



Walk-over Visual Inspections of Assets



**Hartlepool Borough Council
Final Report**

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Hartlepool Borough Council

Walk-over Visual Inspections of Assets

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Preamble

The Cell 1 Regional Coastal Monitoring Programme covers approximately 300km of the north east coastline, from the Scottish Border (just south of St. Abb's Head) to Flamborough Head in East Yorkshire. This coastline is often referred to as 'Coastal Sediment Cell 1' in England and Wales (Figure 0-1). Within this frontage the coastal landforms vary considerably, comprising low-lying tidal flats with fringing salt marshes, hard rock cliffs that are mantled with glacial sediment to varying thicknesses, softer rock cliffs and extensive landslide complexes.

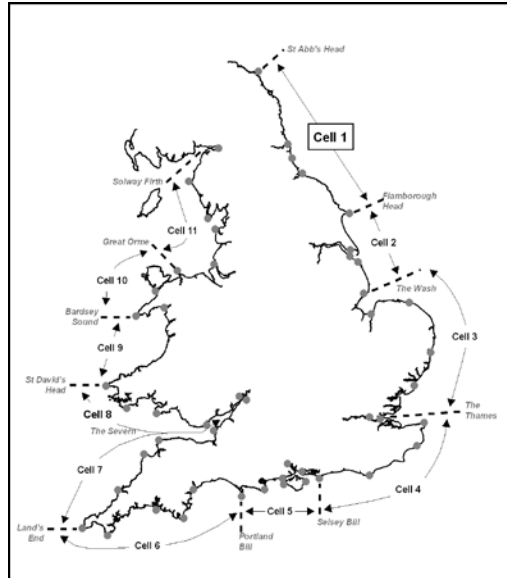


Figure 0-1: Sediment Cells in England and Wales

The work commenced with a three-year monitoring programme in September 2008 that was managed by Scarborough Borough Council on behalf of the North East Coastal Group. This initial phase has been followed by a five-year programme of work, which started in October 2011. The work is funded by the Environment Agency, working in partnership with the following organisations:



The original three year programme of work was undertaken as a partnership between Royal Haskoning, Halcrow and Academy Geomatics. For the current five year programme of work the data collection associated with beach profiles, topographic surveys and cliff top surveys is being undertaken by Academy Geomatics. The analysis and reporting for the programme is being undertaken by Halcrow.



The main elements of the Cell 1 Regional Coastal Monitoring Programme involve:

- beach profile surveys
- topographic surveys
- cliff top recession surveys
- real-time wave data collection
- bathymetric and sea bed characterisation surveys
- aerial photography
- walk-over surveys

In addition, separate reports are produced for other elements of the programme as and when specific components are undertaken, such as beach profile, topographic and cliff top surveys, wave data collection, bathymetric and sea bed sediment data collection, and aerial photography.

The present report provides a summary of the main findings of the Coastal Walk-over visual Inspections of assets of Hartlepool Borough Council's frontage that were carried out in October 2012.

1. Introduction

1.1 Study Area

Hartlepool Borough Council's frontage is approximately 12.5km in length and extends from Crimdon Beck in the north to the North Gare Breakwater at the entrance to the Tees estuary in the south as shown in **Figure 1-1**. In accordance with previous coastal inspection surveys, this frontage is subdivided into approximately coastal 40 assets, 37 of which are man-made assets while 3 are natural assets. Detailed maps showing the location of each of these NFCDD assets are presented in **Appendix A**.



Figure 1-1: Hartlepool Borough Council study area.

1.2 Methodology

This section presents the approach taken by the slope and asset inspectors respectively for the Hartlepool Borough Council coastal frontage.

The visual assessment of both natural and built assets on the Cell 1 coastline was carried out by a team of Chartered engineers in September to November 2012. The walkover inspections for the Hartlepool Borough Council frontage were undertaken on the 4th and 5th October 2012. The weather experienced during this time was dry with light winds, but followed a period of storms and flooding across the north east at the end of September. As with the previous inspection that was undertaken in 2010, the quay walls within Victoria Harbour and Hartlepool Marina were not inspected because they are not classified as coastal defence assets and they are located within privately owned areas.

The frontage has been split into a number of 'asset lengths' as defined in the National Flood and Coastal Defence Database (NFCDD) which is maintained by the Environment Agency (EA). All maritime Local Authorities that act as Coastal Protection Authorities have a duty to report findings from walkover inspections into the NFCDD. However, at the time of writing the NFCDD is in the process of being replaced, the form of the new database has yet to be agreed.

The walk over inspections covered both built defences assets and natural defence assets such as cliffs, slopes and dunes. All assets were visually inspected, photographed, graded based on their condition and an estimate made of their residual life.

For built assets the grading classification was undertaken in accordance with the Condition Assessment Manual (EA, 2011), with estimates made of the urgency of any necessary repairs. An extract of the grading classification for built assets is presented in Table 1-1. For ease of reference the photos presented in this report have also been bordered with the colours key indicated below.

Grade	Rating	Description
1	Very Good	Cosmetic defects that will have no effect on performance.
2	Good	Minor defects that will not reduce the overall performance of the asset
3	Fair	Defects that could reduce performance of the asset.
4	Poor	Defects that would significantly reduce performance of the asset. Further investigation needed.
5	Very Poor	Severe defects resulting in complete performance failure

Table 1-1: Condition assessment grading for man-made assets.

In addition to the above grading classification, for natural asset such as cliffs and slopes the same five point activity scale used in previous cliff activity assessments undertaken by Halcrow for Scarborough Borough Council in Cell 1 was used (Halcrow 2002, Halcrow 2005, Halcrow 2009). An extract of this grading classification is presented in Table 1-2. For ease of reference the photos presented in this report have also been bordered with the colours key indicated below.

