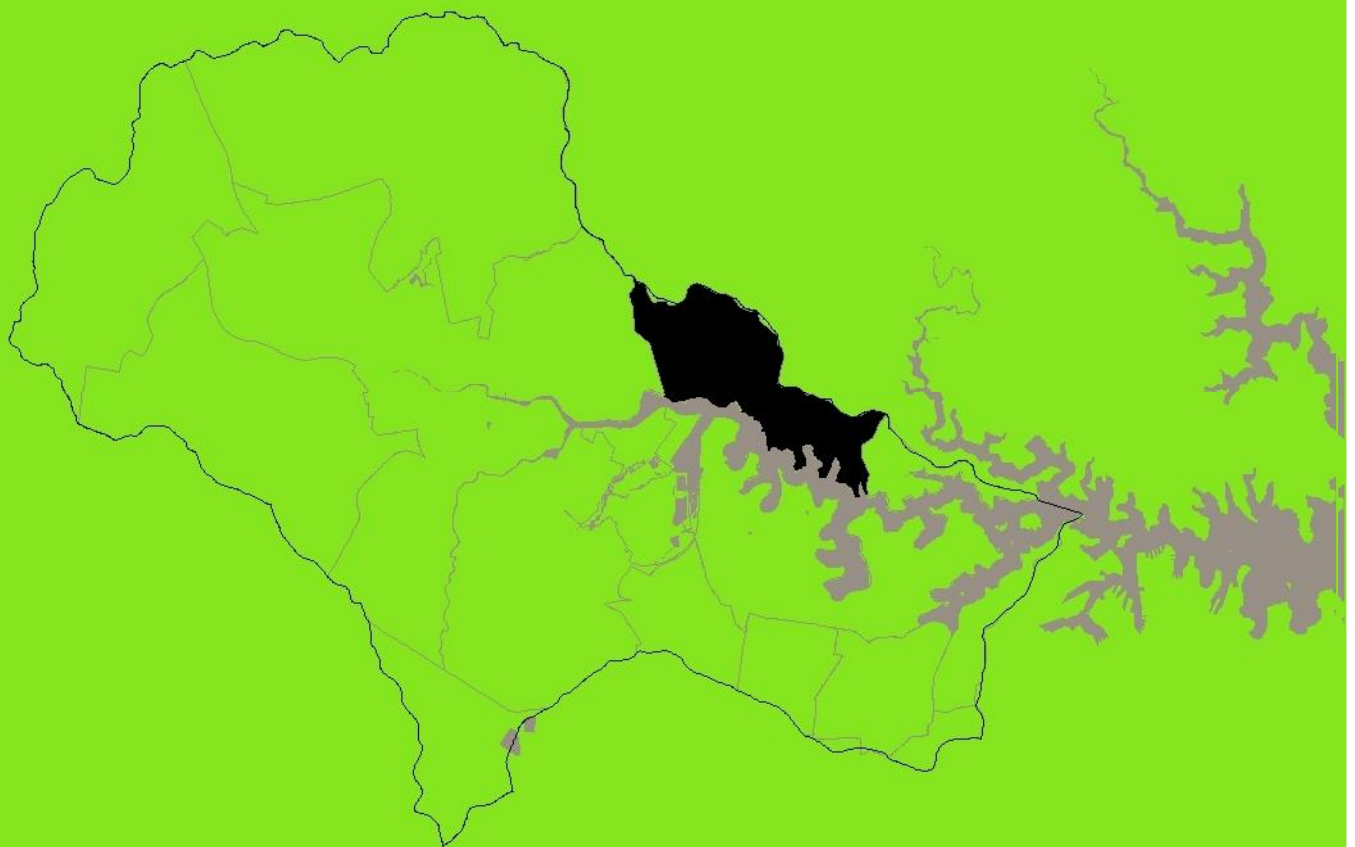


Ryde LGA



9.9 Ryde

9.9.1 General Description

Sub-catchment areas within the Ryde LGA, that are contiguous with the River, cover an area of approximately 1,240.7 ha. Tributaries and embayments within the Ryde LGA include the following:

- Archer Creek (286.4 ha);
- Charity Creek (247.1 ha);
- Smalls Creek (215.4 ha);
- Morrisons Bay (197.0 ha);
- Glades Bay (107.6 ha); and
- Looking Glass Bay (28.8 ha).

A further 158.4 ha located on the foreshore drains the Devlin Road sub-catchment (located between Charity Creek and Morrisons Bay sub-catchments) which comprises Settlers Park, Bennelong Park and Kissing Point Park reserves.

9.9.2 Stormwater Management and GPTs

Stormwater management within Ryde LGA is reported in the Northern Sydney Regional Organisation of Councils (NSROC) statement of environment (SoE) reporting. Information relating to the number, type and locations of stormwater devices is not presented in NSROC's SoEs. 28 GPTs were reported in the Ryde LGA for 2008-09, although this number includes GPTs that operate on inflows into both Lane Cove River and Parramatta River. Eleven (11) GPTs are located in the study area (Table 9-47). Approximately 209 tonnes of waste was removed from GPTs in 2008-09, which was a small decrease from waste removed in 2007-08 (i.e. 213 tonnes).

Table 9-47. GPTs located in the study area within Ryde LGA

Name	Location	Waterway
CDS unit	Maze Park, Brush Rd, Opp. School, West Ryde	Archer Creek
CDS unit	Maze Park, Opp 138 Darvall Rd, West Ryde	Archer Creek
Storm Trap	Brush Farm Park, Marsden Rd, Eastwood	Archer Creek
CDS unit	Looking Glass Bay Park, Ashburn Place, Gladesville	Looking Glass Bay
CDS unit	Parry Park, Parry Street, Ryde	Morrisons Bay
CDS unit	Meadowbank Park, Constitution Rd, Meadowbank	Smalls Creek
CDS unit	Meadowbank Park, Constitution Rd, Meadowbank	Smalls Creek
Humeceptor	Brush Farm Park, Marsden Rd, Eastwood	Archer Creek
Trash Rack	Helene Park, Bowden Street, Meadowbank	Parramatta River
CDS unit	Anderson Park, Belmore Street, Ryde	Parramatta River
Litter basket	Meadowbank Park, Andrew St, Melrose Park	Archer Creek

Eighty stormwater outlets were identified which discharge directly into the estuary from the Ryde LGA. A number of these outlets drain catchments which should be investigated to determine whether gross pollutant control is required or other stormwater management incentive may be warranted (Table 9-48).

Table 9-48. Stormwater outlets draining potential pollutant control catchment locations

Waterway	Outlet_ID
Glades Bay	Glades_Bay_007
Glades Bay	Glades_Bay_008
Morrison Bay	Morrison_Bay_006
Morrison Bay	Morrison_Bay_007
Morrison Bay	Morrison_Bay_008
Morrison Bay	Morrison_Bay_009
Parramatta River	River_North_039
Parramatta River	River_North_041
Parramatta River	River_North_051
Parramatta River	River_North_052
Parramatta River	River_North_054
Parramatta River	River_North_056
Parramatta River	River_North_058
Parramatta River	River_North_068
Parramatta River	River_North_088
Parramatta River	River_North_089
Parramatta River	River_North_090

9.9.3 Seawalls

The Ryde LGA contains approximately 3.0 km of seawalls (within the study area) of which 25 distinct sections of seawall were assessed (Table 9-49). Assessment details and management recommendations for high priority seawall sections are area provided in Table 9-50.

Table 9-49. Seawalls assessed within the Ryde LGA

Asset Name	Location	Length (m)	Condition	Existing Habitat
RYD_S01	Looking Glass Bay	61.7	Good	Sessile invertebrates
RYD_S02	Looking Glass Bay	115.2	Good	Sessile invertebrates
RYD_S03	Looking Glass Point	36.1	Poor	Sessile invertebrates, rock outcrop
RYD_S04	Glades Bay	213.3	Good	Sessile invertebrates, mudflats
RYD_S05	Morrison Bay	74.6	Good	Sessile invertebrates, adjacent sandy beach
RYD_S06	Morrison Bay	283.5	Poor	Scattered rock, mudflats
RYD_S07	Putney Point	45.6	Good	Sessile invertebrates, algae
RYD_S08	Putney	67.1	Good	Rocks, Sessile invertebrates
RYD_S09	Putney Park	326.7	Good	Sessile invertebrates, sandy beach

