

Final Report

Annual Compliance Report (Year 2) (28 November 2021 to 28 November 2022): 1-87 and 76-88 Groves Road (Hospital Swamp Bypass Channel), Armstrong Creek, Victoria (EPBC 2015/7553)

Prepared for

Barwon Heads Management Pty Ltd

December 2022



Ecology and Heritage Partners Pty Ltd

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DECLARATION OF ACCURACY

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed 

Full name (please print) Jacqueline Holst

Position (please print) Regional Manager

Organisation (please print including ABN/CAN if applicable) On behalf of Barwon Heads Management Pty Ltd

Date: / / 20/12/2022

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Barwon Heads Management Pty Ltd to undertake the Annual Compliance Report (Year 2) (28 November 2021 to 28 November 2022) for 1-87 and 76-88 Groves Road (Hospital Swamp Bypass Channel), Armstrong Creek, Victoria.

The requirement for the annual compliance monitoring is associated with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval (EPBC 2015/7553) for the **Warrally-Sparrovale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria**, issued by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly the Department of Agriculture, Water and the Environment (See Appendix 1). This decision was made under sections 130(1) and 133(1) of the EPBC Act. The details of the approval are presented in Table 1 below.

Table 1. Details of EPBC Act Approval (EPBC 2015/7553)

| | |
|--|--|
| Person to whom the approval is granted (approval holder) | Barwon Heads Management Pty Ltd |
| ACN of the approval holder | 621 820 344 |
| Action | To construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria [see EPBC Act referral 2015/7553] |

As per the conditions of the approval (Appendix 1), *the approval holder must prepare a compliance report for each 12-month period following the date of commencement of the action*. In accordance with Condition 2 of EPBC approval 2015/7553, an email was sent to the Department providing formal notification that the approved action commenced on Saturday 28 November 2020.

As such, the following compliance report details the activities undertaken during the second year following the commencement of construction (28 November 2021 to 28 November 2022).

1.2 Description of Action

Urban development in the Armstrong Creek growth areas will increase the peak run-off flow rate during rainfall events and will increase the total run-off volume entering Armstrong Creek (Venant Solutions 2015, 2018). Armstrong Creek flows into Baensch's Wetland, and subsequently Hospital Swamp, which are part of a larger wetland complex, comprising a number of wetlands, which are protected under the EPBC Act as part of the *Port Phillip Bay (western shoreline) and Bellarine* Ramsar site. An increase in run-off flow to Hospital Swamp could change the ecological character of Hospital Swamp (Venant Solutions 2015,2018; Lloyd et al 2011).

In order to mitigate impacts of increases in water volume on the Ramsar complex, in particular Hospital Swamp, the action comprised the construction of a stormwater bypass channel. The channel diverts water as required, from Armstrong Creek to an existing wetland (known as 'Sparrovale Wetland') within 109-215 Sparrovale Road, Charlemont, and 1-87 Groves Road, Armstrong Creek. The primary function of the channel is to mitigate impacts of increases in water volume on the downstream Ramsar complex, in particular Hospital Swamp, by bypassing high flows, typically during summer and autumn, around Hospital Swamp.

1.3 Location of the Project

The study area comprises the area covered by the Public Acquisition Overlay (PAO) within 76-88 Groves Road, Armstrong Creek. The construction footprint, however, did not include the entire area, and was limited to the area indicated in Figure 2, which comprised a 20-metre-wide corridor.

The 20-metre construction corridor also included a five-metre buffer located between the construction footprint and no-go fencing established between native vegetation, as per the approved Construction Environment Management Plan (CEMP) and Conservation Management Plan (CMP) (see Appendix 2 and Appendix 3, respectively).

The channel (and associated work zone) is immediately adjacent to Crown Allotment 2A, Section 4A, Parish of Connewarre, which is part of the Parks Victoria managed Lake Connewarre Wildlife Reserve. However, works did not encroach into the adjoining Lake Connewarre Wildlife Reserve.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2021), the study area occurs on the boundary of the Otway Plain and Victorian Volcanic Plain bioregions. It is located within the jurisdiction of the Corangamite Catchment Management Authority (CMA) and the City of Greater Geelong municipality.

2 EPBC ACT APPROVAL CONDITIONS

Annexure A of the EPBC Act Approval (2015/7553) (see Appendix 1) provides the following approval conditions:

2.1 Part A – Conditions specific to the action

1. For the protection of Spiny Peppercross, Orange-bellied Parrot and the Port Philip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, the action must be undertaken consistent with the Conservation Management Plan.

2.1.1 Conservation Management Plan

Ecology and Heritage Partners Pty Ltd was commissioned by Barwon Heads Management Pty Ltd to prepare a Conservation Management Plan (CMP), for the construction of the stormwater channel within 76-88 Groves Road, Armstrong Creek (Ecology and Heritage Partners 2020a; Appendix 3).

The purpose of the CMP was to provide a set of procedures associated with construction works within the study area. By implementing this CMP, Barwon Heads Management Pty Ltd aimed to ensure that the development did not impact on environmental values present within and adjoining the study area, and that appropriate environmental protection measures were implemented during all stages of construction works.

Section 4.3 (Monitoring and Compliance) of the CMP provides the monitoring and compliance framework to meet the Part A approval condition. A copy of the framework is provided in Table 2 below:

Table 2. Compliance Checklist as per Section 4.3 of the CMP

| Project Phase | Element | Performance target(s) |
|------------------|-------------------------------------|--|
| Pre-construction | Native vegetation | No-go fencing and signage installed. All construction staff inducted and aware of vegetation to be protected. |
| | Spiny Peppercross | No-go fencing and signage installed. All construction staff inducted and aware of vegetation to be protected. |
| | Growling Grass Frog | All construction staff inducted and aware of mitigation measures and translocation procedure. |
| | Orange Bellied Parrot | No-go fencing and signage maintained. All construction staff inducted and aware of vegetation to be protected. |
| | Vehicle, plant and material storage | Set down area designated. Spill kit located at correct locations / vehicles on site. Chemicals/fuel stored in bunded area. |
| | Sedimentation and erosion control | Silt fencing installed downslope of construction zone in high risk areas. |
| | Native vegetation | No-go fencing and signage maintained. |

| Project Phase | Element | Performance target(s) |
|-------------------|--|--|
| Construction | | Vegetation removal minimised where possible. |
| | Spiny Peppercross | No inadvertent damage to plants proposed to be retained. |
| | Growling Grass Frog | If an individual Growling Grass Frog is discovered during construction, salvage is conducted in accordance with this plan. Frog-fencing maintained. |
| | Orange Bellied Parrot | No-go fencing and signage maintained Vegetation removal minimised where possible. No new infestations of noxious weeds. |
| | Vehicle, plant and material storage | Compliance with designated fuel and chemical protocols (i.e. MSDS sheets). Vehicles and plants kept within designated areas. |
| | Noxious weeds | No new infestations of noxious weeds. |
| Construction | Sedimentation and erosion control | Silt fences maintained and regularly checked. Soil stored upslope of trench. Trenches backfilled each day. Construction area kept to a minimum area necessary. No significant incidents with sedimentation or pollutants in waterways. No significant areas of erosion. |
| Post-construction | Noxious weeds | No new infestations of noxious weeds, including but not limited to Tall Wheat-grass, Spear Thistle and African Boxthorn. |
| | Native vegetation, Spiny Peppercross, Growling Grass Frog, Orange Bellied Parrot habitat, management of hydrology, water quality | Develop an operation conservation management plan, to the satisfaction of DoEE, prior to the channel being commissioned. |

2.1.2 Performance Targets

Pre-construction Environmental Requirements

As per the pre-construction environmental requirements of the CMP, on 25 and 26 November 2020, Ecology and Heritage Partners Pty undertook the following:

- Environmental Site Induction;
- Pre-clearance Growling Grass Frog Survey; and,
- CEMP Inspection of Site Controls.

The full details of the environmental pre-commencement activities associated with the channel construction works are provided in a separate report prepared by Ecology and Heritage Partners, along with a signed and dated copy of the CMP Compliance Checklist, pertaining to the pre-construction and construction

environmental requirements is also provided in a separate report prepared by (Ecology and Heritage Partners 2022a).

Post-construction Environmental Requirements – Year 1

The post-construction requirements detail the following performance targets that must be met:

- No new infestations of noxious weeds, including but not limited to Tall Wheat-grass, Spear Thistle and African Boxthorn; and,
- Develop an operational conservation management plan, to the satisfaction of DCCEEW (formerly DAWE), prior to the channel being commissioned.

An inspection was undertaken by Council's Subdivision Inspector, Mr Mark Arkell on 6 May 2021, to which he advised that all works have been completed to Council's satisfaction (see Ecology and Heritage Partners 2022a).

Ecology and Heritage Partners also attended a series of site inspections on 10, 13 and 20 May 2021 and 08 December 2022, which included a pre-site inspection, and additional inspections with City of Greater Geelong Council and a post-site inspection following the finalisation of earth works and plantings within the study area. The inspections identified that there were **no** weed infestations or impacts to areas within the areas of no-go fencing. As a result, the post-construction performance target pertaining to no new infestations of noxious weeds has been met for Year 1 (Ecology and Heritage Partners 2022a).

Post-construction Environmental Requirements – Year 2

Ecology and Heritage Partners attended a series of site inspections on 8 and 14 December 2022, which included a post-site inspection following the finalisation of earth works and plantings within the study area. The inspections identified no noxious weed infestations or impacts to areas within the areas of no-go fencing. As a result, the post-construction performance target pertaining to no new infestations of noxious weeds has been met for Year 2.

Furthermore, an Operational Conservation Management Plan (OCMP) has been prepared and was submitted to DCCEEW (on 6 October 2021) for their approval. The OCMP was subsequently approved on 16 December 2021. An email was sent to City of Greater Geelong on 17 December 2021 notifying them of the OCMP approval. The purpose of the operational conservation management plan is to provide a set of procedures associated with the monitoring and management of the Balog Channel once it has been commissioned. By implementing this OCMP, the approval holder aims to ensure that the operation of the channel does not impact on environmental values present within and adjoining the study area, and that appropriate environmental protection measures are implemented during and following the post-construction stage.

2.2 Part B – Standard Administrative Conditions

Notification of date of commencement of the action

2. *The approval holder must notify the Department in writing of the date of commencement of the action within 10 business days after the date of commencement of the action.*

In accordance with Condition 2 of EPBC approval 2015/7553, an email was sent to 'postapproval@awe.gov.au' (on 30 November 2020) to provide formal notification that the approved action commenced on Saturday 28 November 2020.

Compliance Records

3. *The approval holder must maintain accurate and complete compliance records.*
4. *If the Department makes a request in writing, the approval holder must provide electronic copies of compliance records to the Department within the timeframe specified in the request.*

The approval holder has maintained accurate and complete compliance records (Ecology and Heritage Partners 2021a). Furthermore, the Declaration of Accuracy will be signed by the approval holder, declaring that *all the information and documentation supporting this compliance report is true and correct in every particular*, once the final report is approved.

Annual Compliance Reporting

5. *The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, or as otherwise agreed to in writing by the Minister. The approval holder must:*
 - a) *publish each compliance report on the website within 60 business days following the relevant 12 month period;*
 - b) *notify the Department by email that a compliance report has been published on the website within five business days of the date of publication;*
 - c) *keep all compliance reports publicly available on the website until this approval expires;*
 - d) *exclude or redact sensitive ecological data from compliance reports published on the website; and*
 - e) *where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the Department within 5 business days of publication.*

This report is the second Annual Compliance Report for the second 12 month period following the date of commencement of the action (period from 28 November 2021 to 28 November 2022).

According to Part C of the approval (Definitions), definition t., **website** means a set of related web pages located under a single domain name attributed to the approval holder and available to the public. It is our understanding that the approval holder (Barwon Heads Management Pty Ltd) does not have a website. Instead, the report has been published by APD Projects (on behalf of the approval holder) on 20 December 2022. Given that the report was published on 20 December 2022, this falls within 60 business days following the relevant 12-month period (i.e. it was published before 28 January 2023).

APD Projects will keep this compliance report publicly available on their website until this approval expires. A link to the published report on APD's website has been sent to DCCEE on 20 December 2022.

Reporting Non-compliance

6. *The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in a plan. The notification must be given*

as soon as practicable, and no later than two business days after becoming aware of the incident or non-compliance. The notification must specify:

- a) the condition which is or may be in breach; and*
 - b) a short description of the incident and/or non-compliance.*
- 7. The approval holder must provide to the Department the details of any incident or noncompliance with the conditions or commitments made in plans as soon as practicable and no later than 10 business days after becoming aware of the incident or non-compliance, specifying:*
- a) any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;*
 - b) the potential impacts of the incident or non-compliance; and*
 - c) the method and timing of any remedial action that will be undertaken by the approval holder.*

To date, no incidents, non-compliance with the conditions, or non-compliance with the commitments made in a plan, have occurred. As such, no notification or details of any incidents or non-compliances were required to be submitted to the Department.

Independent Audit

- 8. The approval holder must ensure that an independent audit of compliance with the conditions is conducted, as requested in writing by the Minister.*
- 9. For each independent audit, the approval holder must:*
 - a. provide the name and qualifications of the independent auditor and the draft audit criteria to the Department;*
 - b. only commence the independent audit once the audit criteria have been approved in writing by the Department; and*
 - c. submit an audit report to the Department within the timeframe specified in the approved audit criteria.*
- 10. The approval holder must publish the audit report on the website within 10 business days of receiving the Department's approval of the audit report and keep the audit report published on the website until the end date of this approval.*

To date, an independent audit of compliance with the conditions has not been requested by the Minister to the Department. In the event that an audit is requested, the approval holder will adhere to Conditions 8 through 10.

Completion of the Action

- 11. Within 30 days after the completion of the action, the approval holder must notify the Department in writing and provide completion data.*

As per Part C (Definitions) of the EPBC Act approval EPBC Act approval 2015/7553.

- **Completion of the action** means all specified activities associated with the action have permanently ceased; and,
- **Completion data** means an environmental report and spatial data information clearly detailing how the conditions of this approval have been met.

Email correspondence with Peter Blackwell from Post Approvals at DCCEEW (received on 10/05/2021) confirmed that completion of the action would include the post-construction activities such as the operational Conservation Management Plan (OCMP) and post-construction weed monitoring. After these items were completed, this would then trigger the 30 days in which a notification of the completion of works (along with completion data) is required to be sent to the Department.

Further clarification provided by Peter Blackwell (received on 07/10/2021) reconfirmed that 30-day period would commence upon completion of the implementation of the OCMP, which would include finalising all activities required by the plan.

It is anticipated that the implementation of the OCMP will occur following DCCEEW's approval of the OCMP *and* the handover of the channel to the City of Greater Geelong. This handover is to follow the completion of the EPBC Act referral's two-year monitoring/compliance period which expires on 30 June 2022. This will end the period of Barwon Heads Management's involvement in the Balog Channel.

Given this context, Peter Blackwell stated (on 12/10/2021) that when the responsibilities of Barwon Heads Management Pty cease, that would be when the 'completion of the action' occurs.

As such, the environmental report and associated completion data will be sent to DCCEEW following the handover of the channel to the City of Greater Geelong (after the 28 November 2021 to 28 November 2022 compliance period).

3 EPBC ACT APPROVAL CONDITIONS COMPLIANCE TABLE

A summary of the EPBC Act Approval Conditions are presented in the following Compliance Table (Table 3).

The following designations have been used when determining whether the project is compliant with the approval condition:

- **Compliant:** ‘Compliance’ is achieved when all the requirements of a condition have been met, including the implementation of management plans or other measures required by those conditions.
- **Non-compliant:** A designation of ‘non-compliance’ is given where the requirements of a condition or elements of a condition, including the implementation of management plans and other measures, have not been met.
- **Not applicable:** A designation of ‘not applicable’ is given where the requirements of a condition or elements of a condition fall outside of the scope of the current reporting period. For example, a condition which applies to an activity that has not yet commenced.

Table 3. EPBC approval conditions compliance table

| Condition No. | Condition | Is the project compliant with this condition? | Evidence/Comments |
|---------------|---|---|---|
| 1. | For the protection of Spiny Peppercress, Orange-bellied Parrot and the Port Philip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, the action must be undertaken consistent with the Conservation Management Plan. | Compliant | The action was undertaken in accordance with the Conservation Management Plan (CMP). Appendix 3 provides a copy of the CMP. Appendix 4 contains copies of the pre-construction and construction compliance records. Appendix 5 contains copies of the post-construction compliance records, including the associated Operational Conservation Management Plan. |
| 2. | The approval holder must notify the Department in writing of the date of commencement of the action within 10 business days after the date of commencement of the action. | Compliant | In accordance with Condition 2 of EPBC approval 2015/7553, an email was sent to 'postapproval@awe.gov.au' (on 30 November 2020) to provide formal notification that the approved action commenced on Saturday 28 November 2020. |
| 3. | The approval holder must maintain accurate and complete compliance records. | Compliant | The approval holder has maintained accurate and complete compliance records. See Appendix 4 and Appendix 5. Declaration of Accuracy has also been signed by the approval holder. |
| 4. | If the Department makes a request in writing, the approval holder must provide electronic copies of | Not applicable | The Department, to date, has not made a request to the approval holder to |

| | | | |
|--------|---|------------------|---|
| | compliance records to the Department within the timeframe specified in the request. | | provide electronic copies of the compliance records. |
| 5. | The approval holder must prepare a compliance report for each 12-month period following the date of commencement of the action, or as otherwise agreed to in writing by the Minister. | Compliant | Annual Compliance report for Year 2 (2021/22) has been prepared and published by APD projects (on behalf of the approval holder) on their website 20 December 2022. A link to the published report on APD's website has been sent to DCCEEW on 20 December 2022. |
| 5 (a). | The approval holder must: publish each compliance report on the website within 60 business days following the relevant 12-month period. | Compliant | The Year 2 annual compliance report has been published by APD projects (on behalf of the approval holder) on their website 20 December 2022. A link to the published report on APD's website has been sent to DCCEEW on 20 December 2022. |
| 5 (b). | The approval holder must: notify the Department by email that a compliance report has been published on the website within five business days of the date of publication. | Compliant | A link to the published report on APD's website has been sent to DCCEEW on 20 December 2022. |
| 5 (c). | The approval holder must: keep all compliance reports publicly available on the website until this approval expires. | Compliant | APD Projects will keep this compliance report publicly available on their website until this approval expires. |
| 5 (d). | The approval holder must: exclude or redact sensitive ecological data from compliance reports published on the website | Compliant | If required, any sensitive ecological data was redacted from this report, in preparation for its publication on APD Projects' website. |

| | | | |
|--------|--|-----------------------|--|
| 5 (e). | <p>The approval holder must:</p> <p>where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the Department within 5 business days of publication.</p> | Compliant | A link to the published report on APD's website has been sent to DCCEEW on 20 December 2022. |
| 6. | <p>The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in a plan. The notification must be given as soon as practicable, and no later than two business days after becoming aware of the incident or non-compliance. The notification must specify:</p> <ul style="list-style-type: none"> a) the condition which is or may be in breach; and, b) a short description of the incident and/or non-compliance. | Not applicable | |
| 7. | <p>The approval holder must provide to the Department the details of any incident or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 10 business days after becoming aware of the incident or non-compliance, specifying:</p> <ul style="list-style-type: none"> a) any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future; b) the potential impacts of the incident or non-compliance; and c) the method and timing of any remedial action that will be undertaken by the approval holder. | Not applicable | To date, no incidents, non-compliance with the conditions, or non-compliance with the commitments made in a plan, have occurred. As such, no notification or details of any incidents or non-compliance were required to be submitted to the Department. |
| 8. | The approval holder must ensure that an independent audit of compliance with the conditions is conducted, as requested in writing by the Minister | Not applicable | |
| 9. | <p>For each independent audit, the approval holder must:</p> <ul style="list-style-type: none"> a) provide the name and qualifications of the independent auditor and the draft audit criteria to the Department; b) only commence the independent audit once the audit criteria have been approved in writing by the Department; and c) submit an audit report to the Department within the timeframe specified in the approved audit criteria. | Not applicable | To date, an independent audit of compliance with the conditions has not been requested by the Minister to the Department. In the event that an audit is requested, the approval holder will adhere to Conditions 8 through 10. |
| 10. | The approval holder must publish the audit report on the website within 10 business days of receiving the Department's approval of the audit report and | Not applicable | |

| | | | |
|-----|---|-----------------------|--|
| | keep the audit report published on the website until the end date of this approval. | | |
| 11. | Within 30 days after the completion of the action, the approval holder must notify the Department in writing and provide completion data. | Not applicable | <p>The completion of the action will occur when the responsibilities of Barwon Heads Management Pty will cease.</p> <p>As such completion data will be sent to DCCEEW following the handover of the channel to the City of Greater Geelong (after the 28 November 2021 to 28 November 2022 compliance period).</p> |

4 NEW ENVIRONMENTAL RISKS

No new environmental risks have become apparent during the second year's monitoring period. However, it is anticipated that the Operational Conservation Management Plan (OCMP), when implemented, will monitor for any future and/or ongoing threats to the ecological values being protected within and immediately surrounding the channel.

Table 4 (taken from Table 7 of the OCMP) details the main threats to ecological values within the study area, the associated performance targets and the management actions required to ensure performance targets are met.

Table 4. Potential threats to ecological values within the study area

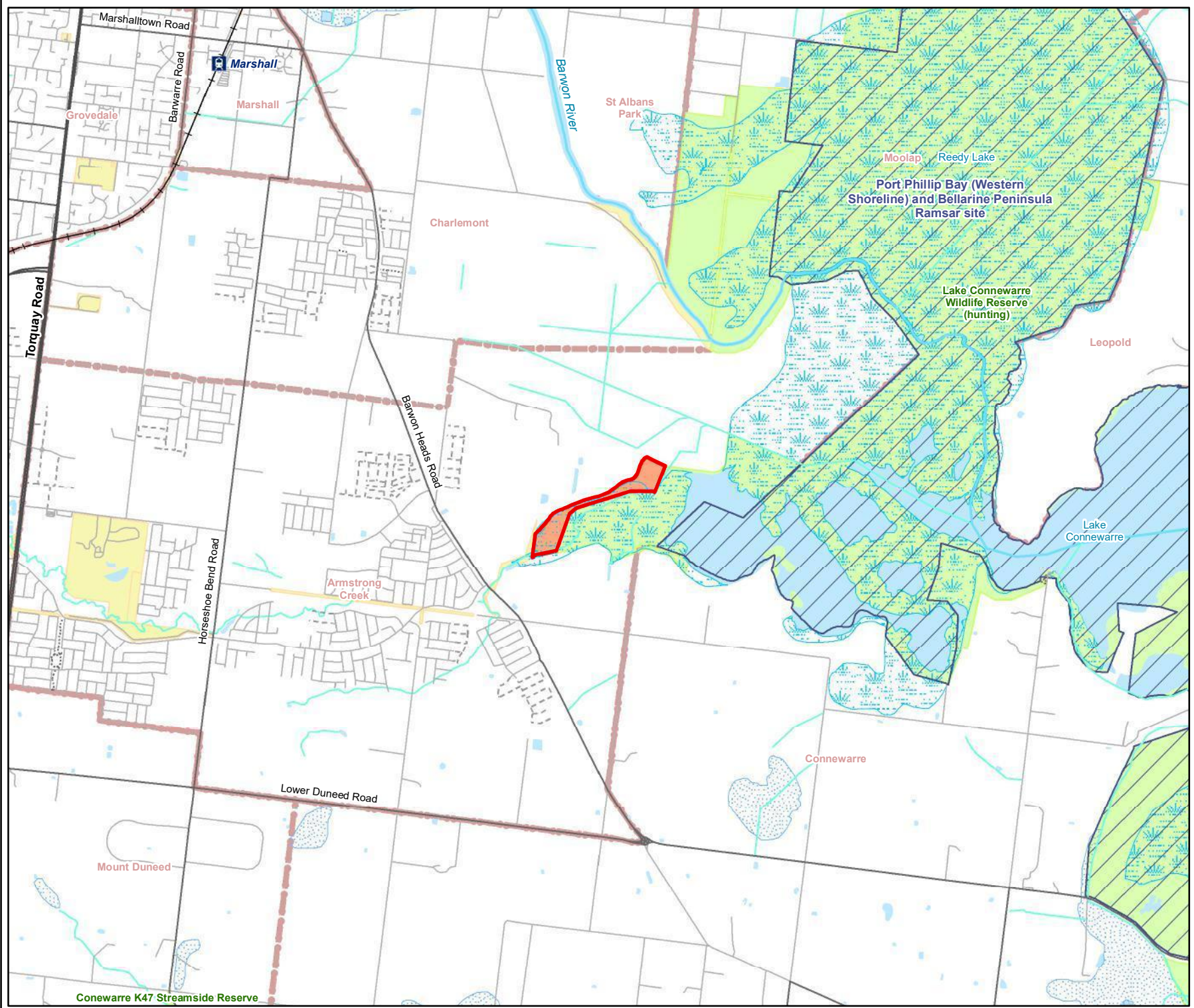
| Key Threats | Performance Target | Description of Threat | Monitoring Action | Management Action |
|----------------------|--|---|--|---|
| Noxious weeds | <i>No new infestations of noxious weeds, including but not limited to Tall Wheatgrass, Spear Thistle and African Boxthorn.</i> | Invasive weed species, can outcompete native flora species, leading to a decline in the quality and extent of native vegetation and habitat for native flora and fauna species. | Undertake detailed weed mapping | Conduct weed control as per Section 2.6 and Table 9 of the Operational Conservation Management Plan (Ecology and Heritage Partners 2021b). |
| | <i>The extent of high threat weeds reduced based on baseline established during the first year of monitoring.</i> | The control of weed species is critical to the maintenance of indigenous vegetation cover and species diversity. | | |
| Pest animals | <i>Decrease in deer population and associated reduction of impacts of deer within the study area</i> | Fallow deer disturb shallow wetlands and add significant grazing pressure on native vegetation. | Undertake observations of deer activity | Conduct pest animal control as per Section 2.6 and Table 9 of the Operational Conservation Management Plan (Ecology and Heritage Partners 2021b). |
| | <i>Reduced impacts of foxes on native fauna</i> | Red Foxes predate on native fauna species, including birds, frogs and reptiles. | Monitor indicator species populations (ground nesting birds – quail, Masked lapwing) | |
| | <i>Reduced impacts of rabbits grazing on native vegetation</i> | <i>European Rabbits remain a threat for the regeneration/recruitment of</i> | Undertake warren mapping. | |
| | <i>Reduced soil disturbance by rabbits</i> | | Undertake active entrance counts | |

| Key Threats | Performance Target | Description of Threat | Monitoring Action | Management Action |
|--|--|--|--|---|
| | | <i>native species throughout western Victoria.</i> | Undertake observations of rabbit activity | |
| Maintenance/Management Activities | <i>Protection of retained native vegetation, Spiny Peppergrass, Orange-bellied parrot habitat and Growling Grass Frog habitat.</i> | Routine maintenance activities have the potential to encroach or negatively impact upon areas of native vegetation/fauna. I.e. The clearing of Common Reeds from within the Balog Channel may impact Growling Grass Frog habitat. | <i>Undertake native vegetation assessments to determine the quality and extent of native vegetation and habitat for significant species.</i> | Undertake protection measures as detailed in Section 2.6 and Table 9 of the Operational Conservation Management Plan (Ecology and Heritage Partners 2021b). |

REFERENCES

- DELWP 2021. NatureKit Map [www Document]. URL: <https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- DoE 2014. Annual Compliance Report Guidelines. Prepared by the Department of the Environment 2014.
- Ecology and Heritage Partners 2020a. Conservation Management Plan for Hospital Swamp Bypass Channel, 76-88 Groves Road, Armstrong Creek, Victoria.
- Ecology and Heritage Partners 2020b. Biodiversity Assessment: 1-87 and 76-77 Groves Road (Balog Land), Armstrong Creek, Victoria.
- Ecology and Heritage Partners 2021a. Annual Compliance Report (Year 1) (28 November 2020 to 28 November 2021): 1-87 and 76-88 Groves Road (Hospital Swamp Bypass Channel), Armstrong Creek, Victoria (EPBC 2015/7553).
- Ecology and Heritage Partners 2021b. Operational Conservation Management Plan: Hospital Swamp Bypass Channel, Victoria (EPBC 2015/7553).
- Lloyd, L.N., Cooling, M.P, Kerr, G.K., Dahlhaus, P. and Gippel, C.J. 2011. Flow/ecology relationships and scenarios for the Lower Barwon Wetlands environmental entitlement: Final Report. Unpublished report for Corangamite CMA.
- SMEC 2020. Site Environmental Management Plan and Tree Protection Construction Management Plan (2) – types and locations of environmental protection measures: Anchoridge, Balog Channel.
- Venant Solutions 2015. Armstrong Creek Water Balance Modelling, Draft Stage 1 Report. Unpublished report prepared for City of Greater Geelong.
- Venant Solutions 2018. Armstrong Creek Balog Diversion Channel Viability Assessment. Unpublished report prepared for City of Greater Geelong.