Rank	Activity Class	Description
1	Dormant	Protected cliffline or landslide complex with no visible evidence of landslide activity.
2	Inactive	Relict cliffs or landslides with vegetated slopes and localised erosion of the toe or failure of the headscarp.
3	Locally	Retreating cliffline with localised small landslides or areas of erosion.
4	Partly	Retreating cliffline with very common smaller-scale landslides or areas of intense erosion.
5	Totally	Retreating cliff line almost entirely affected by large-scale landsliding or intense erosion.

Table 1-2: Condition assessment grading used for natural assets (cliffs/ slopes).

This report provides an overview of the findings from the walkover inspections, summarising each locality in general but also specifically identifying individual assets in 'poor' or 'very poor' condition. It is anticipated that this summary will help identify areas for maintenance or capital investment. Full details of the inspection of each asset is provided in Appendix B.

For ease of reference the report has been sub-divided into "Management Areas" as defined in the overarching Shoreline Management Plan (SMP2) for the coastline between The River Tyne and Flamborough Head.

In addition to this report, full details of the inspection and a selection of appropriate photographs have been entered into the SANDS database, a copy of which, along with viewing software is provided along with this report.

2. Overview

There have been limited changes in the condition of the built and natural defence assets along the Hartlepool frontage since the previous formal inspections in 2010.

- **North Sands** – redistribution of bricks continues following removal of the failing gabion baskets fronting the former industrial unit south of the cemetery. Evidence of slope instability in slag and rubble embankments between the north end of defences at Marine Drive and the former Britmag works site..
- **Marine Drive & Hartlepool Headland** – Significant works have been undertaken to improve the condition of the defences at the north end of Marine Drive. Further spalling and abrasion to the concrete seawall with damage to the concrete toe south of the Town Moor. Undercutting of older sections of concrete toe locally.
- **Fish Sands / Old Pier** – The rear concrete wall and associated steps that were in poor condition were being improved at the time of the inspection.
- **Town Wall** – works were underway to re-new the concrete toe protection apron and repair the voids in the foundations to the wall, which is a Scheduled Ancient Monument, at the time of the inspections.
- **West Harbour** – voids in the apron and undercutting at Middleton Beach side of North Pier require attention. Undercutting of the concrete access steps and slipway north of Tees and Hartlepool Yacht Club as in 2010. Minor settlement in the concrete block revetment as in 2010.
- **Seaton Carew** – sections of the main seawall, including beach access steps adjacent wall and promenade have been significantly improved. The low seawall near the car park and sewage pumping station has been dismantled whilst the water company is undertaking major works in the area.
- **North Gare** – despite further patch repairs the structure remains in a poor state and continues to deteriorate.

3. Condition Assessment

3.1 Blackhall Rocks to Heugh Breakwater (MA 11)

North Sands

The Hartlepool Borough Council frontage starts mid-way through the SMP2 Management Area 11 at Crimdon beck, with the first NFCDD asset length commencing at the dunes at the Hart Warren Nature Reserve. The undefended NFCDD Asset Ref. No. 1221C901C0302C01 is continuous from the local authority border in the north to the eastern end of the eroding cliff / slag bank at Spion Kop cemetery.

As noted in the 2010 inspection, The dunes to the south of Crimdon Dene fronting Hartlepool Golf Course were high and steep with sparse vegetation coverage (below left) where Crimdon Beck flows along the dune toe. Away from the beck the sand dunes appeared to maintain a consistent height along the frontage with vegetation coverage generally increasing to the south (below right). A wide sandy beach was present along North Sands.



Crimdon beck in mid photo, showing steep eroding dune face where beck is close to toe. (Asset ref. No. 1221C901C0301C01)



Looking north towards Crimdon from Britmag works, showing well vegetated dunes (Asset ref. No. 1221C901C0302C01)

At North Sands demolition work and site remediation were underway at the former Steetley Magnesite Britmag works. The beach was wide here and although the dunes are low they appeared to be accreting with embryo dune vegetation building to seaward.



Wide beach at North Sands adjacent to former Britmag works (redevelopment underway). (Asset ref. No. 1221C901C0302C01)



Looking north from Cemetery towards Britmag jetty showing low dunes in front of slag embankment (Asset ref. No. 1221C901C0302C01)

The frontage at the former Britmag works consists of a slag and rubble embankment fronted by sand dunes (above right). Moving south the embankment becomes higher and further seaward. East of Spion Kop cemetery the slag embankment is actively eroding in front of the former industrial site, see below left.



Eroding embankment east of cemetery in mid-distance (redevelopment underway).
(Asset ref. No. 1221C901C0302C01)



Eroding embankment / cliff previously protected by brick filled gabions.
(Asset ref. No. 1221C901C0302C02)

The slag embankment previously had a short, around 100m near vertical section (Asset ref. No. 1221C901C0302C02) protecting the cliff adjacent to a former large industrial building, that was protected by brick filled wire gabions, see photos from 2008 and 2010 below. Many of the failing gabion baskets were removed on health and safety grounds prior to the 2010 inspections and the asset now consists of a brick / waste rubble slope/revetment rather than the vertical structure observed in 2008 (above right).

