

Conservation Area Management Plan

for Sydney's Desalination Plant



Document code: MAN-9918-3

Date: 15-06-2023

Veolia Australia and New Zealand
Level 4, No 65 Pirrama Road
NSW 2009 Australia
Tel: 02 8572 0300

TABLE OF CONTENTS

Section 1 Introduction	4
1.1 Purpose	4
1.2 Scope	4
1.3 References	5
1.4 Definitions	6
Section 2 Operational Environmental Management Documentation	8
2.1 Document control	8
Section 3 Background	10
3.1 Plan approval process and stakeholder consultation	10
Section 4 Legislative And Other Requirements	11
4.1 Relevant legislation	11
4.1.1 Acts	11
4.2 Compliance obligations	12
Section 5 Description Of The Environment	15
5.1 Vegetation	15
5.2 Fauna	17
5.2.1 Grey-headed flying fox	19
5.2.2 Bentwing bats	19
5.2.3 Southern myotis	20
5.2.4 Green and golden bell frog	20
5.2.5 Wallum froglet	21
5.2.6 Introduced species	21
5.3 Acid sulphate soils	21
Section 6 Potential Conservation Area Impacts	23
6.1 Operational activities	23
6.2 Mismanagement of activities	23
6.3 Illegal site access	24
6.4 Invasion by exotic species	24
Section 7 Management Activities	25
7.1 Site access	25
7.2 Site induction and environmental awareness	25
7.3 Acid sulphate soils (ASS)	26
7.4 Vegetation management	26
7.4.1 Species recovery	27
7.4.2 Bushfire	30
7.5 Fauna management	31

7.5.1 Species recovery and threat abatement	31
7.5.2 Grey-headed flying fox	35
7.5.3 Microbats	35
7.5.4 Green and golden bell frog & wallum froglet	36
7.5.5 Other species	36
7.5.6 Exotic species	36
Section 8 Monitoring, Reporting And Auditing	38
8.1 Monitoring	38
8.1.1 Vegetation	38
8.1.2 Fauna	39
8.2 Reporting	40
8.2.1 Vegetation	40
8.2.2 Fauna	41
8.3 Auditing	41
Section 9 Project Responsibilities And Training	42
9.1 Roles and responsibilities	42

LIST OF TABLES

Table 1 References	5
Table 2 Definitions	6
Table 3 Compliance Obligations	13
Table 4 EPBC Act and BC Act Listed Flora and Fauna Species with potential habitat on the site	18
Table 5 EEC Recovery Strategies	27
Table 6 Species Recovery Strategies	31
Table 7 Monitoring program	38
Table 8 Roles and Responsibilities	42

LIST OF FIGURES

Figure 1 Environmental Documentation Flow Chart	9
Figure 2 Conservation Area Vegetation Communities	16
Figure 3 Sydney Metropolitan Vegetation Mapping	17
Figure 4 Acid Sulphate Soil map	20

Section 1 Introduction

1.1 Purpose

The purpose of this Conservation Area Management Plan (CAMP) is to describe how Veolia Water Australia Pty Ltd (Veolia) manages the designated Conservation Area (CA) at Sydney's Desalination Plant during its operation and maintenance phase to protect and enhance its conservation value. This plan provides for overall management of risks relating to the conservation significance and environmental sensitivities of the CA in accordance with Ministers Conditions of Approval (MCoA) 4.6b.

Four endangered ecological communities of plants and the presence of suitable habitat for a number of threatened species of animals has been identified in the CA. The combination of endangered native vegetation and ecosystems means this small area has conservation significance much greater than its limited size.

The CAMP has been developed in accordance with applicable legislative responsibilities and specific Project Approvals and contractual requirements for the operation and maintenance of Sydney's Desalination Plant as defined in the Operate and Maintain (O&M) Contract and relevant MCoA and Statement of Commitments (SoC) as detailed in Table 3 Compliance Obligations.

1.2 Scope

The CA requires ongoing management, as such, the objective of this CAMP is to ensure that all environmental risks associated with the CA management are identified and managed through the application of appropriate safeguards.

This CAMP is applicable to all Veolia activities during the operation and maintenance phase of the Sydney Desalination Plant.

This document includes details on management and quantitative monitoring of:

- Intact vegetation communities
- Grey-headed Flying Fox colonies
- Habitat within the CA for Green and Golden Bell Frog, the Wallum Froglet and the Large-footed Myotis
- The condition of the CA

This plan was updated in 2023 to address the requirement to revise the Vegetation Management Plan every five years (see Section 1.1 of the Vegetation Management Plan (Attached in metadata)). In addition, this updated plan and prescribed monitoring reflects feedback from the past five years of ecological monitoring undertaken during the operations and maintenance phase. The latest version of this plan was completed as part of a review to ensure that the plan remains consistent with relevant endangered listings, legislation and site conditions.

It should be noted that the CAMP does not address the impacts and management of surface water and groundwater from the Sydney Desalination Plant. These issues are addressed in the Surface Water and Groundwater Management Plan (MAN-9491). A Biodiversity Management Plan (MAN-16895) has been prepared to manage the overall biodiversity of the site. The Biodiversity Management Plan includes reference to this Plan and they complement each other but neither should be read in isolation.

1.3 References

Table 1 - References

Document reference	Operational Environmental Management Documentation	Document Number
TIER 1		
Operational EMS	Integrated Business Management System (IBMS) Manual	MAN-9490
TIER 2		
EMP	Environmental Management Plan	MAN-9490 Section 14
TIER 3		
MWQEMP	Marine Water Quality and Ecosystem Management Plan	MAN-9674
NEMP	Noise Environmental Management Plan	MAN-9675
SWGMP	Surface Water and Groundwater Management Plan	MAN-9491
WEMP	Waste Environmental Management Plan	MAN-9676
CAMP	Conservation Area Management Plan (this document)	MAN-9918
BioMP	Biodiversity Management Plan - Arcadis 2022	MAN-16895
VMP	Vegetation Management Plan - Narla 2022	MAN-9918 Attachment
TIER 4		
CTP	Environmental Compliance Tracking Program	
EMPr	Environmental Monitoring Program	

1.4 Definitions

Table 2 - Definitions

Abbreviation	Definition
APZ	Asset Protection Zone
ASS	Acid Sulphate Soils
BC Act	Biodiversity Conservation Act - refer also to TSC Act (repealed)
CA	Conservation Area (the section of the site set aside for conservation purposes)
CAMP	Conservation Area Management Plan (this document)
DPIE	NSW Department of Planning, Industry and Environment (previously OEH)
DPI	NSW Department of Primary Industries
DPS	Desalination Plant Site (the section of site set aside for the plant)
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities (Replaced by the Department of Environment in 2013)
EA	Environmental Assessment
EMP	Environmental Management Plan (Section 14 of IBMS)
EMS	Environmental Management System (See IBMS)
EMSR	Environmental Management System Representative
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPA	NSW Environment Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Cth)
EPL	Environment Protection License
GGBF	Green and Golden Bell Frog (<i>Litoria aurea</i>)
GHFF	Grey-Headed Flying Fox (<i>Pteropus poliocephalus</i>)
IBMS	Veolia's Integrated Business Management System
KDP	Kurnell Desalination Plant
KDF	Kurnell Dune Forest
LEP	Local Environmental Plan
MCoA	Ministers Conditions of Approval
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NPWS	NSW National Parks and Wildlife Service (refer to OEH)
NSW	The State of New South Wales
O&M	Operate and Maintain
OEH	NSW Office of Environment and Heritage (abolished in 2019, most functions now carried out by DPIE)

NSW/Kurnell-Conservation Area Management Plan
Issue Date 15/06/2023

POEO Act	Protection of the Environment Operations Act 1997 (NSW)
PPR	Preferred Project Report
REF	Review of Environmental Factors
RP	Recovery Plan
Schedule 5	Planning Approval Responsibilities Operate and Maintain Contract
SEPP	State Environmental Planning Policy
SFW	Sydney Freshwater Wetlands
SoC	Statement of Commitments
SOFF	Swamp Oak Floodplain Forest
SSC	Sutherland Shire Council
SSFCF	Swamp Sclerophyll Forest on Coastal Floodplains
SDP	Sydney Desalination Plant
SWC	Sydney Water Corporation
SWGMP	Veolia's Surface Water and Groundwater Management Plan
TAP	Threat Abatement Plan
TS-09	Technical Schedule-09 Environmental Requirements – Operate and Maintain Contract
TSC Act	Threatened Species Conservation (TSC) Act 1995 (NSW) - replaced by Biodiversity Conservation Act 2016.
VMP	Vegetation Management Plan
Veolia	Veolia Water Australia Pty Ltd

Section 2 Operational Environmental Management Documentation

The Environmental Management System (EMS) for the operation and maintenance phase of the Sydney Desalination Plant is described in the Integrated Business Management System (IBMS) Manual MAN-9490 (Tier 1). The Environmental Management Plan (EMP) MAN-9490 Section 14 (Tier 2) describes the centralised mechanism and environmental requirements that apply during operation and maintenance of the Sydney Desalination Plant. This document, the Conservation Area Management Plan (CAMP) MAN-9918 (Tier 3) is part of the Veolia environmental management suite of documents required for the Sydney Desalination Plant as illustrated below (Figure 1).

This CAMP describes management measures and quantitative monitoring techniques that will be adopted to mitigate and measure potential impacts on the conservation area or the site during operation and maintenance activities.

Specific environmental management measures have been incorporated into the relevant procedures and work instructions developed to guide activities on site.

2.1 Document control

Control of all environmental management documents will be managed in accordance with section 14 of the IBMS Manual.