Asset Name	Location	Length (m)	Condition	Existing Habitat
RYD_S10	Beneath Ryde Bridge	168.0	Good	None obvious
RYD_S11	Beneath Ryde Bridge	128.0	Poor	Sessile invertebrates, mangroves
RYD_S12	Meadowbank	160.3	Good	Extensive mangroves
RYD_S13	Meadowbank	9.2	Good	Extensive mangroves
RYD_S14	Meadowbank	49.3	Excellent	Extensive mangroves
RYD_S15	Meadowbank	88.0	Good	Extensive mangroves
RYD_S16	Meadowbank	142.9	Good	Sand, mangroves
RYD_S17	Meadowbank	8.1	Good	Sand, mangroves
RYD_S18	Meadowbank	16.8	Good	Sand, mangroves
RYD_S19	Meadowbank	110.4	Poor	Mangroves and bedrock outcrops
RYD_S20	Meadowbank	44.9	Good	Some mangroves, rock outcrops, sandy beach
RYD_S21	Meadowbank	150.0	Good	Sandy beach, rock outcrops
RYD_S22	Meadowbank	50.1	Failed	Rubble
RYD_S23	Meadowbank	90.7	Poor	Sand, rubble, mangroves
RYD_S24	Meadowbank	16.5	Failed	Rocky outcrop, mangroves
RYD_S25	Meadowbank Park	546.5	Poor	Mudflats, mangroves, cavities

Table 9-50. High priority seawalls assessed within the Ryde LGA

Asset name	Length (m)	Cost range for traditional engineered seawall replacement ²⁹		Habitat Creation Option ³⁰
		(\$3,000/lineal m)	(\$5,000/lineal m)	
RYD_S23	90.7	\$272,097.84	\$453,496.41	Low profile sill, artificial reef habitat or rock pool
RYD_S24	16.5	\$49,476.01	\$82,460.02	Low profile sill, artificial reef habitat or rock pool

²⁹ The cost to install a new seawall or coastal revetment is dependent on a number of factors, including:

- The ground conditions at the site
- Materials required, material availability and whether existing materials can be reused
- Site access
- The required structure profile including slope, crest height and foundation depth
- Hydrodynamic conditions

In light of this variability, an indicative cost of \$3,000-\$5,000 per linear metre of seawall has been adopted for seawalls requiring replacement.

³⁰ Refer section 4.8.1 for explanation of treatments

Asset name	Length (m)	Cost range for traditional engineered seawall replacement ²⁹		Habitat Creation Option ³⁰
		(\$3,000/lineal m)	(\$5,000/lineal m)	
RYD_S22	50.1	\$150,305.92	\$250,509.87	Artificial reef habitat
RYD_S03	36.1	\$108,239.26	\$180,398.77	Seawall surface treatment, sub-tidal cave habitat
RYD_S06	283.5	\$850,533.35	\$1,417,555.59	Low profile sill, artificial reef habitat
RYD_S11	128.0	\$383,938.26	\$639,897.11	Seawall surface treatment, sub-tidal cave habitat

9.9.4 Foreshore Erosion

Approximately 1.8 km of foreshore within the Ryde LGA were found to exhibit erosion (Table 9-51), all were categorised as in 'good' condition with no bank failures evident. Assessment details are provided in the project GIS database and management recommendations are provided in.

Table 9-51. Foreshore erosion areas within the Ryde LGA

Asset Name	Length (m)	Location	Condition
RYD_NS01	189.7	Looking Glass Bay Park	Good
RYD_NS04	230.7	Kissing Point Bay	Good
RYD_NS05	238.2	East of Kissing Point Ferry Wharf	Good
RYD_NS06	146.5	Kissing Point Park	Good
RYD_NS07	25.4	Kissing Point Park, Putney	Poor
RYD_NS08	158.7	Adj. Ryde & Concord Sailing Club, Putney	Poor
RYD_NS09	102.0	Bennelong Park, Putney	Good
RYD_NS10	55.5	Settlers Park, Putney	Good
RYD_NS11	333.2	Settlers Park, Putney	Poor
RYD_NS13	108.1	Meadowbank, adjacent to rail bridge	Poor
RYD_NS14	96.4	Korpie Reserve, Melrose Park	Poor
RYD_NS15	111.0	East of West Ryde Wharf	Failed

Table 9-52. High priority foreshore erosion areas within the Ryde LGA

Priority	Asset Name	Erosion Description	Technique (refer s5.4)
1	RYD_NS07	A large, approx. 500mm erosion scarp is present for 50m encompassing the end of Yaralla Road.	Low profile sill, Seawall – rock pool style
1	RYD_NS13	Large erosion scarp (300-500mm) is present at edge of grassy bank indicating exposure and sensitivity to passing vessel wash.	Seawall (ARH at RYD_S23)

Priority	Asset Name	Erosion Description	Technique (refer s5.4)
		Concrete building waste has not been placed to typical engineering standards.	
2	RYD_NS11	Erosion observed with no fine material present between pneumatophores due to exposure to vessel wash. One mangrove has collapsed.	Vented sill
2	RYD_NS14	Erosion observed with undermining and loss of fine material from pneumatophores due to exposure to vessel wash. Some trees are collapsing into water.	Options 1-3
3	RYD_NS15	Erosion observed with undermining and loss of fine material from pneumatophores due to exposure to vessel wash. Some trees are collapsing into water.	Options 1-3
3	RYD_NS08	Extensive erosion was observed which is likely due to vessel wash exposure. Mangroves have been undermined (approx 100-200mm) and no fine material present between the pneumatophores.	Vented sill

9.9.5 Facilities

Seventeen facilities were assessed within the Ryde LGA (Table 9-53). Assessment details and management recommendations for high priority seawall sections are area provided in Table 9-54.

Table 9-53. Facilities assessed within the Ryde LGA

Asset	Locality	Facility Type	Condition
RYD_F01	Looking Glass Bay	Timber jetty, landing and sea stairs	Good
RYD_F02	Looking Glass Point	Timber dinghy storage and boat ramp	Good
RYD_F03	Meriton St, Gladesville	Informal dinghy storage	Poor
RYD_F04	Glades Bay	Steel framed dinghy storage facility	Excellent
RYD_F05	Tennyson Point	Concrete stairs	Poor
RYD_F06	Morrisons Bay	Informal dinghy storage	Good
RYD_F07	Morrisons Bay	Informal dinghy storage	Failed
RYD_F08	Morrisons Bay	Ad-hoc boat ramp and informal dinghy storage	Failed
RYD_F09	Putney Point	Informal dinghy storage	Good
RYD_F10	Kissing Point Bay	Timber dinghy storage facility	Excellent
RYD_F11	Kissing Point Bay	Steel frame dinghy storage facility	Excellent
RYD_F12	Kissing Point	Concrete, two lane boat ramp, public jetty, floating pontoon	Good
RYD_F13	Kissing Point	Timber landing, steel gangway and floating pontoon	Good
RYD_F14	Bennelong Park, Putney	Informal dinghy storage	Good

Asset	Locality	Facility Type	Condition
RYD_F15	Ryde Wharf	Timber landing, steel gangway and floating pontoon	Excellent
RYD_F16	West Ryde Wharf	Timber jetty, steel gangway and floating pontoon	Poor
RYD_F17	West Ryde Boat Ramp	Concrete single lane boat ramp	Poor

Table 9-54. High priority facilities within the Ryde LGA

Priority	Asset Name	Asset Description
1	RYD_F08	<p>There is no formal structure for dinghy storage and dinghies are launched via the ad-hoc boat ramp which is failing.</p> <p>It is recommended that dinghies are either relocated and ad-hoc structures removed or formal dinghy storage and launching facilities are installed.</p>
2	RYD_F05	<p>The concrete stairs are in a poor condition with cracks present and undermining at the lowest point. The rocky foreshore, accessible via the stairs, is steep and mossy with deep water in front. Members of the public were fishing from the rocks and climbing along the shoreline during the inspection.</p> <p>It is recommended that public access is prevented. The site provides an opportunity for a new lookout structure to be installed.</p>
3	RYD_F16	<p>The timber slats on the jetty are loose and deteriorating as is the timber rail. The timber slats on the gangway are also loose and deteriorating. The edges of the concrete that makes up the floating pontoon are severely corroded with reinforcement visible. The structure is exposed to ferry wash making berthing and mooring difficult.</p> <p>A new facility should be designed and installed to replace the existing facility.</p>
4	RYD_F17	<p>The concrete ramp is cracking and aggregate is exposed. The western side of the structure has been undermined. Members of the public commented that the toe of the structure finished abruptly and cars often get stuck. There is also a number of sandstone boulders present in the water beyond the structure and the area is exposed to vessel wash making launching and retrieval difficult.</p> <p>A new facility should be designed and installed to replace the existing facility.</p>
5	RYD_F03	<p>Informal dinghy storage with dinghies tethered to steel safety rail associated with adjacent Sydney Water pumping station. Steel safety rail associated with Sydney Water pumping station is showing signs of corrosion and the concrete slab it sits upon has been undermined. No formal access to water, dinghies must be launched via mossy bedrock.</p> <p>It is recommended that dinghies are either relocated or formal dinghy storage and launching facilities are installed.</p>

Priority	Asset Name	Asset Description
6	RYD_F07	<p>Informal dinghy storage within public reserve with dinghies tethered to private timber paling fence and trees. Ad-hoc groynes with timber poles to mark their ends have been constructed with small sandstone rocks to define the launch area. A timber ramp and rubber tires have also been placed at the shore for launching and berthing,</p> <p>It is recommended that dinghies formal dinghy storage and launching facilities are installed.</p>

9.9.6 Estuarine Vegetation

Mangrove communities along the northern shoreline of the river are the most dominant component of estuarine vegetation within the Ryde LGA (i.e. approximately 10.24 ha). Small fragmented areas of saltmarsh occur in association with mangroves (approximately 0.26 ha). Both mangroves and saltmarsh have relatively little opportunity for landward migration without intrusive management intervention to provide future habitat areas.

