *Water Act 1989* should assets exist within or in the vicinity of the Referral Area.

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

Melbourne Strategic Assessment Program

The Melbourne Strategic Assessment (**MSA**) program is the Victorian Government's approach to manage the impact of urban development in Melbourne's growth areas on significant vegetation communities, plants and animals (DELWP 2019b). A significant component of the Craigieburn Project (excluding the Referral Area) falls into the MSA program area (Arcadis 2019a). Habitat Compensation Obligation (**HCO**) requirements will be provided in the Offset Strategy which is being prepared. However, the Referral Area itself lies just outside of the MSA area and therefore the MSA program does not apply to this proposed action.

The MSA evaluated the impacts of the Victorian Government's urban development program for Melbourne on MNES listed under the Commonwealth EPBC Act and established measures to mitigate those impacts. The MSA provides a range of benefits to stakeholders and the environment, including greater planning certainty, improving biodiversity outcomes, and

streamlining planning and approval processes.

All actions located inside the MSA program area and associated with urban development undertaken in accordance with conditions of the approval are subject to a Part 10 (section 146B) EPBC Act approval. These actions do not require an additional EPBC Act referral and/or assessment by the Commonwealth Government as they have already been assessed under the MSA's Strategic Impact Assessment Report which evaluated the impacts of the Victorian Government's urban development program on MNES.

The Biodiversity Conservation Strategy (**BCS**) is the overarching strategy for the protection of biodiversity in Melbourne's growth corridors (DEPI, 2013). It sets out all the conservation measures required for MNES and to meet Victorian State requirements. The BCS sets out the requirements to provide fees and offsets for removal of native vegetation and threatened species habitat on land suitable for urban development within the BCS area.

The Victorian Department of Environment, Land, Water and Planning (DELWP) maintains a dataset pertaining to habitat modelling within the BCS area. Project proponents submit their project footprint to DELWP to determine offset fees through reference to the HCO. These fees are used to protect and manage land with important biodiversity values to mitigate the impacts of urban development in the growth corridors. The fee price depends on the time-stamped records of mapped native vegetation, threatened species habitat and scattered trees.

The above impacts related to the proposed action that fall within the BCS of the MSA have already addressed the EPBC Act implications, while impacts located outside of the BCS but within the MSA do not have EPBC Act related matters occurring. Therefore, the above impacts within these areas do not trigger a referral under the EPBC Act.

***Planning and Environment Act 1987* (Vic)**

The *Planning and Environment Act 1987* (Vic) (**PE Act**) establishes a framework for planning the use, development and protection of land in Victoria in the present and long-term interests for all Victorians.

The Proponent is proposing to request the Victorian Minister for Planning to prepare, adopt and approve a Planning Scheme Amendment to the Hume Planning Scheme under Section 20 (4) of the PE Act. This amendment proposes to amend the Hume Planning Scheme to insert the Craigieburn Project Incorporated Document. This will exempt all use and development associated with the Craigieburn Project from the need for a planning permit, subject to conditions. Conditions will likely include issues such as requirements relating to native vegetation removal and offsets.

For any areas not covered by the proposed Planning Scheme Amendment, a Planning Permit approval under the Hume Planning Scheme will be required to remove, destroy or lop any native vegetation including dead native vegetation under the guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017a).

There are no existing planning overlays in the current Hume Planning Scheme relating to biodiversity within or adjacent to the Referral Area (Arcadis 2019a).

DELWP has stated ‘vegetation planted along a roadside by a road authority to be for amenity purposes, and not for conservation’ is considered planted vegetation. Such plants which are not considered as having a conservation purpose are considered exempt from a planning permit and offsets under the current Planning Scheme.

The exemption applies to vegetation that has been planted, not vegetation generated from the planted vegetation (e.g saplings) or the combination of canopy, shrub and/or ground storey species present constitutes an EVC that is known to occur within the local area. Some areas of planted indigenous species within the Referral Area are included within remnant patches as they comprise an assumed indigenous overstorey canopy and/or indigenous vegetation that has regenerated from planted vegetation and are therefore not exempt to the PE Act. Vegetation that meet the criteria described above are not currently considered exempt from planning permit requirements under the Hume Planning Scheme and thus require planning permits to remove, destroy or lop as stipulated in the PE Act for native vegetation.

There are some planted Victorian and other Australian native tree/shrub species located within the Referral Area, mostly within private properties (Arcadis 2019a). These are mapped as ‘Planted Vegetation’ and are exempt from planning permit requirements under the current Hume Planning Scheme (Arcadis 2019a).

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and does not trigger referral under the EPBC Act.

Victorian Department of Environment, Land, Water and Planning *Guidelines for the Removal, Destruction or Lopping of Native Vegetation*

The Victorian *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (DELWP 2017a) have been designed to manage the risk to Victoria’s biodiversity associated with the removal of native vegetation. This risk is determined through an assessment of the location and the extent of the native vegetation to be removed.

The Guidelines are relevant to the Referral Area, because the vegetation proposed to be removed consists of greater than 0.5 ha of habitat zones and scattered trees, with some large trees located in both habitat zones and as scattered trees.

The extent of native vegetation loss, habitat condition and modelled species habitat mapping layers were processed using the EnSym tool in order to determine native vegetation offset targets (Arcadis 2019a). This report provides offset requirements for internal testing of the current Craigieburn Project area and the proposed action’s proposal to remove native vegetation. In summary, the overall Craigieburn Project (which includes the Referral Area) will remove a total of 2.5 ha of native vegetation. This includes a total of 12 large scattered trees and 59 small scattered trees.

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

***Heritage Act 2017* (Vic)**

The purpose of the *Heritage Act 2017* (Vic) (**Heritage Act**) is to protect and conserve places

and objects of heritage significance. Under Sections 64 and 127 of the Heritage Act, it is an offence to excavate, disturb or damage any heritage relics or sites. Prior to impacting any historic archaeological site, Consent to Destroy must be obtained from Heritage Victoria.

There are no heritage places within or adjacent to the Referral Area.

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

Aboriginal Heritage Act 2006 **(Vic) (Aboriginal Heritage Act) and** ***Aboriginal Heritage Regulations 2018*** **(Vic) (Aboriginal Heritage Regulations)**

Part 4, Division 2 of the *Aboriginal Heritage Act 2006* (Vic) states certain activities will require a Cultural Heritage Management Plan (**CHMP**) to be prepared if high-impact activities are proposed within areas of cultural heritage sensitivity.

A complex CHMP (Biosis 2019) has been prepared for the Craigieburn Project due to the identification of three registered Aboriginal places within 200 m of the Craigieburn Project area. However, these areas do not fall within the Referral Area. Investigations did not identify potential Aboriginal cultural heritage within the Referral Area.

The above impacts from the proposed action will be addressed in accordance to the requirements of this State legislation and do not trigger referral under the EPBC Act.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

The following section details public consultation undertaken for the Craigieburn Project (except where otherwise noted) which includes the Referral Area unless specified otherwise.

List of Stakeholders Engaged as Part of the overall Craigieburn Road West Upgrade Project (which includes the Referral Area)

Government

- Hume City Council

- Member of Parliament for Yuroke, Hon. Ros Spence MP

- Minister for Roads and Road Safety, Hon Luke Donnellan MP (at the time of community consultation)

- Premier of Victoria, Hon. Daniel Andrews MP

- VicRoads

- Public Transport for Victoria

- Transport for Victoria

- Victorian Planning Authority

- Country Fire Authority (CFA)

- Melbourne Water

- Craigieburn CFA

- Craigieburn Police Station

Land owners impacted by land acquisition within the area *of the proposed action only*

- 6 parcels owned by 4 private landowners

- 10 parcels owned by Hume City Council

Impacted land owners and occupants within 100 m of the Area *of the proposed action only*

- Approximately 20 residential and commercial properties

Local services providers, peak transport and advocacy bodies

- Craigieburn Police Station

- Craigieburn SES

- Transport for Victoria

- VicRoads

- Victorian Planning Authority

- Melbourne Water

- Telstra

- CFA

- Public Transport for Victoria

- Bicycle Network

- RACV

- Victoria Walks

- Victorian Transport Association

Businesses

- Craigieburn Central Shopping Centre - Lendlease Property Management

- Craigieburn Plaza Shopping Centre

- PEET

- Stockland

Ongoing consultation

- Coles Express Petrol Station

- Woolworths service station

- 7 Eleven

- Craigieburn Clinic

- Yuroke Red Angus

- Countryside Pet Resort

- Yuroke Boarding Kennels and Cattery

- Autotech Tools

- Greenwater Australia (Irrigation Equipment)

- Blindsmart

- Cavalier Drive (Homestay)

- Reet Hair Artistry and Beauty

- Luxury Chauffeur Services Melbourne

- Craigieburn Pizza Bar

- McDonalds Craigieburn

- The Foodary (Caltex)

- Shady Gum Garden Centre

- Baywash Craigieburn

- Craigieburn Animal Hospital

- Liberty Fuel Craigieburn

Community Groups

- Our Lady’s Parish

- Friends of Malcom Creek and Grasslands

- Tibetan Buddhist Society

- Islamic Community Milli Gorus Craigieburn

- Mor Yacoub Syrian Orthodox Church

- St Thomas Jacobite Syrian Orthodox Church

- Syrian Orthodox Church

Road users, residents and schools/education providers

- Over 50,000 residents live and work in the area, and more than 28,000 people use Craigieburn Road every day.

- Our Lady’s Catholic Primary School

- Craigieburn Early Childhood Services - HCC

- Goodstart Early Learning Centre

- Aitken Creek Primary School

- Wilmott Park Primary School

- Craigieburn Global Learning Centre - HCC

- Craigieburn Bowls Club

- Craigieburn Golf Course

- Craigieburn Sports Stadium

- Splash Aquapark and Leisure Centre

- Hume Tennis & Community Centre

- Craigieburn Tennis Club

- Craigieburn Sporting Club

- Craigieburn Health Service

- Highlands Retirement Village

- Arcare Craigieburn Aged Care

- Craigieburn Library

Indigenous Stakeholders

- Wurundjeri Tribe Land & Compensation Cultural Heritage Council

Key meetings and events with Council

Hume City Council

-18 June 2018

-10 August 2018

-13 September 2018

-12 October 2018

-19 Nov 2018

-23 April 2019

Key meetings and events with the local MP/Electorate

Ros Spence MP (Yuroke)

-7 June 2018

-31 August 2018

-6 September 2018

-12 October 2018

-11 February 2019

-23 April 2019

Key meetings and events with the Community

Community pop-up

- Craigieburn Carols by Candlelight - 1 December 2018

- Craigieburn Sports Stadium - 11 December 2018

Community members could view the proposed designs, ask questions, complete a survey, sign up for project updates, or take a postcard with the ‘Have your say’ details and provide feedback online in their own time. Approximately 60 people asked questions or provided feedback at these events. Many community members chose to take a postcard and provide feedback online, whilst a few took hard copy feedback forms and preferred to mail them to the Proponent (as they didn’t have access to the online version).

Key meetings and events with interest groups

Craigieburn Central Shopping Centre – Lendlease Property Management

Discuss design and impacts as well as future plans for the shopping centre

19 September 2018

11 December 2018

Craigieburn Plaza Shopping Centre Management

Discuss project scope, impacts and access changes

19 September 2018

Our Lady’s Catholic Primary School

Discuss design and impacts

4 December 2018

Our Lady’s Parish

Discuss project scope and access changes

1 May 2019

CFA

Seek feedback on design and impacts

10 December 2018

Craigieburn Police

Discuss project scope, impacts and access changes

11 December 2018

Melbourne Water

Ongoing discussions about design and impacts

-25 July 2018

-22 August 2018

-19 September 2018

-3 and 17 October 2018

Public Transport for Victoria

Seek feedback on designs

-22 August 2018

-12 December 2018

Transport for Victoria

Ongoing discussions about design and impacts

-21 and 26 September 2018

-19,24 and 26 October 2018

Technical Reference Group (TfV and VicRoads)

To approve scope prior to RFT

12 November 2018

VicRoads

Seek feedback on designs

20 August 2018

27 September 2018

PEET Craigieburn

Discuss project scope, impacts and access changes

5 October 2018

Stockland

Discuss project scope, impacts and access changes

5 October 2018

Victorian Planning Authority (VPA)

Discuss Northern Road Upgrade (NRU) package

-14 June 2018

-13 July 2018

-24 August 2018

-5 October 2018

-2 November 2018

Wilmot Primary School

(phone call)

Discuss project scope and timing

19 December 2018

Goodstart Early Learning Craigieburn

(phone call)

Discuss project scope and timing

19 December 2018

Key meetings with Indigenous Stakeholders

Indigenous Stakeholder

Wurundjeri Tribe Land and Compensation Cultural Heritage Council

Inception meeting for CHMP

11 September 2018

Wurundjeri Tribe Land and Compensation Cultural Heritage Council

Post meeting for Cultural Heritage Management Plan

23 October 2018

Wurundjeri Tribe Land and Compensation Cultural Heritage Council

Post complex assessment results meeting for CHMP

11 January 2019

Engagement opportunities

Online consultation/engagement

The Craigieburn Project received 856 visits to Craigieburn Road West Upgrade engagement website, 141 surveys completed, 235 people dropped pins on the proposed interactive map, and 17 emails or phone enquiries about the project.

Engagement website: Your.roadprojects.vic.gov.au – engaged on 1 December 2018 to 13 January 2019

Mailing

Over 27,000 households were sent a postcard inviting feedback on Craigieburn Project (3063 and 3064), approximately 1200 properties were sent the planning process letter and approximately 150 properties abutting the project area/road alignment and were sent either the impacted or non-impacted land acquisition letters.

Geographically targeted advertising

-Northern Leader newspaper – 55,000 readerships

-Facebook

Provision of information to community and stakeholders about EES/EPBC process for

community feedback submissions

Submission from more than 310 community members and received over 400 responses about the proposed action’s design.

Publication of feedback reports

Feedback reports will be publicly submitted mid-2019.

Publication of consultation plans

Consultation plans will be publicly submitted mid-2019.

Door knocks

No door knocks were conducted, however meetings were held with impacted landowners.

Further engagement with Stakeholders will be undertaken post-submission of this referral. Engagement opportunities will be undertaken through various channels and formats such as printed community updates, paid advertising, videos, electronic direct mail, attendance at community events, trade engagement, briefings, meetings and a community call centre.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

No further impact assessments will be required by the Proponent to complete these works.

An EES self-assessment found that an EES is not required.

1.15 Is this action part of a staged development (or a component of a larger project)?

Yes

1.15.1 Provide information about the larger action and details of any interdependency between the stages/components and the larger action.

