Upper South Creek

Advanced Water Recycling Centre and Pipelines

CoA E19 and E20 Rehabilitation Management Plan, RBM 12 lands – Kemps Creek

Document No: USCP-JHG-MPL-ENV-0011

Revision: 05

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Recommend Documents to be Read in Conjunction

This management plan is to be read in conjunction with the Construction Environmental Management Plan (USCP-JHG-MPL-ENV-0008), Surface Water & Groundwater CEMP Sub-plan (USCP-JHG-MPL-ENV-0001) and Biodiversity CEMP Sub-plan (USCP-JHG-MPL-ENV-0004).

Distribution

There are no restrictions on the distribution or circulation of this CEMP Sub-plan within John Holland.

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Authorised By:	Richard Ioffrida (Project Director)
Date:	23.05.2024

Revisions

Draft issues of this document shall be identified as Revision 01, 02, 03 etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential lettering commencing at Revision A. Revision numbers shall commence at Rev. A, B etc.

Date	Rev	Details Of Change	Section	Prepared By	Reviewed & Approved By
15.09.2023	01	Initial draft for review	All	JS MA	BD / DOB / AH
30/01/2024	02	Second draft based on review and comment	All	JS MA	DOB / BD
12/03/2024	03	Updated version based on Sydney Water comments	All	JS MA	DOB
29/04/2024	04	Updated version based on BCS comments	Several	RM	AH
23/05/2024	05	Updated version based on comments received from BCS and the Department	Table 2-1, Section 2.4 and Appendix D	AH	AH

CONTENTS

Glossary & Abbreviations

Abbreviations	Meaning
ADWF	Average Dry Weather Flow
AWRC	Advanced Water Recycling Centre
BC Act	NSW *Biodiversity Conservation Act 2016*
BCS	The Biodiversity Conservation and Science Group (part of the NSW Department of Climate Change, Energy, the Environment and Water), formerly EHG)
CEMP	Construction Environmental Management Plan
CM	Construction Manager
CoA	Minister's Conditions of Approval
DCP	Development Control Plan
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DPI	Department of Primary Industries
DPE	NSW Department of Planning and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly DPE)
EHG	The Environment and Heritage Group (part of the NSW Department of Climate Change, Energy, the Environment and Water)
EIS	Environment Impact Statement
EPBC Act	Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*
EM	John Holland Environmental Manager
HBT	Hollow-bearing Tree
IMP	Incident Management Plan
Impact Area	The area to be directly impacted by construction and operation of the project, including identified compound areas and access tracks.
Impact Assessment Area	A wider area, generally 12.5 m either side of the impact area to allow for design flexibility after the EIS is approved.
JH	John Holland (the Principal Contractor)
LGA	Local Government Area
LLS	Local Land Services
PCT	Plant Community Type

Abbreviations	Meaning
RBM12 impacted corridor	The section of the Brine Pipeline alignment that is identified in Section 1.2 and Figure 1-1 of this RMP
RBM	Relevant Biodiversity Measure
RMP	Rehabilitation Management Plan
SQP	Suitably Qualified Professional
SW	Sydney Water, the Project proponent
TEC	Threatened Ecological Community
UDLP	Urban Design and Landscape Plan
UMMs	Updated Management Measures
USC	Upper South Creek
VIS	Vegetation Integrity Score
VRZ	Vegetated Riparian Zone
WMP	Weed and Pathogen Management Procedure
WSAGA	Western Sydney Aerotropolis Growth Area

1 Introduction

1.1 Context

This Rehabilitation Management Plan (RMP) has been prepared to address the NSW Minister for Planning's Conditions of Approval (CoA) E19 and E20 issued for the Upper South Creek Advanced Water Recycling Centre – Concept and Stage 1 (SSI 8609189).

CoA E19 requires the preparation of a suitable RMP to address the revegetation and restoration of the Relevant Biodiversity Measure (RBM) 12 red-hatched lands depicted in Appendix B of SSI 8609189, and the subsequent implementation of the actions identified in this plan at the conclusion of construction works. CoA E20 describes the timeline for approval of this plan, and the requirements for the contents to be included within this plan. CoAs E19 and E20 from SSI 8609189 are further detailed in Section 2.2.

This RMP is prepared for the Upper South Creek Advanced Water Recycling Centre (AWRC) and associated pipelines (refer to herein as "the Project") and is solely applicable to the RBM 12 lands referenced in this report. Separate rehabilitation management plans will be prepared for other areas impacted by the Project.

This plan has been prepared by John Holland in consultation with suitably qualified and experienced ecologist, Mark Aitkens (BAAS17034) Principal Ecologist, Environmental Resources Management Australia Pty Ltd (ERM).

1.2 Background and Site Description

The Brine Pipeline is a 24 km long 0.6 m diameter pipeline that will transport the brine waste product produced by the AWRC to Northern Georges River Submain of the Malabar wastewater system in Lansdowne. The pipeline extends south from the AWRC to Elizabeth Drive.

The section of Brine Pipeline that intersects RBM 12 lands, to which this RMP applies, is located south of Elizabeth Drive, and east of Cross Street in the Liverpool City Council local government area. This area is shown in Figure 1-1 below.

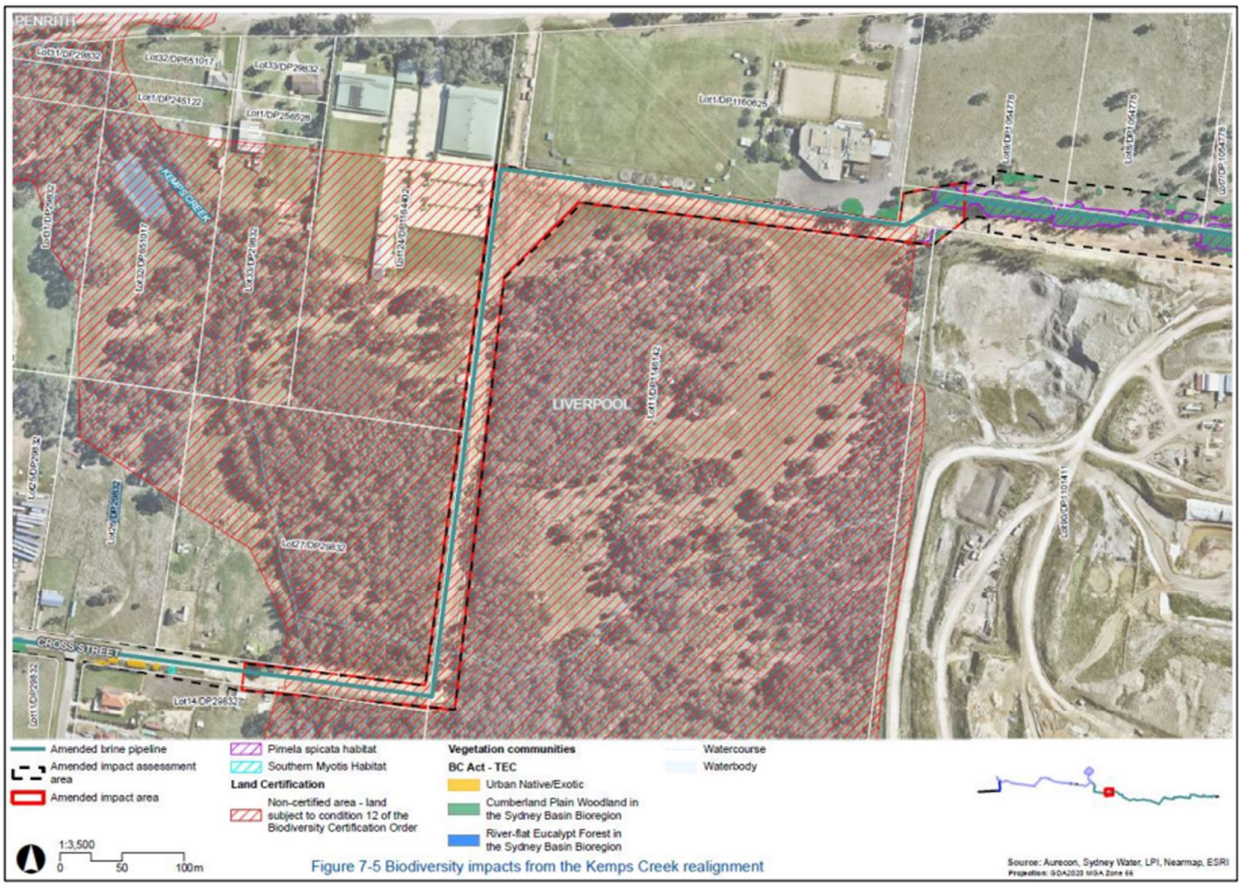


Figure 1-1 Brine Pipeline Corridor within RBM 12 Red Hatched Lands Subject to this Rehabilitation Management Plan
Source: Appendix B of Conditions of Approval for Upper South Creek Advanced Water Recycling Centre – Concept and Stage 1 (SSI 8609189)

This area was identified in the Upper South Creek Advanced Water Recycling Centre Submissions Report March 2022 and the Upper South Creek Advanced Water Recycling Centre Amendment Report March 2022. The original alignment assessed in the Environmental Impact Statement (EIS)(September 2021) was changed to reduce impacts to native vegetation in RBM12 lands and make use of an existing Sydney Water asset corridor. The vegetation in this corridor was previously cleared as part of a recent Sydney Water Infrastructure Project. The USC AWRC project will utilise this same corridor, avoiding the need to clear additional native vegetation in this area, and is required to remediate the corridor in accordance with E20.

The following terms have been used with reference to the site:

- RBM12 impacted corridor: The section of the Brine Pipeline alignment that is identified in Section 2.2 and Figure 1-1 of this RMP.
- Impact area: The area to be directly impacted by construction and operation of the project, including identified compound areas and access tracks.
- Impact assessment area: A wider area, generally 12.5 m either side of the impact area to allow for design flexibility after the EIS is approved.

1.3 RBM12 Rehabilitation Management Plan Purpose

The purpose of the RMP is to satisfy CoA E19 and E20 through describing the approach required to implement measures for the successful rehabilitation of the RBM 12 impacted corridor. Impacts to this area are to be rehabilitated to provide a net positive biodiversity outcome for the site. The rehabilitation is to be implemented during the construction phase of works and

monitored throughout the maintenance period of the project. This RMP has been prepared for the RBM-12 area at Kemps Creek and addresses CoA E19 and E20.

This RMP does not apply to the rehabilitation of areas along the pipeline corridors outside of what is described Appendix A and Figure 1-2 below.

The overall purpose of this RMP is to ensure that the ecological values of the pre-construction environment have been enhanced as a result of the activities prescribed in this plan and will consider the pre-existing environment prior to Promac works in the area for the Prospect South to Macarthur distribution system link project and consultation with the relevant landowners.

1.4 Objectives

The objective of this RMP is to ensure revegetation and rehabilitation of the brine pipeline corridor within RBM 12 lands identified in Figure 1-1. The RBM 12 lands are to be rehabilitated to its pre-construction state. This RMP is to be implemented to achieve an improved ecological state and minimise the potential for undesirable outcomes such as vegetation die-back and the spread of weed species.

This RMP seeks compliance with the requirements and performance outcomes listed in the following:

- the Upper South Creek Advanced Water Recycling Centre Environmental Impact Statement (EIS), September 2021;
- Upper South Creek AWRC Submissions Report, March 2022;
- the Amendment Report (including Appendix B);
- the Updated Mitigation Measures (UMMs);
- relevant NSW Minister for Planning Conditions of Approval (CoA);
- relevant Commonwealth Controlled Activity Approval (Upper South Creek Advanced Water Recycling Centre, Kemps Creek, NSW (EPBC 2020/8816);
- Sydney Water Guidance Standard 9.2, 9.3, and 9.5; and
- relevant legislation and other requirements described in Section 4 of this Plan.

1.5 Environmental Performance Outcomes

The RMP provides prescriptions required to revegetate and rehabilitate the RBM 12 impacted corridor identified in Figure 1 of Appendix A and Figure 1-2 below.

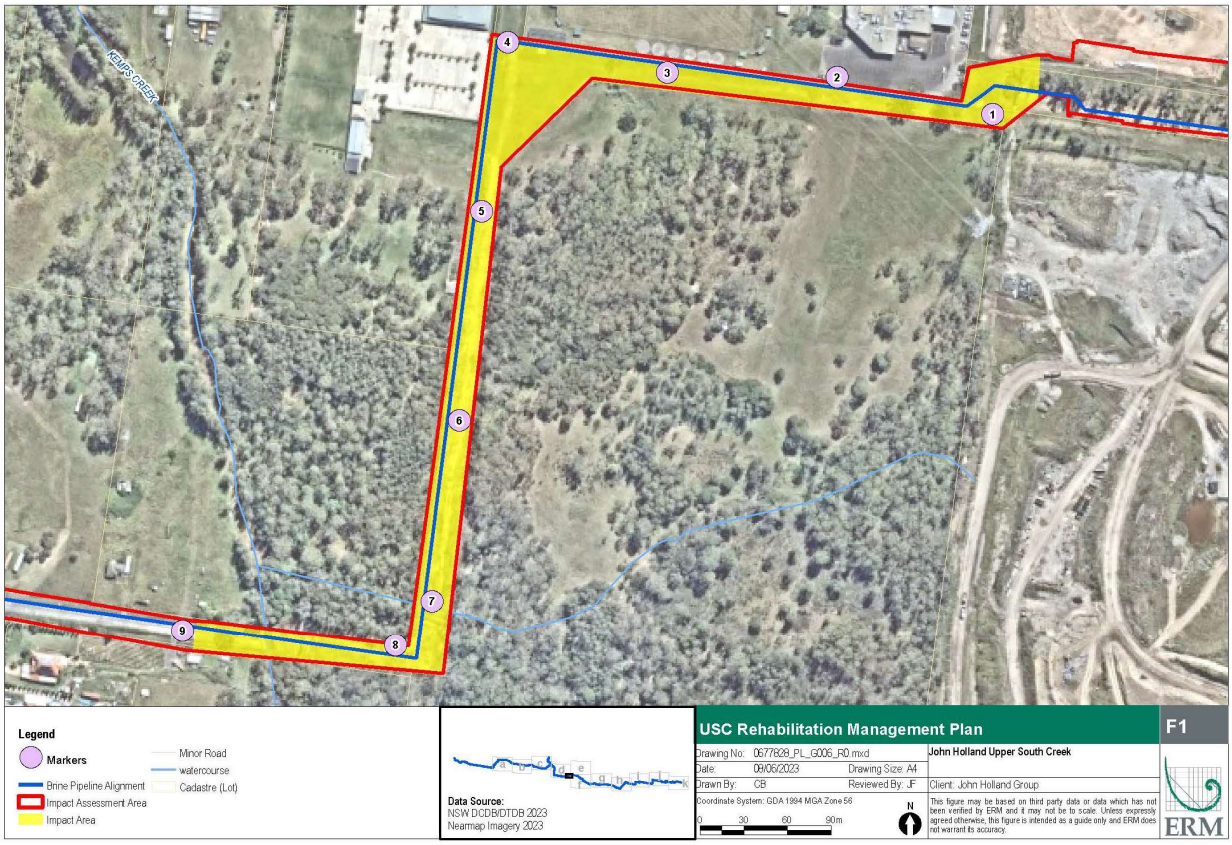


Figure 1-2 Location map of the RBM12 area applicable to this RMP

The desired performance outcomes related to the rehabilitation of the RBM12 impacted corridor are included in Table 1-1.