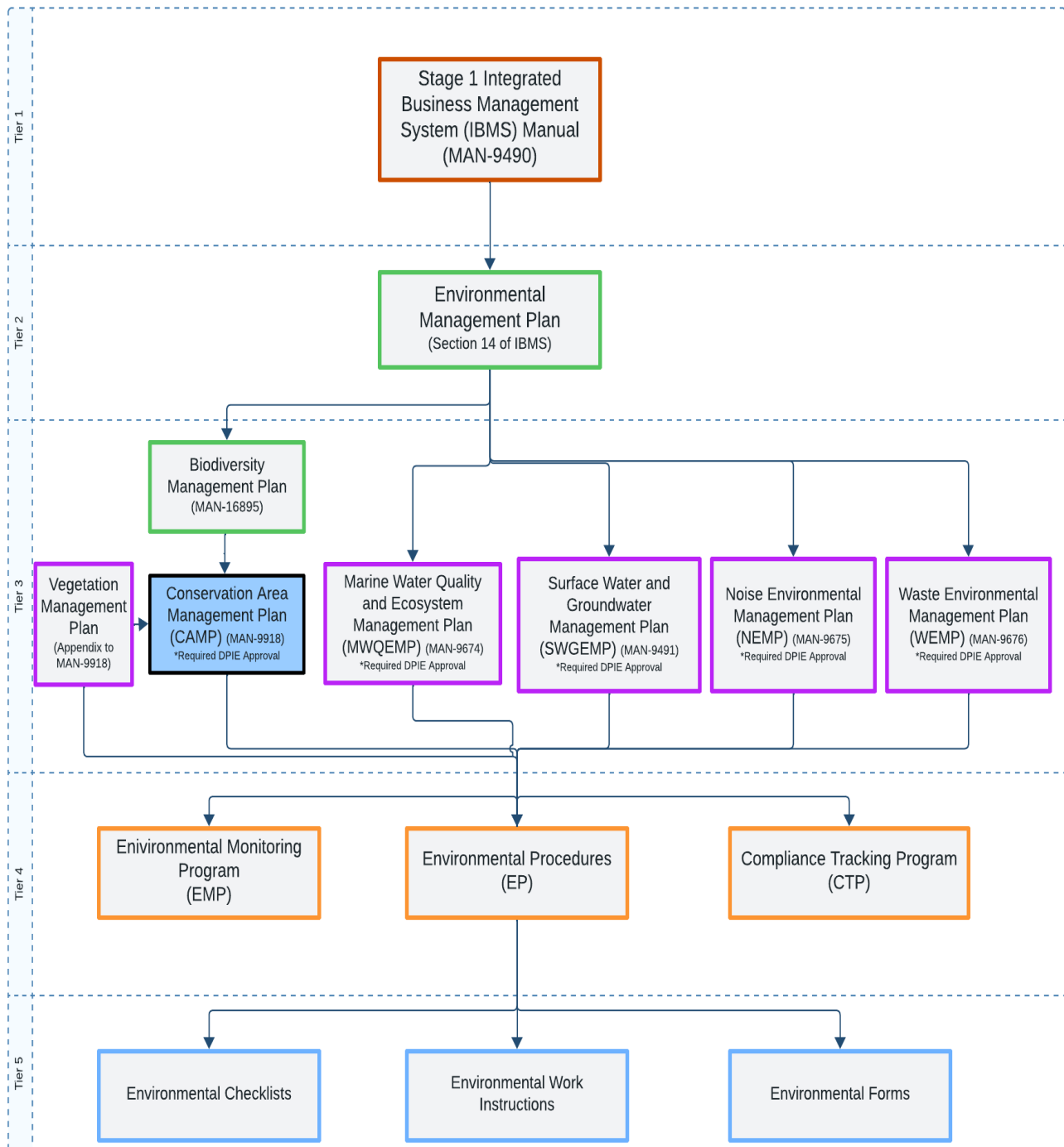


Figure 1 - Environmental Documentation Flow Chart

Section 3 Background

The total area of the site acquired by Sydney Water Corporation (SWC) for the Sydney Desalination Plant (SDP) is approximately 44.5 hectares. Areas of ecological or potential indigenous significance are limited to the conservation area that was identified as part of an earlier development application previously approved by Sutherland Shire Council. The designated conservation area of approximately 15 hectares is to be retained as a conservation area consistent with previous development consents. The conservation area includes endangered ecological communities and habitat for threatened fauna species.

The Environmental Assessment (EA) (SWC, November 2005) for the proposed Sydney Desalination Plant identified that the potential exists for adverse environmental impacts, if left unmitigated, from operations of the plant. Further to the EA a Preferred Project Report (PPR) (SWC August, 2006) was prepared with subsequent amendments to the Statement of Commitments (SoC). A complete list of the SoC can be found in the PPR. O&M commitments relevant to the management of the CA have been collated and reproduced in Table 3 of this plan.

3.1 Plan approval process and stakeholder consultation

The CAMP was prepared by SWC prior to construction to allow it to protect the value of the CA. Veolia has further developed the CAMP and will manage and implement this CAMP accordingly during the operation and maintenance stage of the Sydney Desalination Plant. The CAMP was submitted to SDP (the site owner since 2012) and NSW Office of Environment and Heritage (OEH) for consultation prior to submission to the Department of Planning, Industry and Environment (DPIE) who later approved the Veolia CAMP on 6th April 2011. Future versions of the CAMP will be forwarded to:

Greater Sydney Branch of Environment, Energy and Sustainability Group of DPIE.

Email address: rog.gsrplanning@environment.nsw.gov.au

An update of the CAMP occurred in 2012 to include the updated Vegetation Management Plan and to gain approval for modifications to the fauna monitoring procedure. This version was approved by the Department of Planning and Infrastructure on 10th October 2012 (refer to the Environmental Compliance Tracking Program for details).

The CAMP was further updated in 2017 to include a third updated Vegetation Management Plan (January, 2017) and again in February 2022. The plan was provided to the Department of Planning, Industry and Environment (see above) for information in September 2023. This process was delayed due to the preparation of a site-wide Biodiversity Management Plan.

Any key modifications to this Plan will again be undertaken in consultation with DPIE in accordance with relevant Project Approvals. Thereafter the Plan will be reviewed annually in order that it remains consistent with relevant endangered listings, legislation and site conditions.

Section 4 Legislative And Other Requirements

4.1 Relevant legislation

Project Approval for Sydney's Desalination Plant has been obtained under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act). The EA for the Desalination Plant proposal was prepared under Part 3A of EP&A Act, within which SWC made a Statement of Commitments.

It should be noted that the Sydney Desalination Project is exempt from certain provisions under the Native Vegetation Act 2003 and the Coastal Protection Act 1979, as it falls under Part 3A approval under the EP&A Act.

Veolia has developed this CAMP in accordance with the requirements of the Project Approvals with consideration for the following relevant NSW and federal legislation. Staff and contractors undertaking work onsite must adhere to obligations under the approval, including this Plan when carrying out work associated with the management of the CA.

4.1.1 Acts

Environmental Protection and Biodiversity Conservation Act 1999: The EPBC Act enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance. The Australian Government Department of Sustainability, Environment, Water, Population and Communities administers the EPBC Act.

Veolia must not have any significant impact on any matters of National Environmental Significance (NES). Under the EPBC Act, the Minister of Environment and Heritage has determined that the Sydney Desalination Project is not a Controlled Action¹, on the understanding that suitable arrangements will be made to manage stormwater and groundwater infiltration (associated with hardstand areas of the desalination plant) to avoid impacts on the nearby Quibray Bay portion of the Towra Point Ramsar Wetlands site. With regard to the property management of the CA, there is no risk of significant impact to any matters protected under the EPBC Act, if the environmental management safeguards and strategies identified in this CAMP and Veolia's SWGMP are diligently implemented.

The Biodiversity Conservation Act 2016: Replaced the Threatened Species Conservation Act 1995 which identified and protected native plants and animals in danger of becoming extinct. The Act also provided for species recovery and threat abatement programs.

Veolia is required to protect listed ecological communities and species onsite. The TSC Act, Schedule 1, Part 3 listed endangered ecological communities. The BC Act listed the Green and Golden Bell Frog (*Litoria aurea*) as an Endangered species under Schedule 1, Part 1 and the Grey-Headed Flying Fox (*Pteropus poliocephalus*) and Wallum Froglet (*Crinia tinnula*) as Vulnerable species under Schedule 2, Part 1.

¹ EPBC Act Referral Letter from Minister for the Environment and Heritage, 8 November 2005 (refer to copy in EA).

The Biodiversity Conservation Act introduced the Native Vegetation Regulatory map, a Land Management Code, introduced certain Allowable Activities and Clearing Approval is required by the Native Vegetation Panel. In addition it introduced the Biodiversity Offsets Scheme, Simplified Land Management under the Local Land Services Act, introduced Private land Conservation and strengthened legal protection of threatened species and native protected animals and plants.

Biosecurity Act 2015 (replaced the Noxious Weeds Act 1993 which was repealed in 2017): the act provides for the prevention, elimination, minimisation and management of biosecurity risks. Weeds are a major threat to our unique natural environment, threatening the survival of hundreds of native plants and animals in NSW alone. The Conservation Area is currently being rehabilitated by bush regenerators who are removing weeds from the area. Many of these weeds are Weeds of National Significance (WoNS), environmental weeds and Priority weeds in the Sutherland Shire. The Conservation Area contains some WoNS such as bitou bush and lantana, and Veolia is working towards eliminating these and other weeds from the CA. The category of Noxious weeds no longer exists but under the BC Act it is the responsibility of the landholder to deal with weeds as described by the Department of Primary Industries [Weedwise website](#). For site specific information refer to section 3.5 in the VMP.