Estuarine riparian vegetation within the Ryde LGA is dominated by Coastal Sandstone Gully Forest with small areas of Coastal Sandstone Ridgetop Woodland, Sydney Turpentine Ironbark Forest and Swamp-oak Floodplain Forest. Table 9-55, Table 9-56 and Table 9-57 summarise the various communities in the LGA and their potential to migrate upslope in response to sea level rise (i.e. landward migration). Landward migration refers to the potential for vegetation to migrate naturally upslope unimpeded. Limited landward migration is typically where obstacles are present in the form of structures, development, and in some cases natural topography (elevation or geology) restricts upslope establishment.

Table 9-55. Estuarine vegetation in the Ryde LGA.

Community	Landward Migration		Total (ha)
	Limited	Potential	
Mangrove	10.65	0.51	11.16
Saltmarsh	0.17	0.09	0.26
Swamp-oak floodplain forest	0.06	0.0	0.06
Turpentine-ironbark forest	n/a	n/a	1.56
Coastal sandstone gully forest	n/a	n/a	4.59
Coastal sandstone ridgetop woodland	n/a	n/a	0.85

Table 9-56. Mangroves in the Ryde LGA.

Location	Landward Migration Potential	Area (m ²)	Ha
Archer Creek	Limited	51,000.5	5.10
Charity Creek	Limited	4,442.1	0.44
Glades Bay	Limited	6,863.2	0.68
Looking Glass Bay	Limited	2,006.3	0.20
Morrison's Bay	Limited	1,590.2	0.16
River - North	Limited	16,399.6	1.64
Smalls Creek	Limited	24,162.2	2.42

Location	Landward Migration Potential	Area (m ²)	Ha
	Sub-total Limited	106,464.1	10.65
Archer Creek	Potential	408.0	0.04
Charity Creek	Potential	91.8	<0.01
Looking Glass Bay	Potential	12.0	<0.01
River - RYD	Potential	4,543.7	0.45
	Sub-total Potential	5,109.0	0.51
	Total Mangroves	111,573.1	11.16

Table 9-57. Saltmarsh in the Ryde LGA.

Location	Landward Migration Potential	Area (m ²)
Archer Creek	Limited	1,468.7
Charity Creek	Limited	53.6
Glades Bay	Limited	13.3
Looking Glass Bay	Limited	21.8
Morrisons Bay	Limited	30.7
River - North	Limited	112.9
	Sub-total Limited	1,701.1
Archer Creek	Potential	656.4
Glades Bay	Potential	103.4
Looking Glass Bay	Potential	75.1
River - North	Potential	21.8
	Sub-total Potential	856.9
	Total Saltmarsh	2,558.0

9.9.7 Management Recommendations

Stormwater:

Present SoE reporting (via NSROC) provides only an indication of how many GPTs are operated within the LGA and the total tonnage of waste collected from the GPTs collectively. As the LGA drains to both the Lane Cove River and Parramatta River, an inventory of GPTs and waste removal for each catchment within the LGA is required.

Investigations relating to the efficacy of existing GPTs and their maintenance requirements should be undertaken across the LGA and detailed analysis of data and SoE reporting conducted (refer Section 3.9).

Seawalls and erosion:

As per recommendations in preceding Sections: 9.8.2, 9.8.3 and 9.8.4 with consideration to intertidal habitat when designing replacement seawalls, erosion measures and facilities.

Estuarine vegetation:

Management recommendations include the following:

- Control encroaching native species (e.g. mangroves and *Casuarina glauca*), in saltmarsh communities, particularly where landward migration potential is limited;
- Careful removal of existing isolated saltmarsh species in non-viable habitat areas and nursery advancement of plant materials for rehabilitation projects (e.g. Morrisons Bay).

Specific management of estuarine vegetation is recommended for the following sites:

Looking Glass Bay – Fig. 9.8(a)

Seagrass:

- Review sediment loads discharging to seagrass habitat, adequacy of existing GPT, and other potential sources of sedimentation in bay; and
- Potential for seagrass friendly moorings in combination with improved water quality

Right: seagrass habitat in distance among moorings.



Saltmarsh:

- Small amounts of *Wilsonia backhousei* found which should be monitored and conserved;
- Weed control to reduce competition from buffalo grass and other weeds;
- Removal of debris and gross pollutants stranded on saltmarsh at high tides;
- Reduction of trampling and dinghy storage;
- Removal of mangrove seedlings as they emerge in saltmarsh; and
- Seed collection and propagation of native saltmarsh species (in particular *Baumea juncea* which is a difficult species to procure).



Above left: *Wilsonia backhousei* growing amongst saltmarsh. **Centre:** Buffalo grass growing amongst *Baumea juncea* and small seedlings of *Suaeda australis*. **Right:** Mangrove seedlings emerging in *Sporobolus virginicus*.

Glades Bay – Fig. 9.8(b)

Stormwater management:

- Leaf litter / organic material stranded in mangroves and saltmarsh (*Photo #1*). Possibly drifting in on high tides. No gross pollutant trapping evident in this catchment, which should be considered in future stormwater management incentives.

Saltmarsh and mangroves:

- Weeds such as Lantana are presently limited by saline incursion (*Photo #2 & #3*), potential to artificially salinise weed infestations fringing saltmarsh and mangroves as a weed control tool and to allow expansion of saltmarsh vegetation;
- Formalisation of walking trails would benefit saltmarsh (beyond existing trail);
- Seed collection and propagation of native saltmarsh species, in particular *Samolus repens* (*Photo #1*) and *Baumea juncea* (*Photo #3*), both of which are difficult to procure.



Photo #1 (above left): Leaf litter and *Samolus repens* colonising edge of mangroves. **Photo #2 (top right):** Salinised boundary, Lantana landward (left) & saltmarsh and mangroves seaward (right). **Photo #3 (bottom right):** Salinised boundary, Lantana in background and *Baumea juncea* in foreground.

Morrisons Bay – Fig. 9.8(b)

Saltmarsh:

Small isolated areas of saltmarsh vegetation (*Photo #1 & #2*), which have limited landward migration potential due to proximity of private properties, recommendations include, either:

- Use as potential source of plant propagation materials, or
- Liaise with private landowners to conserve and increase extent of saltmarsh growth.



Photo #1 (above left): Saltmarsh on sandy beach. **Photo #2 (above right):** Isolated patch of *Suaeda australis* adjacent stormwater outlet

Kissing Point Bay – Fig. 9.8(c)

- Investigation and mitigation of large quantities of organic matter (particularly leaf litter) contained in outflows, which are depositing in the near shore environment and being trapped by mangroves growing in close proximity to the outlets (*Photo #1, right*).



- Control of Buffalo grass which overrunning *Juncus kraussii* (*Photo #2*) adjacent RYD_F11, and remove Coral tree sapling at same location.
- Seed collection from isolated patches of *Juncus kraussii* along shoreline between stormwater outlets River_North_49 and River_North_50 (*Photo #3*). Ongoing monitoring to determine whether plants should be translocated to a more suitable location. *Juncus acutus* also present as an individual plant in this location which requires control and ongoing monitoring for regrowth or seed germination.
- Alternanthera philoxeroides* (Alligator weed) is growing among lawn adjacent Kissing Point Wharf car park. Alligator weed is noxious in NSW, and also a weed of national significance (WONs) and requires immediate and ongoing control (*Photo #4*).



Photo #2 (above): stormwater outlet and deposition of organic gross pollutants.



Photo #3 (above right): Scattered *Juncus kraussii* growing along beach with limited landward migration potential.

Photo #4 (above right): Alligator weed growing in road verge turf being maintained by mowing.



Kissing Point Park – Fig. 9.8(c)

- *Juncus acutus* (Spiny rush) control (*Photo #5*); and
- Potential to salinise terrestrial zone seaward of recently installed pathway to allow the establishment of saltmarsh vegetation, which is already present in this zone (*Photo #1 & 2*).