Table 1-1 Performance Outcomes Related to Rehabilitation of the RBM12 Impacted Corridor

Desired Performance Outcome	Performance Measure	How performance outcomes would be achieved	Measurement Tool
A net increase in biodiversity value through the establishment of a stable landform comprising of native groundcover vegetation that minimises soil erosion.	Cumulative increase in Vegetation Integrity Score (VIS) over the baseline and preceding post rehabilitation monitoring events	• Complete the revegetation and rehabilitation of the RBM12 impacted corridor as a part of the construction phase of works and continue maintenance and monitoring as per this plan. • Revegetate the RBM12 impacted corridor using species that are consistent with the adjacent plant community types. Species used are to be known to occur or endemic to the local area. • Prevent the introduction and dispersal of weed species in the RBM 12 impacted corridor.	Vegetation Integrity Plot that measures flora species composition and structure and habitat function attributes (see Section 4.2.1 of the Biodiversity Assessment Method Order 2020 https://legislation.nsw.gov.au/view/pdf/asmade/sl-2020-621)

Desired Performance Outcome	Performance Measure	How performance outcomes would be achieved	Measurement Tool
		• Minimise disturbance to Kemps Creek and waterways within the RBM 12 impacted corridor.	

A net improvement in biodiversity will be achieved for RBM 12 corridor by numerically increasing the metrics fundamental to the calculation of a VIS. However, not all elements of the VIS can be achieved in the RBM 12 corridor as certain introductions (e.g., plantings of trees) would be in conflict with the operation of the corridor. For the RMB 12 corridor, it is considered that biodiversity improvements can be achieved by increasing:

- The number of non-tree native species (i.e.; floristic composition);
- The native species per cent cover (i.e., floristic structure); and
- Habitat complexity (e.g., placement of logs on the ground and improving leaf litter cover).

The planting of trees and large shrubs will be undertaken along the outer edges of the RBM12 impacted corridor where permitted by the *Sydney Water Technical Guidelines - Building over and adjacent to pipe assets*. However, trees and large shrubs cannot be planted in the immediate vicinity as these features would compromise the operation of the corridor over existing and proposed Sydney Water assets. In these locations, grasses will be planted. This is further detailed in Section 4.3.

2 Legislative and Guidance Requirements

2.1 Relevant Legislation, Standards and Guidance

All relevant legislation and associated requirements, including approvals, licences and permits are detailed in Appendix A3 of the CEMP prepared for the Project.

State legislation:

- *Environmental Planning and Assessment Act 1979*;
- *Biodiversity Conservation Act 2016*;
- *Fisheries Management Act 1994*;
- *National Parks and Wildlife Act 1974*;
- *Pesticides Act 1999*; and
- *Biosecurity Act 2015.*

Commonwealth legislation:

- *Environment Protection and Biodiversity Conservation Act 1999*.

Standards and Guidelines

The primary guidelines, specifications and other reference documents relevant to this plan include:

- Sydney Water Management Specification (1041412);
- Sydney Water Guidance Standard – 9.2 Compound Management;
- Sydney Water Guidance Standard – 9.3 Biodiversity management;
- Sydney Water Guidance Standard – 9.5 Restoration Management;
- Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (NSW Office of Water, 2013).
- Sydney Water Technical Guidelines - Building over and adjacent to pipe assets

Project Plans and Policies

- USC Construction Environmental Management Plan;
- USC Soils & Contamination CEMP Sub-plan;
- USC Surface Water & Groundwater CEMP Sub-plan;
- USC Biodiversity CEMP Sub-plan; and

2.2 NSW Minister for Planning Conditions of Approval

Table 2-1 below provides a summary of the CoA relevant to this RMP and how and where these items are addressed in this plan.

Table 2-1 Relevant Conditions of Approval from SSI 8609189

CoA Reference	Condition Requirement	RMP Reference
A**9**	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertaken must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include:	This document (Consultation Summary Report)
	a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	Section 2.4 and Appendix E
	b) a log of the dates of engagement o attempted engagement with the identified party;	Section 2.4 and Appendix E
	c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations.	Section 2.4 and Appendix E
	d) outline of the issues raised by the identified party and how they have been addressed	Section 2.4
	e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed	Section 2.4
E19	The Proponent must prepare a Rehabilitation Management Plan to revegetate and restore impacted RBM 12 red hatched lands at Kemps Creek, mapped within the amended impact assessment area at Appendix B. Rehabilitation must occur as soon as practical after construction of the brine pipeline mapped at Appendix B, or as otherwise agreed with relevant landowner(s) or EHG	This rehabilitation management plan
E20	The Rehabilitation Management Plan required under Condition E19 must be prepared in consultation with EHG and submitted to the Planning Secretary for approval one month before the commencement of construction in the RBM 12 red-hatched lands. The plan must include: (a) removal of all equipment, materials and environmental controls from site; (b) where like-for-like re-vegetation is not possible (for example, to minimise risk to pipelines from tree roots), consider vegetation suited to the infrastructure requirements and environmental conditions; (c) return disturbed areas to preconstruction ground level where practical; (d) rehabilitate areas of native vegetation removal to the highest ecological condition possible; (e) in areas of native vegetation removal, reuse felled vegetation (logs and tree-hollows) and other habitat features such as rocks and boulders to increase habitat values; (f) in areas of native vegetation removal, use locally sourced (local provenance) tube stock only. All species installed are to be locally indigenous and suitable and characteristic of the Plant Community Type (PCT) that would have originally occurred at the site; (g) where possible, reuse stockpiled vegetation as part of rehabilitation works; (h) where open trenching of waterways is required, enhance aquatic habitat and restore creeks to an improved state; and (i) preparation of six-monthly summary progress report(s) over the revegetation maintenance period, for submission	a) Section 4.1 b) Section 4.2 c) Section 4.1 d) Section 4.1 e) Section 4.1 f) Section 4.2 Section 4.4 g) Section 4.3 h) Not applicable i) Section 6.5
E67	Plant maintenance (watering and weeding) must continue during construction and operation on land owned by Sydney Water. Sydney Water must continue plant maintenance on other land specified in the Rehabilitation Management Plan under Condition E19 and Condition E20 and committed to in the documents listed in Condition A1 for the maintenance period specified, in consultation with EHG and relevant landowner(s), as required. Should any plant loss occur during the maintenance period, the plants should be replaced by the same plant species and growth form (i.e. a tree with a tree and local native provenance species where the original planting was of local native provenance) unless it is determined by a suitably qualified person that a different species is more suitable for that location.	Section 4.4.3, Section 4.4.4, Section 5

2.3 Updated Management Measures

Table 2-2 below provides a summary of the updated management measures (UMMs) from the Submissions Report relevant to this RMP and how and where these items are addressed in this plan.

Table 2-2 Relevant UMM's from the Submissions Report

CoA Reference	Condition Requirement	RMP Reference
G05 – Environmental restoration of construction impacts	Develop and implement a Rehabilitation Management Plan to restore pipeline work sites as soon as possible to pre-existing condition or as otherwise agreed with relevant landowner or council. This plan will also include the following:	This RMP
	• Return disturbed areas to preconstruction ground level where practical.	Section 4.4 and 4.5
	• Where like for like re-vegetation is not possible (for example to minimise risk to pipelines from tree roots), consider vegetation suited to the infrastructure requirements and environmental conditions.	Section 4.3
	• Where street trees cannot be replaced like for like, consider other opportunities to reduce impacts to streetscape character and visual amenity.	Not applicable
	• Removing all equipment, materials and environmental controls from site.	Section 4.2
	• Rehabilitate areas of native vegetation removal to the highest ecological condition possible.	Section 4.3
	• In areas of native vegetation removal, reuse felled vegetation (logs and tree hollows) and other habitat features such as rocks/boulders to increase the habitat values.	Section 4.6
	• In areas of native vegetation removal, use locally sourced (local provenance) seed stock only. All species installed are to be locally indigenous and suitable and characteristic of the surrounding Plant Community Types (PCTs).	Section 4.2 and 4.3
	• Where possible reuse stockpiled vegetation as part of rehabilitation works.	Section 4.6
	• Where open trenching of waterways is required, enhance aquatic habitat and restore creeks to an improved state.	Section 3.4 and 4.3
	• In areas covered by the Phase 2 Aerotropolis DCP, consider tree planting provisions of the DCP in designing re-vegetation, including in relation to the risk of wildlife attraction.	Section 4.2 and 4.6
	• Incorporate inputs from relevant experts in revegetation, ecology, geomorphology.	Section 1.1
	• Approach to maintaining revegetated areas during their establishment phase	Section 5

2.4 Consultation

In accordance with CoA E20, this RMP was provided for consultation to Biodiversity and Conservation Science (BCS) group, a division of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW). Comments received from BCS were addressed and incorporated into this RMP.

A consultation log has been prepared and identifies the following:

- Consultation dates (actual and attempted)
- Form of consultation
- Whether responses and / or comments were received
- Summary of the issues raised, including how they have been addressed

Consultation with BCS commenced on 14 March 2024 and concluded 23 May 2024 with evidence of all the correspondence received and sent through the consultation phase summarised in Table 2-3.

Table 2-4 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix D of this Plan.

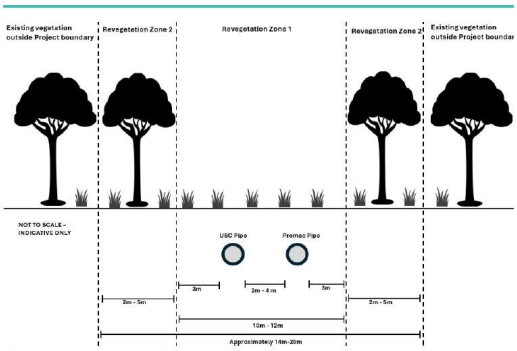
Table 2-3 Engagement log - RBM12 RMP - BCS

#	Date	Correspondence		From	Recipient
		Form/Type	Purpose		
1	14-03-2024	Email	Issuing of sub-plan for consultation in accordance with CoA C19 and E20	Ryan Maxwell	Marnie Stewart
2	12-04-2024	Email	Respond to consultation	Marnie Stewart	Ryan Maxwell
3	30-04-2024	Email	Reissue of updated plan in response to BCS comments	Ryan Maxwell	Marnie Stewart
4	05-05-2024	Email	Follow-up email requesting response to revised plan submitted 30-04-2024.	Ryan Maxwell	Marnie Stewart
5	06-05-2024	Email	BCS respond stating that they plan to respond by 10-05-2024.	Marnie Stewart	Ryan Maxwell
6	14-05-2024	Email	Follow-up email requesting response to revised plan submitted 30-04-2024.	Ryan Maxwell	Marnie Stewart
7	16-05-2024	Phone call	Attempted to call, no response. A voicemail was left requesting response from BCS.	Ryan Maxwell	Marnie Stewart
8	20-05-2024	Email	Follow-up email requesting response to revised plan submitted 30-04-2024.	Ryan Maxwell	Marnie Stewart
9	20-05-2024	Phone call	Attempted to call, no response. A voicemail was left requesting response from BCS.	Ryan Maxwell	Marnie Stewart
10	22-05-2024	Email	BSC issue a follow-up query re riparian vegetation zones.	Marnie Stewart	Ryan Maxwell
11	22-05-2024	Phone call	Attempted to call, spoke with Marnie Stewart to confirm / clarify the comment provided re vegetation riparian zones.	Ryan Maxwell	Marnie Stewart
12	22-05-2024	Email	Response provided directly via email to BCS's comment re vegetation riparian zones.	Ryan Maxwell	Marnie Stewart
13	23-05-2024	Email	BCS provided confirmation via email that it considers comments raised have been adequately addressed.	Marnie Stewart	Ryan Maxwell

Table 2-4 Summary of issues - RBM12 RMP - BCS

Document Section, CoA	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
RMP Section 2.3	**Clarification of the grassed area** It is unclear where the 'grassed area' is located. BCS requests that this area be identified in the plan.	12 April 2024	30 April 2024 References to the grassed area in Section 2.3 have been clarified throughout the document and added to Figure 3.1 as Pasture grasses - native/exotic.
RMP Section 3.1	**Pre-existing vegetation and condition** The RMP Section 3.1 states that the RBM 12 impacted corridor experienced "substantial disturbance associated with Promac's works". It is important to note that the Upper South Creek Advanced Water Recycling Centre Submissions Report – project amendments April 2022 Table 5.1 states "Sydney Water confirms that it intends to rehabilitate the area cleared as a result of another Sydney Water project on the basis that the pre-existing condition is native vegetation. This means that the native vegetation measures in management measure G05 in Appendix B of the Submissions Report will apply. The rehabilitation will be completed after construction of the brine pipeline". It is important that the RMP includes the above advice regarding the pre-existing condition from Sydney Water. It is understood that the rehabilitation works will aim to recreate vegetation types that occurred in the area prior to disturbance. Figure 3-1 includes a map of the vegetation types in the impacted area, but the Existing Native Vegetation in the surrounding RBM 12 lands is not mapped to vegetation type. It would be useful if Figure 3-1 included a map of the vegetation types in the surrounding RBM 12 lands area, as this would justify why the vegetation types in the impacted area were chosen. Section 3.1 also indicates that vegetation in the corridor appears to be currently mowed and slashed, it is assumed by BCS this will cease with the implementation of the RMP.	12 April 2024	30 April 2024 JH acknowledges the commitment made in the Submissions Report that the works will be undertaken in accordance with Updated Management Measure G05. Section 2.3 has been added in which shows how this RBM12 RMP complies with aspects of UMM G05. Figure 3-1 has been updated to better show the vegetation types in the surrounding RBM12 lands area to justify selection of vegetation types used for rehabilitation. The adjacent PCTs layers have been sourced from both the Promac assessment and online vegetation mapping databases. Slashing/mowing in rehabilitated areas mapped as PCT 3320 and 4025 in Figure 3-1 will cease following rehabilitation. Land mapped as pasture grass grazing land will continue to be managed by the landowner which may be subject to mowing and/or grazing which is consistent with land management practices pre-Promac construction.
RMP throughout	**Monitoring period** The RMP states in several places that monitoring will occur for two years, as the RMP considers that this is the maintenance period. However, CoA E20 does not stipulate a maintenance period. Instead, it states that maintenance should continue "until EHG is satisfied". Therefore, BCS considers that the duration of the revegetation maintenance period is until BCS is satisfied that maintenance is no longer required. If the RMP must specify a duration, then it should be made clear that works may need to continue at the end of the specified period, and the plan will be reviewed at that time.	12 April 2024	30 April 2024 The reference to the 2-year monitoring and/or maintenance period has been removed throughout the RB12 RMP and replaced with 'until BCS are satisfied'.
RMP Section 4.3	**Plant selection** The RMP specifies that the Desired Performance Outcomes is "A net increase in biodiversity value through	12 April 2024	30 April 2024 JH have updated the RBM12 RMP which now includes

