6. Sylvan Beach Boating Infrastructure

6.1 Site description

The Sylvan Beach Boating Infrastructure study area is located at the Bellara public boat ramp and jetty facilities (refer to Photo Plate 6-4) at Sylvan Beach along the western coastline of Bribie Island and is approximately 640 m long from the canal in the south to Warrigal Street in the north (refer to Figure 31). The land tenure along the foreshore consists mainly of road reserve, with a small area of leasehold tenured land at the commercial properties. The Bellara public boat ramp was the landing point for the original Bribie Island barge service from the mainland that operated up to the time of the opening of the Bribie Island Bridge in 1963.

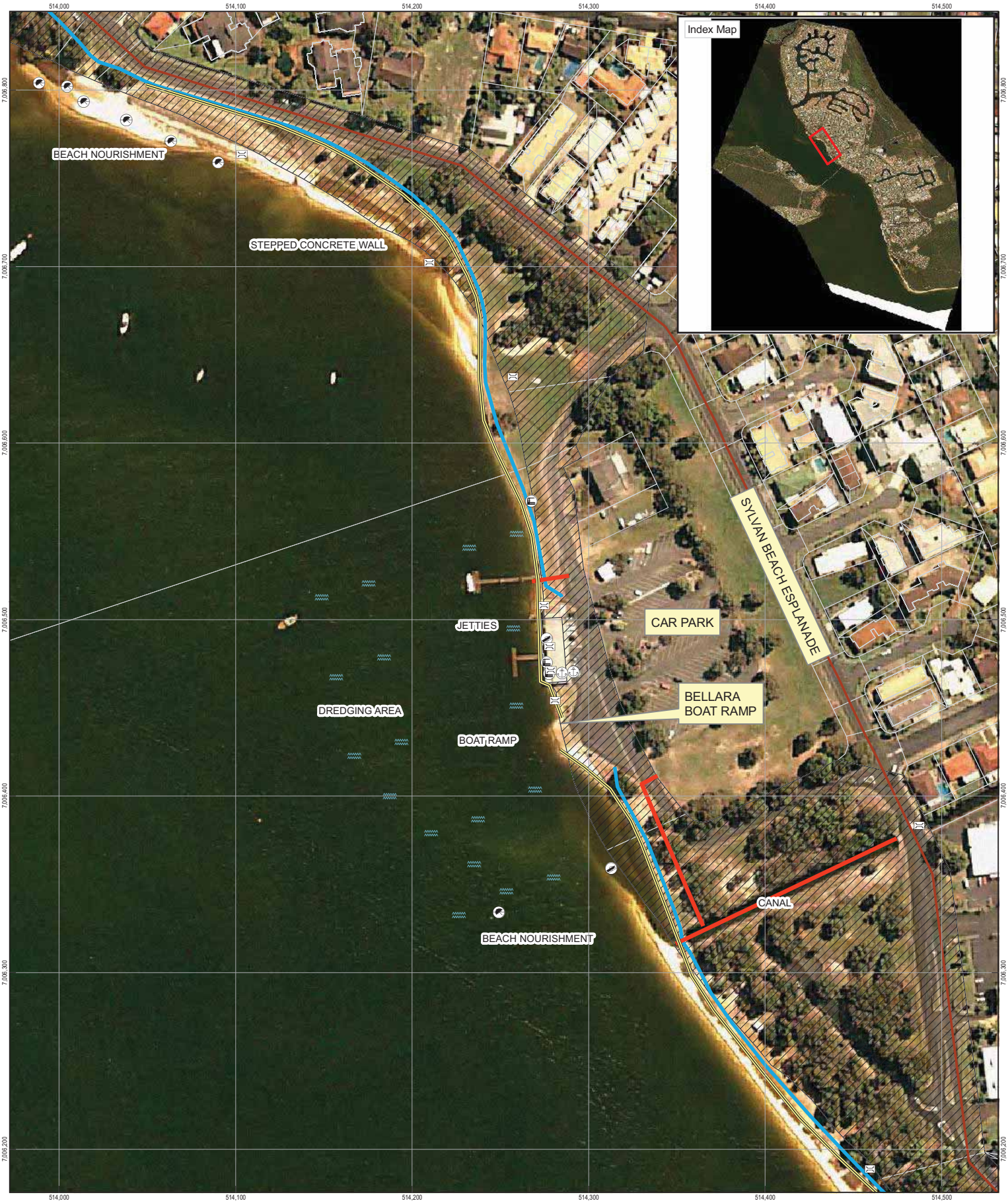
A stepped sea wall and/or rock protection exist along this section of shoreline. Small areas of sand have built up both north of the VMR jetty and south of the boat ramp (refer to Photo Plate 6-2 and Photo Plate 6-5). A small area of sandy beach also exists south of the jetty facility and buildings (refer to Photo Plate 6-3). In 2007, Queensland Transport dredged the area in front of the Bellara public boat ramp and the VMR air sea rescue pontoon. Approximately 5,415 m^3 of material was removed from the area and was used to nourish the foreshore along Sylvan Beach Esplanade.