Bennelong Park – Fig. 9.8(c)

- Fragmented growth of *Sporobolus virginicus* adjacent eroding shoreline (RYD_NS07) could be translocated to a more appropriate location (*Photo #1*)

- Alligator weed infestation in mangrove / saltmarsh area and mown grass adjacent Concord and Ryde Sailing Club (*Photo #1 & 2*).



Settlers Park – Fig. 9.8(d)

- Opportunity to create saltmarsh habitat in association with existing landscaping and erosion remediation (*Photo #1 & #2*).



Meadowbank Park – Fig. 9.8(e) and Melrose Park – Fig. 9.8(f)

Multiple issues impacting on mangroves and saltmarsh require management. Recommend area located from Archers Creek to West Ryde Jetty (RYD_F16) be the subject of a management plan that addresses the following issues:

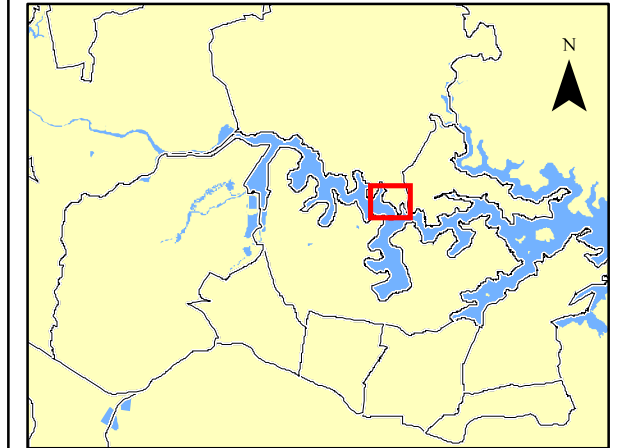
- Mowing management of lawn clippings (*Photo #1*);
- Extension of landscaping activities from residential land into foreshore (*Photo #2*);
- Access management to formalise trampling impacts *Photo #3*;
- Vandalism (*Photo #4*);
- Weed control (*Photo #5*); and
- *Wilsonia backhousei* conservation (*Photo #6*).

A range of opportunities are possible at this site which should incorporate: protection of existing saltmarsh and expansion of its extent; formalised access (potential for boardwalk and viewing platform); and education / interpretation (community consultation, signage).





SITE LOCATION



Seawall condition

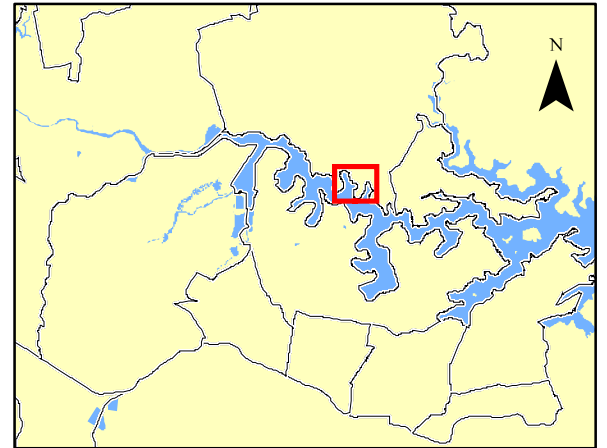
- Excellent
- Good
- Poor
- Failed
- Foreshore erosion
- Facilities
- Stormwater outlets
- Potential GPT site
- Existing GPT
- Stormwater drainage
- Estuarine mangrove
- Coastal saltmarsh (EEC)
- Swamp-oak floodplain forest (EEC)
- Sydney turpentine - ironbark forest (EEC)
- Coastal sandstone communities
- Seagrass
- Foreshore reserves

Source:
 Seagrass base plan: Industry & Investment NSW (2003)
 Seagrass ground truthed: AECOM (2009)
 Vegetation base mapping: SMCMA (2007)
 Other: refer study section 8.0 (2010)

Coordinate System:
 GDA94 MGA Zone 56



SITE LOCATION



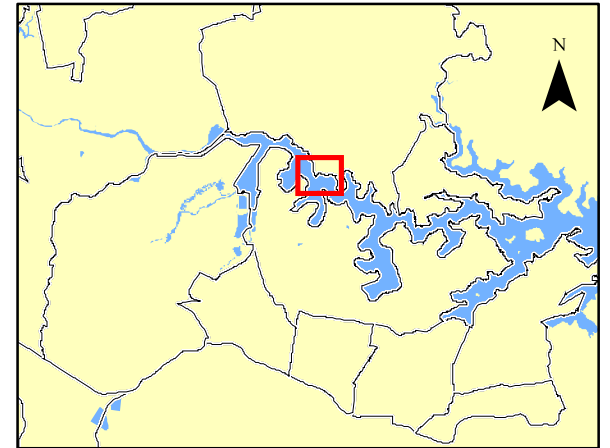
Seawall condition

- Excellent
- Good
- Poor
- Failed
- Foreshore erosion
- Facilities
- Stormwater outlets
- Potential GPT site
- Existing GPT
- Stormwater drainage
- Estuarine mangrove
- Coastal saltmarsh (EEC)
- Swamp-oak floodplain forest (EEC)
- Sydney turpentine - ironbark forest (EEC)
- Coastal sandstone communities
- Foreshore reserves

Source:
Vegetation base mapping: SMCMA (2007)
Other: refer study section 8.0 (2010)
Coordinate System: GDA94 MGA Zone 56



SITE LOCATION



Seawall condition

- Excellent
- Good
- Poor
- Failed
- Foreshore erosion
- Facilities
- Stormwater outlets
- Potential GPT site
- Existing GPT
- Stormwater drainage
- Estuarine mangrove
- Coastal saltmarsh (EEC)
- Swamp-oak floodplain forest (EEC)
- Sydney turpentine - ironbark forest (EEC)
- Coastal sandstone communities

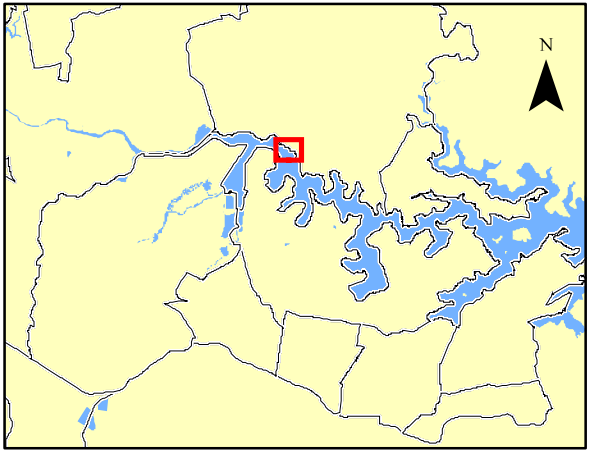
Source:

Vegetation base mapping: SMCMA (2007)
Other: refer study section 8.0 (2010)

Coordinate System: GDA94 MGA Zone 56



SITE LOCATION



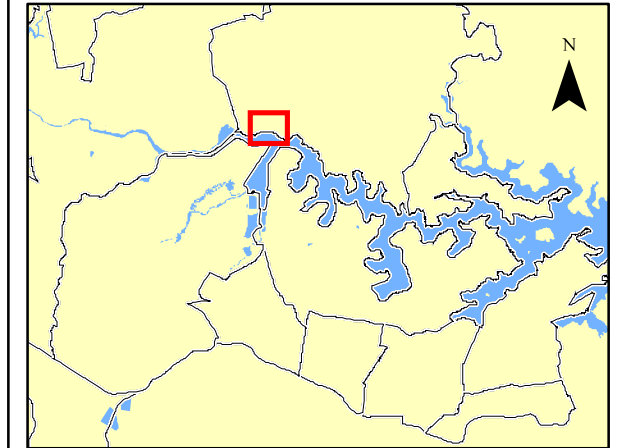
- Seawal condition
- Excellent
 - Good
 - Poor
 - Failed
- Foreshore erosion
- Facilities
 - Stormwater outlets
 - Potential GPT site
 - Existing GPT
- Stormwater drainage
- Estuarine mangrove
 - Coastal saltmarsh (EEC)
 - Swamp-oak floodplain forest (EEC)
 - Sydney turpentine - ironbark forest (EEC)
 - Coastal sandstone communities
 - Foreshore reserves

Source:
Vegetation base mapping: SMCMA (2007)
Other: refer study section 8.0 (2010)