FIGURES

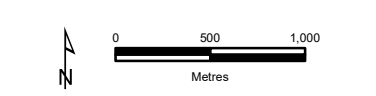


Legend

- Study Area
- Railway
- Major Road
- Collector Road
- Minor Road
- Proposed Road
- Walking Track
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Ramsar wetland
- Parks and Reserves
- Crown Land
- Localities

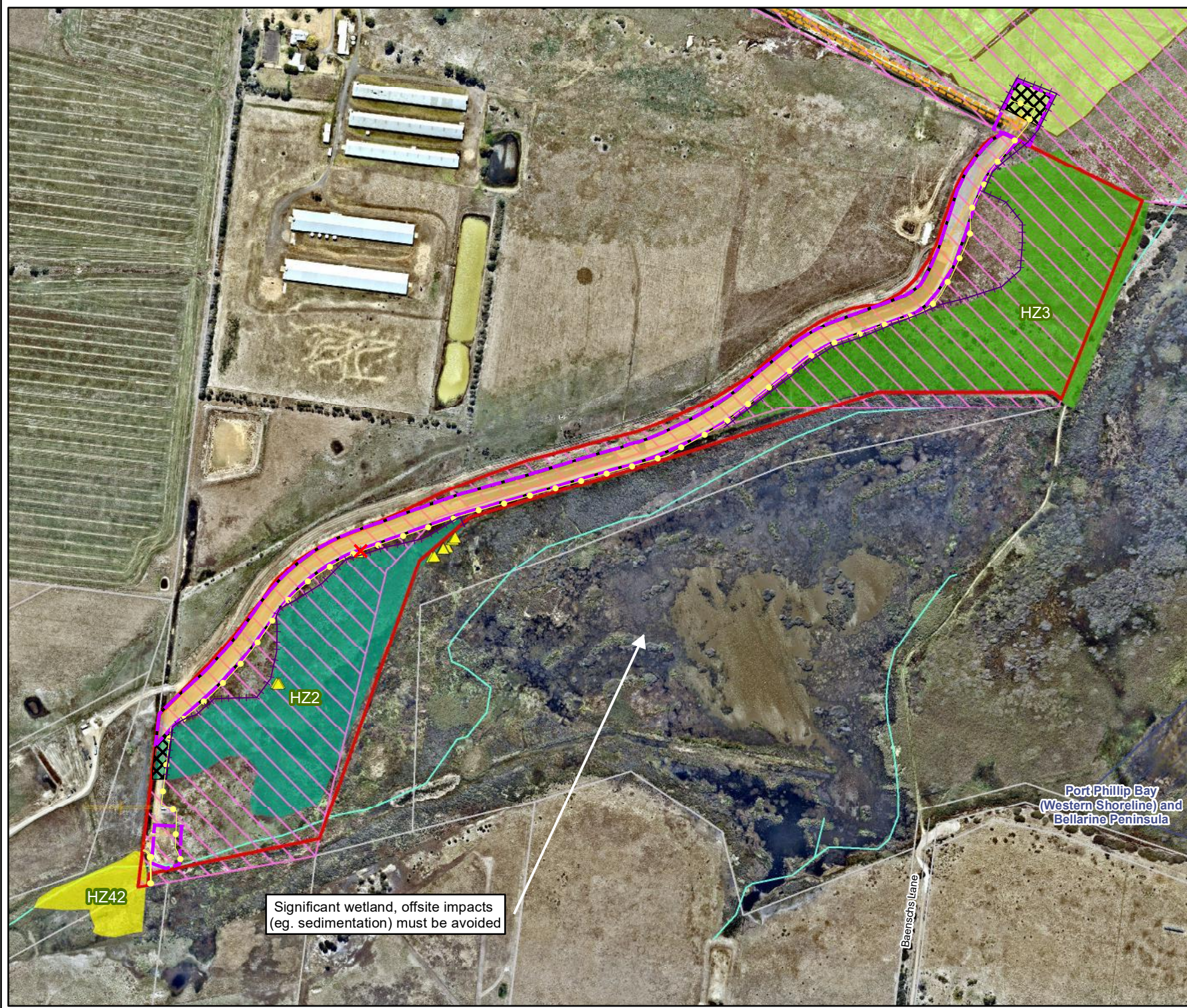


Figure 1
 Location of the study area
Proposed 'Balog' Drainage Channel including extension



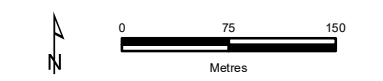
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

15085 Fig01 StudyArea 24/05/2021 psorensen



- Legend**
- Study Area
 - Ramsar wetland
 - Public Acquisition
 - Proposed Drainage Channel
 - Development Plan
 - Native vegetation protection fencing
 - Silt fence
 - Eastern access road
 - Impact areas
- Habitat Zones - native vegetation to be retained**
- HZ2, as per NVPP mapped extent
 - HZ3, as per NVPP mapped extent
 - HZ42, as per NVPP mapped extent
- Sparrovale Biodiversity Assessment (EHP 2018)**
- Seasonally Inundated Sub-saline Hermland (EVC 196)
 - Vegetation to be removed
 - ▲ Spiny Peppercross
 - × Spiny Peppercross to be removed

Figure 2
Ecological features and on-site environmental protections
Proposed 'Balog' Drainage Channel including extension



VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

15085_Fig02_EcolFeat_EnvProt_fr12893_24/05/2021_psorensen

Aerial source: Nearmap 2021

APPENDIX 1 - EPBC ACT APPROVAL (2015/7553)



Mr Brad Paddon
Barwon Heads Management Pty Ltd
Level 3, 468 St Kilda Road
Melbourne VIC 3004
C/o Sarah Shortall
APD Project
Sarah@apdprojects.com.au

Dear Mr Paddon

Decision on approval
Warralily-Sparrovale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria
(EPBC 2015/7553)

I am writing to you in relation to your proposal to construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria (proposed action).

I have considered the proposal in accordance with Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and have decided to grant an approval to Barwon Heads Management Pty Ltd. The details of my decision are attached. The proposal must be undertaken in accordance with the conditions specified in the approval.

I would appreciate your assistance by informing me when you start the action and who will be the contact person responsible for the administration of the approval decision.

You should also note that this EPBC Act approval does not affect obligations to comply with any other laws of the Commonwealth, state or territory that are applicable to the action. Neither does this approval confer any right, title or interest that may be required to access land or waters to take the action.

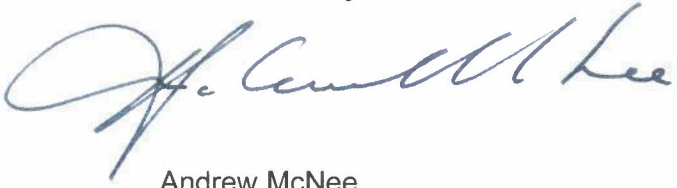
The Department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. Please note that your project may be selected for audit by the department at any time and all related records and documents may be subject to scrutiny. Information about the department's compliance monitoring and auditing program is enclosed.

I have also written to the following parties to advise them of this decision:

| | |
|--|--|
| State/territory authority/authorities | Ms Jane Homewood Executive Director Statutory Planning Services Department of Environment, Land, Water and Planning |
|--|--|

If you have any questions about this decision, please contact the project manager, William Bonney, by email to William.Bonney@environment.gov.au, or telephone 02 6274 1028 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Andrew McNee', written in a cursive style.

Andrew McNee
Assistant Secretary
Assessments and Governance Branch

28 May 2019



APPROVAL

Warralily-Sparrowvale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria, (EPBC 2015/7553)

This decision is made under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Note that section 134(1A) of the **EPBC Act** applies to this approval, which provides in general terms that if the approval holder authorises another person to undertake any part of the action, the approval holder must take all reasonable steps to ensure that the other person is informed of any conditions attached to this approval, and that the other person complies with any such condition.

Details

| | |
|---|--|
| Person to whom the approval is granted (approval holder) | Barwon Heads Management Pty Ltd |
| ACN of approval holder | 621 820 344 |
| Action | To construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria [see EPBC Act referral 2015/7553] |

Approval decision

My decisions on whether or not to approve the taking of the action for the purposes of each controlling provision for the action are as follows.

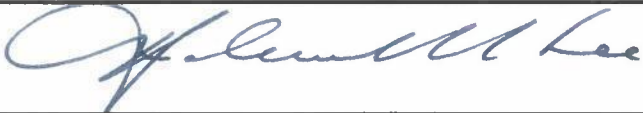
Controlling Provisions

| | |
|--|---------|
| Wetlands of international importance | |
| Section 16 | Approve |
| Section 17B | Approve |
| Listed threatened species and communities | |
| Section 18 | Approve |
| Section 18A | Approve |
| Listed migratory species | |
| Section 20 | Approve |
| Section 20A | Approve |

Period for which the approval has effect

This approval has effect until **30 June 2022**

Decision-maker

| | |
|--------------------------|--|
| Name and position | Andrew McNee Assistant Secretary of Assessments and Governance Branch Department of the Environment and Energy |
| Signature |  |
| Date of decision | 28 May 2019 |

Conditions of approval

This approval is subject to the conditions under the EPBC Act as set out in ANNEXURE A.

ANNEXURE A – CONDITIONS OF APPROVAL

Part A – Conditions specific to the action

1. For the protection of **Spiny Peppercress**, **Orange-bellied Parrot** and the Port Philip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, the action must be undertaken consistent with the **Conservation Management Plan**.

Part B – Standard administrative conditions

Notification of date of commencement of the action

2. The approval holder must notify the **Department** in writing of the date of **commencement of the action** within 10 **business days** after the date of **commencement of the action**.

Compliance records

3. The approval holder must maintain accurate and complete **compliance records**.
4. If the **Department** makes a request in writing, the approval holder must provide electronic copies of **compliance records** to the **Department** within the timeframe specified in the request.

Note: **Compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the **Department's** website or through the general media.

Annual compliance reporting

5. The approval holder must prepare a **compliance report** for each 12 month period following the date of **commencement of the action**, or as otherwise agreed to in writing by the **Minister**. The approval holder must:
 - a. publish each **compliance report** on the **website** within 60 **business days** following the relevant 12 month period;
 - b. notify the **Department** by email that a **compliance report** has been published on the **website** within five **business days** of the date of publication;
 - c. keep all **compliance reports** publicly available on the **website** until this approval expires;
 - d. exclude or redact **sensitive ecological data** from **compliance reports** published on the **website**; and
 - e. where any **sensitive ecological data** has been excluded from the version published, submit the full **compliance report** to the **Department** within 5 **business days** of publication.

Note: **Compliance reports** may be published on the **Department's** website.

Reporting non-compliance

6. The approval holder must notify the **Department** in writing of any: **incident**; non-compliance with the conditions; or non-compliance with the commitments made in a **plan**. The notification must be given as soon as practicable, and no later than two **business days** after becoming aware of the **incident** or non-compliance. The notification must specify:
 - a. the condition which is or may be in breach; and
 - b. a short description of the **incident** and/or non-compliance.
7. The approval holder must provide to the **Department** the details of any **incident** or non-compliance with the conditions or commitments made in **plans** as soon as practicable and no later than 10 **business days** after becoming aware of the **incident** or non-compliance, specifying:

- a. any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;
- b. the potential impacts of the **incident** or non-compliance; and
- c. the method and timing of any remedial action that will be undertaken by the approval holder.

Independent audit

- 8. The approval holder must ensure that an **independent audit** of compliance with the conditions is conducted, as requested in writing by the **Minister**.
- 9. For each **independent audit**, the approval holder must:
 - a. provide the name and qualifications of the independent auditor and the draft audit criteria to the **Department**;
 - b. only commence the **independent audit** once the audit criteria have been approved in writing by the **Department**; and
 - c. submit an audit report to the **Department** within the timeframe specified in the approved audit criteria.
- 10. The approval holder must publish the audit report on the **website** within 10 **business days** of receiving the **Department's** approval of the audit report and keep the audit report published on the **website** until the end date of this approval.

Completion of the action

- 11. Within 30 days after the **completion of the action**, the approval holder must notify the **Department** in writing and provide **completion data**.

Part C - Definitions

- 12. In these conditions, except where contrary intention is expressed, the following definitions are used:
 - a. **Business day** means a day that is not a Saturday, a Sunday or a public holiday in the state or territory of the action.
 - b. **Commencement of the action** means the first instance of any specified activity associated with the action including clearance of vegetation and **construction** of any infrastructure. Commencement does not include minor physical disturbance necessary to:
 - i. undertake pre-clearance surveys or monitoring programs;
 - ii. install signage and /or temporary fencing to prevent unapproved use of the project area; and
 - iii. protect environmental and property assets from fire, weeds and pests, including **construction** of fencing and maintenance of existing surface access tracks, if agreed in writing by the **Department**.
 - c. **Completion data** means an environmental report and spatial data information clearly detailing how the conditions of this approval have been met. The **Department's** preferred spatial data format is shapefile.
 - d. **Completion of the action** means all specified activities associated with the action have permanently ceased.
 - e. **Compliance records** means all documentation or other material in whatever form required to demonstrate compliance with the conditions of approval in the approval holder's possession or that are within the approval holder's power to obtain lawfully.
 - f. **Compliance reports** means written reports:

- i. providing accurate and complete details of compliance, **incidents**, and non-compliance with the conditions;
 - ii. consistent with the **Department's Annual Compliance Report Guidelines (2014)**;
 - iii. include a shapefile of any clearance of any **protected matters**, or their habitat, undertaken within the relevant 12 month period; and
 - iv. annexing a schedule of all **plans** prepared and in existence in relation to the conditions during the relevant 12 month period.
- g. **Conservation Management Plan** means the Conservation Management Plan - Hospital Swamp Bypass channel 76-88 Groves Road, Armstrong Creek, Victoria (October 2018) prepared for Barwon Heads Management Pty Ltd by Ecology and Heritage Partners Pty Ltd.
 - h. **Construction** means the erection of a building or structure that is fixed or is to be fixed to the ground and wholly or partially fabricated on-site; the alteration, maintenance, repair or demolition of any building or structure; preliminary site preparation work which involves breaking of the ground (including pile driving); the laying of pipes and other prefabricated materials in the ground, and any associated excavation work; but excluding the installation of temporary fences and signage.
 - i. **Department** means the Australian Government agency responsible for administering the **EPBC Act**.
 - j. **EPBC Act** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).
 - k. **Incident** means any event which has the potential to, or does, impact on **protected matter(s)**.
 - l. **Independent audit**: means an audit conducted by an independent and **suitably qualified person** as detailed in the *Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines (2015)*.
 - m. **Minister** means the Australian Government Minister administering the **EPBC Act** including any delegate thereof.
 - n. **Orange-bellied Parrot** means the EPBC listed threatened species *Neophema chrysogaster*.
 - o. **Plan** means any of the documents required to be implemented by the approval holder in accordance with these conditions (includes action management plans and/or strategies).
 - p. **Protected matter** means a matter protected under a controlling provision in Part 3 of the **EPBC Act** for which this approval has effect.
 - q. **Sensitive ecological data** means data as defined in the Australian Government Department of the Environment (2016) *Sensitive Ecological Data – Access and Management Policy V1.0*.
 - r. **Spiny Peppercross** means the EPBC listed threatened species *Lepidium aschersonii*.
 - s. **Suitably qualified person** means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.
 - t. **website** means a set of related web pages located under a single domain name attributed to the approval holder and available to the public.

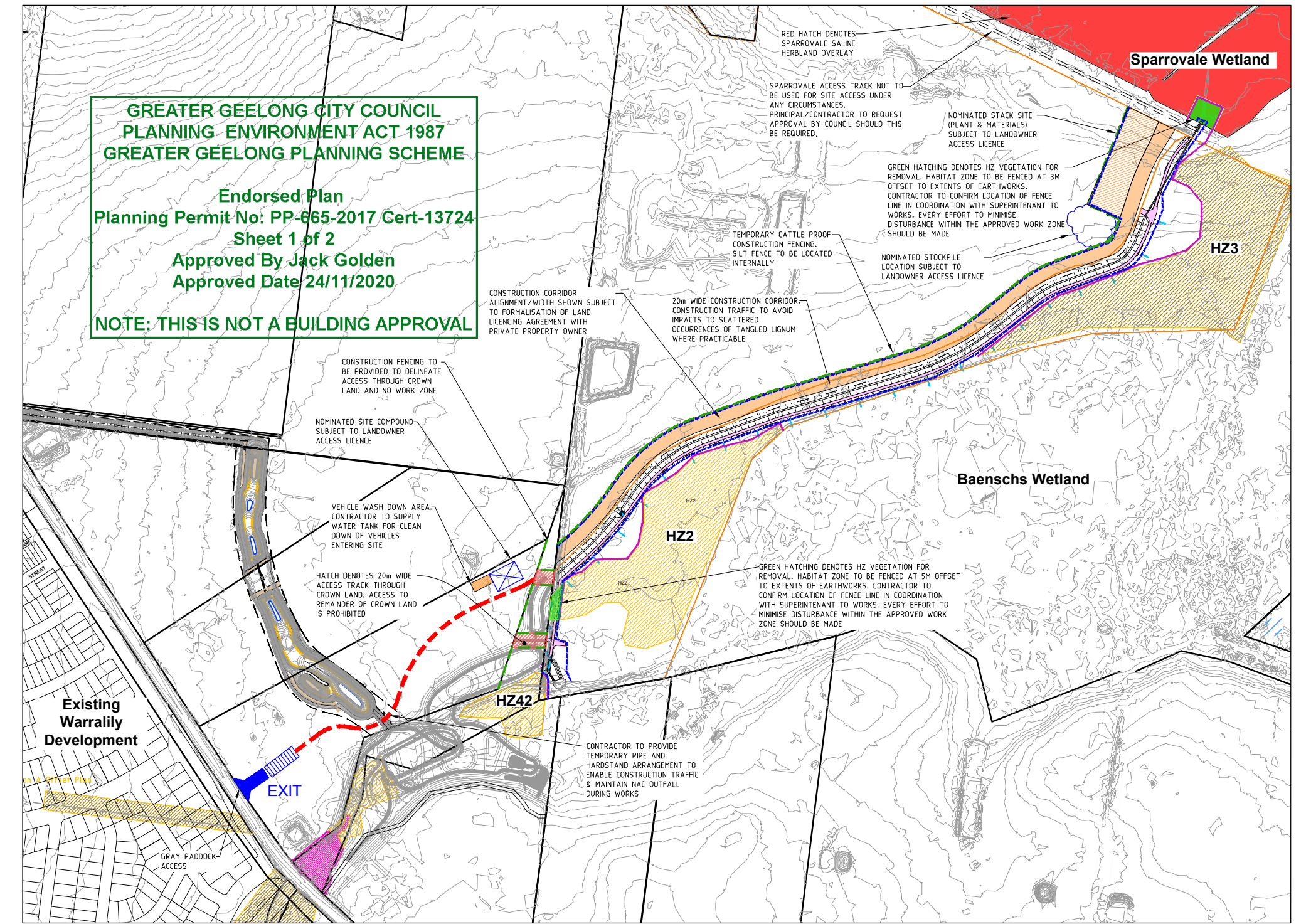
APPENDIX 2 – CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN (CEMP)

SITE ENVIRONMENTAL MANAGEMENT PLAN & TREE PROTECTION CONSTRUCTION MANAGEMENT PLAN (1) - TYPES AND LOCATIONS OF ENVIRONMENTAL PROTECTION MEASURES

Project Name: Anchorage Balog Channel
Date and Revision: 19th November 2020 Rev J

The following have been identified as significant environmental aspects for the site:
- Noise/Dust
- Native Vegetation/Threatened species
- Erosion / Sediment
- Weed Invasion
These aspects shall be managed with environmental protection measures outlined on this plan:

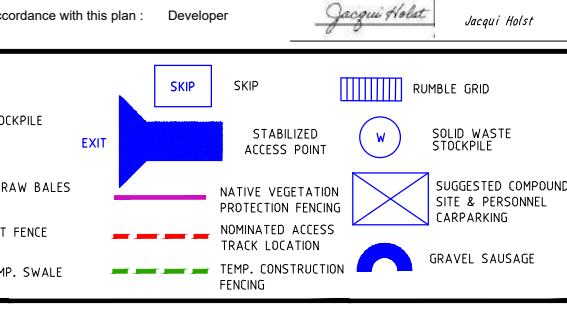
| | |
|--|---|
| Management Risk: Low | |
| 1. Responsibilities: General enquires regarding this plan and requirements of the contractor shall be directed to the developer. Enquires regarding the design and implementation of the environmental controls shall be directed to the contractor. Contractor is responsible for the correct implementation & administration of this EMP. The contractors emergency contact details are to be clearly displayed on a sign at the entrance to the construction zone. Emergency contact (Developer): Camilo Ardila 0447 873 503 Emergency contact (Contractor): Zabi Dalili 0437 489 381 | 4. Staging of Works: Works to be staged as follows: 1. Pre-Clearance Survey (Growing Grass Frog) in accordance with Conservation Management Plan 2. CHMP Induction & Site Inspection with environmental consultant to discuss risks and review EMP controls 3. Construction works (Earthworks and Drainage) 4. Demobilisation and removal of controls to satisfaction of Council 5. Informing Residents: Affected residents to be notified by Contractor as required. |
| 2. Communication of Site EMP Requirements: - Display EMP on site office wall. - Site inductions & ongoing toolbox meetings. | 6. Associated documents: - Duty of Care on Subdivisions, EPA publication 956, 2009 - Construction Guidelines for Major Construction Sites, EPA Publication 485, 2005 - Construction Techniques for Sediment Pollution Control, EPA Publication 275 - AS 4970 - 2009 Protection of Trees on Development Sites - Contractors Erosion Control Site Management Plan - Conservation Management Plan (Channel Access Road, Sparrovale Channel, 74-88 Crown Road, Anchorage Creek, Victoria, October 2019, by Geelong & District Council - CHMP No. 23333 (Revision 2) April 2020), Robert Dennis Channel 74-88 Crown Road, Anchorage Creek, Victoria, October 2019, by Geelong & District Council - Biodiversity Assessment 137 and 21-88 Crown Road (Balog Land), Anchorage Creek, Victoria - by Ecology & Heritage Services - March 2018/2019 |
| 3. Inspections and Maintenance Contractor required to inspect EMP controls daily in accordance with Conservation Management Plan. Any defects to be rectified within 24 hours of identification. | 7. Working hours: 7am to 5pm Mon-Fri 7am to 1pm Sat (with prior approval) |
| 8. Noise Minimisation Methods: Machinery to be properly maintained & compliant with relevant standards. | 9. Other: Breach - Revise work practices and / or replace noisy machinery. |
| Noise Risk: Medium | Requirement: EPA Victoria and Council requirements must be adhered to in relation to the level of noise and working hours, to ensure that residents and other applicable neighbours to the site are not disturbed unreasonably. The generation of noise must be minimised. |
| Dust Risk: Significant | Requirement: Dust generation must be minimised to ensure there is no health risk or loss of amenity. |
| 10. Minimising Dust Generation: - Retain existing vegetation wherever possible. - Careful location of stockpiles. - Stockpile protection. - Minimise traffic on disturbed / exposed areas | 12. Contingencies: Dust generating activities to be limited / cancelled during windy periods Minimise number of stockpiles. Keep truck loads covered where possible. |
| 11. Dust Suppression: - Water cart must be permanently on site and used for the duration of construction. - Stabilize exposed areas at completion of earthworks - Apply mulch / wood chips where possible. - Apply dust suppressant if required. | 13. Other: Breach - Excessive dust generation to be immediately suppressed using water sprays, dust suppressant or other measures as necessary. Further stabilisation works to be actioned to remediate affected areas. |
| 14. Drainage Management: Works to be undertaken in summer months. Sediment fencing to be installed to control site run-off. Drainage structures only to be tied-in to existing creek environment once works are completed. SITE DRAINAGE TO BE MONITORED DAILY BY CONTRACTOR | 15. Soil Stabilisation During construction: Avoid vegetation removal where possible. Re-vegetate disturbed areas where possible using Sterile Ryegrass. Direct interface with habitat zone to be re-vegetated with indigenous/native species as selected from table provide on EMP Sheet 2. Soil Stabilisation shall only occur within construction corridor. |
| 16. Stockpile Management: - Sed fence installed downstream of stockpiles. - Position away from drainage lines - Stabilize stockpile > 20 days - Max 2:1 height to width ratio. - Minimise the number of stockpiles. | 17. Sediment Traps (sediment retention devices). Provide silt fences as detailed on sheet 2 and at locations shown on Sheet 1 |
| 18. Dewatering: Any dewatering required on site will require the contractor to submit a methodology to Superintendent's representative for approval. This shall take into account water turbidity and suitable discharge location with consideration of sensitive receptors on site. Methodology to be approved by responsible authority. Avoid Areas of Native Vegetation | 19. Vehicle and Road Management: Site access: - Stabilised access points or rumble grid to be utilized - Construction traffic to keep to defined haul roads / access tracks Cleaning Vehicles: - Wash vehicles as necessary - Drive length of stabilized access road. Street Cleaning: - Sweep streets as required - Designated wash out area for concrete trucks after delivery of concrete. |
| 20. Other: Breach - Any breaches associated with this EMP or associated legislation shall be reported immediately to the Superintendents Representative, the Greater Geelong City Council, DEWLP and the Commonwealth. An incident report shall be supplied to all aforementioned stakeholders promptly & rectification works must take place within 24 hours | 21. Movement of Soil: All site won material to be either re-used on site for construction of Channel Access Road Bund OR directly carted off-site to the Anchorage Estate. Topsoil to be used for re-dress of channel & disturbed areas as required by Council Approved Design Contaminant Status: Cleanfill |
| 22. Waste Minimisation Methods: Materials to be ordered / scheduled to minimise waste | 23. Waste Storage and Disposal: - Bins for workers at site office (Litter & Recycling). - Designated stockpile area or skip located near site compound for waste construction materials. |
| 24. Other: - Remove off site to designated disposal site at regular intervals to minimise build up. - Machinery and equipment cleaning on-site, not on adjacent roads or footpaths. | 25. Storage: Minimise fuels & chemicals stored onsite. Store in a single area with adequate protection / buffer zones. |
| 26. Spill Management: Spill kit & bunding to be provided onsite as required. Refer to material safety data sheets for any specific requirements. | 27. Refuelling Procedure: - Minimise onsite refuelling where possible. - Refuel in designated area only. - Refuelling area to avoid any drainage lines, stormwater drains or sensitive areas. - Servicing of plant & equipment to include management of hydraulic fluids, oils and grease. |
| 28. Other: Plant servicing - Servicing in designated areas only. | 29. Native Vegetation, Flora & Fauna Site induction to emphasise the need for native vegetation protection & implications of protection removed. Native vegetation fencing/bunding (with signage) to be erected & maintained in accordance with the planning permit & EMP. 3 m BUFFER ZONE TO BE IN PLACE FOR WORKS ADJACENT TO NATIVE VEGETATION BEING RETAINED. HOLD POINT INSPECTION PRIOR TO CONSTRUCTION |
| 29. Native Vegetation, Flora & Fauna Site induction to emphasise the need for native vegetation protection & implications of protection removed. Native vegetation fencing/bunding (with signage) to be erected & maintained in accordance with the planning permit & EMP. 3 m BUFFER ZONE TO BE IN PLACE FOR WORKS ADJACENT TO NATIVE VEGETATION BEING RETAINED. HOLD POINT INSPECTION PRIOR TO CONSTRUCTION | 30. Archaeological/Heritage Requirement: Places, sites and objects of archaeological or heritage significance must be protected. For further details refer to the Cultural Heritage management plan. All site staff must be inducted under the CHMP by the Registered Aboriginal Party (RAP). The contractor shall arrange witness point inspections with the RAP at the beginning, middle and end of the project in accordance with CHMP. CHMP shall be kept on site at all times. Unexpected finds process to be followed by contractor. |
| 30. General - Weed Management - Equipment, controls & practices must be implemented by the Contractor under its Construction Management Plan. - Topsoil not to be removed from site unless otherwise authorised. - Fire management equipment to be fitted to all construction plant & equipment. - Site operations must comply with CFA regulations (2004) 109 & 110 | 31. Site Access MAIN CONSTRUCTION ACCESS VIA BARWON HEADS ROAD (GRAY PROPERTY) ALTERNATE ACCESS VIA GROVES ROAD (COGG SPARROVALE PROPERTY) CONTRACTOR TO REQUEST APPROVAL TO ACCESS SITE FROM PRINCIPAL AND ENSURE REQUIREMENTS OF LICENCE ACCESS AGREEMENTS ARE MET PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS |
| I have read this Site Environmental Management Plan and agree to undertake works and ensure that subcontractors undertake works in accordance with this plan : Developer: <i>Jacqui Holst</i> Jacqui Holst Consultant: <i>Camilo Ardila</i> Camilo Ardila Contractor: <i>Zabi Dalili</i> Zabi Dalili | |



