Huntingfield EPBC Referral – Preliminary Documentation Report

Department of Communities Tasmania (CT)

16 June 2022

→ The Power of Commitment

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Printed date	16/06/2022 3:05:00 PM
Last saved date	16 June 2022
File name	C:\Users\lmccall\Desktop\GHD\Huntingfield EPBC referral\Resubmission to DAWE (ADR and Public comments table)\ADR\3218956-REP-REV-1_Huntingfield Master Plan, EPBC Act Referral additional documentation report.docx
Author	Mickey Dwyer, Lauren McCall
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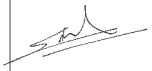
Client name	Department of Communities Tasmania (CT)
Project name	Huntingfield Master Plan and Civil Design
Document title	Huntingfield EPBC Referral – Preliminary Documentation Report |
Revision version	Rev 2
Project number	3218956

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	Mickey Dwyer & Lauren McCall	Dean Heinze	On file	Emil Mohan	On file	18/8/21
S4	0	Mickey Dwyer & Lauren McCall	Emil Mohan	On file	Alex Brownlie	On file	25/8/21
S4	1	Mickey Dwyer & Lauren McCall	Emil Mohan	On file	Alex Brownlie	On file	13/12/21
S4	2	Mickey Dwyer & Lauren McCall	Odin Kelly Steph Magaling		Emil Mohan		16/06/22

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1. Introduction

This document is GHD's (on behalf of Communities Tasmania) additional documentation required report for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) assessment (referral ref. 2020/8869) for impacts to Matters of National Environmental Significance based on an assessment of preliminary documentation for the Department of Communities Huntingfield Residential Development Stages 2 and 3 (the Proposed Action).

This Preliminary documentation report addresses all Matters of National Environmental Significance (MNES), with a strong focus on the most relevant matter: Forty-spotted pardalotes (*Pardalotus quadragintus*) and the potential impacts of the proposed activity to these MNES. The assessment provides avoidance and minimisation measures to mitigate the potential impacts identified. The assessment also considers potential impacts to Swift parrots (*Lathamus discolor*) however it was determined that a significant impact to the species was not likely.

The EPBC listed Threatened Ecological Community (TEC) *Tasmanian white gum (Eucalyptus viminalis) wet forest* was not listed for protection at the time of the referral and has only been considered in its capacity to provide habitat for Forty-spotted pardalotes and Swift parrots.

1.1 Purpose of this report

This additional documentation required report intends to provide a general description of the environment and threatened species (MNES) affected by and surrounding the proposed action area, in both the short and long term of the development.

The report will include an assessment of potential impacts (including indirect and facilitated impacts and those on adjacent areas) that may occur as a result of the proposed action on any MNES. Information on potential impacts, the nature and extent of the impact and the sensitivity of the protected matter in the absence of control measures will be discussed as part of the assessment. Measures proposed to avoid impacts to MNES will consider and describe potential residual effects/impacts on MNES likely to occur as a result of the proposed action.

1.2 Scope and limitations

This report has been prepared by GHD for Department of Communities Tasmania (CT) and may only be used and relied on by Department of Communities Tasmania (CT) for the purpose agreed between GHD and Department of Communities Tasmania (CT) as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Department of Communities Tasmania (CT) arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Description of proposed action

The proposed action (EPBC Ref: 2020/8869) comprises the construction of Stage 2 and 3 of a residential development including associated infrastructure in Huntingfield, Tasmania, known as the Huntingfield Master Plan. The proposed action was deemed a controlled action on 19 April 2021 and will require assessment and approval under Section 75 and Section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) before it can proceed. The assessment type allocated to the proposed action by Department of Agriculture, Water and Environment (DAWE) on 17 May 2021 is assessment by Preliminary Documentation – Further information required for assessment.

The proposed action, Stages 2 and 3 of the Huntingfield Master Plan, would provide a mix of housing options, including dwellings on smaller lots. This inclusion of smaller lot housing is important for increasing the density of greenfield development for more sustainable urban growth while maintaining high levels of amenity.

The key elements of Stages 2 and 3 are outlined below.

Residential development

Consistent with the objectives outlined above, Stages 2 and 3 aim to provide a mix of lot sizes for future residential development. Based on the Huntingfield Master Plan layout, it is anticipated that both stages would provide around 250 lots in total, with a mix of low density lots (>500 m^2), standard density lots (350-499 m^2), medium density lots (275-349 m^2) and townhouse lots (no greater than 199 m^2).

Roads

Stages 2 and 3 include construction of roads. Under the Huntingfield Master Plan, these are separated into three types: collector road, local road and access laneway. Collector roads would be up to 24 m wide, with local roads up to 18 m wide, and access laneway up to 8 m wide. The Huntingfield Master Plan also includes an extensive network of paths for walking and cycling.

Open space

Open space will be included in Stages 2 and 3. As part of the Master Plan, Open Space zoning has been applied to 34 hectares of the 67 hectare site, while additional, indicating a greater extent of open space than provided under traditional subdivisions. The concepts of subdivision design have change, a key emphasis is now on building liveable communities that make more efficient use of land, through diversity of lot design, and in turn provide more useable connected public open space. The open space areas within the site will be designed with core landscape design principles to deliver a range of functional, safe and maintainable open spaces.

Service infrastructure

Stormwater

Stages 2 and 3 would include installation of underground stormwater infrastructure, along with construction of stormwater detention basins. This drainage infrastructure would be used to convey and capture sediment affected stormwater during the construction phase.

Water and sewer

Water and sewer infrastructure would include a looped water network to improve flows and water quality by providing a potable water supply to future houses, and gravity sewers and pump station to connect to TasWater's existing gravity sewer in Huntingfield Avenue.

Electrical and communications

Electrical infrastructure would include high voltage (HV) connections and an internal distribution network, along with ground-mounted kiosk substations. Where practicable, all electrical cabling would be installed underground. Communications infrastructure would include installation of an optic fibre network distribution across the Huntingfield Site. Where practicable, all communications cabling would be installed underground.

Construction and maintenance

Given the number of lots proposed for development, construction would be staged. However, all works would be managed under a Construction Environmental Management Plan. This Plan would include the below measures:

– Temporary construction works would avoid impacting native vegetation and be sited at an appropriate distance from watercourses and drainage lines.
– Sediment and erosion control measures.
– Site rehabilitation works to be undertaken after construction, including weed management.

2.1 Project timing and duration

The Huntingfield Master Plan is defined by four distinct areas including the proposed roundabout and stages 1, 2 and 3. The original EPBC referral (2020/8869) listed the project commencement date for stages 2 and 3 as 1 October 2021 and estimated completion date as 1 January 2025. Given the original estimated commencement date has since lapsed, the current commencement of construction will be dependent on the assessment process under the EPBC Act, and any proposed commencement date may be subject to change. Using the original estimated dates, the project duration is expected to be approximately 3 years, not including any delays due to unforeseen circumstances e.g. supply of materials.

While stages 2 and 3 would utilise infrastructure developed under stage 1, stage 1 and the roundabout are not dependent on stages 2 and 3 proceeding. The proposed roundabout and associated works received an amended planning permit from the Kingborough Council on 26 August 2021, and Stage 1 of the Huntingfield Master Plan was approved by Kingborough Council on 1 November 2021 (no appeals were lodged). Works on the roundabout will start 2022 and it is anticipated works on Stage 1 will commence later in 2022. It is also anticipated planning approval for stages 2 and 3 will receive planning approval either late 2022, or possibly 2023. Commencement of works on stages 2 and 3 could be expected to occur as early as the first half of 2023. Actual commencement of the project works will rely on revenue from the sale of stage 1 and may be delayed subject to market conditions. The duration of the project works is anticipated to be around 6 months, subject to weather and latent conditions.

2.2 Extent and location of proposed action

The Huntingfield Site is located at 1287 Channel Highway, Huntingfield in the Kingborough Local Government Area (LGA) in southern Tasmania. The proposed action is located within the Greater Hobart Area, 13 km south of Hobart, and 3.5 km south of Kingston. The entire Huntingfield Site covers 67.7 ha and consists of four titles. The total development footprint covered by the Huntingfield Master Plan is 45 ha, including the roundabout and Stages 1, 2 and 3. All of the areas within this development footprint are areas of agricultural land (or regenerating agricultural land).

The development footprint for the proposed action is 19.6 ha (comprising Stages 2 and 3 of the Huntingfield Master Plan). Other areas proposed for development under the Huntingfield Master Plan (Roundabout and Stage 1) cover an area of 25.4 ha, but these areas do not form part of this proposed action. Stage 2 and 3 are situated in the south-western and eastern parts of the Huntingfield Site.

The avoidance footprint for the Huntingfield Master Plan is 22.7 ha, which includes all native vegetation (14.7 ha) within the Huntingfield Site.

2.3 Context and State and Local Government requirements

In Tasmania, the key legislation setting out the planning process, including the roles and functions of the Minister for Planning and Local Government, the Tasmanian Planning Commission and Councils, is the *Land Use Planning and Approvals Act 1993* (LUPA Act).

The Stages 2 and 3 of the Huntingfield Master Plan will be subject to assessment under the LUPA Act, by instrument of a development application submission for assessment to the Kingborough Council. Under the LUPA Act, Local Government planning schemes regulate the way that land can be used or developed. It sets out the

overall approach to planning in each Local Government Areas and the specific requirements or standards for the use, development, and protection of land.

The proposed action would be subject to planning approval by the Kingborough Council under the LUPA Act, under the Kingborough Interim Planning Scheme 2015 (planning scheme).

The applicable planning scheme sets out the standards that must be met to gain planning approval for the proposed action. The planning scheme has two parts:

– text that sets out the requirements or standards for use and development, and
– maps that show zones and overlays indicating where different requirements or standards apply.

Some parts of each Local Government's planning scheme are common to all planning schemes as required by a Planning Directive issued by the Minister for Planning and Local Government. Other parts of the planning scheme have been developed either regionally, with other councils or locally, by the Local Government responsible for the planning scheme. In this context Stages 2 and 3 are zoned either Inner Residential or General Residential, with the balance bushland area zoned Open Space.

There may be other environmental and heritage legislation that apply to the project, such as the *Historic Cultural Heritage Act 1993, Aboriginal Heritage Act 1975* and/or the *Threatened Species Protection Act 1995.*

In recent years, the Huntingfield Site has been identified for future urban development in local and regional strategies, including:

– the Southern Tasmania Regional Land Use Strategy 2010-2035
– the Kingborough Land Use Strategy 2019
– Tasmania's Affordable Housing Strategy 2015-2025 and the Affordable Housing Action Plan 2015-2019

In 2020, the Huntingfield Site was rezoned under *Housing Land Supply Act 2018*. The Act allows for the rezoning of certain government land to support the Tasmanian Government's commitment to increase the supply of affordable housing. This enables future development of the Huntingfield site to address future demand for housing in Greater Hobart and increase availability of affordable land within the State.

Communities Tasmania has developed the Huntingfield Master Plan for the Huntingfield Site. The Huntingfield Master Plan is proposed to be developed in three stages. The referral of the proposed action includes Stages 2 and 3 only.

The Huntingfield Master Plan provides an overarching development plan for the Huntingfield Site, including a subdivision that uses the site's terrain to plan an appropriate mix of lot sizes, accessed by contour-following streets and linking laneways. These streets feed into a central, axial boulevard that terminates at a wetland. Linear parks flank the boulevard and connect housing to outdoor recreation areas. The Huntingfield Master Plan provides for landscaped areas, including street trees, along with generous footpath widths and cycle paths, to provide amenity for residents.

KEY FEATURES OF THE DEVELOPMENT

1. Maintain high quality long views from the site to both North West Bay and Mt Wellington, through establishing a linear open space along the view axis. This also provides powerful sense of arrival to the site from Channel HWY.
2. All open space to have overlooking lots fronting it to maximise passive surveillance.
3. Shared use paths to loop around and bisect the site to help promote exercise and healthy living. Minimal road crossings required for entire network to allow safe use.
4. Lateral roads running east-west follow the contours of the site to allow easier travel for residents wishing to connect to the open space network and the shared use path.
5. Utilise the natural assets of the site and those adjacent to the site, such as the Peter Murrell Reserve for active recreation and the internal stand of native vegetation for play, nature walks and informal recreation.
6. The development plan spans 10-20 years. Demand for infrastructure and services as a result of development will occur in response to market forces / demand generated. The Master Plan should be read in conjunction with the Staging Plan.
7. Aboriginal heritage and environmental assessments guided development patterns.

LOT SCHEDULE

- Low Density Lots: greater than 500sq.m
- Standard Density Lots: 13-18m x 27.5m (350 -499sq.m)
- Medium Density Lots: 10-12m x 27.5m (275 - 349sq.m)
- Townhouse Lots: 4.8-6m x 27.5m (an area no greater than 199sq.m)
- Commercial - potential for a corner store with off street parking & outdoor eating facilities

TOTAL LOT TARGET : 468 (inc. commercial area)

Lot schedule subject to change through detailed design

HUNTINGFIELD PROPOSED DEVELOPMENT

Layout Concept scale 1:2500 @ A1 REV. N JUNE 2022

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3. Review of Matters of National Environmental Significance

3.1 MNES

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance (MNES) require approval from the Australian Government Minister for the Environment (the Minister). The Minister will decide whether assessment and approval is required under the EPBC Act.

There are 9 MNES protected under the EPBC Act. GHD conducted a search using the Protected Matters Search tool (PMST 2021) with a buffer of five (5) km, to determine relevant MNES, details regarding the full report are included in Appendix A. Two MNES are known from or have potential to occur within the Project Area (Stage 2 & 3 of the Huntingfield Master Plan):

1. *World heritage properties* – none relevant to this proposed action
2. *Wetlands of international importance (listed under the Ramsar Convention)* – none relevant to this proposed action
3. ***Nationally listed threatened species and ecological communities* – 54 threatened species and two (2) ecological communities have the potential to occur within the Project Area**
4. ***Migratory species protected under international agreements* – 33 species have the potential to occur within the Project Area**
5. *Activities related to nuclear energy, including uranium mining* – none relevant to this proposed action
6. *Commonwealth marine areas* – none relevant to this proposed action
7. *National heritage places* – not relevant to this proposed action
8. *The Great Barrier Reef Marine Park*– none relevant to this proposed action
9. *A water resource, in relation to coal seam gas development and large coal mining development* – none relevant to this proposed action

A review of the two relevant MNES and other matters protected by the EPBC Act identified by the PMST search was undertaken to determine if further assessment was required.

Not all of the flora and fauna species listed by the PMST and NVA search are equally likely to occur in the Project Area for a variety of reasons including:

– Species listed only as marine species in the PMST search are excluded from this assessment as the proposed activity does not occur over Commonwealth marine areas. Species listed as marine, and threatened or migratory under the EPBC Act will be considered for further assessment.
– Listed threatened marine mammals, marine reptiles and marine fish are excluded as the proposed activity does not occur over marine areas and is therefore unlikely to impact the habitat types used most frequently by these species (e.g. marine environments, beaches and off shore islands).