Jul 2010



(Asset ref. No. 1221C901C0302C02)

Sep 2008



(Asset ref. No. 1221C901C0302C02)



Eroding embankment cliff, previously protected by brick filled gabions which have failed.
(Asset ref. No. 1221C901C0302C02)



Eroding slag embankment to north west of Marine Drive.
(Asset ref. No. 1221C901C0302C03)

The slag and rubble embankment to the north of Marine Drive (Asset ref. No. 1221C901C0302C03) has deteriorated further since the 2010 inspections, with greater erosion of the steeper vegetated embankment to the rear (above right), leading to areas of undercutting and overhangs. The former protective chemical slag apron has largely broken up, and the underlying cobble / rubble slope appeared lower than in previous years, although it may just be that beach sand levels were high. The short section of rock armour at the interface between the slag bank and Marine Drive seawall was in fair condition, partly covered with sand, although this may have been at least partly related to works underway on the adjacent seawall.

Marine Drive and Hartlepool Headland

Works were underway to repair the north end of the seawall fronting Marine Drive (Asset Ref. No. 1221C901C0303C01) at the time of the visit, see below left. The wall showed evidence of a significant number of repairs since the 2010 inspections, and consistently with the 2008 and 2010 inspections is classed as good overall condition. There are still some areas of cracking and spalling locally requiring repair, but previous patch repairs generally appeared to be performing well. No significant voids were observed in the masonry wall and defects were noted as minor loss of mortar and surface deterioration as abrasion to the concrete facing was evident throughout (below lower left).



Works underway to replace sections of seawall at return end (Asset ref. No. 1221C901C0303C01)



Works underway to replace sections of seawall at return end (Asset ref. No. 1221C901C0303C01)



View of blockwork wall with repairs to cope.
(Asset ref. No. 1221C901C0303C01)



Patch repairs to coping on Marine Drive
holding well.
(Asset ref. No. 1221C901C0303C01)

Further south east, the seawall fronting Sea View Terrace and the Town Moor (Asset ref. No. 1221C901C0303C02) is constructed from larger concrete blocks, see below upper left. Spalling of the concrete coping units was extensive (below lower right) and abrasion of the blockwork surface appeared to worsen to the south.



Blockwork wall at Sea View terrace.
(Asset ref. No. 1221C901C0303C02)



Damage to concrete coping units increases
towards south. (Asset ref. No.
1221C901C0303C02)



View of wall in fair overall condition, looking
south (Asset ref. No. 1221C901C0303C02)



Scour and abrasion at wall toe (Asset ref. No.
1221C901C0303C02)



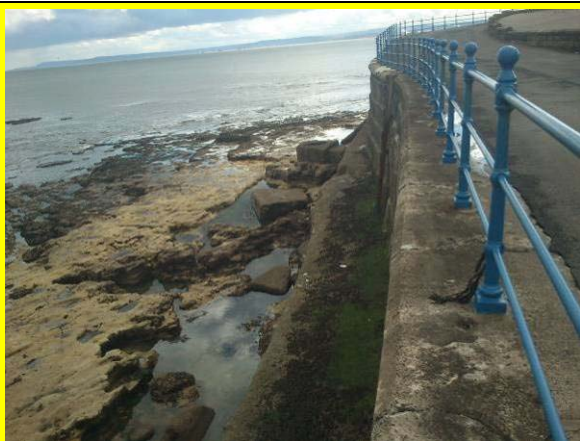
Loss of facing of concrete blocks. (Asset ref. No. 1221C901C0303C02)



Damage to concrete toe (Asset ref. No. 1221C901C0303C02)

The concrete toe was visible along the majority of the length of seawall, with a sand beach only present at the northern end, near Sea View Terrace. The toe consists of a variety of constructions from older stepped concrete profiles to more recent massive precast concrete blocks and insitu fill and was in fair to good condition throughout. In some locations the most recently placed sections were in very good condition. However, in several other locations where new concrete units were not present at the toe, the older sections of toe had been undercut locally as the soft rock on which the wall is founded gets abraded and worn down (above right) and toe units had been displaced, requiring repair.

As noted in the 2010 report, where the displaced / redundant blocks left on the foreshore are large they may continue to offer a degree of protection to the base of the wall but there is also a risk that in a large storm event, they may be tossed against the wall causing impact damage.



Stepped wall at apex of Headland, showing previous failed units placed in voids on foreshore.(Asset ref. No. 1221C901C0303C03)