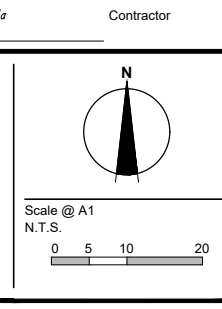
All site construction works to be in accordance with EPA Guideline for Environmental Management, Doing it Right on Subdivisions.

| | | | |
|--|---|---|--|
| Significant Flora/Fauna Risk: Significant Requirement: All significant flora and fauna on and adjacent to the site must be protected. 29. Native Vegetation, Flora & Fauna Site induction to emphasise the need for native vegetation protection & implications of protection removed. Native vegetation fencing/bunding (with signage) to be erected & maintained in accordance with the planning permit & EMP. 3 m BUFFER ZONE TO BE IN PLACE FOR WORKS ADJACENT TO NATIVE VEGETATION BEING RETAINED. HOLD POINT INSPECTION PRIOR TO CONSTRUCTION | Archaeological/Heritage Risk: Low Requirement: Places, sites and objects of archaeological or heritage significance must be protected. 30. For further details refer to the Cultural Heritage management plan. All site staff must be inducted under the CHMP by the Registered Aboriginal Party (RAP). The contractor shall arrange witness point inspections with the RAP at the beginning, middle and end of the project in accordance with CHMP. CHMP shall be kept on site at all times. Unexpected finds process to be followed by contractor. | General Risk: Medium - Weed Management - Equipment, controls & practices must be implemented by the Contractor under its Construction Management Plan. - Topsoil not to be removed from site unless otherwise authorised. - Fire management equipment to be fitted to all construction plant & equipment. - Site operations must comply with CFA regulations (2004) 109 & 110 | Site Access Risk: Low MAIN CONSTRUCTION ACCESS VIA BARWON HEADS ROAD (GRAY PROPERTY) ALTERNATE ACCESS VIA GROVES ROAD (COGG SPARROVALE PROPERTY) CONTRACTOR TO REQUEST APPROVAL TO ACCESS SITE FROM PRINCIPAL AND ENSURE REQUIREMENTS OF LICENCE ACCESS AGREEMENTS ARE MET PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS |
|--|---|---|--|

| | | | |
|--|----------|--------|------|
| J EMP AMENDMENTS | 19.11.20 | MM/MM | TM |
| I AMENDMENTS POST DISCUSSION WITH COGG ENVIRO. | 12.08.20 | MM/MM | TM |
| H AMENDMENTS POST DISCUSSION WITH COGG ENVIRO. | 21.07.20 | MM/MM | SM |
| G DESIGN REVISED, ISSUED FOR COUNCIL APPROVAL | 09.07.20 | MM/MM | SM |
| F DESIGN REVISED, ISSUED FOR COUNCIL APPROVAL | 6.07.20 | MM/MM | SM |
| E AMENDED FOR COUNCIL APPROVAL | 2.07.20 | MM/MM | SM |
| D NOTE AMENDMENTS | 16.06.20 | MM/MM | SM |
| C COUNCIL COMMENTS | 14.05.20 | MM/MM | SM |
| B ISSUED TO CONTRACTOR FOR PRICING | 28.02.20 | MM/MM | SM |
| REVISION | DATE | DES/DT | APPD |



Designed F. Qi
Drawn F. Qi
Checked T. Rhodes
Authorised S. McGlynn
Date September 2018



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ANCHORIDGE
Balog Channel
City of Greater Geelong
Site ECMP & EPMP - 1
Drawing No. 2384E-BC-EMP-1 Rev J
Sheet No. 1 of 2
For Construction

| RISK ASSESSMENT CHECKLIST | | | |
|--|-------------------------------|--------------------------------|------------------------------------|
| Noise Issues: - Nature of noise generating works: <i>Construction machinery/equipment</i> - Potential noise receptors: <i>Isolated farm houses and residential properties</i> - Proximity of works to noise receptors: <i>Within 100 metres</i> | Likelihood <i>Certain</i> | Consequence <i>Minor</i> | Overall Risk <i>Medium</i> |
| Dust Issues: - Dust Sources: <i>Construction activity eg. excavation, placement of soil etc.</i> - Potential dust receptors: <i>Neighbouring residents</i> - Proximity of works to dust receptors: <i>Within 100 metres</i> - Extent of exposed earth and duration of time exposed: <i>Minimum area required for construction activity. Exposed area to be hydromulched on completion</i> - Wind conditions: <i>Predominantly westerly</i> | Likelihood <i>Likely</i> | Consequence <i>Moderate</i> | Overall Risk <i>Significant</i> |
| Erosion and Sediment Issues: - Erosion and sediment sources: <i>Earthworks and trenching</i> - Potential erosion and sediment receptors: <i>Armstrong Creek and Habitat Zones</i> - Proximity of works to erosion and sediment receptors: <i>Through & adjacent to site.</i> - Extent of exposed earth and duration of time exposed: <i>Cut Excavations & Topsoiling Exposure time approx 8 weeks, works to be undertaken in summer months</i> - Soil type and erosivity: <i>Topsoil with underlying clay, low erosivity, some dispersiveness</i> - Slope: <i>Varies</i> - Site drainage regime: <i>Sediment Fencing</i> - Rainfall: <i>Approx 45mm per month on average.</i> - Vehicle movements on and off site: <i>Regular and controlled.</i> | Likelihood <i>Unlikely</i> | Consequence <i>Major</i> | Overall Risk <i>Significant</i> |
| Waste Issues: - Nature of waste to be generated: <i>Construction material eg. pipe offcuts, concrete, wrappings etc.</i> - Presence of waste on site prior to work commencement: <i>Nil.</i> - Quantity of waste anticipated: <i>Minimal</i> - Potential waste receptors: <i>Nil, Contained on site</i> - Proximity to waste receptors: <i>N/A</i> | Likelihood <i>Unlikely</i> | Consequence <i>Minor</i> | Overall Risk <i>Low</i> |
| Chemicals Issues: - Types of chemicals (inc. fuels) to be stored/used on site: <i>Solvents, paint, oil/grease and fuel</i> - Quantities of chemicals (inc. fuels) to be used on site: <i>Minimal, as required</i> - Potential chemical receptors: <i>Nil</i> - Proximity to chemical receptors: <i>N/A</i> | Likelihood <i>Rare</i> | Consequence <i>Moderate</i> | Overall Risk <i>Low</i> |
| Flora/Fauna Issues: - Types of flora/fauna: <i>Wetland/Herbland</i> - Vulnerability of flora/fauna: <i>High adjacent to work site</i> - Proximity of works to flora/fauna: <i>Onsite</i> - Work activities which may threaten flora/fauna: <i>Excavation & vehicle movements, sediment</i> - Potential impacts on flora/fauna: <i>Damage to surface vegetation due to trafficking and excavation works.</i> FLORA & FAUNA CONSIDERED HIGH RISK FOR SITE (REFER SECTION 19 - SHEET 1 FOR DETAILS) CONTRACTOR TO BE INDUCED, RETAIN A COPY OF CONSERVATION MANAGEMENT PLAN ON SITE & PARTAKE IN HOLD POINT INSPECTIONS FOR NO-GO ZONE FENCING PRIOR TO COMMENCEMENT OF CONSTRUCTION | Likelihood <i>unlikely</i> | Consequence <i>Major</i> | Overall Risk <i>Significant</i> |
| Archaeological/Heritage Issues: - Traditional land owners consulted? : <i>Yes</i> - Survey or assessment conducted?: <i>Yes</i> - Probability of encountering archaeological/heritage items during works: <i>Negligible.</i> - Types of archaeological/heritage items on site: <i>Aboriginal artifacts</i> - Proximity of archaeological/heritage items to works: <i>Within site</i> - Work activities which may threaten archaeological/heritage items: <i>Excavation</i> - Potential impacts on archaeological/heritage items: <i>Minimal as sites identified under a CHMP</i> | Likelihood <i>Unlikely</i> | Consequence <i>Minor</i> | Overall Risk <i>Low</i> |

SITE ENVIRONMENTAL MANAGEMENT PLAN & TREE PROTECTION CONSTRUCTION MANAGEMENT PLAN (2) - TYPES AND LOCATIONS OF ENVIRONMENTAL PROTECTION MEASURES

ADDITIONAL ITEMS OF NOTE FROM APPROVED CONSERVATION MANAGEMENT PLAN (ECOLOGY & HERITAGE PARTNERS, OCT 2018)

Vehicle, Plant & Material/Soil Storage

- All works are to be contained within Public Acquisition Overlay
- All plant/vehicle wash down areas, set down areas are to be located off-site
- Risk Assessment to be undertaken of nominated plant/vehicle set-down/wash-down locations prior to construction start
- Storage of high risk chemicals on-site is not recommended due proximity to significant wetlands (if this is required – chemical storage location to be bunded/quarantined)
- A spill kit is to be located within designated plant to ensure availability in spill scenario

Erosion and Sedimentation and protection from surface damage/disturbance

- Geo-textile silt fences to border construction area where adjacent to natural vegetation and to meet the following requirements;
 - Silt fences to be installed downslope of the construction area to a depth of 200mm min.
 - Silt fences to be monitored on a daily basis for damage & repaired immediately where observed
- Construction to be avoided during high rainfall events. Additional silt fencing may be required should extreme rainfall events be expected.
- During excavation, soil should be stockpiled/stored upslope of the channel excavation
- Construction footprint to be kept to a minimum to minimise surface damage/soil disturbance which may lead to erosion.

Noxious Weeds and Equipment Hygiene

- All construction entering the site must be washed-down with high pressure air or water spray jets to remove collected excess soil and organic matter
- To minimise the spread/removal of existing weeds on-site, any vegetation/topsoil that is to be removed, shall be taken from the site immediately. Stockpiling of this material prior to removal is not to occur
- Nominated vehicle wash-down bay is to be bunded/quarantined to ensure no contaminated material is conveyed to water bodies in its vicinity
- Post-construction weed control to be undertaken by a qualified contractor. Refer to CMP for high risk/priority species
- To limit the potential spread of Tall Wheat-grass post construction, construction should staged to work towards & through areas of Wheat-grass
- Isolated locations areas of Wheat-grass post-construction to be controlled by spot-spraying where established

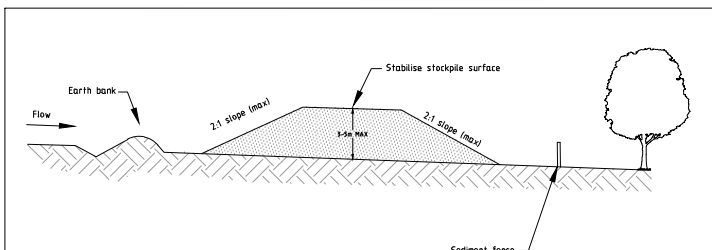
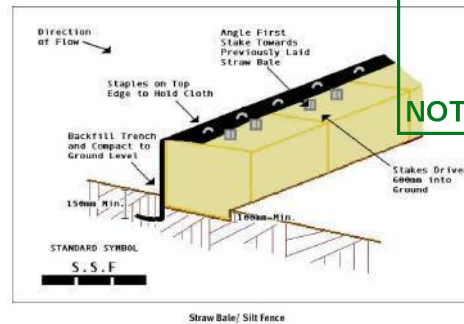
Site Inductions

- An environmental site induction will be undertaken for all contractors working on site. The induction program will highlight environmental values, risks, fauna salvage and translocation procedures, potential impacts and relevant controls. Following the induction all personnel on site are required to sign the induction form.

Site Monitoring

- Daily Environmental Inspections must be carried out to ensure;
 - All vegetation fences are present and clearly signed;
 - All silt fences are present and working effectively;
 - Fuel and chemicals are being stored correctly;
 - No chemical spills have occurred; and
 - Vehicle access is maintained within the construction zone and public roads

Environmental protection measures shall be constructed in accordance with the following designs:



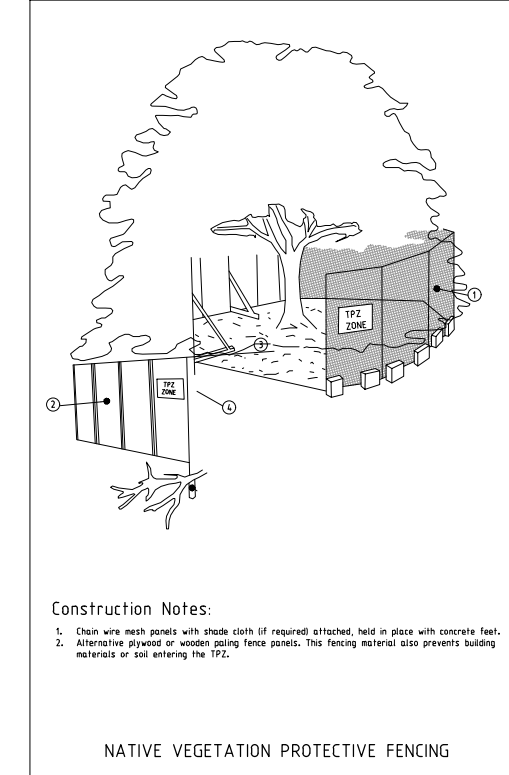
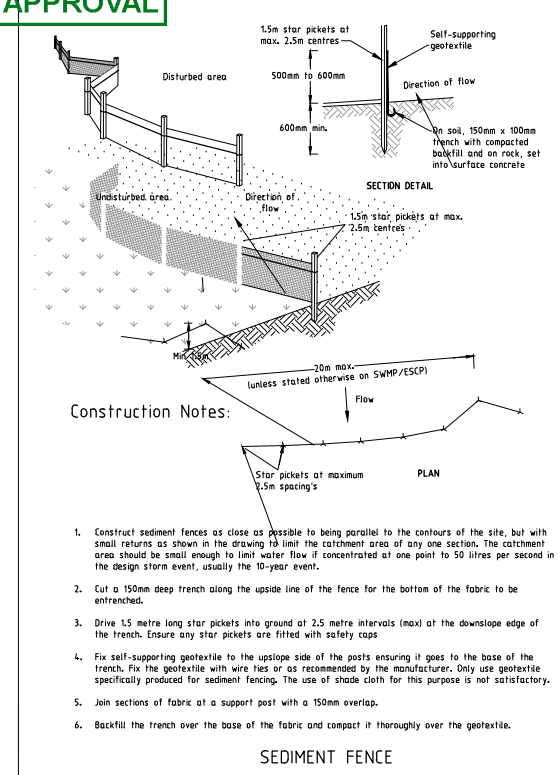
- Construction Notes:**
1. Where possible locate stockpile at least 5 metres from existing vegetation, concentrated water flows, roads and hazard areas.
 2. Construct on the contour as a low, flat, elongated mound.
 3. Where there is sufficient area topsoil stockpiles shall be less than 2 metres in height.
 4. Rehabilitate in accordance with the SWMP/ESCP.
 5. Construct north bank (Standard Drawing 5-5) on the upslope side to divert run off around the stockpile and a sediment fence (Standard Drawing 6-8) 1 to 2 metres downslope of stockpile.
 6. The placement of fill must be designed to ensure that it does not compromise native vegetation to be protected.
 7. Soil must not be stockpiled on native vegetation

GREATER GEELONG CITY COUNCIL
PLANNING ENVIRONMENT ACT 1987
GREATER GEELONG PLANNING SCHEME

Endorsed Plan
Planning Permit No: PP-665-2017 Cert-13724
Sheet 2 of 2
Approved By Jack Golden
Approved Date 24/11/2020

NOTE: THIS IS NOT A BUILDING APPROVAL

| RECOMMENDED INDIGENOUS SPECIES FOR REVEGETATION AT NATIVE VEGETATION INTERFACE (SOUTH SIDE OF CHANNEL BUND) | |
|---|--|
| Australian Salt-Grass | Distichlis Distichophylla |
| Common Tussock-Grass | Poa Poiformis |
| Common Blown-Grass | Lachnagrostis Filiformis S.S |
| Rounded Noon-Flower | Disphyma Crassifolium Subsp. Clavellatum |
| Creeping Brookweed | Samolus Repens Var. Repens |



| REVISION | DATE | DES/DFT | APPD |
|----------|----------|---------|------|
| J | 19.11.20 | MM/MM | SM |
| I | 12.08.20 | MM/MM | TM |
| H | 21.07.20 | MM/MM | SM |
| G | 09.07.20 | MM/MM | SM |
| F | 06.07.20 | MM/MM | SM |
| C | 14.05.20 | MM/MM | SM |
| B | 28.02.20 | MM/MM | SM |
| A | 29.1.20 | FQ/FQ | SM |

LEGEND:

- STOCKPILE
- SSSF STRAW BALES
- EXIT
- SKIP
- STABILIZED ACCESS POINT
- NATIVE VEGETATION PROTECTIVE FENCING
- RUMBLE GRID
- SOLID WASTE STOCKPILE
- SUGGESTED COMPOUND SITE & PERSONNEL CARPARKING
- GRAVEL SAUSAGE
- TEMP. SWALE

Designed F. Qi
 Drawn F. Qi
 Checked T. Rhodes
 Authorised S.McGlynn
 Date September 2018

Scale @ A1
 N.T.S.

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ANCHORIDGE
 Balog Channel
 City of Greater Geelong

Site ECMP & EPMP - 2

Drawing No. 2384E-BC-EMP-2 **Rev J**
 Sheet No. 2 of 2

For Construction

APPENDIX 3 – CONSERVATION MANAGEMENT PLAN (CMP)

Final Report

Conservation Management Plan for Hospital Swamp Bypass channel, 76-88 Groves Road, Armstrong Creek, Victoria

Prepared for

Barwon Heads Management Pty Ltd

June 2020



Ecology and Heritage Partners Pty Ltd

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Document Control

| | |
|------------------------|---|
| Assessment | Conservation Management Plan |
| Address | Hospital Swamp Bypass channel, 76-88 Groves Road, Armstrong Creek, Victoria |
| Project number | 10117 |
| Project manager | Andrew Hill (Principal Ecologist / Director) |
| Other Staff | Andrew Taylor (Consultant Zoologist); Andrew Warnock (Consultant Botanist); Thorin Robertson (Zoologist); Elyse Harrison (Botanist) |
| Mapping | Monique Elsley (GIS Coordinator) |
| File name | 10117_EHP_CMP_BalogChannel_Finalv2_18062020 |
| Client | Barwon Heads Management Pty Ltd |
| CMA | Corangamite |
| Council | City of Greater Geelong |

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1 Introduction

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Barwon Heads Management Pty Ltd to prepare a Conservation Management Plan (CMP), for the construction of a stormwater channel within 76-88 Groves Road, Armstrong Creek.

The channel will divert water as required, from Armstrong Creek to an existing wetland (known as ‘Sparrovale Wetland’) within 109-215 Sparrovale Road, Charlemont, and 1-87 Groves Road, Armstrong Creek. The primary function of the channel is to mitigate impacts of increases in water volume on the downstream Ramsar complex, in particular Hospital Swamp, by bypassing flows during summer and autumn around Hospital Swamp.

Several ecological values have been identified on-site. As such, the CMP outlines measures to mitigate impacts to ecological values within the footprint of the proposed stormwater channel at 76-88 Groves Road and immediately adjacent areas. The CMP was required as part of a request for further information resulting from a referral to the Commonwealth Minister for Environment and Energy under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Referral number: EPBC 2015-7553. Note: A Construction Management Plan will be prepared as a separate document, outlining further measures to reduce the impacts of construction activities.

1.2 Purpose

The purpose of the CMP is to provide a set of procedures associated with construction works within the study area. By implementing this CMP, Barwon Heads Management Pty Ltd aims to ensure that the proposed development does not impact on environmental values present within and adjoining the study area, and that appropriate environmental protection measures are implemented during all stages of construction works.

1.3 CMP Regulatory Context

Project approval is contingent on compliance with several State and local environmental regulations. The most relevant policies and regulations include:

- *The Environment Protection Act 1970*;
- *Victoria’s Catchment and Land Protection Act 2004*;
- *The Commonwealth Environment Protection and Biodiversity Conservation Act 1999*;
- *The Water Act 1989*;
- *The Flora and Fauna Guarantee Act 1988*; and,
- City of Greater Geelong City Council Planning Scheme provisions.

1.4 Site extent

The site extent within this report is defined as the area covered by the Public Acquisition Overlay (PAO) within 76-88 Groves Road, Armstrong Creek, Victoria (Figure 1). However, the construction footprint does not include

this entire area, and will be limited to the area indicated in Plate 1, which comprises a 20 metre wide corridor. The 20 metre construction corridor also includes a five metre buffer located between the construction footprint and no-go fencing to be established between native vegetation. It should be noted that the five metre buffer no-go zone fencing is proposed along the entire construction footprint (SMEC 2020).

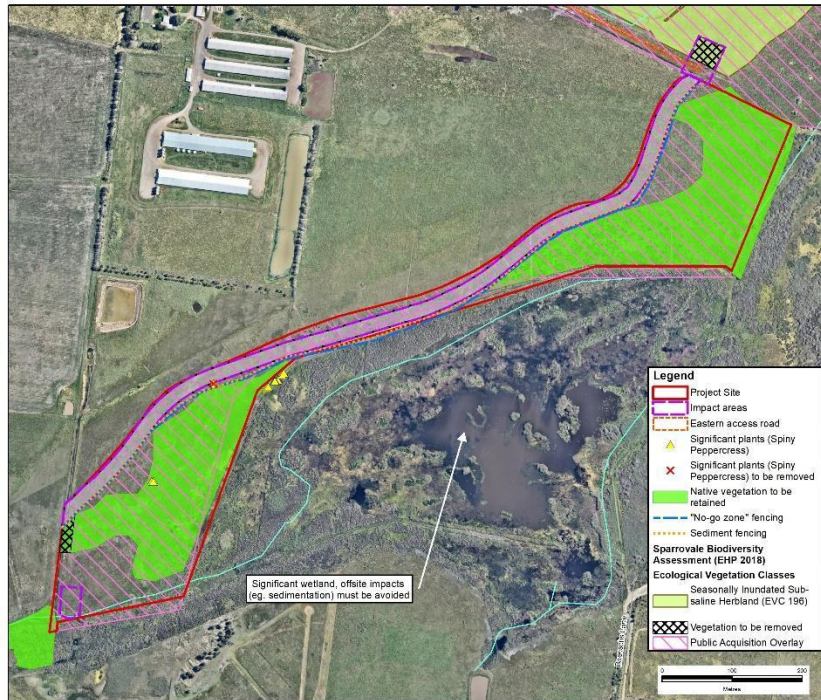


Plate 1. On-site environmental protections

2 Ecological Features

2.1 Vegetation

2.1.1 Native Vegetation

Vegetation within the site is predominantly dominated by exotic pasture grasses, however, remnant native vegetation is present within the site. Areas classified as 'native vegetation to be retained' in accordance with the Armstrong Creek East Precinct Structure Plan are outlined in Plate 1 (SMEC 2010).

2.1.2 Spiny Peppercress

The site contains the nationally significant Spiny Peppercress *Lepidium aschersonii*, listed as Vulnerable under the EPBC Act. Spiny Peppercress is a small (~30cm high) perennial herb with intricately branched, spiny, stems (Plate 2).



Plate 2. Spiny Peppergrass recorded within the site

2.2 Wetlands

Land to the south and east of the site contains a complex of wetlands of international importance (Hospital Swamp, Baensch's Wetland, Lake Connewarre and associated wetlands), protected under the EPBC Act (Ramsar site) (Plate 1).

2.3 Fauna

The site contains potential foraging habitat for the nationally significant Growling Grass Frog *Litoria raniformis*. Growling Grass Frog is protected under the EPBC Act (Plate 3). The site also contains potential foraging habitat for the nationally significant Orange Bellied Parrot *Neophema chrysogaster*. Orange Bellied Parrot is protected under the EPBC Act (Plate 4).



Plate 3. Growling Grass Frog



Plate 4. Orange Bellied Parrot

Wetlands to the south and east of the site contain habitat for a number of nationally significant fauna species protected under the EPBC Act.

