

LYTTELTON COAL STOCKYARD

ARCHAEOLOGICAL ASSESSMENT

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Report for OCTA and Lyttelton Port Company

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1. Executive Summary

This is an Assessment of Archaeological Effects for part of the Lyttleton Port of Christchurch Coal Stockyard Expansion Project. It includes a review of the documentary information on the area as well as the results of an on the ground archaeological investigation. The proposed project is in the vicinity of the historic Battery Point gun emplacement structures and barracks sites. This cultural precinct was registered with the Historic Places Trust as the Battery Point Battery Historic Area in 2004. The proposed project has been designed so that there will be no impact or adverse effects on this Historic Area.

The archaeological recommendations arising from this study are:

1. The project as currently designed avoids any impacts on the historic area and should not be altered from what is proposed.
2. There is no requirement to do any salvage mitigation or excavation of any sites.
3. An on-the-ground observer could be used monitor the construction of the Existing Haul Road Realignment in the area below the 1880s barracks in the event that new historic sites are exposed.
4. An Accidental Discovery Protocol as defined by the Historic Places Trust should apply to the rest of the proposed development.

2. Introduction

The Lyttelton Port of Christchurch is proposing to reclaim approximately 10 ha of land from Te Awaparahi Bay for port activities as part of a Coal Stockyard Expansion Project within Lyttelton Harbour (**Figure 1**). The aim is to enlarge its existing coal storage at the Te Awaparahi Bay coal handling Facility with OCTA Associates Ltd as the project manager.

The method proposed is to extract fill from the existing quarry approximately 3 km to the east at Gollans Bay to extend a reclamation platform out into Lyttelton Harbour (**Figure 2**). Further space may be provided by excavating the foot of the Te Awaparahi Bay slope.

The works which may potentially impact on heritage values are the following.

1. Possible excavation of the undisturbed surface of the Te Awaparahi Bay slope.
2. Continued excavation of the Gollans Bay slopes and cliffs.
3. Upgrading and extension of a haul road between Te Awaparahi Bay and Gollans Bay, around Battery Point (the Existing Haul Road Realignment)

Only a single site has been recorded for the New Zealand Archaeological Association sites register for this area which is the Battery Point precinct (**Figure 3**). No Maori or prehistoric sites are in the register.

3. Objectives

This work is an archaeological assessment to determine if there are any issues arising from the proposed development relevant to the Historic Places Act as part of an AEE. This is to be done by:

- Literature review
- Reference the Historic Places Trust files
- Consultation with iwi for known sites in the area.
- Investigation in the field

4. Background

Banks Peninsula is known to have a long sequence of Maori settlement. In the Lyttelton Harbour area Moa Hunter sites have been reported from Purau opposite Lyttelton, as well as at Redcliffs near Sumner. Shell midden sites are common along the coastline, and major pa were located at Ripapa Island and Rapaki (**Figure 1**).

The proposed development area has already been extensively disturbed, making the likelihood of surviving Maori sites remote. However it should be noted that the original name for Gollans Bay was O Toki Toki, or “the place of adzes”. This carries an implication that it may have been a location where there was a basalt source suitable for making adzes. Most of the basalt and other volcanic rocks of the Banks Peninsula are relatively soft and not suitable for adze manufacture. So far, there are no adze quarries or stone sources reported for Banks Peninsula, although basalt adzes are known in the Canterbury region.

The geological map for Banks Peninsula however shows a volcanic dike running along Gollans Bay (**Figure 4**). This may have been from a different lava source, and if so, may have been of the hard dense type of basalt suitable for adzes. The possibility exists therefore that there could be an adze quarry at Gollans bay.

In the 1850s stock was landed at the Gollans Bay wharf, where Henry Le Cren had a house (Rice 2004:22). Thus there is the possibility for some very early European historical sites in the locality.

It was not until 1884 that the spur between Te Awaparahi Bay and Gollans Bay became strategic. This was at a time when Russia was thought to be a national threat and invasion a possibility. This spur had a commanding view of the harbour and was in a position to intercept any attack by sea on Lyttelton Port (see Cooke 2004). It also was opposite Fort Jervois on Ripapa to provide a cross fire. In 1885 two 7 inch rifled muzzle loading cannons were installed on the spur and headland which became known as Battery Point. As part of the support, a magazine, two observation points (BOPs) and a store were cut into the volcanic rock high on the slope and built of masonry blocks, concrete and brick. Off the road to Sumner, wooden barracks were built on terraces with masonry and cribwork retaining walls. There also was chamber cut into the slope with an arched masonry roof on the Old Sumner Road which is referred to as a sentry post. Most of this work began in 1888 with convict labour. The 7 inch guns were declared obsolete in 1910 and removed. The lower 7 inch gun emplacement was filled in 1939.

In response to WWI Battery Point, was used as a Coast Artillery Searchlight Station from 1914 to 1918. In 1919 two 6 pounder guns were moved to Battery Point from Fort Jervois on Ripapa Island and were mounted in the area where the lower 7 inch gun had been. This was all dismantled in 1922 and the land let for grazing.

With the onset of WWII, Battery Point was designated as an Examination Battery in 1938. Two 4 inch naval guns were installed. The function of an examination battery was to ensure that all vessels entering the harbour displayed proper identification. If they did not, a shot was fired

across the bow. If it continued, it would be fired upon for effect. To support the new emplacements two search light stations were installed just above the shoreline of the headland, with an engine and generator room and a latrine also built into the slope.