The proposed action is part of the Craigieburn Project and Program, as described in Section 1.2 above, and further below.

Overall Program of Works - Suburban Road Upgrade

The Craigieburn Project is part of the government-funded SRU program of works (please see section 1.2 of this referral and the Government Website https://your.roadprojects.vic.gov.au/Craigieburn-road for further information).

Project Description (Craigieburn Project)

As noted in section 1.2 of this referral, the Proponent acknowledges that the Referral Area is part of the Craigieburn Project. The Proponent seeks to split this referral based on environmental risk and has consulted with the DoEE prior to making this submission on this basis.

The Craigieburn Project involves the duplication of approximately 5.5 km of Craigieburn Road, between Mickleham Road and the Hume Highway. The Craigieburn Project also includes changes from two to four lanes between Vantage Boulevard to Mickleham Road (with provision in the cross section to cater for six lanes in the ultimate arrangement), from four to six lanes between Hume Highway and Hanson Road, and from two to six lanes between Hanson Road and Vantage Boulevard. The duplication also includes upgrades of approximately 1 km section of Mickleham Road and Aitken Boulevard, north and south of Craigieburn Road, and approximately 0.5 km section of Craigieburn Road west of Mickleham Road from two to four lanes. The proposed action involves works that will cover approximately a quarter of the Craigieburn Project area (referred to in this document as the **Referral Area**).

Craigieburn Road is a primary east-west arterial road located in Melbourne's Northern Growth Corridor, approximately 25 km north of Melbourne's Central Business District (**CBD**). Craigieburn Road is a key strategic link that:

- facilitates access to local employment and services around Craigieburn Town Centre and Craigieburn Plaza; and

- provides connections to Craigieburn train station and the Hume Freeway, allowing high capacity access to Melbourne's CBD, the wider metropolitan area, as well as regional Victoria and interstate.

Connections from Craigieburn Road to key north-south arterials, such as Mickleham Road, Aitken Boulevard and Sydney Road, provide access to other existing key activity centres, such as Broadmeadows and Melbourne Airport.

The current Craigieburn Project is to duplicate approximately 5.5 km of Craigieburn Road between Mickleham Road and Hume Highway. The Craigieburn Project includes five primary duplications, only one of which (the **Mickleham Road Works**) includes the Referral Area:

- Vantage Boulevard to Mickleham Road – change from two to four lanes with provision in the cross section to cater for six lanes in the ultimate arrangement

- Hume Highway to Hanson Road – change from four lanes to six lanes

- Hanson Road to Vantage Boulevard – change from two lanes to six lanes

- Aitken Boulevard – located north and south of Craigieburn Road – change from two to four

lanes

- Mickleham Road Works: Mickleham Road (located north and south of Craigieburn Road) and Craigieburn Road (west of Craigieburn Road and Mickleham Road intersection) - change from two to four lanes, including total upgrades of approximately 1 km for Mickleham Road and 0.5 km for Craigieburn Road.

Much of the Craigieburn Project is located on highly modified and developed land, containing little or no native vegetation or fauna habitat; or it is within areas covered by the MSA, meaning that MNES have already been considered.

Interdependencies

The Proponent considers that the proposed action within the Referral Area can be assessed separately to the remainder of the Craigieburn Project due to the following factors:

1. With the exception of the Referral Area:

(a) the likelihood of any significant impacts to MNES is low in other areas of the Craigieburn Project as either no MNES were found or habitat for MNES was deemed to be unlikely – further details on the extent of investigation and risks to MNES can be found in Section 4, Section 6.1 and Appendix C of Attachment 1 to this referral, the Biodiversity Technical Assessment Report (Arcadis 2019);

(b) these areas are located in the MSA area (i.e. where EPBC Act obligations have already been addressed in the Biodiversity Conservation Strategy and which the Proponent therefore considers do not need to be included within the current application) – these areas are shown in Attachment 6; and

(c) additional areas in the eastern portion of the Craigieburn Project area are highly modified and urbanised, and contain little native vegetation and minimal potential habitat for threatened species listed under the EPBC Act (MNES). These areas were extensively assessed during field surveys for the project in a number of separate events from September 2017- December 2018. Survey effort and methodology were consistent with appropriate EPBC Act guidelines, including *Significant Impact Guidelines 1.1* (DoE 2013)) (Arcadis 2019). (Further detail can be found in Attachment 1).

2. Additionally, the Mickleham Road Works are not dependent on the remainder of the Craigieburn Project or its program of works and vice versa.

(c) The Craigieburn Project scope could feasibly be amended to remove the Mickleham Road Works without impacting the core objectives of the NRU project. This would, however, result in some localised traffic congestion around Mickleham Road, which is considered inefficient and highly undesirable.

(d) The construction works can be staged such that the Mickleham Road Works are completed independently from the construction works on Craigieburn Road.

Accordingly, the Mickleham Road Works and balance of the Craigieburn Project can be stand-

alone projects/activities.

Splitting the Craigieburn Project for the purposes of the EPBC Act still achieves the objectives of the EPBC Act, namely:

- The protection of the environment, especially MNES

- Conserving Australian biodiversity

- Providing a streamlined national environmental assessment and approvals process.

Splitting the Craigieburn Project in the manner proposed in this referral will also allow construction of the majority of the Craigieburn Project to be undertaken, if necessary, in the most efficient manner and with the most economical staging, avoiding additional costs that would be incurred if the entire Craigieburn Project was subject to a delayed construction commencement due to the approval process.

Refer to Attachment 1 for further details on potential impacts within the Craigieburn Project.

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

The proposed action is part of NRU, the northern package of works for the Program, where road upgrades in other areas north of Melbourne are also being proposed. Please refer to Sections 1.2 and 1.15.1

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Golden Sun Moth Synemon plana	Listed as Critically Endangered under the EPBC Act. Targeted surveys for this species were conducted by Arcadis between December

Species	Impact
	2016 and January 2017, in areas along Craigieburn Road (within the Craigieburn Project area) where the road margin and adjoining private properties supported marginal potential habitat (Arcadis 2017). The species was not detected during these surveys. Targeted surveys completed in December 2018 for the species identified the presence of 57 Golden Sun Moths (GSM) along Mickleham Road within the Referral Area (Canzano 2018). Please refer to Appendix G, Golden Sun Moth Targeted Survey, Map 1 of Attachment 1. Only males were observed during the targeted survey, flying into surrounding habitat beyond the Referral Area (including areas under the MSA) or perched in open, gravel areas. This observation, in addition to historical GSM records and adjacent land likely to be suitable for GSM indicates habitat within the Referral Area is utilised by GSM species for the purpose of thermoregulation and dispersal, and less likely for breeding (Canzano 2019). Confirmed sightings and habitat assessments were used to determine habitat extent within the Referral Area, which consisted of road verges composed of native grasses (such as Common Wallaby-grass (Rytidosperma caespitosum), Slender Wallaby-grass (Rytidosperma racemosum var. racemosum) and exotic grasses (Chilean Needle-grass) and gravel surfaces (Canzano 2018). Within the Referral Area, 2.51 ha of low-quality GSM habitat has been identified as likely to be impacted (refer to Attachment 6). GSM habitat within the Referral Area was deemed low quality habitat based on the characteristic of the landscape, primarily due to compacted soils as well as weed infestation, regular mowing/slashing, gravel driveways and vehicles traversing through the habitat (Canzano 2018). Breeding habitat is more likely to occur in the large parcels of land adjoining the roadside reserves outside of the Referral Area based on existing records, which is also under Habitat Compensation Obligation areas (Canzano 2018). The proposed action, with implementation of the proposed development controls and mitigation measures, will not impact adjacent land containing

Species	Impact
	potential GSM habitat. It is also unlikely to lead to increased fragmentation of habitat as the proposed action is not creating a barrier from connecting habitats (Canzano 2018). The proposed action will not interfere with the recovery of the species as it does not occur within the vicinity of reserves or conservation areas and does not result in the clearance of surrounding habitat outside the Referral Area (Canzano 2018) Based on the current reference design, the extent of Area of Sensitive Vegetation (areas designated as no-go zones for construction) and impacts from other proposed actions by others (see later), total impacts to GSM habitat from this proposed action is expected to be approximately 2.15 ha (refer to Figure 1 for impacted GSM habitat outside of Area of Sensitive Vegetation). However, the size of the footprint of the proposed action may still be subject to further changes in order to accommodate potential future modifications to the design such as the inclusion of service relocation/s and construction laydown areas. Therefore, a conservative maximum impact of up to 2.51 ha has been allowed to accommodate potential modifications of the footprint extent. This final impact value is likely to be much lower, as it is highly conservative and does not take into account design changes, additional mitigation and the impact from other actions that have occurred or designated to occur before construction of this proposed action e.g. Yarra Valley Water and Ausnet. A significant portion of GSM habitat along the eastern side of Mickleham Road have been impacted by Ausnet since the completion of the targeted GSM survey in December 2018. This area of impact is 0.33 ha and is associated with underground services works. These works are not associated with this proposed action but do occur within the same Referral Area covered by this referral. Separate to this development is the proposed area of impact by Yarra Valley Water (refer to EPBC Referral (2018/8312)) which has been approved to impact 0.51 ha of GSM habitat along the western side of Mickleham Road. These works are not associated with this

Species	Impact
	proposed action but do occur within the same Referral Area covered by this referral. The total impact by Ausnet and Yarra Valley Water to GSM habitat within the Referral Area is 0.68 ha of the 2.51 ha proposed to be potentially impacted by this proposed action. The MSA borders the eastern side of the Referral Area, east of Mickleham Road. It is unlikely the proposed action will lead to a significant impact for this species. This is based on (1) the GSM habitat within the Referral Area is considered of low quality and value and (2) implementation of appropriate mitigation and avoidance measures will significantly minimise impacts. Refer to Appendix G within Attachment 1 for further information on GSM habitat assessment and targeted survey. Summary: Assessments of GSM habitat impacts against the significant impact criterion set out in the Matters of National Environmental Significance – Significant Impact Guidelines (DoE 2013) and Significant impact guidelines for the critically endangered golden sun moth (Synemon plana) (DEWHA 2009) were determined to be low, very low or unlikely (Arcadis 2019a). Taking into consideration of the above-mentioned guidelines and through the implementation of appropriate mitigation and avoidance measures, it has been assessed that impacts to GSM are unlikely to be significant in association with the proposed action (Arcadis 2019a). It is noted that according to the Significant impact guidelines for the critically endangered golden sun moth (Synemon plana) (DEWHA 2009a), impacts to GSM habitat greater than 0.5 ha is considered “significant”. However, the Guidelines are not intended to be exhaustive or prescriptive, but rather to highlight actions that threaten the persistence of the GSM species (DEWHA 2009a).
Swift Parrot Lathamus discolor	Swift Parrot is listed as Critically Endangered under the EPBC Act (DoEE 2019b). A search of the Victorian Biodiversity Atlas (VBA) record database for Swift Parrot within 5 km of the Referral Area returned two records, with the last recorded in 2000 (VBA 2019). Swift Parrot is considered to have a moderate likelihood of occurrence within the Referral Area based on

Species	Impact
	its known migratory range and according to searches under the Protected Matters Search Tool (PMST) and Victorian Biodiversity Atlas (VBA) databases (Arcadis 2019a). Foraging habitat which is utilised during its annual winter migration is present within the Referral Area as the species breeding habitat occurs in Tasmania only (Saunders & Tzaros 2011) Potential impacts to foraging habitat are restricted to the removal of Eucalyptus spp., in particular autumn and winter-flowering species (Saunders & Tzaros 2011). The proposed action requires the removal of potential foraging habitat for the Swift Parrot (Arcadis 2019a). Composition of potential foraging habitat to be removed consists of scattered trees and 0.23 ha of suitable EVC 55: Plains Grassy Woodland (EVC with foraging trees). The scattered trees consist of 18 small and six large River Red Gums (Arcadis 2019a). It is likely the River Red Gums only provide occasional alternative or supplementary (lerp) food and roosting resources on an infrequent basis (O'Malley 2018). Assessment of the proposed action against the Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (DoE 2013) was used to determine potential impacts to foraging habitat. It was concluded that there was a low likelihood of having a significant impact on Swift Parrot (see Appendix H in Attachment 1 for further details). Summary: The proposed action requires the removal of potential foraging habitat outside of the MSA. This marginal foraging habitat is comprised of Plains Grassy Woodland and scattered River Red Gum trees as noted above. Given the small amount of potential habitat removal, there is a low likelihood this removal of habitat will have a significant impact on Swift Parrot (Arcadis 2019a).
Grey-headed Flying-fox Pteropus poliocephalus	Grey-headed Flying-fox is listed as Vulnerable under the EPBC Act (DoEE 2019c). A search of the Victorian Biodiversity Atlas (VBA) record database for Grey-headed Flying-fox within 5 km of the Referral Area returned no records (VBA 2019). Grey-headed Flying-fox is considered to have a moderate likelihood of occurrence within the Referral Area, which

Species	Impact
	includes evaluating existing records (the PMST, VBA), known foraging range and available foraging resources within the Referral Area (Arcadis 2019a). No roosting habitat was identified within the Referral Area and the closest camp is located approximately 22 km from the Referral Area (DELWP 2019d). As there were no roosting habitat within the Referral Area and due to the species' large foraging range, no flying-fox surveys were conducted as part of the Biodiversity Technical Assessment Report (Arcadis 2019a), potential foraging habitat was identified within the Referral Area in the form of native and exotic flowering/fruiting trees and they are assumed to opportunistically use these resources. The proposed action and the Craigieburn Project was assessed against the Matters of National Environmental Significance – Significant Impact Guidelines (DoE 2013) and it was determined that impacts to potential foraging habitat had a low likelihood of significant impact (see Appendix H in Attachment 1). Summary: Potential foraging habitat within the Referral Area that may very occasionally be utilised by Grey-headed Flying-fox up to approximately 1.99 ha. However, this potential foraging habitat includes all native woodland vegetation and planted vegetation documented within the Referral Area, some of which may not include flowering and fruiting plants suitable for this species (Arcadis 2019a). Therefore, the total potential foraging habitat to be removed will be less than this amount. Regardless, there is a low likelihood that removal of this small area of foraging habitat will have a significant impact on Grey-headed Flying-fox (Arcadis 2019a).

2.4.2 Do you consider this impact to be significant?

No

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Refer to the attached Attachment 1, Appendix A for the extent of flora and fauna across the proposed action.

Flora

Field surveys undertaken along the Referral Area were conducted in conjunction with those along Mickleham Road, Craigieburn Road and Somerton Road. Field surveys identified a total of 154 vascular plant species, of which 56 (36%) were indigenous, 95 (62%) were introduced and 3 (2%) were native flora species but non-indigenous to the local area (Arcadis 2019a). Identified species composition is reflective of those observed in the Referral Area. Refer to Attachment 1, Section 2.2.1 for further detail.