Protection of the Environment Operations Act 1997: The POEO Act enables the Government to set out explicit protection of the environment policies (PEPs) and adopt more innovative approaches to reducing pollution. PEPs are instruments for setting environmental standards, goals, protocols and guidelines. They provide both the framework for Government decisions that affect the environment, and are the means of adopting Australia-wide environment protection measures set by the National Environment Protection Council.

Operation and maintenance activities at Sydney's Desalination Plant are required to be effectively managed to ensure Veolia complies with the water quality goals and criteria outlined in Section 120 of the POEO Act 1997.

4.2 Compliance obligations

Sydney Water developed a *Statement of Commitments (SoC)* which can be found in the PPR - section 12.1. These commitments mainly outline safeguards and mitigation measures to avoid adverse impact on the environment and ensure legislative compliance. They also outline monitoring and reporting requirements. Commitments relevant to the management of the Conservation Area (CA) are listed in *Table 3 - Compliance Obligations*.

The Minister for Planning issued the *Minister's Conditions of Approval (MCoA)* for the Desalination Plant project in November 2006 that imposes requirements for management of the CA (Minister for Planning, 2006). This CAMP has been prepared as required under MCoA Plant 4.6b. Relevant DPIE Ministers Conditions of Approval (MCoA) and Statement of Commitments (SoC) are listed in Table 3 below with a cross reference to where the condition is addressed in this Plan and/or other project management documents.

Overall environmental compliance will be managed in accordance with section 16 of the IBMS Manual. Records of environmental compliance will be submitted as required in the Environmental Compliance Tracking Program.

Table 3 Compliance Obligations

	No:	Requirement	Doc Ref:
MCoA Plant	2.3	For the purpose of this project approval, the land within the "conservation zone boundary" delineated in yellow in Figure 1 of Appendix A4 to Environmental Assessment of the Concept Plan for Sydney's Desalination Project, dated November 2005, and prepared by Sydney Water Corporation shall be a "conservation area" on the project site and shall not be subject to any development works.	Figure 2
	2.5	The Proponent shall revegetate and rehabilitate the conservation area referred to under condition 2.3 of this approval utilising local native species of local provenance which naturally occur in the adjoining vegetation communities. Particular focus shall be placed on revegetation and rehabilitation with the following vegetation communities: Swamp Sclerophyll Forest on Coastal Floodplains (SSFCF), Kurnell Dune Forest (KDF), Sydney Freshwater Wetlands (SFW) and Swamp Oak Floodplain Forest (SOFF). Revegetation and rehabilitation shall be undertaken in accordance with an approved Conservation Area Management Plan (refer to condition 4.6b)	Section 6.4
	4.6(b)	a Conservation Area Management Plan to detail measures for the on-going management of the conservation area on the site. The Plan shall be developed in consultation with the DEC, and shall include, but not necessarily limited to:	This Plan
		i) a vegetation management program based on maintenance and rehabilitation of intact vegetation communities;	Section 6.4.1
		ii) methods in line with standard bush regeneration techniques, such as the Bradley method where appropriate;	Section 6.4.1
		iii) measures to minimise impacts on Grey-headed Flying Fox colonies, such as directing light away from the colonies and reducing short, sharp noises (for example, sirens or the use of compressed air);	Section 6.5.1
		iv) measures to protect the habitat within the conservation area for the Green and Golden Bell Frog, the Wallum Froglet and the Large-footed Myotis;	Section 6.4 and 6.5
		v) provisions for monitoring the condition of the conservation area over time;	Section 7.1
SoC	3	A configuration of the design and layout of the desalination plant will be developed, incorporating future expansion, to protect endangered ecological communities and threatened species within the conservation area. This will include:	
		(a) Retaining the identified conservation area, that contains the largest and most currently intact area of significant vegetation communities on the site, to avoid biodiversity loss;	Section 4

	6	Conservation area within the desalination plant site maintained and rehabilitated to protect endangered ecological communities and habitat for threatened species.	
		(a) Developing a vegetation management program based on maintenance and rehabilitation of intact vegetation communities;	Section 6.4
		(b) Methods in line with standard bush regeneration techniques such as the Bradley method where appropriate;	Section 6.4
		(c) Measures to minimise impacts on the seasonal roosting colony of the Grey-headed Flying Fox, such as directing light away from the colony and reducing short, sharp noises such as those associated with sirens or the use of compressed air, to mitigate impacts associated with noise and light;	Section 6.5.1
		(d) Measures to protect the habitat within the conservation area for the endangered Green and Golden Bell Frog, Wallum Froglet and the Large-footed Myotis;	Section 6.5.1
		(e) Monitoring the condition of the conservation area for a sufficient period to take into account seasonal variability.	Section 7.1
		(f) Submission of the Plan to the Department of Planning.	Section 2.1

Section 5 Description Of The Environment

The site is divided for management purposes into two sections: the Conservation Area (CA), of approximately 15 hectares; and the Desalination Plant Site (DPS), of approximately 30 hectares. The CA has been set aside due to its value as a small protected area of remnant native vegetation and potential habitat for protected threatened species. The CA is completely fenced from the DPS and access is by approval only.

A part of Towra Point wetland lies directly to the west of the CA on the opposite side of the adjoining properties and Captain Cook Drive. This wetland is listed as a wetland of international importance in the Ramsar international treaty.

5.1 Vegetation

The Conservation Area is entirely vegetated and made up of a mosaic of four endangered (Threatened) ecological communities listed under the Threatened Species Conservation Act, 1995 which has been replaced by the Biodiversity Conservation Act, 2016. Terminology has changed now following the new vegetation mapping carried out by the Department of Planning and Environment.

- Coastal Sand Swamp Mahogany forest S_FoW04 (previously PCT: 3922 Sydney Coastal Sand Swamp Scrub = EEC Sclerophyll Forest on Coastal Floodplains (SSFCF));
- Coastal Freshwater Wetland S_FrW03 (previously PCT 3972 Sydney Creekflat Wetland = EEC Sydney Freshwater Wetlands (SFW));
- Coastal Sand Littoral Forest S_WSFO3 (previously PCT 3546 Coastal Sands Littoral Scrub-Forest (based on SVTM 2022) = EEC Kurnell Dune Forest (KDF)); and
- Coastal Swamp Paperbark-Swamp Oak Scrub S_FoW12 (previously PCT 4028 Estuarine Swamp Oak Twig Rush Forest = ECC Swamp Oak Floodplain Forest (SOFF)).

Figure 2 shows the four endangered (threatened) ecological communities, as mapped in the EA. Vegetation in the CA unshaded in Figure 2 was assessed as disturbed, with varying degrees of weed invasion. Figure 3 presents an updated summary of the vegetation communities with updated nomenclature for each vegetation community. Comparison of the figures shows that the vegetation has matured and the abundance and boundaries of the communities have changed over time.

The Vegetation Management Plan (VMP) (attached) classifies the CA into 7 management units (Zones 1 to 7), see Figure 2. These were defined by a combination of factors, including vegetation type, location and condition.

There are substantial numbers of weeds on some adjoining properties. These pose a potential problem for weed control in the CA, as they can be sources of weed propagules, such as seeds, for ongoing reinfestation.

The presence of infestations of noxious and environmental weeds represents a deterioration of the habitats for native species and particularly for threatened species and endangered ecological communities. Table 13 of the Biodiversity Management Plan (MAN-16895) provides an inventory of all noxious weeds recorded within the CA and their biosecurity duty within the Sutherland LGA.



	Swamp Oak Floodplain Forest (0.9ha)		Kurnell Dune Forest (1.2ha)
	Sydney Freshwater Wetlands (3.3ha)		Swamp Sclerophyll Forest on Coastal Floodplains (6.9ha)

The remaining areas within the CA were classed as disturbed, and have a mix of exposed soil, regenerating native vegetation and, predominantly, woody and herbaceous weed infested areas (~2.7ha)

Figure 2 - Conservation Area Vegetation Communities and Management Zones

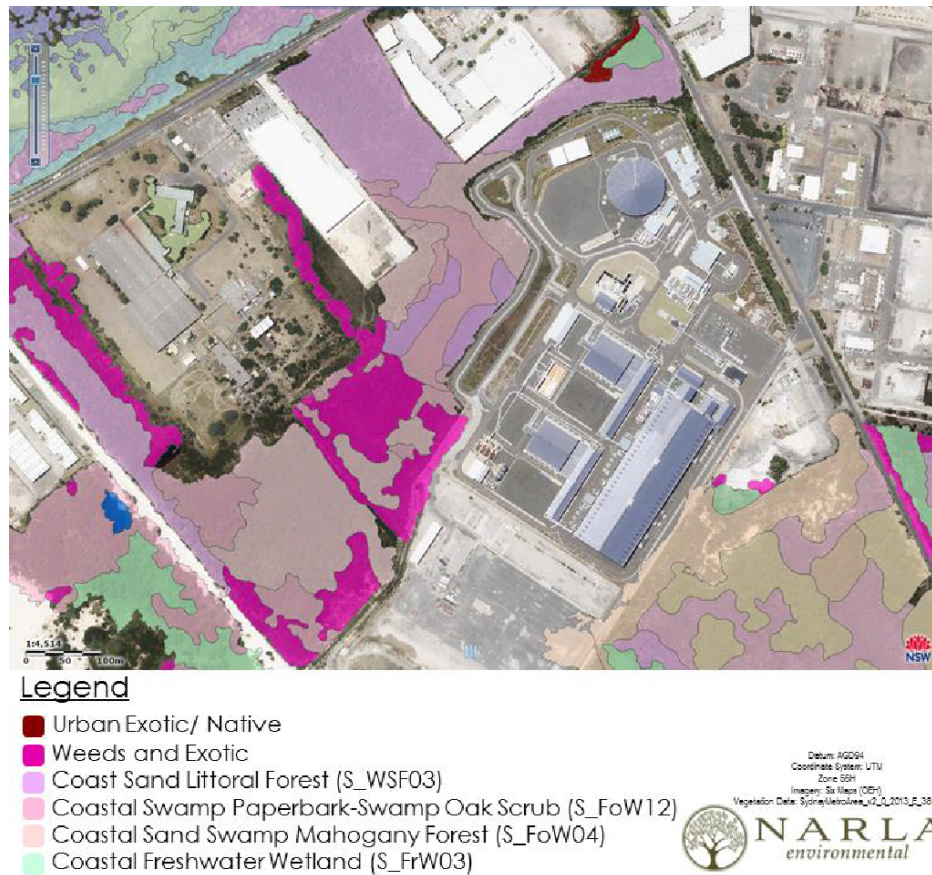


Figure 3 - Sydney Metropolitan Vegetation Mapping showing the CA (OEH 2013)

5.2 Fauna

There are two relevant endangered species statutes, the BC Act (NSW) and the EPBC Act (Cth). The Grey-Headed Flying-Fox (GHFF) (*Pteropus poliocephalus*) (listed as a Vulnerable Species under both the EPBC Act and BC Act) and the Wallum Froglet (*Crinia tinnula*) (listed as Vulnerable under the BC Act) were identified as being on the site or having inhabited the site in the last ten years.