For the support of this new battery a magazine was built into the slope along with a ready room (war room) for the troops and a latrine perched on the spur just above the guns and the lower 1880s observation point was renovated. A new terrace was cut on the lower slope of Te Awaparahi Bay for barracks. In 1942 the overhanging roofs for the 2 gun emplacements which are now so conspicuous were built. In 1939 a house for the District Gunner was built over the 1880s 7 inch gun pit

The function of the Examination Battery continued until 1945. The only incident was on 12 October 1939 (Rice 2004:102, christchurchditylibraries.com) when a fishing boat, the Dolphin, had not identified itself properly and was sunk by a warning shot, killing 1 crew member. It finally became a care and maintenance battery and was closed in about 1958. The District Gunners house was burnt down as part of an exercise by the local fire brigade.

An access road was modified to connect the coal storage area to the Existing Haul Road Realignment. This partly followed the previous track running through the lower and mid slope structures along the Battery Point spur. This is known as the Battery Point Gravel Track.

In 1988 the Battery Point historic precinct was recorded as an archaeological site and was thought to be under threat of quarrying. It is S84/171 in the New Zealand Archaeological Association Site Files.

In 1997 investigations began for the protection of Battery Point. Quarrying in Gollans Bay was of special concern as a potential threat to the precinct. The process of registering Battery point as an historic area was commenced in 2002. The boundaries of the Battery Point Battery Historic Area were registered with the Historic Places Trust on 25 June 2004, registration number 7553.

5. Method

The issues for the study were outlined in a meeting at the Lyttelton Port Company office on 16 December 2008 with David McLernon, Neil McLennan, Mike Day and Yvette Couch-Lewis. Yvette Couch-Lewis said that she would inform the Ngati Wheke runanga at Rapaki for their comment and any known information about Maori sites.

Following the meeting, the lower part of the Battery Point Historic Area was briefly inspected. This is the area contained within a high security fence with access through the coal handling yard. This portion consisted of the WWII search light complex below the guns. Neil McLennan pointed out the state of deterioration of these structures. It was understood that I would include the Battery Point Historic Area in my study and record a fresh set of GPS points to check the ones previously recorded by the HPT in 2001.

The haul road to the Gollans Bay quarry was then inspected, with Neil McLennan pointing out the relevant features, such as the location of the 1880s barracks, access to the upper part of the battery area and the quarry area. I examined the quarry area and went down to the small beach and rock platform of the bay.

After this reconnaissance I made a visit to the Historic Places Trust office on 9 January 2009 to review the NZAA files, and the Historic Registration Files.

I returned to the field on 15 January 2009 and systematically investigated the Battery Point structures above the security fence. These were described and their condition assessed. The structures below in the secure area were not accessible and a return was made on 29 January 2009. At this time the lower structures were also investigated as was the 1880s barracks area on the upper slope.

6. Results

The results of the investigations described above are as follows:

6.1 Gollans Bay

The upper slopes and cliffs of Gollans Bay have been heavily disturbed by quarrying as well as by the construction of the haul road into it. The rock outcrops were examined but none of the volcanic material seemed to include adze quality basalt, and any outcrop which may have been used for a source of adzes would have been removed.

The lower slopes, although steep, were undisturbed and with heavy grass cover. No evidence of the Henry Le Cren 1850s house was seen, although a small peach tree and ornamental flowers in the area may have been related to it. The small boulder beach was examined but there was no indication of a wharf or evidence for a structure (see Rice 2004:22).

The rock platform would have been a source of shell fish, with green and black mussels, paua, catseye and turbans being noted as present. This would have provided the resources for a Maori shell midden. The banks above the boulder beach were eroding, and if any shell midden material was present it would have been seen. There was no trace of any such midden.

The boulder beach itself did not contain any of the black bottle glass or blue on white ceramics that would have been typical of the 1850s. All that was found was part of a cream coloured carbonated stone ginger beer bottle with "Christchurch" and a ship on it as well as a stamp showing it had been made in Sydney. This type of bottle dates to the 1890s (Tasker 1989:68-69). There also was what might have been an iron wagon wheel tyre.

No wave-worn basalt adze preforms or the flakes used to make them were found. However, a few cobbles of dense black basalt were found. These weathered to a reddish brown patina similar to some of the adzes found in the Canterbury area. One cobble was removed for test flaking and was found to be a suitable material for adze manufacture.

Consultation of the Banks Peninsula geological map showed a volcanic dike parallel to Gollans Bay, close to the shoreline. This may have been the source of dense black basalt. No outcrop however was obvious from the haul road. The slope was extremely steep and covered with colluvial soil and dense grass, with some large boulders from the cliffs above.

No attempt was made to investigate the Gollans Bay area further, which would have been time consuming and hazardous and the area along the shoreline was not part of the proposed quarrying.

6.2 Battery Point

Battery Point is an overlay of military installations from the 1880s, WWI and WWII, although there is no conspicuous evidence for WWI. Most of the structures to be seen from the Windy Point look-out on the Sumner road above belong to WWII. The descriptions of the sites are given in **Table 1** and the site coordinates in **Table 2**.

Beginning high on the slope of Te Awaparahi Bay is the 1880s barracks (Site 19-20) with an access road leading down from the Old Sumner Road. This consists of 3 terraces cut in the side of the slope and with masonry of volcanic stone and cribwork retaining walls. The entire area is about 200 x 50 metres in size. The lowest area was heavily grown over and was not inspected. The other two terraces had a few concrete foundations, including what looked like the rusted remains of a hot water tank and stove. Because of the heavy grass cover it was not possible to find any of the glass or ceramic artefactual material characteristic of the time. The most impressive part of this site is the masonry of large squared-off volcanic stone blocks used for retaining walls. These walls remain in relatively good condition.