	the establishment of a stable landform comprising of native groundcover vegetation that minimises soil erosion" and that "The planting of trees and large shrubs cannot be undertaken as these features would compromise the operation of the corridor over existing and proposed Sydney Water assets". Section 4.3 of the RMP also indicates that: • "Plant species used in the revegetation of the RBM12 impacted corridor should be limited to grasses and other ground cover species characteristic of PCT 3320. This is in line with Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets. Deep rooted species such as large trees and shrubs are to be avoided to minimise potential impacts to pipe assets and allow for access to complete necessary maintenance during rehabilitation and the operation of the pipelines" and • "Woody vegetation cannot be established in the riparian vegetation zone as this is likely to adversely affect the future functioning and maintenance of the pipeline asset. Revegetation works are to be limited to longer lived (perennial) groundcover species to stabilise soils. Species such as Matt grasses (e.g., Lomandra longifolia) are recommended for this purpose".		planting of shrubs and trees. Revegetation Zone 1, which is the area directly above/immediately adjacent to the pipeline asset, will need to consist of grass/groundcover species to allow for access to complete necessary maintenance during operation of the pipelines, and to minimise potential impacts to the Sydney Water pipeline asset. Access 3m either side of SW pipeline assets is required and therefore grasses can only be planted in those areas. Revegetation Zone 2 is located between the edge of Revegetation Zone 1 and the existing stands of vegetation outside the RBM12 impacted corridor. This zone will consist of planting shrubs and tree species. It's noted that while trees and shrubs can be planted in this zone, species must be carefully selected to ensure that the mature tree canopy will not extend above SW pipeline assets as required by Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets. As requested by BCS, a diagram has been added to Figure 4-1 which indicatively shows the location and widths of Revegetation Zones 1 and 2 in relation to SW pipeline assets.
Section 4.3	**Riparian Vegetation Zones** We are currently reviewing the updated RMP and just wanted to clarify one of the comments in Section 4.3 (below) about the riparian vegetation zone. Can you please provide further clarification where this specifically this applies?	22 May 2024	22 May 2024 The waterways and subsequent riparian zones within the RBM12 are limited to the areas immediately adjacent to Kemps Creek and the two unnamed tributaries as provided in Figure 3-1. These areas are relatively small in comparison to the remaining non-riparian areas to be rehabilitated. Just to confirm, we will still plant trees and shrubs in revegetation zone 2 in those riparian areas however revegetation zone 1 (directly on top of the pipelines) will be limited to grasses to ensure there is no adverse effect to the functioning of the pipeline

	 *Figure 4-1 Diagram of approximate widths of revegetation zones in relation to SW pipeline assets.* Large trees or shrubs cannot be planted in the riparian vegetation zone immediately above the pipeline asset as this is likely to adversely affect the future functioning and maintenance of the pipeline asset. Revegetation works are to be limited to longer lived (perennial) groundcover species to stabilise soils. Species such as Matt grasses (e.g., *Lomandra longifolia*) are recommended for this purpose.		and access for future maintenance.

The RMP provides context for the existing environment, including a Sydney Water project undertaken within the same easement (at the end of Cross Street and Range Road, Kemps Creek) and within the South West Growth Centre existing certified land prior to the Upper South Creek project, called the Prospect South to Macarthur distribution system link project (herein referred to as 'Promac'). Pre-clearance surveys undertaken for Promac have been referenced throughout the RMP, noting that whilst the pre-construction condition for this RMP is pre-USC works and post Promac works, efforts have been made to understand the nature and condition of existing vegetation communities prior to Promac disturbance and how this can be appropriately incorporated into the rehabilitation requirements.

Further, as part of the engagement process outlined in the project's Community and Stakeholder Engagement Plan, landowners of relevant RMB12 red-hatched lands through which the brine pipeline traverses have been engaged via the establishment of a Pre-Construction Customer Agreement (PCCA). Two (2) properties are impacted by rehabilitation works required under the condition for RBM12 red-hatched lands and are show in Figure 2-1 below. As part of PCCA development and sign-off, the following requirements were specified for implementation by the landowners and have also been considered throughout the remainder of this RMP:

- Reinstatement of existing roads/fences that may be impacted;
- Reinstatement of grassed area;
- Grassed area to be compacted and seeded.

The grassed area stated in the PCCA refers to the Pasture grasses – native/exotic in Figure 3-1.

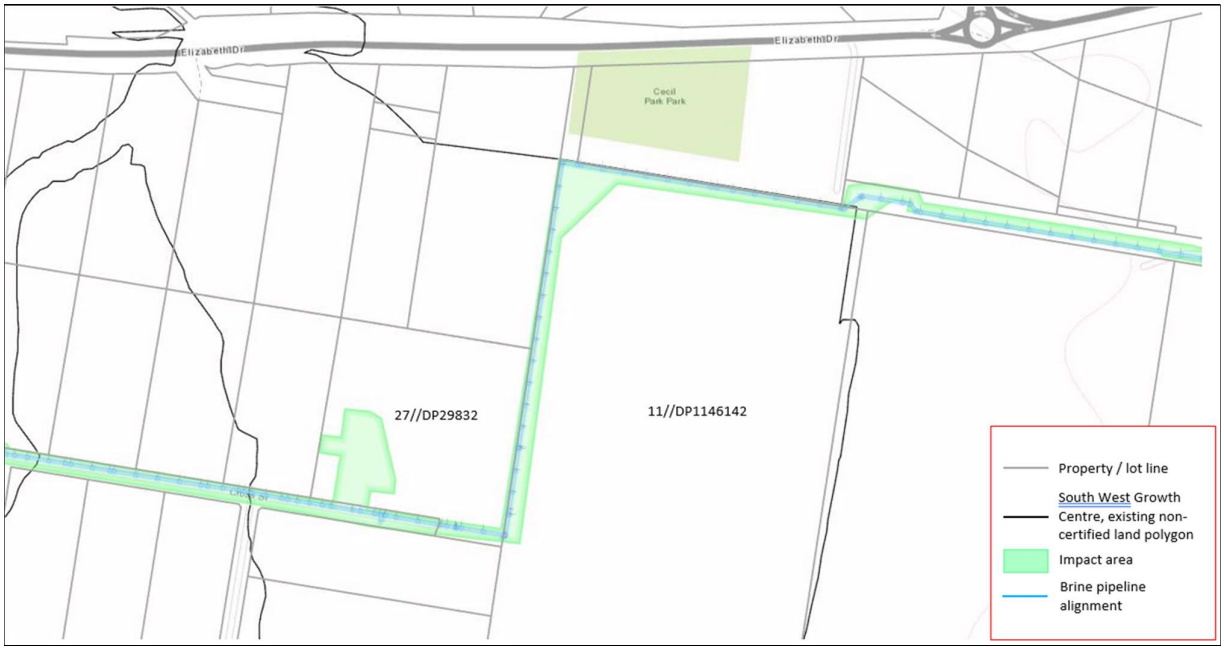


Figure 2-1 Land Parcels within vicinity of the RBM12 impact corridor

2.5 Endorsement and Approval

This plan is required by CoA E20 to be submitted and approved by the Planning Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI), one month prior to the commencement of construction activities to install the brine pipeline in the RBM12 lands. The RMP applicable to the RBM 12 lands will be implemented for the duration of construction of Stage 1 of the Project. Any minor amendments must be approved by the Planning Secretary and implemented for the duration of construction, and any associated maintenance period.

3 Existing Environment

The RBM12 impacted corridor is located in an urbanised area of the Cumberland Plain. Surrounding land uses include residential, agricultural, industrial and infrastructure, as well as areas used for recreation and environmental conservation. The RBM12 impacted corridor was subject to vegetation removal and excavation as a result of a works completed as part of the Prospect South to Macarthur Distribution System Link 2020, which involved the installation of a drinking water pipeline within the RBM 12 impacted corridor. Adjacent areas are comprised of native vegetation associated with two threatened ecological communities (TECs) listed under the Biodiversity Conservation Act 2016 (BC Act) and the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). Pasture grasses – native/exotic are also present in and adjacent to the north/north-east portion of the RBM12 impacted corridor.

The RBM12 impacted corridor was surveyed by a suitably qualified ecologist on 25 May 2023 and 19 December 2023, to gather data and document the current existing environment and conditions (but post completion of Promac's work within the area). The area was assessed through documentation of vegetation condition and composition and marking of plates to be used in monitoring of rehabilitation. The location of monitoring plates established for this plan can be seen in Figure 1 of Appendix A. The subsequent site visit involved the implementation of the NSW Biodiversity Assessment Method to categorise the floristic composition of the corridor and assign a biodiversity value. A document review was also carried out of Promac works which involved clearing of this area previously. This includes review of Promac clearing permits and it should be noted that the existing pre-construction condition does not accurately represent an undisturbed environment. This alignment was selected in order to prevent additional impacts to the PCTs and TECs present within the area adjacent to the RBM 12 impacted corridor. The pre-existing environment prior to Promac's works within the area is also further detailed in the following sections.

3.1 Vegetation Communities

The following section summarises the likely vegetation present prior to disturbance by The Prospect South to Macarthur distribution system link project delivered by Promac and existing vegetation present in the RBM12 impacted corridor and details its current condition (John Holland survey).

The Promac pre-clearance inspection and a review of online vegetation mapping databases identified the following vegetation likely present within the RBM12 impacted corridor prior to Promac disturbance as shown in Figure 3-1 below:

- Cumberland Plain Woodland
- River Flat Eucalypt Forest
- Pasture grasses – native/exotic.

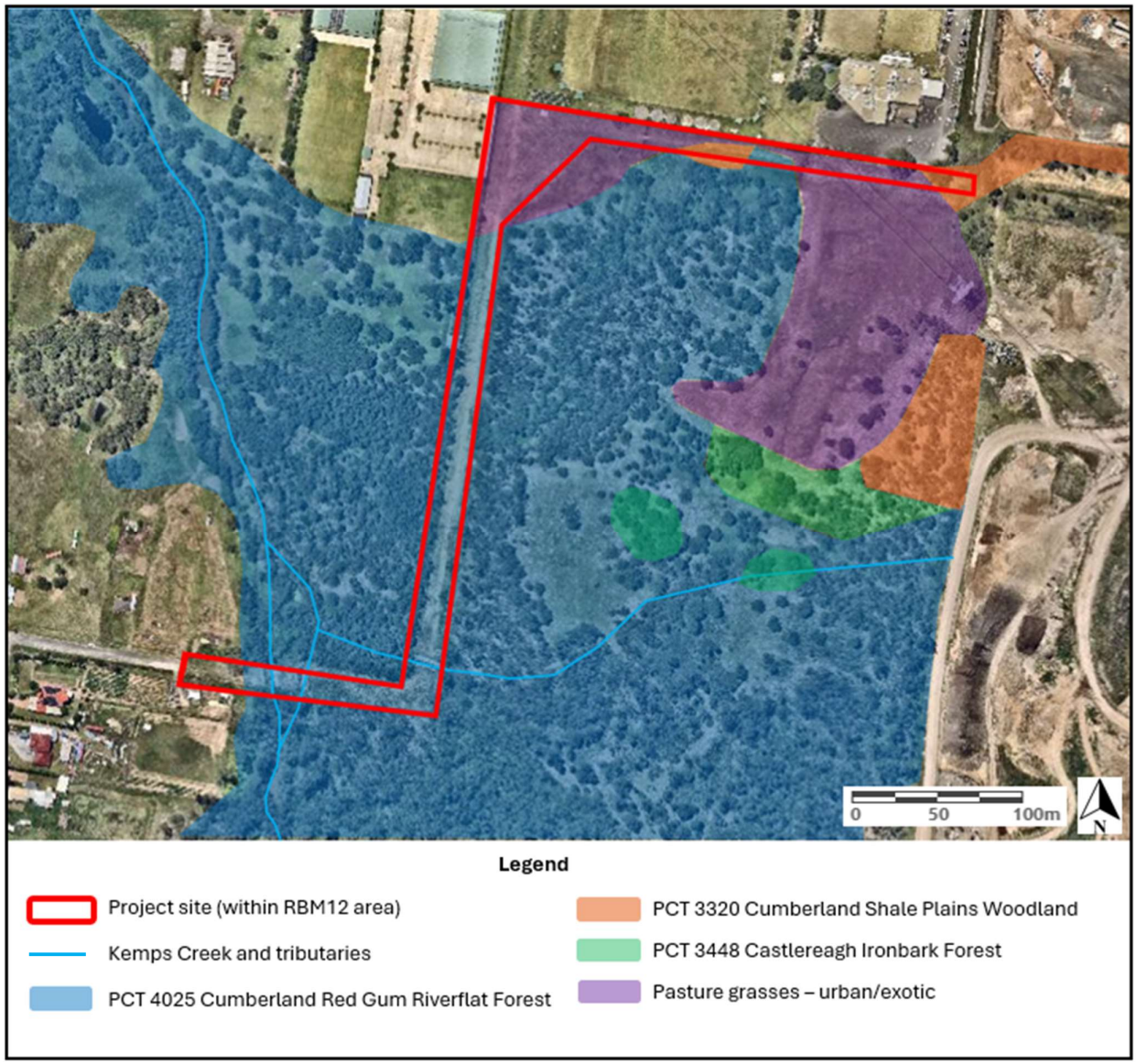


Figure 3-1 Vegetation Mapping of RBM 12 Area based on previous Promac reports and online vegetation mapping databases

A field survey carried out in the area by Promac identified the vegetation community in good condition. Dominant canopy species included a mix of natives and exotics including *Eucalyptus tereticornis, Casuarina glauca, Angophora subvelutina, Schinus var. areira* (Pepper Tree) and *Jacaranda mimosifolia* (Jacaranda). The midstorey was dominated by *Ligustrum sinense* (Small-leaved Privet) regeneration. Ground cover was predominantly comprised of exotic species including *Avena barbata* (Bearded Oats), *Cenchrus clandestinus* (Kikuyu Grass), *Chloris, Araujia sericifera, Rubus fruticosus agg, Ipomoea indica* (Morning Glory), *Lilium bulbiferum* (Orange Lily), *Bidens and Hypochaeris radicata* (Catsear).

Pre-clearance reports carried out by Promac identified that 260 trees were surveyed within 20m of the pipe alignment for these works. It is noted that not all these trees were removed by Promac. The dominant species consisted of *Eucalyptus*

moluccana, Eucalyptus tereticornis, Melaleuca decora, floribunda and Casuarina glauca. Fourteen of these trees consisted of habitat features (hallows and/or nests).