3.2 Likelihood of occurrence for threatened species identified by the PMST

GHD completed a review of the listed threatened species and migratory species presented in the PMST results, using previous reports and online databases including:

– Bryant, S.L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 - 2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania
– Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania

- Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania
- Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart
- The NVA database – which is the most authoritative repository of information on natural values in Tasmania. A NVA Report will identify threatened fauna and flora records within 500 m and 5000 m from the edge of the survey area. The report will also provide lists of TASVEG vegetation communities, geoconservation sites listed on the Tasmanian Geoconservation Database for any site or area within the State
- The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* PMST – which provides a PMST Report that identifies any matters listed under the EPBC Act within a 5000 m buffer around the survey area
- The Land Information System Tasmania (LIST) database – a web-based repository of the State's comprehensive spatial data resources including property and land title information, satellite imagery, topographic maps, geological maps and natural values data
- The Tasmanian Threatened Species Link – contains management and conservation advice on Tasmania's threatened species, including species-specific information on survey periods, habitat, activities most likely to cause an impact, and links to DPIPWE notesheets and species recovery plans
- SKM. (2009) – Flora and Fauna Assessment – Huntingfield Site. Desktop Assessment and Field Survey. May 2009
    - A botanical and habitat assessment of the site was conducted on foot that included the coverage of perceivable habitats across the site
    - The site was traversed to identify the vegetation communities, habitat features, and species present on the 6th – 7th May, 2009. Native and introduced species were recorded, including exotic weed species
    - The assessment of the site flora was restricted to vascular plants. The fauna assessment was restricted to a basic habitat assessment and consisted of opportunistic observations only. Birds observed during the site visit were recorded and animal scats, scratching and suitable habitats observed. No trapping was undertaken as part of this survey
- GHD. (2019). – Huntingfield Master Plan Civil Design - Botanical and Fauna Habitat – Updated Assessment. Desktop Assessment and Field Survey. June 2019
    - Field survey conducted on 2 October 2018 by a GHD Ecologist. Survey area was traversed on foot. All plant species (including weeds), vegetation communities, and fauna habitat values observed were recorded, including any fauna species present at the time of the survey
    - Plant species were collected for identification in accordance with the Department of Primary Industries, Parks, Water and Environment's Plant Collection Permit Number 17108)
- GHD. (2020a). – Huntingfield Master Plan Civil Design – Natural Values Assessment (Proposed Roundabout). Desktop Assessment and Field Survey. December 2020
    - Field survey conducted on 14 October 2020. Survey was targeted to both the southern-eastern and north-western sides of Channel Highway as part of the roundabout survey area. All plant species (including weeds), vegetation communities, and fauna habitat values observed were recorded, including any fauna species present at the time of the survey
    - Remnant mature Eucalypts were assessed for fauna habitat potential (e.g. hollows, nests) as well as dimensions based on Diameter at Breast Height (DBH) in order to calculate Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) based on the Australian Standard AS4970-2009
- North Barker Ecosystem Services (NBES). (2020). Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. Desktop Assessment and Field Survey. September 2020
    - Part of this assessment included a ground survey (half day in August 2020) by an NBES Ecologist to verify the values on the Huntingfield site. The findings of this survey were used in conjunction with the results of previous surveys and previous records on the Natural Values Atlas to inform assessments of species against the significant impact criteria
- GHD. (2020b). – Huntingfield Master Plan Civil Design - Natural Values Assessment Stage 1. Desktop Assessment. December 2020

- Comprised of a desktop assessment and collated the results from the above two GHD field surveys and the NBES significant impact assessment (including field visit)

Given the number, extent and quality of the previous surveys, including three field surveys from 2018 to August 2020, one historic field survey (2009) and the desktop assessment work conducted in support, it is considered that the Huntingfield site has been adequately surveyed to identify and quantify the values present. All survey work was conducted by suitably qualified and experienced specialists using appropriate methods and reporting tools. The SKM (2009) survey was considered as indicative only given the time since it was conducted.

The likelihood of occurrence within the Project Area was evaluated for each species using the information from the literature review and online databases to inform the following rationale:

PRESENT – Species known to occur within or in close proximity to the treatment sites based on findings from the literature review and database search.

POSSIBLE – Potentially suitable habitat occurs within a treatment site(s) and species' known range encompasses the Project Area. Species recorded historically within 1 km of the Project Area, and generally within the last 10 years.

UNLIKELY – Species' known range encompasses the Project Area, but suitable habitat does not occur within treatment sites, or occurs within Project Area but may be marginal (e.g. very small extent) and of low quality. Species recorded historically within 1 km of the Project Area, but generally not within the last 10 years.

HIGHLY UNLIKELY – No historical records of the species within 1 km of the Project Area and/or no suitable habitat within Project Area.

Given the terrestrial location of the proposed action, for the purposes of this assessment those species known to be 'Marine' or 'Wader/Shorebirds' were not considered.

The species identified during the desktop assessment and previous survey work, their known habitat and likelihood of occurrence is listed in the table below. Based on the information provided in below in Table 1, of the 14 species listed below, three indicated suitable habitat likely to be present within the Huntingfield site were considered as possible to occur or known to be present. The remaining eleven species were considered unlikely to be present within the survey area due to their suitable habitat and the mapped vegetation and landforms at the site.

Although *Perameles gunnii gunnii* (Eastern barred bandicoot) was determined is likely to be present given recent records within the overall Huntingfield site, the species was not considered relevant for assessment as there is an abundance of available suitable habitat in the proximate pasture areas and the habitat to be removed was considered sub-optimal for the species[1]. The above factors indicate no likely significant impact for the species as a result of the proposed action.

Table 1 ***Likelihood of occurrence of species identified in the PMST report and surveys listed above on the available fauna habitat at the Huntingfield site***

Species Name	Common Name	TSP Act	EPBC Act	Habitat and Likelihood	Likelihood
Litoria raniformis	green and gold frog	v	VU	Breeding habitat for the Green and Gold Frog includes the following elements: still or slow-moving water bodies (lagoons, lakes, farm dams, ponds, irrigation channels, swamps, and slow-moving sections of rivers and streams); the species prefers the shallow part of lagoons (to approx. 1.5m) with a complex vegetation structure, often containing vegetation communities dominated by emergent plants such as water ribbons (*Triglochin*) and spikerush (*Eleocharis*), and submerged plants such as	**Unlikely** - not within the currently known range of the species and limited suitable habitat present within the Huntingfield site.

[1] As per the Tasmanian Forest Practices Authority (FPA) 'Significant Habitat Guideline' (2021), significant habitat for the Eastern barred bandicoot) is described as 'dense tussock grass-sagg-sedge swards, piles of coarse woody debris and denser patches of low shrubs (especially those that are densely branched close to the ground providing shelter) within the core range of the species

Species Name	Common Name	TSP Act	EPBC Act	Habitat and Likelihood	Likelihood
				watermilfoil (*Myriophyllum*), marsh-flower (*Villarsia*), and pondweed (*Potamogeton*); however, other plant communities can also form suitable breeding habitat.	
Aquila audax subsp. fleayi	Tasmanian wedge-tailed eagle	e	EN	Nesting habitat includes the following elements: patches of mature (including old-growth) forest, or forest with mature/old-growth elements, normally greater than 10 ha in area; nest trees usually tall (25-75 m), large and robust mature eucalypts, generally taller than the canopy; nests are often constructed in the tallest and largest tree at a site, and usually located within the canopy even when the nest tree is taller; nests typically occur on the lee (sheltered) aspect of the site (or where hills shelter an otherwise exposed site), with the nest situated below the ridge level for protection from prevailing winds.	**Unlikely** - some suitable habitat present in the form of mature Eucalypt trees, albeit in minor in extent, previously modified and degraded. More likely to be present as an occasional flyover or foraging in the adjacent pasture.
Ceyx azureus diemenensis	Tasmanain azue kingfisher	e	EN	Habitat is known to be forested margins of major river systems; usually in shady and often overhanging vegetation of riverine forests dominated by wet sclerophyll and mixed forest.	**Highly Unlikely** - not within the core range of the species
Lathamus discolor	Swift parrot	e	CR	Habitat includes flowering Tasmanian blue gum and black gums (foraging habitat) and any eucalypt forest containing hollow-bearing trees (nesting habitat). Hollow-bearing trees are typically large and old with dead limbs or branches and at least some visible hollows.	**Possible** – minor and degraded suitable habitat present in the form of 5 isolated *E. globulus* or blue gums and a 0.27 ha native vegetation patch adjacent to the Project Area mapped to be DOV - *E. ovata* forest. Also, NBES and GHD surveys of the Huntingfield site identified 13 potentially suitable hollow bearing trees.
Pardalotus quadragintus	Forty-spotted pardalote	e	EN	Habitat characteristics for the Forty-spotted pardalote include the following: forest containing white gum trees, with either a grassy or shrubby understorey; TASVEG communities include white gum grassy forest (DVG), white gum coastal shrubby forest on Holocene sand (DVC), dry stringybark forest (DOB), white peppermint-blue gum-white gum grassy shrubby dry sclerophyll forest (DPU), black gum-white gum forest (DOV), black peppermint forest on a sandstone substrate (DAS), and East Coast wet viminalis (WVI).	**Present** - previous records with the Huntingfield site and mapped suitable habitat within the native vegetation adjacent to the Project Area.
Tyto novaehollandiae	masked owl	e	VU	Habitat for the Tasmanian Masked Owl includes the following elements: foraging habitat - a diverse range of forest, woodland and non-forest vegetation including agricultural and forest mosaics; nesting habitat - eucalypt forests and	**Unlikely** - some suitable habitat present mapped in the Huntingfield site in the form mature Eucalypt trees, albet in minor in

Species Name	Common Name	TSP Act	EPBC Act	Habitat and Likelihood	Likelihood
				woodlands containing old growth trees with suitable hollows for nesting/roosting, but will also nest in isolated old growth trees with suitable hollows. This species requires a mosaic of forest and open areas for foraging and large old-growth hollow-bearing trees for nests. The core range covers all habitat below 600 m a.s.l, but significant habitat is dry forest with mature habitat elements within that range. Forests with relatively open understoreys, particularly when these habitats adjoin areas of open or cleared land, are particularly favoured.	extent, previously modified and degraded. More likely to be present as an occasional visitor for foraging purposes.
Prototroctes maraena	Australian grayling	v	VU	Habitat for the Australian Grayling includes the following elements: adult Australian Grayling inhabit and breed in rivers and streams, usually in cool waters often with alternating pool and riffle zones; larvae and juveniles inhabit estuaries and coastal seas, although their precise habitat requirements are poorly known.	**Unlikely** - no suitable habitat present within the Huntingfield site.
Ammoniropa vigens	Ammonite pinwheel snail	e	CE	The Ammonite Snail is endemic to Tasmania and occurs only in the Hobart area. There are currently only two extant populations known, with an area of occupancy of 2 ha and a total population size of as little as 200 individuals. The habitat of the species includes dry and wet eucalypt forests on dolerite in the Hobart lowlands, below 400 m altitude. To date, the species has only been found under dolerite rocks.	**Highly Unlikely** - no suitable habitat present within the Huntingfield site and not within the core habitat of the species.
Antipodia chaostola leucophaea	Tasmanian chaostola skipper	e	EN	Has been found in dry lowland vegetation communities supporting the food plants *Gahnia radula* (Thatch Sawsedge) and *G. microstachya (*Slender Sawsedge). These communities occur on relatively infertile substrates derived from sandstones, mudstones, siltstones, granites or windblown sands.	**Unlikely** - within the core range of the species, however, previous surveys have not mapped any suitable habitat with the Project Area.
Dasyurus maculatus maculatus	spotted-tailed quoll	r	VU	They can be found in numerous types of vegetation. However forest elements such as rainforest, and wet and dry eucalypt forest are important components of their habitat. They can also be found in non-forest vegetation types such as coastal scrub and heath, and pastoral areas. This wide range of vegetation types are generally characterised by relatively high and predictable seasonal rainfall.	**Unlikely** – some suitable habitat present mapped in the Huntingfield site in the form mature Eucalypt trees, albeit in minor in extent, previously modified and degraded. No dens were identified during the surveys.
Dasyurus viverrinus	Eastern quoll		EN	The species' distribution is associated with areas of low rainfall and cold winter minimum temperatures. Within this distribution, it is found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub and alpine heathland, but is typically absent from	**Unlikely** – some suitable habitat present mapped in the Huntingfield site in the form mature Eucalypt trees, albeit in minor in extent, previously modified and degraded.

Species Name	Common Name	TSP Act	EPBC Act	Habitat and Likelihood	Likelihood
				large tracts of wet eucalypt forest and rainforest. Dens in burrow, hollow log or rock crevice.	No dens were identified during the surveys.
Perameles gunnii gunnii	Eastern barred bandicoot		VU	Habitat for the Eastern barred bandicoot includes the following elements: within agricultural districts, mosaic habitats of pasture and remnant native forest, often with a significant amount of cover provided by dense-growing weeds such as gorse, blackberry, blackthorn, rose briar, etc; small remnant populations may occur in remnant native grassland and grassy woodland; all records occur below 950 altitude.	**Present** – suitable foraging and refuge habitat present within the Huntingfield site.
Sarcophilus harrisii	Tasmanian devil	e	EN	Habitat includes the following elements contained across an area of several square kilometres: denning habitat for daytime shelter (e.g. dense vegetation, hollow logs, burrows or caves); hunting habitat (open understorey mixed with patches of dense vegetation); breeding den habitat (areas of burrowable, well-drained soil or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of flooding; windrows and log piles may also be used).	**Unlikely** – some suitable habitat present mapped in the Huntingfield site in the form mature Eucalypt trees, albeit in minor in extent, previously modified and degraded. No dens were identified during the surveys and the likelihood of dens occurring in a open pasture in considered very low.
Pseudemoia pagenstecheri	tussock skink	v		Habitat for the Tussock Skink includes the following elements: treeless tussock grassland and grassy open woodland at virtually any elevation where suitable habitat is present; typical habitat in the warmer lowland part of the range is native grassland dominated by *Poa labillardierei* (tussock grass) and species of *Rytidosperma* (wallaby grasses), *Themeda triandra* (kangaroo grass) and *Microlaena stipoides* (weeping grass).	**Highly Unlikely** – not within the core range of the species and no suitable habitat present within the Huntingfield site.

4. Review and assessment of potential impacts to MNES

4.1 Relevant impacts

When considering whether an action is likely to have a significant impact on a matter of national environmental significance it is relevant to consider all adverse impacts which result from the action, including direct, indirect and offsite impacts.

A review of potential impacts was undertaken that may be relevant to the proposed action. The review considers the potential impacts described in the initial referral (2020/8869), desktop and field surveys undertaken to date by GHD for the proposed action including those outlined in section 3. A summary of the key findings from these studies is provided in Section 4.2.

Table 3 provides a review of the MNES considered for the purposes of this assessment and Table 4 provides an assessment of the potential impacts resulting from the proposed action to the relevant MNES. The significance of the impacts is addressed in the following tables for each relevant MNES.

4.2 Summary of key studies

4.2.1 Assessment of Forty-spotted pardalote (*P. quadragintus*) habitat quality and use within the Huntingfield site

Records and Occurrence within the Huntingfield Site

Field work completed by Wilson (1994) reported a winter flock of between 8 and 10 Forty-spotted pardalote*)* individuals near a water board easement at Huntingfield Estate, Kingston. This report led to the identification of a new colony for the species within the Peter Murrell Conservation Area. This colony was estimated by Dr Sally Bryant (1998) to have a population size of 20 birds in 10 ha of suitable habitat along Coffee Creek, around Penrhyn Pond and Heron Pond. The species was said to be prominent and relatively easy to count.

In addition, a 2005 survey estimated a winter flock of between 6 to 12 birds was reported in an area adjacent to the Northwest Bay Golf Club (1: 250000 Tasmap Blackmans Bay grid 228E 388N) (P. Brown, pers. comm.). This area covers 15 to 20 ha and, as it forms a natural corridor, is a potential addition to the Coffee Creek colonies. A master's thesis by Lijima (2010) identified three patches of white gum (*E. viminalis*) in the native vegetation patch to the south of the Huntingfield site. This study identified small groups of six (6) and three (3) Forty-spotted pardalote in two separate patches of suitable habitat.

Bryant (2010) provides information on first and last dates of reported Forty-spotted pardalote presence at Huntingfield Estate, Kingston. Bryant (2010) indicated the colony known to occur along the Coffee Creek at Peter Murrell Conservation Area, Howden was difficult to find on a consistent basis. Twelve (12) separate visits and > 40 field hours were dedicated to surveying this colony, however only a small number of birds were detected during any one visit. Historically, birds were easily identified and heard in the habitat known to contain white gum (*E. viminalis*) on the fringes of Penrhyn Pond and Heron Pond, however, Bryant (2010) failed to repeat this observation. Despite repeated efforts within the reserve, few birds could be found in areas where previously identified.

In 2010, Dr Bryant estimated the Howden Colony to be 10 birds foraging across a relatively large distances for the species, including the white gum (*E. viminalis*) habitat across Howden Road on private property. Bryant (2010) suggested the colony area had been increased a further two (2) hectares to a total colony size of twelve (12) hectares.

Verified habitat on the Huntingfield Site

As discussed above, areas of vegetation outside of the Project Area have been previously identified as suitable habitat for the Forty-spotted pardalote due to presence of individuals and *E. viminalis* trees. This included vegetation within Peter Murrell Conservation Area to the south-east and a stand of vegetation mapped at the time to be '*Eucalyptus obliqua* dry forest and woodland' (DOB) within the native vegetation south of the Project Area (GHD, 2019).

A natural values assessment conducted by GHD (2019) including a field visit by a GHD ecologist in October 2018 where the area was surveyed by foot and noted plant species, vegetation communities and fauna habitat values. This survey did not identify any Forty-spotted pardalotes individuals during the field visit, however, did identify patches of white gum (*E. viminalis*) within the area mapped as *'Eucalyptus obliqua* dry forest' (DOB).

A field visit by North Barker Ecosystem Services (NBES, 2020), to support a Significant Impact Assessment, interpreted the native vegetation to the south of the Huntingfield site to be '*Eucalyptus amygdalina* forest and woodland on sandstone' (DAS), given *E. amydgalina* is dominant throughout and *E. obliqua* is regular and even dominant in the drainage lines.