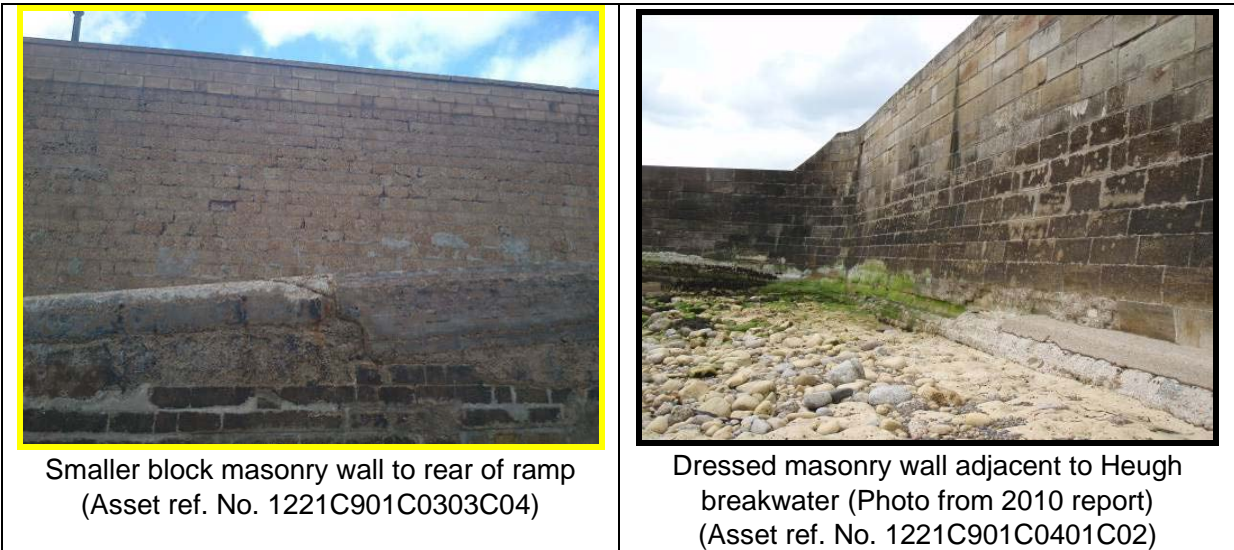


Surface abrasion damage to wall adjacent to ramp showing multiple previous repairs. (Asset ref. No. 1221C901C0303C04)

The short length of wall at the apex of the headland (Asset ref No. 1221C901C0303C03) near the Coastguard building, above left, has a slightly stepped profile to the concrete blocks. Previous repairs to the capping beam are showing further damage. There have been extensive previous repairs and as the area around here is the most exposed section of defence there is a need for regular ongoing maintenance. There was evidence of fairly recent repairs to grout voids under the toe apron and a number of previously failed blocks are present scattered on the foreshore.

The smaller blockwork wall with rendered sections (Asset ref No. 1221C901C0303C04) immediately south of the apex of the headland was in fair to locally poor condition; see above right and below left. There are some missing blocks, extensive abrasion damage, pitting of block surfaces, parts of the wall are bulging and there is extensive cracking in the buttress sections. There are numerous previous patch repairs with some requiring further attention.

The dressed masonry wall (Asset ref. No. 1221C901C0401C02) between the ramp and the Heugh Breakwater (below right) was in a similar condition to the 2010 inspection, with some missing pointing, evidence of previous repairs and extensive abrasion damage to the lower courses of blocks.



Only the landward section of the Heugh Breakwater, which is privately owned, is accessible to the public and so the seaward half was not inspected. The landward section appeared to be in fair condition with no obvious gaps in the blockwork. It is understood that the seaward end has been in a failing condition for many years. There is fencing and signs to prevent access to the seaward section, see below lower left.





Fencing and warning signs at mid length of breakwater. (Asset ref. No. 1221C901C0401C01)



Armouring to toe of inner face of breakwater (Asset ref. No. 1221C901C0401C01)

3.2 Heugh Breakwater to Little Scar (MA 12)

Bock Sands

Bock Sands is located in the lee of the Heugh Breakwater and has a low wall in front of the reclaimed area containing Block Sands paddling pool and a larger set back retaining wall supporting the road and properties to the rear. The low beach levels were exposing the toe of the low front wall, particularly to the south and there were areas of undermining that require attention to prevent loss of infill and void formation, see below upper right and lower left.



Block Sands seawall at north near Heugh Breakwater (Asset ref. No. 1221C901C0401C04)



Toe scour and undermining towards south of Block Sands wall. (Asset ref. No. 1221C901C0401C04)



Low beach levels undermining wall near south of Block Sands reclamation.
(Asset ref. No. 1221C901C0401C04)



Spalling and damage to coping of front wall
(Asset ref. No. 1221C901C0401C05)

Spalling was evident to the curved coping of the adjoining concrete seawall (above right) (Asset ref. No. 1221C901C0401C05) that links between Block Sands wall and the Old Pier. The damage was worst at both ends, where foreshore levels are lowest although there have been repairs near the Old Pier, see below right.

The retaining wall fronting South Crescent/Albion Terrace/York Place appeared to be in fair condition (above right and below left). In the centre section of the front wall there is a high cobble beach that covers the crest, see below left.



High cobble beach at mid-length of wall
(Asset ref. No. 1221C901C0401C05)



Repaired section of coping in foreground,
further damage in distance
(Asset ref. No. 1221C901C0401C05)

Old Pier

Old Pier, (Asset ref. No. 1221C901C0401C34) is a masonry and concrete breakwater with Accropode armour protection at the southern extent which provides shelter to Fish Sands and the Town Wall. The structure appeared in fair condition with minor settlement of blockwork observed on the inward face (below lower left). Armour units appeared in good condition with appropriate voids and interlock. There was cracking in the deck adjacent to wall and through the concrete parapet wall in a number of places, see below right. Some of the construction joints have opened, which may indicate settlement of the overall wall rather than simply damage to the parapet.



General view of Old Pier seaward side
(Asset ref. No. 1221C901C0401C34)



Cracks through deck and crest wall.
(Asset ref. No. 1221C901C0401C34)

Settlement was also apparent in the inner face of the Old Quay, see below left, although this appeared to be historical movement. Works were underway to rebuild a set of access steps and adjacent buttress wall in the rear retaining wall behind the root of the Old Pier (below right).



Landward side of Old Pier showing settlement
in the (original?) masonry blockwork.
(Asset ref. No. 1221C901C0401C06)



Cracks through deck and crest wall.
(Asset ref. No. 1221C901C0401C34)

Town Wall and Fish Sands

In the lee of Old Pier at the south-eastern end of Town Wall, the beach level at Fish Sands was healthy as reported in 2010, and the masonry wall appeared in fair to good condition (below left). As noted under Old Pier above, works were underway to rebuild a set of steps at the south end of the rear retaining wall.