The John Holland ecological survey identified that the vegetation within the RBM12 impacted corridor is comprised mainly of exotic species with some common native species. This area has experienced substantial disturbance associated with Promac's works. There are no large tree or shrub species present within the corridor and the area consists of grass cover, invasive weeds and bare earth. The previous clearing works have left the corridor devoid of hollow bearing trees and other habitat features associated with vegetation. The dominant vegetation type includes grasses such as Common Couch *(Cynodon dactylon)*, Buffalo Grass *(Stenoaphrum secundatum)*, and Kikuyu Grass *(Pennisetum clandestinum)*. Common Couch grass is regarded as a native species; however, it is likely that this was artificially planted following the installation of the pipeline by Sydney Water, for soil stabilisation and to reduce impacts to air quality from dust. The area also appears to be subject to regular maintenance and grazing from livestock. Evidence of mowing and slashing could be seen throughout the corridor and goats were present on site during the December 2023 site survey.

Vegetation that occurs in the areas adjacent to the RBM12 impacted corridor consist of stands of native vegetation which have been identified as the following PCTs:

- PCT 3320 Cumberland Shale Plains Woodland (CEEC, BC Act and EPBC Act)
- PCT 4025 Cumberland Red Gum Riverflat Forest (EEC, BC Act).

3.2 Threatened Species

The Promac pre-clearance inspection identified the following threatened species withing the area:

- Downy Wattle (*Acacia pubescens*)
- Dillwynia tenuifolia
- Juniper-leaved Grevillea (*Grevillea juniperina*)
- Small-flower Grevillea (*Grevillea parviflora*)
- Marsdenia viridiflora
- Nodding Geebung (*Persoonia nutans*)
- Spiked Rice-Flower (*Pimelea spicata*)
- Brown Pomaderris (*Pomaderris brunnea*)
- Pultenaea parviflora
- Matted Pea (*Pultenaea pedunculata*)

The John Holland ecological survey of the RBM12 impacted corridor has identified that the area was subject to extensive disturbance prior to the Project. As a result, the native vegetation that previously occurred in the area has been removed along with the potential to support habitat for threatened species that occur in the locality of the project. No threatened flora or fauna species were recorded during the site visits completed in 2023. Threatened species and measures to reduce the likelihood of impacts towards them have been considered in the CEMP.

3.3 Weeds

The John Holland ecological survey identified that the RBM12 impacted corridor contained several exotic weed species. One (1) of the species identified is listed as a Weed of National Significance (WoNS):

- Fireweed *(Senecio madagascariensis)*.

No additional species were identified in the Promac reports, beyond those listed in Section 3.1 (some of which were removed as part of the Promac works).

Under the NSW *Biosecurity Act 2015,* all landowners have a general biosecurity duty to prevent, eliminate or minimise risk associated with weed species.

Rehabilitation works outlined in this plan include the removal of weed species and maintenance to prevent the spread of weeds into the corridor and into adjacent areas.

3.4 Riparian Areas

The RBM12 impacted corridor is intersected by two creek crossing associated with Kemps Creek. These areas have been heavily altered due to previous works in the area. Bank stabilisation methods have been implemented on both sections of the creek within the corridor as a result of riparian vegetation removal. At the time of field investigations, the creek crossing closest to Plate 7 (Appendix D) did not have visible water moving through the area.

The proposed construction area crosses through the two waterways associated with Kemps Creek, however due to existing infrastructure in the RBM12 impacted corridor, concrete casings are already present under the waterways and will be used in the installation of the brine pipeline in this area, avoiding excavation within the riparian area. No barriers will need to be installed in the creek during the construction of this section of the Project, avoiding impacts to key fish habitat mapped in the area.

4 Rehabilitation Methodology

The rehabilitation methodology detailed in this plan adopts principles from the following documents:

- Managing Urban Stormwater, Soils and Construction Volume 1 (Blue Book);
- Restoring Native Vegetation: Guidelines for assisted regeneration and revegetation. Biodiversity Conservation Trust August 2019;
- Liverpool City Council Environment Restoration Plan. April 2007;
- Liverpool Biodiversity Management Plan 2012; and
- Sydney Water Technical Specification Over and Adjacent to Pipe Assets.

The methods outlined in this plan only apply to the RBM 12 impacted corridor and seek compliance with CoA E19 and E20 of SSI-8609189.

4.1 Performance Specifications

The VIS is a measure of flora composition, structure and function (habitat). Therefore, an increased VIS would require increases in one or more of these metrics. This is in addition to the management of weed species, which otherwise negatively affects these metrics.

A net gain in biodiversity values will require the planting of native groundcover flora and emplacement of leaf litter and fallen logs. Guidance specifications are provided as follows to aid in achieving a positive biodiversity outcome:

- Floristic composition: Establish at least 20 native plant species characteristic of PCT 3320 including keystone species;
- Floristic structure: Achieve a minimum 60% total native vegetation cover at the 1,000m^2 scale; and
- Function: Emplace leaf litter and fallen logs (>10cm diameter) across the corridor.

Detailed specifications are provided in the following sections.

4.2 Site Planning

The RBM12 impacted corridor was surveyed on 25 May 2023 and 19 December 2023 to understand the existing condition of the area and adjacent vegetation types, extent of excavation and construction activities, and condition riparian crossings. This survey was carried out following of Promac works and associated clearing of the area. Monitoring plates have been established and are mapped in Appendix A and depicted in Appendix D. These plates are to be used to document “before and after” photographs (noting the “before” photos depict the condition after completion of the Promac works). Images should be captured prior to construction works taking place and repeated at the same monitoring plates throughout the rehabilitation works. Photographs at each monitoring plate should be documented at the following times:

- Prior to excavation and installation of the pipeline,
- After the pipeline has been installed and covered,
- After the first planting/seeding event has been completed,
- Each month until the monitoring period has expired,
- Images should also be captured after any additional planting/seeding events, before and after periods of maintenance on the pipeline, and upon completion of the Project.

Monitoring plates are to be marked with robust metal stakes and clearly marked so that they are easily identifiable to those working in the area.

Rehabilitation works undertaken by a suitably qualified rehabilitation/bush regeneration contractor, are to occur as soon as practical after construction of the brine pipeline mapped at Appendix B of the SSI-8609189 approval using the methods outlined in the CEMP. Rehabilitation works will include:

- Source locally endemic and suitable species to be used in revegetation of the RBM12 impacted corridor;
- Return of construction areas to pre-construction ground levels, where practicable;
- Removal of all equipment associated with the construction and installation of the pipelines, except for equipment and materials required for the implementation and support of rehabilitation and/or maintenance works. This may include

fencing to assist with delineating rehabilitated areas from other areas that have been returned to the landowner for the purpose of grazing;

- Application of soil treatments where the existing soil conditions are likely to impede to success of rehabilitation,
- Establish exclusion zones of revegetated areas; and
- Ongoing monitoring, maintenance, and watering of the revegetated areas over the maintenance period.

Construction activities must avoid impacts to the adjacent areas of native vegetation.

The RBM12 impacted corridor is within the Phase 2 Aerotropolis Development Control Plan and therefore any plantings or habitat enhancements must consider the risk of wildlife attraction interfering with airport operations.

4.3 Seed and Plant Selection

Areas within the RBM12 impacted corridor mapped as Pasture grasses – native/exotic in Figure 3-1 will be revegetated back to its pre-construction condition in accordance with landholder PCAA.

Areas within the RBM12 impacted corridor mapped as PCT3320 and PCT4025 in Figure 3-1 will consist of grasses and other ground cover species, shrubs and trees characteristic of PCT 3320 and PCT 4025. The rehabilitation works will aim to recreate PCT's that in the area prior to disturbance as much as possible. The location of planted grasses, shrubs and trees dictated by restrictions provided in *Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets*. Applicable restrictions related to planting within a pipeline corridor include:

- *Maintain free and full access*
- *Don't plant trees closer than half the mature tree canopy drip line radius to the pipe*
- *Provide a tree root barrier if the pipe is under the future mature tree canopy. Install the barrier along the length of the pipe to the full extent of the canopy drip line.*

The installation of a tree root barrier is not considered feasible for this project and therefore all trees and shrubs will be planted so the future mature tree canopy is not above the pipeline. Based on the above requirements, revegetation will be split into two separate zones as detailed below:

- **Revegetation Zone 1** – This zone is immediately above/adjacent to the pipeline alignment. To allow for access to complete necessary maintenance during operation of the pipelines, and to minimise potential impacts to the Sydney Water pipeline asset, plantings in this zone will be limited to grass/groundcover species. This zone will extend a minimum of 3m either side of SW pipeline assets to allow appropriate access.
- **Revegetation Zone 2** – This zone is on the outer edges of the RBM12 impacted corridor will include the planting of tree and shrub species, as well as grass/groundcover species. The width of this zone will be between the extent of Revegetation Zone 1 and the existing stands of vegetation outside the RBM12 impacted corridor. It's noted that while trees and shrubs can be planted in this zone, species must be carefully selected to ensure that the mature tree canopy will not extend above SW pipeline assets as required by *Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets*.

A diagram showing the indicative location and widths of Revegetation Zones 1 and 2 in relation to SW pipeline assets is provided in Figure 4-1.

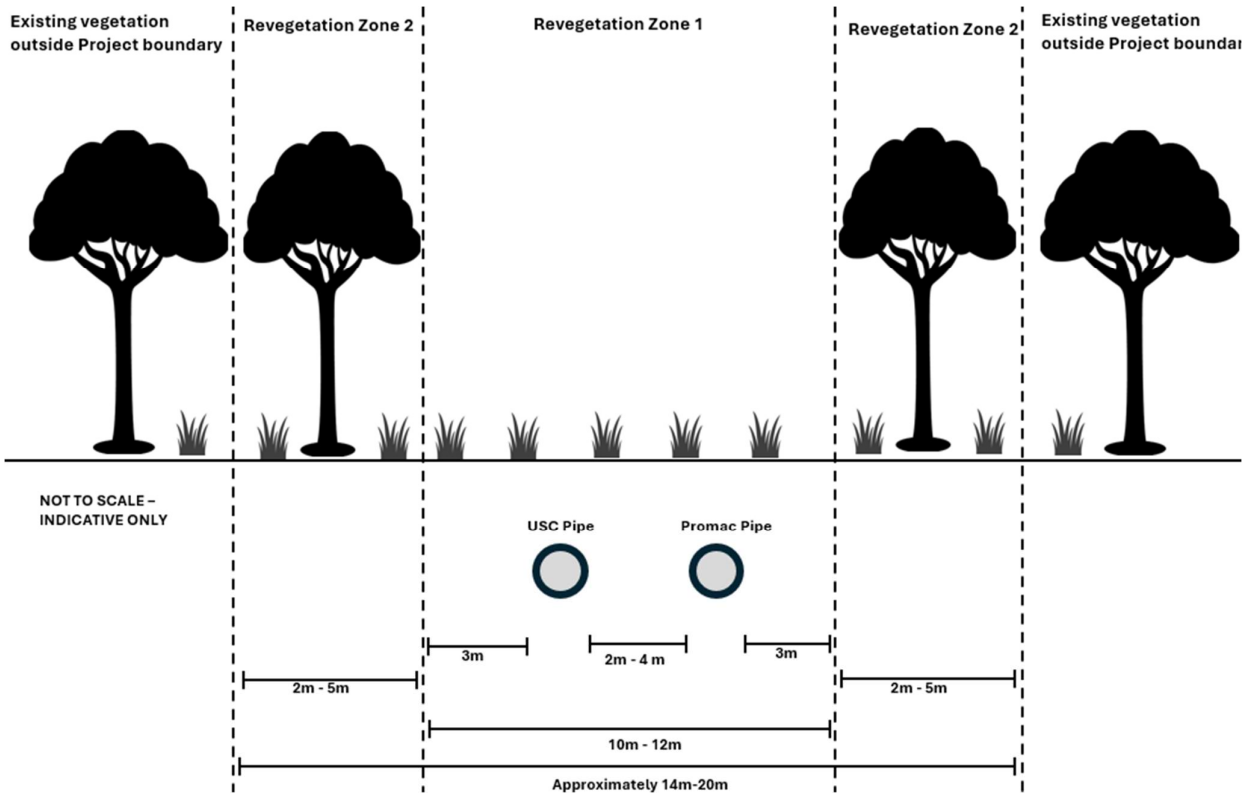


Figure 4-1 Diagram of approximate widths of revegetation zones in relation to SW pipeline assets.

Large trees or shrubs cannot be planted in the riparian vegetation zone immediately above the pipeline asset as this is likely to adversely affect the future functioning and maintenance of the pipeline asset. Revegetation works are to be limited to longer lived (perennial) groundcover species to stabilise soils. Species such as Matt grasses (e.g., *Lomandra longifolia*) are recommended for this purpose.

Species used in rehabilitation should be consistent with the existing adjacent vegetation outside the RBM12 impacted corridor. These species should be considered as a priority and sourced from local nurseries and their condition inspected prior to use to determine viability and increase the likelihood of successful establishment.

A minimum of 20 species characteristic of PCT 3320 and PCT 4025 are to be established in the corridor at the 1,000m^2 scale so as to achieve an even distribution of species throughout the rehabilitation space. At least 10 of the grass/groundcover species, and 5 of the shrub/tree species in Appendix B must be included in the planting specification, with those in bold identified as essential.

Species listed in bold should comprise at least 50% of the total native vegetation cover achieved in the rehabilitated space as these species are characteristic of PCT 3320 and are resilient to open environments and seasonal fluctuation.

A full list of groundcover, shrubs and tree species from the adjacent PCTs can be found in Appendix B.

In the event that these species cannot be located in quantities or condition suitable to be used in revegetation, proposed replacement species should be agreed with John Holland prior to establishment and notified to the landowner, DPHI and EHG.

4.4 Removal of Groundcover Vegetation and Topsoil

Construction works will require the excavation of a trench within the RBM12 impacted corridor. Minimal vegetation persists in the corridor, however erosion and sediment controls in accordance with the Surface Water and Groundwater CEMP sub-plan, should be implemented in areas of vegetation/ groundcover removal in order to minimise the time that soils are left exposed.

Removal of soil should only commence once erosion and sedimentation control measures are in place. It is recommended that soils be stripped progressively in a staged approach ahead of the active excavation area. Topsoils will be segregated from sub soil layers. This is to minimise impacts to air quality and soil erosion. Soil should be removed to 150mm deep or greater where available, this will be subject to design and depth of the Brine pipeline through this corridor. This activity is to be monitored by the site supervisor/ environmental representative. Surfaces that have undergone stripping must be inspected by a suitably qualified geotechnical engineer to ensure all topsoil has been removed. The viability and reuse of soils excavated will need to be determined, as observations of existing conditions revealed that the current soil profile consists of debris from backfilling associated with previous construction activities in the corridor.

