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# 16 Chapman Street Werrington

## Construction Environmental Management Plan

**EPBC Ref: 2019/8552**

**Prepared for Lendlease Communities (Werrington Pty Ltd) ACN: 635 502 082**

12 November 2020

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## Document control

| Project number | Client | Project manager | LGA |
|---|---|---|---|
| 5111 | Lendlease | Amanda Griffith | Penrith |

| Version | Author | Review | Status | Comments | Date |
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| D1 | Alex Christie | Amanda Griffith | Draft | | 16 March 2020 |
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# Executive summary

Niche Environment and Heritage (Niche) has been commissioned by Lendlease Communities (Werrington) Pty Ltd (Lendlease), to prepare a Construction Environmental Management Plan (CEMP). The CEMP is required to ensure potential direct and indirect impacts on Protected Matters listed under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) are appropriately managed during construction of the Werrington residential and commercial development (the Project) located at 16 Chapman Street Werrington, NSW (the site).

The Project was referred to the Commonwealth Department of Environment and Energy (DoEE) in November 2019 in relation to impacts to Cumberland Plain Woodland (CPW), listed as a Critically Endangered Ecological Community (CEEC) under the EPBC Act. The Project was determined a controlled action, to be assessed by way of Preliminary Documentation upon receipt of additional information. The DoEE requested further information on the mitigation and management of potential impacts to areas of CPW which are to be retained within designated conservation areas on-site.

This CEMP forms part of the measures employed to avoid, manage and mitigate impacts to retained areas of CPW at the site. The Project, and this CEMP was approved with conditions on 29 July 2020 (EPBC 2019/8552).

The Project consists of a residential and industrial subdivision as well as associated roads and infrastructure and a number of open space recreation areas. It also includes the development of:

- Recreation and active open space areas, with some landscaping consistent with local native vegetation
- Services, including water, sewer and electricity infrastructure
- A street network of roads, access ways and parking
- Detention basins to capture and treat run-off water captured by road curbs and gutters
- Protection and maintenance of two conservation reserves supporting CPW (E2 Environmental Conservation Zone and areas of CPW within an open space recreation area).

The construction phase is expected to be undertaken in stages over an expected timeframe of three years commencing in June 2020.

This CEMP sets out:

- Construction and conservation areas
- A description of potential environmental impacts and risks
- Approvals to be obtained prior to commencement
- Environmental management measures for each potential risk
- Environmental monitoring and corrective actions
- Environmental management roles and responsibilities
- Environmental training and induction requirements
- Environmental incident and emergency procedures
- Internal and external reporting arrangements
- Audit and review of the CEMP.

## Glossary and list of abbreviations

| Term or abbreviation | Definition |
|---|---|
| Action | As defined in the final decision notice for EPBC 2019/8552<br>The residential and commercial development of 16 Chapman Street, Werrington. |
| APZ | Asset Protection Zone |
| BCT | NSW Biodiversity Conservation Trust |
| CAR | Corrective Action Report |
| PCC | Penrith City Council |
| CEEC | Critically Endangered Ecological Community |
| CEMP | Construction Environmental Management Plan |
| CPW | Cumberland Plain Woodland |
| Development Area | Development Areas as shown in Figure 1 |
| DoE | Department of the Environment |
| DoEE | Department of the Environment and Energy |
| DAWE | Department of Agriculture, Water and the Environment |
| EEC | Endangered Ecological Community |
| Niche | Niche Environment and Heritage |
| EMP | Environmental Management Plan |
| EPBC Act | Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* |
| ESCP | Erosion and Sediment Control Plan |
| HBT | Hollow Bearing Tree |
| MNES | Maters of National Environmental Significance |
| DPIE | Department of Planning, Infrastructure and Environment |
| Protected Matters | Listed threatened species and ecological communities under the EPBC Act |
| SWMS | Safe Work Method Statement |
| TPZ | Tree Protection Zone |

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## Declaration of Accuracy

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this Management Plan (*16 Chapman Street, Werrington Construction Environmental Management Plan*) is complete, current and correct.

2. I am duly authorised to sign this declaration on behalf of the approval holder.

3. I am aware that:

Section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.

Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth) where the person knows the information or document is false or misleading.

The above offences are punishable on conviction by imprisonment, a fine or both.

Signed

Full name

**Amanda Griffith, Niche Environment and Heritage (Niche)**

Signed

Full name

**Daniel Nay, Lendlease Communities (Werrington) Pty Ltd**

**Report Version:** Niche 2020. Chapman Street Werrington CEMP. Prepared for Lendlease Communities (Werrington) Pty Ltd. Version 3, dated 12/11/2020.

# 1. Introduction and purpose of the plan

Niche Environment and Heritage (Niche) has been commissioned by Lendlease Communities (Werrington) Pty Ltd (Lendlease), to prepare a Construction Environmental Management Plan (CEMP). The CEMP is required to avoid and mitigate potential direct and indirect impacts on Protected Matters listed under the *Environment Protection and Biodiversity Conservation Act* 1999 (EBPC Act) within the on-site conservation areas during construction of the Werrington residential and commercial development (the Project) located at 16 Chapman Street Werrington, NSW (Site).

The Project is located within the Penrith City Council (PCC) Local Government Area (LGA) approximately five kilometres to the south-east of the city of Penrith comprising the following lots (Lot 1 DP 1226122).

## 1.1 Project description and planning background

Lendlease propose to develop a residential and commercial precinct at 16 Chapman Street Werrington, NSW (Figure 1).

The Project (EPBC 2019/8552) was referred to the Department of the Environment and Energy (DoEE) in November 2019 and on 9 December a delegate of the Minister determined that the proposed action was a Controlled Action in relation to Matters of National Environmental Significance (MNES) for impacts to the Critically Endangered Ecological Community (CEEC) Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CPW). The DoEE determined the Project be assessed by way of Preliminary Documentation upon receipt of additional information. The additional information request included the requirement for further information on the mitigation and management of potential impacts to areas of CPW to be retained within the designated conservation areas at the site.

This CEMP forms part of the measures employed to avoid, manage and mitigate impacts to retained areas of CPW at the site. Other measures, as detailed within the Preliminary Documentation Assessment Report (Niche 2020) include management of CPW within Asset Protection Zones (APZs), establishment of buffer zones to retained CPW, water sensitive urban design features, stormwater management, implementation of a Vegetation Management Plan (VMP) as well as addressing pre and post construction mitigation measures. A summary of these commitments are provided in Appendix 1.

The Project, and this associated CEMP, was approved with conditions by the Commonwealth on 29 July 2020. Subsequent to the approval, the Project required the addition of an Asset Protection Zone (APZ) within the Project area. This CEMP has been updated to reflect the associated increase in impact to CPW at the Site as a result of the addition of the APZ. This CEMP has been approved as part of the EPBC Act Variation for the Project.

The structure and content of this CEMP, has been based on the recently approved CEMP: *Mount Gilead Residential Development Construction Environmental Management Plan (EPBC2015/7599)* (Eco Logical 2019) as it was developed to minimise and mitigate impacts to areas of retained remnant vegetation (CPW to be managed within designated offset areas) from a similar type of development, by the same proponent.

That document was prepared in accordance with the Department's Environmental Management Plan guidelines and was subsequently approved by DoEE on 12 December 2019.

## 1.2 CPW at the site

The site (Figure 1) consists of:

- The development area
- CPW conservation reserves, located within the E2 Environmental Conservation Zone and the central open space recreation area, zoned RE1 open space recreation).

A Vegetation Management Plan (Niche 2020) was developed to provide for the long-term protection, management and maintenance of retained areas of CPW at the site. The VMP area includes the entire E2 Environmental Conservation Zone, and the areas of retained CPW within the open space recreation area, as shown in Figure 1. The VMP includes details regarding management and rehabilitation/re-vegetation works to be undertaken over a two-year 'maintenance' period (with timing subject to approval of a Voluntary Planning Agreement with Penrith City Council), after which time these areas will be dedicated to Penrith City Council who will be responsible for their long-term protection and management.

This CEMP applies to the management and mitigation of potential indirect effects of construction in the development area to Protected Matters (CPW) in the conservation areas shown in Figure 1.

This CEMP covers construction works in all areas associated with the development.

Following the construction and maintenance period, as mentioned above, the on-going management of the conservation areas within the site are to be dedicated to Penrith City Council from which point Council will become the sole owner of the land.

## 1.3 Site description

The site (Figure 1), covers a total area of approximately 28 hectares. The site has historically been used for agricultural purposes and contains cleared paddocks with improved pastures. Pockets of residual, remnant vegetation are located within the central and northern portions of the site.

The CPW at the site has varying degrees of disturbance and weed infestation. The main disturbances are past land use including agriculture (i.e. farming), clearing of native vegetation, fragmentation, encroachment of weeds and degradation of the quality of remaining native vegetation remnants, unauthorised vehicle access and illegal dumping. The areas affected by this disturbance are primarily the boundaries adjacent to public roads, where tracks and rubbish have impacted on the vegetation condition. Woody weed and exotic grass infestations were prevalent and severe along the edges and drainage lines of the site. Weeds are present in varying densities across the site. However, the overstorey vegetation is still present and showing good signs of regeneration. These areas would naturally regenerate following the removal of rubbish, strategic revegetation and prevention of unauthorised access.

