

181 JAMES RUSE DRIVE

Riverbank Management Plan

For:

Statewide Planning Pty Ltd

October 2014

Final



**PO Box 2474
Carlingford Court 2118**

Report No. 14047RP2

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

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Table of Contents

1 INTRODUCTION

1.1	Purpose of Report	1.1
1.2	Background	1.1
1.3	Legislative Requirements	1.2
1.4	Methodology	1.3
1.4.1	Site Inspection	1.3
1.4.2	Desktop Review	1.3
1.5	Site Description and Vegetation	1.3

2 SOIL REMEDIATION WORKS

2.1	Site Preparation	2.1
2.1.1	Site Surveying	2.1
2.1.2	Preparation of Work Area	2.1
2.1.3	Excavation	2.2

3 RIVERBANK RESTORATION

3.1	Soil and Landscape	3.1
3.2	Tidal Erosion and Boat Wash Mitigation	3.1

4 REVEGETATION PLAN

4.1	Mangroves	4.1
4.1.1	Species and Planting Areas	4.1
4.1.2	Planting Methods	4.1
4.1.3	Planting Density	4.2
4.1.4	Monitoring	4.4
4.2	Coastal Saltmarsh	4.4
4.2.1	Species	4.4
4.2.2	Planting Area	4.4
4.2.3	Planting Density	4.5
4.3	Boardwalk Construction	4.5

Table of Contents *(Cont'd)*

REFERENCES

Table of Appendices

- A. SOIL CONTAMINATION DIAGRAM**
 - B. DEPARTMENT OF FISHERIES REQUIREMENTS**
 - C. ROCK FILLETS DESIGNS**
-

List of Tables

4.1	Saltmarsh Species Suitable for Planting Onsite	4.4
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List of Figures

1.1	Area Subject to RMP and extent of Mangroves	1.5
1.2	Wetlands Protection Area Map (Sydney REP (Sydney Harbour Catchment) 2005)	1.6
A.1	Cross Section of Contamination of Foreshore Area (URS 2014)	A.1
A.2	Asbestos Contamination Across the Development Area (URS 2014)	A.2
C.1	Standard Rock Fillet Design (DPI 2008)	C.1
C.2	Multiple Rock Fillet Design (CMA 2009)	C.2

List of Figures

List of Photographs

1.1	Interface of exotic weed covered, geotextile matted slope and mature mangroves	1.4
2.1	Sediment curtain creating a worksite	2.1
3.1	Rock fillet on landward side of sediment curtain	3.2
4.1	Example of Mangrove Restoration Plantings along the Shoalhaven River (DPI 2008)	4.3
4.2	Example of Rock Fillets used to Protect Mangrove Plantings	4.3
4.3	Example of Planted Saltmarsh along the Georges River (CMA 2009)	4.5

Introduction

1.1 Purpose of Report

The purpose of this report is to provide a Riverbank Management Plan (RMP) in relation to the proposed development at 181 James Ruse Drive in Parramatta NSW. The RMP covers the foreshore area down slope from Lot 10 DP 610228, Lot 2 DP 512655, Lot 1 DP 499552, Lot 25 DP 6856, and Lot 1 and 2 DP 549496 (hereafter referred to as the subject site). The subject site is a stretch of foreshore area along the southern bank of the Parramatta River, vegetated by mangroves, and is owned by the NSW Office of Water (NOW).

The subject site is to be excavated in order to remove asbestos contaminating the riverbank soil from past land uses of the property to the south, which is proposed to be developed. This RMP will guide the restoration of the riverbank area.

1.2 Background

The property at 181 James Ruse Drive (the Property) has previously been developed. The property currently does not contain buildings but is characterised by large concrete slabs and disused roads. No natural vegetation communities or fauna habitat remain on the property.

The proposed development for the Property involves redeveloping the site into a commercial area. The proposed development entails the development of retail and commercial buildings across the majority of the site with recreational areas including a food court, cafes, and a bistro, along the foreshore.

Past development of the Property entailed utilising fill underneath the entire area. This fill contains a large quantity of asbestos, with an estimated 68,310 m³ of asbestos currently under the site (URS 2014). The asbestos containing material (ACMs) within the fill have leached into the adjacent foreshore and are also present on the surface. It is estimated that the ACM layers in the Property and the Subject Site range in depth from 0m to 2.5 m (**Appendix A**).

The ACMs are to be removed across the Property and the Subject Site due to potential health concerns associated with future use of the site following completion of the commercial development. The subject site is owned by the NOW (**Figure 1.1**) and will be remediated by the developer under a Voluntary Planning Agreement (VPA). Remediation of the subject site

will involve the removal of asbestos that has leached from underneath the Property into the subject site (**Figure A.2**).

The subject site is currently vegetated with mangroves. Sampling undertaken by URS within the subject site detected asbestos fibres at a depth of up to a metre under the soil surface. It is estimated that asbestos is likely to be present in deeper layers of the sediment in some areas but deeper excavation was not conducted due to the risks to worker safety from asbestos exposure (URS 2014). Asbestos material including broken sheets of asbestos was observed during sampling in large quantities lying exposed and buried among mangrove roots and pneumatophores.

In order to completely remove and remediate the asbestos contaminated soil an area of approximately 0.36 ha (approximately 3,622 m²) of mangrove vegetation will need to be cleared from the subject site.

1.3 Legislative Requirements

i. *Fisheries Management Act 1994*

Mangroves are protected under the NSW *Fisheries Management Act 1994* (FM Act). However the potential adverse effects of asbestos on human health necessitate the removal of mangroves in order to adequately remediate the foreshore area north of the proposed development.

Following the soil remediation works the subject site is to be revegetated with mangrove species. Clearing of mangrove vegetation is generally required to be offset at a ratio of 2:1 under the FM Act. However as the works will be conducted under a VPA on NOW land, offsetting the clearing of mangroves at a 2:1 ratio is not feasible.