2.4 Limitations

This CMP does not include details of public safety, amenity considerations, site security, operating hours, noise and vibration controls, air and dust management, waste management, construction program, traffic management, evidence of relevant authority approvals and insurance or asset condition reports. These details will be included in the Construction Environment Management Plan.

3 Risk Assessment

3.1 Overview

Environmental risk assessment involves considering the likelihood of negative environmental impacts occurring and the potential consequences of those impacts. Therefore, risk is fundamentally a function of probability and outcome. In the context of environmental management, potential negative impacts of the construction range from impacts on native vegetation, sedimentation and erosion.

A risk assessment for each potential impact has been conducted to gauge a level of consequence, which sets a framework for developing, prioritising and implementing environmental management actions. The risk matrix presented in Table 1 has been used as a basis for the risk assessment, while an explanation of the risk assessment terms is provided in Table 2. The outcome of the risk assessment is presented in Table 3 with a level of risk identified for each source of potential environment impact.

Based on the assessment and risk management actions, controls have been formulated to address each of the identified potential sources of environmental impact.

Table 1. Risk assessment matrix, with likelihood, consequence and level of risk

| Consequence | Likelihood | | | |
|--------------|-------------|-------------|-------------|--------|
| | Certain | Likely | Unlikely | Rare |
| Catastrophic | Significant | Significant | Significant | Medium |
| Major | Significant | Significant | Significant | Medium |
| Moderate | Significant | Significant | Medium | Low |
| Minor | Medium | Medium | Low | Low |

Table 2. Definition of risk assessment 'likelihood and consequence' terms

| Likelihood | Consequence (potential impact) |
|---|--|
| Certain – will occur at a frequency > every week if preventative measures are not applied. | Catastrophic – Significant damage or impact on environment or community e.g. severe and/or persistent waterway/ stormwater quality pollution soil contamination over an area > 10 m2 contamination of off-site soil or contamination of soil with prescribed or hazardous materials widespread community impact resulting in illness, injury or inconvenience receiving a fine(s) is a certainty or works will be halted. |
| Likely – will occur > once or twice but less than weekly if preventative measures are not applied. | Major – Major adverse environmental or social impacts e.g. medium-term, noticeable/measurable change in waterway/ stormwater quality soil contamination over an area 1m2 – 10 m2 (excluding off-site soil contamination or contamination of soil with prescribed or hazardous |

| Likelihood | Consequence (potential impact) |
|--|--|
| | materials) annoyance or nuisance to community fining likely or works may be halted. |
| <p>Unlikely – May occur once or twice during the project if preventative measures are not applied</p> | <p>Moderate – Moderate undesirable environmental or social impacts e.g. localised, short term noticeable/measurable change in waterway/ stormwater quality soil contamination over an area <1m² (excluding off-site soil contamination or contamination of soil with prescribed or hazardous materials) some annoyance or nuisance to community fines unlikely.</p> |
| <p>Rare – Unlikely to occur during a project even if controls are missing</p> | <p>Minor – No or minimal adverse environmental or social impacts e.g. no measurable/ unlikely effect on waterway/ stormwater quality no or isolated community complaints no or isolated events where areas of soil <1m² is contaminated (excluding off-site soil contamination or contamination of soil with prescribed or hazardous materials) no likelihood of being fined.</p> |

Table 3. Environmental impact risk assessment

| Potential impact events | Development Phase | Consequence | Without mitigation measures | | With implementation of mitigation measures | |
|---|----------------------------------|-------------|-----------------------------|---------------|--|---------------|
| | | | Likelihood | Level of Risk | Likelihood | Level of Risk |
| Spread of noxious weeds | All phases | Moderate | Likely | Significant | Unlikely | Medium |
| Sedimentation of waterways | Construction / Post-construction | Major | Certain | Significant | Unlikely | Significant |
| Unapproved native vegetation removal | Construction | Moderate | Likely | Significant | Rare | Low |
| Unapproved removal of Spiny Peppercreess | Construction | Major | Likely | Significant | Rare | Medium |
| Death or injury of individual Growling Grass Frog within construction zone | Construction | Major | Unlikely | Significant | Rare | Medium |
| Unapproved, or unnecessary disturbance to Orange Bellied Parrot habitat | Construction | Moderate | Likely | Significant | Rare | Low |
| Chemical contamination | Construction | Major | Unlikely | Significant | Rare | Medium |
| Soil erosion | Construction / Post-construction | Moderate | Likely | Significant | Unlikely | Medium |

4 CMP Implementation

A detailed plan and methodology relating to the construction works, including, but not limited to the need for parking, laydown/storage areas, access points, traffic management plans, soil management and the management of the interface with the habitat zones is detailed in the Environment Management Plan prepared by SMEC (2020). As such, these plans and details are not repeated in this CMP.

4.1 Conservation Objectives for the use of site

The key conservation objectives for the use of the site are to:

- Avoid removal of native vegetation identified in Plate 1;
- Minimise vegetation disturbance (including introduced vegetation);
- Minimise disturbance and degradation of Orange Bellied Parrot habitat;
- Avoid removal of the nationally significant Spiny Peppercross *Lepidium aschersonii* as identified in Plate 1.
- Minimise impacts to Growling Grass Frog;
- Reduce and prevent further spread of noxious weeds;
- Reduce soil erosion; and
- Prevent sub-surface soil and ground water contamination.

4.2 Plan Implementation

It is envisaged that the CMP will be implemented in agreement between the Department of Environment and Energy (DoEE), Barwon Heads Management Pty Ltd and relevant construction sub-contractors. Regulatory authorities (i.e. City of Greater Geelong, Department of Environment, Land Water and Planning, Environmental Protection Authority, Barwon Water, Corangamite Catchment Management Authority), may also be involved in the compliance and monitoring of aspects of this CMP. It is also recommended that the *CCF Environmental Guidelines for Civil Construction* (CCF 2010) and the *EPA Guidelines No. 960 Temporary Environmental Protection Measures for Subdivision Construction Sites* (EPA 2004) are reviewed by Barwon Heads Management Pty Ltd prior to the commencement of construction activities.

4.3 Monitoring and compliance

A monitoring and compliance framework is provided below (Table 4).

4.4 Management Actions and Controls

Details and specifications for each management response and action are provided under the appropriate headings below. The management responses set out here are based on standard best-practice environmental protection measures.

4.4.1 Protection of Native Vegetation

Without active management, areas supporting native vegetation may be impacted during construction. Unrestricted access into areas of native vegetation by vehicles and machinery may result in loss of native

vegetative cover, Orange Bellied Parrot habitat, soil disturbance and compaction and subsequent weed encroachment.

Native vegetation identified in Appendix 1 must not be impacted and must be protected prior to and during construction works.

While some vegetation is permitted for removal, vegetation must only be removed if necessary for construction works. As much vegetation should be retained on site as practicable in order to minimise potential impacts to local biodiversity values within the study area, including planted or introduced vegetation (eg pasture grasses). The construction footprint must also be kept to the minimum extent necessary to avoid removal of vegetation and the potential for increased levels of sedimentation or erosion.

To minimise the likelihood of inadvertent disturbance to native vegetation, prior to any works, the following mitigation measures will be put in place:

- Prior to any construction works an on-site meeting will be held to outline the location of vegetation to be retained and measures to avoid impacts to native vegetation; and,
- Appropriate 'no-go' fencing will be installed as indicated within Plate 1, signage must be erected to clearly indicate the site as a "No-Go Zone". Further, sediment fencing will be installed along higher risk areas as indicated in the Construction Management Plan.

Prior to, and during construction, all staff must be inducted to outline the importance of adhering to no-go fencing, minimising disturbance to soil and vegetation. Fencing must be regularly inspected and maintained by the site manager.

Any rehabilitation must utilise species appropriate to relevant EVC at a density of at least one plant per square metre using enviro cells or tubes. Further, any rehabilitation should include Beaded Glasswort *Sarcocornia quinqueflora* Shrubby Glasswort *Sclerostegia arbuscula* in order to maintain and/or improve habitat for Orange Bellied Parrot. The site should be weed controlled prior to planting and the area protected with rabbit proof fencing.

4.4.2 Protection of Spiny Peppercreess

To minimise the likelihood of inadvertent disturbance, prior to any works, the following mitigation measures will be put in place:

- All contractors will be made aware of the presence of Spiny Peppercreess plants nearby to the construction footprint through site inductions. Spiny Peppercreess plants identified for retention within the study area (Plate 1) will be included as a mapping overlay on any construction plans; and,
- Appropriate 'no-go' fencing will be installed as indicated within Plate 1, signage must be erected to clearly indicate the site as a "No-Go Zone". Further, sediment fencing will be installed along higher risk areas as indicated in the Construction Management Plan.

4.4.3 Protection of Growling Grass Frog

Given the nature of the works, and proximity of Growling Grass Frog habitat, a precautionary set of procedures will be implemented in the instance that Growling Grass Frog is discovered during construction.

Pre-clearance Survey

A pre-clearance survey for frogs will be undertaken by a suitably qualified individual (zoologist), licensed by DELWP (under the *Wildlife Act*) with knowledge of and demonstrated experience in frog salvage methods. This will be undertaken prior to any ground disturbance within the study area within drainage lines and in open grassed areas prior to the installation of the construction zone to determine the likelihood of detecting the species.

All key construction personnel will be briefed about the occurrence of GGF in the area. Other construction personnel will be informed about the species as part of the general environmental briefing of construction personnel. Information brochures will be prepared on this species for distribution to all site personnel providing a physical description of the species, their population distribution, habitat and similar species.

Salvage Protocol

Salvage and translocation of Growling Grass Frog is not considered to mitigate the impact of an action, or reduce the impact of an action below the significance threshold (DEWHA 2009). However, the following is considered to be a mitigation measure should any individuals be unexpectedly found prior and during construction activities:

- Prior to any construction works an appropriate on-site meeting will be held to outline the following information:
 1. A description of the appearance for Growling Grass Frog and areas in which the species may be discovered;
 2. Where possible, works should minimise direct impact to areas of retained vegetation (including exotic vegetation used by Growling Grass Frog for refuge);
 3. Single-use lightweight plastic bags will be provided by the ecological consultant and must be kept on site at all times in case of an emergency in which injured or salvaged individuals are located during construction. This will allow a relevant site supervisor or designated staff member from the construction team to keep the animal safe until the relevant ecological consultant is contacted and/or arrives on site (if required); and,
 4. Provision of a 'Species Fact Sheet' outlining information on the species and habitat attributes will be kept on site at all times (i.e. in the site shed).
- Pre-clearance salvage surveys will be undertaken to take into account the activity levels of frogs. The Growling Grass Frog is inactive in winter (mid-May to mid-September), and at these times all searching should be carried out in daytime, targeting likely sheltering sites such as underneath rocks and debris;
- Sediment fencing will be installed along the full extent of works as shown on Plate 1. This will also act as subsequent frog-fencing to prevent Growling Grass Frog from entering the site. Additional drift-net fencing will be installed as required to cover the remaining extent of the construction area to prevent Growling Grass Frog from entering the site from the No-Go Zones;

- A suitably qualified individual, licensed by DELWP (under the Victorian *Wildlife Act 1975*) with knowledge of and demonstrated experience in frog salvage methods, must be appointed as the supervisor of the salvage operation;
- The contact details of a suitably qualified zoologist should be readily available to all staff if a Growling Grass Frog is detected or injured during construction works;
- Once contained the ecological consultant is to check the salvaged frog for any signs of injury or ill health (i.e. Chytrid fungus). Any injured or sick individuals will be taken to the nearest veterinary clinic for appropriate treatment or euthanasia, if required;
- Any Growling Grass Frog collected during salvage operations which are not visibly injured or sick will be relocated to suitable habitat within the No-Go Zone (preferably within 100 metres) of the construction zone into suitable habitats in proximity to the detection site. Please note that DELWP must be contacted if a Growling Grass Frog is detected;
- The relocation of Growling Grass Frogs is to occur within 100 metres of the site into the adjacent wetlands to the south of the construction zone, within the No-Go Zone where frog-fencing will prevent re-occurrence within the construction zone;

To reduce the likely spread of Chytrid fungus to surrounding habitats outside the project area, the following protocols will be implemented (DoEE 2016; NPWS 2001):

- Appropriate hygiene protocols will be undertaken in accordance with Murray *et al.* 2011 to minimise the risk of introduction and spread of Amphibian Chytrid Fungus on the construction site from people / machinery and activities associated with the relocation of Growling Grass Frog; and
- Footwear will be washed in disinfectant at the commencement and end of each survey, or when entering/exiting suitable habitats to prevent the introduction and/or spread of diseases;
- If no water is available for washing hands before starting surveys, a sterilising alcohol-based hand disinfectant will be used, such as AquaGel;
- Amphibians will be handled and released as quickly as possible. Unused disposable latex gloves will always be used when handling any frogs. A new pair of gloves will be used for each individual;
- No more than one individual will ever be held in the same container simultaneously. A new bag or sterilised container will be used for each individual and containers/bags will not be reused; and,
- All amphibians will be regarded as a high infection risk and will be handled in the above manner.

Ecology and Heritage Partners have the appropriate *Wildlife Act 1975* Management Authorisation No. 10008058, which outlines DELWP approval for the salvage and relocation of Growling Grass Frog within 100 metres of a specific site.

4.4.4 *Protection of Orange Bellied Parrot habitat*

The primary method available to manage the site in order to retain and enhance its value to Orange-bellied Parrots is through retention and protection of appropriate native vegetation and improvements to degraded areas. This will offer potential roost sites for the bird and similar protection of salt marsh vegetation at the site will offer food sources to the bird.

Impacts to Orange Bellied Parrot habitat during construction must be minimised through the protection of native vegetation, as outlined in Section 3.4.1, and management of noxious weeds, as outlined in Section 3.4.7.

4.4.5 *Vehicle, plant and material/soil storage*

The work zone is restricted by the Public Acquisition Overlay (PAO). As the proposed drainage channel generally follows the upslope boundary of the PAO in order to avoid native vegetation, limited space is available for vehicle/plant set down areas, washdown areas and stockpiles. As such, vehicle/plant set down areas, washdown areas and stockpiles must be located either within the proposed construction footprint (Plate 1), or offsite; with offsite being the preferred option in order to reduce risks. A risk assessment of any sites proposed to be used for vehicle/plant set down areas, washdown areas and stockpiles must be undertaken prior to use of the site.

Due to the proximity of the site to an internationally significant wetland to the south and east of the site, no high risk chemicals will be stored onsite.

A spill kit must be kept within a designated plant during works to ensure ready access, and any other chemicals/fuel must be contained within a bunded area, if they are stored on site.

4.4.6 *Erosion and sedimentation and protection from surface damage/disturbance*

Construction activities (i.e. soil excavation), may increase the potential for erosion and sedimentation and can pose a significant risk to water quality. To limit the potential for direct impacts associated with construction activities, sediment and erosion control measures must be implemented.

The following control measures must be implemented:

- Install geo-textile silt fences along areas posing the highest risk (areas within close proximity to native vegetation and/or areas containing ephemeral pools of water) (Plate 1). Fences must be installed downslope of the construction area and buried to a depth of approximately 200mm. Fencing must be monitored on a daily basis for damage and repaired immediately;
- Avoid construction during or following high rainfall events. Additional silt fencing may be required should extreme rainfall events be predicted. Site managers must monitor weather reports and pre-plan for large rain events to mitigate potential sedimentation runoff and erosion;
- During the excavation of the channel, soil should be ideally stored upslope of the channel. The channel thus forming a sediment trap should rainfall cause stored soil to wash downslope.
- Construction footprint must be kept to a minimum to prevent surface damage/disturbance which may lead to soil erosion.

4.4.7 *Noxious weeds and equipment hygiene*

One of the major risks associated with construction sites is the transport of weed material on contaminated vehicles and machinery. To minimise the likelihood of weed material being moved offsite and new weeds being transferred onto the site, weed control measures will be required prior to commencement of construction activities.

- To avoid the introduction of new weeds into the site – machinery, vehicles and equipment initially coming onto the site are required to be cleaned of excess soil and organic matter by high pressure air or water spray jets prior to arrival at the site.
- To minimise the spread/removal of existing weeds from the site, any vegetation/topsoil that is to be removed from the site will be immediately taken from the construction site via trucks and will not be stockpiled on site.
- The study area does not contain any appropriate site for vehicle wash-down due to the proximity of the site to significant wetlands and extent of the Public Acquisition Overlay in which the channel is to be constructed; therefore plant should be loaded onto floats and washed-down offsite at the construction depot.
- Post-construction weed control must be undertaken by a qualified contractor, weed control should focus on:
 - Eliminating the noxious weed Spear Thistle *Cirsium vulgare*, noxious and weed of national significance African Boxthorn *Lycium ferocissimum* within the site; and,
 - Control (maintain or reduce current extent; Figure 1) of the high threat Tall Wheat-grass *Lophopyrum ponticum*.

To reduce the spread of Tall Wheat-grass (Figure 1), where possible, construction will occur within areas dominated by Tall Wheat-grass (ie. construction staging should work towards, not away from areas dominated by Tall Wheat-grass). Following construction, the spread of Tall Wheat-grass must be controlled by spot spraying isolated plants establishing within new areas.

4.4.8 Site inductions

An environmental site induction will be undertaken for all contractors working on site. The induction program will highlight environmental values, risks, fauna salvage and translocation procedures, potential impacts and the relevant controls. Following the induction, all persons working on site are required to sign the induction form.

4.4.9 Site Monitoring

Monitoring is required to assess the success of management actions on the integrity the ecological values within the site, and to implement change if required. A monitoring and compliance framework is provided below (Table 5). Site managers are to sign and date each management action when it has been completed.

Daily environmental inspections must be carried out to ensure:

- all vegetation fences are present and clearly signed;
- all silt fences are present and working effectively;
- fuel and chemicals are being stored correctly;
- no chemical spills have occurred; and
- vehicle access is maintained within the construction zone and public roads.

4.4.10 *Management of channel post construction*

As the City of Greater Geelong will be responsible for the operation of the channel, and this responsibility may be shared to some extent with Corangamite Catchment Management Authority and Parks Victoria, it is considered too early to define the operational management actions that may be required for the channel, particularly as planning and assessment of the Sparrovale wetlands is yet to be finalised. As such, an operational conservation management plan will be developed by the proponent responsible for the ongoing management of the channel, and submitted to DoEE for approval prior to the channel being commissioned. This conservation management plan may also include management of the Sparrovale wetland, so that the management of the entire system is considered within the one plan. This plan should include:

- Protection of retained native vegetation;
- Protection of Spiny Peppercreess;
- Measures to mitigate impacts to Growling Grass Frog during maintenance activities (eg. clearing Common Reed within the channel);
- Protection of Orange Bellied Parrot habitat;
- Management of hydrology; and,
- Water quality monitoring and reporting; Pat Condina and Associates (2014) have prepared a stormwater monitoring program for the Armstrong Creek catchment to assist with ensuring that suitable water quality objectives are achieved for stormwater runoff. The management plan should incorporate monitoring in accordance with this program, and outline further monitoring requirements, where necessary.

Table 4. Compliance checklist

| Project Phase | Element | Performance target(s) | Date and Signature (site manager) | Comments |
|-------------------------|-------------------------------------|--|-----------------------------------|----------|
| Pre-construction | Native vegetation | No-go fencing and signage installed (Plate 1) All construction staff inducted and aware of vegetation to be protected (Plate 1) | | |
| | Spiny Peppergrass | No-go fencing and signage installed (Plate 1) All construction staff inducted and aware of vegetation to be protected (Plate 1) | | |
| | Growing Grass Frog | All construction staff inducted and aware of mitigation measures and translocation procedure | | |
| | Orange Bellied Parrot | No-go fencing and signage maintained All construction staff inducted and aware of vegetation to be protected (Plate 1) | | |
| | Vehicle, plant and material storage | Set down area designated (Plate 1). Spill kit located at correct locations / vehicles on site. Chemicals/fuel stored in bunded area. | | |
| | Sedimentation and erosion control | Silt fencing installed downslope of construction zone in high risk areas (Plate 1). | | |
| Construction | Native vegetation | No-go fencing and signage maintained. Vegetation removal minimised where possible. | | |
| | Spiny Peppergrass | No inadvertent damage to plants proposed to be retained. | | |

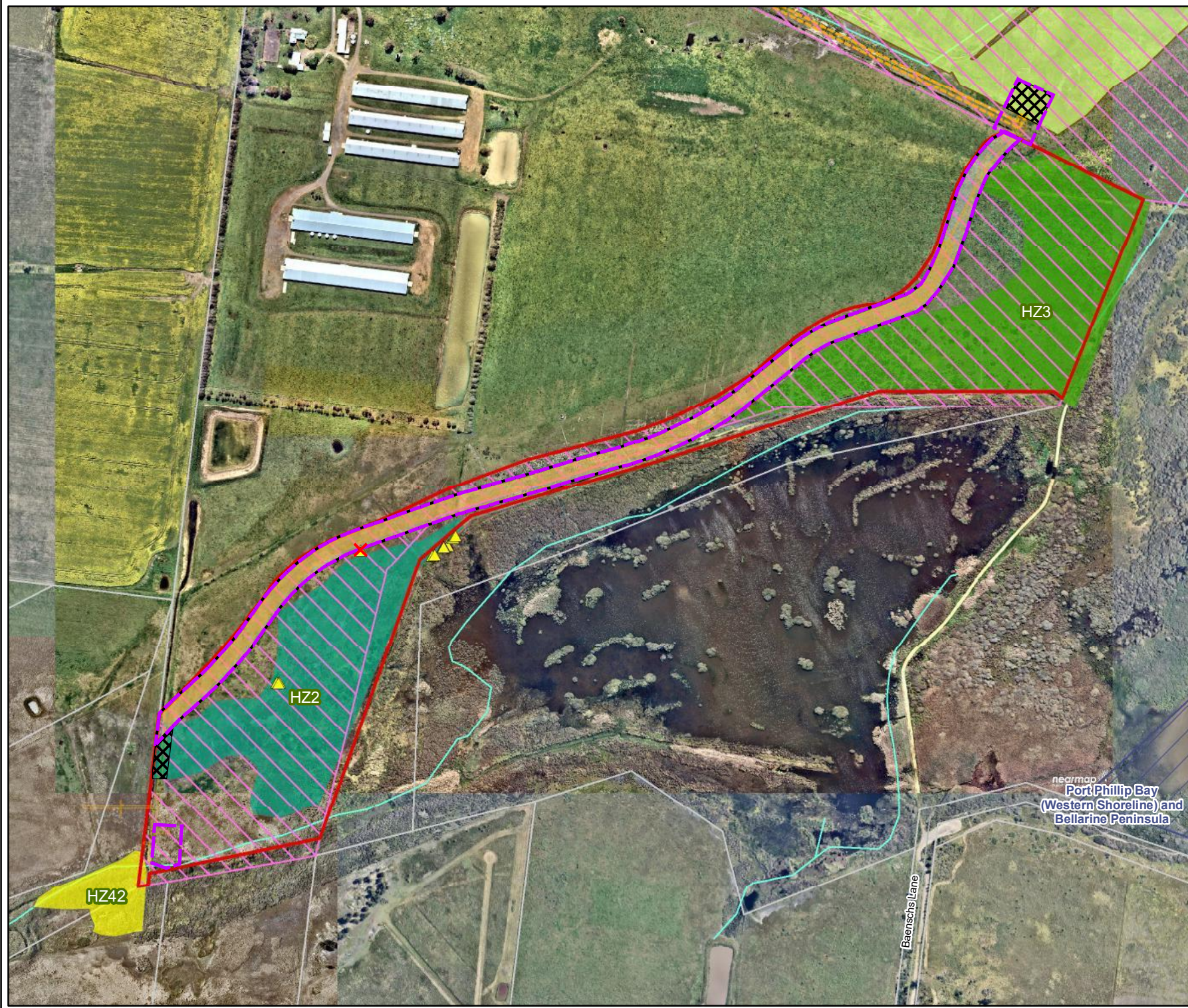
| Project Phase | Element | Performance target(s) | Date and Signature (site manager) | Comments |
|--------------------------|---|--|-----------------------------------|----------|
| | Growling Grass Frog | If an individual Growling Grass Frog is discovered during construction, salvage is conducted in accordance with this plan. Frog-fencing maintained. | | |
| | Orange Bellied Parrot | No-go fencing and signage maintained Vegetation removal minimised where possible. No new infestations of noxious weeds. | | |
| | Vehicle, plant and material storage | Compliance with designated fuel and chemical protocols (i.e. MSDS sheets). Vehicles and plants kept within designated areas. | | |
| | Noxious weeds | No new infestations of noxious weeds. | | |
| | Sedimentation and erosion control | Silt fences maintained and regularly checked. Soil stored upslope of trench. Trenches backfilled each day. Construction area kept to a minimum area necessary. No significant incidents with sedimentation or pollutants in waterways. No significant areas of erosion. | | |
| Post-construction | Noxious weeds | No new infestations of noxious weeds, including but not limited to Tall Wheat-grass, Spear Thistle and African Boxthorn. | | |
| | Native vegetation, Spiny Peppergrass, Growling Grass Frog, Orange Bellied Parrot habitat, | Develop an operation conservation management plan, to the satisfaction of DoEE, prior to the channel being commissioned. | | |



| Project Phase | Element | Performance target(s) | Date and Signature (site manager) | Comments |
|---------------|--|-----------------------|--------------------------------------|----------|
| | management of hydrology, water quality | | | |

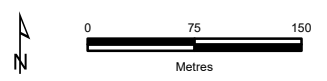
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- Legend**
- Study Area
 - Proposed Drainage Channel
 - Development Plan
 - Eastern access road
 - Impact areas
- Habitat Zones - ACEP NVPP**
- HZ2, as per NVPP mapped extent
 - HZ3, as per NVPP mapped extent
 - HZ42, as per NVPP mapped extent
- Sparrovale Biodiversity Assessment (EHP 2018)**
- Seasonally Inundated Sub-saline Herbland (EVC 196)
 - Vegetation to be removed
 - ▲ Spiny Peppergrass
 - ✕ Spiny Peppergrass to be removed
 - Public Acquisition Overlay
 - Ramsar wetland

Figure 1
Targeted Spiny Peppergrass survey and vegetation survey
Proposed 'Balog' Drainage Channel including extension



VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

12893 Fig02_TargSPC_Survey_11/06/2020_melsley

Aerial source: Nearmap 2019

APPENDIX 4 - CMP POST-CONSTRUCTION AND CONSTRUCTION COMPLIANCE RECORDS

Appendix 4.1 Post-construction Environmental Requirements

Jacqui Holst
Development Manager
APD Projects

By email: jacqui@apdprojects.com.au

Date: 16 December 2022

Dear Jacqui,

Re: EPBC 2015/7553 Year 2 Compliance Report – Post construction Assessment

This letter is to confirm that I undertook a site assessment at Balog Channel on 8 and 14 December 2022 following the completion of the Year 2 anniversary of the commencement of the action (28 November 2022). The site assessment was undertaken to inform the ecological component of the annual compliance reporting for the action as per Condition 5 of EPBC approval 2015/7553.

The monitoring and compliance targets are detailed in Section 4.3 of the Conservation Management Plan (CMP) prepared by Ecology and Heritage Partners (2020), and approved by the Commonwealth. Condition 1 of EPBC 2015/7553 required the proponent to undertake the action consistent with the actions detailed in the CMP.