Where good quality topsoil exists, a stockpile should be maintained for re-use in the disturbed area. Stockpiling of good quality topsoil is crucial to ensure the physical, chemical, and biological characteristics of the soil are maintained. Protection of these features will promote successful revegetation of the corridor. Measures to assist in the successful stockpiling of soil include:

- Placement of stockpiles further than 5 m from existing vegetation, drainage, and access routes;
- Segregation of topsoil and sub soil layers;
- Stockpiles should be no more than 2 m in height;
- Stockpiles should be covered to prevent erosion into adjacent areas and when in place for longer than 10 days; and
- Implement measures to divert water around stockpiles.

4.5 Revegetation

The implementation of this plan will be undertaken in two phases of works:

- The establishment phase (including ground leveling works, planting and installation of additional habitat features); and
- The maintenance phase (Including, watering, additional planting and revegetation, if required, monitoring and reporting).The maintenance phase will end once BCS is satisfied that maintenance is no longer required.

4.5.1 Soil Preparation

Once excavation and pipeline installation works have concluded and the area of impact is ready for revegetation, compacted soils should be ripped to 100-150mm depth. Benefits of preparation of subsoils prior to the addition of topsoils include:

- Increase in soil moisture content and reducing run-off;
- Promotes binding with topsoil once added to the environment; and
- Assists the roots of new vegetation to penetrate past the topsoil layer and promote success of rehabilitation.

Prior to application of topsoil, stockpiles should be certified as being free of weeds and contaminants, treatment of weed and contaminants may be required to achieve this.

Topsoil should be spread across the impacted area to a depth of 75mm, this is to provide adequate depth for seeds and seedlings to retain moisture. After the topsoil is applied, the area should be furrowed horizontally, or perpendicular to the flow of water, using a suitable method such as:

- Diamond harrows, which create regular horizontal furrows in the placed topsoil. The harrows can be dragged by a bobcat or similar, or attached to the arm of an excavator for steep batters where access is difficult; and/or
- Prickle chain, where a chain with a weight of 25 kg/metre can be attached to an implement and dragged to create horizontal furrows.

Furrowing of topsoil at this stage of rehabilitation provides seeds a loose surface which is conducive to germination and minimises the risk of seed loss during rain events. Furrowing also allows plant roots to penetrate deep enough into the topsoil layer to promote stability and access to moisture.

Stockpiled topsoil is likely to be insufficient to cover the disturbed area, therefore additional topsoil should be sourced from a landscape supplier that compliments the existing soil quality. Sourced topsoil should consist of a loam textured material and be suitable for the cultivation of all plant material. The topsoil should contain at least 5% organic material and have a pH within the range of 5-6.5.

All materials imported to the site must also meet the requirements of the CEMP and Soil and Contamination CEMP Sub Plan. Documentation relating to the source of material and materials tracking information, must be retained for inclusion into subsequent validation reporting and review by the NSW EPA accredited site auditor.

4.5.2 Planting

Prior to the revegetation of the RBM12 impacted corridor, habitat features such as rocks and logs should be placed throughout the rehabilitation area, these material should be sourced from within the pipeline corridor. This can be done haphazardly and will assist in the increase of habitat value along the corridor.

Revegetation through seeding and planting of tube stock must be carried out progressively within seven days of completion of each 500m^2 of exposed surface as per the Sydney Water Technical Specification – Civil 2022. Tube stock used in the revegetation of the RBM12 impacted corridor should be locally sourced where possible, in line with CoA E20. Revegetation through seeding can be undertaken using one of the following methods:

- Hand seeding: This method is suited to areas that are inaccessible to machinery, for example the southern portion of Section two that is bounded by two creek crossings;
- Direct seeding: This method includes direct drilling to a depth of 10-15mm. This is usually a cost-effective method of establishing plants from seed; and
- Hydro-mulching: This method includes the application of seeds within mulch which has the potential to improve germination and establishment.

Revegetation through planting of tube stock can be completed either mechanically using tree planting devices or hand planting. Tube stock will typically be used for shrub and tree species. When planting tube stock for revegetation the following should be completed:

- Water all tube stock plants the day before planting;
- Plant tube stock at the same depth in the soil as it was in the container. Reuse stockpiled vegetation wherever possible.
- Place tube stock in the ground and gently firm the soil around the plant;
- Water the planted tube stock thoroughly and remove any air pockets in the soil; and
- Erect tree guards around all plants to provide protection from drying out, wind, frost, and grazing.

Selection of revegetation method should be based on the location of rehabilitation, soil condition and scheduling requirements.

Fertiliser should be applied at the time of planting to each plant used in revegetation. This should be in the form of a native, slow release product with a N:P:K ratio similar to 21.8:0.7:7.2. If required, water crystals can be used to reduce the likelihood of death in establishing plants. This also has the potential to reduce the amount of watering required at the beginning of the rehabilitation period.

4.5.3 Watering

Watering of the revegetated areas should commence at the conclusion of planting. This is to ensure that the survival and establishment rates have the highest chance of achieving successful rehabilitation. All watering taking place in the RBM12 impacted corridor is to abide by all local authority water restrictions and/or guidelines.

Water should be guided by the climatic conditions at the time of planting and thereafter. Watering should occur during the morning or afternoon as these times are typically the coolest parts of the day, and will assist in water retention of the soil and ensure the maximum amount of water is available to the plants. The following is to be used as a guide and adjusted based on the climatic conditions of the day:

- Weeks 1-4: Once every 1-7 days;
- Months 2-4: Once every 14 days; and
- Months 5-6 and thereafter: Once per month.

Watering should be dependent on rainfall and can be increased/decreased based on the weather conditions of each time period above. The frequency of watering will reduce as the plants become established. Generally, after a period of 4-6 months plants should be sufficiently established and able to satisfy their water needs through the environment and supplementary watering should conclude. In the event of periods of extreme dryness, watering regimes should be reinstated to ensure the viability of the revegetated corridor.

4.5.4 Protection of Rehabilitated Areas

Upon completion of revegetation works, an exclusion area should be delineated using temporary fencing and signposting. Access routes utilised by maintenance staff should also be clearly marked within the corridor to reduce impacts to newly established vegetation. All machinery used in construction and rehabilitation works is to be removed from the site at the conclusion of works.

Temporary fencing used to create exclusion areas should be capped star pickets and high-visibility para webbing or other suitable exclusion methods. These fences must also include signage stating that this area is environmentally sensitive and should only be accessed by authorised personnel. Fencing also mitigates the potential for incursion by grazing animals, both native and introduced, into the corridor.

Measures should also be put into place to mitigate impacts associated with plant pathogens and problem fungus species. One species identified within the wider Project area is *Phytophthora cinnamomic* (Promac Prospect South to Macarthur Distribution Systems Link, REF Addendum 2021). This species spreads through infected water and through root systems, or by humans moving contaminated plant material. This can occur unintentionally through tracking soil on the bottom of boots. To prevent the spread of pests such as these the following should be implemented:

- Ensure all soil and plant material entering the site is certified free of weeds and pathogens,
- Schedule maintenance during dry periods as pests such as fungus is spread easier in wet and muddy conditions,
- Ensure equipment taken on and off site is adequately washed down and disinfected.

The maintenance phase will end once BCS is satisfied that maintenance is no longer required. Ongoing maintenance beyond this time frame (the operation phase of the Project) will be managed by the operator (Sydney Water).

4.6 Habitat Emplacement

Both fallen logs and leaf litter are habitat features that can be introduced into the rehabilitated space that will contribute to a higher VIS. The following specifications are recommended:

- Leaf litter: Place ‘brush’ obtained from clearing events onto the ground surface (during planting) to increase surface leaf litter cover. At least 50% of the land surface should be covered by leaf litter obtained from this source. The placement of other sources of organic matter, such as mulch should be carefully performed to minimise any adverse effects on the establishment and subsequent recruitment of native groundcover plants (e.g. grasses).
- Fallen logs: logs in minimum 0.5m lengths with a minimum 0.1 m diameter are to be placed on the ground surface at a minimum rate of ~50 lineal metres per 1,000m^2. Shorter log lengths may be preferred as this specification would have minimal influence on corridor operation (i.e., logs can be moved around within the corridor with minimal effort). Logs should be sourced from within the pipeline corridor, where possible.

The RBM12 impacted corridor is within the Phase 2 Aerotropolis Development Control Plan and therefore any plantings or habitat enhancements must consider the risk of wildlife attraction interfering with airport operations.

5 Maintenance and Monitoring

5.1 Maintenance

Maintenance of the rehabilitated RBM12 impacted corridor is vital to the success of this RMP. Maintenance activities are to commence immediately after the revegetation of the corridor and continue until BCS is satisfied that maintenance is no longer required. CoA E67 of SSI-8609189 requires plant maintenance to occur during construction and operation of the pipeline assets. It also requires that any plants lost must be replaced in one-for-one likeness in species and growth form.

Watering regimes outlined in Section 4.4.3. should be strictly implemented throughout the monitoring phase of rehabilitation. This will increase the likelihood of seed germination and tube stock plants establishing themselves within the corridor. Watering should continue until at least 60% ground coverage has been achieved within the corridor. In the event of seedling die off, additional planting should occur in accordance with CoA E67.

Maintenance activities should include the following works:

- Spraying of annual and perennial weeds,
- Repairing/replacing tree guards around establishing plants,
- Soil stabilisation,
- Supplementary watering (watering additional to the regime in Section 4.4.3.),
- Replacement of lost plant species.

An indicative works summary is listed in Table 5-1.

Table 5-1 Indicative Maintenance Works Summary

Maintenance Activity	Frequency	Responsibility
Spraying of annual and perennial weeds	Two days, monthly. Increase frequency as required in warmer months.	Rehabilitation/bush regeneration contractor
Repairing/replacing tree guards	As required.	Rehabilitation/bush regeneration contractor
Supplementary watering	As required in periods of hot and/or dry weather. To be considered during the early establishment of vegetation in the corridor.	Rehabilitation/bush regeneration contractor
Replacing lost plants	As required, checks are to be conducted every 6 months.	Rehabilitation/bush regeneration contractor

5.2 Monitoring

5.2.1 Method

Monitoring revegetation success is to be evaluated by calculating the Vegetation Integrity Score (VIS) using BAM Plots followed by comparison with baseline conditions. A net increase in biodiversity value would be achieved by observing an increase in the VIS over the baseline/ prior monitoring data.

The BAM plots are to consist of a 50 m by 20 m plot to measure floristic composition, structure and habitat function. Floristic composition and structure are measured within a 20 m by 20 m plot nested within the larger BAM plot. Data collection within the plot will include:

- Identification of all flora species present within the plot area. All plots are to be carefully examined by the field team until they are confident all flora species within the plot are detected.

- Stratum and layers in which all species occur
- Growth form of species
- Abundance rating for each species
- One 1,000 m^2 (20m by 50 m) plot to assess the function attributes (Number of hollow bearing trees, stem size class, tree regeneration and length of logs)
- Five 1 m^2 plots to assess average leaf litter cover, bare earth, cryptogram, and rock cover.

The VIS is then calculated by entering BAM plot data into the BAM-Calculator[1]. These scores will be used to quantify the increase in vegetation integrity, a measure of biodiversity value.

5.2.2 Baseline

The baseline VIS calculated for the existing environment using three (3) BAM plots (December 2023) is provided in Table 5-2. It is noted that densities given do not consider the condition of the site prior to Promac works. Pre-condition of the site prior to Promac works is described in Section 3.

Table 5-2 Plant Numbers and Densities

BAM Plot #	Composition						Structure						Function											VIS
	Tree	Shrub	Grass	Forb	Fern	Other	Tree	Shrub	Grass	Forb	Fern	Other	LL (%)	FL (m)	TS <5cm	TS 5-9	TS 10-19	TS 20-29	TS 30-49	TS 50- 79	TS >80	HTs (#)	LTs (#)	
1	0	1	2	0	0	0	0.0	0.1	35.0	0.0	0.0	0.0	16.0	0	0	0	0	0	0	0	0	0	0	7.2
2	0	0	1	0	0	0	0.0	0.0	35.0	0.0	0.0	0.0	5.2	0	0	0	0	0	0	0	0	0	0	1.6
3	0	1	3	2	0	1	0.0	0.1	35.1	0.2	0.0	0.1	11.0	3	0	0	0	0	0	0	0	0	0	8.5

LL = leaf litter
FL = Fallen Logs
TS = Tree Stem diameter at breast height
HBTs = Hollow-bearing trees
LT = Large Trees

The monitoring plot locations are as follows and shown in Figure 5-1:

- BAM Plot 1: 296740E 6248360N Bearing 355
- BAM Plot 2: 296790E 6248745N Bearing 119
- BAM Plot 3: 297115E 6248685N Bearing 268

[1] BAM Calculator (nsw.gov.au)

Figure 5-1 BAM Monitoring Plot Locations

5.2.3 Frequency

Monitoring of the RBM12 impacted corridor should occur in the maintenance phase and will end once BCS is satisfied . Monitoring data should be recorded and appropriately stored in order to demonstrate the success of the rehabilitation methods.

Documentation should occur at the monitoring plates identified in Figure 1 of Appendix A. Monitoring should provide metrics to demonstrate a net ecological gain. Table 5-3 outlines monitoring surveys that are to be undertaken in the corridor.

Table 5-3 Rehabilitation Monitoring Activities

Rehabilitation Action	Monitoring Requirement	Frequency	Responsibility
Weed Control	Quadrat and transect surveys through the rehabilitated corridor	Survey every 6 months, to be accompanied by a report to summarise the findings of each survey.	Rehabilitation/bush regeneration contractor

Rehabilitation Action	Monitoring Requirement	Frequency	Responsibility
Revegetation	Revegetation success monitored by planting survivorship method which involves measuring plant survival at regular intervals following revegetation to monitor the success of planted/salvaged seedlings. Collecting the following over an established 20 metre transect: • Planting success recorded as either ALIVE or FAILED (failed includes missing and deceased). • Signs of predation or disturbance (plant damaged, presence of scat, tree guard damaged or removed, etc.,) • General comments: correctly planted, sufficient watering undertaken, plant health and vigour (observed nutrient deficiencies). Photos taken at each monitoring plate identified in Figure 1 of Appendix A prior to rehabilitation works, every 6 months during the monitoring period and upon completion of the monitoring period.	Survey every 6 months, to be accompanied by a report to summarise the findings of each survey.	Rehabilitation/bush regeneration contractor
Biodiversity improvement	Repeated BAM plots at baseline measurement sites	Survey every six months, to be accompanied by a report to summarise the findings of each survey including recommendations	Project ecologist

5.3 Contingency for Unsuccessful Rehabilitation

In the event that monitoring identifies shortfalls in the rehabilitation of the RBM12 impacted corridor, i.e. the pre-construction ecological value is not achieved or improved, JH would implement additional and/or alternative methods to achieve the desired rehabilitation outcomes. Remedies would be specified in an investigation report targeting the rehabilitation shortfalls. Replacement seeding and/or planting would be required where seedlings do not successfully establish within the area of impact. Alternative methods to ensure successful rehabilitation of the corridor will be developed and implemented in consultation with a suitably qualified restoration contractor/ environmental representative.

