

M36/301: Jetty's 2-3 Breastwork

The land for the railway terminus at Port Lyttelton was reclaimed by building a sea wall and filling the space between the wall and Norwich Quay. In February 1865 the Secretary of Public Works invited tenders from contractors for construction of a 700 feet (213 metre) sea wall in front of the site of the Lyttelton Railway Station (*Press* 23/2/1865:2). The contract was awarded to E. G. Wright in May 1865 (*Lyttelton Times* 13/5/1865:6). The sea wall was not a stone embankment as Provincial Engineer, Edward Dobson had originally recommended, but was constructed from timber framing with stone backing and clay filling behind (Canterbury Provincial Government 1867:148, 154-155). The wall was intended for completion in March 1866, but was delayed due to late delivery of the timber required (Canterbury Provincial Government 1867:148). The unfinished structure was exposed to the weather and the sea causing a portion of the stone and timber structure to collapse (Canterbury Provincial Government 1867:154). Further, the shifting mud at the bed of the harbour caused prominent bulges in the wall (*Lyttelton Times* 7/1/1867:3, Scotter 1968:74-75). In response to this failure, Dobson altered the design "giving the stone backing a wider base, and driving the sheet piling down to a greater depth" (Canterbury Provincial Government 1867:154). He also recommended that once the wall had settled in position an additional row of "iron bark piles" be driven in front of the wall.

The work was expected to be completed by the end of 1866. However, by February 1867 a "cesspool" had formed between the sea wall and Norwich Quay and tenders were invited for "72,000 cubic yards [55,048 cubic metres] of Embankment for the reclamation of the space between Norwich quay and the Sea-wall" (*Press* 20/2/1867:1, *Lyttelton Times* 20/2/1867:2). James. M. Balfour, Dobson's successor, specified that the land be filled in by constructing a causeway of rubble behind the sea wall and another parallel causeway thirty feet inland from it. Balfour specified that these causeways maybe constructed of "clay merely faced with stone". From these "roadways" the "earth" should be tipped towards the land then left to settle and finally filled with "rubble" (*Press* 9/4/1867:2).

By late March 1867 the railway reclamation was being "filled in" (*Lyttelton Times* 30/3/1867:2). In July 1867 the land reclamation behind the sea wall was complete but was settling before it could bear the weight of a locomotive (*Press* 1/7/1867:2). By March 1868 the railway reclamation was in use for locomotives and had sufficiently settled to allow the completion of the face of the sea wall (*Lyttelton Times* 4/3/1868:6). It is believed that this breastwork was heavily upgraded/extended in 1964, and the decking replaced with concrete in 1989 (Barrott 2012:4).

Reinstatement works at 2-3 Breastwork involved the demolition and reconstruction of portions of the breastwork and retaining structure. As this work effected the 1860s sea wall and surrounding area, recording of the structure was required prior to the start of earthworks.

In accordance with 2015/600, recording was carried out to investigate the original parts of the 2-3 Breastwork. As no further archaeological material was found during the works and due to the information, that already exists about 2-3 Breastwork, a 3D scan and photographic record of this area was agreed to sufficiently satisfy recording requirements.

On 5 February and 22 April 2016 2-3 Breastwork recorded before works began by Kurt Bennett (Underground Overground Archaeology) as per the conditions set forth in authority 2015/600.

The retaining wall exposed here comprised a concrete wall with timber shoring on the seaward side. The 200 mm wide timber shoring was set into the concrete. The shoring often had large gaps in between sets. The exception was concentrated shoring in the central area, where the planks were set flush against each other. The central area also had timber cross-beams, followed by stone blocks in front of the shoring. The blocks were approximately 350 mm by 200 mm and were stacked on an angle

sloping seawards. As some of the piles were located between the shoring and the stone blocks, it is likely that this was a later addition. In addition to this, the wooden stringers of the No 3 Jetty did not appear to be set into the wall. As the original retaining wall comprised of timber farming and stone and the breastwork was heavily upgraded in 1964, it is unlikely that this is the original retaining wall. Concrete jackets apparent on many of the piles suggests that these were also subject to upgrades at this time.