Additional fauna species listed in the EPBC Act and the BC Act have been identified as having potential or actual habitat on the desalination plant site. Table 4 provides a summary of all the species with potential habitat on site. There may also be other species present that have not been detected during the previous surveys.

Table 4 - EPBC Act and BC Act Listed Flora and Fauna Species with potential habitat on the site

Scientific Name	Common Name	Status		Recorded in previous surveys?
		BC Act	EPBC Act	
FLORA				
<i>Acacia terminalis subsp. terminalis</i>	Sunshine Wattle	Endangered	Endangered	No
<i>Pterostylis</i> sp. <i>Botany Bay</i>	Botany Bay Bearded Orchid	Endangered	Endangered	No
<i>Thelymitra atronitida</i>	Black-hooded Sun Orchid	N/A	Critically Endangered	No
FAUNA				
Birds				
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Vulnerable	N/A	No
<i>Calidris alba</i>	Sanderling	Vulnerable	N/A	No
<i>Charadrius mongolus</i>	Lesser Sand-plover	Vulnerable	N/A	No
<i>Diomedea exulans</i>	Wandering Albatross	Endangered	Endangered	No
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Endangered	No
<i>Pterodroma leucoptera leucoptera</i>	Gould’s Petrel	Vulnerable	Endangered	No
<i>Sterna albifrons</i>	Little Tern	Endangered	N/A	No
<i>Sterna fuscata</i>	Sooty Tern	Vulnerable	N/A	No
Mammals				
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bent-Wing Bat	Vulnerable	Endangered	No
<i>Miniopterus australis</i>	Little Bent-Wing Bat	Vulnerable	N/A	No
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	N/A	No
<i>Pteropus poliocephalus</i>	Grey-Headed Flying Fox	Vulnerable	Vulnerable	Yes – camp site
Amphibians				
<i>Crinia tinnula</i>	Wallum Froglet	Vulnerable	Endangered	Yes – call heard during February 2012 targeted survey
<i>Litoria aurea</i>	Green and Golden Bell Frog	Endangered	Vulnerable	Yes – tadpoles in 1993 and 1996. Not found during targeted surveys in 2002, 2004 and 2006-2021. Translocation project commenced in March 2022 with tadpoles introduced and GGBF sighted in refuges. No sightings away from refuges

5.2.1 Grey-headed flying fox

The GHFF (*Pteropus poliocephalus*) had for many years occupied part (Zone 7) of the CA from spring to autumn (see Figure 2) and occasionally for the whole year. This schedule of occupation encompasses significant phases in the annual reproductive cycle of GHFFs. Births occur from late September to November, lactation lasts approximately six months with the majority of young weaned during March and April; and conception occurs from March to May.

The GHFF altered their historic patterns of use of the camp in the CA during the 2008/09 and 2009/10 seasons. The area was not used as a stable, communal day roost from May 2008 to February 2010. However, a small number of animals used the camp intermittently during that time either as a short-term day roost or as a foraging roost at night. GHFF used the site as a day roost during autumn/winter 2010 and again in autumn 2011. The numbers of animals present in these two years were lower than pre-2008. However, mating groups were present in each year, highlighting the ongoing significance of the site to the species.

The monitoring program continued in the 2011/12 season to determine whether the flying foxes continue their affiliation with the CA by inspecting the site for the return to use as a day roost and by gathering evidence of use as a night roost. There was no evidence of the GHFF recorded which was unexpected. However, it was consistent with patterns found elsewhere in Sydney and may be explained by the presence of significant food resources within easy migration distance (250 km) of the Kurnell camp.

In July, 2016 GHFF again began using the CA as a day roost and continued to intermittently use the camp until March 2017. The GHFF camp size varied from zero to 300 during this time, and nursing females were observed from December 2016 to April 2017, peaking at 500 individuals in July of that year. A significant food shortage around the Sydney metropolitan region was being experienced at this time and the ecological consultants conducting the surveys were unable to identify what the GHFF camp were using as their primary food source. Long periods of hot weather events were also intermittently experienced at the time.

In May 2018 and April 2019, 300 and 200 individuals and dependent young were observed respectively. During the 2019-20 season a maximum of 80 individuals were present including some sub-adults. In the March survey of the 2020-21 season a maximum of 50 individuals were observed including some sub-adults. No GHFF were sighted during the 2021-22 season however they reappeared in low numbers (25-35) in March to May 2022 and again from July to September with numbers up to 90 animals. They reappeared in November again with low numbers (25 -35). Surveys were continued until June 2023 when no GHFF were observed. Their departure coincides with the commencement of “buzz” type noise emanating from a local factory. The EPA have determined that the source is not the desalination plant and Sutherland council investigated the matter and found the source to be a nearby factory. The GHFF have not returned at this time (September 2023) .

Refer to the [monthly monitoring](#) reports filed in NSW | KDP | Environment | Int > Monitoring data > K2.3 - Flora and Fauna > K2.3.2 - GHFF > Monthly Monitoring for details .

5.2.2 Bentwing bats

The Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*) is a small bat that hunts in forested areas, catching moths and other flying insects above the tree tops. The Little Bentwing Bat (*Miniopterus australis*) is a small insectivorous bat that forages beneath the canopy of densely vegetated habitats and are distinguished from the Eastern Bentwing-bat by its smaller size.

Caves are the primary roosting habitat for both species, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures. The Eastern Bentwing Bat forms discrete populations centered on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Breeding or roosting colonies can number from 100 to 150,000 individuals. At other times of the year, populations disperse within about 300 km range of maternity caves. The two species often share roosting sites and the two species may form mixed clusters.

The conservation area has suitable foraging and roosting habitat for individuals. Application of pesticides in or adjacent to foraging areas and predation by feral cats and foxes are applicable identified threats to *Miniopterus species* (DECC, 2005).

5.2.3 Southern myotis

Southern Myotis (*Myotis macropus*) is a small insectivorous bat that forages over water. The Southern Myotis has not been recorded on this site during recent surveys though it has been recorded nearby on the Kurnell Peninsula (NPWS, 2006). Generally these animals roost in groups of 10 to 15 close to water in caves, mines, tree hollows, aqueduct tunnels and under bridges and in dense vegetation in the vicinity of bodies of slow-flowing or still water. They forage over streams and pools catching insects and small fish in the air and from the surface of the water.

Favourable roosting sites might be found within the CA in the form of large trees with roosting hollows or other dense vegetation. There are small bodies of water within the CA and the constructed wetland within the DPS that could be suitable foraging sites for this species. Roost disturbance, such as damage to hollow bearing trees and caves that the animals use, has been identified as a possible impact for *Myotis macropus* in the "Action Plan for Australian Bats" (DSEWPC, 1999).

5.2.4 Green and golden bell frog

Historically, the Kurnell Peninsula has had records of the Green and Golden Bell Frog (GGBF) (*Litoria aurea*) since the 1800's (Australian Museum records). Since 1980, GGBF's had been found within the wetlands on the DPS footprint, although numbers in the general area have severely declined since 1993 (White and Pyke, 1993).

The most recent sighting of Green and Golden Bell Frogs in the general area was of two frogs in the nearby Rocla site in 2004 (White, 2005). Prior to this, tadpoles were found on site in 1996, though the last recorded adult individual on site was in 1992.

The conservation area wetlands and vegetation on the DPS provides habitat for frogs, including the Green and Golden Bell Frog, however recent targeted surveys (2006 - 2022) have not found any frogs or tadpoles of this species using any part of the site (refer to the [biannual monitoring](#) reports filed in NSW | KDP | Environment | Int > Monitoring data > K2.3 - Flora and Fauna > K2.3.1 - GGBF > Biannual Reports for details).

Predation by feral animals such as foxes, use of herbicides and other weed-control measures, as well as predation by exotic fish such as Plague Minnow are identified threats to the population (DECC, 2005) that are applicable to management at the site.

The DPIE has approved the translocation of some tadpoles to the site from a captive breeding colony at Symbio Wildlife Zoo at Helensburgh and approximately 1000 Green and Golden Bell Frog tadpoles were transferred to the site in late March 2023. Two sets of four cut down IBC's have been placed in the stormwater retention basin to provide refuge for the tadpoles and hopefully allow them to breed and

repopulate the area. For details of the translocation program refer to the GGBF Translocation folder in the Google Drive - NSW | KDP | Environment Int>Sustainability> GGBF Translocation.

5.2.5 Wallum froglet

Wallum Froglet (*Crinia tinnula*) was recorded within the CA in a targeted survey conducted in February 2012 but had not been recorded in previous surveys or surveys between 2012 and 2021. Wallum Froglets are found only in acid paperbark swamps and sedge swamps of the coastal 'wallum' country.