6 Compliance, Review and Continuous Improvement

6.1 Resources

The John Holland Project Team organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of biodiversity management and environmental controls are detailed in Section 5.

A qualified ecologist will be engaged to provide specialist advice including pre-clearing inspections and post clearing reports, inspections during clearing, following any unexpected threatened species finds and for weed identification and removal.

The infrastructure Sustainability Council (ISC) V2.1, credit ECO-1 Ecology, mandates that management plans to address ecological impacts and opportunities associated with the project must be prepared and/or reviewed by a suitably qualified professional in bush regeneration (SQP). ISC defines a SQP as *"A person with tertiary qualifications in any of these areas: ecology, natural resource management, environmental management, or environmental science; and a minimum of 7 years' experience in the field of ecology and ecological assessment."* The minimum qualifications and years of experience relevant to the review and preparation of this plan have been undertaken by ERM in accordance with this definition.

6.2 Training and Awareness

All staff and subcontractors will undergo project-specific induction training that includes relevant biodiversity matters and associated management measures that must be implemented and/ or considered when planning and delivering work.

Additional daily and task-specific training and awareness material may be delivered to relevant staff and workforce, in the form of toolbox talks and pre-start meetings, to ensure that where detailed information is required, it is accessible to all involved with the project.

The general project induction will include a component on flora and fauna management to ensure that personnel understand the potential impacts from construction and the proposed mitigation measures. This will include, but not be limited to, the following:

- Existence and requirements of this RMP;
- Relevant legislation, licenses and permits;
- Types of threatened flora and fauna identified within the project area and how these species can be recognised;
- Fauna rescue requirements;
- No-go areas and the requirement to remain outside of these locations;
- Types of weeds and pests identified within the project area;
- General flora and fauna management procedures; and
- Specific responsibilities for the protection of flora and fauna.

Toolbox and prestart meetings will be used, as required, to highlight any specific issues that arise on-site, particularly immediately prior to clearing works.

6.3 Monitoring and Inspections

Table 6-1 Flora and fauna monitoring requirements for the Project

Inspection / Monitoring Type	Record	Responsibility	When
Pre-clearing Inspection.	Pre-clearing Inspection Checklist.	Project ecologist	Prior to clearing.
Baseline ecology monitoring.	Existing environment, images to provide evidence	Project ecologist	Prior to construction During construction.
Implementation of works is in accordance with RMP for RBM12 lands.	Works inspection checklist.	Rehabilitation/bush regeneration contractor	During construction.
Weekly and post rainfall site inspections to evaluate environment environmental controls and action deficiencies and maintenance requirements (in relation to rehabilitation site preparation/soil stability/loss of early works via erosion etc).	Inspection checklist form.	Rehabilitation/bush regeneration contractor	During construction.
Success of rehabilitation works in relation to plant establishment and various criteria.	Monitoring. report / checklist	Rehabilitation/bush regeneration contractor	6 monthly.
Monitoring of the implementation of the documents listed Section 4 to ensure implementation is being carried out in accordance with the document and the terms of the project approval.	Monitoring report / checklist	Rehabilitation/bush regeneration contractor	Monthly, for the duration of the project.

6.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this RMP and other relevant approvals, licenses and guidelines. An annual review of this plan will be undertaken and documented by a SQP to reflect any feedback from monitoring activities and any changes to management responses.

Audit requirements are detailed in Section 3.9 of the CEMP.

6.5 Reporting

Six monthly reports are required to provide documentation of the progress of the rehabilitation in the RBM12 impacted corridor. This is in accordance with CoA E20 (i), which requires six-monthly summary progress reports over the maintenance period be submitted to BCS for comment until BCS is satisfied that vegetation is sufficiently established at which time the maintenance period will end.

A summary of project-specific biodiversity matters, including incident management, is provided in the project monthly report issued to Sydney Water.

There are specific reporting requirements associated with additional survey work and monitoring including:

- Results of pre-clearing inspections (flora, fauna, weed and pathogen);

- Results/ volume (area) of clearing in post-clearing surveys;
- Record all fauna relocations that occur in a fauna relocation register;
- Record of habitat feature relocation and re-use;
- Documents and evidence as requested by the Environmental Representative for input into monthly reports;
- Fauna incidents reporting; and
- Baseline ecology monitoring program reporting.

6.6 Incident Management

Any environmental incidents related to biodiversity, such as unapproved clearing of vegetation will be reported in accordance with the project's environmental incident management plan (IMP), provided in Appendix A7 of the CEMP. The IMP is consistent with Sydney Water's Incident Management Procedure (DC0000506). Any incident that is likely to cause material harm to the environment will be reported to Sydney Water within 30 minutes after the incident was first notified, as required by the Sydney Water Environment Incident Reporting Process (REF0866). The John Holland Regional HSEQ team is to be immediately informed of any incident that has caused or has the potential to cause material harm to the environment and will advise on the notification of relevant regulators and stakeholders.

A summary of project-specific biodiversity matters, including incident management, will be provided in the project monthly report issued to Sydney Water.

6.7 Continuous Improvement

The Project shall continually review and improve the suitability, adequacy and effectiveness of this plan against environmental objectives, performance criteria and relevant legislative and other associated guidance documentation, for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

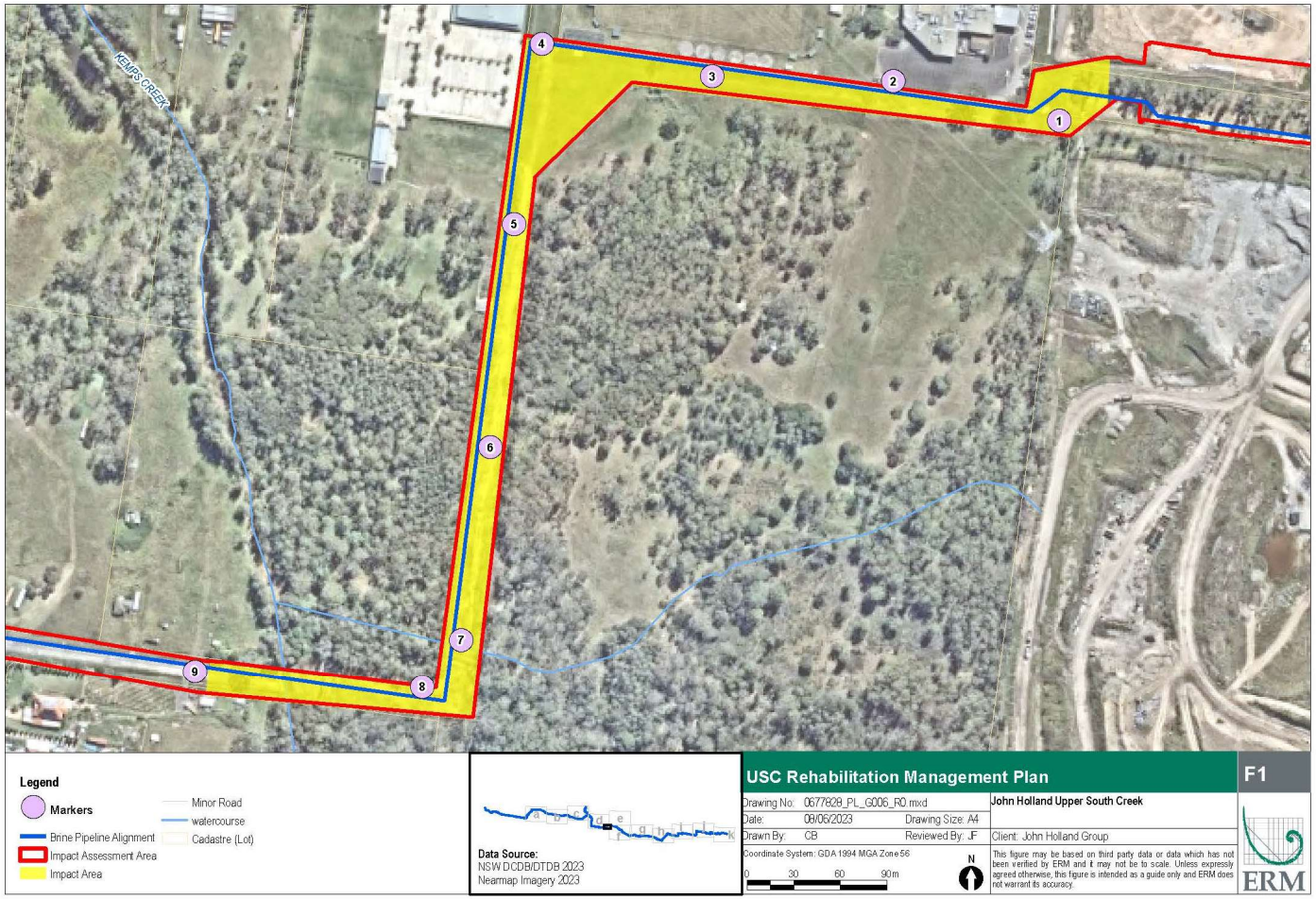
- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from the process improvement; and
- Make comparisons with objectives and targets.

6.8 RMP Update and Change Management

The environmental risk analysis processes described in Section 3.2 of the CEMP may result in the need to update or revise this Plan. Any revisions to this RMP will be in accordance with the process outlined in Section 3.12 of the CEMP and will involve consultation with DPHI and BCS.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.12 of the CEMP.

APPENDIX A – Photo monitoring locations



APPENDIX B – Species List for Rehabilitation

At least 10 of the grass/groundcover species, and 5 of the shrub/tree species in the following table must be included in the planting specification, with those in bold identified as essential.

PCT 3320 Cumberland Shale Plains Woodland		**PCT 4025 Cumberland Red Gum Riverflat Forest**	
Ground Cover Species	**Shrub/Tree species**	**Ground Cover Species**	**Shrub/Tree species**
Austrostipa verticillata	*Eucalyptus moluccana*	*Austrostipa ramosissima*	*Eucalyptus tereticornis*
Bothriochloa decipiens var. decipiens	*Eucalyptus tereticornis*	*Bothriochloa macra*	*Eucalyptu amplifolia*
Bothriochloa macra	*Eucalyptus crebra*	*Carex appressa*	*Angophora floribunda*
Calotis lappulacea	*Eucalyptus eugenioides*	*Chloris truncata*	*Angophora subvelutina*
Chloris truncata	*Corymbia maculata*	*Chloris ventricosa*	*Eucalyptus baueriana*
Chloris ventricosa	*Angophora floribunda*	*Commelina cyanea*	*Eucalyptus botryoides*
Chrysocephalum apiculatum	*Angophora subvelutina*	*Cymbopogon refractus*	*Eucalyptus elata*
Chrysocephalum semipapposum	*Eucalyptus amplifolia*	*Cynodon dactylon*	*Eucalyptus ovata*
Cymbopogon refractus (c4 grass – summer growth)	*Eucalyptus fibrosa*	*Dianella caerulea*	*Eucalyptus saligna*
Cynodon dactylon	*Acacia decurrens*	*Dianella longifolia*	*Eucalyptus grandis*
Dianella caerulea	*Acacia parramattensis*	*Dichelachne micrantha*	*Eucalyptus benthamii*
Dianella longifolia	*Acacia implexa*	*Dichondra repens*	*Eucalyptus longifolia*
Dianella revoluta	*Exocarpos cupressiformis*	*Dichondra sp. A*	*Eucalyptus moluccana*

PCT 3320 Cumberland Shale Plains Woodland		PCT 4025 Cumberland Red Gum Riverflat Forest	
Ground Cover Species	**Shrub/Tree species**	**Ground Cover Species**	**Shrub/Tree species**
Dichondra repens	*Bursaria spinosa*	*Digitaria parviflora*	*Eucalyptus viminalis*
Dichondra sp. A	*Daviesia ulicifolia*	*Digitaria ramularis*	*Melaleuca decora*
Dichondra repens	*Dillwynia sieberi*	*Echinopogon caespitosus*	*Melaleuca styphelioides*
Dichondra sp. A	*Dodonaea viscosa subsp. cuneata*	*Echinopogon ovatus*	*Backhousia myrtifolia*
Echinopogon caespitosus	*Indigofera australis*	*Einadia hastata*	*Melia azaderach*
Einadia hastata		*Einadia nutans*	*Casuarina cunninghamiana subsp. cunninghamiana*
Einadia nutans		*Einadia trigonos*	*Casuarina glauca*
Einadia polygonoides		*Entolasia marginata*	*Bursaria spinosa subsp. spinosa*
Einadia trigonos		*Entolasia stricta*	*Solanum prinophyllum*
Entolasia stricta		*Euchiton involucratus*	*Rubus parvifolius*
Epaltes australis		*Euchiton sphaericus*	*Breynia oblongifolia*
Eragrostis brownii		*Gahnia aspera*	*Ozothamnus diosmifolius*
Eragrostis elongata		*Hydrocotyle laxiflora*	*Hymenanthera dentata*
Eragrostis leptostachya		*Hydrocotyle sibthorpioides*	*Acacia floribunda*
Eragrostis parviflora		*Juncus continuus*	*Phyllanthus gunnii*
Goodenia bellidifolia		*Juncus homalocaulis*	
Goodenia hederacea		*Juncus prismatocarpus*	

PCT 3320 Cumberland Shale Plains Woodland		PCT 4025 Cumberland Red Gum Riverflat Forest	
Ground Cover Species	**Shrub/Tree species**	**Ground Cover Species**	**Shrub/Tree species**
Goodenia paniculata		*Juncus usitatus*	
Hydrocotyle laxiflora		*Juncus usitatus*	
Hydrocotyle sibthorpioides		*Lobelia anceps*	
Imperata cylindrica		*Lobelia purpurascens*	
Lobelia purpurascens		*Lomandra longifolia*	
Lomandra filiformis		*Lomandra multiflora subsp. multiflora*	
Lomandra longifolia		*Microlaena stipoides*	
Microlaena stipoides (c3 grass – winter growth)		*Oplismenus aemulus*	
Panicum effusum		*Oplismenus imbecillis*	
Panicum simile		*Panicum effusum*	
Oplismenus aemulus		*Panicum simile*	
Oplismenus imbecillis		*Persicaria decipiens*	
Plantago debilis		*Pomax umbellata*	
Plantago gaudichaudii		*Rumex brownii*	
Plantago hispida		*Senecio hispidulus*	
Plantago varia		*Sigesbeckia orientalis subsp. Orientalis*	
Pomax umbellata		*Themeda triandra*	
Senecio hispidulus		*Viola hederacea*	

PCT 3320 Cumberland Shale Plains Woodland		PCT 4025 Cumberland Red Gum Riverflat Forest	
Ground Cover Species	**Shrub/Tree species**	**Ground Cover Species**	**Shrub/Tree species**
Rumex brownii			
Themeda triandra (c4 grass – summer growth)			
Vittadinia cuneata			
Vittadinia hispidula			
Vittadinia pustulata			
Vittadinia sulcata			

