



Policy 7: Foreshore Rock Wall – Design and Construction

Chapter 1 Introduction

The City of Gold Coast has approximately forty-two kilometres of Pacific Ocean coastline, with popular surfing beaches, stretching from Coolangatta to South Stradbroke Island.

It is evident that Gold Coast City beaches have always been prone to erosion and accretion cycles, with the worst known erosion occurring in 1967 and the earliest erosion problems recorded in 1894, on beaches in the Southport area.

Whilst the surf waves are an attraction for recreational activities, the high average wave energy which creates these conditions results in a longshore transportation rate of sand movement, which averages 500,000 cubic metres per year.

During cyclonic conditions, waves over eleven metres have been recorded by the Wave Rider buoys off Main Beach and Kirra and, in these conditions, the active beach extends several kilometres seaward. Intrusion can occur temporarily (if unrestrained) landward for some hundreds of metres.

Storm wave attack, which is predominantly from the south east, causes up to 400 cubic metres of sand per linear metre of beach to be moved offshore (eroded) and formed into offshore protective storm bars. This also results in accelerated longshore transportation. Recovery of the upper beach after major erosion, such as that in 1967, can take up to eighteen months.

Chapter 2 History of Boulder Wall Construction

During the cyclonic erosion which occurred in 1954 and 1967, the storms created scarps which extended landward past the boundaries of many beachfront properties. The waves and wind seriously damaged some building structures and affected the structural integrity of many other structures.

Council and many of the residents who owned property adjacent to the beach constructed protective walls along the beach front in an attempt to protect buildings and other structures. In the majority of cases, these walls were constructed directly on the then existing cyclonic or storm erosion scarp.

Because of the variable nature of the cyclonic wave action within the coastal zone, the resultant influences on the beach and eroded areas varied, depending on the particular storm activity in each location. As a result, the revetment works or protective boulder walls were constructed on different alignments, and at varying distances landward, of the fine weather beach line. The construction of these revetments varied, depending on the material that was available at the time. Also, not all property owners along the beach front elected to construct a wall and, therefore, there were gaps left in the walls.

It was not until the early 1970s that Council was in a position to study in any detail the effects of cyclonic erosion on the beach areas. Council engineers studied the influence of cyclonic erosion and resultant wave action and noted that there were varying reactions along the beach area, depending on the quality, the location and continuity of these walls and whether the beach was or was not protected by a wall.

To provide for the stabilisation of the beach area, Council has developed a standard design for the construction of protective boulder walls. It is acknowledged that the dynamic nature of the beach environment means that the boulder wall will be buried in sand during periods of fine weather and following the application of additional beach protection techniques. The boulder wall areas may be exposed or re-exposed during periods of storm conditions.

The foreshore seawall line has been adopted as a continuous line and is generally parallel to the long term primary dune alignment and, includes as many quality boulder walls that existed prior to 1976 as possible.

As the beach front land within the City has been progressively redeveloped, Council has been actively supporting and encouraging the rebuilding of sub-standard boulder walls, in accordance with the adopted standard design on the nominated foreshore seawall line alignment.

The stability of the foreshore and beach protection cannot rely solely on the construction of a foreshore seawall. The foreshore seawall is only part of a complex series of beach protection measures that need to be continuously implemented by Council.



Council has previously considered matters relating to the Foreshores Seawalls previously known as Boulder Walls. The schedule of the Council decisions are listed below:

- 31 October 1975
- 30 May 1986 (WS007)
- 13 March 1987 (WS005)
- 20 May 1968 (WS005)
- 10 February 1989(C0035)
- 15 June 1990 (WS011)

Chapter 3 Intent

The purpose of this Policy is to protect the integrity of the foreshore seawall by ensuring that walls are constructed or restored in accordance with the adopted standard design.

1.0 General Provisions – Foreshore Seawall Construction

- a) The design of any proposed boulder wall or foreshore seawall shall comply with the requirements shown on Council's **Standard Drawing N° 59402 – Foreshore Seawall**.
- b) Where it is proposed to construct or upgrade a boulder wall, in accordance with the provisions of this policy in connection with building development, it will be necessary for the boulder wall to be completed to the reasonable satisfaction of the chief engineer, prior to commencement of any building work, including excavation. All new seawall construction or upgradings are to be certified by a registered engineer, stating that the work has been done in accordance with relevant Planning Scheme provisions.
- c) Building approvals by Council, the Department of Environment and Heritage and the Beach Protection Authority, are necessary prior to any work being carried out in connection with a boulder wall. A security deposit of \$2,500.00 is required to be lodged with Council as security for satisfactory restoration of the beach, including dune vegetation and erection of dune protection fencing. This security shall be returned by Council upon satisfactory completion of the wall and the issue of the relevant compliance engineering certificate to Council.
- d) Prior to approval of strata title documents, the issue of a Certificate of Classification or a Final Completion Certificate for any development, building or subdivision, the applicant must supply satisfactory evidence demonstrating that a conforming wall has been constructed.

1.1 Dune Stabilisation

The specification for the construction of any work on the beach shall contain those relevant minimum requirements for the Specification for Works on the Beach Seaward of the Foreshore Seawall, as listed below.

- a) All excess sand is placed seaward of the boulder wall and profiled and stabilised, as directed by the chief engineer.
This will include the following work and materials:
 - fencing, including strainers;
 - fine gauge fabric mesh;
 - spinifex runners; and
 - brush matting.
- b) Where sufficient excess sand is available to bury the seawall, this sand is to be washed into the wall to fill all voids between boulders to prevent future sand subsidence.
- c) Fence – the standard dune protection fencing is to be constructed around the area to be stabilised, in accordance with the requirements as detailed on Council's **Standard Drawing N° 59403 – Dune Protection Fence**.
- d) Materials and construction shall be 'pig' wire (or equivalent) and/or chain wire supported by treated pine log posts, 3.6 metres apart, with a treated pine log rail along the top. Timber sizes, wire type and fencing methods shall be identical to that of the Gold Coast City Council and Beach Protection Authority.
- e) Pedestrian walkways are to be constructed, where directed, using the same method of construction as described above.



- f) Mesh – fabric mesh shall be fixed to the dune protection fences, where directed by the chief engineer. Rheem multimesh or an equivalent windbreak, 920mm wide, is to be clipped to the 'pig' wire, or equivalent, every 600mm at the top, middle and bottom of front and walkway fencing. Knitted shade cloth, 1200mm wide, with a shade factor between 65-70%, is to be similarly attached to the rear fencing. The fabrics shall be attached on the seaward side of the front and rear dune protection fence and the outer side of access walkway fencing.
- g) Spinifex runners – spinifex runners, a minimum of 750mm, with a minimum of three nodes (unstruck buds), shall be planted parallel to the water line at 500mm centres. Rows shall be one metre apart. The runners shall be planted vertically, to a minimum depth of 450mm, with approximately 125mm of the tip (growing end) exposed. These runners may be obtained from Council's resources on The Spit, or elsewhere as directed. The collection of the spinifex runners is to be carried out under the chief engineer's supervision.
- h) Striking is expected to occur within two to three weeks, at which time the first of three applications of 'Crop King 600 Fertiliser' or equivalent shall be made. The two subsequent applications shall be made at three and six months after the first application.
- i) Brush matting – if required by the chief engineer, the planted area is to be covered with brush matting. The matting shall be spread thinly to avoid smothering of the plants but at sufficient density to act as a sand trap. No limb shall be greater than 50mm diameter.