Coordinate System: GDA94 MGA Zone 56



SITE LOCATION



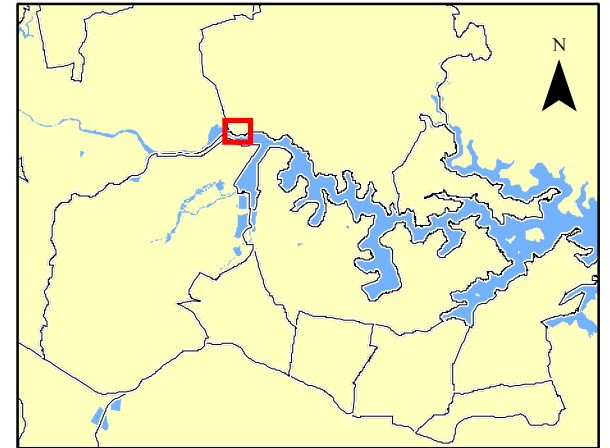
Seawall condition

- Excellent
- Good
- Poor
- Failed
- Foreshore erosion
- Facilities
- Stormwater outlets
- Potential GPT site
- Existing GPT
- Stormwater drainage
- Canals
- Estuarine mangrove
- Coastal saltmarsh (EEC)
- Swamp-oak floodplain forest (EEC)
- Turpentine - ironbark forest (EEC)
- Coastal sandstone communities
- Foreshore reserves

Source:
Vegetation base mapping: SMCMA (2007)
Other: refer study section 8.0 (2010)
Coordinate System: GDA94 MGA Zone 56



SITE LOCATION



Seawal condition

- Excellent
- Good
- Poor
- Failed
- Foreshore erosion
- Facilities
- Stormwater outlets
- Potential GPT site
- Existing GPT
- Stormwater drainage
- Estuarine mangrove
- Coastal saltmarsh (EEC)
- Swamp-oak floodplain forest (EEC)
- Sydney turpentine - ironbark forest (EEC)
- Coastal sandstone communities
- Foreshore reserves

Source:

Vegetation base mapping: SMCMA (2007)

Other: refer study section 8.0 (2010)

Coordinate System: GDA94 MGA Zone 56

Appendix 8: Field Assessment Sheets for Priority Sites

SITES IN ORDER OF PRIORITY

All assessment sites are detailed within the project GIS database.

ABBREVIATIONS

Level: metres AHD (m)

Co-ords (MGA): Coordinates Map Grid of Australia

E: easting

N: northing

Condition:

Excellent	<ul style="list-style-type: none">• No defects observed• Structure is functioning as intended
Good	<ul style="list-style-type: none">• Minor defects observed• Generally good condition• Structure is functioning as intended
Poor	<ul style="list-style-type: none">• Major defects observed• Structure is at risk of failure without remedial action• Reduced functionality
Failed	<ul style="list-style-type: none">• Major defects observed• Structure is no longer functioning as intended• Structure has collapsed

Seawall Inspection Record - RYD_S23

Date	<u>19/08/09</u>	Locality	<u>Meadowbank, River North</u>	Level	<u>0.30m</u>	LGA	<u>Ryde</u>
Time	<u>12:33</u>			Tide	<u>Low</u>		



Co-Ords (MGA)

Start

E	<u>323095</u>
N	<u>6256080</u>

End

E	<u>323007</u>
N	<u>6256101</u>

Seawall Details (Slope, Material, Const. Method, Type):

variable size sandstone block seawall with concrete slab along crest along entire structure and face at western end. Structure is founded on bedrock and there is rubble material along the toe. Mangroves are present in front of the structure at western end. A public footpath and cycleway runs along the length of the structure 1-2m from the crest. Structure also supports new solar powered light poles.

Condition Assessment (Slope, Crest, Toe, Backfill):

Grout not present, voids and localised block failures were observed. Concrete capping on crest and face has cracked and failed.

Excellent
Good
Poor
Failed

X

Assets

Public access is available although no major issues. Structures that seawall supports are sound at present.

Comments:

Photos RYD_S23-01 to RYD_S23-09.

Photo 1

Typical view of structure showing block and concrete capping failure.



Photo 2

Block failure beneath at toe.



Seawall Inspection Record

- RYD_S24

Date	<u>19/08/09</u>	Locality	<u>West of Ryde Bridge, River North</u>	Level	<u>0.30m</u>	LGA	<u>Ryde</u>
Time	<u>9:21</u>			People	<u>Low</u>		



Co-Ords (MGA)

Start

E 323007

N 6256101

End

E 322991

N 6256101

Seawall Details (Slope, Material, Const. Method, Type):

Small section (15m) of small-medium sized sandstone block vertical retaining wall behind rocky outcrops and mangroves. The structures supports a public footpath and cycleway and a new solar powered light pole.

Condition Assessment (Slope, Crest, Toe, Backfill):

Significant slumping, block failures at the crest and weathering of sandstone blocks was observed along the length of the structure. Vegetation is also growing out of the wall.

Excellent

Good

Poor

Failed

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>

Assets

Supports footpath and light pole.

Comments:

Photos RYD_S24-01 to RYD_S24-02.

Photo 1

View of structure.

Photo 2

Block failures and slumping of wall.



Seawall Inspection Record - RYD_S22

Date	<u>19/08/09</u>	Locality	<u>West of Ryde Bridge, River North</u>	Level	<u>0.30m</u>	LGA	<u>Ryde</u>
Time	<u>12:28</u>			Tide	<u>Low</u>		



Co-Ords (MGA)

Start

E	<u>323125</u>
N	<u>6256044</u>

End

E	<u>323095</u>
N	<u>6256080</u>

Seawall Details (Slope, Material, Const. Method, Type):

Gabion basket revetment west of John Whitton Bridge. Landscaping and a timber lattice fence with concrete slab is present along a section of the crest. Beyond the structure is a public carpark and walkway.

Condition Assessment (Slope, Crest, Toe, Backfill):

The section adjacent to the bridge abutment has failed and all material has been lost from the baskets. The rest of the structure is slumping.

Excellent
Good
Poor
Failed

X

Assets

The structure supports a public carpark and walkway which has been undermined by the failure adjacent to the bridge abutment.

Comments:

Photos RYD_S22-01 to RYD_S22-05.

Photo 1

View of structure.



Photo 2

Failure of structure adjacent to John Whitton Bridge.



Seawall Inspection Record

- RYD_S03

Date	<u>6/08/09</u>	Locality	<u>Looking Glass Point, River North</u>	Level	<u>0.46m</u>	LGA	<u>Ryde</u>
Time	<u>14:15</u>			Tide	<u>Low</u>		



Co-Ords (MGA)

Start

E	<u>326525</u>
N	<u>6253825</u>

End

E	<u>326507</u>
N	<u>6253834</u>

Seawall Details (Slope, Material, Const. Method, Type):

Medium sized sandstone block grouted vertical seawall founded on bedrock at the end of Wharf Road. The crest is 3m above bedrock and a small grassy strip separates the road and wall.

Condition Assessment (Slope, Crest, Toe, Backfill):

A number of block failures were observed along the length of the wall. Additionally, no grout is present between the blocks, sinkholes are present at the crest and surface weathering of the blocks has taken place.

Excellent
Good
Poor
Failed

X

Assets

General public access is available with no structure/obstruction to define the structure edge. Fishing rod holders have been put into sinkholes by members of the public.

Comments:

Photos RYD_S03-01 to RYD_S03-02.

Photo 1

Typical view of wall.



Photo 2

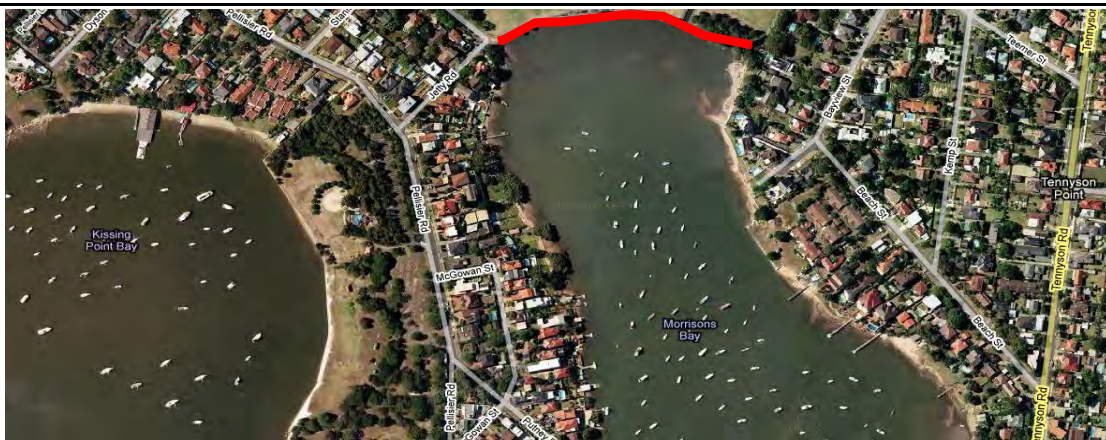
Block failures along wall.