Close to these barracks on the Old Sumner Road is what is referred as the Sentry Post (Site 1) which is a large chamber cut into the slope and with an arched masonry roof. About a 300 m further east on the old Sumner Road is the Battery Point spur.

Proceeding down the spur is the upper 1880s store and magazine (Site 2). This is tunnelled deep into the slope for about 10 metres with two side rooms partitioned off by brickwork. Nearby is a terrace cut into the slope which may have been for a later shed for the District Gunner.

Also part of this upper complex is a battery observation point (BOP) which consists of a chamber with masonry walls and a concrete pillar which may have belonged to observation equipment (Site 3). This is accessible by a passage and a series of concrete steps which lead down to a large courtyard area. This tunnels into the slope for about 20 metres with three side rooms and masonry, concrete and brick partitioning and lining. There is another chamber cut into the slope from the courtyard as well as the 1880s 7 inch gun emplacement (Site 4). This is a semi-circular chamber and steps leading up to what may be a gun mount. This chamber was later used as a cellar for the WWII District Gunners wooden house which was built on top of it and later burnt down. There is a set of concrete steps leading up to where the house was. On top a fireplace and chimney has fallen over, and there are concrete foundations for the building.

Sites 2, 3 and 4 comprise an upper complex which (except for the remnants of the District Gunners House) belong to the 1880s and features deep cuts and tunnels made into the slope, and the extensive use of masonry rather than concrete.

Continuing down the spur is the second BOP, (Site 5). This is relatively large “L” shaped room with 4 smaller rooms that was refurbished in WWII with concrete walls.

Below this structure is a mid-slope complex with three WWII buildings grouped together. The first is the magazine (Site 6) built of concrete into the slope which has a large permanently shut

steel door. Next to it is a free standing concrete building which is the War Shelter or troop ready room. It retains the rusted iron brackets for benches around the sides, coat hooks at both ends and two holes in the roof for stove pipes. Opposite is the concrete latrine (Site 7) with three rooms. The largest has a urinal and 4 stalls. A smaller one has a urinal and a single stall, probably reflecting the difference between officers and enlisted men. There also is a smaller room with a single stall which may have been for women.

Below this mid-slope group are the two WWII gun emplacements (Sites 9 & 10). Initially they were an open circular concrete pad, but subsequently a concrete roof and overhang was installed. This may have been protection from strafing from the air.

Somewhere below these guns is the emplacement for the second 1880s gun which was filled over in WWII (Site 11). There is no evidence of it now, and it is probably also covered over by spoil from the haul road.

Also on the lower slopes is the 1880 magazine (Site 12) of concrete built into the slope with a permanently shut iron door, and a terrace for the WWII barracks (Site 13-14) about 35 by 10 metres and with a small concrete foundation as well as a down slope concrete retaining wall which is breaking up.

The bottom of the Battery Point Gravel Track is cut into the slope below the WWII barracks and 1880s magazine and proceeds up through the mid slope complex before passing below the lower BOP.

The lower complex is below the security fence and was for the searchlight system. It consists of the concrete engine and generator room (Site 15) and a 10 m tunnel to a concrete searchlight station (Site 17) about 3 or 4 metres above the rock platform. Another concrete searchlight station is down a set of steps and also about 3 or 4 metres above the rock platform. A small concrete latrine (Site 18) is located near the engine/generator room.

7. Discussion

The main aim of this study is to assess potential impacts from the proposed development due to the expansion of the Te Awaparahi coal storage area, the Gollans Bay quarry and the connecting haul road.

7.1 Gollans Bay Quarry

The rock face for the quarry has already been the scene of rock extraction, and none of the original rock face seems to be exposed. There also was no obvious source of adze quality basalt, and there was no sign of a Maori adze stone source and none is likely to have survived.

The slope to the boulder beach probably has archaeological evidence belonging to the period between 1850 and 1900, but conditions of poor visibility and exposure (due to tall grass) made it impossible to detect them. The coastline showed no evidence of Maori shell middens or other Maori sites. This slope is not to be affected by the quarry operations and does not warrant further investigation.

7.2 Te Awaparahi Coal Storage Area

The cutting into the slope of the bay to increase the coal storage area and provide additional fill does not encroach upon the 1880s barracks area. The surface here which has not been already disturbed is extremely steep. Access to this area is difficult and hazardous, and any archaeology would be minimal.

7.3 Haul Roads

The haul road using the Old Sumner Road along Gollans Bay is to be up-graded. However, the existing road cut into the Gollans Bay slope would have impacted any archaeological evidence, including the possibility of a Maori adze stone source. The slopes below, where a basalt dike may be located would not be affected by these works.

The proposed realignment of the Existing Haul Road (**Figure 6**) which proceeds up from the Te Awaparahi coal handling area makes a sharp bend below the 1880s barracks at the location of the proposed water storage. Here the present vegetation is dense with inadequate ground surface visibility to allow an assessment of the archaeology. Ground disturbance from haul road construction in this area would need to be monitored in case there are historic features such as a pre-1900 refuse dump. Refuse materials also may have washed down from the barracks area. Such refuse is likely to be black bottle glass, fragments of china, pieces of metal etc. These artefactual remains are difficult to recognise by an operator on an earthmoving machine, and a qualified on the ground observer should be present

7.4 Battery Point Historic Area

In general the Battery Point structures are in relatively good condition, especially the 1880s upper spur complex (Sites 2, 3 and 4). The lower spur complex located below the security fence, and close to the zone of sea spray, is in much worse condition with considerable cracking and deterioration due to weathering and cracking from rust in the ferro-concrete structures affected by the salt air. These structures should be examined by an expert in ferro-concrete deterioration to assess the severity of the situation and what remedies may be feasible.