### 1.3.1 Development area

The Project consists of a residential and commercial subdivision that will facilitate the urban renewal of the precinct for a variety of housing types, associated roads and infrastructure and a number of open space recreation areas (Figure 1). It also includes the development of:

- Recreation and active open space areas, with some landscaping consistent with local native vegetation
- Services, including water, sewer and electricity infrastructure
- A street network of roads, access ways and parking
- Bushfire Asset Protection Zones (APZ)
- Detention basins to capture and treat run-off water captured by road curbs and gutters
- Protection and maintenance of two conservation reserves supporting CPW (E2 Environmental Conservation Zone and areas of CPW within an open space recreation area).

#### 1.3.1.1 Construction timeframe and duration

The construction phase is expected to be undertaken in stages over an expected timeframe of three years commencing in June 2020 and finishing in December 2023.

#### 1.3.1.2 Construction work hours

All work on site will occur between the hours conditioned by Penrith City Council in the conditions of approval for DA14/0627, DA16/1148 and DA16/0789, once determined, and any further development approvals. These hours are expected to be standard day-time construction hours Monday thru Saturday with the majority of works to occur generally between 7:00am and 6:00pm.

### 1.3.2 Long term management arrangements for CPW at the site

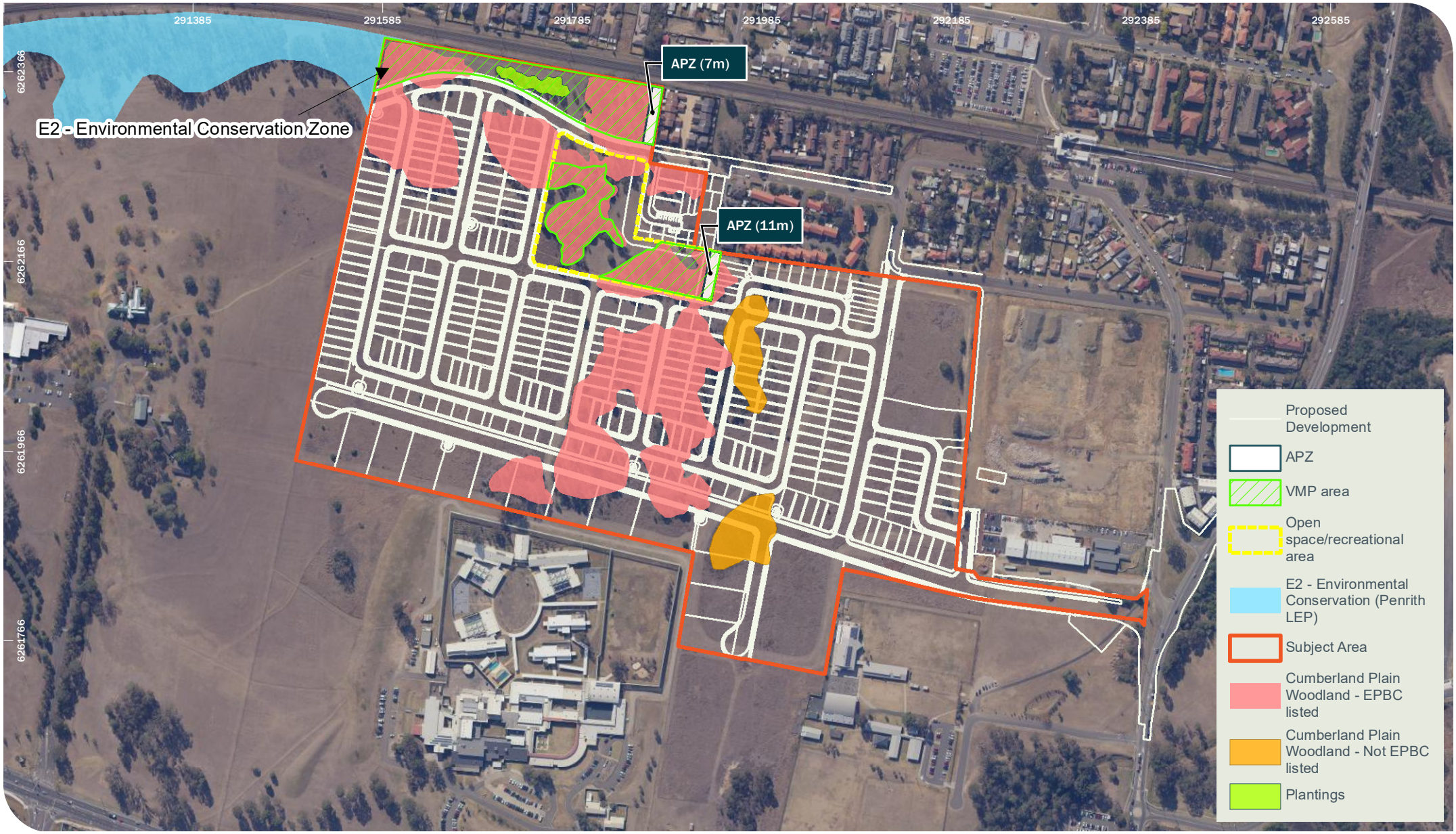
Lendlease acquired the site in 2019 with existing Development Approvals (DA) for part of the site. The Project is currently being assessed by Penrith City Council (PCC) as a modification to the existing DA under Part 4 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). The Project is also subject to approval by the Commonwealth DoAWE.

As part of the State and Commonwealth approval process, a VMP was prepared which details the works and management actions required to maintain or improve the biodiversity value of the CPW remnants within the site over a maintenance period of two (2) years. After the maintenance period, the conservation areas covered by the VMP are to be dedicated to Penrith City Council.

This CEMP does not repeat the management actions outlined in the VMP after the completion of construction other than to summarise the management as:

- Staged and targeted weed control (mechanical removal, hand pulling and chemical control)
- Mulching to supress weeds, provide organic matter and increase water retention in the soil
- Scarification of soil to aid in the establishment and germination of plants within regenerating/revegetation areas
- Re-vegetation works with groundcover, shrub and canopy species endemic to CPW
- Installation of perimeter fencing to discourage pedestrian access
- Installation of interpretive signage informing the community about the CPW conservation area
- Monitoring and reporting of works against performance measures.

Full details of the management and reporting requirements of these conservation areas can be found in the VMP (Niche 2020).

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Niche PM: Amanda Griffith
Niche Proj. #: 5111
Client: Lend Lease

## Commonwealth listed vegetation and proposed development

### EPBC Act Referral - 16 Chapman Street, Werrington

Figure 1

# 2. Objectives and context of the CEMP

The aim of this CEMP is to outline the measures to avoid and mitigate potential indirect impacts on Protected Matters in the conservation areas as a result of construction.

## 2.1 Outline of the CEMP

This CEMP sets out:

- Construction and conservation areas
- A description of potential environmental impacts and risks
- Approvals to be obtained prior to commencement
- Environmental management measures for each potential risk
- Environmental monitoring and corrective actions
- Environmental management roles and responsibilities
- Environmental training and induction requirements
- Environmental incident and emergency procedures
- Internal and external reporting arrangements
- Audit and review of the CEMP.

# 3. Risk assessment

## 3.1 Potential impacts

Potential indirect impacts to Protected Matters in the conservation areas from construction of the Project include:

- Threatened Ecological Communities
  - Clearing of remnant vegetation beyond approved development footprint
  - Dispersal and introduction of weeds
  - Erosion and sedimentation
  - Introduction of plant pathogens such as *Phytophthora cinnamomi*
  - Spread of litter and rubbish
  - Construction dust inhibiting plant health and growth
  - Increased access for recreational use of conservation areas (post construction).

## 3.2 Risk assessment for potential environmental impacts

A qualitative risk assessment methodology in accordance with *Environmental Management Plan Guidelines*, *Department of the Environment Commonwealth of Australia 2014* has been applied to the environmental risks associated with the proposed construction works.

Each environmental risk identified in Section 3.1 has been provided a rating in terms of likelihood of occurring (Table 1) and the consequence to patches of CPW if it did occur using the criteria in Table 2and Table 3. These ratings have been combined to generate a risk rating of low, medium, high or severe (Table 4) (Commonwealth of Australia 2014).

Table 4 then lists the risk assessment for each of the potential environmental impacts described in section 3.1, before and after mitigation. The table also describes the mitigation measures proposed to minimise each risk and assesses the residual risk levels after implementation of mitigation measures.

Table 5 identifies the risks to achieving the environmental objectives of the CEMP in terms of the scientific, ecological or budgetary uncertainties that may prevent the desired outcome from being achieved, how the desired outcome is being monitored/detected by trigger values and likely adaptive management measures if the desired outcome is not met.

Key to management and mitigation of impacts to CPW at the site will be development of an Environmental Control Plan Map. The map, to be used during inductions for all staff working on site will include the identification and locations of

- key conservation/sensitive areas as “no-go” areas
- location of trees outside of the conservation areas to be protected
- Location of hazardous materials and spills equipment.

