



## 7. Sylvan Beach North

### 7.1 Site description

The Sylvan Beach North study area extends from north of the boating infrastructure facilities to the excavated canal entrance known as the Solander canal, along the western coastline of Bribie Island (refer to [Figure 35](#)). Sylvan Beach North consists mainly of road reserve tenured land, with a small area of State land located at the end of Marina Boulevard and esplanade tenured land next to the entrance to Solander Canal. Within Solander Canal, properties are generally of freehold tenure.

Part of this shoreline is vegetated down to the high water mark and with no structures in the tidal zone. However there is evidence of eroding banks with tree roots and some areas of coffee rock exposed along the foreshore. Some small beach areas remain between the vegetation and high tide limit.

There is a section of boardwalk adjacent to Sylvan Beach Esplanade that meanders through an area of mangroves surrounding a protected lagoon area (receiving drainage from three culverts under the road – refer to [Photo Plate 7-1](#)). Some of the timber boardwalk's concrete footings are exposed above the sand (refer to [Photo Plate 7-2](#)). There are some other areas protected by sand build-up that have mangrove seedlings established in the protected water. North of this area is Pirate Park containing open space and playground facilities, including a toilet block approximately 10 m from the shoreline.

Several timber groynes have been partially covered by sand in the north of the study area (refer to [Photo Plate 7-3](#)). Solander Canal features a rock sea wall along the entrance. Some sand has built up just inside of the canal entrance on the southern side.

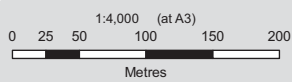
A 600 mm diameter stormwater pipe extends out across the beach near the boardwalk.

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



**LEGEND**

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



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**Sylvan Beach North -  
Locality Plan**

**Figure 35**

**Photo Plate 7-1 Culverts under road beside boardwalk**



Source: GHD 21/12/2009 12:00

**Photo Plate 7-2 Timber boardwalk through mangroves**



Source: GHD 21/12/2009 12:00

**Photo Plate 7-3 Northern Sylvan Beach with timber groynes**



Source: GHD 21/12/2009 13:10

## **7.2 Historical shoreline changes**

The southern section of the Sylvan Beach North study area (just south of Pirate Park) has undergone numerous minor shoreline movements over the record of photography. A summary of the aerial photograph analysis has been shown graphically in Figures [Figure 36](#) and [Figure 37](#). The maximum movement appears to be in the order of 30m, with most changes in the order of 10m. However, there does not appear to be a clear trend of recession as is evident along other sections of the Bribie Island western foreshore. The shoreline shows signs of pockets of erosion and accretion, which is consistent with a shoreline undergoing sporadic sediment supply. There are also localised changes associated with a small drainage line at the centre of this section of shoreline.

The nearshore area is reasonably flat and shallow, and separated from a large sand bar by a shallow lagoon. Assessment of the aerial photography over the period of record indicates that the position, shape and dimensions of the lagoon and sand bar have been stable.

The aerial photography shows that sand supply to the beach is in the form of sand bars which are attached at their landward end to the beach. These sand bars then slowly rotate to become shore parallel where they slowly migrate onshore. This gives the impression of sand deposition in “slugs”. This is likely to be caused by the combined effect of dominant tidal flows (in both directions, during ebb and flood tides) and local wind conditions generating waves. The tidal flows will tend to influence the transport of sediments in the nearshore area, but the wave action is the strongest influence in moving this sediment on to the upper beach. The net sediment transport rates in this area are likely to be quite low however, as the presence of the sand bar combined with the separation of the beach from the main tidal channels would result in slower currents which are less able to transport heavy sediments such as sand during ambient



conditions. The isolation of sediment behind the revetment wall to the southeast does not appear to have influenced the sediment supply to the beach to date.

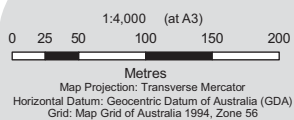
Along the northern part of this study area, the shoreline changes appear to be more consistent, but a clear trend is not apparent. This section of beach is oriented nearly north-south, and is afforded some protection by a wide sand flat that connects to the sand bar near the centre section of the beach. The shoreline changes along this section of coast over the 50 year period of record for the aerial photography all appear to be a maximum of approximately 10m. The present shoreline is largely in a very similar position to that evident in the 1958 and 1975 photography.