Erosion from water running down the Battery Point Gravel Track and through the mid area of Battery Point is the major threat to the historic area. The water is running straight down the slope and under cutting some of the structures. Interim stabilisation works to reduce this are needed. However, the Battery Point Gravel Track is not part of the haul road system, and it is important that it is not used by any related traffic (**Figure 6**).

8. Recommendations

The recommendations from this assessment for the proposed development are as follows (**Figure 6**):

1. The project as currently designed avoids impacts on the historic area. The Existing Haul Road Realignment has been carefully designed to go around the Battery Point structures rather than through them following the Battery Point Gravel Track (**Figure 6**) and should not be altered from what is proposed.
2. There is no requirement to do any salvage mitigation or excavation of any sites.
3. An on-the-ground observer could be used monitor the construction of the Existing Haul Road Realignment in the area below the 1880s barracks in the event that new historic sites are exposed (**Figure 6**). If it is necessary to destroy or disturb any such sites an Authority to do so would be needed from the Historic Places Trust.
4. An Accidental Discovery Protocol as defined by the Historic Places Trust should apply to the rest of the proposed development. The equipment operators should have as part of their induction an explanation of what to look for as an accidental archaeological discovery.

The Accidental Discovery Protocol refers to archaeological finds which are entirely accidental and unexpected. However, where archaeological evidence is likely or suspected, on the ground monitoring by a qualified person is needed. In the case of the bend of the Existing Haul Road Realignment there is a likelihood of refuse deposited below the 1880's barracks (or washed down) to be on the route. Such refuse can be of considerable archaeological significance. Elsewhere, such as the slope above the present coal handling area, the chance of archaeological evidence is considered remote.

9. References

Christchurchcitylibraries.com, Christchurch: a chronology

Cooke, P. 2004. Defending New Zealand Ramparts on the Sea 1840-1950s Part 1. Defence of New Zealand Study Group: 86-90,

Rice, G. 2004. Lyttelton: Port and Town. Canterbury University Press.

Tasker, J. 1989. Old New Zealand Bottles and Bygones. Heinemann Reed, Auckland.

Table 1. Description of Battery Point Sites.

site	exterior	interior	comments
Site 1. Sentry post, 880s	Chamber cut into cliff. About 3 m high, 5 m deep and 3 m high. Access thru 3 x 1 m opening at top, showing a masonry arch.	Roof of arched masonry, some moss/algae where damp, some salt weathering. Walls bedrock. Floor covered with rubbish and some slumping from entrance	Fabric mostly good, arch at entrance impressive
Site 2. Magazine and store. 1880s	Passage way and chambers cut into rock. Entrance masonry with concrete lintel, wooden door frame. Gum tree and pine grove.	Interior passage 10 m, lined with whitewashed brick, 2 side rooms about 3 x 3 m with teller windows. Floor mostly clear. .	Fabric intact, little damage, some wood frames remain
Site 2A. Rock-cut terrace	Platform cut into slope. 25 x 25 m for a building.	No fabric remaining.	Age of this feature not known
Site 3. BOP (Battery Observation Point) 1880s	Stairway with concrete-sided retaining walls (one with root cracking) and having 20 concrete steps. This leading to a passage way 9 m long, cut into rock with masonry and bedrock walls. Patches of heavy salt weathering on walls	Chamber 3 x 3 m of basalt masonry, some salt weathering. Wood frames weathered. Floor with some slump material. No roof. Pillar 35 x 35 cm, 1.7 cm high (for observation equipment?).	Overlooks gun emplacements and harbour. Condition mostly good, but some localised salt weathering.
Site 4. 7 inch 7 ton RML (rifled mussel loading) emplacement. 1880s with later building on top in as the District Gunners house, 1940.	Courtyard 7 x 7 m with stairs to site 3 leading up to east. To NE is a passage cut into the rock with 3 chambers, to SE a side chamber and the gun emplacement.	NE passage 20 m long cut into rock with 3 side rooms about 3 x 3 m each (one room up some steps). Mostly lined with masonry with some salt weathering. Also some whitewashed brick in good condition. Floor has some rubbish but is mostly clear. Side room to SE is 2 x 4 m, concrete walls, niche with charred timber frame, floor mostly clear. Gun emplacement to SE, semi-circular shape 8 x 4 m with side niches. Interior fabric concrete with 3 large iron	Fabric generally good, some damage in the gun emplacement chamber. Later house built over has burnt down, chimney tipped over but foundations in good condition