Seawall Inspection Record

- RYD_S06

Date	<u>31/08/09</u>	Locality	<u>Morrison Bay, River North</u>	Level	<u>0.74m</u>	LGA	<u>Ryde</u>
Time	<u>10:02</u>			Tide	<u>Low-Mid</u>		



Co-Ords (MGA)

Start

E 325439

N 6255085

End

E 325168

N 6255093

Seawall Details (Slope, Material, Const. Method, Type):

The structure consist of a medium grouted sandstone block sloping wall with two rows of vertical blocks at crest and one set of sandstone sea stairs mid-way along the wall. Three large concrete storm water pipes are located along the wall and a canal opening is present at the eastern end. A mud terrace with vegetation and rubble is located in front of the wall at low tide.

Condition Assessment (Slope, Crest, Toe, Backfill):

Severe weathering, slumping and loss of grout from between sandstone blocks was observed. A number of sinkholes are present behind the crest indicating a loss of fine material.

Excellent

Good

Poor

Failed

X

Assets

General public access is available with no barrier to define the wall edge. The slope is mossy and would be slippery. The structure does not support any other infrastructure.

Comments:

Caps are missing from storm water outlets. Photos RYD_S06-01 to RYD_S06-22.

Photo 1

Typical view of seawall.



Photo 2

Weathering of sandstone blocks at crest and sinkhole behind wall.



Seawall Inspection Record - RYD_S11

Date 18/08/09 Locality Beneath Ryde Bridge Level 0.76 LGA Ryde
Time 14:00 Tide Low-Mid



Co-Ords (MGA)

Start
E 323707
N 6255931

End
E 323635
N 6255963

Seawall Details (Slope, Material, Const. Method, Type):
Large sandstone block grouted seawall with a new layer of medium sized blocks along the crest. New medium sized blocks have been installed at discrete locations. A new recreation area has been constructed beyond the crest as has a new public wharf which the structure supports. The structure continues into the mangroves at the northern extent, is founded on bedrock and the crest was 1.5 above the WL.

Condition Assessment (Slope, Crest, Toe, Backfill):
Single block failures were observed along the older, lower section of the wall. The lower section is also slumping and grout material is missing from between the blocks. The newer blocks that form the crest are in excellent condition.

Excellent
Good
Poor
Failed

X

Assets:
Timber bollards along the crest define the structure edge. Blocks failures are present beneath the connection of the public wharf.

Comments:
Photos RYD_S11-01 to RYD_S11-10.

Photo 1
Typical section of wall showing older blocks along toe and newer blocks at crest.

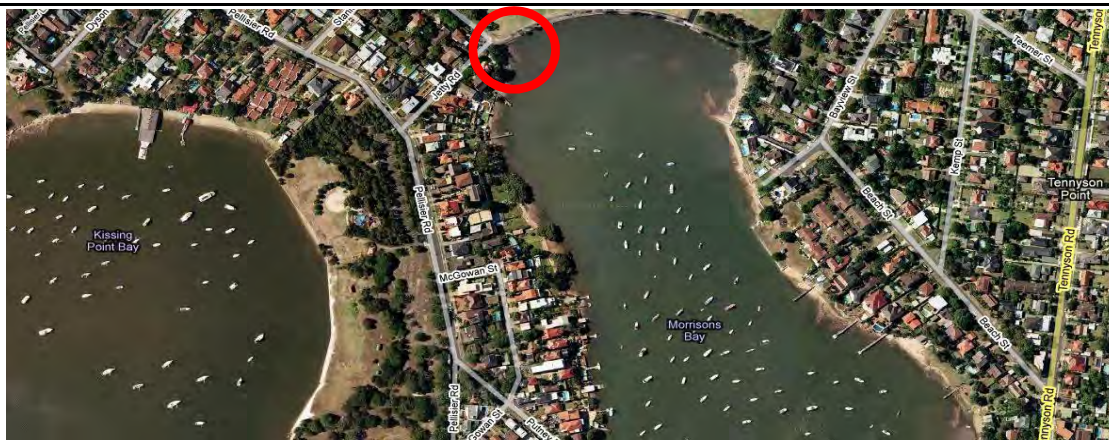
Photo 2
Block failures beneath the connection of the public wharf.



Facility Inspection Record

- RYD_F08

Date 31/08/09 Locality Morrison Bay Level 0.74m LGA Ryde
Time 10:02 Tide Low-Mid



Co-Ords (MGA)

Start

E 325168

N 6255093

Facility Details (Usage, Material, Const. Method, Type):

Ad-hoc boat ramp constructed from building waste and concrete. A number of dinghies are also stored informally in the adjacent public reserve.

Condition Assessment:

The boat ramp is not constructed to typical engineering standards. The toe has been undermined and the sides of the ramp are failing with aggregate material strewn along adjacent sandy shoreline. There is no formal structure for dingy storage.

Excellent

Good

Poor

Failed

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>

Assets:

Dinghies are launched via the ad-hoc boat ramp which is failing.

Comments:

Photos RYD_F08-01 to RYD_F08-04.

Photo 1

View of ad-hoc boat ramp and informal dingy storage.



Photo 2

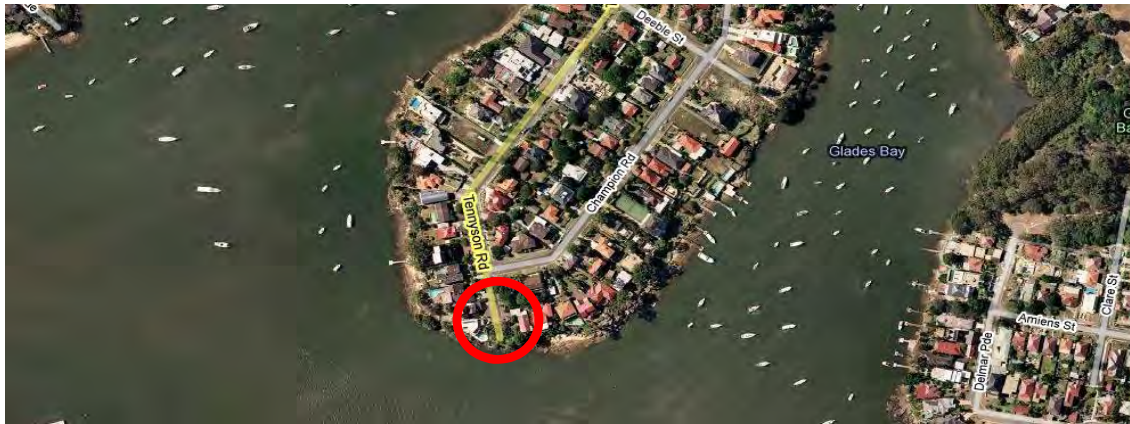
Undermining at the toe and failure along the side of the ad-hoc boat ramp.



Facility Inspection Record

- RYD_F05

Date	<u>6/08/09</u>	Locality	<u>Tennyson Point</u>	Level	<u>0.77m</u>	LGA	<u>Ryde</u>
Time	<u>15:04</u>			Tide	<u>Low-Mid</u>		



Co-Ords (MGA)

Start

E 325661
N 6254305

Facility Details (Usage, Material, Const. Method, Type):

Concrete stairs from Tennyson Rd. providing access to rocky foreshore. Older sandstone blocks are present beneath the concrete stairs.

Condition Assessment:

The concrete stairs are in a poor conditions with cracks present and undermining at the lowest point.

Excellent
Good
Poor
Failed

X

Assets:

The rocky foreshore, accessible via the stairs, is steep and mossy with deep water in front. Members of the public were fishing from the rocks and climbing along the shoreline during the inspection.

Comments:

Photos RYD_F05-01 to RYD_F05-02.

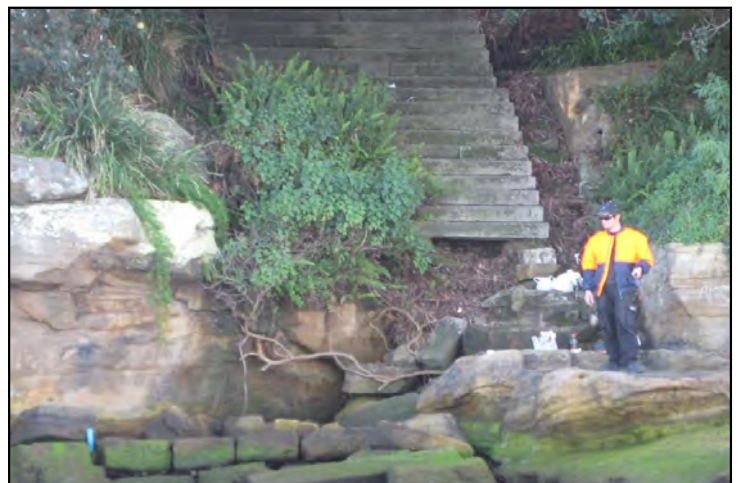
Photo 1

Concrete stairs and rocky shoreline with members of the public fishing and climbing on rocks.