**Table 1: Definitions of likelihood of occurrence**

| Likelihood | Definition |
|---|---|
| Highly likely | Is expected to occur in most circumstances. |
| Likely | Will probably occur during the life of the Project. |
| Possible | Might occur during the life of the Project. |

| | |
|---|---|
| Unlikely | Could occur but considered unlikely or doubtful. |
| Rare | May occur in exceptional circumstances. |

**Table 2: Definitions of consequence**

| Consequence | Definition |
|---|---|
| Minor | Minor incident of environment damage that can be reversed. |
| Moderate | Isolated but substantial instances of environmental damage that could be reversed with intensive efforts. |
| High | Substantial instances of environmental damage that could be reversed with intensive efforts. |
| Major | Major loss of environmental amenity and real danger of continuing. |
| Critical | Severe widespread loss of environmental amenity and irrecoverable environmental damage. |

**Table 3: Risk framework**

| | Consequence | | | | |
|---|---|---|---|---|---|
| | **Minor** | **Moderate** | **High** | **Major** | **Critical** |
| **Highly Likely** | Medium | High | High | Severe | Severe |
| **Likely** | Low | Medium | High | High | Severe |
| **Possible** | Low | Medium | Medium | High | Severe |
| **Unlikely** | Low | Low | Medium | High | High |
| **Rare** | Low | Low | Low | Medium | High |

## 3.3 Environmental objectives, performance targets and indicators

Table 5 provides environmental objectives of the construction phase as well as performance targets and indicators and includes the following:

- The environmental objectives relevant to each protected matter
- The performance targets for each objective
- The commitments (management actions) made to achieve each objective
- The responsible party for undertaking the management action
- The performance indicators for each management action
- The timing and frequency of each action.

## 3.4 Managing uncertainty and adaptive implementation

Table 4 identifies the risks to achieving the environmental objectives of the CEMP in terms of the scientific, ecological or budgetary uncertainties that may prevent the desired outcome from being achieved, how the desired outcome is being monitored/detected by trigger values and likely adaptive management measures if the desired outcome is not met.

The main area of uncertainty in achieving the objectives of the CEMP are:

1. Insufficient funds provided to implement the management actions identified

2. Inadequate induction/training of Project staff leading to miscommunications of the actions to be implemented and/or matters to be protected
3. Poor implementation of identified mitigation measures.

The risk of these uncertainties arising is reduced by the comprehensive monitoring program proposed (Section 5) that will ensure that staff training and induction programs are implemented, records of these programs are retained (Section 5.2), and daily, weekly, monthly monitoring and site audits against a checklist (Section 5.3 and Appendix 6) are undertaken to detect any incidents of non-compliance, with appropriate corrective actions identified and implemented through an adaptive management program.

## 3.5 Contingency response and corrective actions

The monitoring inspection checklist provided in Appendix 6 provides the opportunity to identify appropriate corrective/adaptive management actions that are specific to the issue should an incident of non-compliance arise. Table 4 provides some indicative adaptive management measures for each of the potential impacts identified as Project risks.

**Table 4: Potential impacts and proposed mitigation measures for CPW during and post-construction**

| Potential impact | Risk before mitigation measures | | | Management objective / desired outcome | Scientific, ecological and /or budgetary uncertainties that may prevent desired outcome | Management action/ mitigation measure | Residual risk after mitigation | Trigger, detection/ monitoring activity | Adaptive implementation measures/ corrective actions |
|---|---|---|---|---|---|---|---|---|---|
| | Likelihood | Consequence | Risk | | | | | | |
| **During construction** | | | | | | | | | |
| Clearing of remnant vegetation beyond approval footprint | Possible | Major | High | To ensure that no clearing occurs beyond the approved footprint | Failure to check clearing limits | • All staff are to be inducted and aware of sensitive ecological areas, including the location and boundaries of all conservation areas (Figure 1).<br>• Temporary and permanent protective fencing and signage must be erected around all areas identified for retention (conservation areas) prior to commencement.<br>• For trees located on the perimeter of the conservation areas, the temporary protective fencing should be placed around the drip line of the tree to exclude impacts within this area.<br>• The Tree Clearing Protocol (Appendix 2) is to be implemented for all vegetation clearing. | Low | • Staff induction & training records<br>• Daily, weekly inspection of exclusion fencing<br>• Incident reports | • Fence repair<br>• Restoration of damaged vegetation/ habitat |
| Weed dispersal and introduction throughout the site | Possible | Moderate | Medium | To prevent the introduction and spread of invasive weeds within conservation areas | Not undertaking daily inspections and cleaning of vehicles and equipment during weed control activities | • Prior to entering and leaving the site, all vehicles and equipment involved in clearing and weed removal works must be cleaned to remove soil and plant material (Refer to Hygiene Protocol – Appendix 3).<br>• During vegetation clearing and weed removal, weed species must be stockpiled separately and disposed of at an appropriate waste disposal facility. | Low | • Pre-start checklists<br>• Daily vehicle checks<br>• Weekly inspection records<br>• Incident reports | • Weed control and monitoring of conservation areas |
| Introduction of soil pathogens to conservation areas (including *Phytophthora* spp.) | Possible | High | High | To prevent the introduction of soil pathogens to conservation areas | Not undertaking daily inspections and cleaning of vehicles and equipment | • Prior to entering and leaving the site, all vehicles and equipment involved in construction, clearing and weed removal works must be cleaned to remove soil and plant material (Refer to Hygiene Protocol – Appendix 3).<br>• Implementation of Erosion and Sediment Control Measures (ESCP – Appendix 4). The ESCP will be approved by Penrith City Council prior to the issue of a Construction Certificate. | Low | • Pre-start checklists<br>• Daily vehicle checks<br>• Weekly inspection records<br>• Incident reports | • Monitoring of conservation areas and chemical treatment of any Phytophthora outbreaks |
| Erosion and sedimentation impacting conservation areas | Possible | High | High | To prevent erosion and sedimentation impacting conservation areas | Not checking sedimentation traps on a regular basis, or after heavy rainfall, and repairing any ineffective barriers | • Implementation of Erosion and Sediment Control Plan (ESCP – Appendix 4). | Low | • Post rainfall site inspections<br>• Weekly inspections<br>• Erosion and sediment control fences | • Repair to sediment control fences<br>• Restoration of damaged vegetation/ habitat |
| Deposition of dust inhibiting growth and the health of native plants in the conservation areas | Possible | Moderate | Medium | To prevent high levels of dust that may inhibit the growth and health of native vegetation to be retained | Not implementing Dust Control Plan | • Implementation of Dust Management Control Plan (Appendix 5). The Dust Management Plan will be approved by Penrith City Council prior to the issue of a Construction Certificate or Subdivision Works Certificate | Low-medium | • Checks of water cart usage records<br>• Checks of haul vehicles being covered<br>• Monitoring of stockpiles<br>• Incident reports | • Increase use of water cart<br>• Reduce activity on windy days |
| Spread of litter and waste to conservation areas | Possible | Moderate | Medium | To prevent the spread of litter and rubbish across the development site and into conservation areas and waterways | Not implementing management actions and commitments | • The work site will be maintained free of rubbish and monitored daily to ensure compliance.<br>• Bins and waste storage units are to be located away from riparian zones and regularly emptied. | Low | • Bins and waste storage units not exceeding 100% capacity<br>• Incident reports<br>• Weekly inspections<br>• Monthly audits | • Increase number of rubbish bins, frequency of emptying bins |

| Potential impact | Risk before mitigation measures | | | Management objective / desired outcome | Scientific, ecological and /or budgetary uncertainties that may prevent desired outcome | Management action/ mitigation measure | Residual risk after mitigation | Trigger, detection/ monitoring activity | Adaptive implementation measures/ corrective actions |
|---|---|---|---|---|---|---|---|---|---|
| | Likelihood | Consequence | Risk | | | | | | |
| **Post-construction** | | | | | | | | | |
| Increased access and recreational use of conservation areas resulting in damage to native vegetation | Highly likely | High | High | To avoid recreational use of conservation areas | Insufficient funds allocated in the VMP for human exclusion and site protection | • Temporary or permanent protective fencing and signage must be erected around all areas identified for retention (conservation areas) prior to commencement.<br>• Conservation areas will be identified as “no go” areas during construction and included on the Environmental Control Map.<br>• Provision of active open space areas<br>• Signage at the open space access points requiring passive recreation to be restricted to provided walking paths. | Low | • Annual monitoring and reporting | • Increase presence at conservation areas to undertake enforcement action if required |

# 4. Environmental management measures and performance criteria

## 4.1 Implementation of management actions and performance measures

Table 5 details the requirements for implementation of the management measures to meet management objectives, performance targets and indicators. As well as monitoring and the identification of responsibilities and timeframes for implementation of measures.