Habitat mapping completed by NBES, verified three patches (Patch 1, 2 & 3 – Shown in Figure 3 of Appendix A) of *E. viminalis* habitat known to be suitable for Forty-spotted pardalote directly south of the Project Area. These three patches broadly represented the same patches from the Lijima study, first identified in 2010. At that time, they were mapped as 6.5 ha collectively with a mean *E. viminalis* canopy cover of 40 percent, with values ranging from 10 to 60 percent.

NBES (2020) noted all three patches contain large trees suitable for foraging and potential breeding. NBES surveyed the extent of these patches to be 1.1 ha, 0.77 ha and 1.32 ha respectively. During the NBES survey, two additional patches (Patch 4 & 5 – Shown in Figure 3 of Appendix A) of suitable habitat were identified in the proposal area, mapped as 0.27 and 0.06 ha respectively. Patch 4 (0.27 ha) is a small, isolated and relatively degraded cluster of *E. viminalis* located on a tributary of Coffee Creek that may provide foraging resources only. Patch 5 (0.06 ha) is very small and indicates 'few' *E. viminalis*, but contains larger trees capable of supporting hollows. All patches of suitable habitat are outlined in Figure 3 of Appendix A.

A targeted assessment quantifying species abundance and the number of viable nesting sites has not been completed, however, habitat was considered to be of high value (NBES, 2020). There are so few records in the past 10 years (i.e., since 2010) that no real pattern of species occupancy emerges for the most recent decade. Suitable habitat within the native vegetation to the south of the Huntingfield site is fragmented and is considered to support a small community. The extent of migration between patches of suitable habitat (within Peter Murrell Conservation Area, or further afield) is largely unknown.

Identified threats

Tasmania's Threatened Fauna Handbook (Bryant & Jackson, 1999) indicated the key threats to Forty-spotted pardalote are:

– Any removal of mature white gum (*E. viminalis*) (large or small stands and even single trees) or disturbance to other trees in or near colonies
– Loss of mature white gum (*E. viminalis*) throughout the species range, particularly in areas close to known colonies
– Loss of nest hollows through felling mature timber and firewood collection.
– The misconception that felling mature white gum (*E. viminalis*) in key areas can be compensated for by planting seedlings
– Potential competition and displacement by aggressive birds like kookaburra and noisy miner moving into disturbed areas

The Conservation advice from the Threatened Species Scientific Committee (TSS, 2016) summarises the threats to the species and they are included in the Table 2 below.

Table 2 Threats impacting Forty-spotted pardalote (P. quadragintus) from species Conservation Advice (TSS, 2016)

Threat Factor	Threat type and status	Evidence base
Habitat loss and fragmentation		
Loss of white gum (*E. viminalis*) woodlands	Known past and current	Forty-spotted pardalotes rely on white gum (*E. viminalis*) woodland habitat. Any loss can lead to a loss of mature breeding individuals (TSS, 2006).
Fragmentation	Known past and current	Increased distance between patches reduces dispersal opportunities and makes it unlikely areas will be recolonised if local extinctions occur (TSS, 2006).
Reduced patch size	Known past and current	Reduced patch size can be caused by a range of factors, including fire, timber harvesting and stock grazing. Reduced patch size can lead to invasion of habitat by invasive honeyeaters such as the noisy miner. Forty-spotted pardalotes are not known to exist in habitat fragments where noisy miners occur (Woinarski & Bulman, 1985; Brown, 1986; Bryant, 1991;TSS, 2006).
Habitat disturbance by development	Known past and current	Impacts from housing developments, roading and predation by domestic pets has been demonstrated as direct threat to the Forty-spotted pardalote (TSS, 2012).

The Forty-spotted pardalote Recovery Plan (TSS, 2006) notes the most significant threat to the survival of the species is related to the loss or decline in area and fragmentation of suitable habitat (dry sclerophyll forests supporting *E. viminalis*). The Forty-spotted pardalote favours relatively unmodified forest, and a positive relationship is suggested between security and colony size (Woinarski, 1985). Any loss of suitable habitat can lead to the loss of breeding colonies, increase fragmentation and reduction in dispersal opportunities (TSS, 2006). Simultaneously, small distances of cleared land between patches of suitable habitat can be sufficient to isolate colonies and hinder the dispersal ability of the local species (TSS, 2006).

Changes to the forest structure of known suitable habitat that cause reduced tree canopy cover can lead to reductions in the size of Forty-spotted pardalote colonies or local extinction events. This can often be caused by wildfires, timber harvesting and stock grazing in areas of suitable habitat. The recovery plan (TSS, 2006) notes fragmentation and disturbance of the forest canopy favours invasion by woodland birds.

Bryant (2010) noted that some evidence of *E. viminalis* tree decline was noted along Coffee Creek within the Peter Murrell Conservation Area, however the area appeared to retain adequate mature white gum (*E. viminalis*) in good condition to support the previous colony of an estimated 10 birds. This suggests other threats impacting the Peter Murrell Conservation Area colony, including potential competition and displacement from aggressive avian species i.e. noisy miner (*Manorina melanocephala*), black-headed honeyeater (*Melithreptus affinis*), butcher bird (*Cracticus torquatus*) or Forest raven (*Corvus tasmanicus*).

Human activity, noise and other habitat disturbances are likely to be contributing factors in the decline of this and other sensitive bird species (Bryant, 2010). This is evident in changing and expanding land use in the Howden area which has led to an increased visitation to the Peter Murrell Conservation Area, where estimated colony size has decreased from 20 birds to 10 birds from 1995 to 2010.

A recent study by Amanda Edworthy from 2017 investigated the impacts of a native fly parasite (*Passeromyia longicornis*) on the nestling mortality of Forty-spotted pardalote through a parasite elimination experiment. The study found 89% of nestlings fledged from nests where the parasite was experimentally removed, compared to just 8% in untreated nests (Edworthy, 2017). The study also compared parasite virulence and intensity between similar avian species; Forty-spotted pardalote and striated pardalote (*P. striatus)*. It found virulence to be similar between the species, however, intensity was higher in Forty-spotted pardalote nests.

The above results indicate native fly parasites can become a principal source of mortality in their hosts and significantly impact the persistence of a Forty-spotted pardalote colony.

Current research (Wing, 2020) has also suggested Forty-spotted pardalote foraging resources (*E. viminalis*) are susceptible to climate change. *E. viminalis* has experienced large dieback due to a decrease in rainfall and precipitation (Jurskis, 2016), and is vulnerable to drought (Li *et al*., 2018). This would have negative results for the vulnerable pardalote species, as a specialist avian species of low population, distribution and dispersal rates, indicating species vulnerability in the face of restricting foraging resources (Foden *et al*., 2013).

4.3 Impacts of the proposed action

See Table 3 below for a review of the direct and indirect impacts expected as a result of the proposed action, the MNES considered to be impacted, the supporting information used to determine the impacts, and the assessment of the risks of the impacts to each MNES.

Table 3 Review of MNES and other matters protected by the EPBC Act for consideration

Type of impact and description	MNES/Potential impact to MNES	Assessment information	Information source	Assessment/risk of potential impacts to MNES following information review
Direct impact Removal of native vegetation during construction	*MNES:* Swift parrot (*L. discolor*) Tasmanian wedge-tailed eagle (*A. adux subsp. fleayi*) Forty-spotted pardalote (*P. quadragintus*) Eastern barred bandicoot (*P. gunnii gunnii)* Masked owl (*T. novaehollandiae*) Tasmanian devil (*S. harrisii)* Spotted tail quoll (*D. maculatus subsp. maculatus*) Eastern quoll (*D. viverrinus*) *Potential impacts:* Reduction in habitat quality Reduction in suitable habitat patch size Potential injury or death to local fauna during habitat removal Invasion of invasive flora species	The native vegetation to the south of the Huntingfield site contains potential foraging and nesting habitat for Swift parrots *(L. discolor)* in the form of 5 x *Eucalyptus globulus* and a small patch (0.27 ha) of degraded *E. ovata* (foraging). Additionally, NBES identified 13 potentially suitable habitat trees within the Huntingfield site. Individuals of *A. audax fleayi* (Tasmanian wedge-tailed eagle) have been observed near the Project Area and the overall Huntingfield Site contains potential roosting and foraging habitat. A total of 45 ha of foraging habitat (cleared agricultural land) would be impacted by the proposed action. Observations of Forty-spotted pardalote individuals and identified suitable habitat exist in native vegetation patch to the south of the Huntingfield site, as well as suitable habitat along Coffee Creek in the adjacent Peter Murrell Conservation Area. The proposed action is located <100 m of Forty-spotted pardalote habitat patches. The Eastern barred bandicoot (*P. gunni*) has been recorded in the Huntingfield site and is known to occur within the adjacent Peter Murrell Conservation Area. It is therefore assumed likely to occur within the native vegetation area to the south of the Huntingfield Site and may utilise areas defined as agricultural land. The masked owl (*T. novaehollandiae*) was not observed during the surveys, however potential foraging and nesting habitat is observed in the native vegetation patch to the south of the Huntingfield site. A number of habitat trees were identified that could provide nesting habitat for the species. The Huntingfield site provides limited potential foraging habitat for the species Tasmanian devil *(S. harrisii)*, Spotted tail quoll (*D. maculatus subsp. Maculatus*), Eastern quoll (*D. viverrinus*) and no critical habitat (maternal denning sites).	Bryant, S. L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 - 2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania. Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania. Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart. SKM. (2009). – Flora and Fauna Assessment – Huntingfield Site. May 2009. GHD. (2019). – Huntingfield Master Plan Civil Design – Botanical and Fauna Habitat – Updated Assessment. June 2019. GHD. (2020a). – Huntingfield Master Plan Civil Design – Natural Values Assessment (Proposed Roundabout), December 2020. North Barker Ecosystem Services (NBES). (2020). – Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020. GHD. (2020b). – Huntingfield Master Plan Civil Design – Natural Values Assessment Stage 1, December 2020.	The project would not directly impact on Swift parrot (*L. discolor*) habitat as the disturbance footprint avoids all areas of native vegetation. Given the Huntingfield site is not known to be a breeding site for the species, limited observations occur within the site and the minor extent of the suitable habitat, the NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species. No critical habitat (potential nesting habitat) for *A. audax fleayi* would be impacted by the development. The NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species. The proposed actions (and Broader Huntingfield Master Plan) avoid any direct impact to habitat for Forty-spotted pardalote (white gum - *E. viminalis* woodland). Indirect impacts of the proposed action are discussed below. The proposed action would impact potentially suitable habitat for Eastern barred bandicoot (*P. gunnii*) including the highly modified area of agricultural land (pasture) with occasional dense swards and thickets for cover. There is an abundance of this habitat type in the local and regional area. Based on the availability of suitable habitat in the local area, the NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species. The proposed action would not impact on any identified habitat trees for the masked owl (*T. novaehollandiae*) species. The NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species. The habitat impacted by the Huntingfield Master Plan (including the proposed action) is not considered to be critical habitat for Tasmanian devil (*S. harrisii*), spotted-tailed quoll (*D. maculatus maculatus*) nor the Eastern quoll (*D. viverrinus*) due to the lack of dens and the low density of quolls in the area. The NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species.
Indirect impact Collision with man-made structures and vehicles during the construction and post-completion of the development	*MNES:* Swift parrot (*L. discolor*) *Potential impacts:* Reduction in the number of individuals in Huntingfield area	The native vegetation to the south of the Huntingfield site contains potential foraging and nesting habitat for Swift parrot *(L. discolor)* in the form of 5 x *Eucalyptus globulus* and a small patch (0.27 ha) of degraded *E. ovata* (foraging). Additionally, NBES identified 13 potentially suitable habitat trees within the Huntingfield site. Foraging swift parrots (*L. discolor*) in urban areas are at risk of collision and death from man-made structures such as windows (bird-strike), vehicles and fences (particularly chain-link).	Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *Swift parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05-May-2016. Saunders, D.L. & C.L. Tzaros (2011). *National Recovery Plan for the Swift Parrot* (Lathamus discolor). Birds Australia, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-swift-parrot-lathamus-discolor. In effect under the EPBC Act from 10-Feb-2012.	Currently the Huntingfield site is not known as a breeding site for Swift parrots (*L. discolor*) and the NBES significant impact assessment indicated further surveys during the breeding season would be required to determine this. Given the minimal extent of the nesting habitat (13 trees) and foraging resources (0.27 ha), it is unlikely that the Huntingfield site represents significant habitat for the species. The proposed action has the potential to impact the species through collisions with man-made structures and vehicles, however, given the predicted low abundance of the species at the site, the impacts of this are not expected to be significant.

Type of impact and description	MNES/Potential impact to MNES	Assessment information	Information source	Assessment/risk of potential impacts to MNES following information review
			SKM. (2009). – Flora and Fauna Assessment – Huntingfield Site. May 2009. GHD. (2019). – Huntingfield Master Plan Civil Design – Botanical and Fauna Habitat – Updated Assessment. June 2019. GHD. (2020a). – Huntingfield Master Plan Civil Design – Natural Values Assessment (Proposed Roundabout), December 2020. North Barker Ecosystem Services (NBES). (2020). – Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020. GHD. (2020b). – Huntingfield Master Plan Civil Design – Natural Values Assessment Stage 1, December 2020.	
Indirect impact Human disturbance of bird species via bushwalkers and nature visitors, rubbish dumping	*MNES:* Forty-spotted pardalote (*P. quadragintus*) Swift parrot (*L. discolor*) *Potential impacts:* Reduction in suitable habitat quality Disruption to breeding cycle	The vegetation proposed to be impacted by walking/cycling trails is < 100 m from the *E. viminalis* patches, known to previously support Forty-spotted pardalote colonies. These areas are known to provide both foraging and nesting habitat for the species (Bryant, 2010). No individuals were identified during the recent GHD surveys. However, previous targeted surveys have (Lijima, 2010) have confirmed the presence of the species in at least two of the suitable habitat patches identified during the recent GHD surveys (2019, 2020a, 2020b). The NBES (2020) survey indicated, based on communication with Dr Sally Bryant, that the colony from Coffee Creek (immediately east of the proposed action) has declined from 20 to 10 birds. Based on this reduction in population, it is thought this colony is at risk of imminent extinction. Human activities at the Peter Murrell Conservation Area are considered to have placed the birds in this colony under significant pressure and continuous disturbance may act to force birds away from preferred nesting sites and foraging habitat (Lijima, 2010). Previous assessments of the native vegetation to the south of the proposed action noted impacts by rubbish dumping (soils, gravel and garden waste) and wood harvesting, especially along access tracks (SKM, 2009). The native vegetation to the south of the Huntingfield site contains potential foraging and nesting habitat for Swift parrot *(L. discolor)* in the form of 5 x *Eucalyptus globulus* and a small patch (0.27 ha) of degraded *E. ovata* (foraging). Additionally, NBES identified 13 potentially suitable habitat trees within the Huntingfield site. NBES (2020) found the vegetation is still impacted by the dumping of rubbish and the clearing of small areas, especially along access tracks.	Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *Swift parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05-May-2016. Saunders, D.L. & C.L. Tzaros (2011). *National Recovery Plan for the Swift Parrot* (Lathamus discolor). Birds Australia, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-swift-parrot-lathamus-discolor. In effect under the EPBC Act from 10-Feb-2012. Bryant, S. L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 - 2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania. Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania. Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart. Sinclair Knight Merz (2009) Land for Future Communities, Flora and Fauna Assessment - Huntingfield Site, 25 May 2009. GHD. (2019). – Botanical and Fauna Habitat – Updated Assessment for the Huntingfield Master Plan. June 2019. GHD. (2020a). – Targeted Assessment of Natural Values within the Proposed Huntingfield Masterplan Roundabout, March 2020. GHD. (2020b). – Botanical and Fauna Habitat Assessment for the Huntingfield Stage 1 Project Area, November, 2020. North Barker Ecosystem Services (NBES). (2020). Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020.	Previous designs of the Huntingfield Master Plan included nature recreation activities within the native vegetation area to the south of the Huntingfield site. The proposed action includes a varied construction of low to higher density housing which is expected to cause an increase in visitor numbers and activities to both the Huntingfield, Coffee Creek and Peter Murrell Conservation Area. The revised Huntingfield Master Plan removes the inclusion of walking trails and a bike pump track in or near the native vegetation to the south of the site (including the suitable habitat for Forty-spotted pardalote). There will be no recreation activities proposed in the covenanted revegetation and rehabilitation areas. The development and implementation of an Construction Environmental Management Plan (CEMP) with provision for rubbish collection activities will act to mitigate the impacts of waste accumulation in the understory and allow vegetation to be maintained in its current condition, providing suitable habitat for Forty-spotted pardalote.