Masonry wall at south east end of Town Wall.
(Asset ref. No. 1221C901C0401C35)



View of Town Wall from east end, showing new toe protection apron (Asset ref. No. 1221C901C0401C35)

The 2010 inspections noted that the low beach levels along the main part of the Town Wall to the west of the access gate had exposed the timber piles forming the foundation of the wall, and that undercutting below the concrete apron was evident throughout. The 2010 report recommended works to protect the toe of the wall, which is a Scheduled Ancient Monument, including grouting any voids at the base of the wall to prevent further deterioration. These works were underway during the October 2012 inspections, see photos above right and below left.



Toe protection apron works underway at Town Wall, (Asset ref. No. 1221C901C0401C35)



Large groyne structure near mid point of Town Wall marks large change in beach levels. (Asset ref. No. 1221C901C0401C35)

The paving stones and highway retained to the full length of the rear of the seawall appeared to be in very good condition. Beach levels increase from the gateway in the wall to the large masonry groyne at the slight headland near the mid point of the wall, above right. There is a large (2 to 3m) change in level of the (mainly cobble) beach either side of this groyne, with low beach levels extending fairly consistently to the west, see below left. The wall here appeared to be in fair condition and it is assumed that any minor defects such as open joints missing mortar will be made good as part of the ongoing works. At the western end of the frontage the redundant

steps at the old ferry terminus are in poor to fair condition with significant corrosion to the steps and spalling to the wing walls with missing masonry. However, the condition of this part of the structure is not a significant concern since the area is barriered off to the public.



Western section of Town Wall showing low beach levels,
(Asset ref. No. 1221C901C0401C35)



Steps at former passenger ferry landing at west end of town Wall,
(Asset ref. No. 1221C901C0401C35)

Middleton

The concrete Accropodes armoured breakwater of Middleton Jetty appeared to be in good overall condition, providing protection to the entrance to Victoria Harbour basin and stabilising Middleton beach, see below left and right. The armouring appeared to have good interlock and coverage. The toe could not be inspected as it was submerged at low tide.



Middleton Jetty in good condition. Retains sand and rubble beach to south
(Asset ref. No. 1221C901C0401C16)



View of Accropode armoured breakwater.
(Asset ref. No. 1221C901C0401C16)

Adjacent to Middleton Jetty to the south is a gabion basket wall with a stepped profile, (Asset Ref. No. 1221C901C0401C17). The Gabion baskets (below left and right) are fronted by low sand dunes in the north and rock armour in the south. Rock armour units increased in size towards the south and appear to be performing well. The gabion baskets were reported to have settled locally in 2010 inspections and the situation appeared very similar in 2012, see photos below. The baskets were still largely intact although should be monitored as the wall could unravel rapidly should baskets fail. Consideration should be given to adding more rock armour, and reprofiling the rock in front of the failing gabions.



View of Gabion baskets with rock armour.
 Photo from 2010 report.
 (Asset ref. No. 1221C901C0401C17)



View of Gabion baskets with rock armour.
 (Asset ref. No. 1221C901C0401C17)

South of the rock armour, there is an informal access ramp to the beach, which is recorded as 'undefended' in NFCDD. Demolition waste rubble appeared to have been tipped informally, possibly to help resist erosion or to prevent / reduce public vehicle access onto the beach. The slope to the southern side of the access appeared to be less stable than that to the north, indicating potential for outflanking of the defences to the south if left unmanaged.



Photo from 2010 report.
 (Asset ref. No. 1221C901C0401C18)



Informal beach access ramp with tipped
 demolition waste.
 (Asset ref. No. 1221C901C0401C18)

The near vertical wall to the south (Asset ref. No. 1221C901C0401C19) has two forms of construction, with the north eastern 2/3 a near vertical apparently loose stacked block / brick wall, whilst the south western 1/3 is an older vertical concrete block wall, see photos below. The eastern wall fronting the industrial property was in fair condition with similar defects to those noted in the 2010 inspection. There is local widening of construction joints, minor bulging and missing blocks from both front face and the coping. These defects should be repaired to prevent them spreading through the structure.



Older concrete block wall in foreground; newer slightly sloping smaller block wall in distance.
(Asset ref. No. 1221C901C0401C19)



Missing blocks at interface between two sections of wall
(Asset ref. No. 1221C901C0401C19)



Missing coping stones and bulging of the wall.
(Asset ref. No. 1221C901C0401C19)



Missing blocks and opening joints
(Asset ref. No. 1221C901C0401C19)

The concrete block wall to the south has extensive abrasion damage to the faces of the blockwork (below left), particularly at lower levels, see below left and right. Cracking of the concrete coping was also observed and there are a previous repairs to damage to the facing of the south facing section of wall that appears to be holding well.



Older concrete block wall in foreground; newer slightly sloping smaller block wall in distance.
(Asset ref. No. 1221C901C0401C19)



Toe scour and abrasion damage at corner of wall (Asset ref. No. 1221C901C0401C19/20)

West Harbour

West Harbour provides access to Hartlepool Marina via a lock and is sheltered by North Pier and South Pier. Public access to the North Pier and its inner arm is prevented by a secure gate and fencing at the landward end, however as noted in the 2010 report, access to the structures would still be possible at low tide via the masonry apron presenting potential health and safety issues.

The outside face of North Pier appeared in generally fair condition from the landward, Middleton Beach end. However, the low beach levels had exposed the timber piles at the edge of the toe apron and the apron had areas of damage and voiding, see below lower right. There was also a void under the face of the wall at the edge of the apron, below lower left. These defects should be repaired before the structure becomes destabilised.