**Table 5: Management actions to protect ecological communities, flora, fauna and waterways**

| Management objective / outcome | Performance target / completion criteria | Management action /measure | Performance indicators | Monitoring activity | Responsibility | Timing and frequency |
|---|---|---|---|---|---|---|
| **To ensure that construction works are completed in accordance with project approvals to minimise negative impacts to retained Protected Matters** | No disturbance to or clearing of any vegetation or habitat beyond the approved Project footprint | • All staff are to be inducted and aware of environmentally sensitive areas (as indicated on Environmental Control Map), including the location of conservation areas containing CPW and, for relevant staff, tree clearing protocol. | • Weekly inspection of fencing and any unauthorised disturbance of conservation areas<br>• Incident reports | • Staff training and induction undertaken & records retained<br>• Toolbox talks undertaken<br>• Pre-start meetings held<br>• Up to date Environmental Control Map<br>• Incident reports acted on<br>• Records of daily, weekly inspection of signage and fencing and issues rectified as necessary | • Project Manager<br>• Site Supervisor | At all times |
| **To prevent any inadvertent damage to retained Protected Matters** | Protective fencing around conservation areas maintained at all times | • Temporary or permanent protective fencing must be erected around all areas identified for conservation (conservation areas), and any trees identified for retention or salvage, prior to clearing activities commencing to minimise any inadvertent damage. | • Weekly inspection of fencing and any unauthorised disturbance of conservation areas<br>• Incident reports | • Staff training and induction undertaken & records retained<br>• Toolbox talks undertaken<br>• Pre-start meetings held<br>• Up to date Environmental Control Map<br>• Incident reports acted on<br>• Records of daily, weekly inspection of signage and fencing and issues rectified | • Project Manager<br>• Site Supervisor | Pre-construction |
| **To prevent injury or death of threatened fauna during clearing** | No death or injury of threatened fauna species during vegetation clearing | • The Tree Clearing Protocol (Appendix 2) is to be implemented for any tree clearing.<br>• Hollow-bearing trees that potentially contain roosting and breeding habitat for threatened microbats or other fauna must be identified by a suitably qualified ecologist. These trees should be retained wherever possible. Removal should follow the Tree Clearing Protocol as identified in Appendix 2.<br>• All trees identified as "to be retained" within the clearing area following project ecologist pre-clearing review, will be clearly marked onsite, with an easily visible and removable means of identification. | • Pre-clearing reports<br>• Incident reports | • Daily tree clearing reports<br>• Trees to be retained identified on Environmental Control Map | • Project Manager<br>• Site Supervisor<br>• Ecologist | Pre-clearing and during clearing |
| **To increase habitat values in conservation areas** | Fauna habitat features retained on-site or salvaged for reuse in conservation areas | • Any trees, or parts thereof, that would be appropriate for use as fauna habitat, (such as hollow limbs/logs) are to be identified by a suitably experienced ecologist when undertaking supervision of clearing of hollow-bearing trees, and salvaged for re-use within the on-site conservation areas, where possible and appropriate. | • Pre-clearing reports | • Woody material salvaged and relocated to conservation areas Monitoring and annual reports | • Project Manager<br>• Site Supervisor<br>• Ecologist | During clearing |
| **To prevent the introduction and spread of invasive weeds to conservation areas** | No weed dispersed or introduced to conservation areas as a result of construction activity | • Prior to entering and leaving the site, all vehicles and equipment involved in clearing and weed removal works should be cleaned to remove soil and plant material (Refer to Hygiene Protocol – Appendix 3).<br>• During vegetation clearing and weed removal, weed species are to be stockpiled separately and disposed of at an appropriate waste disposal facility. | • Daily checks of vehicles<br>• Weekly inspection records Incident reports<br>• Monitoring and annual reports that assess weed cover | • Pre-start checklists completed<br>• Daily checks of vehicles undertaken as determined by retained records<br>• Incident reports acted on<br>• Monitoring and annual reports completed | • All Staff | At all times during clearing |
| **To prevent the introduction of soil pathogens to conservation areas** | No soil pathogens introduced to conservation areas as a | • Prior to entering and leaving the site, all vehicles and equipment involved in construction, clearing and weed removal works must be cleaned to remove soil and plant material (Refer to Hygiene Protocol – Appendix 3). | • Daily checks of vehicles<br>• Weekly inspection | • Pre-start checklists completed<br>• Daily checks of vehicles undertaken as determined by retained records<br>• Incident reports acted on | • All Staff | At all times during clearing |

| Management objective / outcome | Performance target / completion criteria | Management action /measure | Performance indicators | Monitoring activity | Responsibility | Timing and frequency |
|---|---|---|---|---|---|---|
| | result of construction activity | • Implementation of Erosion and Sediment Control Plan (ESCP – Appendix 4). The ESCP will be approved by Penrith City Council prior to the issue of a Construction Certificate or Subdivision Works Certificate. | records Incident reports<br>• Monitoring and annual reports that assess weed cover | • Monitoring and annual reports completed | | |
| **To prevent erosion and sedimentation impacting conservation areas** | No oil, fuel or chemical spills<br>No pollution (including sedimentation) of water bodies and riparian areas within and offsite | Erosion and sediment control methods listed in the ESCP will be installed prior to construction commencing and will include:<br>• Minimise areas of bare soil wherever possible through phasing of works and covering and stabilising<br>• Create stabilised site access and egress with vehicle cleaning bay and rattle grids to reduce the likelihood of vehicles tracking soil materials onto public roads<br>• Install catch drains or staked straw bales upslope of the area to divert rain and surface waters from outside the site away from the site<br>• Install sediment controls downslope at the site to capture sediments from the works from going offsite<br>• Soil stockpiles and concrete washout are to be located away from waterways and drainage lines<br>• Soil stockpiles are to be covered and stabilised, and to be protected from sediment runoff by a catch drain constructed along uphill sides and a suitable silt fence or sediment trap constructed on the downhill sides<br>• Rock wrapped in geofabric or straw bales to be installed in or around any stormwater drainage inlet<br>• Monitor and maintenance of all erosion and sediment controls to be undertaken daily<br>• Concrete is to be washed-out in designated concrete wash-out area lined with suitable material and bunded to avoid release of washout materials.<br>Roads surrounding each part of the on-sites conservation areas are to be fully curbed and guttered with piped stormwater management infrastructure to ensure that stormwater will not flow into the conservation areas. | • Monitoring and maintenance of all erosion and sediment controls to be undertaken daily<br>• Concrete washout bay and waste storage areas are to be monitored regularly and washout and waste to be disposed of to an appropriately licenced waste facility | • Weekly inspections<br>• Erosion and sediment control fences<br>• Post rainfall site inspection records | • All Staff | At all times |
| **To prevent high levels of dust that may inhibit the growth and health of vegetation** | No deposits of dust affecting plant health in offset areas as a result of construction activity | Implementation of Dust Management Control Plan (DMCP) (Appendix 5)<br>Dust control methods listed in the DMCP will include:<br>• Stabilised site access and egress with vehicle cleaning bay and rattle grids to reduce the likelihood of vehicles tracking soil materials onto public roads<br>• Minimise areas of bare soil (including stockpiles) wherever possible through phasing of works and covering and stabilising with suitable materials. | • Water cart usage records<br>• Covering of haul vehicles<br>• Monitoring of stockpiles<br>• Incident reports<br>• Monitoring and annual reports that assess vegetation health and condition | • Staff training and induction records Toolbox talks records Pre-start meetings Weekly inspection records Incident reports | • Project Manager<br>• Site Supervisor | At all times |
| **To prevent the spread of litter and waste to conservation areas** | The work site will be maintained free of rubbish and monitored daily to ensure compliance | • The work site will be maintained free of rubbish and monitored daily to ensure compliance.<br>• Bins and waste storage units are to be located away from riparian zones and regularly emptied. | • Weekly inspection of bins<br>• Incident reports<br>• Monthly audits | • Weekly inspections undertaken<br>• Bins and waste storage units not exceeding 100% capacity<br>• Incident reports acted on<br>• Monthly audits completed<br>• Monitoring and annual reports | • Project Manager<br>• Site Supervisor<br>• All Staff | At all times |
| **To prevent the risk of spills of hazardous materials across development site and into conservation areas** | | • Staff will be trained in incident response plan, including spills management<br>• All hazardous material, including hydrocarbons (fuels) will be securely stored in a designated storage area away from water bodies and riparian zones.<br>• Spill kits will be provided, including in designated vehicles and all operators trained in their use.<br>• Location of hazardous materials, storage locations and spills equipment are to be included within the Environmental Control Map | • Visual monitoring will be undertaken during the works to detect any fuel or chemical spills. If any | • Incident response plan training undertaken by all staff<br>• All hazardous materials stored in designated location<br>• Location of hazardous materials and spills equipment included on the Environmental Control Map | • Project Manager<br>• Site Supervisor | At all times |