Recent targeted surveys (2006 -2022) have not found any frogs or tadpoles of this species using any part of the site (refer to the [biannual monitoring](#) reports filed in NSW | KDP | Environment | Int > Monitoring data > K2.3 - Flora and Fauna > K2.3.1 - GGBF > Biannual Reports for details .

5.2.6 Introduced species

Red Fox (*Vulpes vulpes*) have been sighted at the Kurnell site in the past and baiting programs are carried out on the site, as part of the Sutherland Shire Council Fox Baiting program, as well as in other areas of the peninsula. Other introduced species with potential to inhabit the site include rabbits, hares and cats, all of which have been sighted on the plant. During 2022-23 a total of one fox and seven cats were trapped and removed from the site.

Plague Minnow (*Gambusia holbrooki*) is known to prevent, or at least reduce the breeding success of GGBF on sites. The species was detected in both 2011 and 2012 targeted survey seasons, despite efforts to eradicate. They were not identified in the 2013-2017 targeted survey seasons within the conservation area, however they were found within the waterway running along Sir Joseph Banks Drive which is in close proximity to the conservation area.

5.3 Acid sulphate soils

The CA is mapped (NSW Natural Resource Atlas, 2010) as having potential risk for Acid Sulphate Soils (ASS) (Figure 4). The area is identified as having a high probability of encountering ASS in areas that have not been previously disturbed.



0 1 Km

Legend

Symbol	Layer	Custodian
	Soil profiles	
	Primary/arterial road	
	Motorway/freeway	
	Railway	
	Runway	
	Contour	
	High probability of occurrence	Acid sulfate soils risk, coastal NSW
	Low probability of occurrence	
	No known occurrence	
	SPOT 5 satellite image, © CNES 2004-05	

Copyright © 2010 New South Wales Government. Map has been compiled from various sources and may contain errors or omissions. No representation is made as to its accuracy or suitability.

Figure 4 - Acid Sulphate Soil Map
(created with NSW Natural Resource Atlas-<http://nratlas.nsw.gov.au> Wednesday, August 18, 2010)

Section 6 Potential Conservation Area Impacts

6.1 Operational activities

Some of the activities related to the operation and maintenance of the desalination plant that were earlier envisaged to pose some potential risk to the CA included:

- lighting 24 hours per day for security purposes;
- noise; and
- truck movements.

Based on the plant design and 2 years of monitoring while the plant was operating (2010-2012), these activities are no longer considered potential CA risks. The lighting for the Plant is confined to localised buildings and is not directed towards the CA. All potential noise is controlled as equipment is housed within buildings and speciality casing, where required, to meet both occupational health and safety requirements as well noise compliance at sensitive receivers. Truck movements, namely chemical deliveries are limited to daytime and do not constitute a significant increase to traffic in the area. There have been no impacts as a consequence of operating and maintaining the Plant to flora or fauna associated with the CA detected during targeted monitoring.

While the plant was being re-built after the December 2015 tornado, consultation with the ecological consultants concluded that the location and extent of the re-build works would not pose any potential risk to the GHFF community. The conservation area was delineated from the re-build construction site and there had been no other impacts on the conservation area.

The plant commenced full operation (250 MLD in July 2019 due to low dam levels and continued to operate in that mode until early 2020 when Sydney's dams were filled following heavy rainfall. Since that time the plant has operated in low flow mode (50 MLD) and at full capacity. It is expected that in future the plant will operate continuously depending on SWC requirements even when dams are at full.

6.2 Mismanagement of activities

There may be risks from activities aimed at protecting the CA conservation values. These will cause impact if there is a degree of mismanagement.

A potential risk will be from the vegetation management activities. Excessive clearing, with the aim of removing or controlling weeds could result in modification of vegetation structure or species composition. This could alter the CA and impact on the endangered ecological communities and, as a result, the fauna. The use of herbicides and incorrect application of pesticides may also have a direct negative impact on local flora and fauna. In general, the aim is to ensure that no habitat loss or significant disturbance results from any of the work in the CA. In fact there will be an increase in fauna habitat dominated by native species in the long term.

It should be noted that no construction or similar work will occur in the CA.

Potential impacts on the GHFF camp could arise if work activities and access in the CA are not managed effectively. Inappropriate or excessive access to the area beneath the GHFF camp could cause major disturbance to the animals when in occupancy. During certain times of the year when these animals are particularly sensitive, such as September to February, this could result in serious impacts. Work involving very loud noises, such as use of explosives could result in females aborting late in pregnancy. Females have also been known to abandon flightless young when stressed.

6.3 Illegal site access

Prior to the construction of the Plant, illegal access, in particular by motorcyclists, caused damage to the vegetation in the CA. One of the risks related to this is that new growth from the soil seed bank doesn't have a chance to grow to maturity and maintain genetic variety in the native vegetation. This will degrade the health of the vegetation in the CA and potentially reduce its ability to adapt to change. It should be noted that there have not been any recent reported cases of motorcycle access in the CA. The access which was previously used to access the CA from the non-Plant side has been restricted due to the neighbouring site being developed.

6.4 Invasion by exotic species

The presence of introduced fauna species at the site, including feral cats, rabbits, red fox (*Vulpes vulpes*) and Plague Minnow (*Gambusia holbrooki*) have the potential to reduce the success of both native flora and fauna at the site. These species can result in damage to vegetation as well as the abundance and success of native fauna through competition and predation.

Section 7 Management Activities

Sydney Water originally set aside the land in the CA to protect the endangered ecological communities of vegetation and threatened species. Operational activities on the Plant are managed to protect endangered ecological communities and threatened species within the CA, primarily by avoiding the area completely, except for approved vegetation management activities. Ongoing maintenance activities (including weeding) will not affect the CA directly.

A summary of the management activities for each aspect is detailed in this section. It should be noted that all potential impacts associated with surface water and groundwater have been identified and addressed in the Surface Water and Groundwater Management Plan (MAN-9491) and all waste management considerations are included in the Waste Management Plan (MAN-9676).

This Plan will be reviewed annually to ensure continued effectiveness and priorities are to be updated where required. Any management recommendations from consultant reports will be included in the issue management system for actioning using Spheracloud (Rivo).

7.1 Site access

Site fencing is installed and maintained to prevent unauthorised access in addition to 24 hour onsite security for perimeter checks and monitoring of the surveillance system, however there is a section bordering Zone 3 which is not fenced, but access is limited by factory development in Clerke Place and limited access from Captain Cook Drive. In the event of trespassers being observed on the site, the Duty Operator should be contacted immediately and police notified if appropriate.

Due to the known risk of damage to the environment from illegal access, the strategy adopted is to prevent such access as much as possible. If access cannot be stopped, attempts will be made to direct motorcycles away from environmentally sensitive sections of the site by placing obstructions, such as large sandstone boulders, in the way.

Access by subcontractors into the CA from the DPS must be approved and is managed through the issue of a work permit and key to the padlocked gates. To be issued with a key for access into the CA an approved work method statement/JSEA outlining environmental and safety safeguards must first be approved by Veolia.

7.2 Site induction and environmental awareness

All personnel, including subcontractors and site visitors, are required to undertake a site induction including identification of safety and environmental issues. All staff and project personnel are made familiar with the CAMP and the relevant safeguards for their work.

Making staff and others accessing any part of the site aware of environmental sensitivities and issues on the site is the most effective way to avoid environmental impact to the CA. Combined with good induction procedures, the risk of impacting the CA is expected to be reduced substantially by the fact that the CA has been clearly delineated from the DPS with security fencing and padlocked access gates.

No hot works are to be undertaken onsite during Total Fire Bans (TOBANS). Staff working in or near the CA are to watch for indications of fire at all times. Fire fighting equipment will be kept on site in appropriate accessible locations.

7.3 Acid sulphate soils (ASS)

There is no significant risk of disturbing ASS for activities in the CA, as no excavation is required beyond digging out weeds or planting native seedlings, neither of which should cause any disturbance to soil layers deeper than 30 centimetres. ASS risks and appropriate safeguards will be identified for specific works requiring deep (> 1m) excavation of more than 1 m³ in any one location.

Groundwater monitoring is undertaken on the site in accordance with the Surface Water and Groundwater Management Plan MAN-9491 and if any change that could be attributed to the influence of acid sulphate soils is detected it would be notified to DPIE and remediation options explored in consultation with the relevant authorities and specialists.

7.4 Vegetation management

The original Vegetation Management Plan (VMP) (2006) was prepared by EcoLogical and had a life span of five years. A revised VMP was prepared in 2011 by Keystone Ecological in light of the condition of the vegetation and lessons learnt from the management actions and rehabilitation results since 2006.

A third review of the VMP was undertaken in December 2016 and an updated plan was prepared by Narla Ecological which was used to manage the CA for the five years before formal review occurred in January 2022. The current plan was issued by Narla Environmental in February 2022 after inspecting the site and reviewing reports provided by the then bush regenerating contractor Waratah Eco Works. In early 2022 the contract for the bush regeneration works was put out to tender and the contract was awarded to Toolijooa for the period from April 2022 to April 2027. A third party has carried out annual inspections of the CA to provide guidance for the bush regeneration company and to provide SDP staff with independent reports of the condition of the CA.

The implementation of this VMP is intended to minimise the potential for negative impacts, control Key Threatening Processes associated with weed infestations, satisfy noxious weed control requirements and ultimately provide a benefit to the endangered ecological communities and threatened species on the site and in the local area.

All vegetation management actions specified in the VMP shall be carried out by suitably qualified and experienced bush regenerators, as specified in the VMP. The use of trained personnel will ensure correct plant identification, work methods and compliance with required Work Health and Safety standards.

