



Barangaroo Station

Fauna & Flora / Biodiversity Management Procedure

N217

BR COP

28 February 2023



Project overview

Project Site Address: Hickson Road Barangaroo NSW 2000	BESIX Watpac State Division Address: Level 24, 44 Market Street SYDNEY NSW 2000
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BESIX Watpac Approvals

Name	Role & Title	Signature	Date
██████████	Author / Planning & Environment Manager	██████████	28/02/2023
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Name	Role & Title	Signature	Date
[REDACTED]	Reviewer / Contractor's Representative	[REDACTED]	28/02/2023

Note: A controlled copy of the Fauna & Flora / Biodiversity Procedure will be distributed to the Sydney Metro Principal's Representative, Independent Certifier (IC) and other nominated stakeholders, and it will be made available to all BR COP employees and subcontractors in soft copy format through the project document control system.

This procedures, when printed, will be uncontrolled and it will the responsibility of each user to confirm the currency of the plan through the project document control system.

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1.1 Document Purpose

The purpose of the Flora and Fauna and / Biodiversity Procedure is to minimise the impacts of construction activities related to the Barangaroo Construct Only Package (BR COP) to flora and fauna.

1.2 Construction Overview

An overview of BR COP construction activities has been presented below::

- Structural and civil completion works to the station box,
- Stormwater trunk mains works from Hickson Road precinct to the existing pit at the western end of the site
- Installation of a cooling water system within the Barangaroo cutaway and associated trenching and pipework including the connection of the system to an existing network of pipes in Sydney Harbour.
- Hickson Road precinct works including road, footpath, cycleway, landscaping, street lighting, stormwater, utilities works and ventilation pod risers
- Backfilling and surface reinstatement of the temporary northern (Hickson Road) shaft, and
- Staging and temporary works required to deliver the permanent works, including removal of the temporary Hickson Road bridge structure.

1.3 Key Risks and Potential Impacts

The majority of the construction activities taking place occur in an area that is already a construction site which has been extensively excavated with the bulk of the fauna and flora cleared from the site.

There are a group of newly planted trees to the west of the Dalgety Bond Store at 25 Hickson Road, Barangaroo, as shown below in Figure 1 which will need to be removed to facilitate the installation of civil services through the area. In accordance with the requirements of CoA E6, a Tree Report, for the removal of these trees, has been prepared by a suitably qualified arborist and submitted to the Secretary. The removal of, and replacement of, trees in this area will be carried out in accordance with the recommendations made in the Tree Report.

Figure 1 *Bond Store and adjacent trees*



It was initially planned that two trees located to the West of the site, adjacent to the entry to Nawi Cove, as shown below in Figure 2 would be temporarily relocated to facilitate civil works in this area. These trees were to be removed from site and replanted at the conclusion of construction activities in this area. An

arborist prepared a Tree Transplantation Specification to manage this activity, however the civil works were able to be undertaken in Q3 and Q4 2022 without requiring the removal of the trees.

Figure 2 *Trees to West of site for temporary removal*



Potential impacts to Flora and Fauna will include:

- Removal of the existing trees shown in Figure 1 during the construction of the civil services in this area, resulting in a loss of habitat for local fauna.
- Risk of proliferation of weeds on the construction site and subsequent spread of weeds from within the construction site to adjacent areas of Barangaroo (low risk due to lack of soil)
- Any native fauna unexpectedly finding its way onto the site such a bird, bat, possum etc needing removal to a safer environment (low likelihood, low risk)

Figure 3 below shows the location of a network of cooling water pipes existing in Sydney Harbour. BESIX Watpac will use divers to enter Sydney Harbour in this location to carry out an inspection of these pipes to check for any damage to, or degradation of the pipes and to clean them out if necessary. There is not anticipated to be any impact to marine flora or fauna resultant from this activity.

Figure 3 *Nawi Cove Headland - Location of cooling water pipework existing in Sydney Harbour*



1.4 Fauna & Flora Management Objectives

The Chatswood to Sydenham Submissions and Preferred Infrastructure Report (SPIR) nominates the following environmental performance outcome during construction:

- The project would minimise impacts to biodiversity.

Further, in Section 11.1 of the Chatswood to Sydenham Construction Environmental Management Framework (CEMF) identifies the following flora and fauna management objectives applicable to construction:

- Minimise impacts on flora and fauna
- Appropriately manage the spread of weeds and plant pathogens, and
- Retain and enhance existing flora and fauna habitat wherever possible.