Therefore, in order to further improve the quality of the revegetated wetland habitat following the loss of mature mangroves, the high tide area is to be planted with Coastal Saltmarsh species, a community that does not currently occur on the subject site. Coastal Saltmarsh is listed as an Endangered Ecological Community (EEC) under the NSW *Threatened Species Conservation Act 1995* (TSC Act) as Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. The community is also listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as Subtropical and Temperate Coastal Saltmarsh.

ii. *S117 Directions*

The subject site is mapped as a Wetlands Protection Area under the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (SREP 2005) (**Figure 1.2**).

This RMP has considered the protected status of mangroves, particularly under the NSW *Fisheries Management Act 1994*. The removal of mangroves is considered to be justified in light of the hazards posed by ACMs present in the subject site and this RMP has been

prepared to satisfy NSW Department of Fisheries requirements for the subject site (**Appendix B**).

This RMP will guide the restoration of the site, environmental controls during excavation, revegetation of the site with mangrove species and creation of an area of the EEC Coastal Saltmarsh to improve the diversity of wetland habitats within the subject site. The planting of Coastal Saltmarsh EEC will increase the area of occupancy of this community which forms part of the wetland habitats as listed under the SREP 2005

Furthermore the proposed rezoning for this planning proposal intends to zone the areas of the Property adjacent to the foreshore as RE1 Public Recreation. The objective of this zoning is to protect and enhance the natural environment for public recreational purposes. The RE1 zone will allow for the maintenance of a buffer area between the main development area and the foreshore communities to ensure that the replanted mangrove and saltmarsh communities are protected onsite and will have adequate space and stable conditions to successfully regenerate.

The provisions described above intend to improve the quality of foreshore habitat and protect and conserve the environmentally sensitive areas present on the foreshore area in the long-term. The proposal is, therefore, consistent with the ecological planning principles of the SREP 2005 with regard to wetland rehabilitation and ecological function.

1.4 Methodology

1.4.1 Site Inspection

Personnel from Cumberland Ecology conducted a site inspection, along with representatives for the developer and NSW Dept. of Fisheries, on 29 April 2014. The condition of the Property and Subject Site were noted and observations were made on the general health and conditions of mangroves present along the foreshore area. Species present within the subject site were noted and photographs were taken to document the condition of the site.

1.4.2 Desktop Review

A literature review was undertaken to determine appropriate methods for managing the riverbank during the soil remediation and to determine appropriate methods and species for revegetating the site following the soil remediation. The desktop review involved review of government documents, peer reviewed scientific papers, and community group publications.