The VMP (attached) includes a monitoring program (detailed in section 2.3.4 Monitoring Specifications). If, after monitoring, it is deemed that the weed eradication techniques are ineffective, then bush regeneration efforts would be increased to reduce the weed biomass. Likewise, if natural regeneration is failing then corrective measures will be implemented, including planting of tube stock from local provenance material.

7.4.1 Species recovery

The DPIE have identified recovery strategies for the listed Endangered Ecological Communities (EEC) that occur on site. These are detailed in Table 5.

Table 5. EEC Recovery Strategies

Endangered Ecological Community (EEC)	DPIE Recommended Recovery Activity	Actions required within Sydney Desalination Plant CA
Coastal Sand Littoral Forest S_WSFO3 previously PCT: 3546 - Coastal Sands Littoral Scrub-Forest (Based on SVTM 2022) Kurnell Dune Forest in the Sutherland Shire and City of Rockdale EEC	Support and provide information to land managers and maintenance crews regarding appropriate management.	This VMP provides detailed information for land managers including Veolia and bush regeneration contractors to best manage the EEC within the CA
	Determine and apply appropriate fire management practices.	Not applicable. The CA is located close to significant infrastructure and the risk of impact to assets is too high to warrant the use of fire as a management tool.
	Implement measures to control inappropriate water flows.	Historical changes to natural water flows have occurred throughout the area. These changes have facilitated the creation of infrastructure in the area. Water flows in and around the CA have been altered historically, however it is considered unlikely that these will be changed any further.
	Install gates, fencing, formal tracks and signs to manage access and prevent rubbish dumping.	The entire CA is either fenced or has restricted access to unauthorised persons. Unauthorised access may still occur from the north-west of the CA where there is no fencing. One formal track dissects the centre of the CA. It is considered that this track is sufficient for the management of the CA. Additional tracks constructed through the CA will require impact assessment (e.g. REF) prior to construction.
	Protect remnants from clearing and further fragmentation.	The establishment of the CA provides ongoing protection of the vegetation from clearing and fragmentation. This VMP guides best practice methods for further enhancing native habitat.

NSW/Kurnell-Conservation Area Management Plan

Issue Date 15/06/2023

	Restore degraded habitat using bush regeneration techniques.	Best practice weed control methods have been implemented and are further recommended. This VMP directs ongoing works sensitive to the requirements of this EEC.
	Prepare and implement site specific plans of management.	This VMP is a site-specific plan of management that provides recommendations for best practice management actions and monitoring of CA management performance.
Coastal Freshwater Wetland S_FrW03 Previously PCT: 3922 Sydney Coastal Sand Swamp Scrub PCT: 3972 - Sydney Creekflat Wetland Sydney Freshwater Wetlands in the Sydney Basin Bioregion	Install stormwater control mechanisms to prevent off-site impacts from adjacent development.	This recovery strategy was addressed as part of the Sydney Desalination Plant approval and development process. However, the CA may still be vulnerable to spills from uncontrolled accidents in nearby sites.
	Control access to remnants by installing fencing and signage and rationalising informal tracks through the community.	The entire CA is either fenced or has restricted access to unauthorised persons. Unauthorised access may still occur from the north-west of the CA where there is no fencing. One formal track dissects the centre of the CA. It is considered that this track is sufficient for the management of the CA. Additional tracks constructed through the CA will require impact assessment (e.g. REF) prior to construction.
	Undertake weed control as required using removal methods that will not damage the community.	Best practice weed control methods have been implemented and are further recommended. This VMP directs ongoing works sensitive to the requirements of this EEC.
	Protect and actively manage SFW remnants through conservation mechanisms such as covenanting and the preparation/implementation of site-specific vegetation management plans.	This VMP is a site-specific plan of management that provides recommendations for best practice management actions and monitoring of CA management performance.

NSW/Kurnell-Conservation Area Management Plan
Issue Date 15/06/2023

	Improve vegetative connectivity within and between remnants through revegetation/regeneration programs and provide vegetative buffers around these remnants.	Maintenance of vegetation within the CA as outlined in this VMP assists in preserving and enhancing habitat connectivity with other remnant bushland areas of the Kurnell Peninsula e.g. Kamay Botany Bay National Park.
	Restore natural drainage conditions.	Historical changes to natural water flows have occurred throughout the area. These changes have facilitated the creation of infrastructure in the area. Water flows in and around the CA have been altered historically, however it is considered unlikely that these will be changed any further.
Coastal Swamp Paperbark-Swamp Oak Scrub S_FoW12 Previously PCT: 4028 - Estuarine Swamp Oak Twig-Rush Forest Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Promote public involvement in restoration activities.	Not applicable. The subject site has restricted access. Restoration activities are to be undertaken only by Qualified Bush Regeneration Contractors
	Instigate pig control programs	Not applicable. This pest species is not present within the subject site.
	Ensure that the fire sensitivity of the community is considered when planning hazard reduction and asset management burning.	Not applicable. The CA is located close to significant infrastructure and the risk of impact to assets is too high to warrant the use of fire as a management tool.
	Protect habitat by minimising further clearing of the community. This requires recognition of the values of all remnants in the land use planning process, particularly development consents, rezoning and regional planning.	The establishment of the CA protects relevant native vegetation habitat. This VMP directs ongoing works sensitive to the requirements of this EEC.
	Promote regeneration by avoiding prolonged or heavy grazing.	Not applicable. Grazing no longer occurs locally.
	Weed control.	Best practice weed control methods have been implemented and are further recommended. This VMP directs ongoing works sensitive to the requirements of this EEC.

	Undertake restoration including bush regeneration and revegetation.	This VMP provides detailed information on recommended bush regeneration methods to be delivered by Qualified Bush Regeneration Contractors.
Coastal Sand Swamp Mahogany forest S_FoW04 Previously PCT: 3546 - Coastal Sands Littoral Scrub-Forest (Based on SVTM 2022) Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Instigate pig, deer and goat control programs.	Not Applicable. None of these species have been recorded in the subject site
	Ensure that the fire sensitivity of the community is considered when planning hazard reduction and asset management burning.	Not applicable. The CA is located close to significant infrastructure and the risk of impact to assets is too high to warrant the use of fire as a management tool.
	Protect habitat by minimising further clearing of the community. This requires recognition of the values of all remnants in the land use planning process.	The establishment of the CA provides ongoing protection of the vegetation from clearing and fragmentation. This VMP guides best practice methods for further enhancing native habitat.
	Promote regeneration by avoiding prolonged or heavy grazing.	Not applicable. Grazing no longer occurs locally.
	Undertake restoration including bush regeneration, revegetation and weed control, and promote public involvement in this restoration.	Best practice weed control methods have been implemented and are further recommended. This VMP directs ongoing works sensitive to the requirements of this EEC.

7.4.2 Bushfire

The CA is classed as “Vegetation category 1” on the Bushfire Prone land layer. Bushfire management measures were considered in the design layout of the site including examination of the site’s characteristics; such as slope, surrounding vegetation and the assets on site that require protection. These aim to reduce the risks to people and property in relation to the desalination plant generally in line with the NSW Rural Fire Service (2006) Planning for Bushfire Protection. The Bushfire Management Measures are aimed at protection of assets rather than vegetation management.

Reducing the risk of bushfire within the CA will mean that any grass or bushfires that have spread onto the desalination plant site must be controlled to avoid fire spreading to the CA. Fires from adjacent properties still pose a risk to the CA vegetation and fauna.

7.5 Fauna management

Existing and potential fauna at the Plant would be managed through the implementation of the VMP (accompanying this document). The VMP outlines measures to protect the habitat within the conservation area for the Green and Golden Bell Frog, the Wallum Froglet and the Large-footed Myotis as required by MCoA Plant 4.6b.

Narla Environmental, who has also undertaken GHFF monitoring surveys at the Plant since 2016, were the consultant that prepared the updated VMP and therefore were in the best position to ensure relevant safeguards to protect the GHFF camp at the Kurnell desalination plant site were incorporated.

Quantitative monitoring to measure the effectiveness of the safeguards and presence of threatened species will be undertaken as detailed in Section 8.1.2. If species are detected during scheduled surveys then a follow-up survey would be undertaken within a month to confirm the presence of the species. If they are detected at the second survey DPIE would be notified (matthew.mo@environment.nsw.gov.au) the current controls of this Plan assessed to ensure the protection of the species continues.

7.5.1 Species recovery and threat abatement

At the time of preparation of this plan, there are no finalised Threat Abatement Plans (TAPs) that apply to the CA fauna. To guide recovery and threat abatement actions the Biodiversity Conservation Act provides for the preparation of a Threatened Species Priorities Action Statement (the PAS) which outlines actions to recover species and manage threats.

The then Office of Environment and Heritage have identified recovery strategies for the listed threatened species that occur or have the potential to occur on site. These are detailed in Table 6 including the actions to be implemented on the site as a part of this CAMP.