Database searches completed returned 37 queries of rare or threatened flora species, this includes species with records on the VBA or those predicted to occur on the PMST within 5 km of the Craigieburn Project (Arcadis 2019a). It is considered unlikely any EPBC Act or FFG Act listed flora occur within the Referral Area due to the highly modified condition of the available habitat, which is regularly mown, planted with non-indigenous species, heavily infested with exotic species and/or has been subject to extensive soil disturbance and re-levelling (Arcadis 2019a).

Seven species identified in database searches under the PMST and VBA were considered to have a pre-field survey likelihood of occurrence of **moderate** (Arcadis 2019a). Field surveys conducted and a detailed review of database occurrences led to a revision of flora species occurrence from **moderate** to **low** (Arcadis 2019a). These seven species include River Swamp Wallaby-grass *Amphibromus fluitans*, Plump Swamp Wallaby-grass *Amphibromus pithogastrus*, Large-flower Crane's-bill *Geranium* sp. 1, Small Milkwort *Comesperma polygaloides*, Tough Scurf-pea *Cullen tenax*, Matted Flax-lily *Dianella amoena*, Clover Glycine *Glycine latrobeana* (Arcadis 2019a).

One species classified as 'poorly known' in Victoria but thought to be rare or threatened (DEPI 2014) was recorded during field surveys undertaken in Spring/Summer 2017 along Mickleham Road: Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis* (Arcadis 2019a). This status reflects the lack of known information about this species combined with database records showing it is either in low numbers or is limited in extent within Victoria (Arcadis 2019a). It could also be under recorded within the field through mistaken identity with other Bindweed species (Arcadis 2019a). The species has been recorded in all bioregions across Victoria, with the vast majority recorded north-west of Melbourne in the Victorian Volcanic Plain bioregion (Arcadis 2019a). Field surveys recorded Slender Bindweed only in one patch of EVC 55: Plains Grassy

Woodland, which occurs to the south of the Craigieburn Road / Mickleham Road intersection and within the Referral Area (Arcadis 2019a).

No other rare or threatened flora species listed under the EPBC Act, FFG Act, or as DELWP Advisory listed flora species were recorded during site assessments undertaken for the proposed action (Arcadis 2019a).

Fauna

A total of 17 vertebrate fauna species and one insect were recorded incidentally during field surveys undertaken for the Craigieburn Project extent which includes the Referral Area (Arcadis 2019a). All bird, amphibian, insect and mammal species recorded are considered common and abundant in Victoria (Arcadis 2019a). Database searches completed for the proposed action returned 69 queries of threatened fauna species, these include species recorded on the VBA or those predicted to occur on the PMST within 5 km of the Craigieburn Project (Arcadis 2019a). The likelihood of occurrence of these species were determined following general field surveys and targeted habitat assessments and/or surveys undertaken (Arcadis 2019a).

Surveys undertaken to determine the likelihood of occurrence for threatened fauna species include:

- The Golden Sun Moth (Synemon plana) was identified during field surveys undertaken on 1 December 2018 for this proposed action (Canzano 2018).

- Surveys carried out by Hamer (2018) (refer to Appendix G in Attachment 1 for further detail) were used to assess the likelihood of occurrence of Growling Grass Frog which was revised from **moderate** to **low**. No other threatened fauna species listed under the EPBC Act, the FFG Act or as DELWP Advisory listed fauna species were recorded during the field surveys undertaken for the proposed action (Arcadis 2019a).

For species with a pre-field survey likelihood of occurrence of **moderate** or **higher** in the Referral Area and Craigieburn Project, further detail is provided below.

Growling Grass Frog

There are 121 records for Growling Grass Frog within 5 km of the Craigieburn Project on the VBA, with the most recent record from 2017 (Arcadis 2019a).

Habitat assessments completed as part of Hamer (2018) included the dam on the northern side of Craigieburn Road where a patch of Tall Marsh was recorded, as well as several along Mickleham Road, south of the Craigieburn Road and Mickleham Road intersection, occurring within or close to the Craigieburn Project (Arcadis 2019a). Hamer (2018) did not assess other locations such as Aitken Creek due to a low likelihood of occurrence (Appendix G in Attachment 1).

Searches under the VBA returned no records of Growling Grass Frog within Aitken Creek (Arcadis 2019a). Due to the lack of Growling Grass Frog records for Aitken Creek the likelihood of occurrence for the species within the mentioned creek was determined as low (DELWP 2019d). Majority of records within a 5 km radius of the proposed action were from Merri Creek,

located approximately 1 km from the eastern end of the Craigieburn Project at its closest point (Arcadis 2019a).

Hamer (2018) assessed waterbodies across the Craigieburn Project where potential habitat occurred for this species. To be surveyed, waterbodies had to be within 1 km of recent Growling Grass Frog records, not just near potential habitat corridors such as Yuroke Creek. Water quality also had to be average or good.

Waterbodies further south along Mickleham Road and Somerton Road where these conditions were met, were subject to targeted surveys in early February 2018 (Hamer 2018). These surveys did not detect Growling Grass Frog (Arcadis 2019a). Hamer (2018) concluded it is highly unlikely the species is currently present, even in waterbodies exhibiting relatively high habitat quality and within close proximity to previous records for the species south of the current Study Referral Area.

The likelihood of occurrence for Growling Grass Frog within the Referral Area is considered **low** (Arcadis 2019a).

Swift Parrot

There are two records for Swift Parrot within 5 km of the Craigieburn Project according to the VBA, with the most recent record from 2000(Arcadis 2019a).

Swift Parrot breeding habitat is located in Tasmania, with only potential foraging habitat existing within the Referral Area which is potentially utilised during its annual winter migration (Arcadis 2019a). Potential foraging habitat consists of River Red Gums in the form of scattered trees and within EVC 55: Plains Grassy Woodland (Arcadis 2019a). Considering tree species present are River Red Gums, it is deemed likely the Swift Parrot would only migrate through the northern parts of Melbourne on a sporadic basis, when resources are low elsewhere (Arcadis 2019a). On this basis, Swift Parrot is deemed to have a moderate likelihood of occurrence within the Referral Area (Arcadis 2019a).

Grey-headed Flying-fox

There are two records for Grey-headed Flying-fox within 5 km of the Craigieburn Project according to the VBA, with the most recent record from 2016 (Arcadis 2019a).

The Grey-headed Flying-fox numbers a few hundred thousand and has established several permanent breeding colonies within urban centres, including in Kew within the Melbourne urban area (Arcadis 2019a). The closest breeding (roosting) habitat for the Grey-headed Flying-fox is 22 km from the Referral Area (Arcadis 2019a). Within Greater Melbourne, the prime foraging habitat for the species is the more connected forested areas to the east of Melbourne and the suburbs, rather than the scattered eucalypts across the plains to the west and north-west of Melbourne (Arcadis 2019a). The Referral Area and Craigieburn Project contains suitable foraging habitat only, comprising of native and planted trees.

As the Referral Area presents foraging habitat for the Grey-headed Flying-fox, the likelihood of occurrence of Grey-headed Flying-fox within the Referral Area is moderate (Arcadis 2019a).

Golden Sun Moth

There are 579 records for GSM within 5 km of the Craigieburn Project on the VBA, with the most recent record from 2017 (Arcadis 2019a). Much of the habitat within the Craigieburn Project that previously supported this species is now residential development established within the Craigieburn R2 Precinct, which is covered by the MSA (Arcadis 2019a). There are however records close to Mickleham Road adjacent to the Referral Area in currently undeveloped areas (Arcadis 2019a).

According to DEWHA (2009b), potential habitat for GSM includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands) across the historical range of the species. The GSM is also known to inhabit degraded grasslands, including those dominated by the exotic species, Chilean Needle-grass **Nassella neesiana*, a weed of national significance (Arcadis 2019a). Adult moths emerge from underground during the breeding season, between mid-October and early January, depending on climate and location (Arcadis 2019a). They are active only during the hottest part of hot, sunny, and relatively still days (DEWHA 2009b). Adult males spend their time patrolling grassy patches in search of displaying females, who flash their brightly coloured hindwings to attract the males (Arcadis 2019a). Once mated, the females lay their eggs (oviposit) between the tillers of a tussock or between tillers and the soil; females are reluctant to fly and most likely walk between tussocks during display and egg laying (Arcadis 2019a). In contrast, adult males are capable of active and prolong flights, although it is estimated they will not travel more than 100 m away from suitable habitat patches (DEWHA 2009b). Targeted surveys for GSM were undertaken in late 2016 to early 2017 (Arcadis 2017) and again on 1 December 2018 (Canzano 2018). Surveys were conducted during late 2016 to early 2017 focused on areas considered to provide suitable habitat within the Craigieburn Project area (at the western end of Craigieburn Road). During these initial surveys no GSM were recorded (Arcadis 2019a). During the later surveys (December 2018), GSM were detected. While the focus of surveys was to initially be within the Referral Area on the eastern side of Mickleham Road, south of Craigieburn Road, conditions on the day were highly favourable for the species to be observed in flight (Canzano 2018). Not only was GSM therefore found in these locations, but all other areas of the Referral Area along Mickleham Road (Canzano 2018).

The species were observed utilising roadside vegetation on either side (east and west) of Mickleham Road, both to the north and south of the intersection of Mickleham Road and Craigieburn Road (Canzano 2018).

3.2 Describe the hydrology relevant to the project area (including water flows).

The proposed action is in the Merri Creek Upper sub-catchment that forms part of the larger Yarra Catchment, which ultimately comprises part of the Port Philip and Westernport region catchment. The Referral Area is located to the north of Greenvale Reservoir within the Hume Local Government Area (LGA) approximately 25 km north of Melbourne. Refer to Figure 5-1 in Attachment 4, depicting extent of surrounding waterways of the proposed action.

The local catchment area is mainly urbanised covering approximately 2.4 km2. It drains from north-west to south-east direction. There is a mix of rural, residential and commercial land use adjacent to Craigieburn Road. The catchment is split by Craigieburn Road that runs in an East

West direction. Flow in this catchment will drain to Aitken Creek either by underground drainage pipes or as overland flowpaths.

The Referral Area does not intersect any watercourses or waterbodies, but is in close proximity to a number of dams used for agricultural purposes. The closest major watercourse to the Referral Area is Aitken Creek, which is located approximately 2 km east of the Referral Area. Aitken Creek discharges into Merri Creek, east of the Hume Highway.

There is a Biodiversity Conservation Strategy (BCS) associated with Merri Creek at Craigieburn which relates to a Growling Grass Frog Corridor. This is located approximately 2 km east of the Referral Area. The Growling Grass Frog Masterplan identifies this area as a terrestrial habitat buffer to Area of Strategic Importance (ASI) and Merri Creek. The purpose of the ASI is to protect potential breeding habitat of Growling Grass Frogs while terrestrial habitat buffers are designed to ensure sufficient terrestrial habitat remains in the vicinity of the ASI and instream waterbodies.

Hydrology Impacts

Based on the proposed extent of works and information provided for the Phase 1 – Preliminary Surface water Assessment, the general impacts posed to surface water users and environmental values are considered to be low.

During construction, water quality may be impacted through increased pollutant loads discharging into waterways and waterbodies directly from construction sites. Vegetation clearing has the potential to alter localised overland flow and increase sediment laden run-off into Aitken Creek and associated wetlands / settlement pond. While habitat areas associated with the Growling Grass Frog Corridor and Area of Strategic Importance do not intersect the Referral Area, there is the potential for run-off during construction (and the operational phase) to flow into these areas and Merri Creek via associated drainage lines. Impacts on surface water values are most likely to occur during construction when activities with the greatest impact (i.e. clearing and earthworks) occur. Mitigation measures for the construction phase will be required to be set out in the CEMP, which will be developed and implemented in accordance with VicRoads procedures and guidelines. The placement of temporary works, stockpiles, equipment and plant can result in a reduction in flood conveyance or floodplain storage, potentially leading to increases to flood levels, flow velocities and flood frequency.

During operation, there may be an increased pollutant load entering waterways and waterbodies and an increased localised flooding due to a larger impervious area and subsequent run-off associated with the proposed action. Increased run-off volumes / rates may impact nearby waterbodies and identified sensitive receptors (i.e. Merri Creek and Growling Grass Frog habitat areas). Operational mitigation measures will be required to be developed alongside the Phase 2 – Detailed Surface Water Assessment, which will include hydrologic and hydraulic modelling of the Aitken Creek. Measures will include the introduction of effective Water Sensitive Road Design (WSRD) measures and all key stakeholders (i.e. Melbourne Water Corporation - MWC, Hume City Council) will be required to be consulted and engaged following the selection of a final design solution to determine if there are any other works planned which could also impact surface water in the vicinity of the proposed action.

Further investigation of the extent and magnitude of potential surface water impacts will be

completed through detailed hydrologic, hydraulic and water quality modelling so that effective mitigation measures can be incorporated as part of the design where required. WSRD measures, based on MWC advice, will be introduced at detailed design stage to ensure that the SEPP (Waters) 2018 are met.

Comprehensive assessment of the significance of long-term impacts (i.e. during operation) will be required to be undertaken during detailed design. The Phase 2 – Detailed Surface Water Assessment will include:

- collation of water quality data to confirm whether existing waterway quality is within SEPP (Waters) 2018 objectives

- detailed hydrologic and hydraulic modelling of waterway crossings for existing and proposed conditions

- WSRD utilising Model for Urban Stormwater Improvement Conceptualisation (MUSIC) or another suitable methodology taking into account MWC prescribed conditions and VicRoads standards; and

- assessment of spill management and containment controls (e.g. spill basins) to manage fuel or chemical spills as a result of road traffic incidents involving bulk transport vehicles.