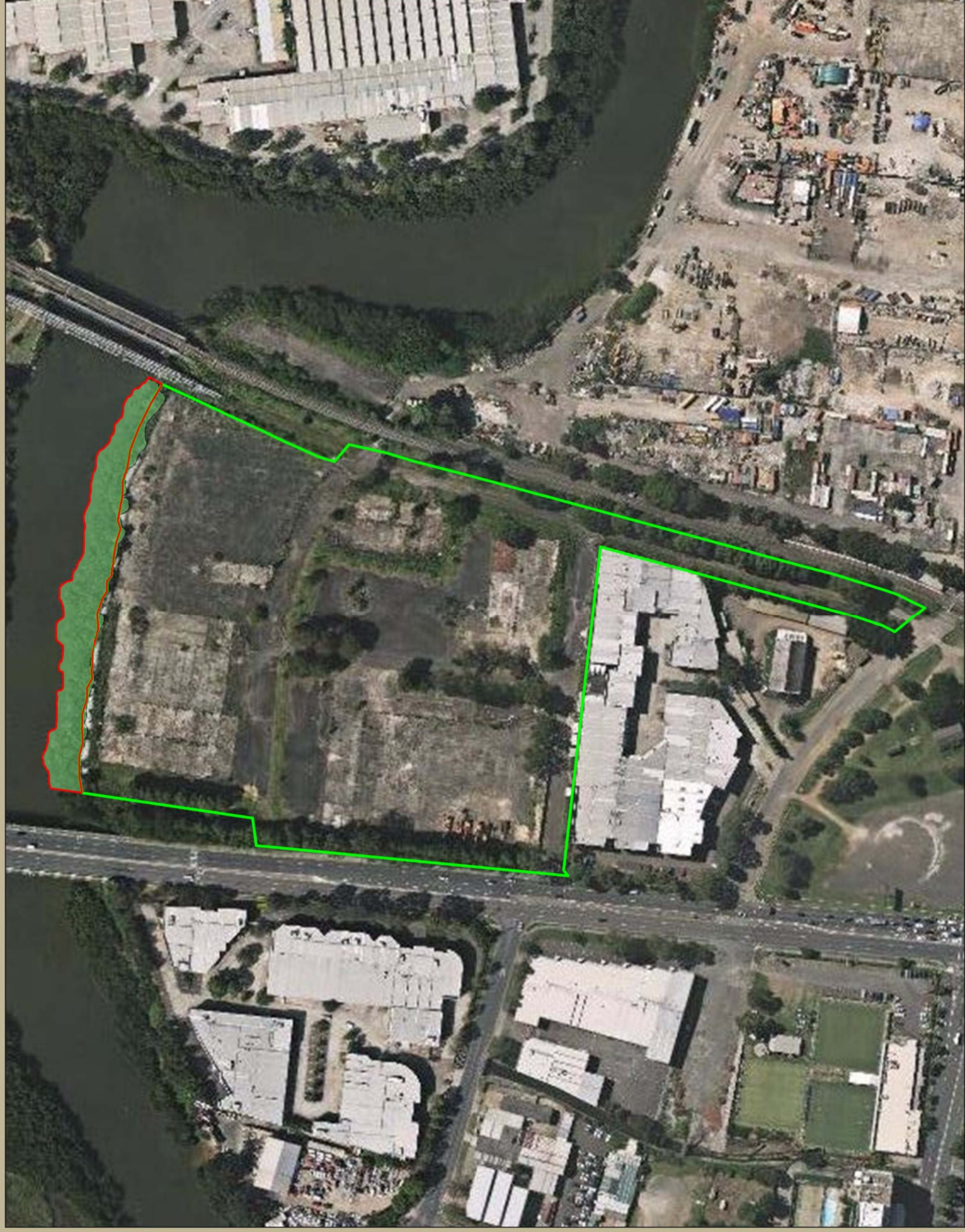
1.5 Site Description and Vegetation

The subject site is an east-west strip along the foreshore of Parramatta River. The southern edge of the subject site is a north facing slope occurring below a large area of fenced concrete slabs, delineating the extent of the lots proposed to be developed. The slope is currently covered with geotextile matting (**Photograph 1.1**). The slope covered with matting is currently dominated by exotic, herbaceous weed species such as Cobbler's Pegs (*Bidens*

pilosa), Morning Glory (*Ipomoea indica*), and Asthma Weed (*Parietaria judaica*). At the bottom of the slope there is an interface of one to several metres of bare soil (in places covered with asbestos containing material) at the high tide zone before the mangroves occur northwards to the edge of the river. The mangrove area consists predominately of the Grey Mangrove (*Avicenna marina*) species, with scattered occurrences of River Mangrove (*Aegiceras corniculatum*).



Photograph 1.1 Interface of exotic weed covered, geotextile matted slope and mature mangroves



Legend

 Subject Site

 Property to be developed


 Mangroves

Image Source:
Image © SIX Maps (1-4-2012)



Figure 1.1 Area Subject to RMP and Extent of Mangroves



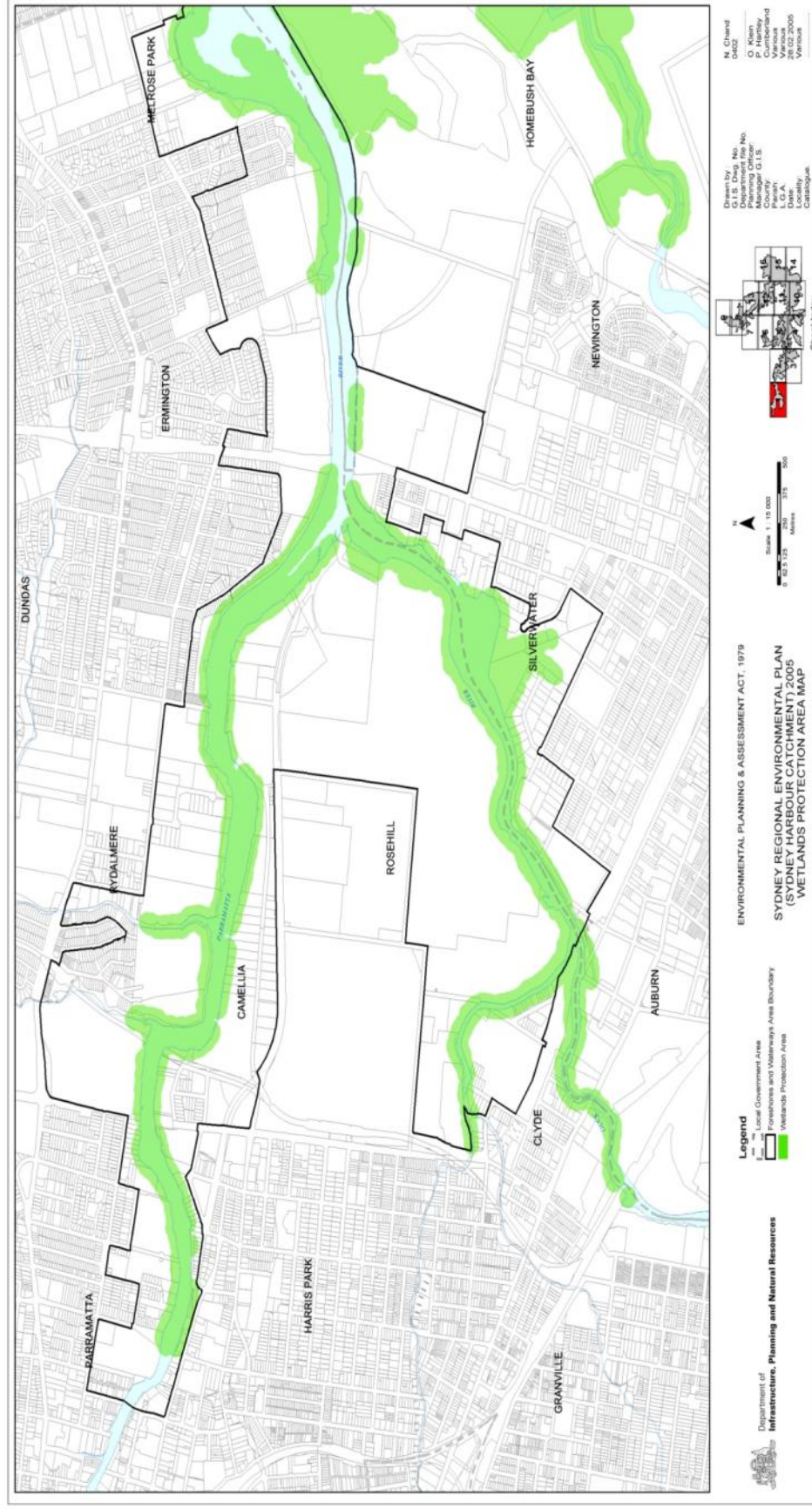


Figure 1.2 Wetlands Protection Area Map (Sydney REP (Sydney Harbour Catchment) 2005)

Soil Remediation Works

2.1 Site Preparation

2.1.1 *Site Surveying*

Prior to commencing the soil remediation works the topography of the site should be surveyed and mapped, to allow the site to be returned to as similar a state as possible following the remediation works. This mapping should include:

- Height of the soil surface above the mean low water mark in all areas of the foreshore; and
- Height of the average high tide level and the extent to which the site is inundated

2.1.2 *Preparation of Work Area*

Prior to commencing soil removal from site and clearing of mangroves, a temporary sediment curtain should be installed beyond the Mean Low Water Mark (MLWM) to create a worksite area. The sediment curtain consists of a floating boom with a mesh attached below. The mesh is weighted at the base with the weights resting on the benthic sediments. An example of an installed sediment curtain is provided in **Photograph 1**.