| Management objective / outcome | Performance target / completion criteria | Management action /measure | Performance indicators | Monitoring activity | Responsibility | Timing and frequency |
|---|---|---|---|---|---|---|
| | | • Vehicles and plant will be refuelled and serviced off site wherever practical<br>• | spills or turbidity plumes are observed, works will be stopped immediately, and the incident response plan implemented | | | |
| **To avoid potential indirect impacts to fauna from lighting directed into conservation areas** | | • Work involving the use of machinery of any description will only be carried out In daylight hours<br>• Lighting to comply with Australian Standard 4282 – Control of the obtrusive effects of outdoor lighting.<br>• Position and direct lights away from conservation zones and outside site boundaries. | • Checking of position and angle of lights installation of street lighting | • Lighting complies with Australian Standard 4282 – Control of the obtrusive effects of outdoor lighting | • Project Manager<br>• Site Supervisor | At all times |
| **To avoid potential indirect impacts to fauna from excessive construction noise** | | • Work involving the use of machinery of any description will only be carried out as per the approved hours from Penrith City Council<br>• All plant and equipment to be maintained and operated as per manufacturer's specifications and to be inspected prior to work. Any faulty plant or equipment is be stood down until repaired.<br>• Limit idling and revving of engines on mobile and stationary machines and shut down any equipment not in use.<br>• Limit the use of horns or other audible signals on mobile equipment to the maximum practical extent.<br>• Promptly respond to complaints and modify practices. | • Pre-start checklists<br>• Maintenance logbooks<br>• Incident reports<br>• Random Checks | • Pre-start checklists completed Maintenance logbooks maintained<br>• Incident reports acted on<br>• Random Checks undertaken | • Project Manager<br>• Site Supervisor<br>• All staff | At all times |
| **To avoid, reduce potential for roadkill of native wildlife in action area** | No road deaths or injuries of native wildlife in action area during construction | • Construction Phase<br>▪ Construction traffic to utilise clearly defined access and egress points to and from the development site that avoid conservation areas<br>▪ Construction traffic within the development site to keep to designated routes where possible<br>▪ Parking and equipment and material laydown areas to be located away from conservation areas<br>▪ Construction traffic is to adhere to construction zone speed limits across the site<br>▪ Exclusion fencing will be installed prior to site works commencing to delineate the limit of areas impacted by the works and accessible by construction traffic<br>• Operational Phase<br>▪ Local roads will have speed limit restrictions of 50km/h<br>▪ Perimeter roads and roads adjacent to conservation areas will be signposted to alert road users to possible presence of native wildlife<br>▪ Roadside vegetation adjacent to conservation areas will be managed to minimise the height of ground cover and therefore increase the visibility of any roadside fauna | • Staff induction training to include recognition of native wildlife<br>• Daily inspection of work area for presence of native wildlife<br>• Daily /weekly inspection of offset area fencing<br>• Pre-clearance survey | • Records of staff training/induction<br>• Fence inspection reports<br>• Records of observations of native wildlife in action area during construction activities | • Project Manager<br>• Site Supervisor<br>• All staff | At all times |

# 5. Monitoring

This CEMP includes a comprehensive monitoring program to ensure that management commitments are effectively implemented, and any incidents of non-compliance are detected, and appropriate corrective actions developed and implemented as part of an adaptive management program.

The Project Manager will be responsible for ensuring that all staff induction and training programs are implemented, and all monitoring requirements are undertaken (Section 0 Roles and Responsibilities).

The purpose of the monitoring program is to ensure that the CEMPs objectives and completion criteria (Table 4 and Table 5) are met and the action is completed.

## 5.1 Monitoring and non-compliance

Regular environmental inspections are to be undertaken of all work activities being carried out at the Project site. Inspection will be carried out in conjunction with personnel responsible for a particular work area and will include the following:

- Weekly inspections of key environmental issues recorded on an Environmental Site Inspection Checklist (Appendix 6). Site supervisory staff as part of their daily duties will conduct daily inspections of the site (incl. all subcontractor activities), and issues noted in daily diaries if applicable. Near misses or non-compliances will be investigated, documented and reported with appropriate corrective action taken and documented.
- Site inspections. One formal inspection by the Project Manager, prior to commencing work to ensure areas of CPW are suitably identified and protected with exclusion fencing. This is to be recorded on an Environmental Site Inspection Checklist (Appendix 6). Near misses or non-compliances will be investigated, documented and reported with appropriate corrective action taken and documented within clearly defined timeframes.
- Monthly audits. Monthly audits by the Environmental Manager, recorded on a monthly audit Checklist will be undertaken. Near missis or non-compliances will be investigated, documented and reported with appropriate corrective action taken and documented within clearly defined timeframes.

Where a site or operational condition does not comply, a Corrective Action Report (CAR) is to be completed and actioned (Appendix 6). A CAR for any non-compliance is to be actioned no later than within three (3) working days of receiving confirmation of the noncompliance. In some instances, further investigation or monitoring may be required to establish whether the CEMP has been adequately implemented, or whether the work is compliant with relevant legislation, guidelines and statutes. In these instances, an independent party, such as an Environmental Auditor, may need to carry out the investigation or monitoring.

The notification to the relevant authority of any emergency or incident which results in the loss or damage to Protected Matters, the release of contaminants and subsequent pollution to water, air or land, should include the following information.

- The location of the emergency or incident
- The name and telephone number of the designated contact person

- The time of the release
- The time the incident occurred
- The suspected cause of the release
- The environmental harm caused, threatened, or suspected to be caused by the release
- Actions taken to prevent any further release and mitigate any environmental harm caused by the release.

## 5.2 Records management and reporting

Accurate and complete compliance records must be maintained. The following records and reports (as detailed above) must be kept on-site:

- All environmental training records, including signed and dated:
  - Environmental inductions
  - Environmental toolbox talks
  - Pre-start meetings.
- All fauna pre-clearing records
- Weekly environmental inspection reports
- Monthly CEMP audit reports (internal and external, if necessary)
- All compliance reports
- All non-conformances and incidents reports
- Corrective Action Reports.

Table 6 details the reporting requirements including: report type, timing, content, who it is prepared by and for and any relevant document control procedures.

**Table 6: Reporting requirements**

| Report type | When to prepare report | Who prepares report | Who the report is prepared for | Document control procedure | Content |
|---|---|---|---|---|---|
| Incident report - internal | Internally - within 24 hours of incident | Site Supervisor/ Environmental Manager | Environmental Manager/Project Manager | To be reviewed and signed by each party | • Location of the emergency or incident<br>• Name and telephone number of the designated contact person<br>• Time the incident occurred<br>• Suspected cause of the incident<br>• Environmental harm caused, threatened, or suspected to be caused by the release/incident<br>• Actions taken to prevent any further incident and mitigate any environmental harm caused by the incident. |

| | | | | | |
|---|---|---|---|---|---|
| Non-conformance/ incident report - to the Department | Notification to the Department within 2 working days; details to be provided within 10 working days | Environmental Manager/Project Manager | The Department | To be reviewed and signed by each party | • Any corrective action or investigation which has already been taken or intends to be taken in the immediate future<br>• The potential impacts of the incident or non-compliance<br>• The method and timing of any remedial action that will be undertaken. |
| Weekly Environmental Site Inspection report | Weekly | Environmental Manager | Site Supervisor and Project Manager | To be reviewed and signed by each party | As per template in Appendix 6 |
| Monthly Environmental Audit | Monthly | Environmental Manager | Site Supervisor and Project Manager | To be reviewed and signed by each party | |
| Corrective Action Report | To be completed and actioned within 3 working days of receiving confirmation of the noncompliance. | Environmental Manager | Site Supervisor and Project Manager | To be reviewed and signed by each party | As per template in Appendix 6 |
| Annual Compliance Report | At the conclusion of each 12 month period following commencement of construction | Environmental Manager | Site Supervisor, Project Manager, Lendlease Management and the Department. | To be reviewed and signed by each party | • Summary of all weekly, monthly (internal and external) compliance reporting undertaken<br>• Description of all non-compliances/incidents<br>• Details of all corrective actions implemented. |

## 5.3 Annual compliance reporting

Compliance reporting will be prepared for each 12 month period following the commencement of the action. Compliance reporting will include:

- Publishing of each compliance report on the site owner's website within 60 business days following the relevant 12 month period
- Notifying the Department by email that a compliance report has been published on the website within five business days of the date of publication
- Keeping all compliance reports publicly available on the website until the Project's approval expires
- Excluding or redacting sensitive ecological data from compliance reports published on the website

- 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.

Notification to the Department must occur as soon as practical, and no later than two business days of any incident, non-compliance with the conditions of approval or non-compliance with the commitments made in the plan.

This notification must provide the Department with the details of any incident, non-compliance with the conditions of approval or non-compliance with the commitments made in the plan as soon as practical, and no later than 10 business days specifying:

- Any corrective action or investigation which has already been taken or intends to be taken in the immediate future
- The potential impacts of the incident or non-compliance
- The method and timing of any remedial action that will be undertaken.

# 6. Roles and responsibilities

## 6.1 Environmental management roles and responsibilities

Key environmental management roles and responsibilities are described in Table 7.

**Table 7: Environmental management roles and responsibilities**

| Role | Responsibilities | Reports to |
|---|---|---|
| Project Manager | • Ensure all works comply with relevant regulatory and Project requirements<br>• Ensure the requirements of this CEMP are fully implemented<br>• Ensure all personnel and contractors have completed a site induction and orientation<br>• Ensure all approval reporting and review requirements are met<br>• Provide adequate resources (personnel, financial and technological) to ensure effective development, implementation and maintenance of this CEMP<br>• Ensure that all personnel receive appropriate induction training including details of the environmental and community requirements<br>• Liaise with government authorities as required<br>• Stop work immediately where there is an actual or potential risk of harm to the environment. | Lendlease Management |
| Site Supervisor | • Plan construction works in a manner that avoids or minimises impact to environment<br>• Ensure the requirements of this CEMP are fully implemented<br>• Ensure construction personnel manage construction works in accordance with statutory and approval requirements<br>• Ensure environmental management procedures and protection measures are implemented<br>• Ensure all project personnel attend an induction prior to commencing works<br>• Stop work immediately where there is an actual or potential risk of harm to the environment<br>• Implement corrective action reports | Project Manager |
| Environmental Manager | • Conduct site environmental inspections<br>• Investigate and review non-conformance and identify, implement and monitor corrective and preventative actions<br>• Prepare written CARs<br>• Maintenance of training, non-conformance and complaints registers<br>• Undertake or coordinate environmental monitoring events<br>• Undertake scheduled and non-scheduled environmental audits. | Project Manager |
| Project ecologist | • Conduct Pre-clearing Assessment in accordance with Appendix 2 identifying and marking suitable habitat trees<br>• Manage fauna during tree clearing in accordance with the Tree Clearing Protocol (Appendix 2)<br>• Possess suitable fauna licences and permits<br>• Provide tree clearing report upon completion of clearing. | Project Manager |

## 6.2 Environmental training

To ensure that this CEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of this CEMP. The following environmental training will be undertaken.