The groyne field at the northern end of the beach is not visible in most of the aerial photography, and does not appear to have made a significant impact on the shoreline, although small localised changes may be evident at ground level. This indicates that the local sediment transport rates (north and south) are very low.

In the late 1980s to early 1990s Dux Creek was heavily modified by the development of the Pacific Harbour Canal Estate and the original creek is now known as Solander Canal. The 1990 aerial photography shows that earthworks to widen and realign the creek mouth had been undertaken; by 1999 the works were complete and the canal was stabilised with a concrete revetment. The earthworks extended the shoreline seawards close to the edge of the sand flat. A very small volume of sand has accreted adjacent to the southern bank of the canal just inside the entrance. This further indicates that sediment transport rates in the area are very low.



LEGEND		<b>Shorelines</b>	
	1958		1982
	1975		1990
	1999		2003
	2007		2009



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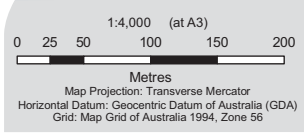
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### Sylvan Beach North - Shorelines

Figure 36



<b>LEGEND</b>	<b>Vegetation Lines</b>	 1982	 2003
		 1958	 1990
		 1975	 2007
			 1999
			 2009



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**Sylvan Beach North -  
Vegetation Lines**

**Figure 37**



### 7.3 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.

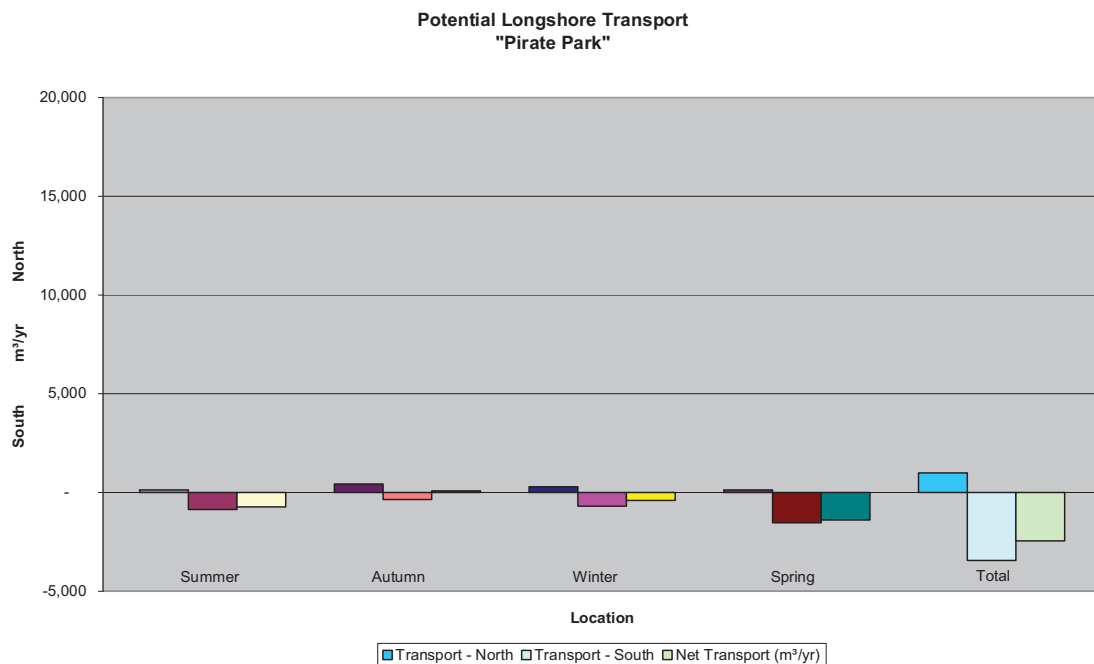
The seasons are defined as follows:

- ▶ 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 38](#)):

- ▶ The transport rates along Sylvan beach are small as this beach is largely sheltered from waves from the south;
- ▶ There is some transport to the north at Sylvan Beach North due to the refraction of southerly waves around the sand shoals at the southern end of the beach; and
- ▶ The seasonal variation is similar to the annual results but the values of the transport are not large enough to draw any further conclusions.