Type of impact and description	MNES/Potential impact to MNES	Assessment information	Information source	Assessment/risk of potential impacts to MNES following information review
Indirect impact Increase in feral and domestic species	*MNES:* Forty-spotted pardalote *(P. quadragintus)* Swift parrots (*L. discolor*) *Potential Impacts* Reduction in the number of individuals in the Huntingfield area	NBES (2020) identified global threats to the Forty-spotted pardalote and to the colony known to be located at the Huntingfield site as part of their significant impact assessment. It was noted that an indirect impact as a result of the proposed action will likely be an increase in the number of domestic and potentially feral cats in the area. The Huntingfield Master Plan and Civil Design Botanical and Fauna Habitat - Updated Assessment (2019) identified feral cats (*Felix catus*) within the study area. This document also made a recommendation to 'develop policies relating to cat management in the housing development (e.g. in door cats only, or external enclosed cat-runs) to avoid increasing predation risk' or Forty-spotted pardalotes.	Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *Swift parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05-May-2016. Saunders, D.L. & C.L. Tzaros (2011). *National Recovery Plan for the Swift Parrot* (Lathamus discolor). Birds Australia, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-swift-parrot-lathamus-discolor. In effect under the EPBC Act from 10-Feb-2012. Bryant, S. L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 - 2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania. Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania. Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart. Sinclair Knight Merz (2009) Land for Future Communities, Flora and Fauna Assessment - Huntingfield Site, 25 May 2009. GHD. (2019). – Botanical and Fauna Habitat – Updated Assessment for the Huntingfield Master Plan. June 2019. GHD. (2020a). – Targeted Assessment of Natural Values within the Proposed Huntingfield Masterplan Roundabout, March 2020. GHD. (2020b). – Botanical and Fauna Habitat Assessment for the Huntingfield Stage 1 Project Area, November, 2020. North Barker Ecosystem Services (NBES). (2020). Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020.	The Huntingfield Master Plan and Civil Design Botanical and Fauna Habitat - Updated Assessment recommended policy be put in place for the management of domestic cats within the housing development. This recommendation was suggested to be explored by the NBES significant impact assessment. Given the impacts feral cats are known to have on the species and are acknowledged as a threat, this recommendation is supported for further exploration. The development of a restrictive covenant with strategies including implementation of potential planning mechanisms of restriction and control i.e. a part v agreement restricting cat ownership and controls that will mitigate against the impacts of cat predation as a result of increasing numbers. It is likely a condition will be included for Stage 2 and 3 similar to Stage 1; "*The owner or occupier must not introduce or keep domestic cats, unless otherwise approved by the General Manager in Writing. The General Manager will only approve the introduction and keeping of cats where there is sufficient justification and the owner or occupier agrees to and can demonstrate that any cat will be contained withing the lot boundary at all times*."
Indirect impact Disturbance of threatened species	*MNES* Forty-spotted pardalote *(P. quadragintus)* Swift parrots *(L. discolor)* *Potential impacts:* Disruption to the breeding cycle of the species Species displacement	No Forty-spotted pardalote individuals were identified during the recent GHD surveys. However, previous targeted surveys have (Lijima, 2010) have confirmed the presence of the species in at least two of the suitable habitat patches identified during the recent GHD surveys (2019, 2020a, 2020b). The NBES (2020) survey indicated, based on communication with Dr Sally Bryant, that the colony from Coffee Creek (immediately east of the proposed action) has declined from 20 to 10 pardalotes. Based on this reduction in population, it is thought this colony is at risk of imminent extinction. Human activities at the Peter Murrell Conservation Area are considered to have placed the birds in this colony under significant pressure	Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *Swift parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05-May-2016. Saunders, D.L. & C.L. Tzaros (2011). *National Recovery Plan for the Swift Parrot* (Lathamus discolor). Birds Australia, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-swift-parrot-lathamus-discolor. In effect under the EPBC Act from 10-Feb-2012. Bryant, S. L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 -	The project would not directly impact on Swift parrot (*L. discolor*) habitat as the disturbance footprint avoids all areas of native vegetation. Given the Huntingfield site is not known to be a breeding site for the species, limited observations occur within the site and the minor extent of the suitable habitat, the NBES significant impact assessment determined all stages of the Huntingfield Master Plan were unlikely to have a significant impact on the species. Previous designs of the Huntingfield Master Plan included nature recreation activities within the native vegetation area to the south of the Huntingfield site. The revised Huntingfield Master Plan removes the inclusion of walking trails and a bike pump track in or near the native vegetation to the south of the

Type of impact and description	MNES/Potential impact to MNES	Assessment information	Information source	Assessment/risk of potential impacts to MNES following information review
		and continuous disturbance may act to force birds away from preferred nesting sites and foraging habitat (Lijima, 2010). The native vegetation to the south of the Huntingfield site contains potential foraging and nesting habitat for swift parrot *(L. discolor)* in the form of 5 x *Eucalyptus globulus* and a small patch (0.27 ha) of degraded *E. ovata* (foraging). Additionally, NBES identified 13 potentially suitable habitat trees within the Huntingfield site. NBES (2020) found the vegetation is still impacted by the dumping of rubbish and the clearing of small areas, especially along access tracks.	2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania. Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania. Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart. Sinclair Knight Merz (2009) Land for Future Communities, Flora and Fauna Assessment - Huntingfield Site, 25 May 2009. GHD. (2019). – Botanical and Fauna Habitat – Updated Assessment for the Huntingfield Master Plan. June 2019. GHD. (2020a). – Targeted Assessment of Natural Values within the Proposed Huntingfield Masterplan Roundabout, March 2020. GHD. (2020b). – Botanical and Fauna Habitat Assessment for the Huntingfield Stage 1 Project Area, November, 2020. North Barker Ecosystem Services (NBES). (2020). Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020.	site (including the suitable habitat for Forty-spotted pardalote). The risk of potential displacement of Forty-spotted pardalote individuals is largely unknown.
Direct impact Increase in the introduction of invasive flora species and pathogens acting to degrade the condition of the *E. viminalis* patches.	*MNES:* Forty-spotted pardalote *(P. quadragintus)* *Potential impacts:* Reduction in suitable habitat quality Reduction in the suitable habitat patch size	The NBES significant impact assessment indicates that in lieu of further site specific or targeted research, global factors for species decline are recognised for the decline of the Forty-spotted pardalote in the area and the associated suitable habitat. Historical assessments of the native vegetation to the south of the proposed action indicated the condition to be relatively intact, diverse with some weed establishment on the fringes and through drainage lines (SKM, 2009). NBES (2020) found the vegetation is still impacted by the establishment and invasion of declared and environmental weeds throughout the understory. The areas covered by the proposed action and those directly adjacent are affected by established declared and environmental weeds including *Rubus fruticosus* (Blackberry), *Ulex europaeus* (Gorse), *Erica Lusitanica* (Spanish heath) and *Genista monspessulana* (Montpellier broom).	Bryant, S. L. (2010). Conservation assessment of the endangered Forty-spotted pardalote 2009 - 2010. Report to Threatened Species Section, DPIPWE and NRM South, Hobart Tasmania. Lijima, C. (2010). Extent and quality of habitat for the endangered Forty-spotted pardalote (*P. quadragintus*) at Howden, Tasmania, Coursework Master thesis, University of Tasmania Threatened Species Section. (2012). Listing State for *P. quadragintus* (Forty-spotted pardalote). Department of Primary Industries, Parks, Water and Environment, Tasmania. Threatened Species Section. (2006). Fauna Recovery Plan: Forty-spotted pardalote 2006-2010. Department of Primary Industries and Water, Hobart. Sinclair Knight Merz (2009) Land for Future Communities, Flora and Fauna Assessment - Huntingfield Site, 25 May 2009. GHD. (2019). – Botanical and Fauna Habitat – Updated Assessment for the Huntingfield Master Plan. June 2019. GHD. (2020a). – Targeted Assessment of Natural Values within the Proposed Huntingfield Masterplan Roundabout, March 2020. GHD. (2020b). – Botanical and Fauna Habitat Assessment for the Huntingfield Stage 1 Project Area, November, 2020. North Barker Ecosystem Services (NBES). (2020). Huntingfield Master Plan and Civil Design – Matters of National Environmental Significance - Significant Impact Assessment. September 2020.	Bryant (2010) indicated the most likely factor causing the decline in the Forty-spotted pardalote is the deterioration in health and extent of white gum (*E. viminalis*) habitat. This is predominantly due to timber harvesting, stock grazing and rubbish dumping, however, establishment of weed species is likely to exacerbate the deterioration. Recent research suggest the tree species is also under threat from drought and climate change. The development and implementation of an Construction Environmental Management Plan (CEMP) with provision for weed control activities will act to mitigate the impacts of established weeds in the understory and allow the vegetation to be maintained in its current condition, providing suitable habitat for Forty-spotted pardalote.

4.4 Assessment of potential impacts

As discussed under section 3.2, although *P. gunnii gunnii* (Eastern barred bandicoot) was determined is likely to be present given recent records within the overall Huntingfield site, the species was not considered relevant for assessment as there is an abundance available suitable habitat in the proximate pasture areas and the habitat to be removed was considered sub-optimal for the species, and therefore unlikely to be significant[2]. The above factors indicate no likely significant impact for the species as a result of the proposed action.

4.4.1 Critically endangered and endangered species

It has been determined as of 19 April 2021 that the proposed action is a 'Controlled Action' and the project will require assessment and approval under the EPBC Act before it can proceed. The relevant controlling provisions include listed threatened species under sections 18 & 18A of the EPBC Act, with specific regard for the Forty-spotted pardalote and Swift parrot (*L. discolor*). Approval is required for an action occurring within or nearby an area of identified habitat for the above species if the action has, will have, or is likely to have a significant impact on the 'ecological character' of the identified habitat.

For the purposes of this report, the 'ecological character' is the combination of the ecosystem components, processes and benefits/services that characterise the identified habitat at any given point in time.

The criteria for assessing significant impact for Fauna Species of National Significance are described in *EPBC Act Policy Statement Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (Department of the Environment (DotE) 2013). A review of potential impacts of the proposed action against the significant impact criteria for the Project Area are provided in Table 4 and Table 5.

Table 4 Assessment of the proposed action against the significant impact criteria for Forty-spotted pardalote (P. quadragintus)

Impact criteria	Review of impacts	Assessment outcome
An action is likely to have a significant impact on the ecological character of identified Forty-spotted pardalote habitat if there is a real chance or possibility that it will result in:		
Lead to a long-term decrease in the size of a population	The location of the proposed action is directly adjacent to known Forty-spotted pardalote habitat and identification locations. The proposed action will not directly remove any native vegetation areas of suitable habitat for Forty-spotted pardalote and the vegetation directly adjacent. Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony.	The proposed action indicates a 'real chance or possibility' of having a significant impact on the long-term population size of the Forty-spotted pardalote colony at the Huntingfield site. Mitigation measures and strategies are discussed below in section 5.
Reduce the area of occupancy of the species	The location of the proposed action is directly adjacent to known Forty-spotted pardalote habitat and identification locations. The proposed action will not directly remove any native vegetation areas of suitable habitat for Forty-spotted pardalote and the vegetation directly adjacent.	The proposed action indicates a 'real chance or possibility' of reducing the area of occupancy (AOO). The removal of the walking/cycling tracks from the proposal has acted to reduce the likelihood of this occurring, however, the indirect impacts still remain and will be mitigated through action discussed in section 5.

[2] As per the Tasmanian Forest Practices Authority (FPA) 'Significant Habitat Guideline' (2021), significant habitat for the species is described as 'dense tussock grass-sagg-sedge swards, piles of coarse woody debris and denser patches of low shrubs (especially those that are densely branched close to the ground providing shelter) within the core range of the species.

Impact criteria	Review of impacts	Assessment outcome
	Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony.	
Fragment an existing population into two or more populations	The location of the proposed action is directly adjacent to known Forty-spotted pardalote habitat and identification locations. Birds identified in 2010 by Lijima at the Huntingfield site are likely dispersals from the Peter Murrell Conservation Area. Therefore, the Coffee Creek and tributaries provide vegetation connectivity between areas of native vegetation known to contain *E. viminalis.* The proposed action will not directly remove any native vegetation areas of suitable habitat for Forty-spotted pardalote and the vegetation directly adjacent. Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony.	The proposed action indicates a 'real chance or possibility' of fragmenting birds known to disperse from Peter Murrell Conservation Area to the Huntingfield site. Given the removal of the walking tracks and cycle path from the proposed action, the likelihood of the significant impact is reduced and would be the result of indirect impacts i.e. anthropogenic disturbance Mitigation measures such as rehabilitation of the Coffee Creek tributary drainage line and increasing habitat connectivity will act to reduce the likelihood of this impact.
Adversely affect habitat critical to the survival of the species	Three of the patches known to contain suitable habitat for the species are located > 100m from the proposed development footprint. One of the patches (Patch 0.27ha) is directly adjacent to the boundary of the proposed development. The proposed action will not remove any native vegetation areas of suitable habitat for Forty-spotted pardalote and the vegetation directly adjacent. Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony. According to the Conservation Advice for the Tasmanian white gum (*Eucalyptus viminalis*) wet forest, "*E. viminalis* is known to be highly susceptible to stress due to climatic factors and climate change projections indicate an increasing frequency and intensity of heat waves." Also, reductions in water availability including dam building, stream diversion, increasing irrigated land use or climate change makes *E. viminalis* more susceptible to disease and dieback.	There is a 'real chance or possibility' that the proposed action will significantly impact on three patches of habitat critical to the survival of the species. Given the removal of the walking tracks and cycle path from the proposed action, the likelihood of the significant impact is reduced and would be the result of indirect impacts i.e. rubbish accumulation or weed invasion Mitigation measures and strategies are discussed in section 5 below. The development does not propose to reduce the availability of water into Coffee Creek or its tributaries, divert natural stream flow, irrigate pasture or construct in-stream dams.

Impact criteria	Review of impacts	Assessment outcome
Disrupt the breeding cycle of a population	The location of the proposed action is directly adjacent to known Forty-spotted pardalote habitat and identified locations. The proposed action is expected to increase the visitor numbers at the Huntingfield site, Coffee Creek and Peter Murrell Conservation Area. Given the removal of the walking tracks and cycle path from the proposed action, the likelihood of the significant impact is reduced and would be the result of indirect impacts. Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony.	There is a 'real chance or possibility' the proposed action will impact the breeding cycle of Forty-spotted pardalote in the area. Mitigation measures and strategies are discussed in section 5 below.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The location of the proposed action is directly adjacent to known Forty-spotted pardalote habitat and identification locations. The proposed action will not remove or modify any habitat for Forty-spotted pardalote within the Project Area. Indirect impacts such as human disturbance, timber harvesting, increased invasive predators (domestic cats), rubbish dumping and weed invasion have the potential to put pressure on a presently stressed Forty-spotted pardalote colony.	The proposed action has a 'real chance or possibility' of having a significant impact on the availability or quality of habitat for the species at the Huntingfield site. The removal of the walking tracks and cycle path from the proposed action will mitigate the direct impacts of native vegetation clearing in areas of suitable habitat for Forty-spotted pardalote and the vegetation directly adjacent. Further mitigation measures such as the development of Construction Environmental Management Plans (CEMP) is discussed in section 5 below.
Result in invasive species that are harmful to the species becoming established in the species' habitat	The proposed action is likely to increase the number of domestic house cats frequenting the area. This is recognised as a threat to the species in the above table.	There is a 'real chance or possibility' that the proposed action will result in an increase in the number of house cats in the area that will impact on Forty-spotted pardalote becoming established within the Project Area. Mitigation measures and strategies are discussed in section 5 below to mitigate this impact.
Introduce disease that may cause the species to decline	Currently, disease is not listed as a threat to the success of the species, colonies or individuals.	The proposed action is unlikely to introduce disease that may cause Forty-spotted pardalote known or likely to occur within the Project Area to decline.
Interfere with the recovery of the species	The recovery of the colony is dependent on the ability of the individuals in the area to forage and breed in the areas of known suitable habitat. Increasing the quality and size of suitable habitat will provide a competitive advantage to the individuals in the area.	There is a 'real chance or possibility' that the proposed action could interfere with the recovery of the species. Given the removal of the walking tracks and cycle path from the proposed action, the likelihood of the significant impact is reduced and would be the result of indirect impacts. Mitigation measures and strategies are discussed in section 5 below.

Impact criteria	Review of impacts	Assessment outcome
	No suitable habitat for the species will be removed as part of the proposed action.	