Table 6 Species Recovery Strategies

Threatened Species	OEH Recommended Recovery Activity	Actions required within Sydney Desalination Plant CA
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Protect roost sites, particularly avoid disturbance September through November.	Establishment of the CA provides general protection. Observe recommendations provided in sections 1.4 (Zone 7) of the VMP and 7.5.2 of this document.
	Identify and protect key foraging areas.	Key foraging resources have been previously identified within the CA including preferred feed tree species. This VMP guides further habitat enhancement. Observe recommendations provided in section 1.4 (Zone 7) of the VMP and 7.5.2 of this document.
	Manage and enforce licensed shooting.	Not Applicable

NSW/Kurnell-Conservation Area Management Plan

Issue Date 15/06/2023

	Investigate and promote alternative non-lethal crop protection mechanisms.	Not Applicable
	Identify powerline blackspots and implement measures to reduce deaths; implement measures to reduce deaths from entanglement in netting and on barbed-wire.	To date powerlines and wire fencing have not been identified as an issue for the Grey-headed Flying Fox using the Sydney Desalination Plant CA. It is still recommended that local powerlines and any barbed wire fencing should be inspected for Grey-headed Flying Fox during times a Grey-headed Flying Fox colony is present, roosting within the CA.
	Increase public awareness/understanding about flying-foxes, and their involvement in flying-fox conservation.	Not Applicable
	Monitor the national population's status and distribution.	Outside of the VMP scope however local population monitoring is addressed in supplementary documentation (Veolia 2015). DPIE contact is: Matthew.mo@environment.nsw.gov.au Information is available on the DPIE website: https://www.environment.nsw.gov.au/topics/animals-and-plants/wildlife-management/management-flying-foxes There is the possibility of introducing orphaned GHFF to the colony provided the colony is > 100 individuals - contact details Charmian Gradwell - Sydney Metropolitan Wildlife Rescue Services - Charmian2@me.com
	Improve knowledge on demographics and population structure to better understand ecological requirements of the species.	Outside of the VMP scope however local population monitoring is addressed in supplementary documentation (Veolia 2015). Also see above.

NSW/Kurnell-Conservation Area Management Plan
Issue Date 15/06/2023

Green and Golden Bell Frog (<i>Litoria aurea</i>)	Maintain captive bred populations for future possible re-introduction programs.	The possibility of introducing the GGBF to the stormwater basin is being investigated. Contact is Arthur White - 9599 1161 Email: arfawhite@gmail.com
	Initiate community awareness programs that highlight the presence of populations and catchment management approaches to improving stormwater quality, habitat retention and management.	Stormwater management is included in the Sydney Desalination Plant Surface and Groundwater Management Plan and its implementation will ensure habitat retention and management
	Develop measures to control or eradicate the introduced Plague Minnow.	Measures have been previously established (refer to Veolia CAMP 2015). Observe recommendations provided in section 1.4 (Zone 7) of the VMP (App 1).
	Establish protocols for handling of frogs and educational strategies to minimise the inadvertent spread of fungal pathogens from site to site.	Handling of any fauna is to be avoided. Hygiene protocols are discussed in section 2.2 of the VMP .
	Develop strategies to provide for the development or enhancement of frog habitat to improve reproductive success and recruitment at known sites.	All management strategies within the VMP (app 1) intend to result in improved native habitat. A Translocation Plan has been developed (2021) and has been approved by the DPIE. Tadpoles have been transferred to IBC's in the stormwater basin - Grefer to Google Drive: NSW KDP> Environment> Sustainability> GGBF Translocation.
	Develop site specific plans of management to improve conservation outcomes for targeted populations.	All management strategies within the VMP intend to result in improved native habitat.
	Develop strategies to provide disease-free and fish-free breeding habitat.	Measures have been previously established and listed within the CAMP (Veolia 2015). Refer to section 4.1 in the VMP for further advice.
Wallum Froglet (<i>Crinia tinnula</i>)	Retain wetland protection buffers in new coastal developments.	The establishment of the CA and management as outlined in the VMP
	Fence off swamps to prevent stock from grazing in these areas.	Grazing no longer occurs locally.

NSW/Kurnell-Conservation Area Management Plan
Issue Date 15/06/2023

	Protect coastal wetland areas.	The establishment of the CA and management as outlined in the VMP
	Manage and control pest species (Plague Minnow) in accordance with approved Threat Abatement Plans.	Recommendations in the VMP are to monitor for pest fish species during scheduled annual frog surveys and manage them appropriately in accordance to Threat Abatement Plans
	Apply fire regime appropriate for vegetation type (frequency varying between 6-35 year intervals) and ensure standing water is present if undertaking prescribed burns.	Not relevant as the site is too close to hazardous industry for the use of fire as a management tool.
	Control incursion of weeds into coastal wetland habitat	The VMP outlines updated best practice recommendation for vegetation management to be carried out by Qualified Bush Regenerators
	Rehabilitate or recreate former and existing habitat degraded or destroyed by grazing, sandmining and other activities	The VMP guides best practice native habitat restoration and enhancement, designed to assist this and other locally indigenous species.
Southern Myotis (<i>Myotis macropus</i>)	Retain native vegetation along streams and rivers and around other waterbodies.	The establishment of the CA protects relevant native vegetation habitat. The VMP guides best practice methods for maintaining the native vegetation habitat within the CA.
	Minimise the use of pesticides adjacent to foraging areas.	Only targeted herbicide and terrestrial, predatory vertebrate pesticide (1080) is specified for use within the CA. This is outlined in this VMP and should be minimised. No pesticides are used to target invertebrates such that prey of the southern myotis may decline.
	Protect roosts from damage or disturbance.	No relevant roost habitat has been identified within the CA. If located in the future an Ecologist should be contacted for guidance.

7.5.2 Grey-headed flying fox

The overarching management consideration is to maintain the critical components of the habitat for the Grey-headed Flying-foxes (refer VMP section 1.4 and Zone 7 detail) . This includes a vigorous canopy structure, the wall of Lantana along the Zone's edge with Boat Harbour Road that acts as a buffer to the hottest westerly winds and the vine arbours (including Morning Glory) that provide access to the coolest part of the vegetation during dangerously hot summer days. The following management strategies apply to works within Zone 7.

- The majority of works near the Grey-headed Flying-fox camp must occur when the animals are not in residence, generally from June to August but May to September may also be available.
- When the animals are in residence, low impact works near the camp site are allowed during March and April only, but a distance of at least 25 to 30 metres is to be maintained. This is due to the risk of causing pregnant females to abort or flightless young to be abandoned if they are disturbed during the breeding months from October to February. Such works must be undertaken quietly (e.g. no chain saws or shouting) and workers should not wear bright clothing. Appropriate low impact works include ground cover weed control (e.g. Trad rolling), manual removal of seedlings or scraping and painting of soft shrubs.
- Works must not radically alter the structure of the vegetation of the area occupied by the animals and so weed control must occur at a very slow pace.
- Morning Glory and other exotic vines should only be removed from the camp area in consultation with an expert on the Grey-headed Flying-fox. The removal of the exotic vine arbours will only occur slowly and progressively where native vines are in place as a structural substitute.
- Remove Ludwigia when animals are not using the camp.
- The bank of Lantana along the western boundary must not be removed. However, the growth of native plants is to be encouraged to replace the structural component of the vegetation now provided by Lantana.

GHFF feed primarily on blossom and fruit in canopy vegetation and supplement this diet with leaves. In accordance with the adopted Bradley method of vegetation management attempts to regenerate with diet species by direct seeding will be undertaken before planting within the CA, if required. The DPS landscaping plan incorporated the planting of various plants used as nectar sources by GHFF including Eucalyptus robusta, Banksia serrata, Callistemon citrinus and Melaleuca quinquenervia. In addition to these DPS planted species, existing suitable species previously present in the CA have had natural regeneration (Waratah Eco Works, Feb 2010).

7.5.3 Microbats

Strategies to protect the microbats and similar arboreal species on the site will involve the retention and protection of their habitat and possible roosting sites. No specific plans have been developed for each species, however measures that should ensure the habitat value and therefore species protection is maintained include retaining native vegetation along and around the few water bodies on site, and not allowing any modification of bodies of standing water in the CA. As the Large-Footed Myotis and other native animals are insectivorous, pesticide and herbicide use will be restricted.

7.5.4 Green and golden bell frog & wallum froglet

The large stormwater detention basin just outside of the Conservation Area was designed to provide additional frog habitat and was constructed and planted in 2009. Other areas of the site also provide potential frog habitat. The following considerations are adopted to minimise the impact of vegetation management works on the green and golden bell frog and other species.

- Herbicide use near waterways or wetlands including ephemeral areas is to be minimised and only herbicides and other additives formulated for use near waterways (e.g. Round-Up Biactive™) are to be used.
- Pampas grass is a weed which is present on the site and is known to provide suitable habitat for frogs and other small animals. Each pampas grass tussock will be closely examined for the presence of frogs and other animals by searching the inner parts for sheltering animals before removal. Where animals are found the tussock will not be treated or removed but any seed heads will be removed. These plants can be treated at a later date when no animals are observed using the habitat.
- Dead branches or tree pruning available should be stored on site, not discarded. Large branches and logs are ideal shelter items for small terrestrial animals (e.g. small lizards, frogs and invertebrates). If the branches are small, they should be stacked in an area that receives some direct sunlight.

Protection of habitat for frogs by maintaining and improving the condition of the native vegetation and the groundwater and surface water will also benefit frog species

7.5.5 Other species

Although neither microbat species, the Eastern Bent-Wing Bat (*Miniopterus schreibersii oceanensis*) nor the Little Bent-Wing Bat (*Miniopterus australis*) have been sighted or recorded during previous surveys, they have potential foraging habitat within the CA. Safeguards to protect the GHFF and frogs should benefit these species as well. Trapping feral cats and baiting of foxes will avoid the risk of these animals being harmed by feral foxes. No additional specific safeguards or management recommendations are needed.

Eastern Banjo Frogs (*Limnodynastes dumerilii*) occur on the site (White, 2006). These squat frogs are burrowing animals and frequently dig burrows under thick bushes where the ground is cool and relatively moist. In addition to relocating any unearthed frogs no other specific safeguards or management recommendations are being applied.

The “Predation by Red Fox (*Vulpes vulpes*) TAP” is relevant to the Kurnell site. Management of the Red Fox will involve baiting programs initiated by National Parks and Wildlife Services and the Sutherland Shire Council.