		<p>rings. 2 concrete pillars 20 x 20 cm, 144 cm high upright, 2 down. 3 steps up to gun mount. No roof. To south set of concrete steps leading to top with a railing. Top surrounded with low concrete foundations for the wall of a building, about 10 x 10 m. Also a tipped-over concrete fireplace and chimney. Lots scattered charcoal and broken glass. Also an outer masonry wall.</p>	
<p>Site 5 BOP (Battery Observation Point) 1880s Modified in WWII</p>	<p>Entrance passage 6 m, concrete, weathered and cracked, roof covered with asphalt paper and soil. Most of chamber sunk in ground with high windows at ground level looking out to the harbour.</p>	<p>The entire chamber is about 11 x 6 m, with the main room "L" shaped and with a little sentry nook off of it. There are 4 small rooms, one a galley. The walls are concrete with the paint peeling. Also a little brick. The walls seem to have been plastered over the original 1880s fabric of masonry or brick. Floor mostly clear. There is a broken concrete pillar, probably for observation equipment. Windows with iron frames severely rusted.</p>	<p>Fabric mostly in very good condition, probably due to the WWII concrete refurbishment. However passage has heavy weathering and metal window frames very rusted.</p>
<p>Site 6 Magazine WWII</p>	<p>Large rectangular concrete structure built into slope, about 15 x 5 m and about 4 m high. Soil and vegetation on roof.</p>	<p>Big iron sliding door 140 x 240 cm, suspended from galvanized rail, not able to open and examine the interior.</p>	<p>In good condition, threat from undermining by eroding haul road.</p>
<p>Site 7 War (troop) Shelter WWII</p>	<p>Concrete structure about 9 x 4 m and 3 m high. Door and 2 windows.</p>	<p>Interior concrete with peeling paint. Rusting angle brackets for benches along the sides, row of coat hooks at both ends. Two round holes in roof, probably for stove pipes. Iron frames for windows rusting. Floor clear.</p>	<p>In good condition, rusting iron, threat from undermining by eroding haul road.</p>
<p>Site 8</p>	<p>Rectangular concrete</p>	<p>Main room 4 x 5 with urinal</p>	<p>Fabric mostly</p>

Latrine WWII	building cut into slope with 3 entrances about 10 x 4 m.	and 4 stalls. Floor mostly clear with some porcelain fragments. Probably for enlisted men. Other room about 3 x 5 m with one stall and a urinal, probably for officers. Also a small isolated room, possibly a ladies toilet.	good, some ferro-concrete cracking
Site 9 4 inch Naval Gun in 1939 emplacement #1 WWII	Large concrete structure 8 x 8 m cut into slope. Roof with extensive overhang built in 1942.	Gun pad circular, about 7 m diameter with steel gun mount and bolts. Some rusting of bolts and angle iron. Concrete with some cracking and bursting from re-bars.	Fabric in mostly good condition, some cracking and rusting.
Site 10 4 inch Naval Gun in 1939 emplacement #2 WWII	Large concrete structure 8 x 8 m cut into slope. Roof with extensive overhang built in 1942.	Large elderberry bush growing inside. Gun pad circular, about 7 m diameter with steel gun mount and bolts. Some rusting of bolts and angle iron. Concrete with some cracking and bursting from re-bars. Seepage staining in roof.	Fabric in mostly good condition, some cracking and rusting. Major threat from undermining from eroding haul road
Site 11 7 inch 7 ton RML (rifled mussel loading) emplacement. 1880s Buried WWII	No trace of this site found. Filled in during WWII. Also, possibly covered by spoil from haul road,		
Site 12 Magazine 1880s	Poured concrete exterior with passage retaining walls 8 m long and 3 m wide. Chamber 7 x ? m. roof covered with soil and vegetation	Not able to open double iron door 180 x 210 cm. Small opening in door allowed flash photographs, showing rusting iron girders with seepage and graffiti on ceiling, walls with graffiti and rubbish on floor.	Exterior fabric cracking and retaining wall with breaks. Damage to wall from haul trucks.
Site 13-14 Barracks WWII	Concrete retaining wall about 10 m long cracking, breaking up and slumping into haul road. Terrace 35 m long and about 10 m	Top of barracks area with a concrete pad and concrete stumps in a terrace cut into the slope.	No wooden fabric remaining, concrete fabric in mostly poor

	wide		condition, and threatened by erosion
Site 13-14 A Ablutions block	Concrete foundations 5 x 3 m	Small internal rooms, shower stall.	Mostly good condition
Site 15 Engine room WWII	Large concrete structure 12 x 6 m. Wood door frame and lintel over door. Iron shuttered window, other window with iron frames. Iron very rusted. Contained engine and electricity generator for search lights.	Interior with large engine mounts on floor to produce electricity for the search lights. Ceiling with iron rail for pulley and crane. Small side room (2 x 2 m) with brackets for fuel drums. Floor clear but with considerable mud washed in. Roof with soil and grass cover.	Exterior fabric cracking & with water seepage. Ceiling with substantial fero-concrete weathering. Walls with peeling paint and lots graffiti.
Site 16 Searchlight E2 WWII	Open passage with 22 concrete steps leading down. Search light station 7 x 3 m, with bowed out opening overlooking harbour. Only about 4-5 m above sea and spray from rock platform.	Iron bracket inside very rusted. Curved iron rail as runner for search light along outside of lower opening, very rusted, and above a curved "I" beam about ½ rusted away. Floor clear with some soil washed in. Roof with soil and grass cover. Rusting iron rail projecting forwards from roof. Ceiling in good condition.	All iron in advanced stage of rust. Exterior fabric severely weathered and cracking. Extensive fero-concrete weathering and cracking. Paint peeling, graffiti.
Site 17a Tunnel to searchlight E1 & SE1 WWII	Concrete covered passage 10 x 2 m from engine/generator room to search light station site #16.	Contains 13 steps leading up to search light station.	Fabric well protected and in good condition.
Site 17b Searchlight E1 & SE1 WWII	Search light station 7 x 3 m, with bowed out opening overlooking harbour. Only about 4-5 m above sea and spray from rock platform.	Curved iron rail along outside of lower opening, very corroded, and above a curved "I" beam also very rusted. Floor clear, roof with soil and grass cover. Rusting iron rail projecting forwards from roof.	All iron extremely rusted. Extensive fero-concrete weathering and cracking. Paint peeling, graffiti.
Site 18	Concrete structure 1 x 4	Iron stall door hinge very	Exterior fabric