Table 5 Review of the proposed action against the significant impact criteria for Swift parrot (L. discolor)

Impact criteria	Review of impacts	Assessment outcome
An action is likely to have a significant impact on the ecological character of identified Swift parrot (*L. discolor*) habitat if there is a real chance or possibility that it will result in:		
Lead to a long-term decrease in the size of a population	The native vegetation to the south of the Huntingfield site contains potential foraging and nesting habitat for Swift parrots *(L. discolor)* in the form of 5 x *Eucalyptus globulus* and a minor patch (0.27 ha) of degraded *E. ovata* (foraging) and trees with observed and potential hollows (nesting). Additionally, NBES identified 13 potentially suitable habitat trees within the Huntingfield site. The proposed action will not remove or modify any habitat for Swift parrots *(L. discolor)* within the Project Area. The removal of the walking and cycling paths from the proposed action has eliminated any direct impact form the removal of suitable foraging and potential nesting habitat. Potential indirect impacts remain from human disturbance (bushwalkers), rubbish, invasion of weeds, timber harvesting and increased invasive predators (domestic cats). Currently this site is not known to be a breeding site for the species. Given the predicted low abundance of Swift parrots (*L. discolor*) at the site, limited potential nesting habitat (13 potentially suitable habitat trees), limited foraging habitat (5 x *E. globulus* and a minor patch (0.27 ha) of degraded *E. ovata*), it is not expected the native vegetation at the site represents significant habitat for the species.	The proposed action is unlikely to result in a significant impact to the long-term population size of Swift parrots (*L. discolor*)
Reduce the area of occupancy of the species	The proposed action will not remove or modify any habitat for Swift parrots *(L. discolor)* within the Project Area. The removal of the walking and cycling paths from the proposed action has eliminated any direct impact form the removal of suitable foraging and potential nesting habitat.	The proposed action is unlikely to result in a significant impact to the area of occupancy of Swift parrots (*L. discolor*).
Fragment an existing population into two or more populations	The proposed action will not remove or modify any habitat for Swift parrots (*L. discolor*) within the Project Area. Given the predicted low abundance of Swift parrots (*L. discolor*) at the site, limited potential nesting habitat and limited foraging habitat (5 x *E. globulus* and a minor patch (0.27 ha) of degraded *E. ovata*), it is not expected the native vegetation at the site	The proposed action is unlikely to fragment a population of Swift parrots (*L. discolor*) known or likely to occur within the Project Area into two or more populations.

Impact criteria	Review of impacts	Assessment outcome
	represents significant habitat for the species.	
Adversely affect habitat critical to the survival of the species	Given the predicted low abundance of Swift parrots (*L. discolor*) at the site, limited potential nesting habitat and limited foraging habitat (5 x *E. globulus* and a minor patch (0.27 ha) of degraded *E. ovata*), it is not expected the native vegetation at the site represents significant habitat for the species.	The proposed action is unlikely to significantly impact habitat critical to the survival of Swift parrots (*L. discolor*) known or likely to occur within the Project Area.
Disrupt the breeding cycle of a population	The native vegetation to south of the Huntingfield site contains limited nesting habitat for Swift parrots (*L. discolor*) in the form of 13 trees potentially suitable habitat trees. Currently, this area is not identified as a breeding site, however further targeted surveys during the breeding season would be required to determine this. The proposed action will not remove or modify any nesting habitat for Swift parrots (*L. discolor*) within the Project Area. Given the predicted low abundance of Swift parrots (*L. discolor*) at the site, limited potential nesting habitat and limited foraging habitat, it is not expected the native vegetation at the site represents significant habitat for the species.	The proposed action is unlikely to disrupt the breeding cycle of Swift parrots (*L. discolor*) known or likely to occur within the Project Area.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action will not remove or modify any nesting habitat for Swift parrots (*L. discolor*) within the Project Area.	The proposed action is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that Swift parrots (*L. discolor*) known or likely to occur within the Project Area is likely to decline.
Result in invasive species that are harmful to the species becoming established in the species' habitat	The proposed action is likely to increase the number of domestic house cats frequenting the area. The 'National Recovery Plan for the Swift Parrot – *L. discolor*' recognises the predation of the species by cats (*Felis catus*) as a threatening process relevant to the swift parrot. Given the scale of possible nesting habitat (13 trees) and minor patch of foraging habitat (0.27 ha), the Huntingfield site is unlikely to represent a significant resource for the species and its abundance at the site would likely be minimal and randomised from year to year. Therefore, localised impacts to the species as a result of the invasion of pests is unlikely to represent a significant impact to the overall Swift parrot species.	The proposed action has the potential to result in invasive species (i.e. cats) that may be harmful to Swift parrots (*L. discolor*) known or likely to occur within the Project Area becoming established within the Project Area. However, given the minimal extent of the habitat suitable for the species within the Huntingfield site, no significant impact is expected as a result of the proposed action. Mitigation measures and strategies are discussed in section 5 below to mitigate this impact.
Introduce disease that may cause the species to decline	It is recognised that Psittacine Beak and Feather Disease is considered a threat to Swift parrots (*L. discolor*)	The proposed action is unlikely to introduce disease that may cause Swift parrots (*L. discolor*) known or likely to

Impact criteria	Review of impacts	Assessment outcome
	however the proposed action is not expected to increase the likelihood that this disease will increase within the species.	occur within the Project Area to decline.
Interfere with the recovery of the species	Currently, this area is not identified as a breeding site, however further targeted surveys during the breeding season would be required to determine this. The proposed action will not remove or modify any breeding or foraging habitat for Swift parrots (*L. discolor*) within the Project Area. Given the predicted low abundance of Swift parrots (*L. discolor*) at the site, limited potential nesting habitat (13 potentially suitable habitat trees) and limited foraging habitat (5 *E. globulus* and a 0.27 ha patch of degraded *E. ovata*), it is not expected the native vegetation at the Huntingfield site represents significant habitat for the species.	The proposed action is unlikely to interfere with the recovery of Swift parrots (*L. discolor*) known or likely to occur within the Project Area.

4.5 Conclusion on the likelihood of a significant impact

The proposed action has a 'real chance or possibility' to have a significant impact on Endangered or Critically Endangered species, as outlined in the *EPBC Act Policy Statement Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (Department of the Environment (DotE) 2013). The potential impacts relevant to the proposed action have been reviewed and mitigation measures have been proposed for the residual impacts likely to occur. This assessment has considered the information from the Approved Conservation Advice (TSS, 2016), the Fauna Recovery Plan (TSS, 2006), the previous assessments and field surveys conducted by GHD for the overall Huntingfield Master Plan, Stage 1 of the Master Plan, the proposed Roundabout and Channel Highway upgrades and the North Barker Significant Impact Assessment for MNES. A literature review of previous studies was also undertaken with specific respect to impacts to Forty-spotted pardalote*,* suitable habitat and known occurrences of the species at the Huntingfield Site. For the proposed action, conclusions for MNES with the greatest potential for adverse impacts are described below.

4.5.1 Threatened fauna (vulnerable, endangered, and critically endangered)

The proposed action has the potential to impact on eight (8) of the nine (9) significant impact criteria for the Endangered Forty-spotted pardalote. It was determined that the proposed action is unlikely to impact any of the significant impact criteria for Swift parrot (*L. discolor*)*.* The majority of the suitable habitat for both species is located > 100m from the proposed action. The revised Huntingfield Master Plan has removed the installation of cycling and walking paths to the south of the site. Therefore, the proposed action will not remove any suitable habitat for threatened fauna within the Project Area. This has negated the direct impacts of the proposed action via the removal of native vegetation and suitable habitat for threatened fauna known to utilise the site.

The source of any potential impacts would be indirect and includes the degradation of suitable habitat as a result of weed invasion into areas of native vegetation, human disturbances to potential breeding populations and individuals (timber harvesting, bushwalkers, rubbish dumping etc.) and a potential increase in the introduction of feral species to the area.

Given the potential indirect impacts of the proposed action to the Forty-spotted pardalote, mitigation measures are proposed and discussed in the following section.

5. Proposed avoidance and mitigation measures

5.1 Description of measures proposed for impacts to MNES

GHD has identified three core objectives to avoid or reduce impacts to identified MNES. Individual mitigation measures set to achieve these objectives aim to establish avoidance and minimisation strategies. Measures contain tasks which are required to implement the mitigation measure. New measures are also introduced to provide and encourage avenues of dispersal for threatened fauna species between colonies/communities to facilitate potential species recovery.

5.1.1 Objective 1: Improve current and provide additional habitat for threatened fauna species known or projected to utilise the Huntingfield site

1. Measure: Develop a plan to revegetate areas adjacent to known suitable habitat for Forty-spotted pardalote.

   Task: Within 12 months post commencement of the activities related to the proposed action (2020/8869), the proponent will engage with a suitable qualified specialist to develop a Revegetation and Rehabilitation Plan. The plan will be submitted to the Department of Agriculture, Water and the Environment (DAWE) for approval prior the commencement of the activities proposed under the plan. One plan will be generated to encompass measures 1, 2, 3, 4 and 5 relating to the revegetation and rehabilitation activities proposed. A total of 7.9 ha has been identified as the 'maximum potential area' that could be utilised for revegetation purposes. The revegetation will aim to provide habitat for all fauna known to utilise the Huntingfield site, but with a targeted focus on providing suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote. The proposed Revegetation Plan will outline completion criteria to be achieved within a set timeframe which can be used to measure the effectiveness of the activities. Refer to Figure 2 (Appendix A) for areas which have currently been identified as potential revegetation sites.

   Outcome: Increase the extent of available suitable habitat for Forty-spotted pardalotes within the Huntingfield site.

2. Measure: Develop a plan to rehabilitate areas of known suitable habitat for Forty-spotted pardalote to be rehabilitated.

   Task: Within 12 months post commencement of the activities related to the proposed action (2020/8869), the proponent will engage with a suitable qualified specialist to develop a Revegetation and Rehabilitation Plan. The plan will be submitted to the DAWE for approval prior the commencement of activities proposed under the plan. One plan will be generated to encompass measures 1, 2, 3, 4 and 5 relating to the revegetation and rehabilitation activities proposed. A total of 4.6 ha has been identified as the 'maximum potential area' that could be utilised for revegetation purposes. This includes the patches (1-5) discussed in section 4.2.1, as identified during the NBES survey (2020). The rehabilitation will aim to provide habitat for all fauna known to utilise the Huntingfield site, but with a targeted focus on providing suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote. The proposed Revegetation and Rehabilitation Plan will outline completion criteria to be achieved within a set timeframe which can be used to measure the effectiveness of the activities. Refer to Figure 2 (Appendix A) for areas which have currently been identified as potential rehabilitation sites.

   Outcome: Improvement of the existing suitable habitat for Forty-spotted pardalotes within the Huntingfield site.

3. Measure: Develop a plan to revegetate and rehabilitate the vegetation surrounding the western tributary of Coffee Creek to establish and increase habitat connectivity between the Huntingfield Estate Colony and Peter Murrell Conservation Area.

Task: Within 12 months post commencement of the activities related to the proposed action (2020/8869), the proponent will engage with a suitable qualified specialist to develop a Revegetation and Rehabilitation Plan. The plan will be submitted to the DAWE for approval prior the commencement of activities proposed under the plan. One plan will be generated to encompass measures 1, 2, 3, 4 and 5 relating to the revegetation and rehabilitation activities proposed. The plan will aim to re-establish a vegetated corridor surrounding the tributary of Coffee Creek which links to the extant native vegetation in Peter Murrell Conservation Area. The revegetation/rehabilitation will provide habitat for all fauna known to utilise the Huntingfield site, but with a targeted focus on providing suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote throughout the tributary of Coffee Creek drainage line. The proposed Revegetation and Rehabilitation Plan will outline completion criteria to be achieved within a set timeframe which can be used to measure the effectiveness of the activities. Refer to Figure 2 (Appendix A) for areas which have currently been identified as potential revegetation and rehabilitation sites.

Outcome: Establishment of a corridor to facilitate movement of fauna species between the Huntingfield Estate and Peter Murrell Conservation Area populations.

4. Measure: Implement the activities of the Revegetation and Rehabilitation Plan.

   Task: Within 6 months post approval of the Revegetation and Rehabilitation Plan proposed under measures 1-3 of Objective 1, the proponent will engage a suitably qualified specialist to implement and adhere to the activities approved under the plan. The activities will provide habitat for all fauna known to utilise the Huntingfield site, but with a targeted focus on improving and providing additional suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote.

   Outcome: Measures 1, 2 & 3 are implemented in accordance with the plan and the extent and condition of habitat for the Forty-spotted pardalote throughout the Huntingfield site is increased.

5. Measure: Monitor and maintain the areas of revegetation and rehabilitation outlined in Objectives 1 and 2 to ensure the long-term viability of the fauna habitat.

   Task: Within 12 months post the commencement of the activities proposed under measures 1, 2 and 3 of Objective 1, the proponent will engage a suitably qualified specialist to monitor the revegetated and rehabilitated areas to determine compliance with the plan and any conditions imposed on the relevant approvals. In areas where monitoring of rehabilitation/revegetation has determined the activities are unlikely to meet the completion criteria, the proponent will undertake remedial activities until such a point that the completion criteria have been met. Monitoring will continue for the duration of the construction of the proposed development. After which time, areas of native vegetation and public open space will be handed over to a management organisation (to be determined by the proponent at a later date – see Measure 6).

   Outcome: Activities undertaken in accordance with the above proposed Revegetation and Rehabilitation Plan to meet the requirements of the completion criteria.

6. Measure: Native vegetation within the Huntingfield site, including the suitable habitat for Forty-spotted pardalote, is secured from the risk associated with development or clearing.

   Task: Within 12 months post commencement of the activities proposed under measure 4 of Objective 1, in collaboration with the relevant stakeholders, the proponent will secure areas of native vegetation including the suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote (as identified by the NBES Significant Impact Assessment (2020)), and those areas provided by the revegetation and rehabilitation activities outlined above. The final extent of the secured areas will be determined by the activities proposed under measures 1-3 of Objective 1. The maximum potential secured areas are shown in Figure 4 of Appendix A. Currently, the proponent is investigating all options for protecting the Forty-spotted pardalote habitat and surrounding native vegetation within the Huntingfield site, including the on-going management of the native vegetation and other areas of public open space within the Huntingfield. This may include the ceding of tenure from CT, and handing over to a local management organisation e.g. Kingborough Council or Parks and Wildlife.

   Options to secure areas of the site in perpetuity include a conservation covenant registered in accordance with the *Nature Conservation Act 2002* and placed on the subdivision certificate of title sealed plan; this will be included either as a condition imposed on the Planning Permit issued under the *Land Use Planning and Approvals Act 1993* that requires the developer to enter into a conservation covenant which is placed on each

new title in the development; or a conservation covenant under the *Land Titles Act 1980* on the subdivision titles.

Outcome: All habitat suitable for Forty-spotted pardalote foraging and breeding within the Huntingfield site is secured in perpetuity from the risks of clearing and development.

7. Measure: Provide additional nesting habitat for the Forty spotted pardalote.

   Task: Within 12 months post commencement of the activities related to the proposed action (2020/8869), the proponent will engage with a suitable qualified specialist to construct and install purpose-built pardalote nest boxes. Recent research (Edworthy, 2017) has shown Forty spotted pardalote breeding density and clutch size was noticeably increased in areas with nest boxes, indicating nest box addition is a promising conservation tool for the species. The installation of the boxes and associated details (quantity, location etc) will be outlined as part of the Rehabilitation and Revegetation Plan (see Measure 3). The plan will also include provisions for the on-going monitoring of the nest boxes by a suitable qualified specialist for the duration of the construction of the proposed development. The proponent has committed to engage with stakeholders of the Forty-spotted Pardalote National Recovery Team to assist in the planning and implementation of this measure.

   Outcome: The proposed development results in the addition of nesting habitat (in the form of nest boxes) within suitable habitat for the Forty spotted pardalote.

5.1.2 Objective 2: Minimisation of impacts on the ecological character of the Huntingfield Estate colony site and listed threatened species

1. Measure: No clearing of the native vegetation to the south of the Huntingfield site as a result of the proposed action. Refer to Figure 1 (Appendix A) for the Huntingfield site map.

   Task: Limit the construction activities of the proposed action to areas of cleared pasture or existing agricultural land.

   Outcome: Retention of all identified suitable habitat for threatened species known or projected to utilise the Huntingfield site.