There is a submerged stormwater pipe and in the southern extent of the study area is a tidal drainage canal with culverts under the road and a footpath along the foreshore (refer to Photo Plate Photo Plate 6-1).

A food outlet forms part of the boating facilities at this location.

A foredune community of grasses has been planted and established at the northern end of this study area (refer to Photo Plate 6-6). This area is understood to be a dredge spoil deposition area from dredging undertaken by Queensland Transport in the vicinity of the VMR jetty.

A Coastal Management District over Land is mapped along the shoreline in this section (refer to Appendix B).



LEGEND

- Stormwater Pipe
- Footpaths
- Main Road
- Cadastral Boundary
- Community Facility
- Foreshore Reserve
- Section 86 Permits
- Jetty/Pier/Pontoon
- Boat Ramp/Works/Access
- Culvert/Bridge/Weir/Groyne/Wall
- Marina/Building
- Channel/Canal
- Dredging Area
- Beach Nourishment
- Seawall

1:2,000 (at A3)

0 12.5 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Sylvan Beach Boating Infrastructure - Locality Plan

Figure 31

4-6 Innovation Parkway, Birtinya QLD 4575 T 61 7 5413 8100 F 61 7 5413 8199 E W www.ghd.com.au

G:\Projects\41\22291\CADD\GIS\Maps\SEMP_SylvanBoatRamp.mxd

Data source: MBRC Quickbird Image and Council Infrastructure, 2009; DERM, Moreton Bay DCDB, 2009, Section 86 Permits, 2010. Created by: S Potts

Photo Plate 6-1 Drainage canal culvert outlet south of boat ramp

Source: GHD 21/12/2009 15:10

Photo Plate 6-2 Boat ramp

Source: GHD 21/12/2009 15: 20

Photo Plate 6-3 Sandy area between boat ramp and jetty facilities

Source: GHD 21/12/2009 15:25

Photo Plate 6-4 Jetty facilities

Source: GHD 21/12/2009 15:30

Photo Plate 6-5 Sand build-up north from jetty facilities

Source: GHD 21/12/2009 15:30

Photo Plate 6-6 Revegetated sand dune north of jetty facilities

Source: GHD 21/12/2009 15:00

6.2 Historical shoreline changes

At the southern end of this section, a beach and vegetated low dune area has been maintained seaward of the revetment wall (refer to Figure 32 and Figure 33).

The photography shows that by 1958 boating facilities were in place in the northern section of this beach compartment, although it is difficult to identify from the aerial photography whether the infrastructure comprised a jetty and a boat ramp, or just a jetty. Information received from a long term resident of this area, Mr R Reynolds indicates that this was the location of the barge landing ramp that was used before the Bribie Island bridge was opened in 1963. Localised accretion on either side of this infrastructure indicates that sediment transport was affected by the structure(s), but that the longshore transport appears to be in equilibrium as sediment movement to the north and the south in equal amounts is apparent.

By 1975, the jetty appears to have been removed and a boat ramp is visible. In addition, a second boat ramp had been constructed approximately 250m to the north. Again, localised shoreline changes around these structures are visible in the photography, but no serious erosion of adjacent shorelines is evident. The 1982 photography indicates that the groyne effect created by these boat ramps had ceased and that sediment transport around the ends of the ramps had been re-established.

A jetty was constructed between the two boat ramps by 1990, and between 1990 and 1999 a second jetty and the revetment wall were constructed. A recreational beach is visible along this part of the shoreline seaward of the revetment, although it is unclear if the sediment in this area has been supplemented by artificial nourishment.

The shoreline immediately north of the boating facilities area appears to be reasonably stable, with the mouth of a small creek providing some localised shoreline changes over the period of photography. This section of shoreline was protected by a stepped revetment constructed during the late 1970's under the Regional Employment Development (RED) Scheme[1]. the alignment is noticeably seaward of historical shorelines. In places there is a very small recreational beach at high tide.