7.5.6 Exotic species

NSW National Parks & Wildlife Service and Sutherland Shire Council Sutherland Shire Council (SSC) have implemented Fox Abatement Program on the Kurnell Peninsula. Cat and rabbit abatement is being examined and may become part of the program. The program is undertaken to protect endangered migratory shore birds, endangered vegetation communities and Green and Golden Bell frog populations found on the Kurnell Peninsula and is an excellent example of integrated, co-operative wildlife conservation in urban areas.

NSW/Kurnell-Conservation Area Management Plan**Issue Date 15/06/2023**

The program implements integrated control operations on public and private property throughout the Kurnell Peninsula where numerous techniques of Fox and Rabbit control are undertaken including: major 1080 fox baiting program, shooting, Den/Warren detection using detection Dogs, Den/Warren fumigation, rabbit harbour control and trapping programs. The shooting and trapping program is completed to target bait shy Foxes, terrestrial rabbits and cats/rats that were disturbing/destroying the bait stations. Veolia participates in such integrated feral species control programs on the Peninsula where they are offered. A recent program (2023) has removed six cats. No foxes were found on site but rabbits have been sighted.

Site specific actions for the eradication of *Gambusia holbrooki* will be undertaken following the breeding season (September – April) if the species was identified in targeted surveys. Such actions may include controlled draining of the sites basin and investigation of potential to dose chemicals into closed systems should they be impacted and draining proves unsuccessful.

Section 8 Monitoring, Reporting And Auditing

Monitoring and reporting of the condition of the CA overtime will occur in accordance with the site specific Vegetation Management Program (see VMP - sections referring to specific management zones and section 2.1 Ongoing Management Actions). Significant issues are to be raised immediately with the EMSR, DPIE and the Department of Planning, Industry and Environment (DPIE), if required. Records are maintained on the local server.

8.1 Monitoring

Quantitative monitoring for relevant threatened species and vegetation will be undertaken according to the following program (see Table 7 and Section 2.1 of the VMP) as detailed further in the following subsections.

Table 7 - Monitoring program

Monitoring task	Timing (month)											
	J	F	M	A	M	J	J	A	S	O	N	D
Regular sweeps	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quantitative vegetation monitoring - annual photo point monitoring and annual quadrat monitoring		✓										
GHFF Survey*#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Frog Survey*%	✓										✓	

* If a threatened species is detected a survey will be scheduled within a month to determine the species ongoing affiliation with the site.

Checks will be carried out during May, June, July and August by bush regeneration staff. If GHFF are sighted the environmental consultant will be contacted to arrange surveys to be carried out.

% Informal, ad hoc surveys will be carried out for GGBF

8.1.1 Vegetation

Monitoring of the vegetation by the bush regeneration contractor will be undertaken throughout the 5 year VMP implementation period - refer to the VMP section 2.2 Work Schedule/Timing.

Informal monitoring will be undertaken using regular sweeps and additional monitoring may be carried out by Helensburgh Landcare.

- The entire Conservation Area is to be regularly checked via random and targeted meander in order to detect new or previously undetected weed outbreaks. These weed sweeps are to occur more frequently in the growing season and when target weeds are more detectable.

- This information is to be incorporated into the vegetation mapping and Annual Vegetation Report and used to direct the treatment program.

Formal monitoring will consist of three components;

- Quadrats

A monitoring quadrat of 10 x 10 metres in each Zone is to be sampled annually in February. The data to be collected from each quadrat comprises:

- o description of each vegetation layer-an estimate of height, percentage cover and a list of up to three major species in that layer;
- o species list for each quadrant with a cover abundance rating, using a modified Braun-Blanquet rating system; and
- o photograph of each quadrat taken with the picket visible in the foreground.

- Photographs

15 photographic reference points are to be photographed annually in February. All of these photographs and their grid references as determined by GPS are to be incorporated into the Annual Vegetation Report that also includes the data collected from the monitoring quadrats.

- Mapping

A map of the Conservation Area showing the densities of weeds and the areas of occurrence of different species is to be provided annually as part of the Annual Vegetation Report. These maps are to show:

- o Changes to weed and native percentage cover with an estimate in square metres of the approximate area rehabilitated during the previous 12 months;
- o Changes to species distributions;
- o Areas of Bitou Bush infestations with an estimate in square metres of the approximate area covered by this species (to facilitate reporting in accordance with the Draft Bitou Bush Threat Abatement Plan);
- o Any new incursions of weeds treated during the previous 12 months or any other management issues throughout the Conservation Area;

8.1.2 Fauna

A monitoring program for the GHFF and threatened frogs was initiated pre-construction and has been implemented continuously, including 2 years of operations. In that time there has not been a detectable influence from activities occurring on the Plant including construction which had the greatest perceived potential to impact the species given the increased activity on the site and associated noise. In recent years, however, the numbers have declined somewhat.

Specific targeted monitoring of the GHFF is carried out monthly and threatened frog species are conducted bi-annually during the previous period of occupancy and peak breeding period, respectively. The current safeguards in place as part of this plan will be assessed including benefits from the controls implemented for noise, illegal access, lighting and vegetation enhancement through the implementation of the VMP.

- Frog Surveys
 - Carried out over one night and undertaken after heavy rain/storm event where possible.
 - Survey around wetland areas within and outside CA to establish if individuals are present and to provide advice on how best to preserve and maintain frog habitat during operation and maintenance of the Plant.
 - Consider issues raised in the “Predation by Plague Minnow (*Gambusia holbrooki*) TAP”.
- GHFF Survey
 - Determine pattern of occupation
 - Consider external factors influencing the potential for the species to inhabit the previous camp site

8.2 Reporting

To support compliance with the requirements of various contracts, legislative and Minister’s Conditions of Approval, a legislative compliance register, [TEM-5274 Compliance Register - NSW Water](#) is maintained. This is complemented by the Environmental Compliance Tracking Program which is used to record relevant details. Any changes are reported monthly to SDP via the monthly report and collaboratively reported to the Department of Planning, Industry and Environment annually.

The MAN-9673 Incident and Emergency Manual includes an incident notification process where the Director-General will be notified by the Operations Manager (or delegate) of any incident with actual or potential significant off-site impacts on the biophysical environment as soon as practicable, as well as notifications in accordance with Part 5.7 of the POEO Act. Supplementary written details of the incident shall be provided within seven days of the date on which the incident occurred.

Monitoring and reporting requirements of the EPA, Environmental Protection License (EPL) would be carried out to the satisfaction of the conditions therein and otherwise reported via EPA Pollution Line. All other surface water and groundwater monitoring has been addressed in the Surface Water and Groundwater Management Plan (MAN-9491).

8.2.1 Vegetation

An annual Maintenance and Progress Report is prepared by the bush regeneration contractors and provided to Veolia Water each year usually in March. The document summarises the work carried out throughout the year and makes recommendations for the coming year.

The report details:

1. bush regeneration work carried out throughout the year;
2. compliance with the VMP’s management strategies and fulfilment of the objectives. This is to include any recommendations for alterations to the management strategies in response to the condition of the vegetation; and
3. specific results from the monitoring quadrats, photo points and weed mapping. This should include a time series of data and photographs to illustrate the changes over the entire management period.

The grid references of the locations of each photo point should also be collected via GPS and reported in this document.

Copies of the annual reports can be found on the Google Drive in [KDP|Environment>Monitoring Data> K2.3 Flora and Fauna>K2.3.3 Vegetation Management>Conservation Area>Vegetation Report](#).

A review may also be carried out by an independent third party to verify that the Annual Maintenance and Progress Report provided by the bush regeneration company is accurate.

8.2.2 Fauna

A written report will be provided to Veolia following each survey. These reports will briefly describe the survey findings and any recommendations. Recommendations from surveys are promptly entered into the sites issue management system RIVO and actions assigned to relevant staff for investigation/implementation.

8.3 Auditing

Auditing is managed by Veolia's corporate document [PRO-161 Internal Audit Management Procedure](#) which guides scheduling and conducting audits, auditor qualifications and audit reporting. At Kurnell, there are four levels of auditing taking place:

1. corporate level audit schedule which covers management system audits to identified standards for every Veolia site over the course of 12 months,
2. site specific audit schedule based on auditing specific areas of operations, or specific contract requirements,
3. schedule of client/Veolia "collaborative" audits which are focussed on evaluating management systems and compliance with Ministers Conditions of Approval, and
4. third party certification audits

Veolia maintains certification to the relevant management system standards specifically, ISO 14001 Environmental Management Systems, ISO 9001 Quality Management Systems and AS/NZS 4801 and ISO 45001 Safety Management Systems.

Section 9 Project Responsibilities And Training

9.1 Roles and responsibilities

In summary, the key responsibilities for the conservation area management are detailed in Table 8 below.

Table 8 Roles and Responsibilities

Role	Responsibility
Operations Manager:	Responsible for ensuring that conservation area management measures are implemented and maintained and, in the event of identified potential or actual breaches, to implement appropriate corrective or preventative actions to fulfill the requirements of this Plan. Responsible for advising applicable members of Sydney's Desalination Plant Team of complaints received pertaining to Conservation Area management or misuse and facilitating the resolution of complaints.
Environmental Management Systems Representative/s (EMSR):	Responsible for ensuring this Plan is implemented by Sydney Desalination Plant personnel. Undertake and assess data from inspections, monitoring and reporting and provide project-wide advice to ensure consistent approach and outcomes are achieved. Responsible for providing necessary training for Sydney Desalination Plant personnel to cover conservation area management issues.
Process Manager:	Responsible for providing assistance to the EMSR to fulfill the requirements of this Plan and for ensuring that appropriate conservation area management measures are implemented and maintained, and for reviewing performance of these measures.
Operations & Maintenance Supervisor:	Responsible for providing assistance to the EMSR to fulfill the requirements of this Plan and for ensuring that appropriate conservation area management measures are implemented and maintained.