Latrine WWII	m. Urinal and stall.	rusted, overhead light bracket rusted. Wood door frames in good condition. Floor with rubbish.	with light cracking. Graffiti.
Site 19-20 A Barracks 1880s	Access road sloping down to Terrace 1 from Old Sumner Road, 90 m long and 6 m wide.	Low retaining masonry wall of large blocks 1 to 1 ½ m high.	Fabric in mostly good condition
Site 19-20 B Barracks 1880s	Terrace 1. Terrace leading out from the access road. About 15 x 85 m. The northern half was heavily overgrown and not accessible.	Masonry retaining wall 2- 3 m high. Concrete base 3 x 1.5 m with steps. Concrete foundations 3 x 7 m. Concrete base 1 x 6 m & 2 x 4 m. Concrete square water tank on top of retaining wall.	Foundations and retaining wall in relatively good condition
Site 19-20 C Barracks 1880s	Terrace 2. About 80 x 17 m. Upper retaining wall cut stone blocks masonry and crib work, 1 to 3 m high.	Concrete foundations for ablutions block A, 12 x 3 m and 9 partitions, with trough and heavily rusted hot water tank and stove. Concrete foundations for ablutions block B, 4 x 3 m, 4 rooms	Foundations and retaining wall in relatively good condition
Site 19-20 D Barracks 1880s	Terrace 3. Below Terrace 1. Heavily over grown and not obvious at the time, probably 100m long		

Table 2. GPS points for Battery Point sites

D. Witter						Jacomb, McGovern-Wilson, Lovell-Smith 2001	
site	WPT	easting	northing	date	time	easting	northing
1	410	2488674	5734003	29-Jan-09	mk 23:09:49	2488680	5734008
2	390	2489049	5733853	15-Jan-09	mk 23:08:31	2489057	5733848
3	391	2489080	5733847	15-Jan-09	mk 23:34:48	2489081	5733848
4	426	2489075	5733842	29-Jan-09	mk 1:45:57	2489067	5733837
5	427	2489083	5733823	29-Jan-09	mk 1:52:09	2489023	5733874
6	401	2489035	5733775	15-Jan-09	mk 15:03:52	2489038	5733783
7	392	2489052	5733762	15-Jan-09	mk 13:47:36	2489048	5733765
8	394	2489053	5733754	15-Jan-09	mk 14:01:44	2489055	5733762
9	393	2489075	5733756	15-Jan-09	mk 13:59:20	2489078	5733765
10	396	2489108	5733726	15-Jan-09	mk 14:18:36	2489109	5733726
11						2489116	5733702
12	398	2489086	5733707	15-Jan-09	mk 14:33:25	2489100	5733708
13	400	2489044	5733730	15-Jan-09	mk 14:47:09	2489044	5733724
14	399	2489075	5733720	15-Jan-09	mk 14:45:06	2489061	5733720
15	404	2489097	5733699	29-Jan-09	mk 21:27:39	2489108	5733667
16	407	2489122	5733685	29-Jan-09	mk 22:14:37	2489131	5733683
17	406	2489112	5733672	29-Jan-09	mk 21:54:23	2489119	5733683
18	408	2489106	5733662	29-Jan-09	mk 22:28:02	2489095	5733651
19	415	2488547	5733844	29-Jan-09	mk 23:47:19	2488644	5733982
20	424	2488647	5733985	29-Jan-09	mk 13:14:22	2488561	5733863

Additional site features

site	WPT	easting	northing	date	time	feature
13-14a	425	2489054	5733726	29-Jan-09	mk 1:24:18	concrete foundation
19-20b	414	2488575	5733855	29-Jan-09	mk 23:39:29	concrete foundation
19-20a	412	2488572	5733855	29-Jan-09	mk 23:28:37	concrete foundation
19-20c	417	2488636	5733942	29-Jan-09	mk 23:54:05	concrete base
19-20d	419	2488645	5733937	29-Jan-09	mk 12:57:27	concrete base
19-20e	423	2488726	5733985	29-Jan-09	mk 13:11:38	concrete water tank