Photo 2

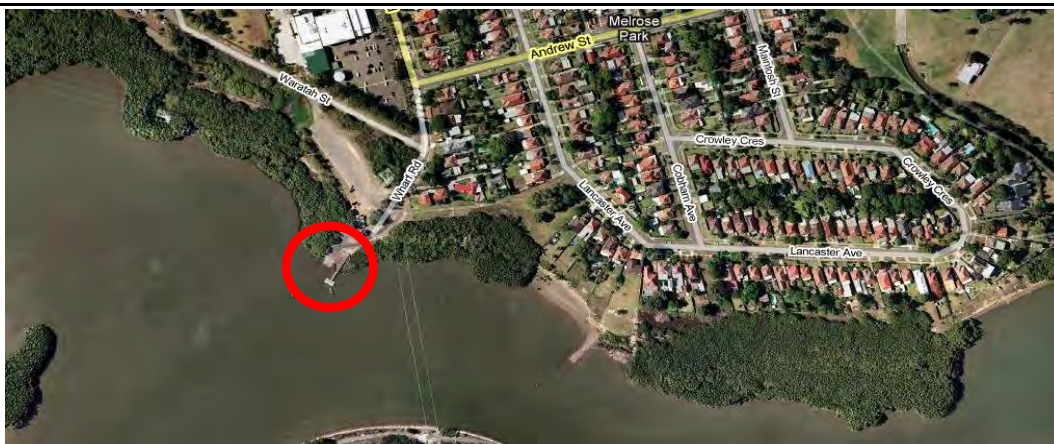
Undermining of concrete stairs.



Facility Inspection Record

- RYD_F16

Date	<u>19/08/09</u>	Locality	<u>West Ryde Wharf</u>	Level	<u>1.13m</u>	LGA	<u>Ryde</u>
Time	<u>15:30</u>			Tide	<u>Mid</u>		



Co-Ords (MGA)

Start

E 321652
N 6256243

Facility Details (Usage, Material, Const. Method, Type):

The facility consists of a timber jetty with timber safety rail supported by a medium sandstone block wall on the land, a steel gangway with timber slats and rails and a concrete floating pontoon with fenders and steel cleats for temporary vessel mooring. A part from the landward side of the jetty, the facility is supported by timber piles. The structure complements the adj. boat ramp, RYD_F17, and is well utilised.

Condition Assessment:

The timber slats on the jetty are loose and deteriorating as is the timber rail. The timber slats on the gangway are also loose and deteriorating. The edges of the concrete that makes up the floating pontoon are severely corroded with reinforcement visible.

Excellent
Good
Poor
Failed

X

Assets:

Timber safety rails are loose and deteriorating. The structure is exposed to ferry wash making berthing and mooring difficult.

Comments:

The structure is situated atop old timber piles and beams which may have formed an old wharf. A sign in the adjacent car park indicated that the whole facility is to be replaced in 2010. Photos of the facility, RYD_F16-01 to RYD_F16-10.

Photo 1

View of structure.

Photo 2

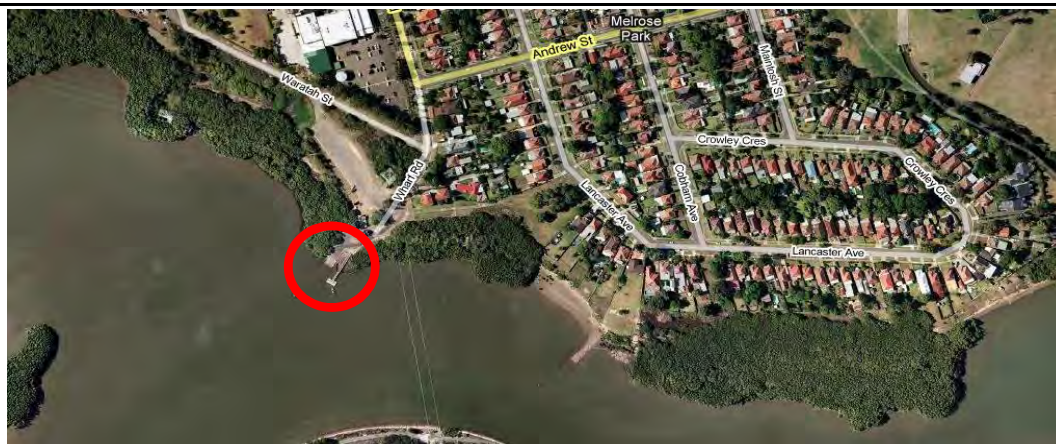
Corrosion of concrete which forms floating pontoon.



Facility Inspection Record

- RYD_F17

Date	<u>19/08/09</u>	Locality	<u>West Ryde Boat Ramp</u>	Level	<u>1.13m</u>	LGA	<u>Ryde</u>
Time	<u>15:20</u>			Tide	<u>Mid</u>		



Co-Ords (MGA)

Start

E 321652

N 6256267

Facility Details (Usage, Material, Const. Method, Type):

Concrete single lane boat ramp with diagonal grooves to aid grip. Concrete has been poured along the eastern side of the ramp. Parking is available beyond the ramp and the facility is well utilised and supported by the adjacent wharf and floating pontoon (RYD_F16).

Condition Assessment:

The concrete ramp is cracking and aggregate is exposed. The western side of the structure has been undermined.

Excellent

Good

Poor

Failed

X

Assets:

Members of the public commented that the toe of the structure finished abruptly and cars often get stuck.

There is also a number of sandstone boulders present in the water beyond the structure and the area is exposed to vessel wash making launching and retrieval difficult.

Comments:

A sign in the adjacent car park indicated that the whole facility is to be replaced in 2010.

Photos of the facility, RYD_F17-01 to RYD_F17-03.

Photo 1

View of boat ramp.

Photo 2

Undermining of structure on the western side.



Facility Inspection Record

- RYD_F03

Date 6/08/09
Time 14:22

Locality Meriton St, Gladesville

Level 0.46
Tide Low

LGA
Ryde



Co-Ords (MGA)

Start

E 326288

N 6254155

Facility Details (Usage, Material, Const. Method, Type):

water is via rocky shoreline.

Condition Assessment:

No formal facility. Steel safety rail associated with Sydney Water pumping station is showing signs of corrosion and the concrete slab it sits upon has been undermined.

Excellent
Good
Poor
Failed

X

Assets:

No formal access to water, dinghies must be launched via mossy bedrock.

Comments:

Photos RYD_F03-01 to RYD_F03-02.

Photo 1

Informal dinghy storage at Sydney Water pumping station.

Photo 2

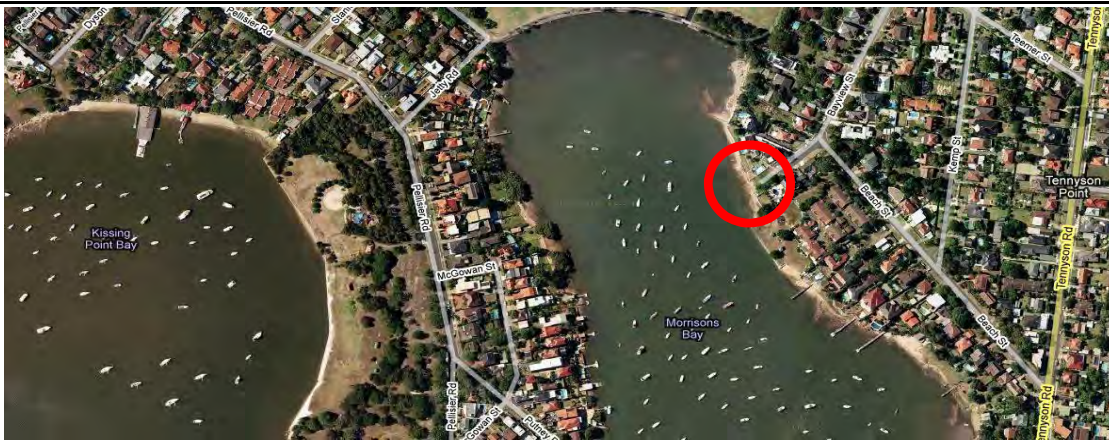
Dinghy tethered to steel safety rail.



Facility Inspection Record

- RYD_F07

Date	<u>6/08/09</u>	Locality	<u>Morrisons Bay, eastern shore</u>	Level	<u>0.77m</u>	LGA	<u>Ryde</u>
Time	<u>15:20</u>			Tide	<u>Low</u>		



Co-Ords (MGA)

Start

E 325450

N 6254926

Facility Details (Usage, Material, Const. Method, Type):

Informal dinghy storage within public reserve with dinghies tethered to private timber paling fence and trees. Ad-hoc groynes with timber poles to mark their ends have been constructed with small sandstone rocks to define the launch area. A timber ramp and rubber tires have also been placed at the shore for launching and berthing.