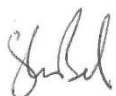
Specifically, the assessment was undertaken to determine whether the post-construction noxious weed performance target of ‘*no new infestations of noxious weeds, including but not limited to Tall Wheat-grass, Spear Thistle and African Boxthorn*’ was achieved.

The Balog Channel site was inspected on 8 and 14 December 2022 to map and record the presence of any new noxious weed infestations, including but not limited to Tall Wheat-grass *Lophopyrum ponticum*, Spear Thistle *Cirsium vulgare* and African Boxthorn *Lycium ferocissimum*. No infestations of any noxious weeds were observed within the Balog Channel construction footprint.

It is noted that the remaining post-construction requirement requiring an Operational Conservation Management Plan (OCMP) to be prepared and approved to the satisfaction of the Commonwealth has been completed, with the OCMP approved on 16 December 2021.

Based on the results of the assessment, Ecology and Heritage Partners can confirm that the post-construction performance targets relating to EPBC 2015/7553 have been achieved, and the proponent has achieved all Year 2 compliance requirements relating to the action.









Your sincerely










Shannon LeBel
Associate Ecologist
Ecology and Heritage Partners Pty Ltd

Appendix 4.2 Compliance Checklist

Table 4. Compliance checklist

| Project phase | Element | Performance target(s) | Date and signature (site manager) | Comments |
|------------------|-------------------------------------|--|---|--|
| Pre-construction | Native vegetation | No-go fencing and signage installed (Plate 1) All construction staff inducted and aware of vegetation to be protected (Plate 1) | 26/11/20  | Inspected by Cell Environment for Smeel, APO & SHANNON LEBAL from ECOHERZ Partners. 26/11/20. ① CHMP inspections conducted |
| | Spiny Peppergrass | No-go fencing and signage installed (Plate 1) All construction staff inducted and aware of vegetation to be protected (Plate 1) | 26/11/20  | Same as item ① above |
| | Growing Grass Frog | All construction staff inducted and aware of mitigation measures and translocation procedure | 26/11/20  | Same as item ① |
| | Orange Bellied Parrot | No-go fencing and signage maintained All construction staff inducted and aware of vegetation to be protected (Plate 1) | 26/11/20  | Included as part of personnel inductions. See ① above. |
| | Vehicle, plant and material storage | Set down area designated (Plate 1). Spill kit located at correct locations / vehicles on site Chemicals/fuel stored in bunded area | 26/11/20  | All plants were refused at the compound away from sensitive areas. |
| Construction | Sediment and erosion control | Silt fencing installed downslope of construction zone in high risk areas (Plate 1) | 26/11/20  | See ① above. |
| | Native vegetation | No-go fencing and signage maintained Vegetation removal minimised where possible | 10/02/21  | Internally inspections of fence & signage is ongoing |
| | Spiny Peppergrass | No inadvertent damage to plants proposed to be retained. | 10/02/21  | At no point did any plant or personnel enter No-go zones. |

| Project phase | Element | Performance target(s) | Date and signature (site manager) | Comments |
|---------------|-------------------------------------|--|--|---|
| | Growing Grass Frog | If an individual Growing Grass Frog is discovered during construction, salvage is conducted in accordance with this plan Frog-fencing maintained. | 10/02/21  | None discovered during construction Regularly inspected. |
| | Orange Bellied Parrot | No-go fencing and signage maintained Vegetation removal minimised where possible No new infestations of noxious weeds | 10/02/21  | Regularly inspected. None discovered during construction |
| | Vehicle, plant and material storage | Compliance with designated fuel and chemical protocols (i.e. MSDS sheets) Vehicles and plants kept within designated areas | 10/02/21  | Fueling & plants minimised to be kept at compound away from job |
| | Noxious weeds | No new infestations of noxious weeds | 10/02/21  | None sighted. |
| | Sediment and erosion control | Silt fences maintained and regularly checked Soil stored upslope of trench Trenches backfilled each day Construction area kept to a minimum area necessary No significant incidents with sedimentation or pollutants in waterways No significant areas of erosion | 10/02/21  | Silt fence regularly checked. AM complied with. No sedimentation or pollutants entered waterways. No erosion |
| | Noxious weeds | No new infestations of noxious weeds, including but not limited to Tall Wheat-grass, Spear Thistle and African Boxthorn | 14/12/22  | Post-construction Year 2 Audit. NO NOXIOUS WEED INFESTATIONS OBSERVED |
| | Post-construction | Native vegetation, Spiny Peppercress, Growing Grass Frog, Orange Bellied Parrot habitat, management of hydrology, water quality |  | APPROVED BY THE COMMONWEALTH ON 16 DECEMBER 2021 |

APPENDIX 5 – CMP POST-CONSTRUCTION COMPLIANCE RECORDS

Appendix 5.1 – Operational Conservation Management Plan

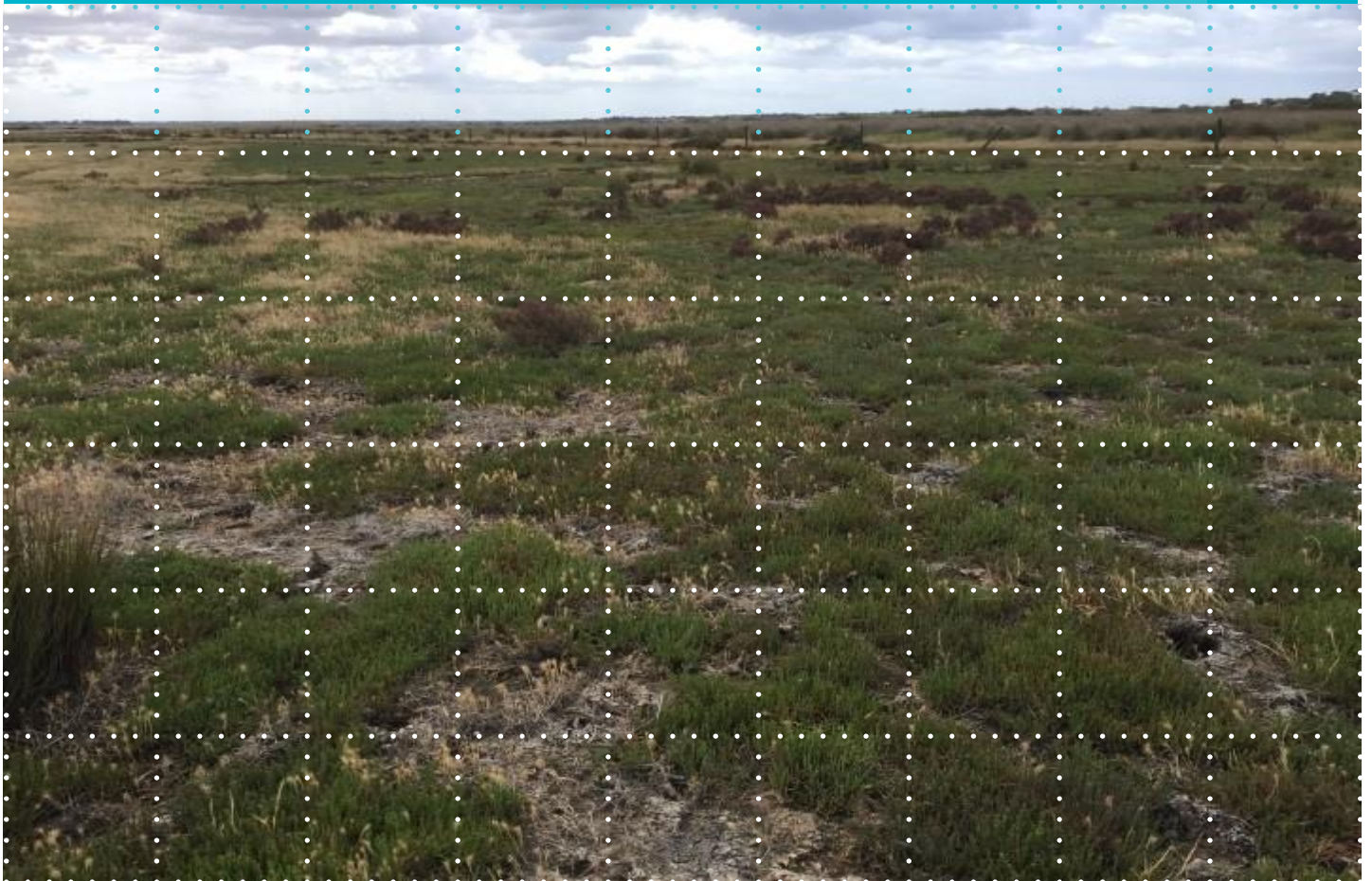
Final Report

Operational Conservation Management Plan: Hospital Swamp Bypass Channel, Victoria (EPBC 2015/7553)

Prepared for

Barwon Heads Management Pty Ltd

November 2021



Ecology and Heritage Partners Pty Ltd

DOCUMENT CONTROL

| | |
|---------------------------------------|---|
| Assessment type | Operational Conservation Management Plan |
| Address | Hospital Swamp Bypass Channel, Victoria |
| Project number | 15085 |
| Project manager | Elyse Harrison (Consultant Botanist) |
| Report reviewer | Shannon LeBel (Associate Ecologist / Geelong Resource Manager) |
| Mapping | Petra Sorensen (GIS Officer) |
| File name | 15085_EHP_OperationalConservationManagementPlan_BalogChannel_Finalv3_29112021 |
| Client | Barwon Heads Management Pty Ltd |
| Catchment Management Authority | Corangamite |
| Council | City of Greater Geelong |

VERSION CONTROL

| Report versions | Comments | Comments made by: | Date submitted |
|-----------------|---|-------------------|----------------|
| Draft | Report sent to the client for review | EH | 17/08/2021 |
| Draftv2 | Report updated following comments from client | EH | 14/09/2021 |
| Final | Report updated following comments from City of Greater Geelong | EH | 01/10/2021 |
| Finalv2 | Report updated following additional comments from City of Greater Geelong | EH | 06/10/2021 |
| Finalv3 | Report updated following comments from DAWE | EH | 29/11/2021 |

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Barwon Heads Management Pty Ltd to prepare an Operational Conservation Management Plan for the Hospital Swamp Bypass Channel, Armstrong Creek, Victoria.

The requirement for the Operational Conservation Management Plan is associated with the EPBC Act Approval (EPBC 2015/7553) for the **Warralily-Sparrovale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria**, issued by the Department of Agriculture, Water and the Environment (DAWE) (formerly the Department of Environment and Energy) (See Appendix 1). This decision was made under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. The details of the approval are presented in Table 1 below.

Table 1. Details of EPBC Act Approval (EPBC 2015/7553)

| | |
|--|--|
| Person to whom the approval is granted (approval holder) | Barwon Heads Management Pty Ltd |
| ACN of the approval holder | 621 820 344 |
| Action | To construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria [see EPBC Act referral 2015/7553] |

Section 4.3 (Monitoring and Compliance) of the Conservation Management Plan (CMP) (Ecology and Heritage Partners 2020a) provides the monitoring and compliance framework to meet the Part A approval condition, which states that: *For the protection of Spiny Peppercross, Orange-bellied Parrot and the Port Philip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, the action must be undertaken consistent with the Conservation Management Plan.*

The post-construction requirements of the CMP detail the need to develop an operational conservation management plan, to the satisfaction of DAWE (formerly DoEE), prior to the channel being commissioned.

1.1.1 Scope and Objectives

The purpose of the operational conservation management plan (OCMP) is to provide a set of procedures associated with the monitoring and management of the Balog Channel once it has been commissioned. By implementing this operational CMP, Barwon Heads Management Pty Ltd aims to ensure that the operation of the channel does not impact on environmental values present within and adjoining the study area, and that appropriate environmental protection measures are implemented during and following the post-construction stage.

The environmental protection measures discussed within this plan pertain to the following:

- Protection of retained native vegetation;
- Protection of Spiny Peppercross *Lepidium aschersonii*

- Measures to mitigate impacts to Growling Grass *Litoria raniformis* frog habitat during maintenance activities;
- Protection of Orange-bellied Parrot *Neophema chrysogaster* habitat;
- Management of hydrology; and,
- Water quality monitoring and reporting.

1.2 Description of Action

Urban development in the Armstrong Creek growth areas will increase the peak run-off flow rate during rainfall events and will increase the total run-off volume (Venant Solutions 2015, 2018). Armstrong Creek flows into Baensch's Wetland, and subsequently Hospital Swamp, which are part of a larger wetland complex, comprising a number of wetlands, which are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as part of the *Port Phillip Bay (western shoreline) and Bellarine* Ramsar site. An increase in run-off flow to Hospital Swamp could change the ecological character of Hospital Swamp (Venant Solutions 2015,2018; Lloyd et al 2011).

In order to mitigate impacts of increases in water volume on the Ramsar complex, in particular Hospital Swamp, the action comprised the construction of a stormwater bypass channel. The channel diverts water as required, from Armstrong Creek to an existing wetland (known as 'Sparrovale Wetland') within 109-215 Sparrovale Road, Charlemont, and 1-87 Groves Road, Armstrong Creek. The primary function of the channel is to mitigate impacts of increases in water volume on the downstream Ramsar complex, in particular Hospital Swamp, by bypassing flows during summer and autumn around Hospital Swamp.

1.3 Location of the Project

The study area comprises the area covered by the Public Acquisition Overlay (PAO) within 76-88 Groves Road, Armstrong Creek (Figure 1). The construction footprint, however, did not include the entire area, and was limited to the area indicated in Figure 2, which comprised a 20-metre-wide corridor.

The 20-metre construction corridor also included a five-metre buffer located between the construction footprint and no-go fencing established between native vegetation, as per the approved Construction Environment Management Plan (CEMP) (SMEC 2020) (Appendix 2) and Conservation Management Plan (CMP) (Ecology and Heritage Partners 2020a).

The channel (and associated work zone) is immediately adjacent to Crown Allotment 2A, Section 4A, Parish of Connewarre, which is part of the Parks Victoria managed Lake Connewarre Wildlife Reserve. However, works did not encroach into the adjoining Crown land.

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management Tool (DELWP 2021), the study area occurs on the boundary of the Otway Plain and Victorian Volcanic Plain bioregions. It is located within the jurisdiction of the Corangamite Catchment Management Authority (CMA) and the City of Greater Geelong municipality.

1.4 Responsible Authority for Implementing the OCMP

It is understood that the City of Greater Geelong (CoGG) will be responsible for the operation of the channel following the expiry of this approval on 30 June 2022 (with some extent of responsibility shared with Corangamite Catchment Management Authority (CMA) and Parks Victoria). As such, CoGG will be responsible for the implementation of this Operational Conservation Management Plan following the handover of the channel (on 1 July 2022).

A meeting with CoGG was held on 15 June 2021 to discuss and define the operational management actions that are required for the channel.

CoGG have previously undertaken the planning and assessment of the broader Sparrovale Wetlands and have subsequently drafted the Sparrovale Wetland Monitoring and Management Plan (CoGG 2020). The purpose of this plan is to detail the preferred methods for monitoring environmental conditions in the Sparrovale wetlands so that CoGG, Department of Environment, Land, Water and Planning (DELWP), Parks Victoria and the community are better able to determine the success of environmental management actions to protect the ecological values of the adjoining wetlands of international importance.

With permission from CoGG, this operational conservation management plan incorporates the methods used for monitoring environmental conditions within the Sparrovale wetlands, with the intention that the management of the entire system, including the Balog Channel, can be considered within the one plan.

In addition, Pat Condina and Associates (2014) have prepared a stormwater monitoring program for the Armstrong Creek catchment to assist with ensuring that suitable water quality objectives are achieved for stormwater runoff. This operational CMP also incorporates monitoring in accordance with this program.

1.5 Ecological Features

1.5.1 Native Vegetation

Vegetation within the study area is predominantly dominated by exotic pasture grasses, however, remnant native vegetation is present within the site:

Brackish Wetland

Brackish Wetland within the study area was in moderate condition and was generally dominated by Chaffy Saw-Sedge, although some areas were dominated by Salt Club-sedge *Bolboschoenus caldwellii* and Small Spike-rush *Eleocharis acuta*. Brackish Wetland also supported, in lower abundances, Beaded Glasswort *Sarcocornia quinqueflora* subsp. *quinqueflora*, Shrubby Glasswort *Sclerostegia arbuscula*, Austral Seablite *Suaeda australis* and Streaked Arrow-grass *Triglochin striatum*.



Plate 1. Brackish Wetland within the study area (Ecology and Heritage Partners Pty Ltd 31/02/2018).



Plate 2. Brackish Wetland within the study area (Ecology and Heritage Partners Pty Ltd 31/02/2018).

Spiny Peppergrass

The site contains the nationally significant Spiny Peppergrass *Lepidium aschersonii*, listed as Vulnerable under the *Environmental Protection and Biodiversity Conservation Act (EPBC Act) 1999*.

Spiny Peppergrass is a small (approx. 30 centimetres high) perennial herb with intricately branched, spiny stems (Plate 3).



Plate 3. Spiny Peppergrass recorded within the study area.

1.5.2 Wetlands

Land to the south and east of the site contains a complex of wetlands of international importance (Hospital Swamp, Baensch's Wetland, Lake Connewarre and associated wetlands), protected under the EPBC Act (Ramsar site) (Figure 2).

1.5.3 Fauna

The site contains potential foraging habitat for the nationally significant Growling Grass Frog *Litoria raniformis* and Orange-bellied Parrot *Neophema chrysogaster*, which are protected under the EPBC Act (Plate 4; Plate 5).



Plate 4. Growling Grass Frog



Plate 5. Orange-bellied Parrot

In addition, wetlands to the south and east of the site contain habitat for a number of State significant water and migratory bird species, including including Australasian Shoveler *Anas rhynchos*, Eastern Great Egret *Ardea modesta*, Intermediate Egret *Ardea intermedia*, King Quail *Coturnix chinensis victoriae*, Lewin's Rail *Lewinia pectoralis pectoralis*, Little Bittern *Ixobrychus minutus dubius*, Little Egret *Egretta garzetta nigripes*, Glossy Ibis *Plegadis falcinellus*, Long-toed Stint *Calidris subminuta*, Nankeen Night Heron *Nycticorax caledonicus hillii* and Royal Spoonbill *Platalea regia*.

1.5.4 Hydrology

The study area typically comprises an ephemeral marsh system, whereby shallow water persists over the wetland in wet winters and shrinks quickly over late spring and summer/autumn (Pat Condina and Associates 2014). Such a wetland is essentially dry by the end of summer and would fill again in any Winter/Spring flood. However, due to water regulation practices these ephemeral marsh characteristics have diminished in the existing wetland complex (Condina and Associates 2014).

1.5.5 Water Quality

Prior to development and construction of levees and barrages on the Barwon River, the study area would likely have experienced a combination of influences including freshwater inputs from the Barwon River whenever it exceeded bankfull levels, and perhaps saline inputs from tidal intrusion (Condina and Associates 2014).

Whilst the current water quality within the study area has not previously been determined as part of past ecological assessments (Ecology and Heritage Partners 2020b) urban development in the surrounding areas has likely lead to an increase in stormwater runoff into the study area, which is expected to contain non-point source or diffuse source pollution (i.e. pollution origination from a variety of sources rather than a discrete source discharge).

2 MONITORING PROGRAM AND MANAGEMENT PLAN

The process of ongoing monitoring allows for the continual improvement of the ecological condition and quality of the Balog Channel by informing management interventions.

The monitoring program needs to consider the amount of time it can take for slowly changing ecological variables to respond to management actions. To be effective, monitoring designs must be able to distinguish ecosystem responses triggered by management actions from those caused by natural variability. An important aspect of this is to identify critical threats to the key ecological attributes that we wish to conserve (see Section 3) because this provides the focus for the monitoring program.

The main key ecological attributes to monitor function of the Balog Channel will be:

- Hydrology;
- Water quality (set parameters);
- Native vegetation (quality and extent of ecological vegetation classes (EVC), changes in composition, quality and extent of native vegetation in addition to EVC benchmarks);
- Fauna species diversity and distribution; and,
- Threats to ecological values.

2.1 Hydrology

A return to the hydrological pattern of an ephemeral marsh system will be somewhat approximated by accepting developmental flows from the upstream catchment in the Horseshoe Bend Precinct, via the Hospital Bypass Channel.

There are several performance targets and management actions that can assist to achieve the optimal hydrology for the area surrounding the Hospital Bypass Channel (post-construction). These items have been taken from the stormwater monitoring program prepared by Pat Condina and Associates (2014) are detailed in Table 2 (below):

Table 2. Ecosystem Objectives and associated Management Actions required to maintain hydrology of the study area

| Performance Target | Management Action |
|--|--|
| Implement and refine water quality monitoring program | See Section 2.2 |
| Complete freshwater inundation of the wetland at least on an annual basis to levels of 0.95 m or higher | Implement and continue shallow inundation regime. |
| Use freshwater inundation as a means of control of terrestrial weeds | |
| Retain the major freshwater wetlands as part of the lower Barwon floodplain (if sea level rise forecasts eventuate) | Review and adjust hydrodynamic modelling of lower Barwon floodplain area to assess required level of protection of new freshwater wetlands against future sea level rises. |
| | Visually inspect and repair/redesign/rebuild the part or all of the main levee system and control structures as |

| Performance Target | Management Action |
|--|--|
| | required, and maintain on an annual basis (into the future). |
| Prevent accumulation of contaminants in wetland overtime | Schedule desilting and resetting of the upstream sediment traps |
| | Program the treatment wetlands to reduce accumulated levels |
| | Monitor accumulation of sediments in the sediment ponds and wetlands on an annual basis. |

2.2 Water Quality

The quality of water in our waterways is a reflection of the nature and quality of catchment conditions, development and activity. The progressive urbanisation of any area leads to substantial changes in the quality of water discharged from a catchment.

The following information has been taken from the Sparrovale Wetlands Monitoring and Management Plan (CoGG 2020).

2.2.1 Water Quality Targets

The State Environment Protection Policy (SEPP), *Waters of Victoria*, sets out base statutory requirements for the quality of stormwater runoff. The policy, in Clause 46, states that artificial stormwater drains and artificial stormwater management wetlands need to be managed for the purposes for which they were constructed. They need to be designed and managed so that their waters are not harmful to humans or have unacceptable impacts on animals. Also, the impacts of flow, sediments, nutrients, toxicants, litter and other pollutants on surface waters are minimised.

A summary of the SEPP water quality targets is provided in Table 3 below. These targets are also proposed to be used for the Hospital Swamp Bypass Channel monitoring program to ensure a consistent land management approach across the entire Sparrovale Wetland system.

Table 3. Water quality targets compared to urban stormwater and urban stream water quality

| Indicator | Water quality targets for segment including Armstrong Creek and Sparrovale wetland* | Typical Urban Stream WQ# | Typical Pollutant concentrations in untreated Urban Runoff [^] |
|--|---|--------------------------|---|
| Conductivity (uS/cm) | <1500 | 800 | - |
| Dissolved Oxygen (% Sat) | >85% | - | - |
| pH | 6.5 – 8.3 | 6 – 9 | 6 – 9 |
| Turbidity (FTU) and Suspended Solids as mg/l | <10 | 2.5-25 | 250 (50-800) |
| E.coli (org/100 ml) | Median <1000 (secondary contact) | 100 – 1000 | 104 (103-105) |
| Ammonia (mg/l) | <0.03 | 0.002-0.16 | 0.7 (0.1-2.5) |

| Indicator | Water quality targets for segment including Armstrong Creek and Sparrovale wetland* | Typical Urban Stream WQ# | Typical Pollutant concentrations in untreated Urban Runoff^ |
|---|---|--------------------------|---|
| Total Nitrogen (mg/l) | <0.60 | 0.4-2.5 | 3.5 (2-6) |
| Total Phosphorus (mg/l) | <0.045 | 0.05-0.5 | 0.6 (0.1-3) |
| Chlorophyll a (ug/l) | <20 | 10 | |
| Blue Green Algae (cells/ml as <i>Microcystis aeruginosa</i>) | <50,000 | - | - |
| Total Microcystin (ug/l) | <10 | | |
| Lead (mg/l) | <0.005 | <0.002-0.024 | 0.25 |
| Zinc (mg/l) | <0.05 | 0.009-0.14 | 0.4 |
| Copper (mg/l) | <0.005 | 0.001-0.017 | 0.4 |
| Chromium (mg/l) | <0.01 | | 0.02 |
| Cadmium (mg/l) | <0.002 | 0.0005 | 0.006 |

* Derived from SEPP and Australian Water Quality Guidelines for Fresh and Marine Waters, ANZECC, 2002; # Derived from Melbourne Urban Streams-Melbourne Water data and author data ; ^ Adapted from O'Loughlin, E.M. *et al.* (1992) Urban Stormwater: Impacts on the Environment. CSIRO Division of Water Resources Consultancy Report 92/29.

The monitoring program should also enable assessment of whether *Urban Stormwater: Best Practice Environmental Management Guidelines* (BPEM) guidelines are being achieved in any catchment or sub-catchment area. Therefore, as a minimum, the levels of suspended solids, Total Phosphorus and Total Nitrogen will be measured. Measurement of a range of other parameters is also required to adequately characterise the potential range of key stormwater pollutants.

The objectives of the BPEM guidelines are summarised below:

- **Suspended solids:** 80% reduction from typical annual urban load
- **Total nitrogen:** 45% reduction from typical annual urban load
- **Total Phosphorus:** 45% reduction from typical annual urban load
- **Litter:** 70% reduction from typical annual urban load
- **Flows:** maintain discharges for the 1.5 year ARI at pre-development levels

Additional parameters may be added at a sampling event should the need arise (e.g. measurement of chlorophyll a, and cell count and algal identification). The following threshold levels are suggested, outside of which the City should be notified for further assessment or protective action:

- **pH:** <6.0 or >9.5 units
- **turbidity:** >50 FTU
- **conductivity:** >5,000 uS/cm in dry weather period and >2,000 uS/cm in wet weather.
- **Dissolved oxygen:** <3.0 mg/l

2.2.2 Water Quality Monitoring Program

The implementation of the monitoring strategy outlined below in Table 4 in this report will enable a broad assessment of existing conditions and the performance of the presently constructed Balog Channel.

Table 4 provides a summary of the monitoring plan for the Balog Channel.

Table 4. Water Quality Monitoring Program

| Environmental Indicators | Performance Measure (10 Year) | Monitoring Method | Timing | Responsibility |
|--------------------------|---|---|------------------|--------------------------------|
| Surface Water | Water quality parameters within accepted levels (BPEM). | Lab tests (certified results): pH, EC, DO, turbidity, TSS, OP, TP, Ammonia, TN, Metals, E.Coli, | 4 times per year | Consultant (ALS) |
| | | Automated equipment for testing of select water quality parameters, potentially including pH, EC, DO and turbidity. | Monthly | Consultant (Deakin University) |
| | Vegetation composition adjacent to Balog Channel is maintained within natural variability based on Ecology and Heritage Partners 2020b. | Undertake floristic surveys. | Annually | Consultant |
| | | Monitoring volume of freshwater flows discharging into Balog Channel | | |

2.3 Native Vegetation

The quality and extent of native vegetation within the study area will be a critical indicator of the function of the surrounding wetlands. Native vegetation within the study area is representative of one EVC: Brackish Wetland (EVC 656).