APPENDIX C – Fencing and Signage Protocol

Fencing and Signage Protocol		
Clearing Limits		Must be installed prior to commencement of clearing. Do not clear outside of delineated area. A current approved Clearing Permit is required to clear or impact vegetation.
Project Boundary	Flagging (orange flagging) 	Do not impact beyond delineation Project boundary signage will be installed on the flagging
Protected environmentally sensitive areas – includes heritage areas	Signed with: 	Identifies environmentally sensitive areas onsite including high value threatened species habitat, heritage sites, threatened species and TECs No impact beyond or within the delineated area. Do not remove protection fencing or signage.
Habitat Trees	Marked with blue and white 	This will be wrapped around the tree by the project ecologist prior to clearing

APPENDIX D – Monitoring Plates

Plate 1 existing condition

Plate 2 existing condition

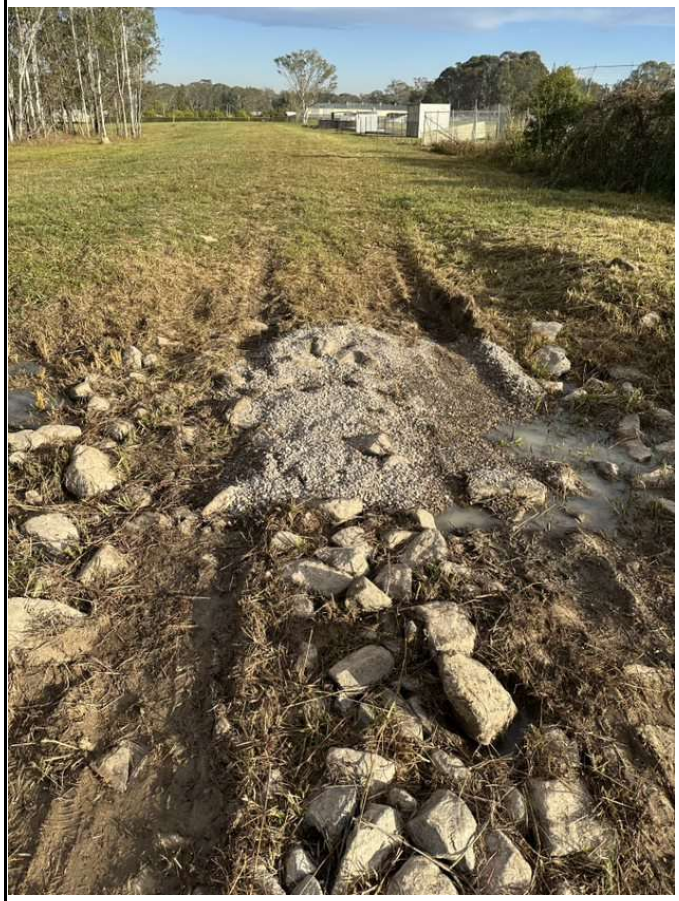


Plate 3 existing condition

Plate 4 existing condition

Plate 5 existing condition

Plate 6 existing condition

Plate 7 existing condition

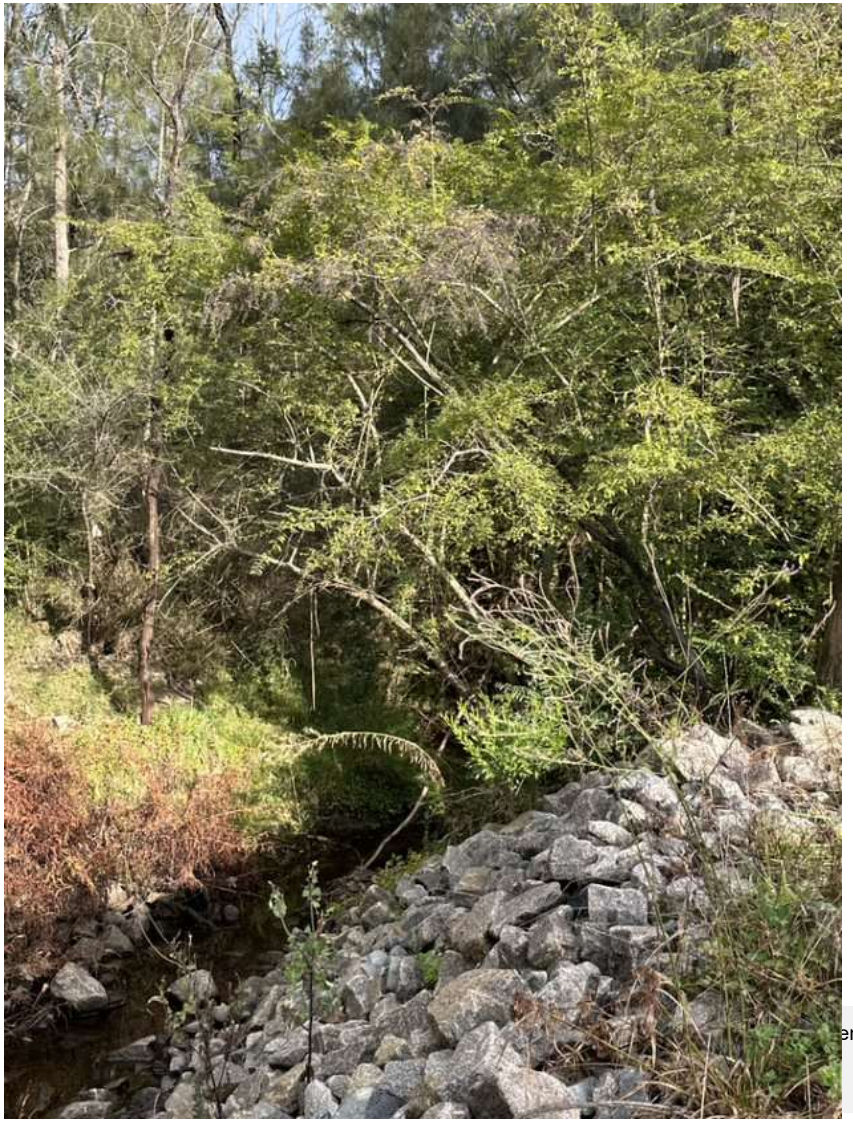


Plate 8 existing condition

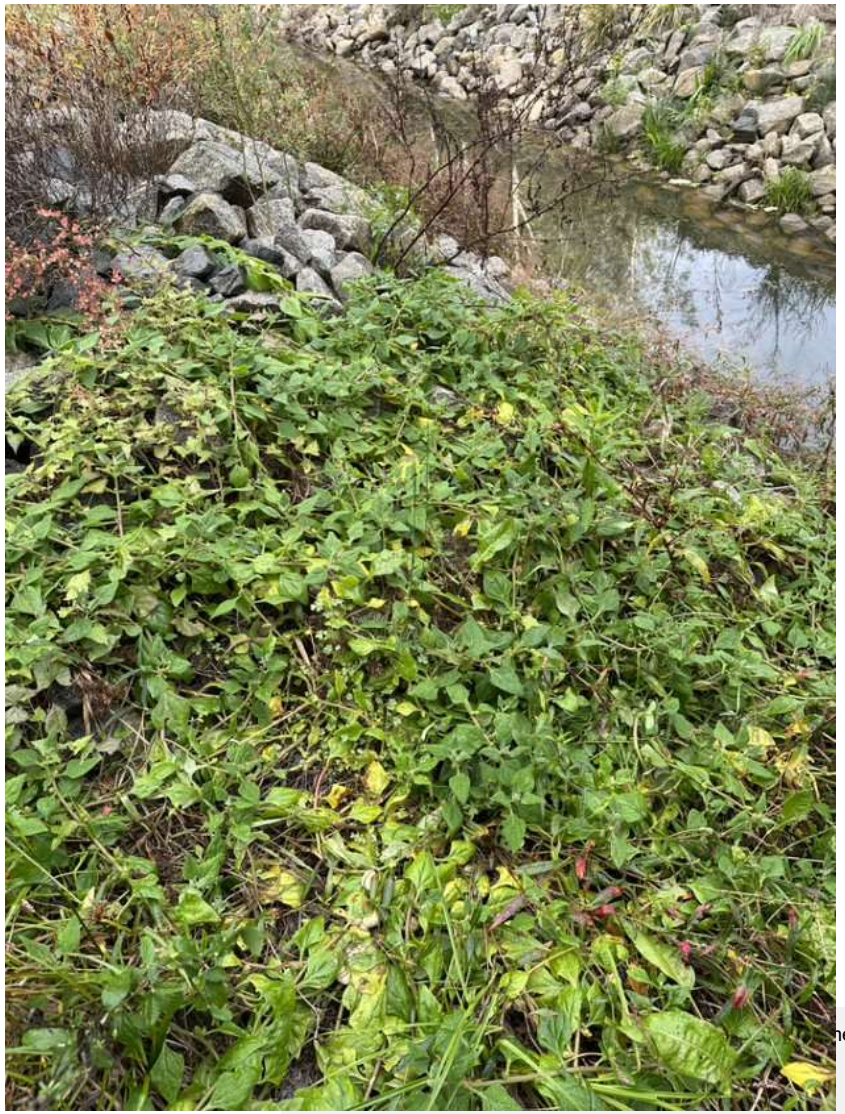


Plate 9 existing condition

Appendix E – Consultation Record

Your ref: SSD-8609189-PA-84
Our ref: DOC24/220669

Alyce Harrington
Planning, Environment and Approvals Director
Upper South Creek
John Holland

12 April 2024

Subject: Post approval consultation - conditions E19 and E20 - Upper South Creek Advanced Water Recycling Centre (SSI-8609189-PA-84) Rehabilitation Management Plan RMB 12 lands - Kemps Creek

Dear Alyce,

Thank you for your correspondence received 14 March 2024 via the Major Project Portal seeking consultation with the Biodiversity, Conservation and Science Group (BCS) in accordance with the Minister for Planning's Conditions of Approval (CoA) E19 and E20 for the Upper South Creek Advanced Water Recycling Centre – Concept and Stage 1 (SSI 8609189).

CoA E19 requires the preparation of a Rehabilitation Management Plan to revegetate and restore impacted RBM 12 red-hatched lands at Kemps Creek and for rehabilitation to occur as soon as practical after construction of the brine pipeline. CoA E20 requires the Rehabilitation Management Plan to be prepared in consultation with BCS, sets the timeline for approval of the plan and the requirements and matters to be addressed and included in the plan.

It is important to note that the RBM 12 red-hatched land in CoA E19 and E20 relates to RMB 12 in the *Order to confer biodiversity certification on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006.*

In addition to CoA E19 and E20, CoA E18 specifies:

E18 The Proponent must avoid direct or indirect impacts to ENV within RBM 12 red-hatched lands at Kemps Creek and Cross Street during construction of Stage 1 of the CSSI.

Rehabilitation Management Plan

BCS has reviewed the Upper South Creek Advanced Water Recycling Centre and Pipelines CoA E19 and E20 Rehabilitation Management Plan, RBM 12 lands – Kemps Creek (RMP) (John Holland, March 2024) and provides the following comments.

The RMP Section 2.3 states that *Two (2) properties are impacted by rehabilitation works required under the condition for RBM12 red-hatched lands and are show in Figure 2-1 below. As part of PCCA development and sign-off, the following requirements were specified for implementation by the landowners and have also been considered throughout the remainder of this RMP:*

- *Reinstatement of existing roads/fences that may be impacted;*
- *Reinstatement of grassed area;*
- *Grassed area to be compacted and seeded.*

It is unclear where the 'grassed area' is located. BCS requests that this area be identified in the plan.

Pre-existing vegetation and condition

The RMP Section 3.1 states that the RBM 12 impacted corridor experienced "substantial disturbance associated with Promac's works". It is important to note that the Upper South Creek Advanced Water Recycling Centre Submissions Report – project amendments April 2022 Table 5.1 states "Sydney Water confirms that it intends to rehabilitate the area cleared as a result of another Sydney Water project on the basis that the pre-existing condition is native vegetation. This means that the native vegetation measures in management measure G05 in Appendix B of the Submissions Report will apply. The rehabilitation will be completed after construction of the brine pipeline". It is important that the RMP includes the above advice regarding the pre-existing condition from Sydney Water.

It is understood that the rehabilitation works will aim to recreate vegetation types that occurred in the area prior to disturbance. Figure 3-1 includes a map of the vegetation types in the impacted area, but the Existing Native Vegetation in the surrounding RBM 12 lands is not mapped to vegetation type. It would be useful if Figure 3-1 included a map of the vegetation types in the surrounding RBM 12 lands area, as this would justify why the vegetation types in the impacted area were chosen. Section 3.1 also indicates that vegetation in the corridor appears to be currently mowed and slashed, it is assumed by BCS this will cease with the implementation of the RMP.

Monitoring period

The RMP states in several places that monitoring will occur for two years, as the RMP considers that this is the maintenance period. However, CoA E20 does not stipulate a maintenance period. Instead, it states that maintenance should continue "until EHG is satisfied". Therefore, BCS considers that the duration of the revegetation maintenance period is until BCS is satisfied that maintenance is no longer required. If the RMP must specify a duration, then it should be made clear that works may need to continue at the end of the specified period, and the plan will be reviewed at that time.

Plant selection

The RMP specifies that the Desired Performance Outcomes is "A net increase in biodiversity value through the establishment of a stable landform comprising of native groundcover vegetation that minimises soil erosion" and that "The planting of trees and large shrubs cannot be undertaken as these features would compromise the operation of the corridor over existing and proposed Sydney Water assets". Section 4.3 of the RMP also indicates that:

- "Plant species used in the revegetation of the RBM12 impacted corridor should be limited to grasses and other ground cover species characteristic of PCT 3320. This is in line with Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets. Deep rooted species such as large trees and shrubs are to be avoided to minimise potential impacts to pipe assets and allow for access to complete necessary maintenance during rehabilitation and the operation of the pipelines" and
- "Woody vegetation cannot be established in the riparian vegetation zone as this is likely to adversely affect the future functioning and maintenance of the pipeline asset. Revegetation works are to be limited to longer lived (perennial) groundcover species to stabilise soils. Species such as Matt grasses (e.g., Lomandra longifolia) are recommended for this purpose".

BCS seeks clarification as to why it is not possible to plant shrubs and trees in the RMB 12 impacted corridor. It is understood that the Sydney Water *Technical Guidelines - Building over and adjacent to pipe assets* ("SW269", 2021) allows tree planting provided that certain requirements are met. In addition, BCS notes that the *Rear of Gurner Ave Austral Revegetation Plan 2022* prepared by Blue Tongue Ecosystems and dated September 2022 (Gurner Ave Plan) for the

Austral and Leppington Wastewater Project (ALWP), proposed the planting of canopy trees, tall shrubs, shrubs, grasses and groundcovers in the wastewater pipeline corridor. It is unclear why it would be inappropriate to plant shrubs and trees in the RMB 12 corridor when it is possible in the ALWP pipeline corridor. BCS requests that Sydney Water provides a diagram showing the location of the USCAWRC/PROMAC pipelines within the corridor (plan and cross-section) and demonstrates why planting in the corridor in accordance with Diagram 5 of the SW269 Technical Guidelines (p.22) is not possible.