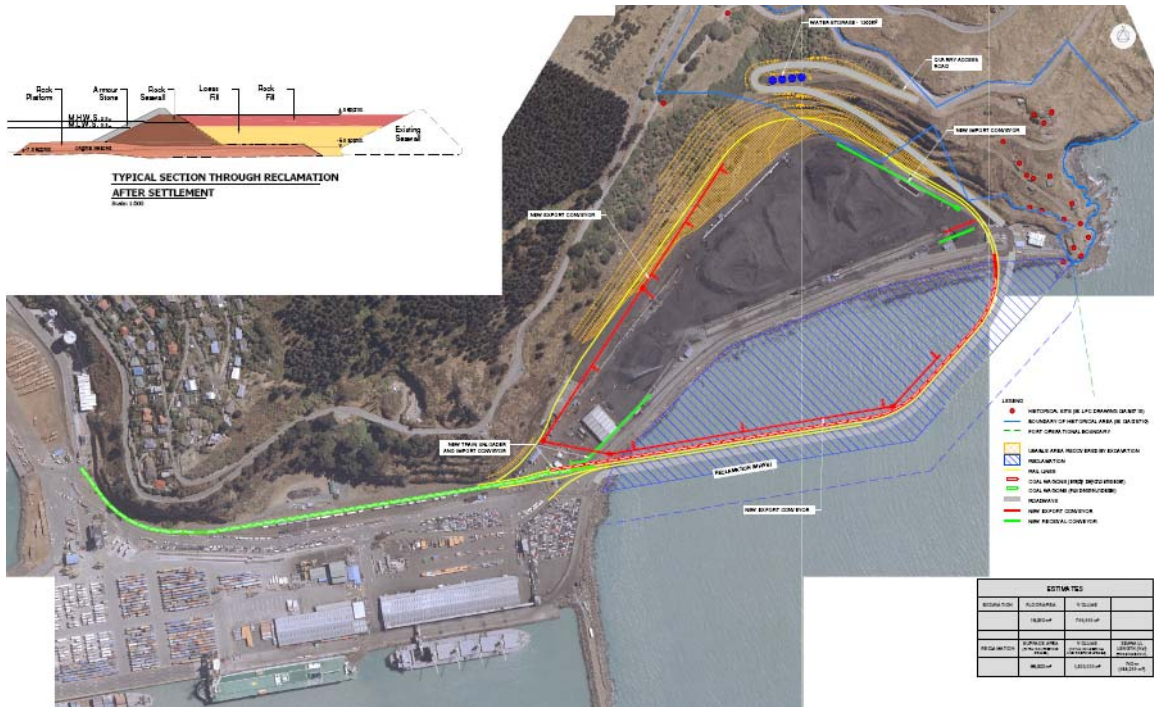


Figure 3. Design of proposed coal storage area.

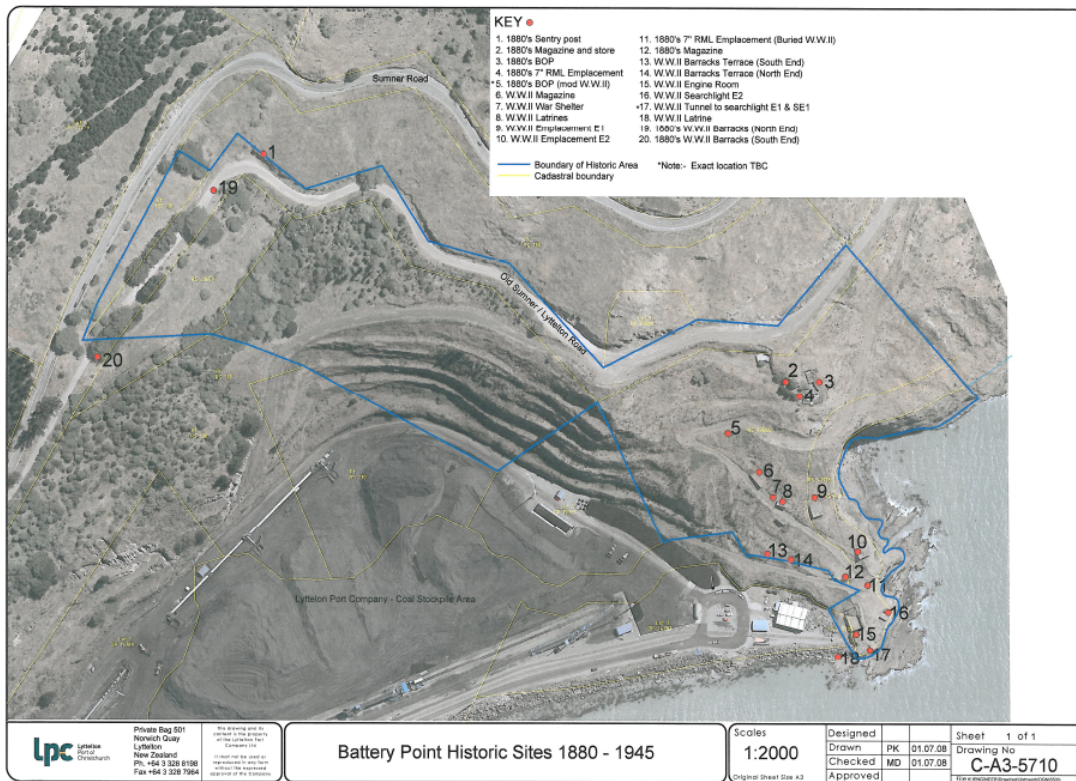


Figure 4. Battery Point sites. Site numbered when recorded by McGovern-Wilson, et al 2001. Blue line is the boundary of the Historic Places Trust Historic Area.