	
<p>Recently constructed steps giving access to Middleton beach from root of North Pier (Asset ref. No. 1221C901C0401C22)</p>	<p>Timber piles to north side of North Pier exposed by low beach levels (Asset ref. No. 1221C901C0401C22)</p>
	
<p>Damaged toe apron exposing void under wall on Middleton Beach side of North Pier (Asset ref. No. 1221C901C0401C22)</p>	<p>Voids in toe apron on Middleton Beach side of North Pier (Asset ref. No. 1221C901C0401C22)</p>

The inside face and seaward end of the two sections of North Pier were only inspected from land and from South Pier. The structure appeared in fair overall condition, but with significant areas of masonry damage, extensive patchwork repairs and several large concrete repairs.

The rock armour revetment overlaying the former stone stepped revetment at the north end of West Harbour (Asset ref. No. 1221C901C0401C23) appeared to be in fair condition, below left. The mass quay wall structure at the rear of the harbour, to the north side of the lock (Asset ref.

No. 1221C901C0401C24) has a newer masonry flood wall on the crest that was built when the area was redeveloped. The flood wall appeared to be in good condition, although it ties in to the lock structure at a slightly lower level, see below right; presumably this was to allow for wave action on the main wall, which would be less at the lock as it is more sheltered. There was extensive seaweed coverage to the lower wall that prevented inspection although there was no obvious global movement or distress apparent in the structure to suggest any major problem.



Revetment at north end of West harbour.
(Asset ref. No. 1221C901C0401C23)



Flood wall tie into lock structure.
Asset ref. No. 1221C901C0401C22)

The concrete structures forming the lock entrance were in good condition, although water level prevented the inspection of the lower section of these walls. The toe apron of the short section of wall to the south of the lock, (Asset ref. No. 1221C901C0401C25) was covered in seaweed so not able to be inspected, but the wall itself is in good condition..



Wall to south side of lock entrance.
(Asset ref. No. 1221C901C0401C25)



Wall to south side of lock entrance, toe apron covered in seaweed.
(Asset ref. No. 1221C901C0401C25)

The concrete block set revetment (Asset ref. No. 1221C901C0401C25) fronting Slake Terrace was in good condition, apart from an area of settlement with a diameter of about 2m. This defect has been noted on the inspections since 2008 and does not appear to have changed significantly. As noted previously, the settlement is indicative of a local loss of fill material below the concrete blocks and should continue to be monitored as further loss could reduce the integrity of the asset.



Area of settlement in block revetment
(Asset ref. No. 1221C901C0401C25)



Photo from 2010 report
(Asset ref. No. 1221C901C0401C27)

The vertical quay wall landward of Middle Pier, to the north of the Yacht Club was noted to have problems with undercutting at the steps and slipway from the yacht club in the 2010 inspections, see photo above right. The situation was similar in October 2012, with undercutting at the slipway, the steps and also at the wall between the steps and the slipway. The voids under the apron should be repaired and additional protective rock armour placed to reduce wave reflections and help avoid further scour damage.



Rock armour at toe of wall looking west from
steps (Asset ref. No. 1221C901C0401C27)



Exposure of wall toe at gaps in toe armour
(Asset ref. No. 1221C901C0401C27)

Middle Pier appeared to be in fair condition, although there was significant growth of vegetation in gaps in the masonry slabs in the deck, which should be removed and the gaps repointed, see below left. The lower parts of the structure were heavily obscured by seaweed, but where visible appeared in fair condition with some loss of mortar to joints.



Vegetation growing in between masonry slabs and patch repairs in deck of Middle Pier (Asset ref. No. 1221C901C0401C28)



Rear flood wall at south part of West Harbour in fair condition. (Asset ref. No. 1221C901C0401C29)

The old masonry wall with newer concrete parapet flood wall along the rear of the southern part of the harbour, above right was in fair condition. There was again heavy coverage with seaweed obscuring the defence, but some open joints requiring repointing were visible in places.

South Pier (Asset ref. No. 1221C901C0401C32) was in good condition with the rock armour (inner face) and Accropodes (roundhead and outer face) maintaining a consistent profile with good interlock between units where visible. Due to the nature of the structure inspection of the seaward end and lower part of the outer face was not possible from the crest on foot and a boat survey at low tide should be considered at some point in future, although there were no signs of apparent distress so this is not urgent.



South Pier rock armour on inner face, with vegetation that should be removed. (Asset ref. No. 1221C901C0401C32)



South Pier Accropode armour on outer face (Asset ref. No. 1221C901C0401C32)

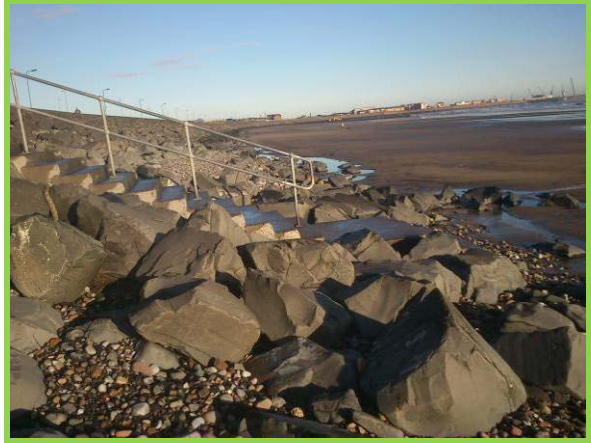
Carr House Sands

To the south of South Pier the Accropode armour ties into a rock armour revetment with concrete crest wall that runs for almost 2.3km to Little Scar at the north of Seaton Carew. The defences along this section are in good overall condition but having been reported “as new” in the 2008 and 2010 inspections there are now some minor defects and local repairs that will require attention. There were minor defects to the crest wall at some construction joints, where there are signs of previous failed repairs and there has been displacement to the rock armour adjacent to some of the sets of steps to the south of Newburn Bridge.