Should you have any queries regarding this matter, please contact Marnie Stewart, Senior Project Officer Planning via marnie.stewart@environment.nsw.gov.au.

Yours sincerely

S. Harrison

Susan Harrison
Senior Team Leader Planning
Greater Sydney Branch
Biodiversity, Conservation and Science

Alyce Harrington-JHG

From: Ryan Maxwell-JHG
Sent: Monday, 20 May 2024 2:52 PM
To: OEH ROG Greater Sydney Region Planning Unit Mailbox; Marnie Stewart
Subject: Re: CM Record: Re: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Marnie,

I just tried calling and left you a voicemail.

Just following up on the below. Do you have an ETA for when you will be able to confirm/provide comments on the RBM12 RMP?

Regards,

Ryan Maxwell
Environment Lead
Upper South Creek (Mon, Tue, Thu, Fri)
Sydney Program Alliance (Wed)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, May 14, 2024 2:13 PM

To: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>; Marnie Stewart <marnie.stewart@environment.nsw.gov.au>
Subject: Re: CM Record: Re: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Marnie,

Just following up on the below and whether BCS are satisfied that the comments on the RBM12 RMP have been adequately addressed?

More than happy to have a meeting or take a phone call if you would like to discuss this further.

Thanks,

Ryan Maxwell
Environment Lead
Upper South Creek (Mon, Tue, Thu, Fri)
Sydney Program Alliance (Wed)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

From: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au> on behalf of OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>
Sent: Monday, May 6, 2024 12:08 PM
To: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Subject: RE: CM Record: Re: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Ryan

If you are unable to up-load the documents on the portal, we can accept the email below as your request for comment.

We are aiming to provide a response by the end of the week.

Regards, Marnie

Marnie Stewart
Senior Project Officer – Planning
Biodiversity and Conservation
Department of Climate Change,
Energy, the Environment and Water

T 02 9995 6868 | **E** marnie.stewart@environment.nsw.gov.au
4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150

dcceew.nsw.gov.au

From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Sunday, 5 May 2024 7:41 PM
To: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au>
Cc: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>
Subject: CM Record: Re: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Marnie,

Regarding the below email and in reference to uploading the updated RBM12 RMP into the Major Projects Portal, I have been advised that the original entry is closed and we no longer have access to re-upload documents. I hope the previous email correspondence will suffice.

If you would like to have a meeting or phone call to discuss the updated RBM12 RMP, please let me know and I'm more than happy to coordinate.

If BCS is satisfied that all comments have been adequately addressed, can you please advise.

Thanks,

Ryan Maxwell
Environment Lead
Upper South Creek (Mon, Tue, Thu, Fri)
Sydney Program Alliance (Wed)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

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Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, April 30, 2024 5:03 PM
To: Marnie Stewart <marnie.stewart@environment.nsw.gov.au>
Cc: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>
Subject: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Marnie and Susan,

Thank you for reviewing and providing comments on the Rehabilitation Management Plan, RBM 12 lands – Kemps Creek (RBM12 RMP) for the Upper South Creek Advanced Water Recycling Centre Project (SSI-8609189). The RBM12 RMP has been updated to address your comments as per the attached and I have also provided a summary response to your comments below. The updated RBM12 RMP has also been provided to BCS via the portal.

Comment 1 - clarification of the grassed area

References to the grassed area in Section 2.3 have been clarified throughout the document and added to Figure 3.1 as Pasture grasses - native/exotic.

Comment 2 - pre-existing vegetation and condition

JH acknowledges the commitment made in the Submissions Report that the works will be undertaken in accordance with Updated Management Measure G05. Section 2.3 has been added in which shows how this RBM12 RMP complies with aspects of UMM G05.

Figure 3-1 has been updated to better show the vegetation types in the surrounding RBM12 lands area to justify selection of vegetation types used for rehabilitation. The adjacent PCTs layers have been sourced from both the Promac assessment and online vegetation mapping databases. Slashing/mowing in rehabilitated areas mapped as PCT 3320 and 4025 in Figure 3-1 will cease following rehabilitation. Land mapped as pasture grass grazing land will continue to be managed by the landowner which may be subject to mowing and/or grazing which is consistent with land management practices pre-promac construction.

Comment 3 - monitoring period

The reference to the 2 year monitoring and/or maintenance period has been removed throughout the RB12 RMP and replaced with 'until BCS are satisfied'.

Comment 4 - plant selection

JH have updated the RBM12 RMP which now includes planting of shrubs and trees. Revegetation Zone 1, which is the area directly above/immediately adjacent to the pipeline asset, will need to consist of grass/groundcover species to allow for access to complete necessary maintenance during operation of the pipelines, and to minimise potential impacts to the Sydney Water pipeline asset. Access 3m either side of SW pipeline assets is required and therefore grasses can only be planted in those areas.

Revegetation Zone 2 is located between the edge of Revegetation Zone 1 and the existing stands of vegetation outside the RBM12 impacted corridor. This zone will consist of planting shrubs and tree species. It's noted that while trees and shrubs can be planted in this zone, species must be carefully selected to ensure that the mature tree canopy will not extend above SW pipeline assets as required by *Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets*.

As requested by BCS, a diagram has been added to Figure 4-1 which indicatively shows the location and widths of Revegetation Zones 1 and 2 in relation to SW pipeline assets.

Based on the above responses, can you please confirm that your comments have been adequately addressed?

Please feel free to contact me if you have any questions or would like to discuss any of the above.

Regards,

Ryan Maxwell
Environment Lead
Upper South Creek (Mon, Tue, Thu, Fri)

Sydney Program Alliance (Wed)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

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Alyce Harrington-JHG

Subject: FW: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update - BCS comments - post approval

From: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au>
Sent: Thursday, May 23, 2024 9:03:46 AM
To: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Subject: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update - BCS comments - post approval

Hi Ryan

BCS has reviewed the following information provided by John Holland in response to its letter dated 12 April 2024 on the Rehabilitation Management Plan RMB 12 lands (conditions E19 and E20 - SSI 8609189):

- updated Rehabilitation Management Plan Revision 4 and summary response (received via email 30 April 2024)
- addition information (received 22 May 2024 in the below email)

and considers that its comments have been adequately addressed.

It is also important to note that In addition to CoA E19 and E20, CoA E18 specifies:
E18 The Proponent must avoid direct or indirect impacts to ENV within RBM 12 red-hatched lands at Kemps Creek and Cross Street during construction of Stage 1 of the CSSI.

Please contact me if you have any questions

Regards, Marnie

Marnie Stewart
Senior Project Officer – Planning
Biodiversity and Conservation
Department of Climate Change,
Energy, the Environment and Water

T 02 9995 6868 | **E** marnie.stewart@environment.nsw.gov.au
4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150

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From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Wednesday, 22 May 2024 2:02 PM
To: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au>
Subject: Re: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update - query

Hi Marnie,

Thanks for the call earlier. As discussed, the waterways and subsequent riparian zones within the RBM12 are limited to the areas immediately adjacent to Kemps Creek and the two unnamed tributaries as provided in Figure 3-1. These areas are relatively small in comparison to the remaining non-riparian areas to be rehabilitated.

Just to confirm, we will still plant trees and shrubs in revegetation zone 2 in those riparian areas however revegetation zone 1 (directly on top of the pipelines) will be limited to grasses to ensure there is no adverse effect to the functioning of the pipeline and access for future maintenance.

Based on the above, can you please confirm that your comments have been adequately addressed?

Thanks,

Ryan Maxwell

Environment Lead

Upper South Creek (Mon, Tue, Thu, Fri)

Sydney Program Alliance (Wed)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
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From: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au>
Sent: Wednesday, May 22, 2024 8:24 AM
To: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Subject: RE: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update - query

Hi Ryan

We are currently reviewing the updated RMP and just wanted to clarify one of the comments in Section 4.3 (below) about the riparian vegetation zone. Can you please provide further clarification where this specifically this applies?

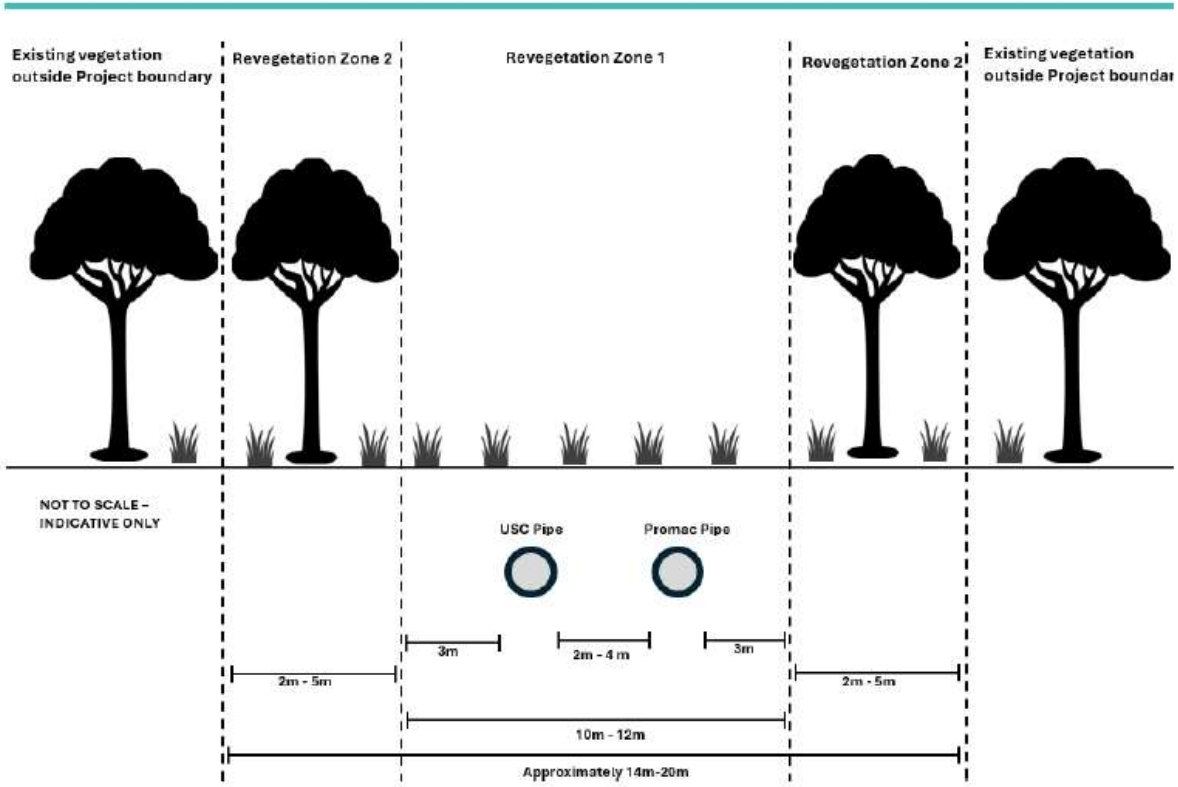

Figure 4-1 Diagram of approximate widths of revegetation zones in relation to SW pipeline assets.

Large trees or shrubs cannot be planted in the riparian vegetation zone immediately above the pipeline asset as this is likely to adversely affect the future functioning and maintenance of the pipeline asset. Revegetation works are to be limited to longer lived (perennial) groundcover species to stabilise soils. Species such as Matt grasses (e.g., *Lomandra longifolia*) are recommended for this purpose.

Happy to discuss.

Regards, Marnie

Marnie Stewart
Senior Project Officer – Planning
Biodiversity and Conservation

**Department of Climate Change,
Energy, the Environment and Water**

T 02 9995 6868 | **E** marnie.stewart@environment.nsw.gov.au
4 Parramatta Square, 12 Darcy St, Parramatta NSW 2150

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From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, 30 April 2024 5:03 PM
To: Marnie Stewart <Marnie.Stewart@environment.nsw.gov.au>
Cc: OEH ROG Greater Sydney Region Planning Unit Mailbox <rog.gsrplanning@environment.nsw.gov.au>
Subject: Upper South Creek Project (SSI-9609189) - RBM12 RMP Update

Hi Marnie and Susan,

Thank you for reviewing and providing comments on the Rehabilitation Management Plan, RBM 12 lands – Kemps Creek (RBM12 RMP) for the Upper South Creek Advanced Water Recycling Centre Project (SSI-8609189). The RBM12 RMP has been updated to address your comments as per the

attached and I have also provided a summary response to your comments below. The updated RBM12 RMP has also been provided to BCS via the portal.

Comment 1 - clarification of the grassed area

References to the grassed area in Section 2.3 have been clarified throughout the document and added to Figure 3.1 as Pasture grasses - native/exotic.

Comment 2 - pre-existing vegetation and condition

JH acknowledges the commitment made in the Submissions Report that the works will be undertaken in accordance with Updated Management Measure G05. Section 2.3 has been added in which shows how this RBM12 RMP complies with aspects of UMM G05.

Figure 3-1 has been updated to better show the vegetation types in the surrounding RBM12 lands area to justify selection of vegetation types used for rehabilitation. The adjacent PCTs layers have been sourced from both the Promac assessment and online vegetation mapping databases. Slashing/mowing in rehabilitated areas mapped as PCT 3320 and 4025 in Figure 3-1 will cease following rehabilitation. Land mapped as pasture grass grazing land will continue to be managed by the landowner which may be subject to mowing and/or grazing which is consistent with land management practices pre-promac construction.

Comment 3 - monitoring period

The reference to the 2 year monitoring and/or maintenance period has been removed throughout the RB12 RMP and replaced with 'until BCS are satisfied'.

Comment 4 - plant selection

JH have updated the RBM12 RMP which now includes planting of shrubs and trees. Revegetation Zone 1, which is the area directly above/immediately adjacent to the pipeline asset, will need to consist of grass/groundcover species to allow for access to complete necessary maintenance during operation of the pipelines, and to minimise potential impacts to the Sydney Water pipeline asset. Access 3m either side of SW pipeline assets is required and therefore grasses can only be planted in those areas.

Revegetation Zone 2 is located between the edge of Revegetation Zone 1 and the existing stands of vegetation outside the RBM12 impacted corridor. This zone will consist of planting shrubs and tree species. It's noted that while trees and shrubs can be planted in this zone, species must be carefully selected to ensure that the mature tree canopy will not extend above SW pipeline assets as required by *Sydney Water Technical Specification: Building Over and Adjacent to Pipe Assets*.

As requested by BCS, a diagram has been added to Figure 4-1 which indicatively shows the location and widths of Revegetation Zones 1 and 2 in relation to SW pipeline assets.

Based on the above responses, can you please confirm that your comments have been adequately addressed?

Please feel free to contact me if you have any questions or would like to discuss any of the above.

Regards,

Ryan Maxwell

Environment Lead

Upper South Creek (Mon, Tue, Thu, Fri)

Sydney Program Alliance (Wed)

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