2. Measure: Restrict access to the native vegetation at the site.

   Task: Within 6 months post commencement of the revegetation and rehabilitation activities proposed under Measure 4 of Objective 1, the proponent will install a permanent fence around boundary of the native vegetation patch at the south of the Huntingfield site. Fencing will be included as part of the revegetation and rehabilitation activities from section 5.1.1 as a best practice measure to reduce detrimental impacts from natural (native or invasive herbivores) or anthropogenic factors. Fencing of remnant woodlands has been proven to improve and enhance tree regeneration, improve native ground cover and improve soil conditions (Spooner & Briggs, 2008). Additional fencing is proposed under this measure to protect contiguous native vegetation patches (those without revegetation/rehabilitation activities proposed) from the risk of anthropogenic impacts i.e. walkers or bikers accessing the vegetation for recreational activities. An indicative outline of the fence is shown in Figure 4 (Appendix A). The final positioning of permanent fence locations proposed under this measure will be impacted by the locations of the revegetation and rehabilitation areas and may be subject to change. Fences aim to limit any degradation of native vegetation within the Huntingfield site and work in conjunction with proactive conversation activities (Objective 1) to increase and improve the extent of habitat for environmental values at the site. Fencing which provides a significant physical barrier to pedestrian access (i.e. cyclone fencing) would limit the movement of some ground-dwelling fauna species and act to isolate (physically & genetically) some fauna populations. Whereas conservation fencing which allows and facilitates the movement of fauna species (i.e. timber post and mesh) would provide a physical deterrent to pedestrian movements, and therefore is likely to be the preferred option. Also, measures 5 & 6 in section 5.1.2 will act to increase the knowledge of Forty-spotted pardalote amongst the local community and discourage residents from accessing areas of suitable habitat, whilst directing them towards established pathways.

   Outcome: Disturbance to the native vegetation patch to the south of the Huntingfield site is limited which reduces the opportunity for disturbance and/or damage associated to the native vegetation and aims to improve fauna habitat quality.

a. Given the locations of revegetation and rehabilitation activities will impact the final locations of the conservation fencing proposed under this measure, the proponent will install temporary fencing until such a time that the exact and final fencing permanent locations can be determined. This will aim to limit the degradation of native vegetation from anthropogenic factors (e.g. bushwalkers or bike riders) within the Huntingfield site during the construction activities related to the proposed action. The temporary fencing will be installed within 6 months post commencement of activities related to the proposed action (2020/8869).

3. Measure: Reduce the spread and occupancy of invasive flora species throughout areas of native vegetation at the Huntingfield site.

   Task: Prior to the commencement of the activities related to the proposed action (2020/8869), the proponent will engage a suitably qualified consultant to develop a *Construction Environmental Management Plan* (CEMP) containing provisions for a weed control management program for areas of native vegetation at the Huntingfield site. The CEMP will be developed in accordance with the DAWE *Environmental Management Plan Guidelines 2014.*

   Outcome: The condition of the native vegetation, including those areas of suitable habitat for threatened fauna species, at the site is maintained or improved during the period of construction through the removal of invasive flora species.

4. Measure: Limit the degradation of native vegetation at the Huntingfield site caused by excess waste.

   Task: Prior to the commencement of the activities related to the proposed action (2020/8869), the proponent will engage a suitably qualified specialist to develop a *Construction Environmental Management Plan* (CEMP) which contains provisions for rubbish and waste collection for the Huntingfield site, including the native vegetation patch to the south and all areas of suitable habitat for threatened fauna species. The CEMP will be developed in accordance with the DAWE *Environmental Management Plan Guidelines 2014.*

   Outcome: The condition of the native vegetation, including those areas of suitable habitat for threatened fauna species, at the site is maintained or improved during the period of construction through the removal of excess waste.

5. Measure: Disturbance of suitable habitat for threatened species is limited as part of the intensification of use of the Huntingfield Estate.

   Task: Within 3 months post commencement of the activities related to the proposed action (2020/8869), the proponent will direct pedestrian traffic towards one access point to Peter Murrell Conservation Area from the Coffee Creek (western) portion of the reserve to limit disturbance in the areas of suitable habitat for Forty-spotted pardalote within the reserve. This will be done through the implementation of the Master Plan design, shown in Appendix A - Figure 1. The proposed direct access point is shown in the north-west corner of the site.

   Outcome: The impacts of the presence of pedestrians is limited and the quality of the suitable habitat for Forty-spotted pardalote is not adversely affected, whilst habitat within Huntingfield is maintained or improved.

6. Measure: Disturbance of suitable habitat for threatened species is limited as part of the intensification of use of the Huntingfield Estate.

   Task: Within 6 months post commencement of the activities related to the proposed action (2020/8869), the proponent will install conservation fencing on the eastern boundary between PMR and the Huntingfield site to limit unwanted and prohibited access. The use of conservation fencing, designed in consultation with the relevant authorities (Parks and Wildlife) will allow for fauna movement between the sites and aim to protect any ground dwelling species from isolation and limitation of the gene pool within PMR.

   Outcome: The impacts of the presence of pedestrians is limited and the quality of the suitable habitat for Forty-spotted pardalote is not adversely affected, whilst habitat within Huntingfield is maintained or improved.

7. Measure: Encourage the public not to access the native vegetation patch to the south of the Huntingfield site and encourage targeted access and use of Peter Murrell Conservation Area.

   Task: Within 12 months post commencement of the activities related to the proposed action (2020/8869), the proponent will provide the local residents and members of the public with documentation on the ecological importance of the Huntingfield site and adjacent vegetation as foraging habitat and potential breeding grounds

for Forty-spotted pardalote colonies in the area. The proponent will provide marked maps and/or informative signs for education and public awareness. Access to areas of suitable habitat will be communicated as a prohibited activity. Install signage on the boundaries of suitable habitat areas and extant native vegetation areas. This will likely require negotiation with the relevant authorities (Parks and Wildlife) to determine the location, placement and necessary information to be provided.

Outcome: Access to the native vegetation patch to the south of the Huntingfield site is reduced which limits the opportunity for disturbance and/or damage associated to the native vegetation and aims to maintain or improve fauna habitat quality.

8. Measure: Impacts to native fauna species from an increase in domestic house cats as a result of the proposed action are mitigated and limited.

   Task: Prior to the commencement of activities related to the proposed action (2020/8869), the proponent will liaise with the relevant stakeholders (Kingborough Council, DPIPWE etc) to develop a suitable restrictive mechanism related to a reduction of feral species (i.e. *Felix catus* or cats) at the Huntingfield site. The two potential options for mechanisms that restrict or limit cat ownership that result in a covenant being placed on the sealed plan; can include either a condition imposed on the Planning Permit issued under the *Land Use Planning and Approvals Act 1993* that requires the developer to enter into a Part V agreement that specifies a restrictive covenant relating to cat management is placed on each new title in the development; or a restrictive covenant under the *Land Titles Act 1980* on the subdivision titles.

   Outcome: Mitigation against increased predation on threatened species by feral cat population with higher density development.

   a. Communities Tasmania (CT) has held discussions with the Kingborough Council since June 2018 on the potential options for the protection of fauna values within and adjacent to the Huntingfield site from the risk of invasive fauna predation. In December 2020, Kingborough Council met with CT and GHD staff to discuss the practicalities of the planning mechanisms mentioned above and the following two options for limiting and restricting cats; a prohibition on the keeping of cats i.e. 'The owner or occupier agrees not to introduce and keep domestic cats', or a cat 'at large' requirement on the keeping of cats (consistent with the Tasmanian *Dog Control Act 2000*) i.e. 'The owner of a cat must not allow a cat to be at large', whereby - "at large", in relation to a cat, means that the cat is –

      i. in a public place and not restrained or secured; or

      ii. on private premises without the consent of the occupier.

      "restrained" means enclosed in a container suitable for the transport of cats.

      "secured", in relation to a cat, means that the cat is attached to a lead not more than 2 metres long that is – (a) held by hand by a person able to control the cat; or (b) tethered to a fixed object.

   b. The inclusion of cat prohibition or 'at large' provision for residents of the Huntingfield Development will help shape community standards about responsible pet cat ownership. The majority of compliance work involves education, and as is the case with the majority of legislation, it is the small minority of cases where legal action is required.

   c. With respect to the option of cat 'at large' provision under Council's Bruny Island Cat By-law, this approach has been well accepted by the community, with anecdotal evidence indicating approximately 60% compliance with the by-law from known cat owners (NRM South, 2021). Under this approach people can choose to contain their cat inside their house and/or within an enclosure / fence-top system / use a harness and lead when outside with their cat.

   d. Recent correspondence from CT (E. Kavic, personal communication, 12 October 2021) indicated they were awaiting legal advice from the Crowns Solicitors office as to the pros and cons of each mechanism prior to committing to a preferred option.

   e. Correspondence from CT (E. Kavic, personal communication, 29 November 2021) indicates a condition on the planning permit from Kingborough Council (Condition 26) for Stage 1 of the

Master Plan includes the following covenant applied to all lots on the Title: *"The owner or occupier must not introduce or keep domestic cats, unless otherwise approved by the General Manager in Writing. The General Manager will only approve the introduction and keeping of cats where there is sufficient justification, and the owner or occupier agrees to and can demonstrate that any cat will be contained withing the lot boundary at all times".* It is expected that the above condition will be applied to all subsequent stages of the development as part of the planning approvals process.

i. The enforcement of the covenant with be undertaken by Kingborough Council, as will any community education programs or activities.

9. Measure: Mitigate the indirect impact of stormwater on the native vegetation (*E. Viminalis*) susceptible to water availability changes to the south of the Huntingfield site as a result of the proposed action.

   Task: The development does not propose to reduce the availability of water into Coffee Creek or its tributaries, divert natural stream flow, irrigate pasture or construct in-stream dams. Overland flows through the minor tributary within the Huntingfield site are proposed to persist as per the existing conditions of the site.

   A stormwater basin has been proposed to address overland flow path capacities and to assist the development to meet modelled stormwater runoff capacity. Stormwater will be directed to a retention basin at the southern end site. This basin will service stages 1-3 and has a TasWater recommended and approved discharge point into Coffee Creek (Condition 9 and 11 of DA 2020-26 for the residential sub-division was issued by Kingborough Council). The water in this basin will be naturally treated to standards prior to discharge.

   Stormwater treatment

   a. Grassed filter strips where the receiving surface is robustly surface lined with vegetation, and suitable flow volumes and velocities permit.
   b. Buffer strips are effective in the removal of coarse to medium sized suspended solids and bed loads. They also can assist in reduction of peak flows for more common, smaller, storm events and promote infiltration dependent upon the underlying soil conditions. Under the current model, they represent catchment conditions where runoff from impervious surfaces needs to flow across grassed areas towards the stormwater drainage system or receiving watercourse.
   c. Swales are open channel systems which use vegetation to aid the removal of sediment and suspended solids. These systems are subjected to high hydraulic loading and the removal efficiency is dependent on the density and height of the vegetation in the channel. As for buffer strips, the vegetation can assist in reducing peak flows for a range of events (dependent on the swale width and length) and may also be beneficial in quantity reduction through infiltration into the ground surface, depending upon the underlying soil conditions.
   d. Wetlands are designed for stormwater pollutant removal (nutrients, suspended solids, metals) and to improve the quality of stormwater runoff from urban catchments. Aside from providing amenity and recreational value to the community, wetlands provide for wildlife habitat, management of stormwater runoff volumes and frequency, stormwater harvesting and reuse opportunities, and minimal maintenance requirements once established. The area surrounding the basin will be revegetated to provide additional habitat for Forty-spotted pardalotes and other native fauna, providing habitat connectivity between Huntingfield and PMR.
   e. Infiltration will occur in all water quality devices proposed in this design. Infiltration into the ground surface reduces the volume of stormwater, and hence the frequency of runoff and the mass of contaminants carried, by infiltration into the bed of the basin, swale, and buffer strip.
   f. Inflows greater than the storage and infiltration capacity of the structure will overflow and continue downstream. By reducing the volume of surface runoff, infiltration systems help to counteract the increase in runoff volume and frequency that generally accompanies land development.

   Outcome: It is not expected the development will reduce or negatively impact water availability within Coffee Creek or its tributaries, and act to provide additional habitat and connectivity for the Forty-spotted pardalote.

5.1.3 Objective 3: Minimise disturbance to threatened fauna species as a result of the proposed action

1. Measure: Threatened fauna species known or projected to occur at the Huntingfield site or in the adjacent vegetation are not adversely impacted by the proposed action.

   Task: Prior to the commencement of the activities related to the proposed action (2020/8869), the proponent will engage a suitable qualified specialist to develop a *Construction Environmental Management Plan* (CEMP) outlining measures for minimising impacts to threatened fauna species as a result of the proposed action. The CEMP will be developed pursuant to the conditions of the planning permit from Kingborough Council and in accordance with the DAWE *Environmental Management Plan Guidelines 2014* as part of best practice environmental management of the Huntingfield Site. With respect to fauna management, the plan should include, but is not limited to, records of fauna encounters, site inductions, no go zones/buffers and monitoring and compliance with the plan.

   Outcome: The proposed action limits adverse impacts on any threatened fauna species occurring in the suitable habitat at the Huntingfield site.

2. Measure: Limit the impacts of the proposed action on the breeding activities of Forty-spotted pardalote at the Huntingfield Site.

   The measures outlined in above Objectives 1, 2 & 3 aim to mitigate any direct and indirect impacts of the Huntingfield development. As such the proponent has agreed to the provision of revegetation activities in cleared areas adjacent to Forty-spotted pardalote habitat, rehabilitating known patches of pardalote habitat and establishing habitat connectivity between the Huntingfield estate and PMR (Objective 1). Additional measures included statutory protection of native vegetation patches including reveg/rehab areas (Objective 2), fencing to reduce human traffic (Objective 2) and implementation of a weed management program with provisions for rubbish collection (Objective 2). Overall, the development would aim to increase the availability of Forty-spotted pardalote habitat (including nest boxes for breeding) whilst improving the condition of the previously identified habitat. Given no native vegetation is proposed to be removed and the development aims to increase the scale and condition of suitable habitat, it was deemed appropriate that a no-construction buffer would be sufficient during the Forty-spotted pardalote breeding season.

   Task: During the breeding season for the Forty-spotted pardalote a buffer zone will be implemented from areas of known suitable habitat (Patches 1-5 – Figure 3 of Appendix A) for the species within the Huntingfield site. Activities related to the proposed action (i.e. construction or earthworks activities) will be not permissible within any buffer zone(s) during the designated period. Buffer distances will be determined according to the extent and condition of the suitable habitat for the Forty-spotted pardalote and the ability to support pardalote colonies, as determined by the NBES site visit and previous GHD field surveys.

   The precedence and recommendation for a 100m buffer comes from a previous development on Bruny Island whereby remnant forest was to be demolished and converted to pasture for the purposes of grazing. That development included the direct removal of native vegetation adjacent to suitable foraging habitat (white gums) for the Forty-spotted pardalote, acting to fragment habitat and exposing the vegetation to edge effects. Although this previous development shares similarities to the current proposed development, no native vegetation is proposed to be removed, and the Communities Tasmania has agreed to the mitigation measures outlined above which will act to increase the scale and condition of suitable nesting, breeding and foraging habitat, a seasonal buffer was considered appropriate.

   In patches 1, 2 & 3 which have been identified with the potential to support populations Forty-spotted pardalote populations[3] (NBES, 2020), a 100m buffer distance could be applied during the breeding season[4]. Patch 4 (0.27 ha) has been surveyed to be small, isolated, relatively degraded and suitable as a foraging resource only (NBES, 2020). Given the patch is unable to support a colony and is not suitable for nesting, a 50m buffer could be applied during the breeding season. Patch 5 (0.06 ha) is greater than 100m from any proposed activities, and therefore, a natural buffer is in place and will be maintained during construction. The designated buffer

[3] Dr Sally Bryant suggests 20 trees are enough to support a colony

[4] 100m buffer has been suggested in the NBES Significant Impact Test (2020), based on previous communications between NBES and DPIPWE as agreed as a suitably protective buffer to ensure the integrity of Forty-spotted pardalote (*P. quadragintus*) habitat. This agreement comes from a development where native vegetation was to be destroyed and converted to pasture

zone(s) will be outlined in the *Construction Environmental Management Plan* (CEMP). Refer to Figure 3 (Appendix A) for potential season buffer(s) distances based on fauna habitat patch quality.

Outcome: The development of the proposed action does not adversely impact on any breeding activities by Forty-spotted pardalote(s) occurring in the suitable habitat at the Huntingfield site.

6. Residual impacts

Proposed avoidance measures outlined in Section 5 demonstrate that there will be no direct impacts on MNES specifically relating to the loss of key ecological components of Forty-spotted pardalote or Swift parrot (*L.* discolor) habitat. This is due to the retention and avoidance of white gum (*E. viminalis*) and blue gum (*E. globulus*) within the Huntingfield site which are important food-producing trees for these threatened bird species. In some cases, mature hollowing-bearing trees also provide nesting opportunities.