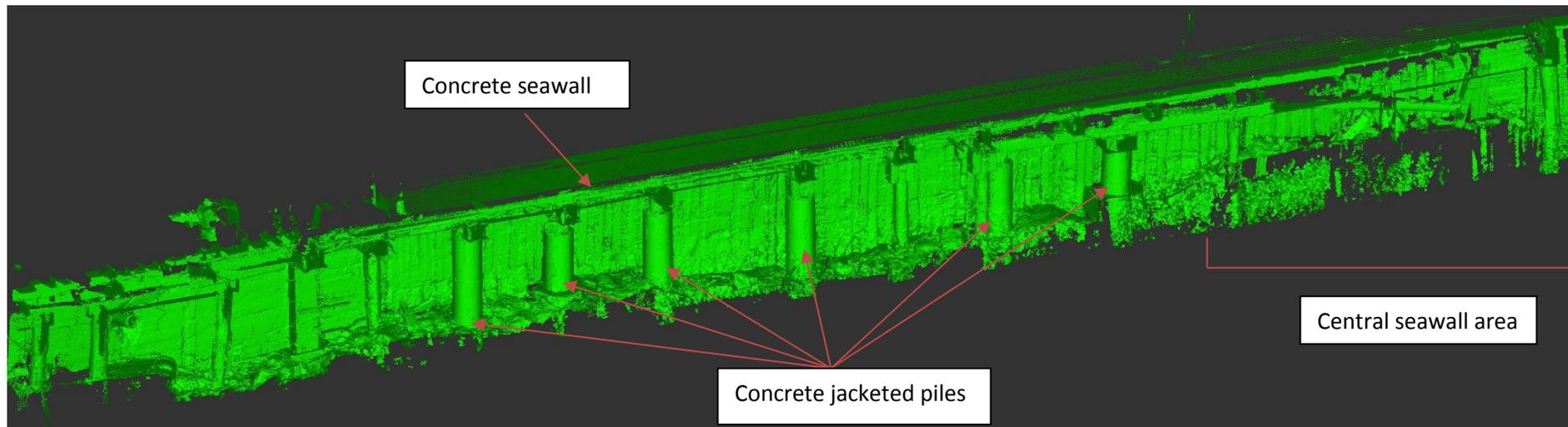
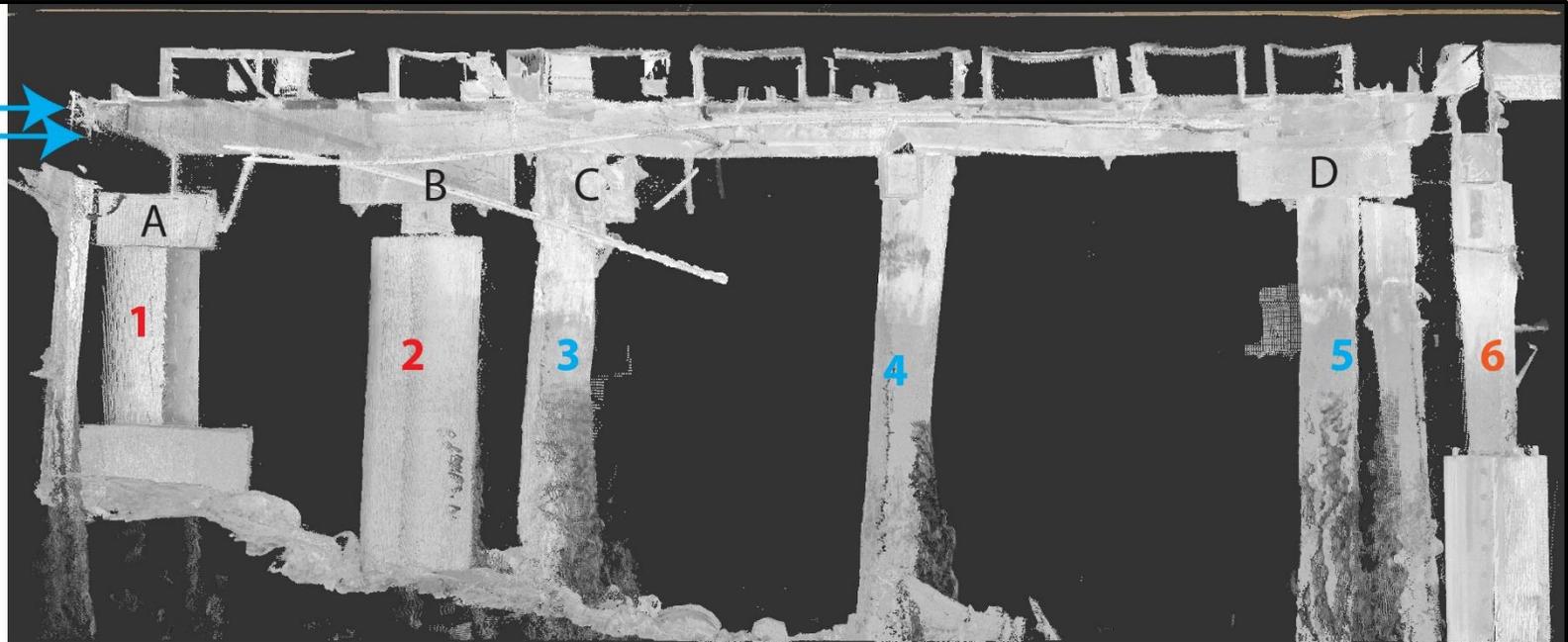


Figure 1. 3D scan of the northwest end of the seawall, showing the concrete jacketed piles. Image by Opus November 2015.

Decking
Stringer



Key

Piles (jacketed) 1-2

Piles (wooden) 3-5

Piles (concrete base) 6

Pile cap A-D

Figure 2. 3D scan of Bent 7 of the breastwork structure, with labels. Image by Opus November 2015.



Figure 3. Close up image of spaced timber shoring set into the concrete seawall, a concrete jacketed wooden pile and metal reinforced pile cap and stringer. Image: K. Bennett February 2016.



Figure 4. Composite image of the timber shoring with cross bracing and stone blocks exposed in the centre of the seawall. Image: K. Bennett 12 February 2016.



Figure 5. Close up image of the timber shoring, cross bracing and stone blocks in the central area. Image: K. Bennett 12 February 2016.



Figure 6. Looking northwest at the exposed concrete seawall and timber shoring after the removal of the decking. The wooden stringers of the No 3 Jetty are also visible and do not appear to be tied into the wall (highlighted by the red arrows). Image: K. Bennett 22 April 2016.