Works were underway at the large water company outfall near Newburn Bridge at the time of the inspection (15th October 2012). It was noted that the low beach levels in the area had resulted in difficulty in use of the beach access ramp for plant accessing the beach with an excavator having to build a ramp in the sand to allow access over the step down at the end of the ramp.



Construction joint in crest wall with failed previous repairs south of Newburn Bridge
(Asset ref. No. 1221C901C0401C33)



Displacement of rock armour near steps south of Newburn bridge
(Asset ref. No. 1221C901C0401C33)



Rock armour defence in good condition to south of South Pier
(Asset ref. No. 1221C901C0401C33)



Promenade with crest wall to left and low flood wall to rear
(Asset ref. No. 1221C901C0401C33)

3.3 Little Scar to Coatham Sands (MA 13)

Seaton Carew

The beach levels along the Seaton Carew frontage have varied significantly since the first inspections under the programme in 2008. In 2010 the beach levels were significantly higher than for the 2008 inspections, especially towards the south of the frontage (below, left & right). This led to sand obscuring some of the defects previously identified in the lower sections of structures. For the 2012 inspections beach levels at the toe of the defences appeared similar to or maybe lower than during the 2008 inspections.



The structures along the Seaton Carew frontage consist of various concrete and masonry structures with toe rock armour units locally. The inspection took place on 15 October 2012, and is reported, working from north to south below.

At Little Scar at the northern limit of Seaton Carew the concrete seawall is protected by rock armour. There is a rock beach control structure protecting the beach access ramp and rock armouring to the seawall toe, see below left and right. The rock beach control structures have been reconfigured since the 2010 aerial photographs as there is now a gap directly opposite the access ramp, whereas previously the rock structure was open only to the north.

The beach access steps and adjacent sections of seawall that were noted to have significant defects in the 2008 and 2010 inspections have been reconstructed, with repairs to adjacent sections of wall and improvements to the promenade. The repairs to the coping and wall joints appear to be holding well. It was noted that a cobble beach has built up at the newly constructed southern set of access steps, making access difficult, see below centre left.



Rock armour beach control structures near Little Scar (Asset Ref. No. 1221C901C0501C05 foreground, 1221C901C0401C33 in distance)



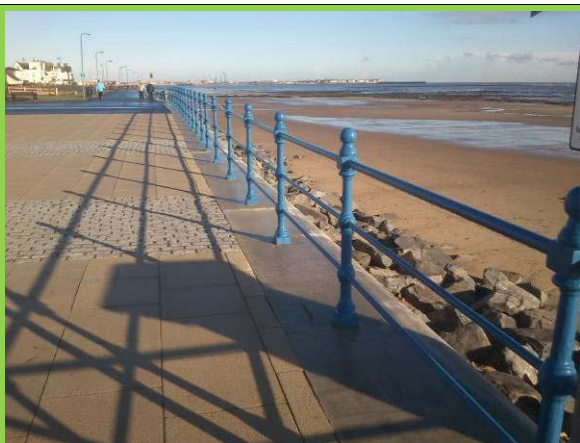
Northern set of steps has been substantially repaired / rebuilt since 2010 (Asset Ref. No. 1221C901C0501C05)



High cobble beach level adjacent to rebuilt northern steps. (Asset Ref. No. 1221C901C0501C05)



High sand levels at new southern set of steps, showing rebuilt section of wall next to new step structure. (Asset Ref. No. 1221C901C0501C05)



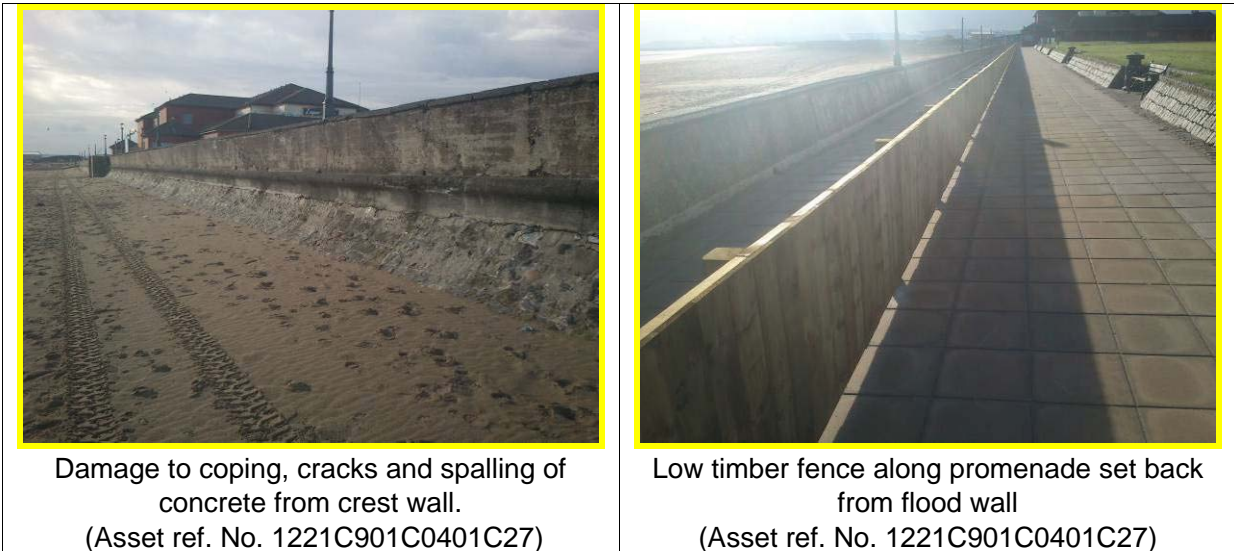
Repaired coping and promenade (Asset Ref. No. 1221C901C0501C05)