Impacts to MNES may be indirect and these are addressed through mitigation measures outlined in Sections 5.1.1 to 5.1.3. These actions will preserve and enhance existing habitat values, as well as minimise potential impacts from the Huntingfield site construction activities and longer-term potential disturbance due to the close proximity of an urban area to threatened species habitat.

Residual impacts are not likely to be significant, as such, an offset is not proposed for any species identified within the Project Area.

7. Other required approvals and conditions

7.1 Approvals

7.1.1 Environmental

In Tasmania, development proposals for specific projects (known as Level 2 activities) are referred by Local Government to EPA Tasmania for environmental impact assessment. The *Environmental Management and Pollution Control Act 1994* (EMPC Act) defines a range of activities (i.e. Level 2 activities) in Tasmania that require assessment via Environmental Impact Assessment. The proposed action does not meet the definitions of these activities under the EMPC Act, as it is defined as Level 1 activity.

Level 1 Activities are assessed under the *Land Use Planning Approvals Act 1993* (LUPA Act) typically by the relevant Local Government Authority. Level 1 activities do not require environmental impact assessment.

7.1.2 Planning

In Tasmania, the key legislation setting out the planning process, including the roles and functions of the Minister for Planning and Local Government, the Tasmanian Planning Commission and Councils, is the *Land Use Planning and Approvals Act 1993* (LUPA Act).

The Stages 2 and 3 of the Huntingfield Master Plan will be subject to assessment under the LUPA Act, by instrument of a development application submission for assessment to the Kingborough Council.

Under the LUPA Act, Local Government planning schemes regulate the way that land can be used or developed. It sets out the overall approach to planning in each Local Government Area and the specific requirements or standards for the use, development and protection of land.

The proposed action would be subject to planning approval by the Local Government under the LUPA Act, under the *Kingborough Interim Planning Scheme 2015*.

The applicable planning scheme sets out the standards that must be met to gain planning approval for the proposed action. The planning scheme has two parts:

– text that sets out the requirements or standards for use and development, and
– maps that show zones and overlays indicating where different requirements or standards apply.

Some parts of each Local Government's planning scheme are common to all planning schemes as required by a Planning Directive issued by the Minister for Planning and Local Government. Other parts of the planning scheme have been developed either regionally, with other councils or locally, by the Local Government responsible for the planning scheme.

In this context Stages 2 and 3 are zoned either Inner Residential or General Residential, with the balance bushland area zoned Open Space.

There may be other environmental and heritage legislation that apply to the project, such as the *Historic Cultural Heritage Act 1993, Aboriginal Heritage Act 1975* and/or the *Threatened Species Protection Act 1995*.

7.1.3 Conditions

The development application submitted for approval under the Planning Scheme will be assessed and if deemed to comply with the applicable standards a planning permit will be issued with the set of conditions that apply to the development. These will include any conditions relating to environmental management, monitoring and enforcement. One of the planning permit conditions is highly likely to require submission of a Construction Environmental Management Plan (CEMP) prior to the commencement of activities (relating to the proposed action).

Conditions imposed on the planning permit for cat management will likely include a condition as evident with the Stage 1 development; the requirement for the following covenant applied to all lots on the Title: "*The owner or*

occupier must not introduce or keep domestic cats, unless otherwise approved by the General Manager in Writing. The General Manager will only approve the introduction and keeping of cats where there is sufficient justification, and the owner or occupier agrees to and can demonstrate that any cat will be contained withing the lot boundary at all times". It is expected that the above condition will be applied to all subsequent stages of the development as part of the planning approvals process (including Stages 2 and 3; the Proposed Action).

The potential mechanisms to place restrictions on cat ownership are either a restrictive covenant placed upon the Certificate of Title Sealed Plan under the *Land Titles Act 1980* or the instrument of a Part V Agreement under the *Land Use Planning and Approvals Act 1993* entered into between the developer, property-owner and Kingborough Council.

A similar mechanism is employed for the proposed conservation covenants as discussed in Section 5.1.1. Within 12 months post the commencement of the activities proposed under measure 4 of Objective 1, in collaboration with the relevant stakeholders, the proponent will place a conservation covenant over areas of suitable habitat (white gum - *E. viminalis*) for Forty-spotted pardalote as identified by the NBES Significant Impact Assessment (2020) and those areas provided by the revegetation and rehabilitation activities outlined above. The conservation covenant will be registered in accordance with the *Nature Conservation Act 2002* and placed on the subdivision certificate of title sealed plan; this will be included either as a condition imposed on the Planning Permit issued under the *Land Use Planning and Approvals Act 1993* that requires the developer to enter into a conservation covenant which is placed on each new title in the development; under the *Land Titles Act 1980* on the subdivision titles.

7.1.3.1 Monitoring and enforcement

Given the proposed action is subject to planning approval under the state LUPA Act and the *Kingborough Interim Planning Scheme 2015*, the Kingborough council is responsible for the enforcement of any conditions imposed relating to land use and the management of cats. Community complaints are the primary mechanism utilised by the council to monitor and measure compliance issues. A similar process would be used to monitor issues and complaints relating to the management of cats from the Huntingfield site. For example, a staged process is used for addressing complaints about cats (under Council's Bruny Island Cat Bylaw) and dog control (under the *Dog Control Act 2000*). This process involves receipt of the complaint, contact with the property owner, identification of issues and development of approach, follow up by council to determine progress and disciplinary actions (if required) under the *Cat Management Act 2009* (CMA). Council officers are authorised under the CMA and agreements are in place with local pet shelters for the receival of trapped cats.

8. Social and economic impacts

The proposed action aims to provide an affordable housing supply to Southern Tasmania in an area where there is increased demand for housing. The proposed action, including the development of the Huntingfield site will deliver substantial social and economic effects throughout the surrounding community. The provision of new housing for Tasmanian's is seen as a key social and economic imperative, and Huntingfield Stage 2 in this regard will assist the Government in delivering its Affordable Housing Strategy 2015-2025. The proposed action has received government funding. The Tasmanian Government received Australian Government grant funding to purchase the land in the 1970's.

The Tasmanian Government, on behalf of the Director of Housing, has previously delivered two stages of residential land supply at Huntingfield, delivering more than 200 lots to date. The remaining land will be subdivided and deliver approximately 460 lots including smaller, contemporary lots that will be more affordable particularly for first home buyers. The majority of the lots within the site will be sold on the open market with up to 15% to be retained for social and affordable housing.

The following includes some of the potential socio-economic impacts resulting from the proposed action:

8.1 A variety of housing types and densities on existing residents, schools, visitors and roads

These wider social, community, infrastructure, economic impacts warrant support from the Council and the Government as a stimulus for new investment. It should also be noted that the 460 lot subdivision will occur over a considerable length of time giving the broader market the opportunity to respond to the additional demand for service.

8.2 Delivery of affordable housing

Strong demand for housing and restricted supply in Greater Hobart has in the last few years put upward pressure on rents and housing prices, diminishing housing affordability, particularly for lower income households. A sharp fall in rental affordability has been linked to a contraction in the supply of rental properties associated with their repurposing as short-stay holiday rentals. CT has committed to deliver at least 15% of the total lots as social and affordable housing. This will take the form of a combination of social housing (subsidised rentals) and affordable housing options such as HomeShare, a shared equity scheme to lower the cost for eligible homeowners buying a home. Furthermore, the masterplan includes a significant number of smaller lots which will offer more affordable land prices in themselves while the total number of lots entering the market will to some extent locally address supply constraints which lead to price escalation. These measures, as part of the proposed action will provide an affordable housing supply and is increasingly being used/promoted across Australia as a way of dealing with the increasing cost of land issues. Well-designed housing will be required, and CT intends to retain greater control over the production of housing potentially in a Joint Venture with a major developer.

8.3 Sustainable development

The proposed rezoning of the Huntingfield site will provide fair, orderly and sustainable use and development of the site. The rezoning of the site will provide for a range of residential densities and supply of affordable housing and living outcomes. The site is well-serviced and connected to local schools, employment opportunities and recreational areas and will provide positive social and economic outcomes for the area.

8.4 Economic benefits

GHD engaged Choice Location Strategists on behalf of Communities Tasmania, to undertake a market and demand analysis to inform the Huntingfield Master Plan.

The market assessment is intended to provide an appreciation of the socio-economic and demographic character of the area and to provide a competitive environment for the proposed estate to ensure that the Master Plan best

fits local circumstances. It is intended to provide recommendations as to the appropriate mix of development to ensure that the Huntingfield land release delivers greater housing choices and affordable options to Tasmania's housing shortage and the range of needs of a diverse range of households.

Stages 2 and 3 of the project are expected to inject over $40 million into the local economy, creating over 300 local jobs and other employment opportunities including construction contracting. The construction of homes on the land is expected to generate over $75million, creating over 550 jobs.

8.5 Stakeholder consultation

As described in the preliminary documentation request submission; Communities Tasmania has undertaken extensive public consultation as part of the development of the Huntingfield Master Plan.

The Huntingfield Master Plan has a Stakeholder Engagement Plan (SEP). The SEP identifies the range and types of stakeholders, and how and when it is intended to engage with them during different phases of the master plan development and implementation. The SEP was developed in accordance with the guiding principles for the International Association of Public Participation (IAP2). The engagement methods being used on this project include the Inform and Consult levels.

The key objectives of the SEP and stakeholder engagement activities are:

– Ensure that relevant stakeholders are informed about the project and are given the opportunity to be heard and provide feedback
– Provide stakeholders with an opportunity to ask questions and to identify areas of concern with respect to the project
– Demonstrate that concerns and issues raised by the stakeholders are considered in the development
– Implement an approach to stakeholder communications that is transparent and timely, and that is coordinated and consistent between Communities Tasmania and GHD
– Effectively and proactively identify and manage issues in a responsive and balanced manner; and
– Keep accurate records of interactions with stakeholders.

The key stakeholder engagement activities to date for the proposed action are shown in Table 6.

Table 6 Stakeholder engagement activities

Activity	Details
Adjacent landowners and schools	Meetings with adjacent landowners and schools to brief them on the project including documenting any actions required as part of construction
Letter of introduction	Letter of introduction for adjacent landowners advising that the project team will be in touch to talk to residents about the project.
FAQ	A series of project FAQs have been developed for the project.
Community letter	Letter to all nearby residents and landowners living within the immediate area. The aim was to invite participation in the community information sessions and seek feedback on the initial project design.
Community consultation sessions	Due to restrictions associated with COVID-19, planned face-to-face consultation sessions were unable to be held. Public consultation was undertaken using an interactive web-based tool (Social Pinpoint), in addition to email and written submissions. This was undertaken prior to finalisation of the proposed subdivision layout (including key civil design elements) and finalisation and submission of the Development Application;
Community Information sessions	Community information events were held to summarise feedback on the Schematic Design and changes made as a result of consultation. These were held prior to finalisation and lodgement of the Development Application.
Schematic Design Feedback Summary	To respond to concerns from community events and as far as possible address these by the final subdivision design layout.
Briefings	Presentations and briefings to a range of stakeholders including local environmental groups, aboriginal groups, schools and government bodies.

Activity	Details
Aboriginal Heritage Permit	The Aboriginal Heritage Council and Aboriginal Heritage Tasmania were briefed, and a permit application has been lodged.
Website	A website has been developed to present key information on the project. https://www.communities.tas.gov.au/housing/tasmanian_affordable_housing_strategy/key-projects/huntingfieldlandrelease
Interactive map	Due to restrictions associated with COVID-19, planned face-to-face information sessions were unable to be held. Public consultation was undertaken using the interactive web-based tool (Social Pinpoint), in addition to email and written submissions.

Stakeholders (individuals and organisations) from the following categories have been engaged during the development of the proposed action.

– Federal Government (including Department of Agriculture, Water and the Environment)
– State Government Agencies (including the Department of Primary Industries, Parks, Water and Environment, TasNetworks, TasWater, Housing Tasmania, Department of State Growth, Department of Justice, Planning Policy Unit, Tasmanian Planning Commission, Department of Police and Emergency Services)
– Local Government (including Kingborough Council)
– Landowners and local residents
– Community/Interest Groups
– Aboriginal Groups (South East Tasmanian Aboriginal Corporation (SETAC), Tasmanian Heritage Corporation Inc. (TAC) Aboriginal Heritage Council and Aboriginal Heritage Tasmania (AHT))
– Media

Community feedback has been collated into several key themes including:

– Transport infrastructure and traffic
– Housing density
– Cycling infrastructure
– Open space
– Flora and fauna, (including cat management)
– Stormwater and drainage
– Social considerations and housing supply order process

A fact sheet has been published responding to the key themes from the Community Consultation in September 2020, which is available via the Project website: https://www.communities.tas.gov.au/housing/tasmanian_affordable_housing_strategy/key-projects/huntingfieldlandrelease.

9. Environmental Record of Person(s) Proposing to Take the Action

There have been no changes to the environmental record of the applicant. Communities Tasmania has previously developed land without any significant natural or environmental values. All previous developments have been undertaken in accordance with relevant Commonwealth and State legislation for environmental protection. Communities Tasmania has no past or present proceedings against it under State or Federal environmental legislation. Furthermore, Communities Tasmania has no environmental policy or framework, however the proposal would be undertaken in accordance with site-specific environmental plans, including a construction environmental management plan (CEMP). These plans would be developed in accordance with relevant guidelines and advice provided from local, State and Federal Governments.

10. Conclusion on the likelihood of a significant Impact

The proposed action will not destroy or substantially modify any area of habitat of MNES species. The removal of walking and cycling paths from the proposal has negated the direct impacts of the removal of native vegetation to the south of the site. It is expected the proposed action will not remove or modify any habitat for threatened fauna species identified within the Huntingfield site or create barriers that may affect the movement of threatened species through the site or adjacent areas of habitat. Indirect impacts of the proposed action will be mitigated through limiting pedestrian access to areas of known suitable Forty-spotted pardalote habitat, the installation of fencing and provision of educational materials to the public, direction of pedestrian traffic to existing access points in Peter Murrell Conservation Area, the development and implementation of a Construction Environmental Management Plan (CEMP) with provision for weed and dieback management activities, rubbish and waste collection, provision of seasonal buffers distances from areas of known suitable habitat, and the development and implementation of a restrictive covenant within the intention to limit the impacts on native fauna species from domestic cat predation.

The development and implementation of a CEMP will act to limit the impacts of cats in the Huntingfield site for both Forty-spotted pardalote and Swift parrots (*L. discolor*).

The proposed action includes activities that may occasionally disturb some species for short periods of time which has the potential to temporarily displace individuals from identified sites (e.g. construction activities and the operation of heavy machinery). However, the overall impacts to the species as a result of this factor are largely unknown. To mitigate any possible disturbance, spatial buffers of no construction will be implemented during critical breeding periods to ensure construction activities related to the proposed action do not disturb threatened fauna. Additionally, areas of currently known suitable habitat for the Forty-spotted pardalote and some adjacent degraded and/or cleared vegetation will be identified for the purpose of rehabilitation and revegetation to increase and provide additional habitat for threatened fauna at the site.

Given the proximity of construction works and the installation of boundary fences during the period of construction at the Huntingfield Site, there is a low risk of collision with listed threatened birds and other threatened fauna. Species are not expected to disperse through unvegetated areas.

This assessment considered the objectives of the EPBC Act and the principles of the 'Ecologically Sustainable Development', outlined under section 2 and 3A of the Act respectively. The assessment also considered the potential impacts to MNES identified in the NBES Significant Impact Assessment (2020), field surveys undertaken to date by GHD for the Huntingfield Site and academic research relevant to the MNES to understand the potential impacts of the Project.

Potential impacts to protected matters under the EPBC Act as a result of the proposed action were identified and mitigation measures have been proposed to ensure they will be avoided, minimised and rehabilitated (where practicable). This assessment concluded that the proposed action is not likely to have a significant impact on protected matters under the EPBC Act. Given the above, it was determined the proposed action is environmentally acceptable with respect to impacts to relevant MNES, including Forty-spotted pardalote.

11. References and information sources

The following list includes the information sources inclusive of literature, listings and reports that were utilised in the preparation of this additional information report:

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The table below reviews the databases utilised in the preparation of this additional information requested report.