### 6.2.1 Environmental induction

All personnel, including sub-contractors, are required to attend a compulsory site induction that includes an environmental component prior to commencing work on-site. The Project Manager (or delegate) will conduct the environmental component of the site induction. The environmental component will include an overview of:

- Relevant details of the CEMP including purpose and objectives
- Key environmental issues in the Project area, i.e. protection of sensitive areas, erosion and sediment control, pre-clearance protocol, vehicle hygiene and fauna awareness
- Conditions of environmental approvals
- Specific environmental management requirements and responsibilities
- Mitigation measures for the control of environmental issues
- Environmental incident responses
- Location of environmental sensitivities (Environmental Control Map).

A record of all environment inductions will be maintained and kept on site.

### 6.2.2 Pre-start meetings

Pre-start meetings will be used to raise awareness and educate personnel on construction related environmental issues. They occur at the beginning of each project or major work zone with representatives such as project manager, site supervisor and leading hands. The pre-start meetings will be used to ensure environmental awareness continues throughout the various stages of the construction period.

Pre-start meetings will be tailored to specific environmental issues including:

- Vegetation clearing controls
- Fauna management
- Biodiversity values and conservation areas
- Erosion and sedimentation control
- Weed management
- Hygiene protocol
- Concrete washout
- Noise
- Housekeeping and waste
- Dust control
- Emergency and spill response.

Pre-start meeting attendance is mandatory, and attendees are required to sign an attendance form and the records maintained.

### 6.2.3 Toolbox talks

Toolbox talks are a tool for informing the workforce (including all sub-contractors) of the day's activities, safe work practices, environmental protection practices, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the day's work.

The daily toolbox talk will be conducted for the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Toolbox talks may be project-wide and/or held for specific work areas. The environmental component of toolbox talks will include any environmental issues that could potentially be impacted by, or impact on, the day's activities. All attendees will be required to sign on to the toolbox talk and acknowledge their understanding of the issues explained.

Toolbox talk topics, dates delivered, and a register of attendees will be recorded, and the records maintained.

## 7. Emergency contacts and procedures

Emergency contacts are shown in Table 8.

**Table 8: Emergency contacts**

| Issue | Staff/ organisation | Contact name | Contact number |
|---|---|---|---|
| Spills | Project Manager<br>Site Supervisor | To be appointed<br>To be appointed | To be appointed<br>to be appointed |
| Pollution incidents | Penrith City Council | - | (02) 4732 7777 |
| Wildlife injury | Project Ecologist<br><br>Wildlife Information Rescue & Education Service (WIRES) | To be appointed | To be appointed<br><br>1300 094 737 |
| Fire and other emergencies | Fire and Rescue NSW, Ambulance, Police | - | 000 |

The wildlife injury procedure is included in Appendix 7.

## 8. Review and audit

In accordance with this CEMP Lendlease Communities must ensure that reviews of the CEMP are undertaken as well as independent audits of compliance with the conditions or commitments made in all management plans, if requested in writing by the Minister or as required according the conditions of approval.

Following any audit, the CEMP may be reviewed and updated where necessary. The CEMP will also be reviewed and updated after any significant changes to design or construction methods. The review would be undertaken by the Environmental Manager (as described in Table 7). A copy of the CEMP will be kept on site at all times.

As described in section 5.1, monthly audits would be undertaken internally by the Environmental Manager. Near misses or non-compliances will be investigated, documented and reported with appropriate corrective action taken and documented within clearly defined timeframes.

Where a site or operational condition does not comply, a Corrective Action Report (CAR) is to be completed and actioned (Appendix 6). In some instances, further investigation or monitoring may be required to establish whether the CEMP has been adequately implemented, or whether the work is compliant with relevant legislation, guidelines and statutes. In these instances, an independent party, such as an Environmental Auditor, may need to carry out the investigation or monitoring.

A summary of the review and audit requirements are provided in Table 9 below.

**Table 9: Review and audit procedures**

| Task | Timing/trigger | Process/input | Action | Responsibility |
|---|---|---|---|---|
| Monthly audit (internal) | • Monthly | Review all reporting documents for near misses and/or non-compliance including:<br>• Daily diary entries of Site Supervisor<br>• Weekly site inspection reports<br>• Results of site inspection prior to works commencing<br>• Monthly audits by Environmental Manager. | • Prepare Corrective Action Report<br>• Update CEMP (if necessary)<br>• Contact the Department for advice regarding external audit requirements (if necessary)<br>• Prepare report on result of audit. | Environmental Manager |
| CEMP review (internal) | • Following significant environmental incidents<br>• Following significant changes to design/ construction<br>• Annually | Review all reporting documents for near misses and/or non-compliance including:<br>• Daily diary entries of Site Supervisor<br>• Weekly site inspection reports<br>• Results of site inspection prior to works commencing<br>• Monthly audits by Environmental Manager. | • Update CEMP as required<br>• Contact the Department for advice regarding requirements for external review<br>• Prepare summary report on result of review. | Environmental Manager |
| Audit (external) | • Following significant environmental incidents | Review audit/review/incident reports made by Environmental Manager | | External Environmental |

| | | | | |
|---|---|---|---|---|
| | | | | Auditor/ the Department |

## References


Commonwealth of Australia (2014). Environmental Management Plan Guidelines.

Commonwealth of Australia (2015). Arrive Clean, Leave Clean.

Eco Logical (2019). Mount Gilead Residential Development Construction Environmental Management Plan (EPBC2015/7599). and Biodiversity Conservation Act 1999. Prepared for Lendlease Communities (Mt Gilead) Pty Ltd.

Landcom (2004). Managing Urban Stormwater: Soils and Construction.

Niche (2020). Lot 1 DP1226122 Werrington Vegetation Management Plan. Report prepared for Lendlease Communities (Werrington) Pty Ltd, January 2020.

Niche (2020). 16 Chapman Street Werrington EPBC Preliminary Documentation Assessment Draft Report (EPBC Ref: 2019/8552). Draft Report prepared for Lendlease Communities (Werrington) Pty Ltd, March 2020.

# Appendix 1 – Proposed Avoidance, Mitigation and Management Measures included in the Preliminary Documentation Report

Measures to avoid, reduce/manage impacts as provided in the Referral are detailed below and have been updated to include:

- a more detailed assessment of indirect impacts
- implementation of buffer zones
- re-calculation of areas of direct and indirect impact
- re-calculation of quantum of biodiversity offsets required.

## 8.1 Avoidance of impact

Approximately 0.69 hectares of the CPW at the site is to be retained, managed and rehabilitated within a protected 1.2 hectare reserve in the north of the site (Figure 1). This area constitutes land zoned as E2 Environmental Conservation (PCC 2010).

Similarly, a 0.86 hectare patch of CPW will be retained and managed within the 1.8 hectare open space recreation area. This area has been retained in line with the aims and objectives of the DCP "To conserve the biodiversity of the site by incorporating woodland areas into the open space system and protecting riparian corridors" (PCC 2014), and also the principle of avoiding impacts to biodiversity.

It is acknowledged that the retained CPW in these areas will be subject to edge effects and indirect impacts (altered light and water regimes, pedestrian access, weed invasion, rubbish dumping, litter, etc.). These indirect impacts to the CEEC have been taken into consideration in calculation of impacts areas and the requirement to offset impacts to retained vegetation.

The VMP and CEMP for the site were developed with the aim of avoiding/mitigating/managing direct and indirect impacts to CPW within these spaces and are discussed below.

## 8.2 Reduce/manage impact

The VMP and CEMP have been specifically developed to address and manage potential direct and indirect impacts to retained areas of CPW at the site.

Potential indirect impacts may include:

- the introduction of weeds and exotic species
- the spread of litter and rubbish
- introduction of domestic animals (cats and dogs)
- increased disturbance from pedestrian access
- runoff from construction containing nutrients, sediments and other pollutants
- inappropriate water, sewer and stormwater management leading to erosion
- recreational use of open space adjacent to conservation areas
- recreational use of conservation areas.

Within the Project area, perimeter roads are located along the edges of the proposed conservation and open space areas, with the exception of the eastern end of the open space recreation area, where residential lots are located adjacent to the space. This decreases the likelihood of illegal encroachment into native vegetation by future residents, thus removing the chance of degradation through illegal clearing,

weed invasion, garden escapes, fires and predation by domestic animals. It also allows for the required Bushfire Asset Protection Zones (APZs) to be absorbed (i.e. overlap with) the perimeter roads and the dwelling setback within the individual lots. Minimal clearing or modification of vegetation will be required to create or maintain the APZ's for the Project. However, the APZ located adjacent to the proposed residential lots in the RE1 recreational area, Figure 4, is included in the 30 metre buffer zone and impacts to this vegetation have been included in the impact assessment. Similarly, impacts to native vegetation in the APZ in the E2 Conservation zone have been included in the impact assessment.

