

8(a) Permanent Works and Materials Used in Construction

All materials listed are installed below or flush with MHWS as part of the drainage outfall.

Steel / Iron

- **Permanent works description:**
Stainless steel fixings associated with the 400 mm tidal flap valve (Althon HDPE/SS construction).
- **Quantity:**
Approx. 8 stainless-steel M8 anchor bolts (per manufacturer's specification).
- **Dimensions:**
Standard M8 anchors.
- **Weight:**
Negligible.

Concrete

- **Permanent works description:**
375 mm diameter **reinforced concrete outfall pipe** installed through existing seawall, grouted in position.
- **Quantity:**
Approx. 1 no. pipe section.
- **Dimensions:**
375 mm diameter × approx. 1 m length.
- **Weight:**
Approx. 150–200 kg (typical for 375 mm concrete pipe).

Plastic / Synthetic

- **Permanent works description:**
Althon 400 mm tidal flap valve — HDPE/SS composite unit.
- **Quantity:**
1 flap valve.
- **Dimensions:**
400 mm internal diameter; approx. 568 mm outer diameter (per drawing).
- **Weight:**
Approx. 20–30 kg.

Other Materials (Foamed Concrete Grout)

- **Permanent works description:**
Lightweight foamed concrete (“Cemex Readymix Voidfill Foamed Concrete or similar approved”) used to grout the annulus around the pipe within the seawall.
 - **Quantity:**
Approx. 0.05–0.1 m³ (small volume to fill annulus).
 - **Weight:**
Variable depending on product density (typically 600–1,200 kg/m³).
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✓ 8(b) Materials to Be Removed (from below MHWS)

Note: Works take place through the face of an existing seawall and are carried out during low tide. No excavation is required below MHWS, and the only removed material is the core drilled from the seawall.

Concrete (Core arisings)

- **Removal description:**
Core from drilling a 375 mm opening through the seawall. Material removed and disposed of off-site.
- **Quantity:**
One cylindrical core.
- **Dimensions:**
Approx. 375–400 mm diameter × approx. 0.8–1.0 m long.
- **Weight:**
Approx. 40–60 kg.

All other material categories:

Not applicable — no removal of timber, steel, sediments (sand/silt/gravel), cobbles, boulders, or plastics below MHWS.

✓ 8(c) Temporary Works (Materials Below MHWS)

There are **no temporary works located below MHWS.**

All temporary installations (barriers, tools, ladders) are positioned above MHWS on the path or landward side of the seawall.

Steel / Iron, Timber, Concrete (Temporary)

- **Temporary works description:**
None below MHWS.

- **Quantity & dimensions:**
Not applicable.

Plastic / Synthetic, Sediments, Other

- **Temporary works description:**
None.
- **Quantity & dimensions:**
Not applicable.