The northern end of this beach compartment encompasses the embayment north of the Sylvan Beach boating infrastructure area. The 1958 aerial photography shows a wide intertidal sand flat offshore of the beach, but also evidence of a small lagoon not associated with a natural drainage line. This lagoon could have been formed by the onshore attachment of a sand bar. Subsequent photography from 1975 shows very little change in the shoreline. However, by 1982, erosion is evident. Although it is difficult to identify with certainty, it appears that erosion of the road behind the beach has been prevented by the construction of a temporary revetment. The 1982 image also shows that a significant area within the intertidal flat at the eastern end of the beach has been dredged, possibly to create a mooring area for vessels. The photography does not indicate where any dredge material was placed, although it may have been used during earthworks for construction of the buildings around the boating infrastructure area. The erosion may have been influenced by sediment transported past the boat ramps being deposited in the dredge hole rather than on the upper beach. It is likely that this erosion was caused during a storm event rather than due to an interruption in sediment supply.

[1] Letter dated 7 July 2010 from Mr R Reynolds, long term resident at Sylvan Beach Esplanade

By 1990 some recovery of the upper beach was evident, but between 1990 and 1999 a revetment was constructed which continued north past the boat ramps at the boating facilities area, changed alignment to follow the shoreline, terminating close to the intersection of Sylvan Beach Esplanade and Warrigal St. This revetment appears to have been located several metres seaward of the road it was intended to protect. By 2002, scour was becoming evident at the end of the revetment. It is difficult to assess from the aerial photography if there has been any further scour or revetment extension due to the density of vegetation in this area.

LEGEND

Shorelines

1958
1975
1982
1990
1999
2003
2007
2009

1:2,000 (at A3)

0 12.5 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Sylvan Beach Boating Infrastructure - Shorelines

Figure 32

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G:\Projects\41\22291\CADD\GIS\Maps\SEMP_SylvanBoatRamp_Lines.mxd

Data source: MBRC Quickbird Image 2009 and Council Infrastructure, 2009. Created by: S Potts

LEGEND

Vegetation Lines

1958
1975
1982
1990
1999
2003
2007
2009

1:2,000 (at A3)

0 12.5 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Sylvan Beach Boating Infrastructure - Vegetation Lines

Figure 33

4-6 Innovation Parkway, Birtinya QLD 4575 T 61 7 5413 8100 F 61 7 5413 8199 E W www.ghd.com.au

G:\Projects\41\22291\CADD\GIS\Maps\SEMP_SylvanBoatRamp_Lines.mxd

Data source: MBRC Quickbird Image 2009 and Council Infrastructure, 2009. Created by: S Potts

6.3 Longshore transport

This section presents details of the potential longshore transport for this particular section of the coastline with both the annual southerly, northerly, and net transport movements shown as well as the seasonal variations. Just as the annual calculations are based on the average wind climate over the period of record for the full 12 months, the seasonal calculations are based on the average wind climate over the period of record for that particular season.

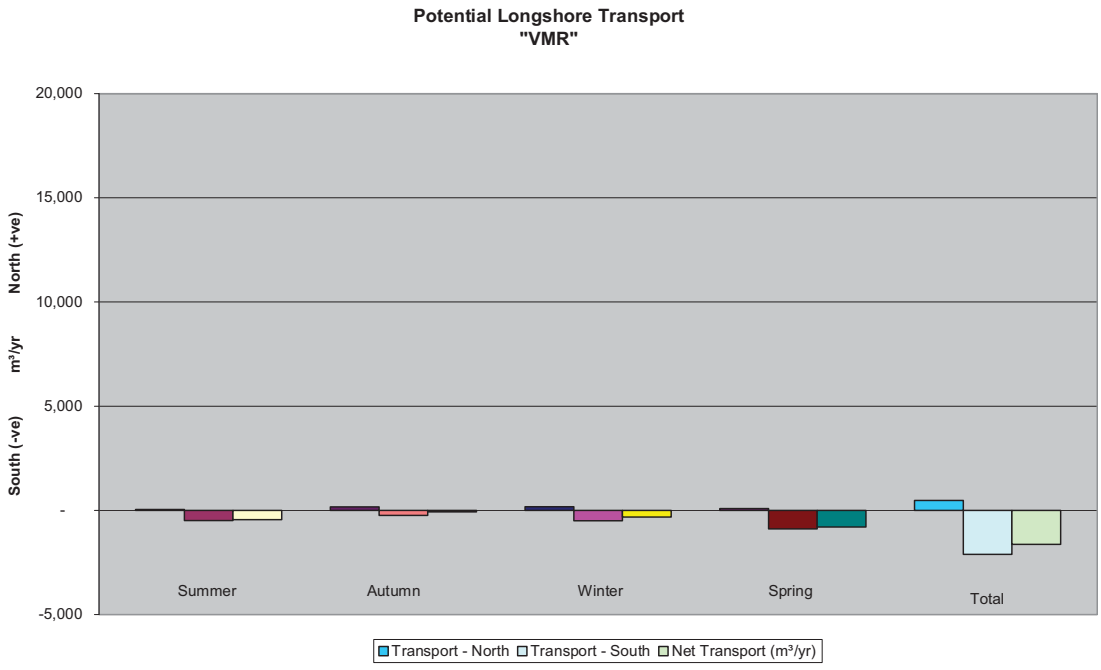
The seasons are defined as follows:

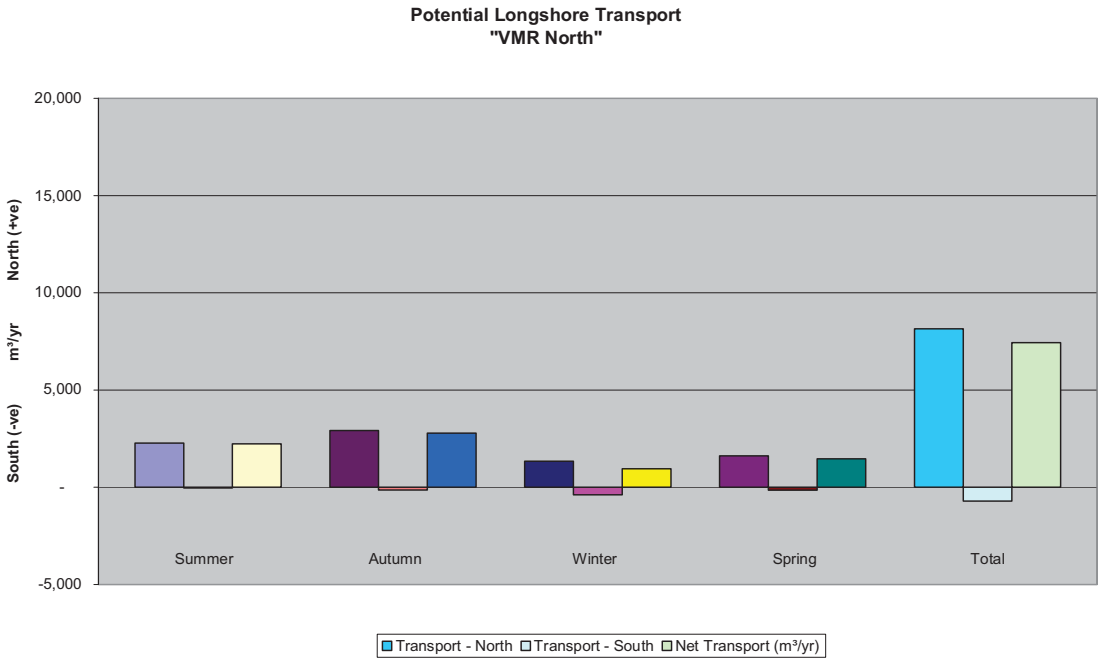
- Summer – December, January, February;
- Autumn – March, April, May;
- Winter – June, July, August; and
- Spring – September, October, November.

For this section of the coast the following observations can be made (refer Figure 34):

- The transport at the VMR site is minimal and is to the south as a result of being sheltered from any southerly waves progressing up Pumicestone Passage;
- The transport at the VMR North site is higher but still small, and is in the opposite direction to VMR, being to the north under the influence of waves progressing up the Passage. In addition this site is more protected from waves from the northerly sector; and
- The seasonal variation is similar to the annual results with higher potential transport rates occurring during Autumn.

Figure 34 Sylvan Beach Boating Infrastructure – Longshore Transport





6.4 Expected shoreline trends

Continued erosion north of the Bribie Island Bridge is expected to continue, resulting in further loss of recreational beach. Eventually this erosion would be expected to progress north to the boating infrastructure area.

It is possible that very slow beach lowering in front of the revetment will occur at the northern end of this section of coast. As the net sediment transport rates in this area appear to be very low, it is unlikely that Sylvan Beach to the north will be noticeably affected.