Photograph 2.1 Sediment curtain creating a worksite

The mesh size of the sediment curtain should be at an appropriate scale to prevent any asbestos material and soils disturbed during works washing into the river during tidal action. In particular, it is important that ACMs are contained within the work site to prevent them being washed up on riverbank areas outside the subject site.

The sediment curtain should be constructed prior to the removal of any of the mangroves on the site, as ACMs have been located within the root area of mangroves on the site. Removal of the mangroves before construction of the sediment curtain will result in some of the asbestos material being free to wash into the river as the roots are holding the soil in the foreshore area in place.

The sediment curtain should be constructed as close as possible to the MLWM so as to prevent disturbance of submerged aquatic vegetation and substrate, and to prevent disruption to river traffic.

2.1.3 Excavation

Excavation of contaminated material from the work area will occur during low tide periods. As material is excavated, sandstone boulders should be laid down over retained sediments to minimise further erosion. These boulders will also form the basis of the rock fillets which are a necessary wash mitigation measure to ensure creation of areas protected from strong tidal action to allow for the future establishment of mangroves. Further details on the rock fillets are provided in Section 3.2.

Provided the work site is properly prepared to prevent any erosion, and loss of soil and contaminants into the river during excavation, no restrictions are required upon excavation activities, provided all work activities take place exclusively within the land side south of the sediment curtain.

Riverbank Restoration

3.1 Soil and Landscape

Following the soil remediation works and waste removal, the subject site needs to be refilled with clean soil. Soil to be used to fill the site should replicate the natural soils that occur in the area. Sampling undertaken by URS for contamination of the site indicates that the natural soil is a combination of silt, clay, and sand (URS 2014). The subject site should be refilled to a height and slope above the low tide mark, and general landform replicating the subject site as it was surveyed prior to commencement of the soil remediation works.

3.2 Tidal Erosion and Boat Wash Mitigation

The area in which the subject site occurs is susceptible to erosion from boat wash, particularly from the Parramatta Rivercat service, and tidal action. In order to successfully re-establish mangroves on the site they will need to be protected from tidal action and boat wash.

Due to the presence of boats including the Rivercat in the area of the river where the site occurs, a more robust form of erosion control should be utilised to protect the mangroves. The Rivercat has a seven second wave period, significantly longer than many other boats, and requires specific wash mitigation measures such as the use of rock fillets (AECOM Australia 2010). Rock fillets consist of walls of piled rocks dug into the substrate and placed on top of a geotextile material. They create an area of still water protected from strong tidal action that allows the establishment of mangroves, while still allowing fish movement.

A barrier of rock fillets should be established at the MLWM concurrent with refilling the subject site with soil and prior to removal of the sediment curtain. An example of a rock fillet barrier prior to removal of a sediment curtain is shown in **Photograph 2**.



Photograph 3.1 Rock fillet on landward side of sediment curtain

The rock type used should be sandstone which will allow large gaps for fish movement and provide aesthetic value to the foreshore area. The height of the rock fillets should correspond with the average height of a high tide at the site.

As the width of the area of mangroves existing on the site is currently up to 40m in some areas, several rock fillet walls should be staggered southwards at intervals to reduce tidal action across the site and allow for multiple discrete areas to establish mangrove plantings. Further rock fillet walls should be established around the Mean High Water Mark (MHW), where the interface currently exists between the geotextile covered slope and the mangroves, to allow for the establishment of an area of saltmarsh that will only undergo inundation during higher than average tides.

At a minimum, the rock fillets should cover at least half of the tidal shoreline to create protected areas for establishment of mangroves. The placement of the rock fillets can be staggered to match the natural contours of the shoreline. **Appendix C** contains design examples of rock fillets.

Revegetation Plan

Revegetation is to be undertaken by staff of a suitably qualified Bushland Regeneration contractor. The company chosen to undertake the revegetation works should have experience with restoration of Coastal Saltmarsh and mangrove communities. Any nursery grown plants used for revegetation should be from a nursery that specialises in growing native plants for restoration purposes, and plants should be grown from seed of local provenance.

4.1 Mangroves

4.1.1 *Species and Planting Areas*

Two mangrove species currently occur on the site and should be replanted following the completion of soil remediation works. The Grey Mangrove is dominant in the area and approximately 80% of the plantings should be of this species. The Grey Mangrove should be planted through all areas of the site currently containing mangroves, from the MLWM to the MHWM. The River Mangrove generally only occurs in areas around the low tide mark and during revegetation should be planted within a distance of 5-10m of the low tide mark, behind the rock fillets furthest to the north.

4.1.2 *Planting Methods*

i. Seedlings

A shovel needs to be used to prepare a hole for planting of the mangrove seedling. The shovel should be dug into the foreshore area to a depth that will allow the entire vertical root of the mangrove seedling to be inserted into the hole without being bent. Once the shovel has been inserted at an adequate depth into the foreshore it should be levered to produce an opening in the soil surface. The mangrove seedling should be inserted into the opening created by levering the shovel, and the shovel slowly removed from the ground, allowing the surrounding silt to refill the hole, and surround the seedling and roots. Any area of the hole remaining around the seedling should be allowed to be refilled by silt during the next high tide, rather than by filling with soil, to avoid damage to the sensitive root system (DPI 2008).