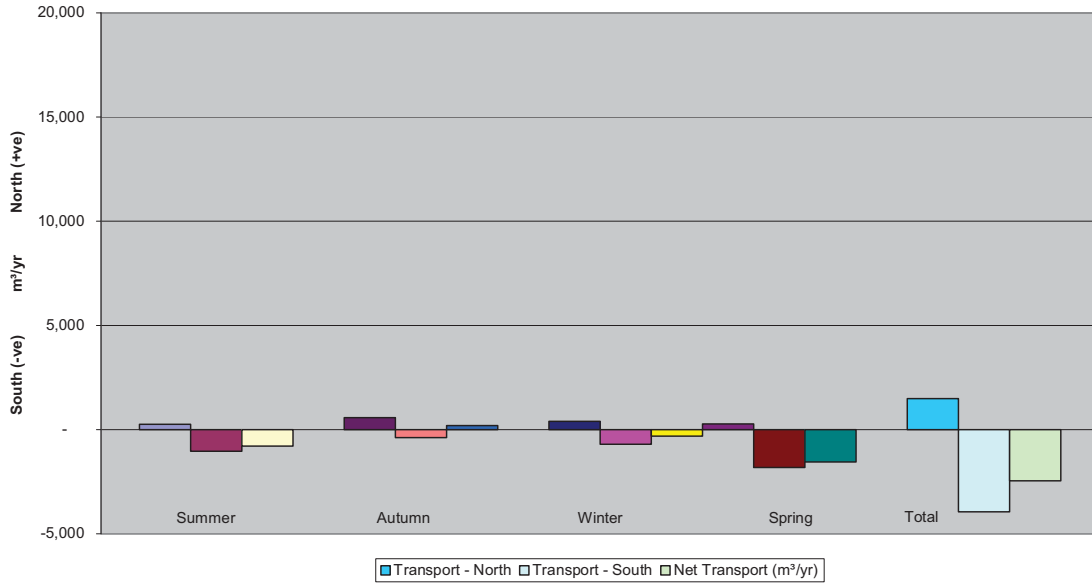
**Figure 38 Sylvan Beach – Longshore Transport**



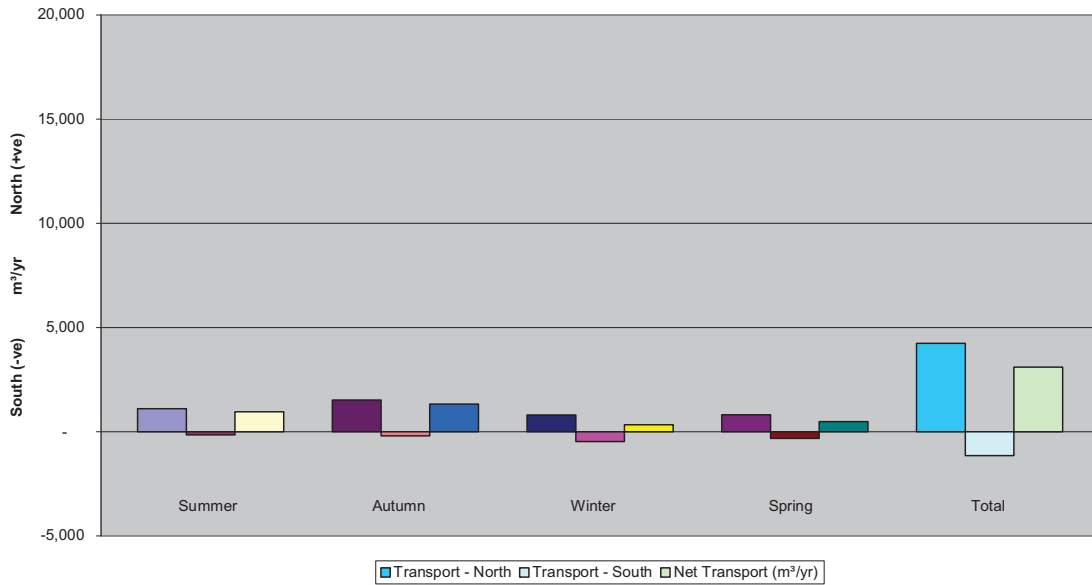




Potential Longshore Transport  
"Sylvan Beach"



Potential Longshore Transport  
"Sylvan Beach North"



### 7.4 Expected shoreline trends

As the net sediment transport rates in the area immediately south of Sylvan beach appear to be very low, it is unlikely that Sylvan beach will be noticeably affected by processes in the boating infrastructure area to the south.



The very low sediment transport rates at the northern end of Sylvan Beach also indicate that overall the shoreline should continue to be reasonably stable. This does not mean that pockets of erosion and accretion will not continue to occur.