Ongoing consultation with MWC and Hume City Council will be conducted to confirm any additional environmental assessments in the Aitken Creek and Merri Creek area to assess impacts associated with the proposed action and the Craigieburn Project extent, e.g. ecological risk assessment, targeted ecological surveys.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The Referral Area is located within the Victorian Volcanic Plain (**VVP**) bioregion, which is primarily located west of Melbourne, Victoria. The VVP is characterised by Cainozoic volcanic deposits, fertile soils, relatively flat topography and rainfall of 450-840 millimetres (mm) per annum, with a relatively even rainfall distribution throughout the year (Agriculture Victoria 2019). Soils associated with this bioregion are variable, ranging from red friable earths and acidic contrast soils (Ferrosols and Kurosols) on the higher fertile plain to soraceous material, supporting Plains Grassy Woodland and Plains Grassland ecosystems (Agriculture Victoria 2019). On the intermediate plain, Stony Knoll Shrubland, Grassy Woodland and Plain Grassy Wetland ecosystems are present on calcareous sodic texture contrast soils grading to yellow acidic earths (Chromosols and Sodosols to Dermosols) are present, with grey cracking clays (Vertosols) on the low plains. Stony earths (Dermosols and Tenosols) can be found on the stony rises (volcanic outcropping) supporting Stony Rises Herb-rich Woodland, Basalt Shrubby Woodland and Herb-rich Foothill Forest ecosystems (Agriculture Victoria 2019). The Referral Area is located within the volcanic derived stony rises of the Western Plains area characteristic of the Victorian Volcanic Plain Bioregion (Agriculture Victoria 2019). The soils relevant to the Referral Area include mainly brown Sodosols.

The native vegetation in the Referral Area has largely been cleared and modified. Within the last five to ten years, high-density residential development has occurred east of the Referral

Area along Craigieburn Road. Prior to this, these areas were previously characterised as grazing land containing scattered eucalypts (predominantly River Red Gum *Eucalyptus camaldulensis*) and paddocks of native Wallaby *Rytidosperma* spp. and Spear *Austrostipa* spp. grasses. Parcels of land directly adjacent to the eastern side of the Referral Area still contain Plains Grassy Woodland and cleared grazing paddocks. These developed and undeveloped parcels of land fall under the MSA. Neither the east or west road reserves along Mickleham Road within the Referral Area fall under the MSA.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The proposed action is not within or adjacent to any outstanding natural features or unique values.

3.5 Describe the status of native vegetation relevant to the project area.

The Referral Area occurs within the VVP Bioregion, with fragmented patches of native vegetation occurring along Mickleham Road. To the east of the Referral Area the MSA applies, which includes areas covered by the BCS and those that are not.

Field surveys confirmed the presence of EVC 55: Plains Grassy Woodland within the Referral Area. EVC 651: Plains Swampy Woodland and EVC 821: Tall Marsh were identified within 20 m of the Referral Area.

EVC 55: Plains Grassy Woodland

EVC 55: Plains Grassy Woodland was recorded along Mickleham Road. The total area of Plains Grassy Woodland in the Referral Area is 0.33 ha.

Depending on location and the current mowing/slashing regime, some of the treed patches of Plains Grassy Woodland exhibited high levels of recruitment of canopy species. However, most areas of Plains Grassy Woodland located within road reserves along Mickleham Road exhibited little recruitment given the ongoing slashing in these areas.

Some treed patches along Mickleham Road include additional understorey species. This understorey includes understorey tree and shrub species such as Lightwood *Acacia implexa*, Blackwood *Acacia melanoxylon*, Drooping Cassinia *Cassinia arcuata*, Black Wattle *Acacia mearnsii* and Hedge Wattle *Acacia paradoxa*. Groundstorey in these areas also contained a mixture of Wallaby Grass, Spear Grass and Kangaroo Grass *Themeda triandra*. The treed patch north-west of Mickleham Road within the Referral Area contained good groundstorey cover with indigenous species cover exceeding 40-50%.

Scattered herbaceous species were also present in some of the treed patches along Mickleham Road. This included species such as Berry Saltbush *Atriplex semibaccata*, Prickfoot *Eryngium ovinum*, Grassland Wood-sorrel *Oxalis perennans*, Wattle Mat-rush *Lomandra filiformis*, Jersey Cudweed *Helichrysum luteoalbum* and Common Woodruff *Asperula conferta*. The treed patch south-east of Mickleham Road within the Referral Area also included Slender Bindweed

(*Convolvulus angustissimus subsp. omnigracilis*).

While the majority of treed patches of Plains Grassy Woodland had some tree cover, two patches along the western side of Mickleham Road, north of the Craigieburn Road and Mickleham Road intersection, are considered to be a derived grassland state of this EVC. This has been taken into consideration in the modelling of pre-European vegetation across the Referral Area and the location of these treed patches between other areas mapped as Plains Grassy Woodland that have a tree canopy cover. These two patches have similar species composition and cover of indigenous species. This includes a good cover of Wallaby Grass and Spear Grass of up to 50%, and to a lesser extent scattered individuals of Sheep's Burry *Acaena* spp. and Berry Saltbush. While these two patches have some weed cover, this cover was relatively low and some areas were less than 25%. All patches of Plains Grassy Woodland were assessed against the criterion for *Grassy Eucalypt Woodland of the Victorian Volcanic Plain.* None of the patches meet all three key diagnostic criteria in relation to threatened ecological community *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*, nor meet the minimum patch size for this ecological community which is 0.5 ha. As none of the patches of EVC 55: Plains Grassy Woodland are considered representative of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*, consideration of this community does not form a part of this referral.

EVC 651: Plains Swampy Woodland

One patch of EVC 651: Plains Swampy Woodland was recorded to the south of the Craigieburn Road and Mickleham Road intersection on a private property outside of the Referral Area but within 20 m of the boundary, with an approximate area of 0.08 ha.

The patch was characterised by several River Red Gums located around a dam, ringed by indigenous Rushes (Hollow Rush *Juncus amabilis*, Finger Rush *Juncus subsecundus* and Gold Rush *Juncus flavidus*) and Common Swamp Wallaby-grass *Amphibromus nervosus*. Whilst the dam is artificial, the benchmark description for EVC: 651 was the 'best fit' for the patch of native vegetation.

Beyond the ring of indigenous vegetation around the dam, the groundstorey was dominated by exotic pasture and weed species such as Toowoomba Canary-grass **Phalaris aquatica*, Rye Grass **Lolium* spp. and Chilean Needle-grass **Nassella neesiana*.

The patch was considered to be in low-moderate ecological condition, as it has a high indigenous vegetation cover but is species poor and occurred opportunistically due to the creation of the dam.

The Plains Swampy Woodland did not correspond to any threatened vegetation communities under the EPBC Act, and therefore does not form a part of this referral.

EVC 821: Tall Marsh

One patch of Tall Marsh was identified within 20 m of the Referral Area. This patch is located within a dam on the western side of Mickleham Road, north of the Craigieburn Road / Mickleham Road intersection. This dam is fringed with Rush and River Club-sedge.

Tall Marsh is considered a contraindicator for the EPBC listed ecological community *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* according to DoEE listing advice (DoEE 2011). Therefore, no further EPBC Act assessment for this community was undertaken.

Habitat Hectare Assessment

All EVCs recorded within the Referral Area were subject to a Habitat Hectare assessment and carried out by a qualified assessor. The results achieved for all EVCs were of low to moderate scores. Lower scoring EVCs are reflective of the high weed cover, low floristic diversity and the highly modified landscape context in which the vegetation occurs. The remaining EVCs achieving moderate scores were attributable to low weed cover, a higher floristic diversity and/or higher levels of recruitment. Further information about the characteristics and extent to which they occur within the Referral Area can be found in section 3.2.3 and 4.1.2 of Attachment 1.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The local topography in the Referral Area ranges from approximately 246 metres Australian Height Datum (mAHD) in the western area to 236 mAHD in the eastern area (Arcadis 2018). The variation across the Referral Area is approximately 10 m.

3.7 Describe the current condition of the environment relevant to the project area.

Overall, the condition of the environment within and surrounding the Referral Area is highly modified and degraded through land clearing for agricultural purposes, residential and commercial areas, and the introduction of pest flora and fauna species. Several patches of remnant vegetation and scattered trees do persist however along road reserves and in adjacent paddocks.

As the Referral Area is centred around the existing Craigieburn Road and Mickleham Road roadways, the road reserve areas along these roadways that will be impacted have consequently been modified over time. This has been the result of ongoing disturbance and compaction associated with vehicle use, slashing, utility installation, and along Mickleham Road, the installation of drainage infrastructure. These uses and ongoing management regime have therefore reduced the quality and quantity of patches of remnant vegetation present. It has also reduced the quality of habitat available for fauna, including GSM.

The majority of the Referral Area supports exotic vegetation (including exotic roadside vegetation and modified agricultural land) as a result of previous disturbance and ongoing impacts from residential and rural use of the landscape.

There is no significant erosion occurring within the Referral Area. Feral animals including cats, foxes and rabbits are known to occur in the area.

The Craigieburn Project supports nine weed species declared as noxious weeds under the *Catchment and Land Protection Act 1994* (Vic), of which all are likely to also occur within the

Referral Area. Eight of the identified weed species are regionally controlled weeds and one, the Chilean Needle-grass *Nassella neesiana*, is categorised as restricted under the Port Phillip catchment. The identified weed species are listed below:

- Spear Thistle *Cirsium vulgare*

- Hawthorn *Crataegus monogyna*

- Artichoke Thistle *Cynara cardunculus*

- Paterson's Curse *Echium plantagineum*

- African Boxthorn *Lycium ferocissimum*

- Horehound *Marrubium vulgare*

- Chilean Needle-grass *Nassella neesiana*

- Serrated Tussock *Nassella trichotoma*

- Blackberry *Rubus fruticosus spp. agg*.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

There are no Commonwealth Heritage Places relevant to the Referral Area.

3.9 Describe any Indigenous heritage values relevant to the project area.

A Cultural Heritage Management Plan (CHMP 15920) was completed in early 2019 for the Craigieburn Project. There are no Aboriginal places previously recorded within the Referral Area (Biosis 2019).

Based on the extent of the proposed action, there was the potential for Aboriginal cultural heritage items to occur. However, investigations undertaken as part of the CHMP 15920 did not identify any significant cultural heritage items within the Referral Area.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The Referral Area consists of predominantly road reserve controlled by VicRoads and the City of Hume. The Referral Area also includes two private freehold land lots.

3.11 Describe any existing or any proposed uses relevant to the project area.

The primary land use within the Referral Area is the existing road (Craigieburn Road West and Mickleham Road). Private lots are located adjacent to the Referral Area, with lots to the east covered by the MSA and lots to the west of Mickleham under the Green Wedge land use zoning. Areas covered under the MSA are designated for future development and all EPBC Act implications were dealt with under the MSA program and the Biodiversity Conservation Strategy to offset loss of habitat for EPBC listed species. Yarra Valley Water is about to commence construction of two water pipelines, two pressure reducing stations, and associated infrastructure along Mickleham Road, up to Craigieburn Road West and Mickleham Road intersection, which overlaps areas of this proposed action (Referral 2018-8312). Works undertaken by Yarra Valley Water will impact GSM habitat assessed in this proposed action.

It is understood Ausnet, an electricity and gas provider, are responsible for construction of (part of) a gas pipeline in the proposed Referral Area (overlapping the area that is subject of this referral). Construction works are understood to have started in early 2019 but were put on hold pending further permits from local Council. This has resulted in direct impacts to the Referral Area.

A number of commercial buildings and car parking facilities are under construction at 420-440 Craigieburn Road, approximately 2.5 km east from the proposed action (Montague Construction 2015). The 420 Craigieburn Road lot comprises approximately 4.5 ha, with the adjoining 440 Craigieburn Road property comprising approximately 1.6 ha (Montague Construction 2015). The total area of both lots occupies approximately 6.1 ha. The Development of 420 Craigieburn Road is expected to cause the removal of 0.015 ha of remnant Plains Grassland (Montague Construction 2015). One male GSM was identified at this site; however, it had been determined the lot was unlikely to support the species and the single specimen originated from adjacent land with supporting habitat. Therefore, impacts to the GSM species were unlikely (Montague Construction 2015).

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

This section outlines the proposed action's approach to avoiding and reducing the impact to MNES.

Design

Significant reductions in impact have been achieved through avoidance and design optimisation. Avoidance and design optimisation measures adopted for the proposed action include the reduction of shared use path length, utilisation of footpaths, and reduction in sealed shoulder and lane widths. Measures implemented do not compromise the serviceability and safety of the proposed Program. Additional mitigation opportunities will be identified during the Detailed Design stage of the proposed action.

For further information regarding mitigation and avoidance measures undertaken during Concept Design stage, refer to the table below and Section 5 of the Biodiversity Technical Assessment Report by Arcadis 2019.

Construction

Apart from the mitigation measures detailed below addressing impacts specific to GSM, an Environmental Management Strategy (EMS) will be adopted for managing the potential environmental impacts of the proposed action.

An Environmental Management Plan is required under the proposed Incorporated Document. Under the NRU Project Deed, Project Co (the successful construction contractor consortium for NRU) is required to prepare, implement and maintain a CEMP that will meet the Project Specifications and Design Requirements (**PSDR**) and implement the mitigation measures stipulated in the Biodiversity Technical Assessment Report (Arcadis 2019a) and this referral. The CEMP typically outlines all practicable measures to minimise and mitigate impacts on biodiversity from the construction and operational phase through to the management and maintenance phases. The development of a CEMP will be the key tool used to address reduction of GSM impacts for the proposed action. The CEMP will include, where appropriate,

the following procedures and/or requirements:

- GSM mitigation measures for the Detailed Design phase- Staff and contractor inductions to address the location of GSM habitat and their role and responsibilities to protect and/or minimise impacts- Clear mapping of Areas of Sensitive Vegetation (**ASV**), areas of habitat and scattered trees designated to be retained and protected. No construction or impacts may occur without prior consent from the Proponent and identification of required protection on the ground of GSM habitat to be retained- Vegetation clearing protocols- Weed and/or pest animal establishment and spread management protocols- Post construction monitoring- Rehabilitation and restoration, including:- Rehabilitation protocols- Weed control measures- Pest management measures- Erosion and sediment control- Handling and storage of hazardous/toxic substances.

The CEMP will include clear objectives and actions, including:

- Minimising human interferences to GSM- Minimising clearing/disturbance of GSM habitat- Erosion and sediment control as per standards- Handling and storage of hazardous/toxic substances.

GSM Specific Measures

The following table addresses specific measures taken to avoid and mitigate impacts listed against MNES impact criteria for GSM.

GSM specific measures

Removal of habitat

Referral Area

No construction activities are to occur outside of the Referral Area and Craigieburn Project area. This ensures GSM habitat outside of the Referral Area is retained and protected during the course of construction.