Although it would be ideal to remove any seedlings currently occurring on site before remediation works to replant after the works have been completed, studies have shown that aquatic plants are capable of absorbing asbestos contaminants (Trivedi et al. 2004). It is

therefore not recommended that seedlings be collected from the site prior to soil remediation works.

ii. Direct Seeding

Directly rehabilitating a site by planting of mangrove seeds is more effective than use of nursery grown or transplanted seedlings due to the generally high mortality rate of seedlings used in mangrove rehabilitation. High mortality rates are thought to be due to the sensitive nature of mangrove roots, which are damaged during planting and transplanting of seedlings (DPI 2008).

If direct seeding is used, seeds should be sourced from mangrove individuals that occur within the same catchment as the rehabilitation site at 181 James Ruse Drive. If possible seeds should be gathered from the site prior to the removal of mature mangroves during the soil remediation works, and from areas immediately to the west and east of the site along the foreshore. As seeds of mangroves remain viable for only short periods of time, and do not remain viable when stored (Cousins and Saenger 2002), site seeds should be collected, germinated, and raised in a nursery setting for planting, before the soil remediation works commence, and seedlings planted as per above instructions following the remediation. Seeds for direct seeding within the site should be collected from surrounding areas of mangroves along Parramatta River following the completion of soil remediation works.

Grey Mangroves are most likely to be producing seed during the months of October and December. River Mangroves produce seed between Summer and Autumn. Seed should be collected from the ground between mangroves to ensure ripeness, rather than directly off plants. Seeds will need to be placed in a bucket of fresh or saline water for a period of 24 hours. This will induce the tough outer husk of the seed to fall off and the seeds will sink to the bottom of the bucket. Seeds should be collected from the bottom of the bucket and planted (DPI 2008).

Seeds should be planted directly into the ground. A hole should be made in the ground and the seed buried into the soil at a depth of one to two centimetres, allowing some of the seed to remain above the soil surface to prevent it rotting. The sloping top edge of the seed should be facing the waterline to prevent dislodgement by floating debris during subsequent tidal action. A plastic or thin metal mesh should be pegged into the ground above the areas of planted seeds to prevent seeds being dislodged. This mesh should be removed when seeds have sprouted roots and are anchored into the soil (DPI 2008).

4.1.3 Planting Density

Due to the relatively low survival rate of mangrove seedlings planting should be at a density of at least four plants or seeds per m² or higher depending on availability of mangrove stock.



Photograph 4.1 Example of Mangrove Restoration Plantings along the Shoalhaven River (DPI 2008)



Photograph 4.2 Example of Rock Fillets used to Protect Mangrove Plantings

4.1.4 Monitoring

The Bushland Regeneration contractor should visit the site once every two months to check on the mangrove plantings for a two year period. Any mangrove plants that have died should be replaced within the two year period. The site should also be inspected within the two year period following any significant storm to replace any plants washed away during storm surges.

4.2 Coastal Saltmarsh

4.2.1 Species

Table 4.1 lists species that have been recorded in Saltmarsh communities within the Parramatta River Catchment and are suitable for planting on site (Kelleway et al. 2007). Some of these species are uncommon or threatened and may not be available from nurseries for planting. All species available to be purchased for planting should be planted to result in the highest species diversity possible to be achieved on the site.

Table 4.1 Saltmarsh Species Suitable for Planting Onsite

Family	Botanical Name	Common Name
Aizoaceae	<i>Tetragonia tetragonioides</i>	New Zealand Spinach
Chenopodiaceae	<i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i>	
Chenopodiaceae	<i>Sarcocornia quinqueflora</i>	Samphire
Chenopodiaceae	<i>Suaeda australis</i>	Seablite
Convolvulaceae	<i>Wilsonia backhousei</i>	
Cyperaceae	<i>Baumea juncea</i>	
Cyperaceae	<i>Ficinia nodosa</i>	Knobby Club-rush
Goodeniaceae	<i>Selliera radicans</i>	Swamp Weed
Juncaceae	<i>Juncus kraussii</i>	Sea Rush
Juncaginaceae	<i>Triglochin striata</i>	Streaked Arrowgrass
Poaceae	<i>Sporobolus virginicus</i>	Sand Couch
Theophrastaceae	<i>Samolus repens</i>	Creeping Brookweed

4.2.2 Planting Area

The area for planting of Saltmarsh species should be between the MHW and the embankment edge of the Property. This area should experience inundation during higher than average tides but not consistently with every high tide throughout the year.

4.2.3 Planting Density

Coastal Saltmarsh is a community typified by dense herb species. Planting of species should occur at a density of at least eight plants per m².



Photograph 4.3 Example of Planted Saltmarsh along the Georges River (CMA 2009)

4.3 Boardwalk Construction

Remediation of the subject site will include the construction of a boardwalk through the mangrove and saltmarsh communities in the foreshore area and the northern extent of the proposed RE1 zone. The purpose of the boardwalk is to enhance the visual qualities of the foreshore area as well as provide opportunities for interactive and educational experiences thus improving public awareness of wetland habitats and their role in coastal and marine ecosystems.

Boardwalks allow for regular access to wetland areas with minimal disturbance to the wetland habitat, thus enabling small scale student research projects and long-term monitoring programmes on coastal changes and ecosystem health. The regular access also allows for recreational activities such as birdwatching and viewing points for public education purposes. The boardwalks also provide additional shelter for estuarine fauna and increased space (eg the pylons) for attachment of non-mobile fauna (eg barnacles).