Ongoing monitoring requirements pertaining to native vegetation within the study area are provided in the table below (Table 5). The floristic composition and extent of Brackish Wetland should be maintained and/or enhanced. EVC benchmark thresholds will be employed to monitor the health and structure of Brackish Wetland vegetation structure and diversity (DELWP 2021).

Table 5. Monitoring Activities regarding native vegetation

| Performance Target | Monitoring Activities | Description |
|--|--|--|
| <i>The floristic composition and extent of Brackish Wetland should be maintained and/or enhanced.</i> | Native vegetation assessments will be completed annually over a ten-year period. | The 2020 Biodiversity Assessment completed by Ecology and Heritage Partners provides the baseline from which to monitor any potential change. The focus of the vegetation monitoring is to identify trends such as whether native vegetation species extent and diversity are getting better or worse due to the changes to the management of the site. |

| Performance Target | Monitoring Activities | Description |
|--------------------|---|---|
| | Establish floristic quadrats to determine species presence and abundance. | <p>Five, 1 m² quadrats are to be placed every 20 meters along a transect (minimum 100 meters) at designated sites. These quadrats should be in the same location each year.</p> <p>Within each monitoring quadrat, species presence and abundance (percentage cover) will be recorded.</p> <p>Each quadrat is photographed from above (~1.3 m) to be used as reference point.</p> <p>High threat weed species within a quadrat are to be recorded and assessed to determine: dominant life stage (seedling, juvenile, adult, dead) and reproductive state (vegetative, budding, flowering, seeding).</p> |
| | Review of Near Maps aerial photography | <p>Review of Near Maps aerial photography will provide a long-term landscape scale baseline on vegetation coverage of the wetland basin.</p> <p>The frequency of the photographs will allow for ongoing monitoring but also provide an indication of the impact of seasonal variability over the last ten years. This should allow for correlation of any changes in vegetation extent with seasonal conditions and/or management interventions.</p> |
| | Establish photopoints at sites throughout the study area. | <p>Photopoints set up on site will allow comparison of changes by ensuring a standard view of the same area over time. They are useful in showing changes in vegetation over time on a more localised scale.</p> |

2.4 Fauna Species Diversity and Distribution

Fauna species diversity is a good indicator of the health of the wetland environment; fluctuations in species diversity is likely to be in response to changes in ecology and quality of the wetland.

The ongoing monitoring of fauna species diversity will inform the management and abatement of threatening processes impacting the study area, ultimately allowing the Balog Channel to continue to provide habitat values for significant faunal species (i.e. waterbirds and frogs).

Table 6. Monitoring Activities regarding fauna species diversity and distribution

| Fauna Type | Performance Target | Monitoring Activities | Description |
|--------------|---|-----------------------|---|
| Frogs | <i>Diversity of native species maintained or increased.</i> | Frog Surveys | <p>Frog surveys will be completed at the most appropriate time of year to identify the targeted species (October to December). The key species to be surveyed for is the Growling Grass Frog <i>Litoria raniformis</i>.</p> <p>The method for surveying Growling Grass Frogs is based on the national</p> |

| Fauna Type | Performance Target | Monitoring Activities | Description |
|-------------------------------------|--|---|---|
| | | | <p>best-practice as described by Heard et al. 2006 and Heard et al. 2010.</p> <p>Frog surveys should be undertaken annually following the implementation of this operational CMP. As Growling Grass Frog are known to occur within the channel, the aim of the surveys is to monitor for the continued presence of the species in and adjacent to the channel.</p> |
| <p>Orange-bellied Parrot</p> | <p><i>Number of individuals maintained or increased.</i></p> | <p>Orange-bellied Parrot monitoring</p> | <p>Bird surveys should be undertaken within the study area twice yearly by relevant experts. These surveys can align with the Orange-bellied Parrot surveys undertaken as part of the Orange-bellied Parrot Recovery Team's surveys within the surrounding areas.</p> <p>Observations will be entered into an e-bird website from which reports can be generated.</p> <p>The first year's reports, following the implementation of this operational CMP will provide the baseline data.</p> |

2.5 Threats to Ecological Values

An important element of any ecological monitoring program is to include measures that monitor the threats to the values being protected. Table 7 details the main threats to ecological values within the study area, the associated performance targets and the management actions required to ensure performance targets are met.

Given that deer and fox control are difficult to implement in small areas, such as that surrounding the channel, and the fact that these pest species will be controlled in the adjoining reserve as part of the Sparrovale Wetland Monitoring and Management Plan, pest control for these species under this Operational Conservation Management Plan will be undertaken when necessary and as required.

Table 7. Potential threats to ecological value within the study area

| Key Threats | Performance Target | Description of Threat | Monitoring Action | Management Action |
|----------------------|--|---|--|---|
| Noxious weeds | <i>No new infestations of noxious weeds, including but not limited to Tall Wheatgrass, Spear Thistle and African Boxthorn.</i> | Invasive weed species, can outcompete native flora species, leading to a decline in the quality and extent of native vegetation and habitat for native flora and fauna species. | Undertake detailed weed mapping | Conduct weed control (See Section 2.6 for further details) |
| | <i>The extent of high threat weeds reduced based on baseline established during the first year of monitoring.</i> | The control of weed species is critical to the maintenance of indigenous vegetation cover and species diversity. | | |
| Pest animals | <i>Decrease in deer population and associated reduction of impacts of deer within the study area</i> | Fallow deer disturb shallow wetlands and add significant grazing pressure on native vegetation. | Undertake observations of deer activity | Conduct pest animal control as required (See Section 2.6 for further details) |
| | <i>Reduced impacts of foxes on native fauna</i> | Red Foxes predate on native fauna species, including birds, frogs and reptiles. | Monitor indicator species populations (ground nesting birds – quail, Masked lapwing) | |
| | <i>Reduced impacts of rabbits grazing on native vegetation</i> | <i>European Rabbits remain a threat for the</i> | Undertake warren mapping. | |

| Key Threats | Performance Target | Description of Threat | Monitoring Action | Management Action |
|--|--|--|--|---|
| | <i>Reduced soil disturbance by rabbits</i> | <i>regeneration/recruitment of native species throughout western Victoria.</i> | Undertake active entrance counts Undertake observations of rabbit activity | |
| Maintenance/Management Activities | <i>Protection of retained native vegetation, Spiny Peppergrass, Orange-bellied parrot habitat and Growling Grass Frog habitat.</i> | Routine maintenance activities have the potential to encroach or negatively impact upon areas of native vegetation/fauna. I.e. The clearing of Common Reeds from within the Balog Channel may impact Growling Grass Frog habitat. | <i>Undertake native vegetation assessments to determine the quality and extent of native vegetation and habitat for significant species.</i> | All contractors will be made aware of the presence of significant species within the study area. Signage, including species identification, will be erected to clearly indicate areas of habitat for Spiny Peppergrass, Orange-bellied and Growling Grass Frog and which identify these as no-go zones during periods of maintenance. The contact details of a suitably qualified zoologist should be readily available to contractors if a Growling Grass Frog is detected or injured during maintenance works. If Growling Grass Frog is or is likely to be impacted as part of maintenance activities, works will cease until individuals are captured and relocated to appropriate habitat under the supervision of suitably qualified zoologist. If native vegetation is impacted as part of maintenance activities, rehabilitation works should be undertaken. Any rehabilitation must utilise species appropriate to relevant EVC at a density of at least one plant per square metre using enviro cells or tubes. Furthermore, rehabilitation should include Beaded Glasswort <i>Sarcocornia quinqueflora</i> and Shrubby Glasswort <i>Sclerostegia arbuscula</i> in order to maintain and/or improve habitat for Orange Bellied Parrot. The site should be weed controlled prior to planting and the areas around Spiny |

| Key Threats | Performance Target | Description of Threat | Monitoring Action | Management Action |
|-------------|--------------------|-----------------------|-------------------|--|
| | | | | <p>Peppergrass protected with rabbit proof fencing. Rabbit-proof fencing should <i>not</i> be erected around the whole site due to its ability to restrict the movement of native fauna.</p> <p>(See Section 2.6 for further details)</p> |

2.6 Management of Ecological Values

Section 2.6 (Management of Ecological Values) provides further detail and commitments for each of the key management actions listed in Table 7 (above).

2.6.1 *Protection of Retained Native Vegetation*

Protective Fencing and Signage

Areas of retained native vegetation must be clearly marked and identifiable on site to reduce the likelihood of these areas being disturbed during routine maintenance activities. Such areas will be protected with vegetation protection fencing and permanent signage is to be installed along the perimeter in order to:

- Highlight the vegetation as an ecologically sensitive area;
- Prevent accidental entry by the public; and,
- Prevent vegetation trampling, rock disturbance and rubbish ingress by contractors undertaking routine maintenance or pest plant and animal control within the area.

City of Greater Geelong should undertake regular inspections of the fencing and signage and organise any required maintenance, ensuring that it is carried out in a timely manner and to a satisfactory standard.

Weed Management

Annual, ongoing weed monitoring (and control if required) should be undertaken as one of the primary management requirements within the areas surrounding the Balog Channel. This will ensure that weed cover does not increase beyond the current level and will assist to monitor for any new and emerging high threat weeds.

Several management techniques are generally recommended to control weeds, including physical removal, brush cutting and herbicide application. In most cases, herbicide will only be applied to weeds by using the spot-spraying technique, to prevent death or damage to non-target species. Given the Balog Channel is a waterway, it is recommended that weeds be removed by hand pulling, as opposed to the application of herbicide.

If herbicide is applied to weeds in this area, ensure an appropriate herbicide for use near waterways is utilised. Furthermore, spot spraying should be undertaken when the weather is calm, there is no rainfall, and with spray directed away from waterbody.

However, it is important that only an experienced contractor undertakes weed control works within the areas surrounding the Balog Channel.

Licensed weed control contractors should make appropriate decisions on which technique to use based on individual situations. Contractors will also need to be aware of the potential for new outbreaks of weed species not recorded in this assessment and implement appropriate weed control techniques as necessary.

Weed management actions to be undertaken within the area surrounding the Balog Channel:

- Undertake weed control works prior to the weeds flowering and setting seed or spreading;

- Undertake weed control with sensitivity to indigenous species also present, particularly indigenous chenopod species;
- Where appropriate, promote persistence and expansion of indigenous species populations; and,
- Monitor for the occurrence of new weeds or the further spread of current weeds.

Key performance indicators for weed management include:

- No new significant weed invasions occur in the study area; and,
- No increase in the extent of high threat weeds within the study area.

Pest Animal Control

Pest animals listed under the CaLP Act are likely to occur within the study area (Fallow Deer, European Rabbit and potentially at times the Red Fox).

Given that deer and fox control are difficult to implement in small areas, such as that surrounding the channel, and the fact that these pest species will be controlled in the adjoining reserve as part of the Sparrovale Wetland Monitoring and Management Plan, pest control for these species under this Operational Conservation Management Plan will be undertaken when necessary and as required.

European Rabbits can pose a threat to the regeneration and recruitment of native species within areas of vegetation surrounding the Balog Channel, and if the native vegetation is being impacted, then Rabbits will need to be controlled. Management measures commonly adopted to control European Rabbits in Victoria include:

- Warren fumigation;
- Long netting and night netting;
- Warren ripping; and,
- Baiting (pindone).

European Rabbits commence breeding in autumn and continue until vegetation dries off, which generally occurs in early summer. Rabbit mortality is particularly high during summer months due to disease, lack of food and water, and high temperatures. Late summer and early autumn are therefore the best times to control rabbits as populations are naturally low.

Night netting is the most appropriate method for actively controlling rabbits within small areas. This method avoids the use of poisons and is effective in situations where few warrens exist or where they are in areas of dense vegetation.

General Pest Animal Management Actions:

- Continually monitor for the presence of pest animal fauna; and
- Where appropriate, undertake preferred control methods as summarised above.

Additional key performance indicators for pest animal management include:

- Meeting the requirements of the CaLP Act in relation to the control of listed pest animals within the study area;
- Presence of pest fauna does not increase above baseline levels of occurrence;
- Achieving control of key pest fauna species within the study area within the specified management timeframe; and,
- No new significant pest fauna invasions occur in the study area.

Revegetation/Rehabilitation

If native vegetation is impacted as part of maintenance activities, rehabilitation works should be undertaken. Any rehabilitation must utilise species appropriate to relevant EVC at a density of at least one plant per square metre using enviro cells or tubes. The site should be also be weed controlled prior to planting.

Table 8. Species associated with the Brackish Wetland EVC suitable for revegetation/rehabilitation

| Life Form | Species Name | Common Name |
|-----------|--|------------------------|
| LH | <i>Persicaria decipiens</i> | Slender Knotweed |
| LH | <i>Epilobium billardierianum</i> subsp. <i>billardierianum</i> | Smooth Willow-herb |
| MH | <i>Sarcocornia quinqueflora</i> | Beaded Glasswort |
| MH | <i>Samolus repens</i> | Creeping Brookweed |
| MH | <i>Suaeda australis</i> | Austral Seablite |
| SH | <i>Selliera radicans</i> | Shiny Swamp-mat |
| SH | <i>Crassula helmsii</i> | Swamp Crassula |
| SH | <i>Mimulus repens</i> | Creeping Monkey-flower |
| LTG | <i>Gahnia filum</i> | Chaffy Saw-sedge |
| LNG | <i>Juncus kraussii</i> subsp. <i>australiensis</i> | Sea Rush |
| LNG | <i>Phragmites australis</i> | Common Reed |
| MTG | <i>Poa poiformis</i> | Coast Tussock-grass |
| MTG | <i>Lachnagrostis filiformis</i> s.l. | Common Blown-grass |
| MNG | <i>Bolboschoenus caldwellii</i> | Salt Club-sedge |
| MNG | <i>Distichlis distichophylla</i> | Australian Salt-grass |
| MNG | <i>Schoenoplectus pungens</i> | Sharp Club-sedge |
| MNG | <i>Triglochin striata</i> | Streaked Arrow-grass |
| SC | <i>Calystegia sepium</i> | Large Bindweed |

Note: LH = Large Herb, MH = Medium Herb, SH = Small Herb, LTG = Large Tufted Graminoid, LNG = Large Non-tufted Graminoid, MTG = Medium Tufted Graminoid, MNG = Medium Non-tufted Graminoid, SC = Scrambler or Climber

2.6.2 Protection of Spiny Peppergrass

All contractors will be made aware of the presence of Spiny Peppergrass within the study area.

Signage that includes the species identification will be erected to clearly indicate the areas of Spiny Pepperpress habitat and which identify these as no-go zones during periods of maintenance. This will reduce the likelihood of this species being disturbed during routine maintenance activities.

Areas around Spiny Pepperpress should be protected with rabbit proof fencing to prevent grazing of this significant flora species. It is important to note that rabbit-proof fencing should not be erected around the whole site due to its ability to restrict the movement of native fauna.

2.6.3 Protection of Growling Grass Frog

All contractors will be made aware of the presence of Growling Grass Frog within the study area.

Signage that includes the species identification will be erected to clearly indicate the areas of Growling Grass Frog habitat and which identify these as no-go zones during periods of maintenance. This will reduce the likelihood of this species being disturbed during routine maintenance activities.

The contact details of a suitably qualified zoologist should be readily available to contractors if a Growling Grass Frog is detected or injured during maintenance works. If Growling Grass Frog is or is likely to be impacted as part of maintenance activities, works will cease until individuals are captured and relocated to appropriate habitat under the supervision of suitably qualified zoologist.

2.6.4 Protection of Orange-bellied Parrot habitat

All contractors will be made aware of the presence of Orange-bellied Parrot within the study area.

Signage that includes the species identification will be erected to clearly indicate the areas of Orange-bellied Parrot habitat and which identify these as no-go zones during periods of maintenance. This will reduce the likelihood of this species being disturbed during routine maintenance activities.

Furthermore, any rehabilitation of areas of native vegetation should include Beaded Glasswort *Sarcocornia quinqueflora* and Shrubby Glasswort *Sclerostegia arbuscula* in order to maintain and/or improve habitat for Orange Bellied Parrot.

3 MONITORING AND MANAGEMENT ACTIONS SUMMARY

It is understood that the City of Greater Geelong (CoGG) will be responsible for the operation of the channel following the expiry of this approval on 30 June 2022 (with some extent of responsibility shared with Corangamite Catchment Management Authority (CMA) and Parks Victoria). As such, CoGG will be responsible for the implementation of this Operational Conservation Management Plan following the handover of the channel (on 1 July 2022).

A summary of the monitoring and management actions (over a general ten-year period) that should be undertaken **following** the implementation of this operational CMP (by CoGG) are provided below (Table 9).

Table 9. Monitoring and Management Action Table for the Balog Channel

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|---------------|---|---|--------------------------------|------------------|--|-------------------------------|------------------|
| Year 1 | | | | | | | |
| Water | <i>Water quality parameters within accepted levels (BPEM).</i> | Lab tests (certified results): pH, EC, DO, turbidity, TSS, OP, TP, Ammonia, TN, Metals, E.Coli, | Consultant (ALS) | 4 times per year | Schedule desilting and resetting of the upstream sediment traps. | City of Greater Geelong | Annually |
| | <i>Implement and refine water quality monitoring program.</i> | Automated equipment for testing of select water quality parameters, potentially including pH, EC, DO and turbidity. | Consultant (Deakin University) | Monthly | Program the treatment wetlands to reduce accumulated levels of contaminants. Monitor accumulation of sediments in the sediment ponds and wetlands on an annual basis. | | |
| | <i>Prevent accumulation of contaminants in wetland overtime.</i> | | | | | | |
| | <i>Vegetation composition adjacent to Balog Channel is maintained</i> | Undertake floristic surveys. | Consultant | Annually | Implement and continue shallow inundation regime. | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|--|--|--------------------------------------|------------------|---|--------------------------------------|-------------------------|
| | <p><i>within natural variability based on Ecology and Heritage Partners 2020b.</i></p> <p><i>Complete freshwater inundation of the wetland at least on an annual basis to levels of 0.95 m or higher.</i></p> <p><i>Use freshwater inundation as a means of control of terrestrial weeds.</i></p> <p><i>Retain the major freshwater wetlands as part of the lower Barwon floodplain (if sea level rise forecasts eventuate).</i></p> | Monitoring volume of freshwater flows discharging into Balog Channel | | | <p>Review and adjust hydrodynamic modelling of lower Barwon floodplain area to assess required level of protection of new freshwater wetlands against future sea level rises.</p> <p>Visually inspect and repair/redesign/rebuild the part or all of the main levee system and control structures as required, and maintain on an annual basis (into the future).</p> | City of Greater Geelong | Annually |
| Protection of Native Vegetation | <p><i>The floristic composition and extent of Brackish Wetland should be maintained and/or enhanced.</i></p> | Undertake a native vegetation assessment to determine whether native vegetation species extent and diversity are changing. | City of Greater Geelong / Consultant | Annually | Areas of retained native vegetation must be clearly marked and identifiable on site to reduce the likelihood of these areas being disturbed during routine maintenance activities. | City of Greater Geelong / Contractor | Ongoing and as required |
| | | Establish floristic quadrats to determine species presence and abundance. | City of Greater Geelong / Consultant | Annually | Ongoing weed control should be undertaken (if required). | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|---|--------------------------------------|-------------------|---|-------------------------------------|-------------------------|
| | | Review of Near Maps aerial photography to determine previous long-term changes to the study area. | City of Greater Geelong / Consultant | Annually | Pest animal fauna should be continually monitored for and pest control undertaken when required. If native vegetation is impacted as part of maintenance activities, rehabilitation works should be undertaken | | |
| | | Establish photopoints at sites throughout the study area. | City of Greater Geelong / Consultant | Annually | | | |
| Protection of Growling Grass Frog | <i>Number of individuals maintained or increased.</i> | Undertake Frog surveys | Consultant | Annually (Spring) | All contractors will be made aware of the presence of Growling Grass Frog within the study area. Signage that includes the species identification will be erected to clearly indicate the areas of Growling Grass Frog habitat and which identify these as no-go zones during periods of maintenance. The contact details of a suitably qualified zoologist should be readily available to contractors if a Growling Grass Frog is detected or injured during maintenance | City of Greater Geelong / Contactor | Ongoing and as required |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|--|-------------------------------|------------------|--|--------------------------------------|-------------------------|
| | | | | | works. If Growling Grass Frog is or is likely to be impacted as part of maintenance activities, works will cease until individuals are captured and relocated to appropriate habitat under the supervision of suitably qualified zoologist. | | |
| Protection of Orange-bellied Parrot habitat | <i>Number of individuals maintained or increased.</i> | Undertake Orange-bellied Parrot monitoring | Relevant experts | Twice yearly | <p>All contractors will be made aware of the presence of Orange-bellied Parrot within the study area.</p> <p>Signage that includes the species identification will be erected to clearly indicate the areas of Orange-bellied Parrot habitat and which identify these as no-go zones during periods of maintenance.</p> <p>Furthermore, any rehabilitation of areas of native vegetation should include Beaded Glasswort and Shrubby Glasswort in order to maintain and/or</p> | City of Greater Geelong / Contractor | Ongoing and as required |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|--|-------------------------------|-------------------|--|--------------------------------------|-------------------------|
| | | | | | improve habitat for Orange Bellied Parrot. | | |
| Protection of Spiny Peppercross | <i>Number of individuals maintained or increased.</i> | Undertake Spiny Peppercross monitoring | Consultant | Annually (Spring) | <p>All contractors will be made aware of the presence of Spiny Peppercross within the study area.</p> <p>Signage that includes the species identification will be erected to clearly indicate the areas of Spiny Peppercross habitat and which identify these as no-go zones during periods of maintenance.</p> <p>Areas around Spiny Peppercross should be protected with rabbit proof fencing to prevent grazing of this significant flora species. It is important to note that rabbit-proof fencing should not be erected around the whole site due to its ability to restrict the movement of native fauna.</p> | City of Greater Geelong / Contractor | Ongoing and as required |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|----------------|--|--|--|---|--|---|-------------------------|
| Threats | <p><i>No new infestations of noxious weeds, including but not limited to Tall Wheatgrass, Spear Thistle and African Boxthorn.</i></p> <p><i>No new significant weed invasions occur in the study area.</i></p> | Undertake detailed weed mapping | City of Greater Geelong / Consultant | Annually | <p>Undertake weed control works prior to the weeds flowering and setting seed or spreading.</p> <p>Undertake weed control with sensitivity to indigenous species also present, particularly indigenous chenopod species.</p> <p>Where appropriate, promote persistence and expansion of indigenous species populations.</p> <p>Monitor for the occurrence of new weeds or the further spread of current weeds.</p> | City of Greater Geelong / Contractor | Ongoing and as required |
| | <p><i>Decrease in deer population and associated reduction of impacts of deer within the study area</i></p> | Undertake observations of deer activity | City of Greater Geelong / Parks Victoria | In coordination with Parks Victoria and as required | <p>Continually monitor for the presence of pest animal fauna; and</p> <p>Where appropriate, undertake preferred control methods in conjunction with Parks Victoria and an experienced contractor.</p> | City of Greater Geelong / Parks Victoria / Contractor | Ongoing and as required |
| | <p><i>Reduced impacts of foxes on native fauna</i></p> | Monitor indicator species populations (ground nesting birds – quail, Masked lapwing) | City of Greater Geelong / Contractor | As required | | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--------------------------|--|---|--------------------------------|--------------------------|--|-------------------------------|------------------|
| | <i>Reduced impacts of rabbits grazing on native vegetation</i> | Undertake warren mapping. | Contractor | Annually (during autumn) | | | |
| | <i>Reduced soil disturbance by rabbits</i> | Undertake active entrance counts Undertake observations of rabbit activity | | | | | |
| Year 2 to Year 10 | | | | | | | |
| Water | <i>Water quality parameters within accepted levels (BPEM).</i> | Lab tests (certified results): pH, EC, DO, turbidity, TSS, OP, TP, Ammonia, TN, Metals, E.Coli, | Consultant (ALS) | 4 times per year | Schedule desilting and resetting of the upstream sediment traps. | City of Greater Geelong | Annually |
| | <i>Implement and refine water quality monitoring program.</i> | Automated equipment for testing of select water quality parameters, potentially including pH, EC, DO and turbidity. | Consultant (Deakin University) | Monthly | Program the treatment wetlands to reduce accumulated levels of contaminants. Monitor accumulation of sediments in the sediment ponds and wetlands on an annual basis. | | |
| | <i>Prevent accumulation of contaminants in wetland overtime.</i> | | | | | | |
| | <i>Vegetation composition adjacent to Balog Channel is maintained within natural variability based on Ecology and Heritage Partners 2020b.</i> | Undertake floristic surveys. | Consultant | Annually | Implement and continue shallow inundation regime. | City of Greater Geelong | Annually |
| | <i>Complete freshwater inundation of the wetland at least on an annual</i> | Monitoring volume of freshwater flows discharging into Balog Channel | | | Review and adjust hydrodynamic modelling of lower Barwon floodplain area to assess required level of protection of new freshwater wetlands | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|---|---|------------------|--|---|--------------------------------|
| | <p><i>basis to levels of 0.95 m or higher.</i></p> <p><i>Use freshwater inundation as a means of control of terrestrial weeds.</i></p> <p><i>Retain the major freshwater wetlands as part of the lower Barwon floodplain (if sea level rise forecasts eventuate).</i></p> | | | | <p>against future sea level rises.</p> <p>Visually inspect and repair/redesign/rebuild the part or all of the main levee system and control structures as required, and maintain on an annual basis (into the future).</p> | | |
| Protection of Native Vegetation | <p><i>The floristic composition and extent of Brackish Wetland should be maintained and/or enhanced.</i></p> | <p>Undertake a native vegetation assessment to determine whether native vegetation species extent and diversity are changing.</p> | <p>City of Greater Geelong / Consultant</p> | <p>Annually</p> | <p>Areas of retained native vegetation must be clearly marked and identifiable on site to reduce the likelihood of these areas being disturbed during routine maintenance activities.</p> <p>Ongoing weed control should be undertaken (if required).</p> <p>Pest animal fauna should be continually monitored for and pest control undertaken when required.</p> <p>If native vegetation is impacted as part of</p> | <p>City of Greater Geelong / Contractor</p> | <p>Ongoing and as required</p> |
| | | <p>Establish floristic quadrats to determine species presence and abundance.</p> | <p>City of Greater Geelong / Consultant</p> | <p>Annually</p> | | | |
| | | <p>Review of Near Maps aerial photography to determine previous long-term changes to the study area.</p> | <p>City of Greater Geelong / Consultant</p> | <p>Annually</p> | | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|---|--------------------------------------|-------------------|---|--------------------------------------|-------------------------|
| | | Establish photopoints at sites throughout the study area. | City of Greater Geelong / Consultant | Annually | maintenance activities, rehabilitation works should be undertaken | | |
| Protection of Growling Grass Frog | <i>Number of individuals maintained or increased.</i> | Undertake Frog surveys | Consultant | Annually (Spring) | <p>All contractors will be made aware of the presence of Growling Grass Frog within the study area.</p> <p>Signage that includes the species identification will be erected to clearly indicate the areas of Growling Grass Frog habitat and which identify these as no-go zones during periods of maintenance.</p> <p>The contact details of a suitably qualified zoologist should be readily available to contractors if a Growling Grass Frog is detected or injured during maintenance works. If Growling Grass Frog is or is likely to be impacted as part of maintenance activities, works will cease until individuals are captured and relocated to</p> | City of Greater Geelong / Contractor | Ongoing and as required |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--|---|--|-------------------------------|-------------------|---|--------------------------------------|-------------------------|
| | | | | | appropriate habitat under the supervision of suitably qualified zoologist. | | |
| Protection of Orange-bellied Parrot habitat | <i>Number of individuals maintained or increased.</i> | Undertake Orange-bellied Parrot monitoring | Relevant experts | Twice yearly | <p>All contractors will be made aware of the presence of Orange-bellied Parrot within the study area.</p> <p>Signage that includes the species identification will be erected to clearly indicate the areas of Orange-bellied Parrot habitat and which identify these as no-go zones during periods of maintenance.</p> <p>Furthermore, any rehabilitation of areas of native vegetation should include Beaded Glasswort and Shrubby Glasswort in order to maintain and/or improve habitat for Orange Bellied Parrot.</p> | City of Greater Geelong / Contractor | Ongoing and as required |
| Protection of Spiny Pepperpress | <i>Number of individuals maintained or increased.</i> | Undertake Spiny Pepperpress monitoring. | Consultant | Annually (Spring) | All contractors will be made aware of the presence of Spiny Pepperpress within the study area. | City of Greater Geelong / Contractor | Ongoing and as required |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--------|--------------------|----------------------|-------------------------------|------------------|--|-------------------------------|------------------|
| | | | | | <p>Signage that includes the species identification will be erected to clearly indicate the areas of Spiny Peppercross habitat and which identify these as no-go zones during periods of maintenance.</p> <p>Areas around Spiny Peppercross should be protected with rabbit proof fencing to prevent grazing of this significant flora species. It is important to note that rabbit-proof fencing should not be erected around the whole site due to its ability to restrict the movement of native fauna.</p> | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|---------|---|--|--|---|--|---|-------------------------|
| Threats | <p><i>No new infestations of noxious weeds, including but not limited to Tall Wheatgrass, Spear Thistle and African Boxthorn.</i></p> <p><i>No new significant weed invasions occur in the study area.</i></p> <p><i>The extent of high threat weeds reduced based on baseline established during the first year of monitoring.</i></p> | Undertake detailed weed mapping | City of Greater Geelong / Consultant | Annually | <p>Undertake weed control works prior to the weeds flowering and setting seed or spreading.</p> <p>Undertake weed control with sensitivity to indigenous species also present, particularly indigenous chenopod species.</p> <p>Where appropriate, promote persistence and expansion of indigenous species populations.</p> <p>Monitor for the occurrence of new weeds or the further spread of current weeds.</p> | City of Greater Geelong / Contractor | Ongoing and as required |
| | <p><i>Decrease in deer population and associated reduction of impacts of deer within the study area</i></p> | Undertake observations of deer activity | City of Greater Geelong / Parks Victoria | In coordination with Parks Victoria and as required | <p>Continually monitor for the presence of pest animal fauna; and</p> <p>Where appropriate, undertake preferred control methods in conjunction with Parks Victoria and an experienced contractor.</p> | City of Greater Geelong / Parks Victoria / Contractor | Ongoing and as required |
| | <p><i>Reduced impacts of foxes on native fauna</i></p> | Monitor indicator species populations (ground nesting birds – quail, Masked lapwing) | | | As required | | |

| Factor | Performance Target | Monitoring Action(s) | Resource / personnel required | Timing of action | Management Action(s) | Resource / personnel required | Timing of action |
|--------|--|---|--------------------------------------|--------------------------|----------------------|-------------------------------|------------------|
| | | | City of Greater Geelong / Contractor | | | | |
| | <i>Reduced impacts of rabbits grazing on native vegetation</i> | Undertake warren mapping. Undertake active entrance counts | Contractor | Annually (during autumn) | | | |
| | <i>Reduced soil disturbance by rabbits</i> | Undertake observations of rabbit activity | | | | | |