The proposed upgrade is to an existing road, with efforts made for the proposed road and associated works such as the shared use path to be tightly drawn to the current road extent without compromising road geometry, sight lines and road safety.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Some loss of GSM habitat

No-go Zones

Areas of Sensitive Vegetation (**ASV**) include areas of environmental sensitivity in which no disturbance is to take place before, during, or after construction without written prior consent by the Proponent. These ASVs consist of GSM habitat in addition to other habitat zones, native vegetation, and trees / trees' protection zones. To ensure these environmentally sensitive areas are not disturbed or damaged, these areas have been identified within the Project Deed (the contract between the Proponent and Project Co). Compliance with these ASVs is therefore a contractual requirement. The ASV was identified based on priorities for retention as determined by project ecologists with support from the design team.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - None

Fauna injury and mortality

Detailed Design

To consider and plan for the retention of on-going biodiversity values for the GSM, the Detailed Design phase of the proposed action will;

- Ensure the Referral Area (outside of the current ASV), where refined during the detailed design phase, incorporates additional retention of GSM habitat. This can be achieved through consultation with ecologists and application of construction techniques sensitive to GSM habitat

- Link GSM habitat through planned and strategic revegetation and landscaping where possible

- Incorporate GSM habitat components within the road corridor

- Appropriate fencing and barriers to avoid loss of connectivity and increased presence of predatory birds

- Draw upon key technical documents and reports to provide mitigation measures as part of the detailed design process. These include:

- VicRoads Fauna Sensitive Road Design Guidelines (VicRoads 2012)

- Fauna Sensitive Road Design Manual – Volume 1: Past and Existing Practices (Queensland Department of Transport and Main Roads 2010a)

- Fauna Sensitive Road Design Manual – Volume 2: (Queensland Department of Transport and Main Roads 2010b)

- Road Ecology (Foreman et al. 2003)

- Handbook of Road Ecology (van der Ree, Smith and Grilo 2015).

Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (DEWHA, 2009a).

Timing and Construction - Detailed design

Likely efficacy of mitigation - Proven

Residual impacts anticipated - Fauna injury and mortality will be reduced, however impacts are still anticipated

Construction measures

GSM could potentially be impacted within the Referral Area during vegetation removal and construction works during breeding season.

All construction personnel will be required to attend a project-specific induction prior to commencing work. Each induction will need to include relevant information about the GSM and GSM habitat of the Referral Area, and the appropriate management measures.

The following guidelines will be followed to minimise harm to fauna during construction;

- Schedule habitat clearing and trenching works for periods of low GSM activity (breeding season).

- Ensure the speed of vehicles/plant entering and working within the Referral Area are kept low and vehicle movements are kept to a minimum.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Fauna injury and mortality will be reduced, however impacts are still anticipated

Construction methods

Any weed control works proposed during or after construction to be undertaken within identified habitat for GSM to be conducted as a staggered process, thereby avoiding impacts to present population.

Landscaping works to be undertaken along Mickleham road will avoid planting/installation of trees and structures around areas identified as GSM habitat to avoid predation by predatory birds and shading of habitat.

Timing and Construction - During construction

Likely efficacy of mitigation - Proven

Residual impacts anticipated - Fauna injury and mortality will be reduced, however impacts are still anticipated

Timing of construction works

Works along Mickleham Road to be conducted outside of breeding season (mid-October to early January; DEWHA 2009b). Potential reduction measures include staged construction to work around the breeding season or performing construction activities with minimal impacts to GSM such as linemarking, surveying, test pits, etc.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Flying GSM mortality and injury will be greatly reduced. Presence of larvae unlikely but should they be present, injury or mortality still likely to occur

Fence design

The design of fences to be installed, temporary or permanent, are to be constructed in a manner that is conducive to the passage of GSM adults. Fencing is to be sufficient to direct and guide works during construction, but be strategically designed and placed limit bird perching opportunities close to GSM habitat, thereby limiting predation. This design consideration shall also be applied to permanent fencing installed as part of landscaping works.

Timing and Construction - During construction

Likely efficacy of mitigation - Proven

Residual impacts anticipated - Fauna injury and mortality will be reduced, however impacts are still anticipated

Habitat degradation from disturbance

Light and noise

It is unlikely GSM will be directly impacted by noise and vibration during construction and/or operation, or by the installation of artificial lighting. The Referral Area is already modified to an urbanised environment. Despite the negligible impacts, standards controls will be enforced to minimise the disturbance during construction. This will include limiting night works and

construction light as much as practicable. A measure specific to GSM is the avoidance of additional shading from buildings, landscaping or other structures in the middle of the day (in winter between 0900 and 1500 hrs) to minimise negative effects on soil temperature and moisture. Noise and light resulting from road use are not anticipated to require mitigation beyond standard controls.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Residual impact unlikely

Management regime

The previous slashing regime undertaken within the Referral Area will be continued within areas of ASV during construction in order to maintain existing dispersal habitat in these areas. Where disturbed areas are to be re-instated with grass, these areas are to be slashed on an ongoing basis as per the current management regime, with a view to it being used for dispersal post-construction.

Timing and Construction - Post construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - None

Revegetation

A *Landscape Revegetation Plan* will be prepared prior to the completion of construction outlining vegetation rehabilitation to be implemented in the post-construction works period. This will aim to minimise impacts to GSM and other fauna, and potentially improve habitat and habitat connectivity. Plantation and direct seeding of GSM suitable vegetation such as *Rytidosperma*, *Austrostipa*, *Microlaena* and *Themeda* can achieve this aim. Recommendations under this plan will also be included in the CEMP.

Timing and Construction - Post construction

Likely efficacy of mitigation - Unproven

Residual impacts anticipated - Residual impact unlikely

Invasion and spread of weeds

Weed and disease management

Adopted weed and disease management will be in accordance with the requirements of the *Catchment and Land Protection Act 1994* and *measures* stipulated in relevant VicRoads documents are likely to effectively mitigate most risks associated with weeds and pathogens. However, the following are also pertinent to the Upgrade:

- Undertaking appropriate hygiene and maintenance by ensuring all machinery and vehicles entering the Referral Area are free of weed propagules and/or material carrying potential diseases prior to commencement of work

- If possible, planning of works should begin in areas close to native vegetation and GSM habitat and progress to areas dominated by exotic/introduced species, or ensure machinery is thoroughly cleaned between sites

- Where possible, avoid works during prolific seed events of noxious weeds to avoid their spread via machinery. Generally, this is spring time for most noxious weeds present within the Referral Area.

- Minimise soil movement across sites to limit potential weed dispersal.

The weed and disease management mentioned will form part of the CEMP prepared for the Craigieburn Project, minimising the overall spread of weeds and undesirable species.

Timing and Construction- During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Residual impact unlikely

Revegetation

Landscaping works will also ensure weed or non-indigenous plants are not included in the species palette.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Residual impact unlikely

Erosion and Sedimentation

Prevention measures

Erosion mitigation measures will be applied to prevent the movement of soil into areas outside of the Referral Area. This includes areas of native vegetation to be retained within the Referral Area as 'Areas of Sensitive Vegetation', as well as drainage lines, farm dams, Aitken Creek and Highlands Lake that occur outside of it. Sediment-laden run-off would be minimised in these areas. While vegetation provides the most effective form of erosion control, there will be interim measures applied after vegetation has been removed from the Referral Area. A wide variety of soil erosion techniques can be applied using a range of materials.

Clause 56 of the *SEPP (Waters of Victoria)* requires construction works be managed to minimise land disturbance, soil erosion and the discharge of sediment and other pollutants to surface waters. Throughout the Referral Area, a number of principles will be applied in order to limit erosion and sedimentation. These should be in line with the Victorian EPA *Principals of Best Practice Guidelines*.

The following mitigation measures are of particular importance in relation to the Referral Area and will be implemented for the proposed action:

- Limiting machinery and earthworks to the Referral Area and Craigieburn Project area only

- Limiting the exposure of disturbed soil for the shortest possible time (e.g., do not clear an area prior to a weekend, and/or if rain is forecast)

- Diverting water away from exposed soil or loose material

- Applying rock armouring on access tracks and roadways to prevent sediment loss

- Applying temporary silt trapping techniques, particularly near the dams if there are bore access points

- Retaining the natural drainage lines as much as possible

- Applying appropriate sedimentation and erosion control measures around Aitken Creek as part of the bridge upgrade process.

These recommendations will be included in the CEMP.

Timing and Construction - During construction

Likely efficacy of mitigation - Effective

Residual impacts anticipated - Some erosion and sedimentation likely to occur however residual impact is unlikely

Rubbish

Waste management

Impacts to the ecological values of GSM habitat from rubbish will be minimised through the implementation of a waste management plan. All waste management plans will be included in the proposed project CEMP.

Timing and Construction - During and post construction

Likely efficacy of mitigation - Proven

Residual impacts anticipated - Residual impact unlikely

Hydrology and water pollution

Management procedure

Mitigation measures addressing changes to surface water run-off that could contain pollutants such as oil and petrol will be included in the proposed action's CEMP.

The CEMP will include measures to reduce the likelihood for the release of pollutants into waterways and drainage channels including designating areas for refuelling and chemical storage.

Emergency procedures relating to accidental release of pollutants will also be developed and related to staff. These emergency procedures will be included in induction and training material.

Timing and Construction - During and post construction

Likely efficacy of mitigation - Proven

Residual impacts anticipated - Minor changes in hydrological regime and pollutant impact. Unlikely to be significant

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

Associated impacts to MNES species from the proposed action primarily relate to GSM and their respective habitat, which, within the Craigieburn Project area, is solely found along Mickleham Road. Assessed GSM habitat located within the Referral Area is deemed to be of low quality as the areas have been highly modified and fragmented, composed of vegetated and gravel road verges adjacent to an existing road corridor. Vegetation is comprised of areas with a higher cover of native grasses along with exotic species such as Chilean Needle-grass. Only male GSM's were observed during the targeted survey. They were either perched in open, gravel areas or flying into surrounding habitat beyond the Referral Area. It is therefore likely that the habitat found within the Referral Area where GSM were observed is being used by the species for dispersal and for thermoregulation, and less likely for breeding habitat (Canzano 2019). No females – which are reluctant to fly and most likely walk between tussocks – were

recorded within the areas surveyed (DEWHA 2009b). Areas of habitat located adjacent to the Referral Area are of higher quality and habitat value for the GSM, and predominantly located within the MSA (areas within the MSA have already accounted for EPBC Act requirements).

This referral assumes a maximum of 2.51 ha of GSM habitat could potentially be impacted within the Referral Area (Table 11 provides a breakdown of the components of this 2.51 ha of habitat). However, through construction environmental management and the rehabilitation of habitat, this area will be minimised as much as possible. Table 11 summarises the breakdown of impacts to potential GSM habitat.

Of the GSM habitat anticipated to be impacted, it is expected 0.41 ha will be permanently impacted based on the extent of the proposed road alignment and shared use paths, while the rest of the impacts will be reinstated with vegetation at the completion of construction (Section 4.1 of this referral). The majority of the area to be reinstated are comprised of swale drainage, which will largely resemble the existing swales, which currently provides GSM habitat.

Impact of Installation of Gas Utilities

Within the maximum 2.51 ha of GSM habitat to be impacted within the Referral Area, 0.33 ha of GSM habitat has already been impacted as part of the installation of gas utilities along the eastern side of Mickleham Road, south of the Craigieburn Road and Mickleham Road intersection (See Table 12 for a summary of this). It is understood that no approvals were sought or granted for these works and their associated impacts. The Proponent has undertaken site surveys to attempt to determine the impact of these works prior to submission of this referral. Contact was also made with Ausnet but the Proponent has been unable to obtain sufficient information on the scope of works to complete this assessment e.g. depth of excavations and construction methodology. In order to be conservative, these impacts have **not** been accounted for (**not subtracted from the 2.51 ha area of GSM habitat**). Therefore, a conservative approach has been adopted in the calculation of GSM habitat. This means therefore that the estimated 2.51 ha disturbance estimate is unlikely to be realised.

Anticipated Impacts of Yarra Valley Water works

Additionally, another 0.51 ha of GSM habitat is anticipated to be impacted by proposed actions by Yarra Valley Water, who obtained Commonwealth approval for the removal of this habitat. It should be noted that the Yarra Valley Water project is not considered a controlled action (Referral 2018-8312). Yarra Valley Water's impacts are located south of the Craigieburn Road and Mickleham Road intersection, primarily along the western side of Mickleham Road. As the nature of these activities and impacts by other parties (of up to 0.68 ha) cannot be determined (as temporary or permanent), these impact areas have **not been accounted for (not subtracted from the 2.51 ha area of GSM habitat)** i.e. a conservative approach has been adopted in the calculation of GSM habitat. This means therefore that the estimated 2.51 ha disturbance estimate is unlikely to be realised.

Dispersal habitat

As the GSM habitat proposed to be impacted is likely to be for dispersal purposes and is of low quality, the proposed action is unlikely to threaten the overall persistence of GSM. Assessments have taken into consideration the species-specific *Significant impact guidelines for the critically*

endangered golden sun moth (DEWHA 2009a). While the guideline considers habitat removal of greater than 0.5 ha as significant, it stipulates that the mentioned threshold:

"*… give[s] guidance to the level of impact that is likely to be significant for the species at a site. [it is] not intended to be exhaustive or prescriptive, but rather to highlight those actions that threaten the persistence and recovery of the golden sun moth."*

(DEWHA 2009a).

While dispersal habitat will be reduced, the application of mitigation measures described in this referral will minimise impacts. Given the low quality of the habitat and relatively small area to be removed, in conjunction with mitigation measures detailed in Section 4, it is considered unlikely that the proposed action would have a significant impact on GSM and its habitat.

Refer to Attachment 3 for extent of GSM habitat and impacts, and the table below for GSM habitat area and impact types.

GSM Habitat Extents

Permanently cleared

Proposed action's permanent impacts to GSM Habitat (will be permanent hard stand areas)

0.41 ha

Temporary or unlikely to be permanently impacted

GSM Habitat within Areas of Sensitive Vegetation (proposed no-go zones)

0.36 ha

GSM Habitat cleared for construction but to be rehabilitated

1.74 ha

Total GSM Habitat potentially impacted by the proposed action (hectares)

2.51

Note: For Areas of Sensitive Vegetation through application of design and construction mitigation measures, it is unlikely that 0.36 ha will be impacted (to be confirmed during Detailed Design). The total figure of 2.51 ha is conservative, and an estimate of 2.15 ha is likely.

Clearing that has already been undertaken or approved for removal within the referral area (included within the 2.51 ha of GSM habitat above)

Already cleared areas or proposed to be cleared by other proponents within the referral area

Yarra Valley Water impacts to GSM Habitat within Referral Area (not yet cleared, not by the Proponent)

0.51 ha

Ausnet Electricity and gas utility impacts to GSM Habitat within Referral Area (already cleared, not by the Proponent)

0.33 ha

Total of already cleared areas within the referral area (hectares)

0.68 ha*

*These impact areas overlap with each other and therefore total area impacted is not 0.84 ha.