1.5 Roles and Responsibilities

An overview of the specific responsibilities for flora and fauna management as they relate to each role on the project are outlined in Table 1 below:

Table 1 *Roles and Responsibilities*

Activity	Responsibility
Responsibility for the implementation of the CEMP and this Fauna & Flora / Biodiversity Procedure	Project Director
Observation of Hold Points/Release Records and Tree Report Requirements	Construction Manager Planning and Environment Manager
Implementation of mitigation measures	Environmental Coordinator
Recording and reporting on effectiveness of mitigation measures	
Visual inspection for weeds on site	
Visual inspection for weeds on site	Site Foreman
Implementation of mitigation measures	
Disposal of weeds	

Activity	Responsibility
The management, action and discharge of any complaints received in accordance with the process as outlined in the CCS and BMP	Stakeholder & Community Relations Manager

1.6 Requirements Specific to Flora and Fauna

The following fauna and flora requirements specific to this project have been extracted from the CEMF, Revised Environmental Mitigation Measures (REMMs) and Conditions of Approval (CoA) as below:

Table 2.1 Relevant CEMF requirements

CEMF reference	Requirement
11.1	Flora and Fauna Management Objectives
	i. Minimise impacts on flora and fauna;
	ii. Design waterway modifications and crossings to incorporate best practice principles;
	iii. Retain and enhance existing flora and fauna habitat wherever possible; and
	iv. Appropriately manage the spread of weeds and plant pathogens.
11.2	Flora and Fauna Management Implementation
	a. Principal Contractors will develop and implement a Flora and Fauna Management Procedure which will include, as a minimum:
	i. The ecological mitigation measures as detailed in the environmental approval documentation;
	ii. The responsibilities of key project personnel with respect to the implementation of the plan;
	iii. Procedures for the clearing of vegetation and the relocation of flora and fauna;
	iv. Details on the locations, monitoring program and use of nest boxes by fauna;
	v. Procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint;
	vi. Plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded;
	vii. Vegetation management plan(s) for site where native vegetation is proposed to be retained;
	viii. Identification of measures to reduce disturbance to sensitive fauna;
	ix. Rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures);
	x. Weed management measures focussing on early identification of invasive weeds and effective management controls;
	xi. A procedure for detailing with unexpected EEC threatened species identified during construction, including cessation of work and notification of the Department, determination of appropriate mitigation measures in consultation with the OEH (including relevant relocation measures) and updating of ecological monitoring or off-set requirements;
	xii. Details on the methodology for vegetation mapping and survey;
	xiii. Ecological monitoring requirements; and
	xiv. Compliance record generation and management.
	b. Principal Contractors would undertake the following ecological monitoring as a minimum:
	i. A pre-clearing inspection will be undertaken prior to any native vegetation clearing by a suitable qualified ecologist and the Contractor's Environmental Manager (or delegate).
	<ul style="list-style-type: none"> • The pre-clearing inspection will include, as a minimum: • Identification of hollow bearing trees or other habitat features;

CEMF reference	Requirement
	<ul style="list-style-type: none"> • Identification of any threatened flora and fauna; • A check on the physical demarcation of the limit of clearing; • An approved erosion and sediment control plan for the worksite; and • The completion of any other pre-clearing requirements required by any project approvals, permits or licences.
	ii. The completion of the pre-clearing inspection will form a HOLD POINT requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist; and
	iii. A post clearance report, including any relevant Geographical Information System files, will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts.
	c. The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing.
	d. The following compliance records would be kept by the Principal Contractor: <ul style="list-style-type: none"> i. Records of pre-clearing inspections undertaken; ii. Records of the release of the pre-clearing hold point; and iii. Records of ecological inspections undertaken.
11.3	Flora and Fauna Mitigation
	<p>a. Examples of flora and fauna mitigation measures include:</p> <ul style="list-style-type: none"> i. Areas to be retained and adjacent habitat areas will be fenced off prior to works to prevent damage or accidental over clearing; ii. Clearing will follow a two-stage process as follows: <ul style="list-style-type: none"> • Non-habitat trees will be cleared first after sign-off of the pre-clearing inspection; and • Habitat trees will be cleared no sooner than 48 hours after non-habitat trees have been cleared. A suitably qualified ecologist will be present on site during the clearing of habitat trees. Felled habitat trees will be left on the ground for 24 hours or inspected by the ecologist prior to further processing. iii. Weed management is to be undertaken in areas affected by construction prior to any clearing works in accordance with the Noxious Weeds Act 1993.