4 REPORTING

4.1 Reporting Requirements

In line with the Sparrovale Wetland Monitoring and Management Plan, a monitoring progress report for the Hospital Swamp Bypass Channel will be collated and analysed annually at the end of each financial year. The report will include details on the monitoring and management progress of all categories identified in Table 9.

This annual evaluation will feed into informing and, when required, adapting management actions to achieve the desired outcomes and will identify any trends in the parameters being monitored.

The report will be sent to the responsible authority and distributed to nominated positions at DELWP and Parks Victoria, as well as APD Pty Ltd and Barwon Heads Management Pty Ltd for their records. The report will also be submitted to DAWE in line with any conditions set out following the approval of this Operational Conservation Management Plan.

4.2 Responsible Authority for Implementing the OCMP

It is understood that the City of Greater Geelong (CoGG) will be responsible for the operation of the channel following the expiry of this approval on 30 June 2022 (with some extent of responsibility shared with Corangamite Catchment Management Authority (CMA) and Parks Victoria). As such, CoGG will be responsible for the implementation of this Operational Conservation Management Plan following the handover of the channel (on 1 July 2022).

The responsible party for ensuring actions and monitoring have been undertaken are the Environment and Biodiversity Unit within CoGG.

REFERENCES

- CoGG 2020. Sparrovale Wetland – Monitoring and Management Plan. City of Greater Geelong, June 2020.
- DELWP 2021. Ecological Vegetation Class (EVC) Benchmarks for each Bioregion [www Document]. URL: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>. Victorian Department of Environment, Land, Water and Planning, Melbourne, Victoria.
- Ecology and Heritage Partners 2020a. Conservation Management Plan for Hospital Swamp Bypass Channel, 76-88 Groves Road, Armstrong Creek, Victoria.
- Ecology and Heritage Partners 2020b. Biodiversity Assessment, 1-87 and 76-88 Groves Road (Balog land), Armstrong Creek, Victoria.
- Heard, G.W., Scroggie, M.P., and Clemann, N. (2010). Guidelines for managing the endangered Growling Grass Frog in urbanising landscapes. Arthur Rylah Institute for Environmental Research Technical Report Series No. 208. Department of Sustainability and Environment, Heidelberg, Victoria.
- Lloyd, L.N., Cooling, M.P, Kerr, G.K., Dahlhaus, P. and Gippel, C.J. 2011. Flow/ecology relationships and scenarios for the Lower Barwon Wetlands environmental entitlement: Final Report. Unpublished report for Corangamite CMA.
- Pat Condina and Associates 2014. A Proposed Water Quality Monitoring Strategy for the Armstrong Creek and Horseshoe Bend Precinct Catchments.
- Condina, P., Cragie, N., 2014b. An assessment of the sustainability of the proposed Sparrovale wetlands and assessment of the associated social, economic and environmental risks. 6 May 2014.
- SMEC 2020. Site Environmental Management Plan & Tree Protection Construction Management Plan (1) - Types and Locations of Environmental Protection Measures.
- Venant Solutions 2015. Armstrong Creek Water Balance Modelling, Draft Stage 1 Report. Unpublished report prepared for City of Greater Geelong.
- Venant Solutions 2018. Armstrong Creek Balog Diversion Channel Viability Assessment. Unpublished report prepared for City of Greater Geelong

FIGURES

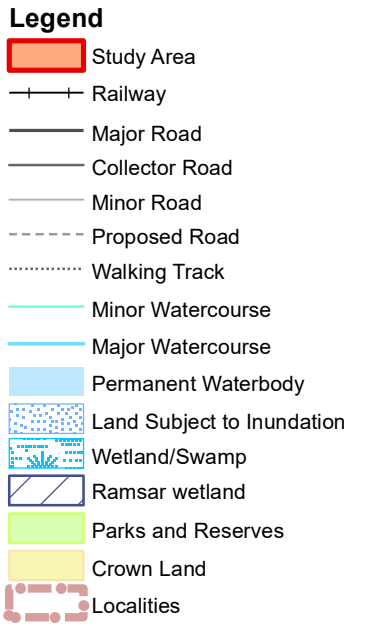
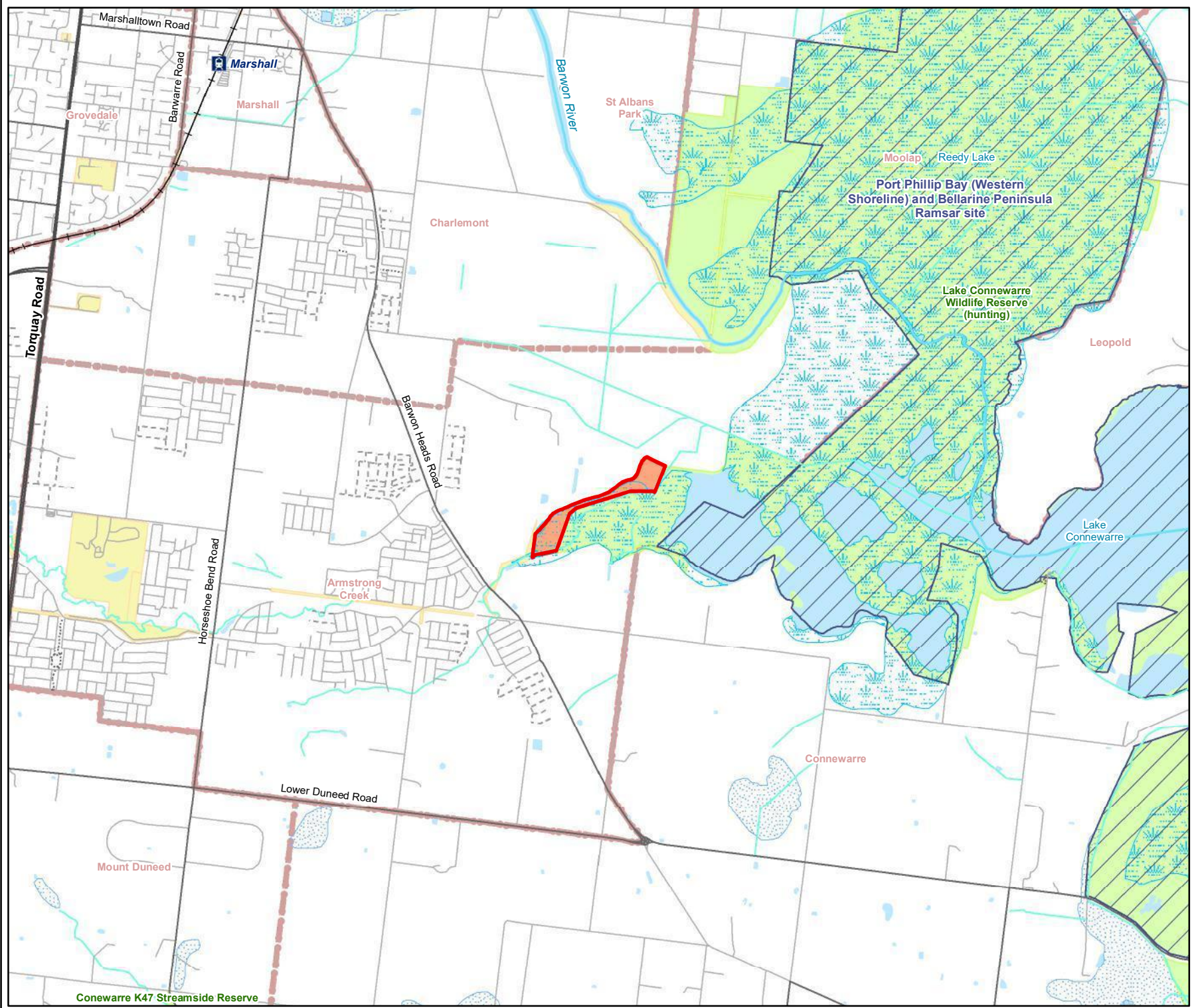
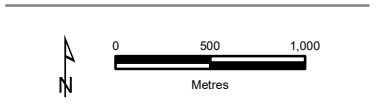
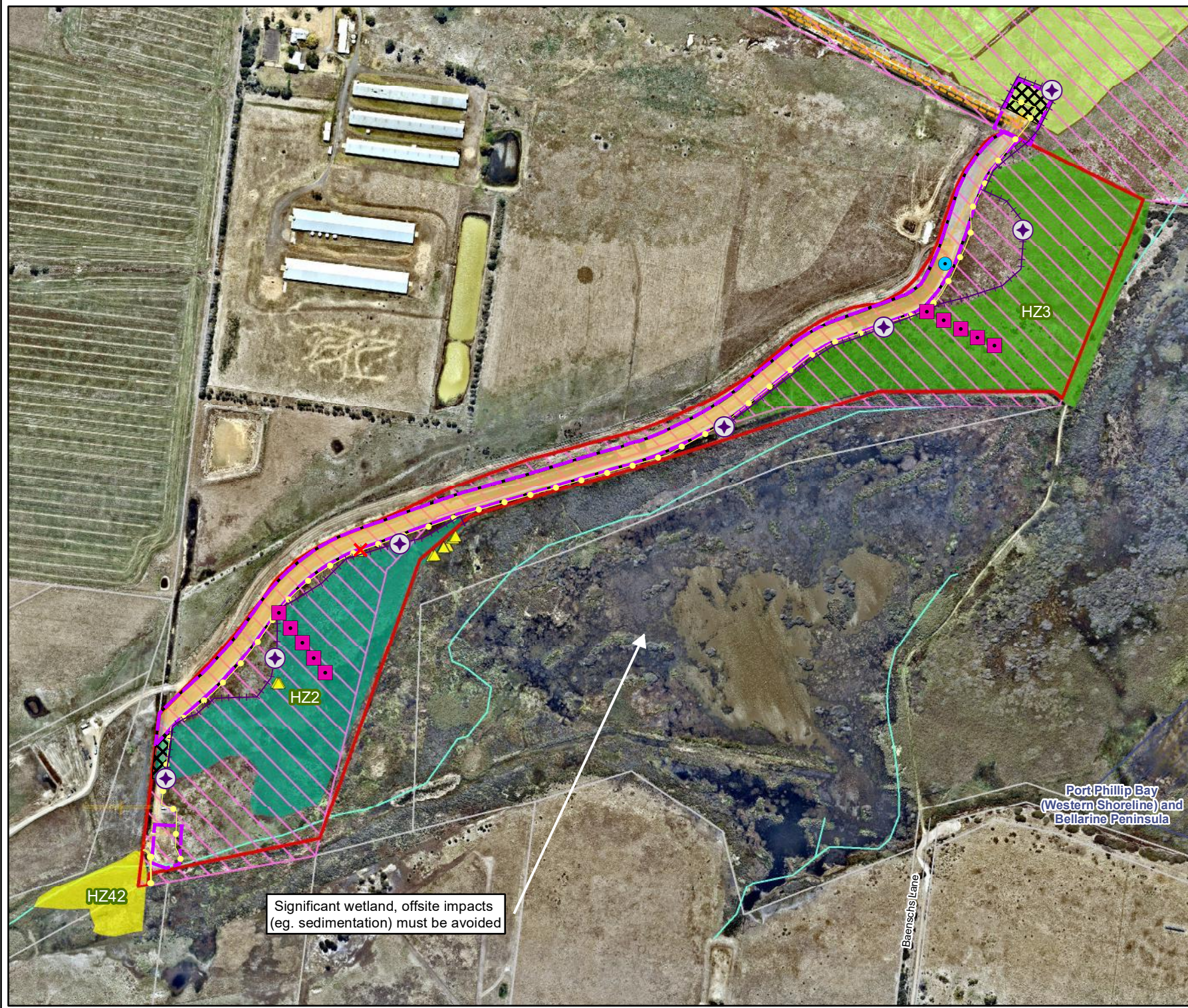


Figure 1
Location of the study area
Proposed 'Balog' Drainage Channel including extension



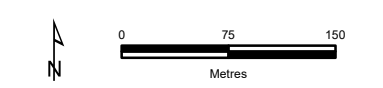
VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

15085 Fig01 StudyArea 24/05/2021 psorensen



- Legend**
- Study Area
 - Ramsar wetland
 - Public Acquisition Overlay
 - Proposed Drainage Channel
 - Development Plan
 - Native vegetation protection fencing
 - Silt fence
 - Eastern access road
 - Impact areas
 - Water quality monitoring point
 - Floristic quadrat point
 - ◆ Significant vegetation signage
- Habitat Zones - native vegetation to be retained**
- HZ2, as per NVPP mapped extent
 - HZ3, as per NVPP mapped extent
 - HZ42, as per NVPP mapped extent
- Sparrovale Biodiversity Assessment (EHP 2018)**
- Seasonally Inundated Sub-saline Hermland (EVC 196)
- Vegetation to be removed
- ▲ Spiny Peppergrass
 - ✕ Spiny Peppergrass to be removed

Figure 2
Ecological features and on-site environmental protections
Proposed 'Balog' Drainage Channel including extension



VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.
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 Aerial source: Nearmap 2021

Significant wetland, offsite impacts (eg. sedimentation) must be avoided

Port Phillip Bay (Western Shoreline) and Bellarine Peninsula

Baensch's Lane

HZ42

HZ2

HZ3

APPENDICES

Appendix 1 – EPBC Act Approval (EPBC 2015/7553)



Mr Brad Paddon
Barwon Heads Management Pty Ltd
Level 3, 468 St Kilda Road
Melbourne VIC 3004
C/o Sarah Shortall
APD Project
Sarah@apdprojects.com.au

Dear Mr Paddon

Decision on approval
Warralily-Sparrovale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria
(EPBC 2015/7553)

I am writing to you in relation to your proposal to construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria (proposed action).

I have considered the proposal in accordance with Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and have decided to grant an approval to Barwon Heads Management Pty Ltd. The details of my decision are attached. The proposal must be undertaken in accordance with the conditions specified in the approval.

I would appreciate your assistance by informing me when you start the action and who will be the contact person responsible for the administration of the approval decision.

You should also note that this EPBC Act approval does not affect obligations to comply with any other laws of the Commonwealth, state or territory that are applicable to the action. Neither does this approval confer any right, title or interest that may be required to access land or waters to take the action.

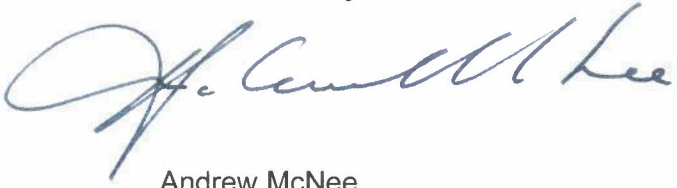
The Department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. Please note that your project may be selected for audit by the department at any time and all related records and documents may be subject to scrutiny. Information about the department's compliance monitoring and auditing program is enclosed.

I have also written to the following parties to advise them of this decision:

| | |
|--|--|
| State/territory authority/authorities | Ms Jane Homewood Executive Director Statutory Planning Services Department of Environment, Land, Water and Planning |
|--|--|

If you have any questions about this decision, please contact the project manager, William Bonney, by email to William.Bonney@environment.gov.au, or telephone 02 6274 1028 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Andrew McNee', written in a cursive style.

Andrew McNee
Assistant Secretary
Assessments and Governance Branch

28 May 2019



APPROVAL

Warralily-Sparrowvale Outfall, Stormwater Bypass Channel, Armstrong Creek, Victoria, (EPBC 2015/7553)

This decision is made under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Note that section 134(1A) of the **EPBC Act** applies to this approval, which provides in general terms that if the approval holder authorises another person to undertake any part of the action, the approval holder must take all reasonable steps to ensure that the other person is informed of any conditions attached to this approval, and that the other person complies with any such condition.

Details

| | |
|---|--|
| Person to whom the approval is granted (approval holder) | Barwon Heads Management Pty Ltd |
| ACN of approval holder | 621 820 344 |
| Action | To construct a stormwater bypass channel at 76-88 Groves Road, Armstrong Creek, Victoria [see EPBC Act referral 2015/7553] |

Approval decision

My decisions on whether or not to approve the taking of the action for the purposes of each controlling provision for the action are as follows.

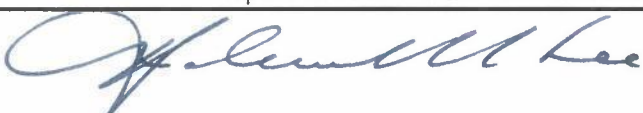
Controlling Provisions

| | |
|--|---------|
| Wetlands of international importance | |
| Section 16 | Approve |
| Section 17B | Approve |
| Listed threatened species and communities | |
| Section 18 | Approve |
| Section 18A | Approve |
| Listed migratory species | |
| Section 20 | Approve |
| Section 20A | Approve |

Period for which the approval has effect

This approval has effect until **30 June 2022**

Decision-maker

| | |
|--------------------------|--|
| Name and position | Andrew McNee Assistant Secretary of Assessments and Governance Branch Department of the Environment and Energy |
| Signature |  |
| Date of decision | 28 May 2019 |

Conditions of approval

This approval is subject to the conditions under the EPBC Act as set out in ANNEXURE A.

ANNEXURE A – CONDITIONS OF APPROVAL

Part A – Conditions specific to the action

1. For the protection of **Spiny Peppercress**, **Orange-bellied Parrot** and the Port Philip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, the action must be undertaken consistent with the **Conservation Management Plan**.

Part B – Standard administrative conditions

Notification of date of commencement of the action

2. The approval holder must notify the **Department** in writing of the date of **commencement of the action** within 10 **business days** after the date of **commencement of the action**.

Compliance records

3. The approval holder must maintain accurate and complete **compliance records**.
4. If the **Department** makes a request in writing, the approval holder must provide electronic copies of **compliance records** to the **Department** within the timeframe specified in the request.

Note: **Compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the **Department's** website or through the general media.

Annual compliance reporting

5. The approval holder must prepare a **compliance report** for each 12 month period following the date of **commencement of the action**, or as otherwise agreed to in writing by the **Minister**. The approval holder must:
 - a. publish each **compliance report** on the **website** within 60 **business days** following the relevant 12 month period;
 - b. notify the **Department** by email that a **compliance report** has been published on the **website** within five **business days** of the date of publication;
 - c. keep all **compliance reports** publicly available on the **website** until this approval expires;
 - d. exclude or redact **sensitive ecological data** from **compliance reports** published on the **website**; and
 - e. where any **sensitive ecological data** has been excluded from the version published, submit the full **compliance report** to the **Department** within 5 **business days** of publication.

Note: **Compliance reports** may be published on the **Department's** website.

Reporting non-compliance

6. The approval holder must notify the **Department** in writing of any: **incident**; non-compliance with the conditions; or non-compliance with the commitments made in a **plan**. The notification must be given as soon as practicable, and no later than two **business days** after becoming aware of the **incident** or non-compliance. The notification must specify:
 - a. the condition which is or may be in breach; and
 - b. a short description of the **incident** and/or non-compliance.
7. The approval holder must provide to the **Department** the details of any **incident** or non-compliance with the conditions or commitments made in **plans** as soon as practicable and no later than 10 **business days** after becoming aware of the **incident** or non-compliance, specifying:

- a. any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future;
- b. the potential impacts of the **incident** or non-compliance; and
- c. the method and timing of any remedial action that will be undertaken by the approval holder.

Independent audit

- 8. The approval holder must ensure that an **independent audit** of compliance with the conditions is conducted, as requested in writing by the **Minister**.
- 9. For each **independent audit**, the approval holder must:
 - a. provide the name and qualifications of the independent auditor and the draft audit criteria to the **Department**;
 - b. only commence the **independent audit** once the audit criteria have been approved in writing by the **Department**; and
 - c. submit an audit report to the **Department** within the timeframe specified in the approved audit criteria.
- 10. The approval holder must publish the audit report on the **website** within 10 **business days** of receiving the **Department's** approval of the audit report and keep the audit report published on the **website** until the end date of this approval.

Completion of the action

- 11. Within 30 days after the **completion of the action**, the approval holder must notify the **Department** in writing and provide **completion data**.

Part C - Definitions

- 12. In these conditions, except where contrary intention is expressed, the following definitions are used:
 - a. **Business day** means a day that is not a Saturday, a Sunday or a public holiday in the state or territory of the action.
 - b. **Commencement of the action** means the first instance of any specified activity associated with the action including clearance of vegetation and **construction** of any infrastructure. Commencement does not include minor physical disturbance necessary to:
 - i. undertake pre-clearance surveys or monitoring programs;
 - ii. install signage and /or temporary fencing to prevent unapproved use of the project area; and
 - iii. protect environmental and property assets from fire, weeds and pests, including **construction** of fencing and maintenance of existing surface access tracks, if agreed in writing by the **Department**.
 - c. **Completion data** means an environmental report and spatial data information clearly detailing how the conditions of this approval have been met. The **Department's** preferred spatial data format is shapefile.
 - d. **Completion of the action** means all specified activities associated with the action have permanently ceased.
 - e. **Compliance records** means all documentation or other material in whatever form required to demonstrate compliance with the conditions of approval in the approval holder's possession or that are within the approval holder's power to obtain lawfully.
 - f. **Compliance reports** means written reports:

- i. providing accurate and complete details of compliance, **incidents**, and non-compliance with the conditions;
 - ii. consistent with the **Department's Annual Compliance Report Guidelines (2014)**;
 - iii. include a shapefile of any clearance of any **protected matters**, or their habitat, undertaken within the relevant 12 month period; and
 - iv. annexing a schedule of all **plans** prepared and in existence in relation to the conditions during the relevant 12 month period.
- g. **Conservation Management Plan** means the Conservation Management Plan - Hospital Swamp Bypass channel 76-88 Groves Road, Armstrong Creek, Victoria (October 2018) prepared for Barwon Heads Management Pty Ltd by Ecology and Heritage Partners Pty Ltd.
 - h. **Construction** means the erection of a building or structure that is fixed or is to be fixed to the ground and wholly or partially fabricated on-site; the alteration, maintenance, repair or demolition of any building or structure; preliminary site preparation work which involves breaking of the ground (including pile driving); the laying of pipes and other prefabricated materials in the ground, and any associated excavation work; but excluding the installation of temporary fences and signage.
 - i. **Department** means the Australian Government agency responsible for administering the **EPBC Act**.
 - j. **EPBC Act** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).
 - k. **Incident** means any event which has the potential to, or does, impact on **protected matter(s)**.
 - l. **Independent audit**: means an audit conducted by an independent and **suitably qualified person** as detailed in the *Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines (2015)*.
 - m. **Minister** means the Australian Government Minister administering the **EPBC Act** including any delegate thereof.
 - n. **Orange-bellied Parrot** means the EPBC listed threatened species *Neophema chrysogaster*.
 - o. **Plan** means any of the documents required to be implemented by the approval holder in accordance with these conditions (includes action management plans and/or strategies).
 - p. **Protected matter** means a matter protected under a controlling provision in Part 3 of the **EPBC Act** for which this approval has effect.
 - q. **Sensitive ecological data** means data as defined in the Australian Government Department of the Environment (2016) *Sensitive Ecological Data – Access and Management Policy V1.0*.
 - r. **Spiny Peppercross** means the EPBC listed threatened species *Lepidium aschersonii*.
 - s. **Suitably qualified person** means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.
 - t. **website** means a set of related web pages located under a single domain name attributed to the approval holder and available to the public.