The Swift Parrot and Grey-headed Flying-fox, which have a moderate likelihood of occurrence within the Referral Area, are not expected to be significantly impacted as the proposed action will remove habitat that is considered non-critical for these species (refer to Section 2.4.1 and 3.1).

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Assessments and fields surveys for the Referral Area were undertaken as part of biodiversity assessment for the Craigieburn Project (Attachment 1). As noted in Section 3.7, from this assessment it was determined that much of the Craigieburn Project area is highly modified and (except for the Referral Area and areas covered by the MSA) is unlikely to contain significant habitat for EPBC Act threatened species. As already noted, areas covered by the MSA have already considered MNES.

The Referral Area contains habitat and potential habitat for these species. Assessments carried out as part of the biodiversity assessment has been used to determine a moderate likelihood of occurrence for the following MNES listed threatened species within the Referral Area:

- Swift Parrot

- Grey-headed Flying-fox

- Golden Sun Moth.

Swift Parrot

As noted in Sections 2.4.1 and 3.1 of this referral, the likelihood of Swift Parrot occurring within the Referral Area has been assessed as moderate. Its presence is restricted to its winter migration to the mainland from Tasmania between March and September. Completed searches of the VBA database within a 5 km radius of the Referral Area produced two records, with the most recent record from 2000. Though there is a moderate likelihood of occurrence between March and September, the **likelihood of a significant impact is considered low** because:

- The potential foraging habitat for the Swift Parrot within the Referral Area includes River Red Gums consisting of scattered trees and trees within EVC 55: Plains Grassy Woodland.

- River Red Gums are not the preferred food source for this species, they are used occasionally for their lerp and for roosting habitat during migration (O'Malley 2018). Foraging habitat proposed to be removed consists of 18 small and six large River Red Gums and 0.23 ha of suitable EVC 55: Plains Grassy Woodland (Arcadis 2019a).

- The species is highly mobile and therefore habitat removal will not fragment the population.

Approximately 0.23 ha of suitable Plains Grassy Woodland (EVC with foraging trees) is expected to be removed as part of the proposed action as well as 18 small and six large scattered River Red Gums.

Grey-headed Flying-fox

As noted in Sections 2.4.1 and 3.1 of this referral, the Grey-headed Flying-fox has a **moderate** likelihood of occurrence within the Referral Area. However, assessments have determined the **likelihood of a significant impact to be low**, because:

- completed searches of the VBA database within a 5 km radius of the Referral Area produced two records, with the most recent record from 2016

- the removal of up to 1.99 ha native and planted vegetation which represents potential habitat for this species will reduce the availability of foraging habitat for this species, however this is unlikely to result in a significant impact due to the large foraging habitat range of the species, consequently individuals are only likely to occasionally forage within the Referral Area; and

- breeding habitat which is considered critical for this species will not be impacted by the proposed action.

Golden Sun Moth (GSM)

As noted in Sections 2.4.1 and 3.1 of this referral, for GSM, the habitat that will be impacted by the proposed action is considered to be of low quality given soil compaction, weed infestation, regular mowing/slashing, gravel driveways and vehicles traversing through the habitat (Canzano 2018). The habitat is also bordered by the MSA, which leaves suitable habitat highly fragmented or at the risk of being removed for residential development. While 579 records for GSM occur within 5 km of the Craigieburn Project on the VBA (the most recent being from 2017), the quality of this habitat, along with observations of only males, that are believed to have flown in from areas within the MSA (December 2018) (Canzano 2018), has indicated that the area to be impacted is **unlikely to be used for breeding purposes**, but rather more likely for dispersal and thermoregulation by the species. Further to this, of the 2.51 ha of expected impact to GSM habitat by the action proposed in this referral, it is anticipated 1.74 ha of GSM habitat will be available again to GSM for the purpose of dispersal and thermoregulation once rehabilitation and the proposed action are completed.

The likely use of habitat to be removed for dispersal thermoregulation and low level of permanent habitat impacts, combined with other mechanisms to avoid and minimise impacts on GSM within the Referral Area, deem it **unlikely that impacts to this species will be significant** as defined under the EPBC Act. Table 12 below provides further details regarding this assertion through an analysis of the significant impact criteria within DoE (2013) and DEWHA (2009a).

Migratory Species

Three migratory species have a moderate likelihood of occurrence for the Craigieburn Project

but a low likelihood of occurrence within the Referral Area:

- Eastern Osprey

- Common Greenshank

- Latham's Snipe.

For the Craigieburn Project area, the likelihood of occurrence for these species is attributed to potentially suitable habitat within Aitken Creek which intersects near the centre of the Craigieburn Project. Assessments of impacts have been used to determine **the likelihood of a significant impact for these species is low**. This is due to;

- Aitken Creek not being an important habitat for migratory species;

- the low number and non-recent species records found under VBA searches;- the minor impacts on Aiken Creek; and

- proposed mitigation measures, as detailed in the attached Biodiversity Technical Assessment Report and Preliminary Surface Water Assessment (Attachment 1, Section 5 and Attachment 4, Section 5.3 and 5.5) to reduce environmental impact.

For the Referral Area, both the likelihood of occurrence and the potential for impact are low. For more information for the occurrence and impacts of all MNES species within the Craigieburn Project, refer to Attachment 1.

Table 12 Summary of assessment against Significant impact criteria for GSM in the Referral Area

Significant impact criteria - Key Reasons/Justifications

Lead to a long-term decrease in the size of a population (DoE 2013)

- GSM habitat within the Referral Area has been assessed as likely dispersal and thermoregulation habitat, and not likely for the purposes of breeding.

- This is based on observations of only male specimens and GSM flying in and out of adjacent habitat that is more likely to be used for breeding.

- Habitat assessments also determined that the quality and value of habitat within the Referral Area is low due to soil compaction, weeds, regular mowing/slashing, gravel driveways and vehicles traversing the Craigieburn Project.

- Given the above, the risk of a long term decrease in the size of the population without mitigation measures has been considered low-moderate.

- With mitigation measures – including confinement of the proposed action to the Referral Area,

the establishment of Areas of Sensitive Vegetation, appropriate timing of works, fencing and ongoing site management – the risk of a long-term decrease in the size of the population is deemed to be low.

- Further detail is provided in Arcadis (2019b) and Canzano (2019).

Impacts from the proposed action are unlikely to lead to a long-term decrease in the size of a GSM population.

Reduce the area of occupancy of the species (DoE 2013)

- Within the Referral Area, a maximum of 2.51 ha of low-quality GSM habitat has been identified as likely to be impacted for assessment in this Referral.

- Of this 2.51 ha, it should be noted that approximately 0.33 ha of habitat have already been impacted by works for utility assets. and 0.51 ha of GSM habitat has been approved for impacts for Yarra Valley Water's proposed action. Combined impacts from these two overlapping actions will therefore result in a total disturbance of 0.68 ha of assessed GSM habitat. Please refer to Attachment 3 for GSM impacts.

- Where feasible, during construction, areas identified as ASV will be avoided to further reduce impacts to GSM habitat. If road design and associated infrastructure can avoid impacts in areas identified as ASV, No-go Zones will be erected to avoid impacts during construction.

- While the removal of GSM habitat will reduce the area of occupancy of the species as detailed above, the low level of permanent, residual impacts from the proposed action are not likely to result in a significant impact at a species level.

- To consider cumulative impacts to GSM, a desktop review of EPBC Act Referrals in proximity to the proposed action has revealed approximately 58.92 ha of GSM habitat has been approved to be impacted under the EPBC Act. Additionally, GSM habitat exists east of the proposed action along Mickleham Road within the MSA.

- With consideration to the low quality and value habitat and the small area of proposed impacted area, it is unlikely the proposed action will significantly contribute to the cumulative impact for GSM within the Victorian Volcanic Plain Bioregion.

The proposed action will reduce the area of occupancy for GSM, however, it is unlikely to be a significant impact.

Fragment an existing population into two or more populations (DoE 2013)

- While the proposed action also involves widening the current road alignment, the added width of the proposed alignment is unlikely to be prohibitive for GSM dispersal.

- The likelihood of fragmentation of the existing population into two or more populations as a result of the proposal is therefore considered very low.

It is unlikely GSM present in the area will be fragmented into two or more populations as the proposed action is an upgrade for an existing road corridor.

Adversely affect habitat critical to the survival of species (DoE 2013)

- The GSM habitat has been assessed as likely dispersal and thermoregulation habitat only and not likely breeding habitat (Canzano 2019).

- It is therefore unlikely habitat within the Referral Area is critical habitat for GSM. Such habitat is more likely represented by the large parcels of land adjoining the roadside reserves (outside of the Craigieburn Project area and Referral Area) that are more likely to be used for breeding.

- The risk of impacts to this potential critical habitat have been reduced by avoiding impacts outside of the Referral Area that may contain this critical habitat (Arcadis 2019a). Mitigation measures specifically for GSM will also be put in place to minimise impacts particularly to dispersing males that are utilising habitat within the Referral Area to further reduce this risk.

- Provided mitigation measures are employed prior to and during construction, it is unlikely that the removal of small pockets of habitat will significantly impact on the survival of the species.

It is unlikely the proposed action will adversely affect habitat critical to the survival of GSM.

Disrupt the breeding cycle of a population (DoE 2013)

- There is some potential that construction works conducted during the breeding season of GSM could impact the breeding cycle of the population by affecting existing dispersal movements of males due to the movement of heavy vehicles and surface disturbances. Any females that may move into the Referral Area, while unlikely, could also be directly impacted.

- Additionally, the widening of the road corridor will further reduce available dispersal habitat for males.

- To ameliorate the above, measures will be put in place to limit impacts to the breeding cycle during the construction phase by staging works along Mickleham Road outside of the breeding period (mid-October to early January).

- Vegetated areas within the Referral Area that do not form part of the road pavement or other hardscapes (shared use paths, kerbs etc) will also be rehabilitated to minimise permanent habitat loss and allow for ongoing dispersal across the road reserves.

- Within these measure in place, it is unlikely that the project will disrupt the breeding cycle of the population.

Assessments have concluded the proposed action is unlikely to disrupt the breeding cycle of the existing GSM population.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline (DoE 2013)

- The proposed action will result in the permanent removal of occupied habitat within the Referral Area, however the extent of habitat removal is unlikely to directly contribute to the overall decline of the species as a whole. The area of potential habitat within the Referral Area is comparatively small and is unlikely to influence the persistence of the overall population of GSM.

It is unlikely that the proposal will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Result in invasive species that are harmful to critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat (DoE 2013)

- The proposed action is unlikely to lead to the introduction or spread of a harmful predatory invasive species. The major predators for GSM are native insectivorous birds and insects already present in the area. Additional fencing, temporary or permanent, may however result in increased perching sites for birds predating on GSM. Bird predation will be minimised where possible by utilising fences designed to limit additional perching sites.

- Any proposed works have a high risk of weed spread through contaminated equipment and vehicles. Implementation of weed hygiene will be undertaken as part of the proposed action's CEMP, requiring all vehicles, machinery and equipment to be cleaned before entering the site to prevent the spread of invasive species. Any weed control proposed in identified GSM habitat will be conducted at times when they will not have a negative impact on the species.

- The residual risk of a significant impact based on invasive species is therefore deemed to be low.

The proposed action will not likely result in additional invasive species that are harmful to GSM to become established in critical habitat.

Introduce disease that may cause the species to decline (DoE 2013)

- There are no known diseases that have been transmitted to this species as a result of human activity.

- It is therefore unlikely the proposed action will cause a decline in the GSM population due to

the introduction of diseases.

The proposed action is unlikely to introduce disease that may cause a decline in GSM population.

Interfere with the recovery of the species (DoE 2013)

- There is no approved recovery plan for Golden Sun Moth, however the Commonwealth of Australia (2009b) consider all populations to be important for the long-term survival and recovery of the species.

- Despite this, the proposed action is highly localised and does not occur within the vicinity of reserves or conservation areas and does not result in the clearance of surrounding habitat that is more likely to be used for breeding.

- Additionally, the habitat within the Referral Area has been and is subject to soil compaction, weeds, regular mowing/slashing, gravel driveways and vehicle movement. The habitat is not likely to represent that which would be the focus of species recovery.

It is deemed unlikely the proposed action will substantially interfere with the recovery of the species as a whole.

Large or contiguous habitat area (>10 ha) (DEWHA 2009a)

- Habitat loss of 2.51 ha from the proposed action will exceed the habitat impact threshold the GSM set out in DEWHA (2009a) of 0.5ha. While impacts beyond this area threshold are deemed significant for the species, DEWHA (2009a) does state that this threshold:

". . . give[s] guidance to the level of impact that is likely to be significant for the species at a site. [it is] not intended to be exhaustive or prescriptive, but rather to highlight those actions that threaten the persistence and recovery of the golden sun moth".

- The habitat identified within the Referral Area that is proposed for removal appeared at the time of survey to only be used by male moths for dispersal and thermoregulation. The proposed action is not likely to threaten the overall persistence of GSM but will reduce the area of available dispersal habitat. While this will be reduced, through the application of mitigation measures impacts on the species overall is unlikely to be significant based on the criteria set out within DoE (2013).

- Habitat Compensation Obligation mapping identifies that over 300 ha of mapped GSM habitat occurs to the east of the Referral Area (DELWP 2018).

Small or fragmented habitat area (<10 ha) (DEWHA 2009a)

N/A

Habitat connectivity (DEWHA 2009a)

- As per Section 2.4.1 and Canzano (2018), the proposed action does not create a barrier to dispersal as the proposed road widening is less than 200 m wide. Therefore, the habitat present remains connected to other areas of suitable habitat without any barriers.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Establishment of the Proponent:

The Proponent is a division of the Victorian Major Transport Infrastructure Authority, which is an administrative office in relation to the Victorian Department of Transport. The Proponent is responsible for the delivery of major road projects in Victoria, which were (until mid-2018) delivered by the Major Projects Division of VicRoads. The Victorian government has recently announced that VicRoads will soon be merged into the Department of Transport as well.

The Proponent, Major Road Projects Victoria, has been in existence only since **January 2019**. There were a number of Victorian machinery of government changes (under the *Public Administration Act 2004* (Vic)) during 2018 which were relevant to the Proponent's establishment and the transfer of certain VicRoads' functions to the Proponent.

Due to this very recent establishment of the Proponent and MTIA, only one project has been referred by MRPV (and its brief predecessor, the Major Road Projects Authority) to the Commonwealth under the EPBC Act. Yan Yean Road Stage 2, now a controlled action, was referred by MRPA in late December 2018. However, as the Proponent is responsible for existing projects which were previously being delivered by, and future projects which would (but for the machinery of government changes described above) have been delivered by, the Major Projects Division of VicRoads, the Proponent considers that VicRoads' environmental management record is relevant to this referral.