Condition Assessment:

Non-engineered structures.

Excellent

Good

Poor

Failed

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>

Assets:

Dinghies are launched via sandy shoreline in front of storage area.

Comments:

Photos RYD_F07-01 to RYD_F07-02.

Photo 1

View of informal dinghy storage facility and ad-hoc structures along shoreline.



Photo 2

Dinghies tethered to trees and timber fence.



Natural Shoreline Inspection Record

- RYD_NS07

Date	<u>18/08/09</u>	Locality	<u>Kissing Point Park, Putney</u>	Level	<u>0.76m</u>	LGA	<u>Ryde</u>
Time	<u>13:36</u>			Tide	<u>Low-Mid</u>		



Co-Ords (MGA)

Start

E 324277

N 6255207

End

E 324277

N 6255232

Details (Vegetation, Slope, Toe):

Rocky shoreline with public park. The section encompasses Yaralla Road which terminates directly above the rocky shoreline and a
300mm diameter storm water outlet.

Condition Assessment:

A large, approx. 500mm erosion scarp is present for 50m encompassing the end of Yaralla Road. The section is fenced
off from the public and council workers were on site during the inspection and were placing large sandstone boulders
along the scarp which don't appear to be designed to typical engineering detail with no filter layer observed.

Excellent

Good

Poor

Failed

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

Assets:

Foreshore supports the end of Yarralla Road and a storm water outlet which may be threatened if erosion was to
continue. Public access is currently restricted by a temporary fence.

Comments:

Photos RYD_NS07-01 to RYD_NS07-05.

Photo 1

View of erosion scarp behind rocky shoreline.



Photo 2

Large sandstone blocks placed along erosion scarp encompassing
a new storm water culvert.



Natural Shoreline Inspection Record

- RYD_NS13

Date	19/08/09	Locality	Meadowbank, adjacent to rail bridge	Level	0.30m	LGA	Ryde
Time	12:42			Tide	Low		



Co-Ords (MGA)

Start

E 322991

N 6256101

End

E 322906

N 6256156

Details (Vegetation, Slope, Toe):

Rocky/sandy shoreline with grassy bank. Concrete building waste has been placed along toe of grassy bank. Public footpath and cycleway is located 1-2m from bank edge.

Condition Assessment:

Large erosion scarp (300-500mm) is present at edge of grassy bank indicating exposure and sensitivity to passing vessel wash. Concrete building waste has not been placed to typical engineering standards.

Excellent

Good

Poor

Failed

X

Assets:

Foreshore supports public footpath and cycleway which will become threatened if erosion is left unabated.

Comments:

Photos RYD_NS13-01 to RYD_NS13-02.

Photo 1

View of foreshore.

Photo 2

Erosion scarp with concrete building waste.



Natural Shoreline Inspection Record

- RYD_NS11

Date	<u>20/08/09</u>	Locality	<u>Settlers Park, Putney</u>	Level	<u>0.55</u>	LGA	<u>Ryde</u>
Time	<u>12:30</u>			Tide	<u>Low-Mid</u>		



Co-Ords (MGA)

Start

E	<u>323627</u>
N	<u>6255959</u>

End

E	<u>323486</u>
N	<u>6256200</u>

Details (Vegetation, Slope, Toe):

Muddy foreshore vegetated with mangroves extending from north west from Ryde Wharf (RYD_F15).

Condition Assessment:

Erosion observed with no fine material present between pneumatophores due to exposure to vessel wash. One mangrove has collapsed.

Excellent
Good
Poor
Failed

X

Assets:

No issues at present, however, shoreline will continue to erode into the future.

Comments:

Photos RYD_NS11-01 to RYD_NS11-02.

Photo 1

Mangroves adjacent to Seawall RYD_NS11.



Photo 2

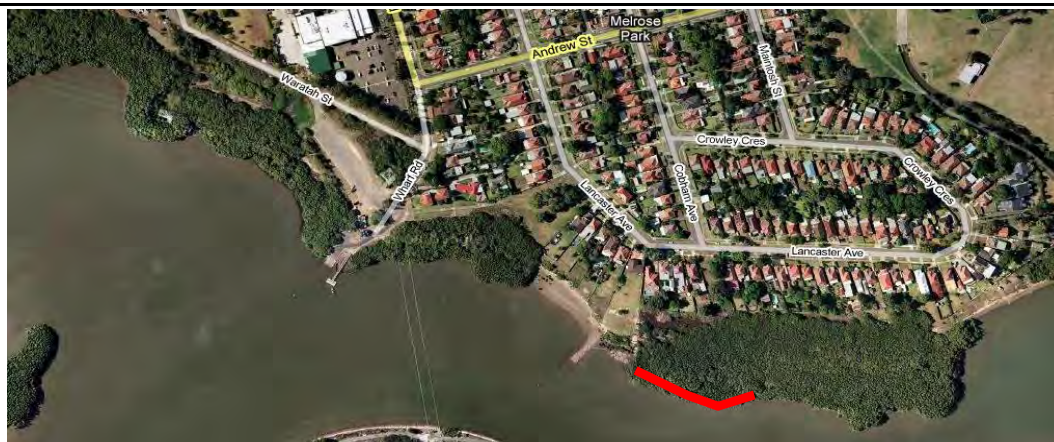
Collapsed mangrove.



Natural Shoreline Inspection Record

- RYD_NS14

Date	<u>20/08/09</u>	Locality	<u>Korpie Reserve, Melrose Park</u>	Level	<u>0.55m</u>	LGA	<u>Ryde</u>
Time	<u>12:50</u>			Tide	<u>Low-Mid</u>		



Co-Ords (MGA)

Start

E 322039

N 6256215

End

E 321951

N 6256205

Details (Vegetation, Slope, Toe):

Muddy/Sandy shoreline vegetated with mangroves.

Condition Assessment:

Erosion observed with undermining and loss of fine material from pneumatophores due to exposure to vessel wash.

Some trees are collapsing into water.

Excellent

Good

Poor

Failed

X

Assets:

No public access, no structures along shore.

Comments:

Photos RYD_NS14-01 to RYD_NS14-11.

Photo 1

Loss of fine material from pneumatophores.

Photo 2

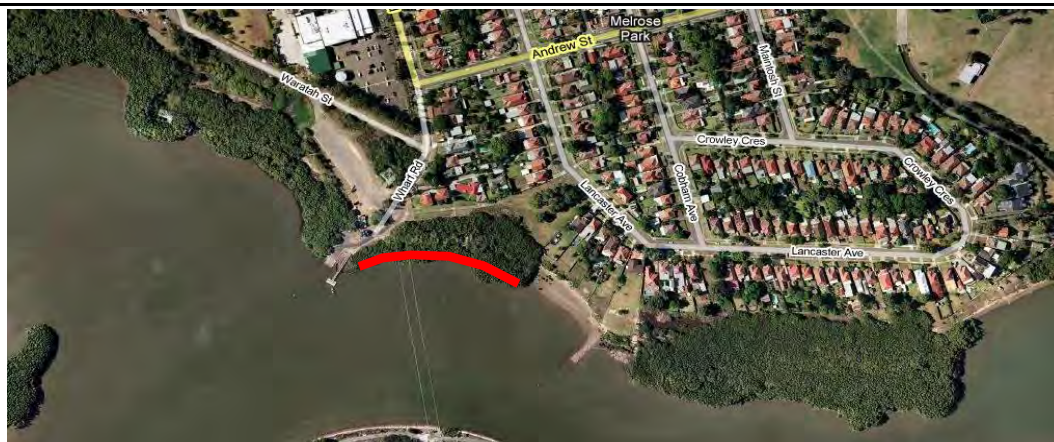
Undermining and collapsing of mangroves.



Natural Shoreline Inspection Record

- RYD_NS15

Date	<u>20/08/09</u>	Locality	<u>East of West Ryde Wharf</u>	Level	<u>0.24m</u>	LGA	<u>Ryde</u>
Time	<u>13:43</u>			Tide	<u>Low</u>		



Co-Ords (MGA)

Start

E 321766

N 6256273

End

E 321677

N 6256261

Details (Vegetation, Slope, Toe):

Muddy/sandy shoreline vegetated with mangroves.

Condition Assessment:

Erosion observed with undermining and loss of fine material from pneumatophores due to exposure to vessel wash.

Some trees are collapsing into water.

Excellent

Good

Poor

Failed

X

Assets:

No public access, no structures along shore.

Comments:

Photos of foreshore RYD_NS15-01 to RYD_NS15-06.

Photo 1

Loss of fine material from pneumatophores.



Photo 2

Mangroves collapsing due to undermining.