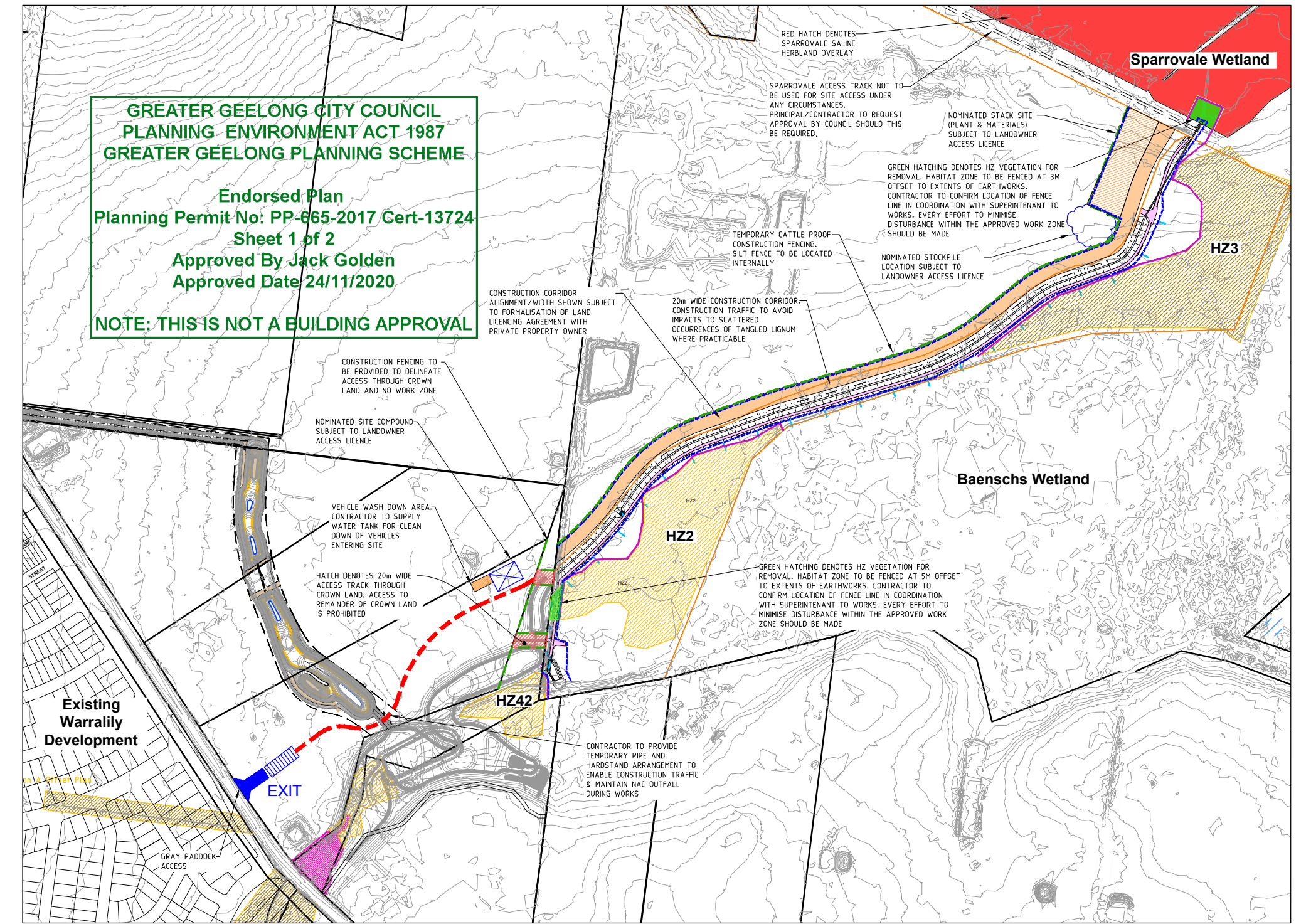
Appendix 2 – Construction Environment Management Plan

SITE ENVIRONMENTAL MANAGEMENT PLAN & TREE PROTECTION CONSTRUCTION MANAGEMENT PLAN (1) - TYPES AND LOCATIONS OF ENVIRONMENTAL PROTECTION MEASURES

Project Name: Anchorage Balog Channel
Date and Revision: 19th November 2020 Rev J

The following have been identified as significant environmental aspects for the site:
- Noise/Dust
- Native Vegetation/Threatened species
- Erosion / Sediment
- Weed Invasion
These aspects shall be managed with environmental protection measures outlined on this plan:

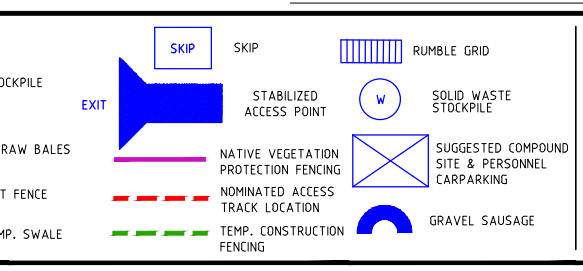
| | | | | | |
|---|--|---|--|--|--|
| Management Risk: Low | | 1. Responsibilities: General enquires regarding this plan and requirements of the contractor shall be directed to the developer. Enquires regarding the design and implementation of the environmental controls shall be directed to the contractor. Contractor is responsible for the correct implementation & administration of this EMP. The contractors emergency contact details are to be clearly displayed on a sign at the entrance to the construction zone. Emergency contact (Developer): Camilo Ardila 0447 873 503 Emergency contact (Contractor): Zabi Dalili 0437 489 381 | | 4. Staging of Works: Works to be staged as follows: 1. Pre-Clearance Survey (Growing Grass Frog) in accordance with Conservation Management Plan 2. CHMP Induction & Site Inspection with environmental consultant to discuss risks and review EMP controls 3. Construction works (Earthworks and Drainage) 4. Demobilisation and removal of controls to satisfaction of Council 5. Informing Residents: Affected residents to be notified by Contractor as required. | |
| 2. Communication of Site EMP Requirements: - Display EMP on site office wall. - Site inductions & ongoing toolbox meetings. | | 6. Associated documents: - Duty of Care on Subdivisions, EPA publication 956, 2009 - Construction Guidelines for Major Construction Sites, EPA Publication 485, 2006 - Construction Techniques for Sediment Pollution Control, EPA Publication 275 - AS 4970 - 2009 Protection of Trees on Development Sites - Contractors Report Specific Site Management Plan - Conservation Management Plan (Channel Access Road, Sparrovale Channel, 74-88 Crown Road, Anchorage Creek, Victoria, October 2019, by Geelong & District Council - CHMP No. 23333 (Revision 2) April 2020, Robert Dennis Channel 74-88 Crown Road, Anchorage Creek, Victoria, October 2019, by Geelong & District Council - Biodiversity Assessment, 747 and 75-88 Crown Road (Balog Land), Anchorage Creek, Victoria - by Ecology & Heritage Services - March 2018/2019 | | | |
| 3. Inspections and Maintenance Contractor required to inspect EMP controls daily in accordance with Conservation Management Plan. Any defects to be rectified within 24 hours of identification. | | 7. Working hours: 7am to 5pm Mon-Fri 7am to 1pm Sat (with prior approval) | | 8. Noise Minimisation Methods: Machinery to be properly maintained & compliant with relevant standards. | |
| 9. Other: Breach - Revise work practices and / or replace noisy machinery. | | 10. Minimising Dust Generation: - Retain existing vegetation wherever possible. - Careful location of stockpiles. - Stockpile protection. - Minimise traffic on disturbed / exposed areas | | 12. Contingencies: Dust generating activities to be limited / cancelled during windy periods Minimise number of stockpiles. Keep truck loads covered where possible. | |
| 11. Dust Suppression: - Water cart must be permanently on site and used for the duration of construction. - Stabilize exposed areas at completion of earthworks - Apply mulch / wood chips where possible. - Apply dust suppressant if required. | | 13. Other: Breach - Excessive dust generation to be immediately suppressed using water sprays, dust suppressant or other measures as necessary. Further stabilisation works to be actioned to remediate affected areas. | | 14. Drainage Management: Works to be undertaken in summer months. Sediment fencing to be installed to control site run-off. Drainage structures only to be tied-in to existing creek environment once works are completed. SITE DRAINAGE TO BE MONITORED DAILY BY CONTRACTOR | |
| 15. Soil Stabilisation During construction: Avoid vegetation removal where possible. Re-vegetate disturbed areas where possible using Sterile Ryegrass. Direct interface with habitat zone to be re-vegetated with indigenous/native species as selected from table provide on EMP Sheet 2. Soil Stabilisation shall only occur within construction corridor. | | 16. Stockpile Management: - Sed fence installed downstream of stockpiles. - Position away from drainage lines - Stabilize stockpile > 20 days - Max 2:1 height to width ratio. - Minimise the number of stockpiles. | | 17. Sediment Traps (sediment retention devices): Provide silt fences as detailed on sheet 2 and at locations shown on Sheet 1 | |
| 18. Dewatering: Any dewatering required on site will require the contractor to submit a methodology to Superintendent's representative for approval. This shall take into account water turbidity and suitable discharge location with consideration of sensitive receptors on site. Methodology to be approved by responsible authority. Avoid Areas of Native Vegetation | | 19. Vehicle and Road Management: Site access: - Stabilised access points or rumble grid to be utilized - Construction traffic to keep to defined haul roads / access tracks Cleaning Vehicles: - Wash vehicles as necessary - Drive length of stabilized access road. Street Cleaning: - Sweep streets as required - Designated wash out area for concrete trucks after delivery of concrete. | | 20. Other: Breach - Any breaches associated with this EMP or associated legislation shall be reported immediately to the Superintendents Representative, the Greater Geelong City Council, DEWLP and the Commonwealth. An incident report shall be supplied to all aforementioned stakeholders promptly & rectification works must take place within 24 hours | |
| 21. Movement of Soil: All site won material to be either re-used on site for construction of Channel Access Track Bund OR directly carted off-site to the Anchorage Estate. Topsoil to be used for re-dress of channel & disturbed areas as required by Council Approved Design Contaminant Status: Cleanfill | | 22. Waste Minimisation Methods: Materials to be ordered / scheduled to minimise waste | | 23. Waste Storage and Disposal: - Bins for workers at site office (Litter & Recycling). - Designated stockpile area or skip located near site compound for waste construction materials. | |
| 24. Other: - Remove off site to designated disposal site at regular intervals to minimise build up. - Machinery and equipment cleaning on-site, not on adjacent roads or footpaths. | | 25. Storage: Minimise fuels & chemicals stored onsite. Store in a single area with adequate protection / buffer zones. | | 26. Spill Management: Spill kit & bunding to be provided onsite as required. Refer to material safety data sheets for any specific requirements. | |
| 27. Refuelling Procedure: - Minimise onsite refuelling where possible. - Refuel in designated area only. - Refuelling area to avoid any drainage lines, stormwater drains or sensitive areas. - Servicing of plant & equipment to include management of hydraulic fluids, oils and grease. | | 28. Other: Plant servicing - Servicing in designated areas only. | | 29. Native Vegetation, Flora & Fauna Site induction to emphasise the need for native vegetation protection & implications of protection removed. Native vegetation fencing/bunding (with signage) to be erected & maintained in accordance with the planning permit & EMP. 3 m BUFFER ZONE TO BE IN PLACE FOR WORKS ADJACENT TO NATIVE VEGETATION BEING RETAINED. HOLD POINT INSPECTION PRIOR TO CONSTRUCTION | |
| 30. Archaeological/Heritage Requirement: Places, sites and objects of archaeological or heritage significance must be protected. For further details refer to the Cultural Heritage management plan. All site staff must be inducted under the CHMP by the Registered Aboriginal Party (RAP). The contractor shall arrange witness point inspections with the RAP at the beginning, middle and end of the project in accordance with CHMP. CHMP shall be kept on site at all times. Unexpected finds process to be followed by contractor. | | 31. General - Weed Management - Equipment, controls & practices must be implemented by the Contractor under its Construction Management Plan. - Topsoil not to be removed from site unless otherwise authorised. - Fire management equipment to be fitted to all construction plant & equipment. - Site operations must comply with CFA regulations (2004) 109 & 110 | | 32. Site Access MAIN CONSTRUCTION ACCESS VIA BARWON HEADS ROAD (GRAY PROPERTY) ALTERNATE ACCESS VIA GROVES ROAD (COGG SPARROVALE PROPERTY) CONTRACTOR TO REQUEST APPROVAL TO ACCESS SITE FROM PRINCIPAL AND ENSURE REQUIREMENTS OF LICENCE ACCESS AGREEMENTS ARE MET PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS | |



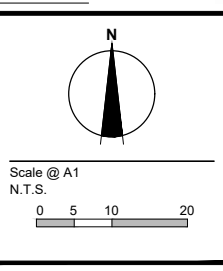
All site construction works to be in accordance with EPA Guideline for Environmental Management, Doing it Right on Subdivisions.

I have read this Site Environmental Management Plan and agree to undertake works and ensure that subcontractors undertake works in accordance with this plan : Developer *Jacqui Holst* Consultant *Camilo Ardila* Contractor *Zabi Dalili*

| | | | | |
|----------|--|----------|---------|------|
| J | EMP AMENDMENTS | 19.11.20 | MM/MM | TM |
| I | AMENDMENTS POST DISCUSSION WITH COGG ENVIRO. | 12.08.20 | MM/MM | TM |
| H | AMENDMENTS POST DISCUSSION WITH COGG ENVIRO. | 21.07.20 | MM/MM | SM |
| G | DESIGN REVISED, ISSUED FOR COUNCIL APPROVAL | 09.07.20 | MM/MM | SM |
| F | DESIGN REVISED, ISSUED FOR COUNCIL APPROVAL | 6.07.20 | MM/MM | SM |
| E | AMENDED FOR COUNCIL APPROVAL | 2.07.20 | MM/MM | SM |
| D | NOTE AMENDMENTS | 16.06.20 | MM/MM | SM |
| C | COUNCIL COMMENTS | 14.05.20 | MM/MM | SM |
| B | ISSUED TO CONTRACTOR FOR PRICING | 28.02.20 | MM/MM | SM |
| REVISION | | DATE | DES/DFT | APPD |



Designed F. Qi
Drawn F. Qi
Checked T. Rhodes
Authorised S. McGlynn
Date September 2018



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ANCHORIDGE
Balog Channel
City of Greater Geelong
Site ECMP & EPCCP - 1
Drawing No. 2384E-BC-EMP-1 Rev J
Sheet No. 1 of 2
For Construction

RISK ASSESSMENT CHECKLIST

| | |
|---|------------------------------------|
| Noise | Likelihood Certain |
| Issues: | Consequence Minor |
| - Nature of noise generating works: Construction machinery/equipment | Overall Risk Medium |
| - Potential noise receptors: Isolated Farm houses and residential properties | |
| - Proximity of works to noise receptors: Within 100 metres | |
| Dust | Likelihood Likely |
| Issues: | Consequence Moderate |
| - Dust Sources: Construction activity eg: excavation, placement of soil etc. | Overall Risk Significant |
| - Potential dust receptors: Neighbouring residents | |
| - Proximity of works to dust receptors: Within 100 metres | |
| - Extent of exposed earth and duration of time exposed: Minimum area required for construction activity. Exposed area to be hydromulched on completion | |
| - Wind conditions: Predominantly westerly | |
| Erosion and Sediment | Likelihood Unlikely |
| Issues: | Consequence Major |
| - Erosion and sediment sources: Earthworks and trenching | Overall Risk Significant |
| - Potential erosion and sediment receptors: Armstrong Creek and Habitat Zones | |
| - Proximity of works to erosion and sediment receptors: Through & adjacent to site. | |
| - Extent of exposed earth and duration of time exposed: Cut Excavations & Topsoiling Exposure time approx 8 weeks, works to be undertaken in summer months | |
| - Soil type and erosivity: Topsoil with underlying clay, low erosivity, some dispersiveness | |
| - Slope: Varies | |
| - Site drainage regime: Sediment Fencing | |
| - Rainfall: Approx 45mm per month on average. | |
| - Vehicle movements on and off site: Regular and controlled. | |
| Waste | Likelihood Unlikely |
| Issues: | Consequence Minor |
| - Nature of waste to be generated: Construction material eg: pipe offcuts, concrete, wrappings etc. | Overall Risk Low |
| - Presence of waste on site prior to work commencement: Nil. | |
| - Quantity of waste anticipated: Minimal | |
| - Potential waste receptors: Nil, Contained on site | |
| - Proximity to waste receptors: N/A | |
| Chemicals | Likelihood Rare |
| Issues: | Consequence Moderate |
| - Types of chemicals (inc. fuels) to be stored/used on site: Solvents, paint, oil/grease and fuel | Overall Risk Low |
| - Quantities of chemicals (inc. fuels) to be used on site: Minimal, as required | |
| - Potential chemical receptors: Nil | |
| - Proximity to chemical receptors: N/A | |
| Flora/Fauna | Likelihood unlikely |
| Issues: | Consequence Major |
| - Types of flora/fauna: Wetland/Herbland | Overall Risk Significant |
| - Vulnerability of flora/fauna: High adjacent to work site | |
| - Proximity of works to flora/fauna: Onsite | |
| - Work activities which may threaten flora/fauna: Excavation & vehicle movements, sediment | |
| - Potential impacts on flora/fauna: Damage to surface vegetation due to trafficking and excavation works. | |
| Flora & Fauna CONSIDERED HIGH RISK FOR SITE (REFER SECTION 19 - SHEET 1 FOR DETAILS). CONTRACTOR TO BE INDUCTED, RETAIN A COPY OF CONSERVATION MANAGEMENT PLAN ON SITE & PARTAKE IN HOLD POINT INSPECTIONS FOR NO-GO ZONE FENCING PRIOR TO COMMENCEMENT OF CONSTRUCTION | |
| Archaeological/Heritage | Likelihood Unlikely |
| Issues: | Consequence Minor |
| - Traditional land owners consulted? : Yes | Overall Risk Low |
| - Survey or assessment conducted? : Yes | |
| - Probability of encountering archaeological/heritage items during works: Negligible. | |
| - Types of archaeological/heritage items on site: Aboriginal artifacts | |
| - Proximity of archaeological/heritage items to works: Within site | |
| - Work activities which may threaten archaeological/heritage items: Excavation | |
| - Potential impacts on archaeological/heritage items: Minimal as sites identified under a CHMP | |

SITE ENVIRONMENTAL MANAGEMENT PLAN & TREE PROTECTION CONSTRUCTION MANAGEMENT PLAN (2) - TYPES AND LOCATIONS OF ENVIRONMENTAL PROTECTION MEASURES

ADDITIONAL ITEMS OF NOTE FROM APPROVED CONSERVATION MANAGEMENT PLAN (ECOLOGY & HERITAGE PARTNERS, OCT 2018)

- Vehicle, Plant & Material/Soil Storage
- All works are to be contained within Public Acquisition Overlay
 - All plant/vehicle wash down areas, set down areas are to be located off-site
 - Risk Assessment to be undertaken of nominated plant/vehicle set-down/wash-down locations prior to construction start
 - Storage of high risk chemicals on-site is not recommended due proximity to significant wetlands (if this is required - chemical storage location to be bunded/quarantined)
 - A spill kit is to be located within designated plant to ensure availability in spill scenario
- Erosion and Sedimentation and protection from surface damage/disturbance
- Geo-textile silt fences to border construction area where adjacent to natural vegetation and to meet the following requirements:
 - Silt fences to be installed downslope of the construction area to a depth of 200mm min.
 - Silt fences to be monitored on a daily basis for damage & repaired immediately where observed
 - Construction to be avoided during high rainfall events. Additional silt fencing may be required should extreme rainfall events be expected.
 - During excavation, soil should be stockpiled/stored upslope of the channel excavation
 - Construction footprint to be kept to a minimum to minimise surface damage/soil disturbance which may lead to erosion.
- Noxious Weeds and Equipment Hygiene
- All construction entering the site must be washed-down with high pressure air or water spray jets to remove collected excess soil and organic matter
 - To minimise the spread/removal of existing weeds on-site, any vegetation/topsoil that is to nominated to be removed, shall be taken from the site immediately. Stockpiling of this material prior to removal is not to occur
 - Nominated vehicle wash-down bay is to be bunded/quarantined to ensure no contaminated material is conveyed to water bodies in its vicinity
 - Post-construction weed control to be undertaken by a qualified contractor. Refer to CMP for high risk/priority species
 - To limit the potential spread of Tall Wheat-grass post construction, construction should be staged to work towards & through areas of Wheat-grass
 - Isolated locations areas of Wheat-grass post-construction to be controlled by spot-spraying where established

| RECOMMENDED INDIGENOUS SPECIES FOR REVEGETATION AT NATIVE VEGETATION INTERFACE (SOUTH SIDE OF CHANNEL BUND) | |
|---|--|
| Australian Salt-Grass | Distichlis Distichophylla |
| Common Tussock-Grass | Poa Poiformis |
| Common Blown-Grass | Lachnagrostis Filiformis S.S |
| Flowered Noon-Flower | Disphyma Crassifolium Subsp. Clavellatum |
| Creeping Brookweed | Samolus Repens Var. Repens |

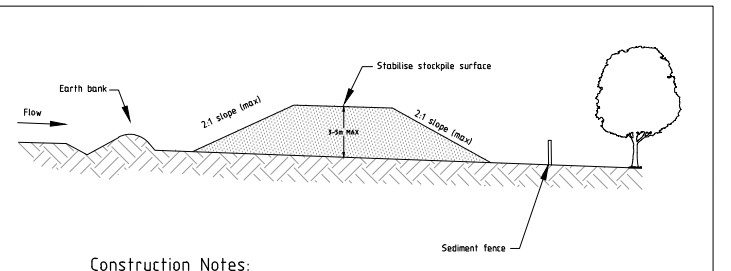
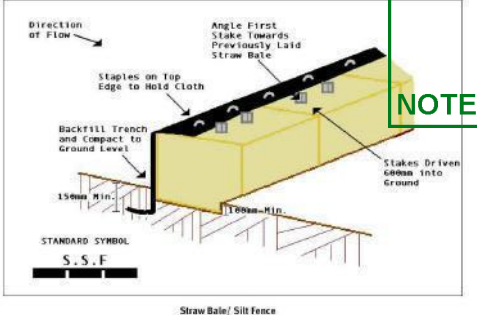
**GREATER GEELONG CITY COUNCIL
PLANNING ENVIRONMENT ACT 1987
GREATER GEELONG PLANNING SCHEME**

**Endorsed Plan
Planning Permit No: PP-665-2017 Cert-13724
Sheet 2 of 2
Approved By Jack Golden
Approved Date 24/11/2020**

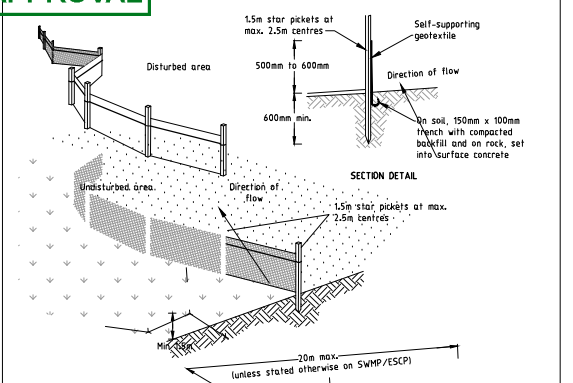
NOTE: THIS IS NOT A BUILDING APPROVAL

- Site Inductions
- An environmental site induction will be undertaken for all contractors working on site. The induction program will highlight environmental values, risks, fauna salvage and translocation procedures, potential impacts and site-specific details. Following the induction all personnel working on site are required to sign the induction form.
- Site Monitoring
- Daily Environmental Inspections must be carried out to ensure:
 - All vegetation fences are present and clearly signed;
 - All silt fences are present and working effectively;
 - Fuel and chemicals are being stored correctly;
 - No chemical spills have occurred; and
 - Vehicle access is maintained within the construction zone and public roads

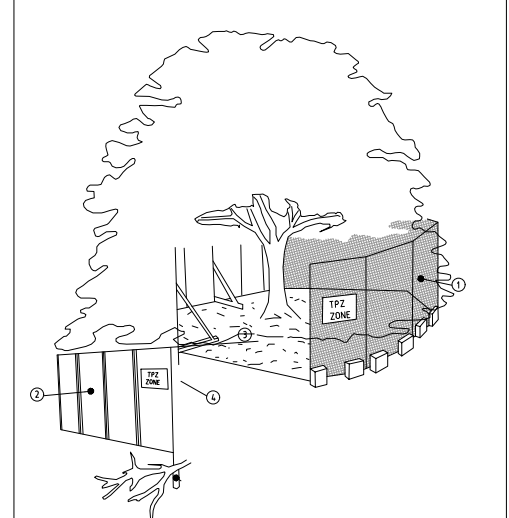
Environmental protection measures shall be constructed in accordance with the following designs:



- Construction Notes:**
1. Where possible locate stockpile at least 5 metres from existing vegetation, concentrated water flows, roads and hazard areas.
 2. Construct on the contour as a low, flat, elongated mound.
 3. Where there is sufficient area topsoil stockpiles shall be less than 2 metres in height.
 4. Rehabilitate in accordance with the SWHP/ESCP.
 5. Construct north bank (Standard Drawing 5-5) on the upslope side to divert run off around the stockpile and a sediment fence (Standard Drawing 6-8) 1 to 2 metres downslope of stockpile.
 6. The placement of fill must be designed to ensure that it does not compromise native vegetation to be protected.
 7. Soil must not be stockpiled on native vegetation

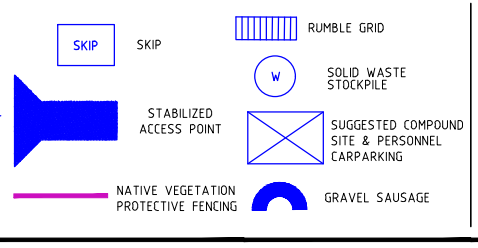
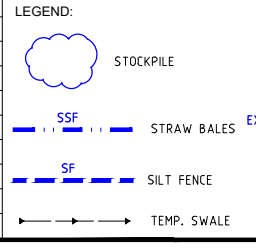


- Construction Notes:**
1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
 2. Cut a 150mm deep trench along the upslope side of the fence for the bottom of the fabric to be entrenched.
 3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are filled with safety caps.
 4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
 5. Join sections of fabric at a support post with a 150mm overlap.
 6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.



- Construction Notes:**
1. Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
 2. Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.

| REVISION | DATE | DES/DFT | APPD |
|----------|----------|---------|------|
| J | 19.11.20 | MM/MM | SM |
| I | 12.08.20 | MM/MM | TM |
| H | 21.07.20 | MM/MM | SM |
| G | 09.07.20 | MM/MM | SM |
| F | 6.07.20 | MM/MM | SM |
| C | 14.05.20 | MM/MM | SM |
| B | 28.02.20 | MM/MM | SM |
| A | 29.1.20 | FQ/FQ | SM |



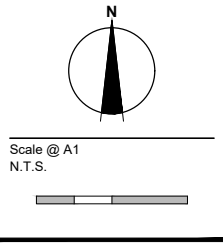
Designed
F. Qi

Drawn
F. Qi

Checked
T. Rhodes

Authorised
S.McGlynn

Date
September 2018



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SMEC

Member of the **Surbana Jurong Group**

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ANCHORIDGE
Balog Channel
City of Greater Geelong

Site ECMP & EPMP - 2

Drawing No. 2384E-BC-EMP-2
Sheet No. 2 of 2

Rev J

For Construction

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