Table 7 Table of information sources

Reference Source	Reliability	Uncertainties
Threatened Species Link Tasmanian Government	Provides a summary of Management and conservation advice on Tasmania's threatened species. This includes both known habitat for many species (i.e. in or near habitat where the species has been recorded) and potential habitat (i.e. areas of habitat with appropriate characteristics for the species and within the species potential range which have not yet been adequately surveyed).	The fauna data on the Threatened Species Link is currently not being maintained. As such, some of the information may be out of date. TSL data has been developed to provide general information only. Field survey will be required to improve the accuracy, completeness, and relevance of TSL information to the proposed action.
Protected Matters Search Tool (PMST) Australian Government	Not all species listed under the EPBC Act have been mapped and therefore the PMST report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. PMST results have been used as a starting point to guide field survey and further investigation into the presence of any species or ecological communities of national environmental significance within the Project Area.	For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Reference Source	Reliability	Uncertainties
Natural Values Atlas Tasmanian Government	The NVA only includes verified flora and fauna records submitted to DPIPWE via the NVA. Although much of the NVA data has been through a variety of validation processes, the lists may contain errors. The spatial accuracy of the NVA data ranges from 5 m to over 10 km. Hence the location of mapped records may not reflect their exact location. Therefore the NVA search results have been used as a starting point to guide field survey and further investigation into the presence of flora and fauna species within the Project Area.	The NVA is not a complete database of species occurrences, and is generally reflective of where survey has previously occurred, so it is almost certain that some species and/or occurrences are not recorded. However, extensive field survey work was undertaken prior to this referral to validate the database results and further investigate the Project Area.
Species Profile and Threats Database (SPRAT) Australian Government	Database been compiled from a range of sources including listing advice, recovery plans, published literature and individual experts.	Database does not represent a complete source of information, and needs to be used in conjunction with other databases, relevant literature and field survey.
Conservation advice from the Threatened Species Scientific Committee (TSS, 2016)	A good source of information issued by the Department of Agriculture, Water and Environment (DAWE) for listed species under the EPBC Act providing guidance on immediate recovery and threat abatement activities to be undertaken to ensure conservation of subject species. This advice is approved by the Minister's delegate which cites several of its own information sources.	The conservation advice is a summary of advice and needs to be used in conjunction with other databases, relevant literature and field survey

Appendices

Appendix A

Maps and Figures

522,000 523,000 524,000 525,000

5,240,000

5,239,000

Roundabout

Stage 1

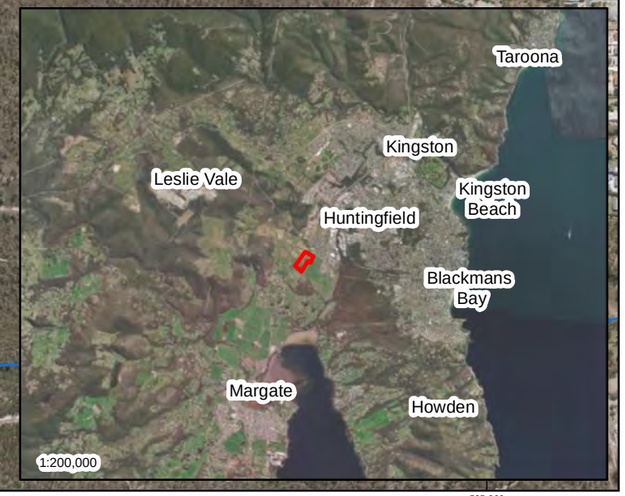
Stage 2

Huntingfield Site
(PID 9171495)

Stage 3

Stage 3

Coffee Creek



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0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Huntingfield Site
- Cadastral Parcels
- Watercourses

Proposed Staging

- Roundabout
- Stage 1
- Stage 2 (Project Area)
- Stage 3 (Project Area)

Department of Communities Tasmania
Huntingfield Master Plan and Civil Design

Job Number 32-18956
Revision B
Date 20 Oct 2021

Huntingfield Project Area

Figure 1

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Data source: The List, Aerial Imagery and Basemaps, Cadastral Parcels and land titles; Department of Communities, Huntingfeild Master Plan and Civil Design. Created by:tdcoates

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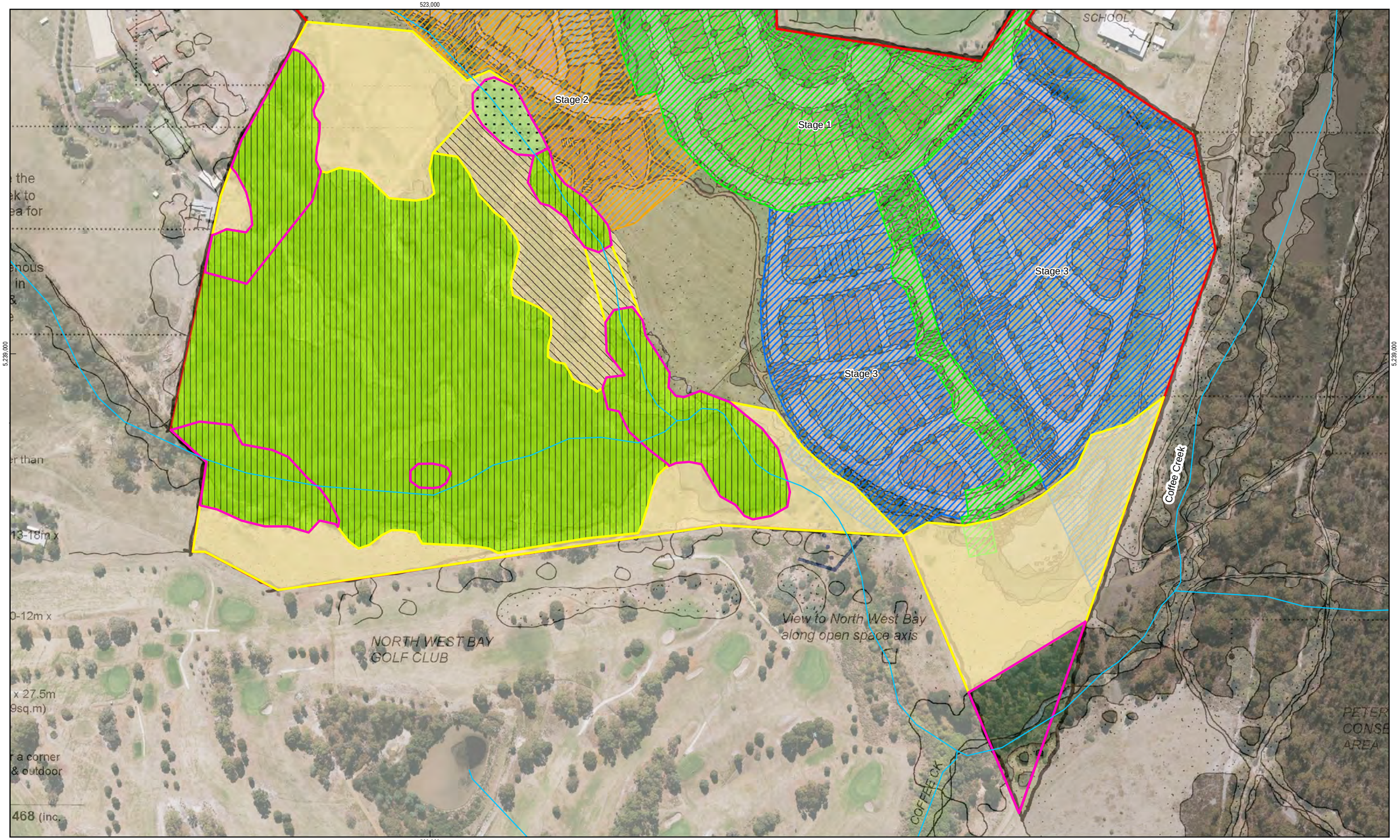

1:3,100 @ A3

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

Huntingfield Site
Watercourses

(TasVeg 4.0 Mapping units - Vegetation ground truthed by NBES 2020)

- (DAS) - *Eucalyptus amygdalina* forest and woodland on sandstone
- (DOV) - *Eucalyptus ovata* dry forest and woodland
- (FRG) - Regenerating cleared land
- (FAG) - Agricultural

Proposed Subdivision Staging

- Stage 1
- Stage 2 (Project
- Stage 3 (Project

Areas Identified for Potential Rehabilitation/Revegetation

- Rehabilitation
- Revegetation

GHD

Department of Communities Tasmania
Huntingfield Master Plan and Civil Design

Job Number 32-18956
Revision D
Date 01 Jul 2022

Potential Areas for Revegetation and Rehabilitation

Figure 2

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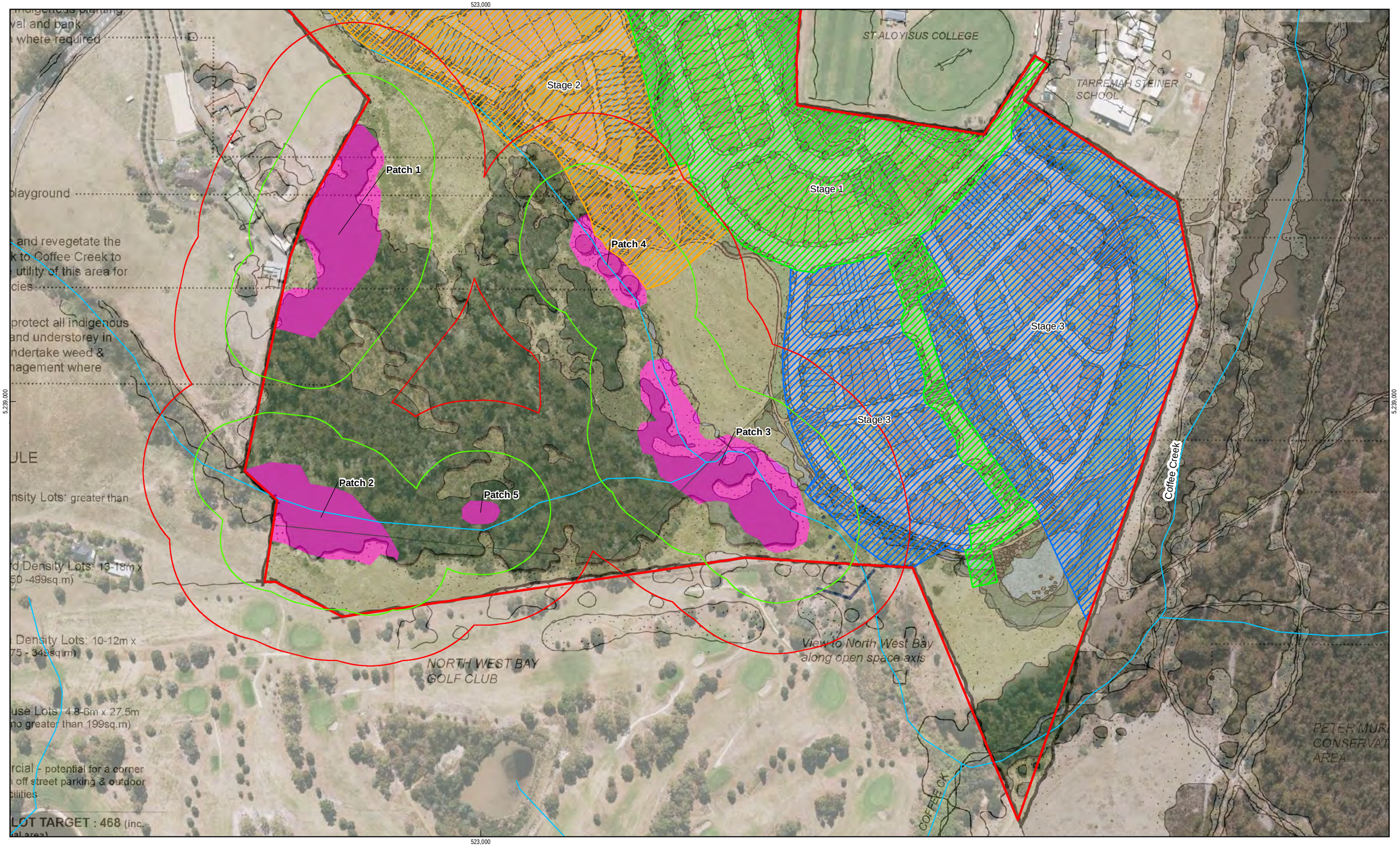

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0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

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- Huntingfield Site
- Stage 1
- Stage 2 (Project Area)
- Stage 3 (Project Area)
- Watercourses
- 100 Meter Buffer from *P. quadragintus* habitat
- 50 Meter Buffer from *P. quadragintus* habitat

Threatened Fauna Habitat Region

- Forty-spotted pardalote (*P. quadragintus*) foraging and potential breeding habitat (e/EN)

Department of Communities Tasmania
Huntingfield Master Plan and Civil Design

Job Number 32-18956
Revision D
Date 01 Jul 2022

Potential Seasonal Construction Buffer Zones

Figure 3

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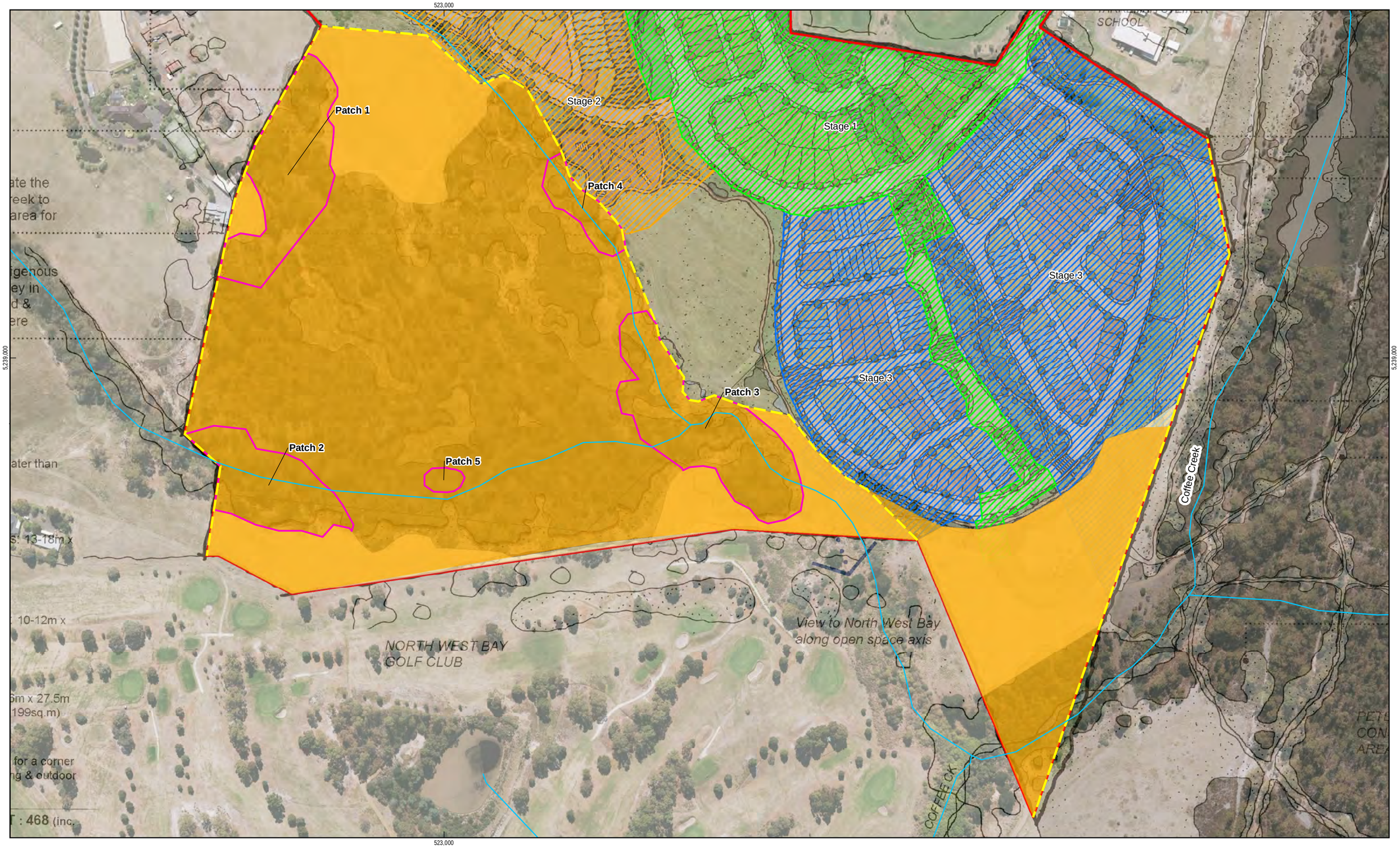

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0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

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Huntingfield Site
Maximum Potential Covenant
Indicative Fencing Locations
Watercourses

Proposed Subdivision Staging

Stage 1
Stage 2 (Project Area)
Stage 3 (Project Area)

Department of Communities Tasmania
Huntingfield Master Plan and Civil Design

Job Number	32-18956
Revision	D
Date	01 Jul 2022

Maximum Potential Covenant Area

Figure 4

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