VicRoads has an established history of environmental management evidenced through its annual reporting. VicRoads has initiated and completed a significant number of both major and minor road projects across the State, all of which have the potential for environmental impact. In any one year, it is estimated that approximately 200 projects are completed, of which, on average, five projects per year are referred for approval under the EPBC Act.

VicRoads publicly reports its environmental performance in the Annual Report. In recent years, the environmental incident reporting system was upgraded to automatically track and escalate issues as appropriate. Since January 2010, there have only been 3 significant environmental incidents reported (significant is defined as Level 4 and Level 5 incidents) of which only one related to EPBC issues and resulted from contractor non-compliance with VicRoads specifications and requirements. Details are as follows:

- The incident occurred on 6.12.2010- VicRoads notified the Department of the Environment on

8.12.2010- The incident was investigated by VicRoads and corrective action was taken.

A search of EPA Victoria's prosecutions database as at 20 June 2019, [http://www.epa.vic.gov.au/our-work/compliance-and-enforcement/epa-sanctions/prosecutions] in relation to enforcement of the Environment Protection Act 1970 and the Pollution of Waters by Oil and Noxious Substances Act 1986, has indicated no prosecutions involving VicRoads.

VicRoads / MRPV have been involved in recent EPBC compliance audits as noted below.

EPBC 2010/5784 – Pakenham Bypass to South Gippsland Highway, Victoria

A compliance audit of the Pakenham Bypass to South Gippsland Highway site was conducted by the Department on 24 January 2019. The Department is undertaking an evaluation study and audit of compliance across road and rail projects in southern states and territories of Australia. The site visit on the 24 of January 2019 to the Pakenham Bypass to South Gippsland Highway site was a part of this evaluation study. Officers reviewed compliance with elements of Conditions 3, 4 and 8 of the EPBC Act approval.

Officers did not identify any non-compliance with these EPBC Act approval conditions.

EPBC 2014/7203 – Level Crossing Removal, Main Road, St Albans, Victoria

A compliance audit of the St Albans offset site was conducted by the Department on 21 January 2019. The purpose of the site visit was to discuss the conditions of the EPBC 2014/7203 approval and to view onsite works including the progress of works to date. Officers reviewed compliance with elements of Conditions 1 and 3 of the EPBC Act approval.

Officers did not identify any non-compliance with these EPBC Act approval conditions.

EPBC 2008/4486 – Geelong Ring Road – Section 4A, Victoria

A compliance audit of the Geelong Ring Road – Section 4A, Victoria, was conducted by the Department on 21 August 2012.

There are seven particular manner requirements set out in the decision notification. VicRoads demonstrated compliance with requirements 2, 5, 6 and 7 relating to best practice erosion, siltation and sediment controls being implemented; controls to manage a one in two Year Average Recurrence Interval event being implemented and maintained; construction activities that could potentially impact on the breeding of the Yarra Pygmy Perch and the Growling Grass Frog not being undertaken during September and October in associated habitat; and the construction area being fenced off to ensure that areas outside of the construction area are not impacted.

Non-compliance was found with elements of requirements 1, 3 and 4 relating to the implementation of the Project Environment Protection Strategy and water quality monitoring requirements for the project. The non-compliances have been addressed to the satisfaction of the Department in accordance with the Department's Compliance and Enforcement Policy.

EPBC 2010/5741 – Western Highway Project Section 2: Beaufort to Ararat, Victoria

VicRoads self-reported an alleged breach of conditions attached to EPBC 2010/5741 to the Department the day following the potential impact to an area of less than 0.1 ha of Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP).

Condition 5 of the approval required VicRoads to implement the Threatened Species Management Plan (**TSMP**) approved by the Department. The TSMP required no-go zones to be installed at the section of the site where unapproved works were undertaken. Vegetation located outside the no-go zone, that had been marked and agreed to be cleared by VicRoads and its contractor was fallen and stored in the no-go zone by a subcontractor.

An audit by the Department determined that although condition 5 of EPBC 2010/5741 had been contravened, no matters of national environmental significance were impacted in this instance.

No further action was taken by the Department at that time.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

Not applicable.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

The Proponent will utilise the established EMS and Environmental Management Framework (EMF) from VicRoads. VicRoads has a well-established environmental management system for managing the potential environmental impacts of major road projects. VicRoads approach to environmental management is modelled on AS/NZS ISO 14001- Environmental Management Systems.

The main elements of VicRoads environmental management system are:

- VicRoads Sustainability and Climate Change Policy (2014)

- VicRoads Sustainability and Climate Change Strategy (2015-2020)

- VicRoads Environmental Risk Management Guidelines (2012)

- Environmental procedures for management of projects including sensitive design, and where appropriate, specific guidance documents (e.g. integrated water management)- Contract

specifications with specific environmental clauses

- Surveillance audits of contractor activities based on a risk-based approach

- Independent environmental audits of contractor environmental management systems prior to commencement of major works

- Independent environmental audits throughout the life of major construction projects

- Training modules including e-learning modules for environmental aspects of project construction

- When managing projects, VicRoads exercises high standards of environmental diligence both in the contract preparation and administration.

Project Co will be required to prepare, implement and maintain a CEMP in accordance with AS/NZS ISO 14001 that will meet the requirements of the NRU Project Deed's Outline Scope Requirements (**OSR**) and the NRU Request For Proposal (**RFP**). The information in the Biodiversity Technical Assessment Report (Arcadis 2019a) and this referral will be incorporated into the mitigation and management actions that will need to be adopted by the Proponent and any contractors' works to avoid and minimise impacts on MNES.

During and after construction, the biodiversity impact mitigation process will also be managed through the CEMP. During construction works, Project Co and its contractors will be required to undertake monitoring and audits for construction activities, including works undertaken by any subcontractors employed on their behalf, to verify compliance with the contract Specification/s and their CEMP. In addition to this auditing and monitoring of their works, VicRoads also conducts its own surveillance and auditing to assess the contractor's compliance with the CEMP.

The Proponent has standard environmental protection measures as well as more specific measures relating to fauna. The CEMP will include the standard flora and fauna mitigation measures in VicRoads' Section 177 Environmental Management document (VicRoads 2016). Other standard measures will need to be followed during the relevant stages of the Mickleham Road Works. This includes protection measures outlined in the VicRoads Fauna Sensitive Road Design Guidelines (VicRoads 2012) which may be included, where appropriate, in the CEMP.

The Australian Standard for Protection of trees on development sites (AS4970-2009) (Standards Australia 2009) and the Australian Standard for Pruning of amenity trees (AS4373-2007) (Standards Australia 2007) will also need to be followed during construction.

Note that specific mitigation measures have been developed for this proposed action that go beyond the standard controls and procedures as described above. These have been developed to mitigate specific risks upon MNES, State significant species and communities and wildlife protected under the Wildlife Act and FFG Act. They include some of the standard controls provided in Section 177 (VicRoads 2016) with additional detail or additional measures targeted to the specific significant values within the Referral Area. Details regarding these specific mitigation measures form part of the Biodiversity Technical Assessment Report prepared by Arcadis (2019a) on behalf of the Proponent. An Offset Strategy is being prepared for the

proposed action by WSP Australia Pty Limited (**WSP**) on behalf of the Proponent to meet offset requirements under Victorian policy and legislation.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

Reference number

Title of referral

Valid Date

2018/8371

DEPARTMENT OF ECONOMIC DEVELOPMENT JOBS TRANSPORT AND RESOURCES/Transport - Land/Doreen and Yarrambat, Victoria/Victoria/Yan Yean Road Stage 2 Upgrade, Vic

15/02/2019

2017/8091

Department of Economic Development, Jobs, Transport, and Resources (Major Road Projects Authority)/Transport - Land/5km east of Mordialloc/Victoria/Mordialloc Bypass Project, Vic

30/10/2017

2017/8070

Department of Economic Development, Jobs, Transport, and Resources (VIC)/Transport - Land/Lot 1 and 2 of Title Plan 333725, Crown Allotment 33D and Crown Allotment’s 84L, 84M, 84N, 2001, 3 /Victoria/South Gippsland Highway Realignment, Koonwarra, Vic

19/10/2017

2017/8052

ROADS CORPORATION/Transport - Land/21A PARISH OF MARYVALE and 3C PARISH OF BOOLA BOOLA/Victoria/Latrobe River Bridge Replacement Project, Tyers Road, Vic

26/09/2017

2017/8018

ROADS CORPORATION/Transport - Land/Geelong-Bacchus Marsh Road, Balliang East, VIC, 3340/Victoria/Geelong-Bacchus Marsh Road Upgrade Project

22/08/2017

2017/8008

Department of Economic Development, Jobs, Transport, and Resources (Major Road Projects Authority)/Transport - Land/Hume Freeway and O'Herns Road, Epping, VIC, 3076/Victoria/O'Herns Road and Hume Freeway Interchange Project, Vic

22/08/2017

2016/7809

VICROADS/Transport - Land/chainage 10.90 and 15.00 Pyrenees Hway/Victoria/Road safety works, Pyrenees Hway, Green Gully, Vic

10/11/2016

2014/7252

Roads Corporation trading as VicRoads/Natural Resources Management/Mortlake Ararat Road, Lake Bolac/Victoria/Construction of the Mortlake Ararat Road firebreak, Lake Bolac, Vic

26/06/2014

2014/7203

ROADS CORPORATION/Transport - Land/Main Road,St Albans/Victoria/Main Road Level Crossing Removal, St Albans, Victoria

09/05/2014

2013/7077

Roads Corporation/Transport - land/Great Ocean Road, Wye River, Victoria/VIC/Proposed replacement of existing road culvert

03/12/2013

2013/6970

ROADS CORPORATION/Transport - Land/Dartmoor-Hamiton Road, Yulecart/Victoria/Muddy Creek Culvert Rehabilitation, Vic

19/08/2013

2013/6850

Roads Corporation VicRoads/Transport - Land/between Warren St in Echuca Vic & Perricoota Rd in Moama NSW/Victoria/Construction of a second Murray River crossing Echuca-Moama, Vic

30/04/2013

2013/6792

ROADS CORPORATION VICROADS/Transport - Land/Kilmore within the Shire of Mitchell/Victoria/Construction of the Kilmore - Wallan bypass road

18/03/2013

2012/6642

ROADS CORPORATION T/A VICROADS/Transport - Land/western fringe of Kaniva in far west Victoria/Victoria/Upgrade of Western Highway rail overpass at Kaniva, VIC

26/11/2012

2012/6640

VicRoads Western Region/Transport - Land/Between Nurcoung and Minimay in West Wimmera Shire/Victoria/Road Safety Improvement Works - Natimuk Frances Road

23/11/2012

2012/6568

ROADS CORPORATION/Transport - Land/From Winchelsea to Colac/Victoria/Princes Highway Duplication - Winchelsea to Colac, Vic

3/10/2012

2012/6417

VicRoads Geelong Ring Road Project/Transport - Land/Winchelsea/Victoria/Barwon River Bridge & Hesse Street Intersection, Winchelsea, VIC

05/06/2012

2012/6291

VicRoads /Transport - land/Grovedale, approximately 85km south west of Melbourne /VIC/Pioneer Road and bridge Duplication

24/02/2012

2012/6264

Roads Corporation t/a VicRoads/Transport - land/Between Mitta Mitta and Omeo /VIC/Upgrade and seal existing unsealed sections of the Omeo Highway

23/01/2012

2012/6238

VicRoads- Geelong/Transport - land/Foxhow Road approx 140km west of Melbourne/VIC/Foxhow Road Realignment

7/11/2011

2011/6180

VICROADS WESTERN REGION/Transport - Land/Between Stawell and Halls Gap/Victoria/Grampians Road Safety Improvement Project

2011/6054

Roads Corporation t/a VicRoads (Western Victoria)/Transport - land/Within Grampians National Park (GNP)/VIC/Flood Recovery Works

28/07/2011

2011/5805

VicRoads/Transport - Land/Between Willow drive and Livingstone Rise, Hampton Park VIC/Victoria/Hallam Road Duplication between Pound Rd & Ormond Rd

11/01/2011

2010/5784

VICROADS/Transport - Land/Healesville - Koo Wee Rup Road/Victoria/Pakenham Bypass to South Gippsland Highway

20/12/2010

2010/5744

VicRoads/Transport - Land/Between Ararat and Stawell/Victoria/Duplication of the Western Highway

24/11/2010

2010/5741

VicRoads/Transport - Land/Between Old Shirley Road Beaufort & Heath Street Ararat/Victoria/Western Highway Project: Beaufort to Ararat

19/11/2010

2010/5738

VicRoads/Department of Transport/Transport - land/Williams Landing/VIC/Palmers Road Rail Overpass and Bridge Works

18/11/2010

2010/5705

VicRoads/Transport - land/Between Burrumbeet and Beaufort/VIC/Upgrade of the Western Highway

25/10/2010

2010/5640

VICROADS/Transport - Land/Stammers Road, Traralgon East to Templetons Road, Fulham /Victoria/Princes Highway Duplication - Traralgon East to Fulham

10/09/2010

2010/5604

Roads Corporation trading as VicRoads/Transport - land/Henty HWY, approx 6.5km southwest of Hamilton /VIC/Construction of road deviation to side of existing carriageway and new bridge

04/08/2010

2010/5509

VicRoads /Transport - land/Between Princes Freeway, Laverton North & Greensborough /VIC/M80 Ring Road Upgrade, Part 2

25/05/2010

2010/5375

VicRoads/Transport - land/Nhill /VIC/Proposed Heavy Vechicle Trailer Exchange

26/02/2010

2010/5369

VicRoads/Transport - Land/Taylors Lakes/Victoria/Calder Freeway/Kings Road Interchange & Kings Road Duplication Project

23/02/2010

2010/5332

VicRoads/Transport - land/Fulham to Sale/VIC/East Princess Highway Duplication

25/01/2010

2010/5328

VicRoads/Natural Resources Management/Norbank Road to Morris Road, Lake Bolac/Victoria/Ararat-Mortlake Road Grassland Restoration Project

21/01/2010

2010/5314

VicRoads/Transport - land/Western Highway Chainages 119515 to 127662/VIC/Western Highway Duplication - Ballarat to Burrumbeet

14/01/2010

2009/5239

VicRoads/Transport - Land/Draytons Road, Waurn Ponds to Lennox Street, Winchelsea/Victoria/Princes Highway West Duplication

9/12/2009

2009/5106

VicRoads/Transport - Land/Dalmore/Victoria/Replacement of Four Bridges on Manks Road

30/09/2009

2009/5085

VicRoads/Transport - land/Laverton North to Greensborough/VIC/M80 Ring Road Upgrade