Boardwalks have been constructed through several mangrove communities across Australia, such as the Jack Barnes Bicentennial Mangrove Boardwalk (Qld), Merimbula Top Lake

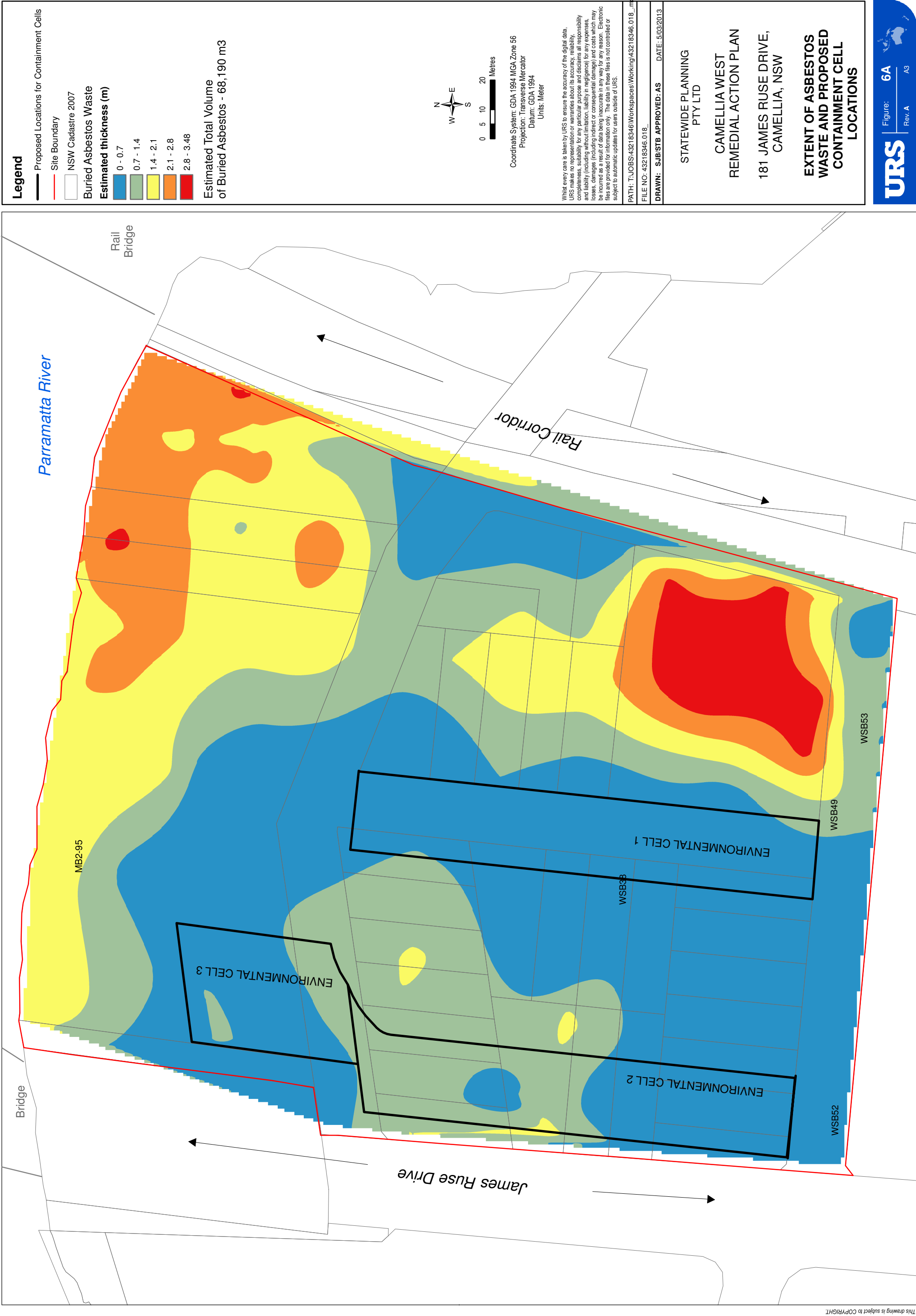
Boardwalk (NSW) and the St Kilda Mangrove Trail (SA), and are known to provide several ecological and socio-economic benefits (Mangrove Watch 2013).

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Appendix A

Soil Contamination Diagram



SOUTH

NORTH

181 James Ruse Dr

Site Boundary

Site Boundary

Foreshore Area

Mangroves

FILL: Asbestos Sheeting

Silty CLAY/Sand

Silty SAND

TP5

Parramatta River

Legend

Concrete

Geofabric

Dense Mangrove
Roots

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SCHEMATIC OF
FORESHORE SUPPLEMENTARY
INVESTIGATION

CROSS SECTION
(SOUTH-NORTH)

URS

Figure: 3

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Appendix B

Department of Fisheries Requirements

Environmental Assessment Requirements for proposed foreshore remediation works at 181 James Ruse Drive, Camellia

Note: Fisheries NSW recommends that development proposals comply with the *Policy and Guidelines for Fish Habitat Conservation and Management (2013)* (referred to hereafter as P&GLs). A list of general information requirements for developments and standard precautions and mitigation measures are outlined in Section 3.1 of this document. See <http://www.dpi.nsw.gov.au/fisheries/habitat/publications/policies,-guidelines-and-manuals/fish-habitat-conservation>

A: General Requirements

- site address and contact details.
- property description (e.g. Lot and DP numbers).
- a clear description of the proposal including details of construction methods and materials.
- map(s) of the development area and adjacent areas - this should include nearby waterways, adjacent infrastructure (such as jetties) and land use.
- clear photographs of the site (at low and high tide in estuaries), including photographs of any riparian and aquatic vegetation present (including pest species such as *Caulerpa taxifolia*).
- a description of the potential direct and indirect impacts on recreational fishing from the development.
- a clear description of the physical and hydrological features of the development area (which may extend upstream and downstream of the development site in the case of flowing rivers or tidal waterways).
- approximate depth contours within 20 metres of the proposal.
- a clear description of aquatic environments including:
 - ❑ fish in the locality, including threatened and protected species, populations, ecological communities, pest species or presence of 'critical habitat' under the FM Act or EPBC Act,
 - ❑ an aquatic and riparian vegetation survey map of the area which shows the location and/or coverage of saltmarsh, mangrove, seagrass, and riparian vegetation,
- details of the nature, timing, magnitude and duration of the proposed disturbance to the aquatic environment.
- assessments of predicted impacts upon any threatened species (fish and marine vegetation) (i.e. completion of a 7 part test and/or species impact statement(s)) and other aquatic flora and fauna.
- details of any mitigation measures to limit environmental impacts.
- details of the general regional context, any protected areas, other developments in the area, and/or cumulative impacts.
- a copy of the land owner's consent where relevant.
- notification of any other matters relevant to the particular proposal and of interest to NSW DPI.