Prior to construction, exclusion fencing and tree protection (for those trees on the boundaries of the VMP areas) will be established to prevent unintended clearing/access within areas subject to the VMP. Post-construction, all areas subject to the VMP (Figure 4), will be fenced to prohibit human and vehicular access. Interpretive signage "*Cumberland Plain Woodland Conservation Area*" would be installed at a number of locations around both areas to inform the community about the presence and value of CPW in the area.

The VMP includes an intensive two-year period of weed management and suppression, re-vegetation and re-habilitation works and monitoring, and then an on-going schedule of maintenance and monitoring including rubbish removal. Note, after the two-year maintenance period, Penrith City Council will become the owners of these lots and be responsible for their long-term management and conservation.

Implementation of the VMP will ensure biodiversity values within the areas of retained CPW at the site will be, at the minimum maintained and at best improved.

The CEMP also specifically outlines measures to minimise direct and indirect impacts to areas of retained native vegetation throughout the construction of the Project.

Key management actions to be implemented to mitigate/manage indirect impacts to CPW during and post-construction will be:

- Environmental inductions for all personnel working on site regarding the controls within the CEMP and value of the retained areas of CPW.
- Establishment of protection and exclusion fencing around whole VMP area (extending around the drip-line of trees located on the periphery of the conservation areas) prior to construction.
- Installation of permanent fencing to exclude people and vehicles.
- Installation of signage around the perimeter of the conservation areas identifying them as "Cumberland Plain Woodland – Conservation Area".
- Implementation of erosion and sediment control plan.
- Prior to entering and leaving the site, all vehicles and equipment involved in clearing and weed removal works must be cleaned to remove soil and plant material (Refer to Hygiene Protocol in CEMP).
- During vegetation clearing and weed removal, weed species will be stockpiled separately and disposed of at an appropriate waste disposal facility.
- An emergency spill kit to be kept on site at all times. All staff are to be made aware of the location of the spill kit and trained in its use.
- Use of native species endemic to CPW within the landscape planting where possible.

The CEMP is adaptive to allow for implementation of appropriate contingency measures/corrective actions.

### 8.2.1 TEC Buffer zones

The DoTEE recommends that a 30 metre vegetated buffer is provided between the development zone and the edge of the ecological community to mitigate indirect impacts to retained areas of the community.

As shown in Figure 4 of the Preliminary Documentation Assessment Report (Niche 2020), 30 metre buffers comprising inner and outer zones have been provided to all retained CPW at the site. Indirect impacts to the vegetation within the inner buffer areas will be mitigated and managed through implementation of the CEMP and VMP. An allowance of a 20 per cent reduction in the quality of the CPW in this area has been included in the impact assessment on the basis of these mitigation measures.

As mentioned previously, the two conservation areas will be permanently fenced and actively managed in the long-term by Penrith City Council, who will take ownership of these lots after the initial two-year management and rehabilitation maintenance period. Implementation of the VMP over the long-term will minimise and mitigate any potential indirect impacts including weed establishment and growth, rubbish dumping, illegal tree removal and will assist in improving the existing condition of CPW within the reserve areas.

Any changes to surface runoff from the development area will be managed through the proposed stormwater infrastructure which will direct surface flows away from the offset sites and to the specifically designed stormwater detention basins downstream of the sites where water is filtered and ultimately is returned to the existing stormwater network. The stormwater design aims to ensure that post development peak discharges are equal to or less than pre-development discharges.

Recreational use of conservation areas will be prohibited and discouraged through fencing and signage.

### 8.2.2 Water Sensitive Urban Design Features

Inappropriate water, sewer and stormwater management presents potential risks to the integrity of the conservation areas. Water sensitive urban design (WSUD) is included in the basin design including:

- Gross Pollutant Traps strategically located at outlet of stormwater drainage systems
- Bio-retention (filtration) system located at the outlet of stormwater drainage system.

### 8.2.3 Flooding, stormwater and water quality

The stormwater design for the site involves the implementation of a treatment train approach to satisfy pre-determined stormwater quality objectives and includes rainwater tanks, Gross Pollutant Traps (GPTs) and bio-retention systems. In order to satisfy stormwater quality management objectives, stormwater detention structures will be provided adjacent to the proposed bio-retention systems in order to ensure that post-development peak discharges are equal to or less than predevelopment peak discharges.

Stormwater runoff for the site is captured within the stormwater system within the road network via curbs, pits and pipes and directed away from the conservation areas to detention basins downstream, prior to discharge into the existing stormwater network downstream of the site.

As a result of the above measures, no stormwater run-off is expected to enter conservation areas. Further, the CEMP includes measures to ensure that any impacts during the construction phase of the bio-retention basins is confined to the development footprint and will not extend into proposed conservation areas.

## 8.3 Offset impacts

The Project will impact on 4.58 hectares of CPW at the site. These residual impacts will need to be offset. As detailed within the referral, Lendlease are seeking support of an offset strategy that will allow some flexibility in satisfying offset obligations. In summary, these include:

1. Option 1: Purchasing credits from the NSW Department of Planning, Industry and the Environment's (DPIE) Biodiversity Credits Register; or payment of credit equivalence into the Biodiversity Conservation Trust Fund (BCF)
2. Option 2: Securing a land-based offset that meets the EBPC Act Environmental Offsets Policy and EPBC Act Offsets Assessment Guide (DSEWPC 2012) i.e. establishment of an offset site (or Biodiversity Stewardship site under the NSW Biodiversity Offsetting Scheme).
3. Option 3: A combination of the above two options.

Details regarding these three options are provided in the Referral and Preliminary Documentation Assessment Report (Niche 2020).

Note it is understood that a bi-lateral agreement between the NSW and Federal Governments for assessment of impacts to biodiversity is due for imminent approval and release. Under the new agreement, should it be possible for impacts to Commonwealth matters to be satisfied by payment of credits into the Biodiversity Conservation Fund (BCF), then Lendlease would consider this option for the Project.

The detailed offset strategy is provided in the *Preliminary Documentation Assessment Report: 16 Chapman Street Werrington* (Niche 2020).

## Appendix 2 – Fauna Pre-clearing Protocol

This Protocol provides methodologies regarding fauna pre-clearance and potential relocation for implementation during the removal of Habitat Trees.

**Qualifications of ecologist**

A suitably qualified fauna ecologist with experience relating to microchiropteran bats (micro-bats) and arboreal fauna will be required to be on site to supervise the felling of any hollow-bearing trees on-site. The ecologist must have a current Lyssavirus vaccination and hold a scientific licence from NSW Department of Planning, Industry and Environment (DPIE) to conduct flora and fauna surveys. This licence requires that all survey and incidental records are submitted to the DPIE for inclusion in their databases (primarily the Atlas of NSW Wildlife).

The ecologist is to take all appropriate hygiene pre-cautions before handling any fauna to prevent spreading diseases such as Chytrid disease or Beak and Feather disease.

**Pre-clearance survey**

Prior to clearing, all Hollow-bearing trees (HBTs) and trees with nests within the clearing footprint are to be clearly marked.

To minimise disturbance to fauna, vegetation removal would be undertaken following the staged habitat removal process considered best practice. An ecologist would be present during all stages of the habitat removal process to rescue and relocate any fauna as required. This process is as follows:

- Ecologist check all trees for removal especially those noted in earlier reports as having or possibly having habitat particularly hollows
- Ecologist with wildlife care training to be on site during habitat tree removal works.
- Ecologist to take photographs of the trees removed and any habitat.
- Habitat trees with hollows to be to dismantled in pieces so that hollows are retained and lowered gently. Pre-lowering the hollows are to be inspected and any wildlife relocated or the hollow to be retained in situ until wildlife can be relocated effectively.
- Hollows and habitat logs to be retained and stored on site for use in increasing habitat in the conservation areas.
- Ecologist to have current Animals Ethics license, 132c license and wildlife care training.
- Ecologist to write a report of trees removed and report any fauna seen/relocated/etc. Photos of fauna to be taken if possible.

Where fauna has not fled or does not seem likely to flee from a hollow the fauna ecologist will advise on the potential to block hollow exits and move the section of the HBT with the fauna to the conservation area where the exits can be unblocked and the animal left to exit and move on its own. Where this method of relocation is not considered acceptable by the fauna ecologist, the fauna ecologist will attempt to capture or encourage any un-injured fauna that is capable to move or relocate from the project site. If it proves difficult to remove an animal from a hollow, these trees/logs must be left on the ground overnight to give these animals a chance to relocate before the tree is mulched or moved. Typically, most fauna in this situation will have multiple roosts throughout the region and will vacate the hollow and move away from the subject site.

Any small and nocturnal fauna that are unable to relocate themselves, such as micro-bats, lactating females, will be captured, placed into an individual calico bag and then stored in cool location for release after dusk. Any captured fauna will be released into suitable habitat off site.

If an animal is injured during these works, the fauna ecologist will ensure that they receive the appropriate levels of care. Depending on the level of injury and status of the injured fauna, WIRES and/or the nearest veterinary clinic are to be contacted to retrieve to take the animal into care or to determine whether the veterinary staff are capable of caring for injured native animals.

**Retention of timber**

Native timber felled from the development footprint will be retained for use as habitat logs for ground dwelling reptiles and mammals within the conservation areas.

**Fauna pre-clearing records**

Records will be kept by the fauna ecologist detailing the results of any fauna encountered during clearing. The fauna ecologist will record species and numbers of fauna, including details on injuries, treatment, and relocation.

