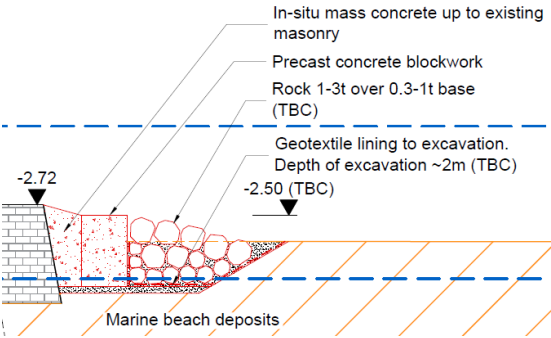
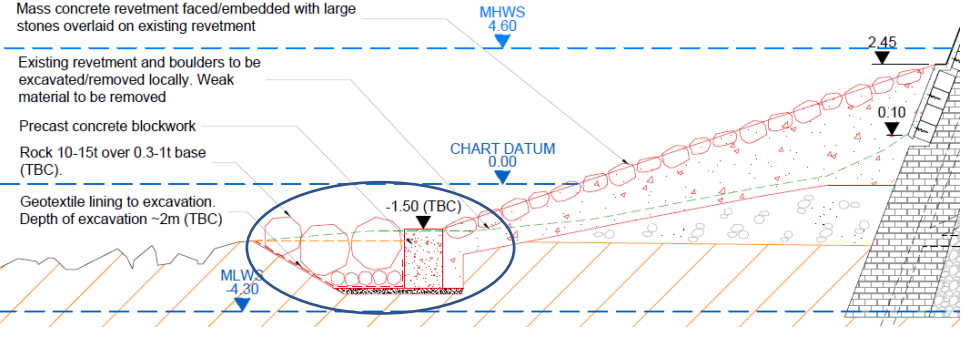
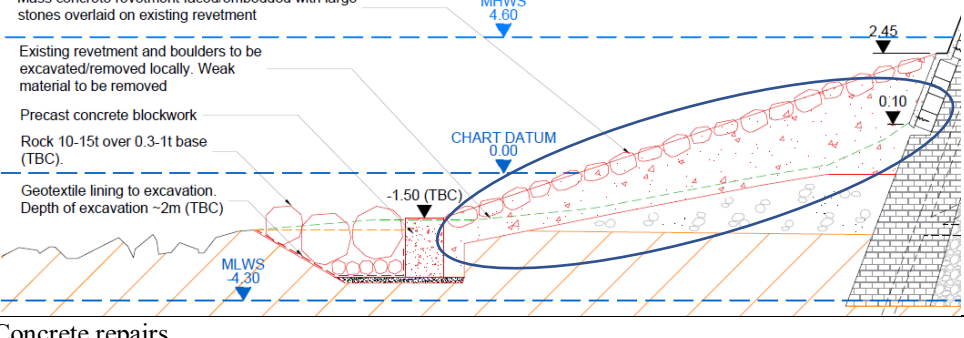


Indicative Construction Method

Western Breakwater

Item	Indicative construction sequence
Combined cut off wall and scour protection (leeward side) 	Works take place over 5-10m lengths (TBC). Works within the tidal zone – weather to be monitored, summer working. At low tide no.1: 1. Breakout weak material, clear rubble debris & seaweed 2. Excavate trench up to toe of breakwater to required depth (depth 0.75m to 1.00m, TBC) – excavator 3. Lay blinding (rapid cure 1-2hours) to support trench 4. Build precast blockwork & backfill with mass concrete 5. Remove plant At low tide no.2: 1. Excavate in front of blockwork wall (depth 0.75m to 1.00m, TBC) 2. Line excavation with geotextile 3. Place 0.3-1t rock armour followed by 1-3t rock armour Repeat procedure along length of leeward side
Combined cut off wall and scour protection (seaward side) 	Method as above; depth of excavation ~2m
Stone faced revetment 	Faced revetment constructed following completion of combined cut off wall and scour protection. Faced revetment will be constructed in tiers from toe to top between tides. At low tide no.1 1. Starting at toe of revetment - excavate weak material with excavator to required depth 2. Pour mass concrete (rapid cure) and embed first tier of facing stone Subsequent tides – repeat step 1 and 2 working up to the top of revetment Pointing and dressing on completion
Concrete repairs	1. Survey breakwater to identify extent and location of all defects 2. Working from base to top of each concrete panel - breakout existing concrete around defect and remove degraded rebar/spall concrete 3. Make good with SBR modified mortar patch repair Temporary works - mobile working platform lowered from top of breakwater between tides
Void repairs	Void repair works to be carried out at low tide 1. Drill into revetment at regular specified intervals - inject gravity flow grout or pressure grout (boring/drilling operations) 2. Make good surface and repoint

Cintec anchors (also Eastern Prom)	On completion of void repairs 1. Drill borehole to required diameter (boring/drilling operations) 2. Install fabric sock and stainless-steel bar 3. Inject grout 4. Load test set number of anchors (tbc) 5. Cap of anchor with masonry insert (retrieved during coring)
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Eastern Promenade

Item	Indicative construction sequence
Stone faced revetment	Faced stone revetment and seawall will be repaired locally as part of the works where visible defects are identified. 1. Condition survey (walkover) to confirm the location of missing stonework and voids present in the face of the structure. 2. Joints to be raked out, missing stonework to be replaced with like for like limestone blockwork and pointed. Areas with significant loss of mortar are to be noted and repointed. 3. Where voids behind face of revetment have been identified these are to be pressure grouted following method as per Western Breakwater void repair construction method. 4. Rope access will be required for minor works. MEWP operating at beach level is required where access and delivery of materials is not feasible using rope access. 5. Works to take place at low tide
Crest raising and strengthening works	1. Raise parapet crest levels at Southern end and Northern end to the proposed level and widen parapet in zone D with like for like limestone blockwork. 2. Mass concrete backfill behind existing parapet where voiding in the substrate is noted 3. Post install Cintec anchors following method as per Western Breakwater Cintec anchor construction method

Rhych Point

Item	Indicative construction sequence
Rock armour revetment	Site should largely comprise works above MHWS in 2020 (see bottom red dashed line in screenshot). Works to be completed during low tide – weather to be monitored, anticipate summer working. Access will be from Rhych Avenue via slipways on both Sandy Bay and Trecco Bay side. Additional access via Mackworth Road maybe utilised. 1. Remove existing rubble and debris down to design profile 2. Survey topography following site clearance to confirm rock volumes 3. Placement of 5 – 40kg standard grading rock armour as underlayer - o Confirmation / approval of underlayer by client / client’s engineer 4. Staged 0.3m deep excavation along revetment toe - o Staging lengths TBC pending tide times to allow construction within the dry 5. Placement of double layer of 0.3 – 1 tonne rock armour 6. Final survey of revetment Repeat procedure along length of Sandy Bay and Trecco Bay side.