Dredging and reclamation activities

- purpose of works
- type(s) and distribution of marine vegetation in the vicinity of the proposed works
- method of dredging to be used
- timing and duration of works
- dimension of area of works including levels and volume of material to be extracted or placed as fill
- nature of sediment to be dredged, including Acid Sulphate Soil, contaminated soils etc
- method of marking area subject to works

- environmental safeguards to be used during and after works
- measures for minimising harm to fish habitat under the proposal
- spoil type and source location for reclamation activities
- method of disposal of dredge material
- location and duration of spoil stockpiling, if planned

Activities that damage marine vegetation

- type of marine vegetation to be harmed
- map and density distribution of marine vegetation
- reasons for harming marine vegetation
- methods of harming marine vegetation
- construction details
- duration of works/activities
- measures for minimising harm to marine vegetation under the proposal and details of compensatory habitat development to replace lost vegetation.
- method and location of transplanting activities or disposal of marine vegetation.

Activities that block fish passage

- type of activity eg works in a stream that change flow or morphological characteristics
- length of time fish passage is to be restricted
- timing of proposed restriction
- remediation works

B. Aquatic habitat assessment

The aim of the aquatic assessment should be to define the presence of 'key fish habitat' within the study site, adjacent areas (upstream and downstream), and the broader regional area. There may be a range of potential fish habitats that could be impacted by a particular activity. Some points to consider include:

- flow regime of the watercourse (e.g. is it an intermittent or permanently flowing stream? What is the range of water velocity of the flow? What are the maximum and minimum or percentile flows (in megalitres/day) for the watercourse?),
- description of local wave and current regimes (in tidal areas),
- description of the water quality (e.g. discolouration, sedimentation, turbidity, pH, dissolved oxygen, nutrients),
- types of surrounding land use (e.g. agricultural, urban, aquaculture),
- condition of riparian vegetation (i.e. present or absent. Are the species native or exotic? Is the density of vegetation thick or sparse?),
- condition of marine vegetation (i.e. information on type, species, shoot density and/or percentage cover. Is the vegetation continuous or sparse in coverage? What is the aerial extent? Is the vegetation healthy or degraded? Is wrack (dead seagrass or macroalgae) present?),
- substrate type (e.g. rock, sand, gravel, silt),
- timing of construction in relation to any fish migration seasons,
- presence of any listed threatened or protected aquatic species or 'critical habitat' under the FM Act and EPBC Act.

C. Assessment of likely impacts

- indicate the location, nature and extent of habitat removal or modification (both direct and indirect) which may result from the proposed action;
- discuss the potential impact of the modification or removal of habitat (potential direct and indirect sources of impact are stated in the letter with this attachment).

Note: In defining the proposal area, discussion must be provided in regard to possible indirect effects of the proposal on species/habitats in the area surrounding the subject site: for example, through altered hydrological regimes, soil erosion or pollution.

D. Ameliorative measures

The environmental assessment should consider and provide detail on how the proposal has been or may be modified and managed to minimise impacts and conserve aquatic habitat on the subject site and in the study area.