10/09/2009

2009/4867

VicRoads/Transport - land/Dunnings Road in Point Cook to Calder Freeway in Keilor/VIC/Palmers Road Corridor Duplication

24/04/2009

2009/4856

VICROADS/Transport - Land/Between Bulmans Rd, Melton & Bacchus Marsh Rd, Bacchus

Marsh/Victoria/Upgrade and realignment of a 5km long section of the Western Highway

16/04/2009

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Agriculture Victoria (2019). Victorian Resources Online – Victorian Volcanic Plain. Accessed online via: http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/veg_managemt_volcanic_plain. Agriculture Victoria.	Publicly available website from a reputable source	No uncertainties
Arcadis (2017). Golden Sun Moth Survey Results 2016/2017 Flying Season. Memo prepared by Arcadis Australia Pty Ltd for VicRoads.	Non-publicly available report from reputable sources	No uncertainties
Arcadis (2018). Craigieburn Road West Upgrade (Mickleham Road to Hume Highway) – Preliminary Groundwater Impact Assessment. Report prepared by Arcadis Australia Pty Ltd for MRPV.	Non-publicly available report from reputable sources	No uncertainties
Arcadis (2019a) Craigieburn Road West Upgrade (Mickleham Road to Hume Highway) - Biodiversity Technical Assessment Report. Report prepared by Arcadis Australia Pty Ltd for MRPV.	Non-publicly available report from reputable sources	No uncertainties
Arcadis (2019b). Craigieburn Road West Upgrade (Mickleham Road to Hume Highway) – Phase 1 – Preliminary Surface Water Assessment	Non-publicly available report from reputable sources	No uncertainties
Canzano A (2018). SRU Project Golden Sun Moth Habitat Assessment. Prepared by	Non-publicly available report from reputable sources	No uncertainties

Reference Source	Reliability	Uncertainties
Practical Ecology Pty Ltd for Arcadis Australia Pty Ltd.		
Canzano A (2019). Golden Sun Moth Targeted Survey. Prepared by Practical Ecology Pty Ltd for Arcadis Australia Pty Ltd.	Non-publicly available report from reputable sources	No uncertainties
DELWP (2017a). Guidelines for the removal, destruction or lopping of native vegetation. Department of Environment, Land, Water and Planning, East Melbourne, Victoria.	Document commissioned by government department, publicly available on government website	No uncertainties
DELWP (2017b). Assessor's Handbook – Applications to remove, destroy or lop native vegetation. Department of Environment, Land, Water and Planning, East Melbourne, Victoria.	Document commissioned by government department, publicly available on government website	No uncertainties
DELWP (2019a). Planning Maps Online. Accessed online via: http://services.land.vic.gov.au/maps/pmo.jsp Department of Environment, Land, Water and Planning, Melbourne, Victoria.	Publicly available website from a reputable source	No uncertainties
DELWP (2019b). Melbourne Strategic Assessment. Accessed online via: https://www.msa.vic.gov.au/home Department of Environment, Land, Water and Planning, Melbourne, Victoria.	Publicly available website from a reputable source	No uncertainties
DELWP (2019c). Hume Planning Scheme 52.17. Accessed online via: http://planningschemes.dpcd.vic.gov.au/schemes/vpps/52_17.pdf Department of Environment, Land, Water and Planning, Melbourne, Victoria.	Document commissioned by government department, publicly available on government website	No uncertainties
DELWP (2019d). Victoria's flying fox colonies. Accessed online via: https://www.wildlife.vic.gov.au/our-wildlife/flying-foxes/victorias-flying-fox-colonies Department of Environment,	Publicly available website from a reputable source	No uncertainties

Reference Source	Reliability	Uncertainties
Land, Water and Planning, Melbourne, Victoria.		
DEPI (2013). Biodiversity Conservation Strategy for Melbourne's Growth Corridors. Department of Environment and Primary Industries, VIC.	Document commissioned by government department, publicly available on government website	No uncertainties
DEPI (2014). Advisory list of rare or threatened plants in Victoria. Department of Environment and Primary Industries, VIC	Document commissioned by government department, publicly available on government website	No uncertainties
DEWHA (2009a). Significant impact guidelines for the critically endangered golden sun moth (Synemon plana). Department of Environment, Water, Heritage and Arts, Canberra, ACT.	Document commissioned by government department, publicly available on government website	No uncertainties
DEWHA (2009b). Background Paper to EPBC Act Policy Statement 3.12 – Nationally Threatened Species and Ecological Communities: Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (Synemon plana). Department of Environment, Water, Heritage and Arts, Canberra, ACT.	Document commissioned by government department, publicly available on government website	No uncertainties
DSE (2006). Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978. Department of Sustainability and Environment, Melbourne, Victoria.	Document commissioned by government department, publicly available on government website	No uncertainties
DoE (2013). Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. Department of Environment, Canberra.	Document commissioned by government department, publicly available on government website	No uncertainties
DoEE (2011). Advice to the Minister for Sustainability, Environment, Water, Population and Communities from the	Document commissioned by government department, publicly available on government website	No uncertainties

Reference Source	Reliability	Uncertainties
Threatened Species Scientific Committee (the Committee) on an Amendment to the List of Threatened Ecological Communities under the Environment Protection and Biodiversity act 1999 (EPBC Act). Department of Environment and Energy, Canberra.		
DoEE (2019a) SPRAT Profile Synemon plana – Golden Sun Moth. Accessed online via: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25234. Department of the Environment and Energy.	Publicly available website from a reputable source	No uncertainties
DoEE (2019b). SPRAT Profile Lathamus discolor – Swift Parrot. Accessed online via: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=744. Department of the Environment and Energy.	Publicly available website from a reputable source	No uncertainties
DoEE (2019c). SPRAT Profile Pteropus poliocephalus – Grey-headed Flying-fox. Accessed online via: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=186. Department of the Environment and Energy.	Publicly available website from a reputable source	No uncertainties
Biosis (2019). Craigieburn Road West Upgrade (Mickleham Road to Hume Highway) – Cultural Heritage Management Plan. Prepared by Biosis Pty Ltd for Arcadis Australia Pty Ltd.	Non-publicly available report from reputable sources	No uncertainties
Foreman, RTT, Sperling, D, Bissonette, JA, Clevenger, AP, Cutshall, CD, Dale, VH, Fahrig, L, France, R, Goldman, CR, Heanue, K, Jones, JA, Swanson, FJ, Turrentine, T & Winter, TC (2003). Road ecology - science and solutions. Island Press.	Published academic journal article from a reputable source	No uncertainties

Reference Source	Reliability	Uncertainties
Hamer A (2018). Growling Grass Frog Litoria raniformis Targeted Surveys: Somerton Road and Mickleham Road. Practical Ecology Pty Ltd. Preston, Victoria.	Non-publicly available report from reputable sources	No uncertainties
Montague Construction (2015). Craigieburn Employment Precinct EPBC Referral. EPBC Referral prepared by Biosis Pty Ltd for Montague Construction (Australia) Pty Ltd.	Publicly available report from a reputable source	No uncertainties
Queensland Department of Transport and Main Roads (2010a). Fauna Sensitive Road Design. Volume 1 – Preferred Practices. Queensland Department of Transport and Mains Roads, Brisbane, QLD.	Document commissioned by government department, publicly available on government website	No uncertainties
Queensland Department of Transport and Main Roads (2010b). Fauna Sensitive Road Design. Volume 2 – Preferred Practices. Queensland Department of Transport and Mains Roads, Brisbane, QLD.	Document commissioned by government department, publicly available on government website	No uncertainties
Saunders & Tzaros (2011). National Recovery Plan for the Swift Parrot Lathamus discolor. Birds Australia, Melbourne, Victoria.	Document commissioned by government department, publicly available on government website	No uncertainties
VicRoads (2012). VicRoads Fauna Sensitive Road Design Guidelines. VicRoads.	Document commissioned by government department, publicly available on government website	No uncertainties
van der Ree, R, Smith, DJ & Grilo, C (2015). Handbook of Road Ecology, Ecology of roads. Hoboken: Wiley, Hoboken.	Published book from a reputable source	No uncertainties
YVW (2018). Submission #3520 - Mickleham and Craigieburn Rd DW and NDW. EPBC Referral prepared by Yarra Valley Water Corporation for Department of Environment and Energy.	Publicly available report from a reputable source	No uncertainties
O'Malley (2018). Yarrambat	Non-publicly available report	No uncertainties

Reference Source	Reliability	Uncertainties
Swift Parrot Cumulative Impact Advice. Internal memo prepared for the Major Roads Project Authority by Eco Logical Australia Pty Ltd.	from reputable sources	
VBA (2019). Victorian Biodiversity Atlas. Accessed online via: https://vba.dse.vic.gov.au/. Department of Environment, Land, Water and Planning	Publicly available website from a reputable source	No uncertainties

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

The proposed Craigieburn Project (including the proposed action) is in response to population and urban growth outpacing road infrastructure capacity investment in many outer suburban areas of metropolitan Melbourne. Craigieburn Road West was identified as a high priority arterial road for future vital road upgrades, ensuring residents and motorists benefit from new high-quality roads while the existing network is maintained to a high standard for years to come.

A ‘do nothing’ option was not considered feasible for the Craigieburn Project as this is in response to required infrastructure for projected population and urban growth. Traffic projection for future volumes based on a 2031 growth modelling indicated significant growth along Craigieburn Road and the eastern boundary of Mickleham Road. This growth modelling assessment was applied to all of Victoria’s major arterial roads and specifically identified and prioritised Craigieburn Road for potential upgrades over other surrounding roads.

The basis for the current design extent has been developed in accordance with Relevant Standards, Guidelines and Publications where possible, and is listed below:

- Austroads Guide to Road Design

- VicRoads Supplements to Austroads Guide- Austroads Guide to Traffic Management

- VicRoads Guidance for Planning Road Networks in Growth Areas (working document November 2015)

- VicRoads Standard Drawings for Roadworks

- VicRoads Final Drawing Presentation Guidelines- VicRoads Cycle Notes

- VicRoads Bus Stop Guidelines

- VicRoads Traffic Engineering Manual, Volumes 1, 2 and 3

- Federal Government Disability Standards for Accessible Public Transport- Austroads Design Vehicles and Turning Path Templates, and

- Safe System Assessment Guidelines.

The design also followed the Safety In Design (**SID**) process in accordance with the procedures described in AS/NZS ISO 31000, which is based on and supersedes the Risk Management Standard AS/NZS 4360. While the current design is based on standards, guidelines and

publications, there are a number of design non-conformance efforts made to limit the road footprint and associated works area to a minimum, without compromising road geometry, sight lines and road safety. Design non-conformances have resulted in a Referral Area that is tightly drawn around the existing road footprint and associated works area, thereby reducing impacts. The alternative is to strictly adhere to the mentioned standards, guidelines, and publications, which would lead to an increase in the proposed action's footprint and therefore impacts.

As the proposed action is an upgrade for an existing alignment (i.e. part of the Craigieburn Project), an 'options assessment' exploring an alternative alignment shape was not undertaken. A number of constraints also determined the horizontal alignment of the proposed action, these include:

- The agreed Right of Way (**ROW**), which resulted in the proposed action generally following the existing horizontal and vertical alignment

- The design has sought to remove and reduce the extent of land acquisition wherever possible

- Minimise impact to existing commercial and residential properties and structures, and retention of existing service road- Existing Property Acquisition Overlay (**PAO**) constraints.

Due to the nature of this proposed action, there are no feasible alternatives to the existing proposed design.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Program Director

9.2.2 First Name

Peter

9.2.3 Last Name

Jones

9.2.4 E-mail

peter.x.jones@roadprojects.vic.gov.au

9.2.5 Postal Address

168 Exhibition Street
Melbourne VIC 3000
Australia

9.2.6 ABN/ACN

ABN

69981208782 - DEPARTMENT OF TRANSPORT

9.2.7 Organisation Telephone

1800 105 105

9.2.8 Organisation E-mail

contact@roadprojects.vic.gov.au

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

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 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

Person proposing the action - Declaration

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

Signature:..... Date: 24/6/19

I, PETER JONES, the person proposing the action, consent to the designation of DIPAL SORATHIA as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 24/6/19

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Project Director

9.5.2 First Name

Dipal

9.5.3 Last Name

Sorathia

9.5.4 E-mail

dipal.sorathia@roadprojects.vic.gov.au

9.5.5 Postal Address

168 Exhibition Street
Melbourne VIC 3000
Australia

9.5.6 ABN/ACN

ABN

69981208782 - DEPARTMENT OF TRANSPORT

9.5.7 Organisation Telephone

1800 105 105

9.5.8 Organisation E-mail

contact@roadprojects.vic.gov.au

Proposed designated proponent - Declaration

I, DIPAL SORATHIA, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date: 24/6/19

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Director Land, Planning and Environment

9.8.2 First Name

Philippa

9.8.3 Last Name

Forge

9.8.4 E-mail

philippa.forge@roadprojects.vic.gov.au

9.8.5 Postal Address

168 Exhibition Street
Melbourne VIC 3000
Australia

9.8.6 ABN/ACN

ABN

69981208782 - DEPARTMENT OF TRANSPORT

9.8.7 Organisation Telephone

1800 105 105

9.8.8 Organisation E-mail

contact@roadprojects.vic.gov.au

Referring Party - Declaration

I, PHILIPPA FORGE, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:..... Date: 24/6/19

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. Attachment 1_part1.pdf
2. Attachment 1_part1_S2.pdf
3. Attachment 1_part1_S3.pdf
4. Attachment 1_part2.pdf
5. Attachment 1_part2_S2.pdf
6. Attachment 1_part2_S3.pdf
7. Attachment 1_part3.pdf
8. Attachment 1_part3_S2.pdf
9. Attachment 1_part3_S3.pdf
10. Attachment 1_part4.pdf
11. Attachment 1_part4_S2.pdf
12. Attachment 1_part4_S3.pdf
13. Attachment 1_part5.pdf
14. Attachment 1_part5_S2.pdf
15. Attachment 1_part5_S3.pdf
16. Attachment 3.pdf
17. Attachment 4.pdf
18. Attachment 5.pdf
19. Attachment 6.pdf
20. Attachment 7.pdf
21. EPBC_CraigieSplit.zip
22. SRU_BDY_P17_ARC_CraigieburnRdW_EPBCSplit.zip
23. SRU_BDY_P17_ARC_SCO_CraigieburnRdW_Current.zip
24. SRU_DGN_P17_ARC_CraigieburnRdWCurrent.zip
25. SRU_ENV_P17_ARC_AreaOfSensitivity.zip
26. SRU_ENV_P17_ARC_GSM_Habitat.zip