## Appendix 3 – Hygiene procedures for vehicles and machinery to control the introduction and spread of Phytophthora cinnamomic

**Guidelines taken from "Arrive Clean, Leave Clean. Commonwealth of Australia 2015"**

Undertake visual inspections to confirm that vehicles, plant and equipment and footwear, are free of clods of soil, slurry (water and soil mixture) and plant material.

Use facilities specifically designed for cleaning vehicles, plant and equipment and footwear.

**Vehicles, machinery and large equipment**

Use a wash-down facility for vehicles and machinery, pay particular attention to cleaning mud flaps, tyres and undercarriage.

Dispose of wash-down water so that it drains back into a low area away from waterways. If this is not possible, empty it into a waste container for responsible disposal offsite.

Do not allow mud and wash-down effluent to drain into bushland and surface waters, such as rivers, creeks, reservoirs and dams.

Don't drive through wash-down water.

**Footwear, small equipment and hand tools**

Set up a wash-down area for workers to wash and clean their footwear before entering and exiting the site.

To clean footwear, first use a hard brush or stick to remove as much mud, soil and organic matter as possible before disinfecting with a solution of 70% ethanol or methylated spirits in 30% water—applied through a spray bottle or a footbath.

Collect all removed mud, soil and organic matter in a bag or bucket, and keep it out of clean bushland.

# Appendix 4 – Erosion and Sedimentation Control Plan

**General Instructions**

1) The Principal Contractor will ensure that all soil and water management works are located as documented or as otherwise directed by the Environmental Manager.
   All work will be generally carried out in accordance with:
   a) Penrith City Council Requirements
   b) EPA requirements
   c) NSW department of housing manual "managing urban stormwater, soils and construction", 4th edition, March 2004.

2) The Principal Contractor will maintain the erosion control devices to the satisfaction of the Environmental Manager and Penrith City Council.

3) The Principal Contractor is to ensure all erosion & sediment control devices are maintained in good working order and operate effectively. Repairs and or maintenance will be undertaken as required, particularly following storm events.

**Land Disturbance**

4) Where practical, the soil erosion hazard on the site will be kept as low as possible. To this end, works should be undertaken in the following sequence:
   a) Install a sediment fence along the boundaries as shown on plan
   b) Construct stabilised construction entrance to location as determined by superintendent/engineer
   c) Install sediment basins as shown and install sediment traps as shown
   d) Undertake site development works in accordance with the engineering plans. Where possible, phase development so that land disturbance is confined to areas of workable size.

**Erosion Control**

5) During windy weather, large, unprotected areas will be kept moist (not wet) by sprinkling with water to keep dust under control.

6) Final site landscaping will be undertaken as soon as possible and within 20 working days from completion of construction activities.

**Sediment Control**

7) Stockpiles will not be located within 2 metres of hazard areas, including likely areas of concentrated or high velocity flows such as waterways. Where they are between 2 and 5 metres from such areas, special sediment control measures should be taken to minimise possible pollution to downslope waters, e.g. through installation of sediment fencing.

8) Any sand used in the concrete curing process (spread over the surface) will be removed as soon as possible and within 10 working days from placement.

9) Water will be prevented from entering the permanent drainage system unless it is relatively sediment free, i.e. the catchment area has been permanently landscaped and/or any likely sediment has been filtered through an approved structure.

10) Temporary soil and water management structures will be removed only after the lands they are protecting are stabilised.

11) Acceptable receptors will be provided for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter.

12) Any existing trees which form part of the final landscaping plan will be protected from construction activities by:
    a) Protecting them with barrier fencing or similar materials installed outside the drip line
    b) Ensuring that nothing is nailed to them
    c) Prohibiting paving, grading, sediment wash or placing of stockpiles within the drip line except under the following conditions:
        i. encroachment only occurs on one side and no closer to the trunk than either 1.5 metres or half the distance between the outer edge of the drip line and the trunk, whichever is the greater
        ii. a drainage system that allows air and water to circulate through the root zone (e.g. a gravel bed) is placed under all fill layers of more than 300 millimetres depth
        iii. care is taken not to cut roots unnecessarily nor to compact the soil around them.

## Appendix 5 – Dust Management Control Plan

The following strategies are suggested to minimise dust from this Project during the bulk earthworks stage:

- Optimise the haulage route on-site to minimise travel
- Minimise speed along haul road to 15km/hr on unsurfaced roads and 25km/hr on surfaced roads
- Use water cart regularly along hauls roads
- Keep a daily site log observing wind, rain, dust leaving the site, dust on flora and any actions where relevant
- Minimise the use of stockpiles, alternatively cover, seed or fence
- Ensure all trucks moving on/off site are covered
- As soon as practical, landscape/plant any disturbed areas that are completed.

## Appendix 6 – Environmental Inspection Checklist and Corrective Action Required

| Environmental Inspection Checklist- Werrington Residential Development EPBC | | Compliance (Yes or No) | Corrective Actions / Maintenance Required (and due date) | Corrective Actions / Maintenance Completed (Signature/date of responsible manager |
|---|---|---|---|---|
| **Site/ work zone inspected:** | | | | |
| **Time & Date:** | **Weather:** | | | |
| **Endangered Ecological Communities** | | | | |
| Loss or damage to vegetation in conservation areas as a resut of construction activity | | ☐ | | |
| Protective fencing/ barrier erected around all conservation areas | | ☐ | | |
| No damage to protective fencing/ barrier erected around all conservation areas | | ☐ | | |
| Weed species stockpiled separately from other waste | | ☐ | | |
| Vehicles/ plant entering and leaving site free of soil and weeds | | ☐ | | |
| Erosion and/or sedimentation impacting conservation areas | | ☐ | | |
| Deposition of dust impacting conservation areas | | ☐ | | |
| Spread of litter and/or waste into conservation areas | | ☐ | | |
| **Fauna** | | | | |

| | | | |
|---|---|---|---|
| Loss of fauna habitat beyond approval | ☐ | | |
| Habitat trees (with hollows and/or nests) to be retained clearly marked onsite | ☐ | | |
| Trees or parts thereof to be re-used within conservation areas salvaged and placed within conservation areas | ☐ | | |
| Tree clearing protocol is implemented for any tree clearing | ☐ | | |
| Injury of death of threatened fauna during clearing | ☐ | | |
| Road mortality of any threatened fauna during construction | ☐ | | |
| Dam dewatering protocol is implemented for any dam dewatering | ☐ | | |
| Evidence of fauna disturbance from excessive construction noise | ☐ | | |
| **Waterways** | | | |
| Hazardous materials/ fuels stored securely in designated storage area | ☐ | | |
| Spill kits are available on-site in designated areas (including near fuel /haz material storage and refuelling zones) and well stocked | ☐ | | |
| No evidence of any spills or turbidity plumes in receiving water | ☐ | | |
| Refuelling/ servicing of plant/ vehicles to occur off-site or in a designated area away from water bodies/ drainage lines | ☐ | | |
| Site and waterways are free of rubbish and wastes (except within designated waste receptacles) | ☐ | | |

| | | | | |
|---|---|---|---|---|
| Waste containers are not filled beyond capacity | | ☐ | | |
| Waste containers are located away from water bodies / drainage lines | | ☐ | | |
| Concrete wash-out area lined with suitable material / bunded and not filled beyond capacity | | ☐ | | |
| Erosion and sediment controls are in place as per the Erosion and Sediment Control Plan | | ☐ | | |
| No evidence of run off/ sedimentation downslope of any sediment controls or offsite | | ☐ | | |
| Other | | ☐ | | |
| | | ☐ | | |
| **Inspected by:** | **Signature:** | **Date:** | | |

## Appendix 7 – Wildlife Injury Procedure

Should threatened fauna be observed near the works area, then the following procedure should be followed:

1. Contact the site supervisor
2. The site supervisor reviews if the animal is at risk of being harmed

    - If yes, all works in the vicinity of the animal (works in other areas may continue) should be halted and the project ecologist contacted to conduct a “catch and release” in order to safely remove the animal from risk
    - If the animal is not at risk of being harmed, then works should be halted in the vicinity of the animal until it moves on (works may continue in other areas of the site). If the animal is not capable of moving on of its own, then the following steps should ensue.

If an animal is found within the site that is injured the following procedure should be implemented:

3. Contact the site supervisor
4. The site supervisor determines the most appropriate person to engage:

    - Project ecologist
    - The Wildlife Information and Rescue Services (WIRES), who will respond to all sick, injured or orphaned native wildlife queries.
5. If the injuries are too great for the animal to be relocated, then the animal should be taken to a WIRES Wildlife Carer or Veterinary Clinic.

## Contact Us

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**Illawarra**
**Coffs Harbour**
**Central Coast**
**Gold Coast**
**Canberra**



## Our services

**Ecology and biodiversity**
Terrestrial
Freshwater
Marine and coastal
Research and monitoring
Wildlife Schools and training

**Heritage management**
Aboriginal heritage
Historical heritage
Conservation management
Community consultation
Archaeological, built and landscape values

**Environmental management and approvals**
Impact assessments
Development and activity approvals
Rehabilitation
Stakeholder consultation and facilitation
Project management

**Environmental offsetting**
Offset strategy and assessment (NSW, QLD, Commonwealth)
Accredited BAM assessors (NSW)
Biodiversity Stewardship Site Agreements (NSW)
Offset site establishment and management
Offset brokerage
Advanced Offset establishment (QLD)