Table 2.2 *Relevant REMMs requirements*

REMMs Reference	Requirement
B1	An ecologist would be present during the removal of any hollow-bearing trees.
B3	The local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.

Table 2.3 *Relevant CoA requirements*

CoA Reference	Requirement
E6	<p>The CSSI must be designed to retain as many trees as possible and provide replacement trees such that there a net increase in the number of trees. The Proponent must commission an independent, experienced and suitably qualified arborist to prepare a comprehensive Tree Report before removing any trees as detailed in the EIS, as amended by the documents listed in A1. The Tree Report must include:</p> <ul style="list-style-type: none"> (a) a description of the conditions of the tree(s) and its amenity and visual value; (b) consideration of all options to avoid tree removal, including relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services; and (c) measures to avoid tree removal, minimise damage to, and ensure the health and stability of those trees to be retained and protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, materials storage and protection of public utilities. <p>In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. The size of the replacement trees will be determined in consultation with the relevant Council. A copy of the</p>

CoA Reference	Requirement
	Tree Report must be submitted to the Secretary before the removal, damage and/or pruning of any trees, including those affected by the site establishment works. All recommendations of the Tree Report must be implemented by the Proponent, unless otherwise agreed by the Secretary.
	The Tree Report may be prepared for the entire CSSI or separate reports may be prepared for individual areas where tree removal and/or pruning is proposed.

1.7 Mitigation Measures

The following mitigation measures will be implemented during construction to minimise the risk of adverse impacts on fauna and flora and to meet the requirements as outlined in the CEMF and Revised Environmental Mitigation Measures (REMMs):

CEMF Section 11.2 requirements include for this site:

- v. Procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint;
- x. Weed management measures focusing on early identification of invasive weeds and effective management controls;
- xi. A procedure for dealing with unexpected EEC threatened species identified during construction, including cessation of work and notification of the Department, determination of appropriate mitigation measures in consultation with the OEH (including relevant relocation measures) and updating of ecological monitoring or off-set requirements;

REMMs requirements include:

- Item B3 – The local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.

In accordance with the requirements of CoA E6, those trees which are nominated in the Tree Report as needing to be removed will be replaced. The size of the replacement trees will be determined in consultation with Infrastructure NSW and City of Sydney Council.

1.7.1 Tree Management

The trees located to the west of the Dalgety Bond Store indicated in Figure 1 are to be managed and removed in accordance with the Tree Report approved as per CoA E6.

The trees located to the west of the site adjacent to Nawi cove, as indicated in Figure 2 which are to be removed from site temporarily and transplanted will be done so in accordance with the Tree Transplantation Specification prepared by an arborist. These trees are not recorded in the Tree Report as they were not identified in the EIS and have been recently planted as part of the project. They are being temporarily removed from sight and will be stored off-site, cared for, and re-instated as the completion of the civil construction works in the area.

1.7.2 Fauna Mitigation

As required by REMMs Condition B3, the local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.

1.7.3 Flora Mitigation

Weed manage management will be undertaken in areas affected by construction prior to any clearing works in accordance with the *Biosecurity Act 2015*.

1.7.4 Marine Mitigation

Remediation activities include pipe cleaning, repairing underwater pipework and provision of new underwater bell mouths. High pressure water jetting of the pipework will be carried out so that dislodged marine materials impacting water quality and any chemicals used to disinfect or scour are collected for disposal and not discharged into the harbour. These works will be subject to a separate environmental risk assessment.

1.7.5 Biodiversity impact mitigation

Due to the already highly modified and barren nature of the site, construction activities will have little to no measurable impacts to local biodiversity in most areas of the site. An impact to biodiversity will result from the removal of those trees nominated for removal in the Tree Report. This will be mitigated by these trees being replaced. The size of the replacement trees will be determined in consultation with Infrastructure NSW and City of Sydney Council.

1.8 Records Management

Records will be maintained by the project Environmental Co-ordinator, as follows:

- Records of any pre-clearing weed management inspections undertaken
- Records of ecological inspections undertaken
- Records of any fauna removed from site
- Photographic record of trees contemplated for removal in the Tree Report
- Record of trees removed from the site
- Record of trees pruned on site