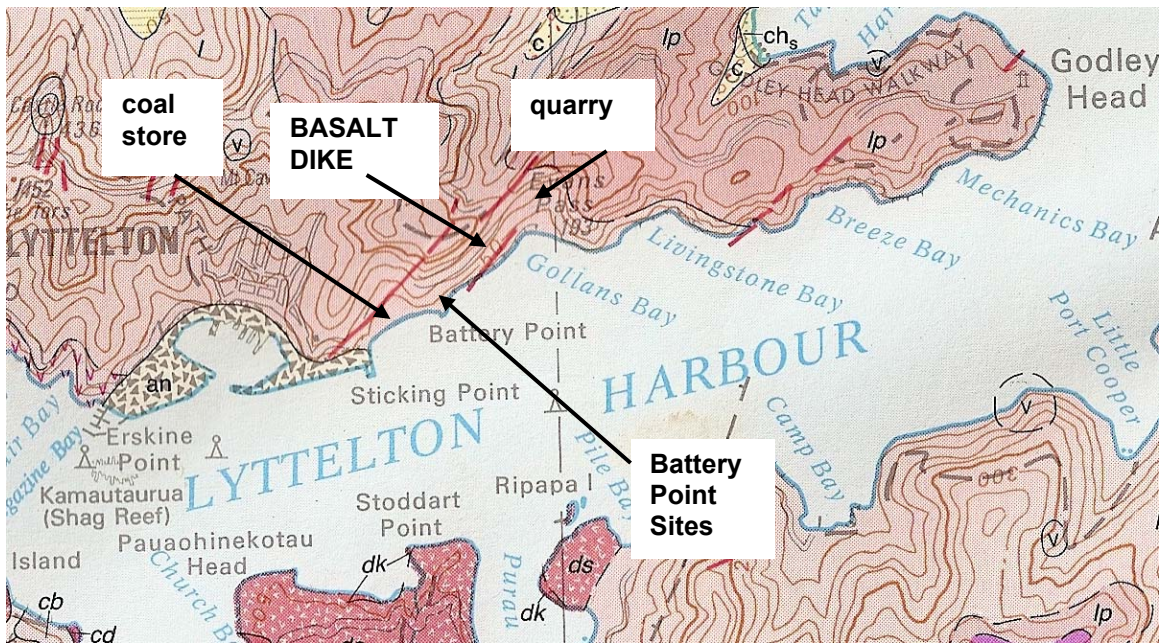


Figure 5. Geological map of project area showing the location of a basalt dike with potential adze quality stone material.

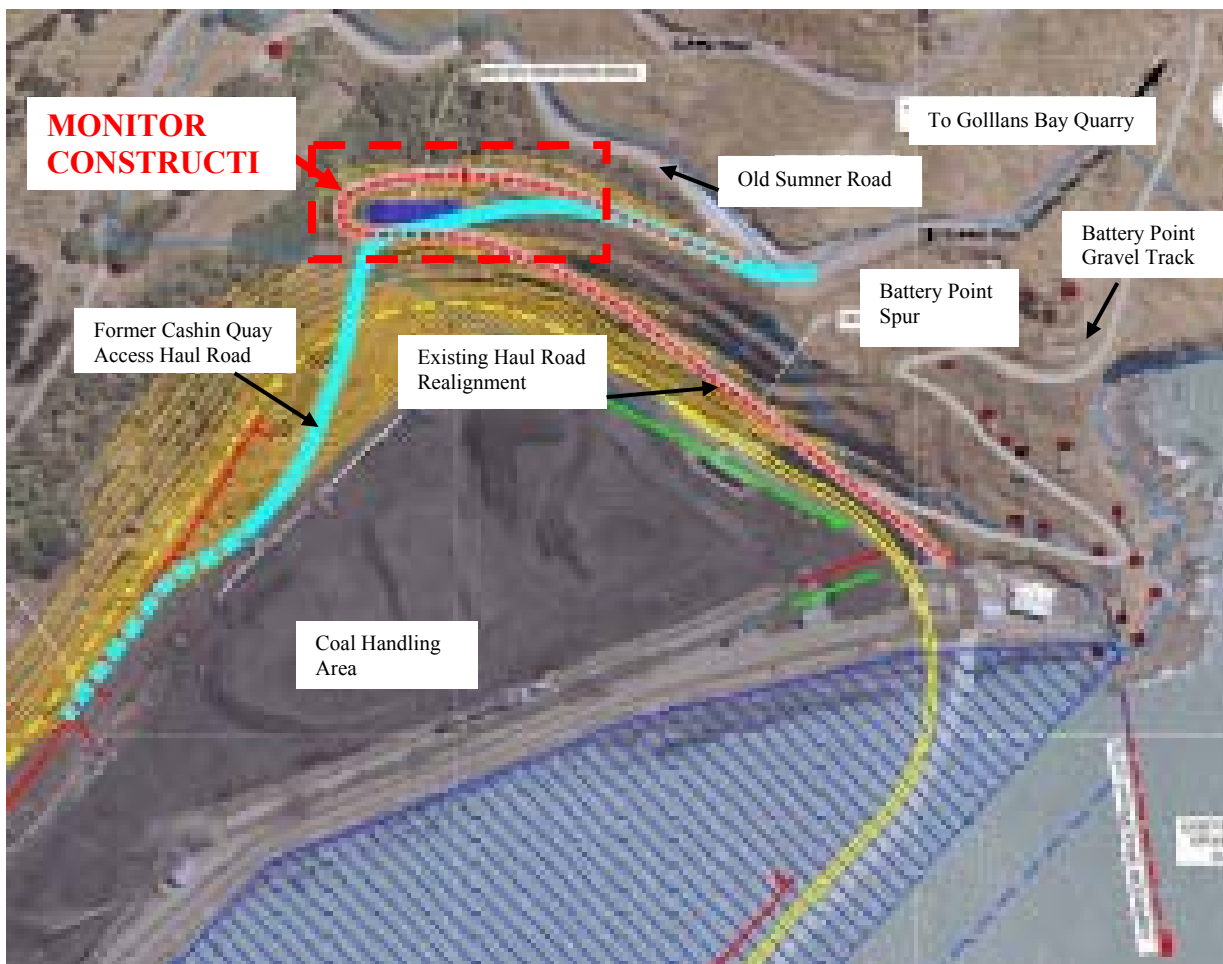


Figure 6. Map of roads and places mentioned in text and locations of recommendations.