Appendix C

Rock Fillets Designs

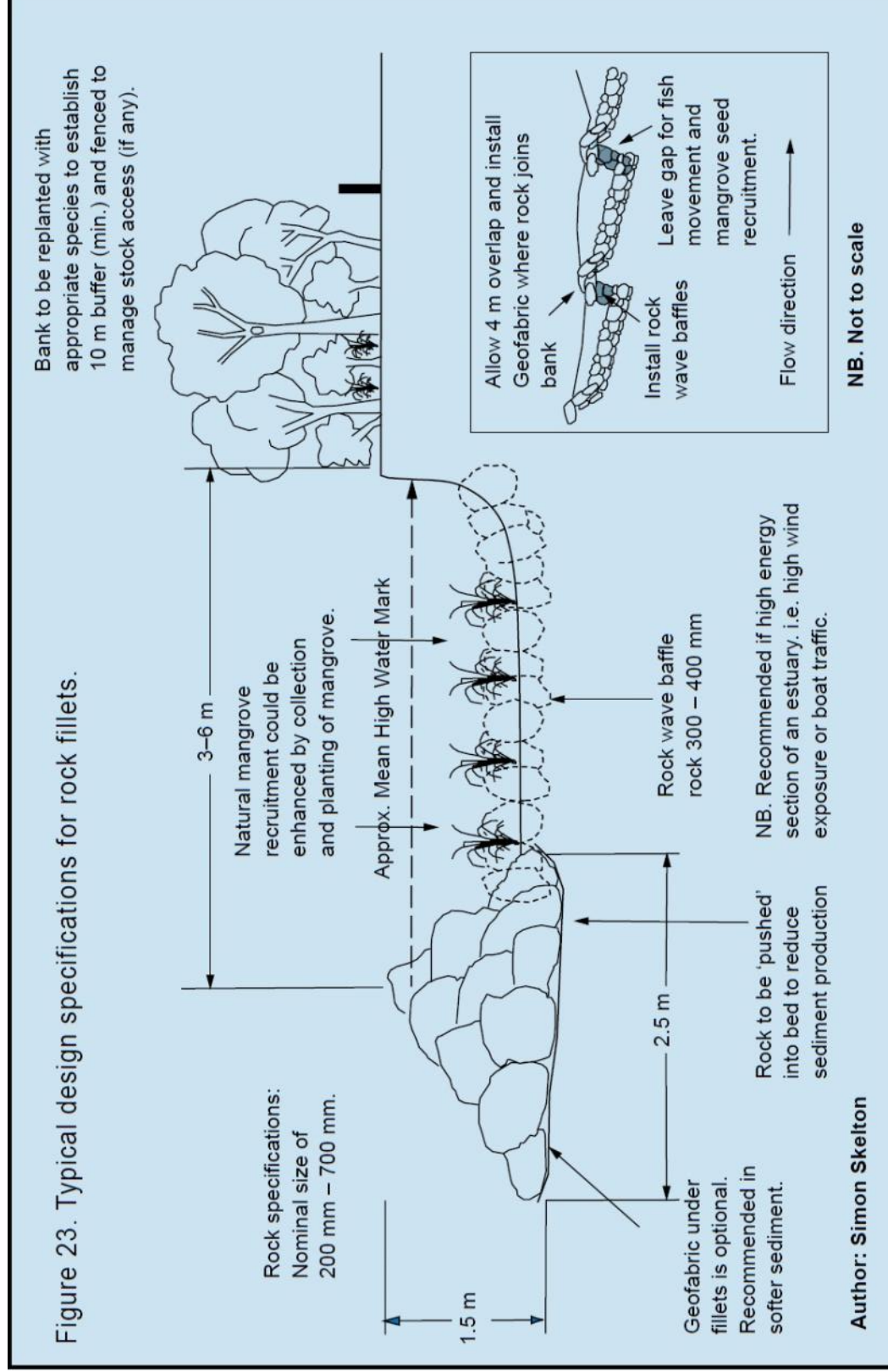


Figure C.1 Standard Rock Fillet Design (DPI 2008)

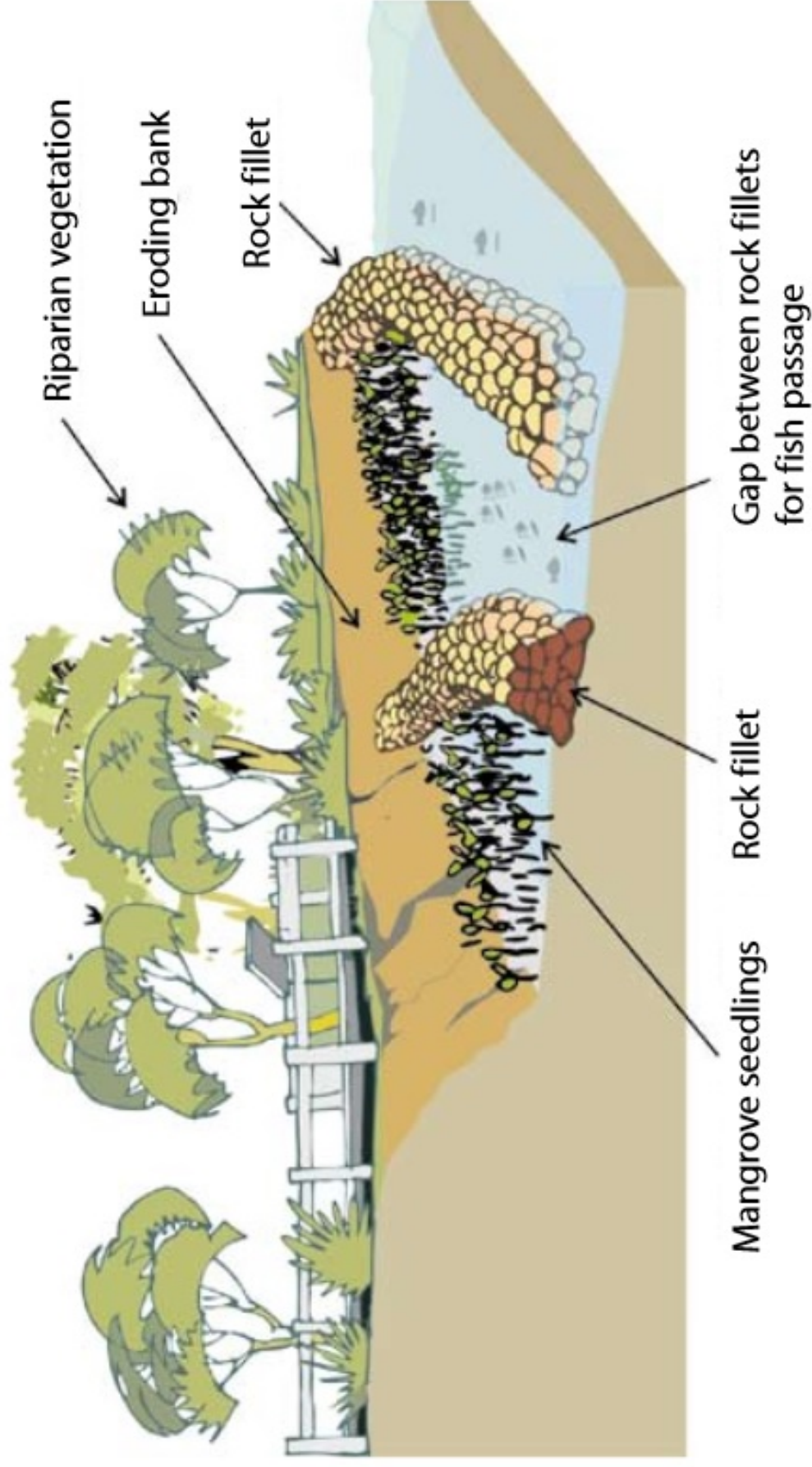


Figure C.2 Multiple Rock Fillet Design (CMA 2009)