Beach access point at south end of main seawall. (Asset Ref. No. 1221C901C0501C05)

South of the beach access point the land levels are lower, but the seawall, Asset ref. no. 1221C901C0501C04 is fronted by a wide beach. This section of wall is in fair condition, with many of the defects noted in previous surveys still present. This includes abrasion of concrete exposing aggregate and reinforcement locally and spalling of concrete (particularly copings and

surrounding impact damage) (below left). A low timber fence had recently been constructed along the promenade (below right). It was not clear what the purpose of the fence was but it appeared to be intended to limit public access to the front wall.



The low concrete wall at the public car park to the south of Seaton Carew (Asset ref. No. 1221C901C0501C02) was reported to have displaced sections of wall at the northern extent in 2008, with undercutting of the concrete apron. In 2010 the high beach levels were obscuring the defects. At the time of the 2012 inspections major works were being undertaken by the water company in the area and sections of the wall had been dismantled, see photographs overleaf, resulting the condition for the two assets in this area being reported as poor. Once the works have been completed it is recommended that the area is inspected to confirm that the coastal defences have been adequately reinstated and left in good condition by the contractors.





Nov 2008



Oct 2012

Section of wall at car park dismantled during ongoing water company works in area (Asset Ref. No. 1221C901C0501C03)



Oct 2012

Works underway adjacent to low seawall at water treatment works. (Asset Ref. No. 1221C901C0501C02)

Seaton Sands

To the south of the sewage pumping station, the frontage is undefended and comprises of a relatively stable dune system which includes the Seaton Dunes Nature Reserve (photograph overleaf, left). The dunes were well established and had a good coverage of vegetation. Local erosion was evident due to trampling from members of the public walking through the dunes, with a lowering of the crest of the most seaward dune in several locations. As in previous years, local cliffing was observed towards the south in close proximity to the North Gare breakwater (overleaf, right). The level of the dune crests generally increases to the south and a healthy beach is maintained along Seaton Sands by the North Gare breakwater.



View of dunes at Seaton Sands from near North Gare Breakwater, showing informal paths through dunes causing local erosion.
(Asset ref. No. 1221C901C0502C01)



Localised cliffing of the dunes immediately north of North Gare, adjacent to rubble revetment placed to manage outflanking.
(Asset ref. No. 1221C901C0502C01)

North Gare Breakwater

The North Gare Breakwater is a private structure at the entrance to the Tees, marking the southern extent of Hartlepool BC's coastal frontage. The massive structure stabilises the shoreline to the north, retaining the beach and dune system, but also provides shelter to the beach located in the lee to the south where a stable dune field has developed. As reported in 2008 and 2010 the structure remains in poor condition.



General view of North Gare breakwater.
(Asset ref. No. 1221C901C0502C01)

The structure remains in a dangerous condition with fencing and signs to deter members of the public from accessing the seaward section, see below left. However, it is fairly easy to walk past this fencing on the adjacent foreshore to the south of the breakwater, below right.



Fencing and warning signs on North Gare breakwater.
(Asset ref. No. 1221C901C0502C01)



Rubble / slag beach to the south side of North Gare Breakwater.
(Asset ref. No. 1221C901C0502C01)

The breakwater has a multitude of ad-hoc repairs to the varied concrete and masonry structure. There was evidence of fairly recent repairs, but there remains sections that are undercut and voids requiring further urgent work to stabilise the structure. As noted in previous years, the structure was generally in better condition along its southerly, more sheltered side although significant damage was still evident locally, with loss of concrete render, evidence of settlement/displacement of previous concrete infill repairs and displaced/damaged slabs.



View of upper deck level showing patch repairs and northern side of breakwater from near fence.
(Asset ref. No. 1221C901C0502C01)



Northern side of breakwater, with extensive cracking and voids.
(Asset ref. No. 1221C901C0502C01)

4. Comparison with Previous Assessment

The previous formal assessment across the whole study frontage was undertaken in August 2010.

Comparative photographs have been included in the main text for a number of key locations. The condition of many of the hard defences along the frontage is very similar to the 2010 inspections although significant improvement works have been undertaken or are underway at Marine Drive, the Town Wall and Seaton Carew seawall. For the other assets, the 2012 inspections have generally identified further deterioration of defects in recorded in the 2008 and 2010 inspections, which were predominantly local defects not adversely affecting the performance of assets and with no large scale failures.

5. Problems Encountered and Uncertainty in Analysis

All assets were inspected at suitable stages of the tide and therefore there were no problems encountered.

Victoria Harbour and Hartlepool Marina quay walls were not inspected since they are under private ownership and not classed as coastal defence assets. The Heugh Breakwater, North Pier and North Gare Breakwater are not accessible to the public and therefore inspection of these structures is limited.

6. Conclusions and Recommended Actions

Further to the visual inspection of all NFCDD assets, specific conclusions and recommendations for individual assets are given in Appendix B.

The works that were underway at Town Wall will complete the key recommendation from the 2010 inspection report for urgent works to secure the Scheduled Ancient Monument.

There remains a need for action at North Gare Breakwater which provides important shelter to the mouth of the River Tees and acts to retain Carr House Sands. The structure was recorded as poor condition in 2008 and had continued to deteriorate in 2010 and was in a similar state in 2012.

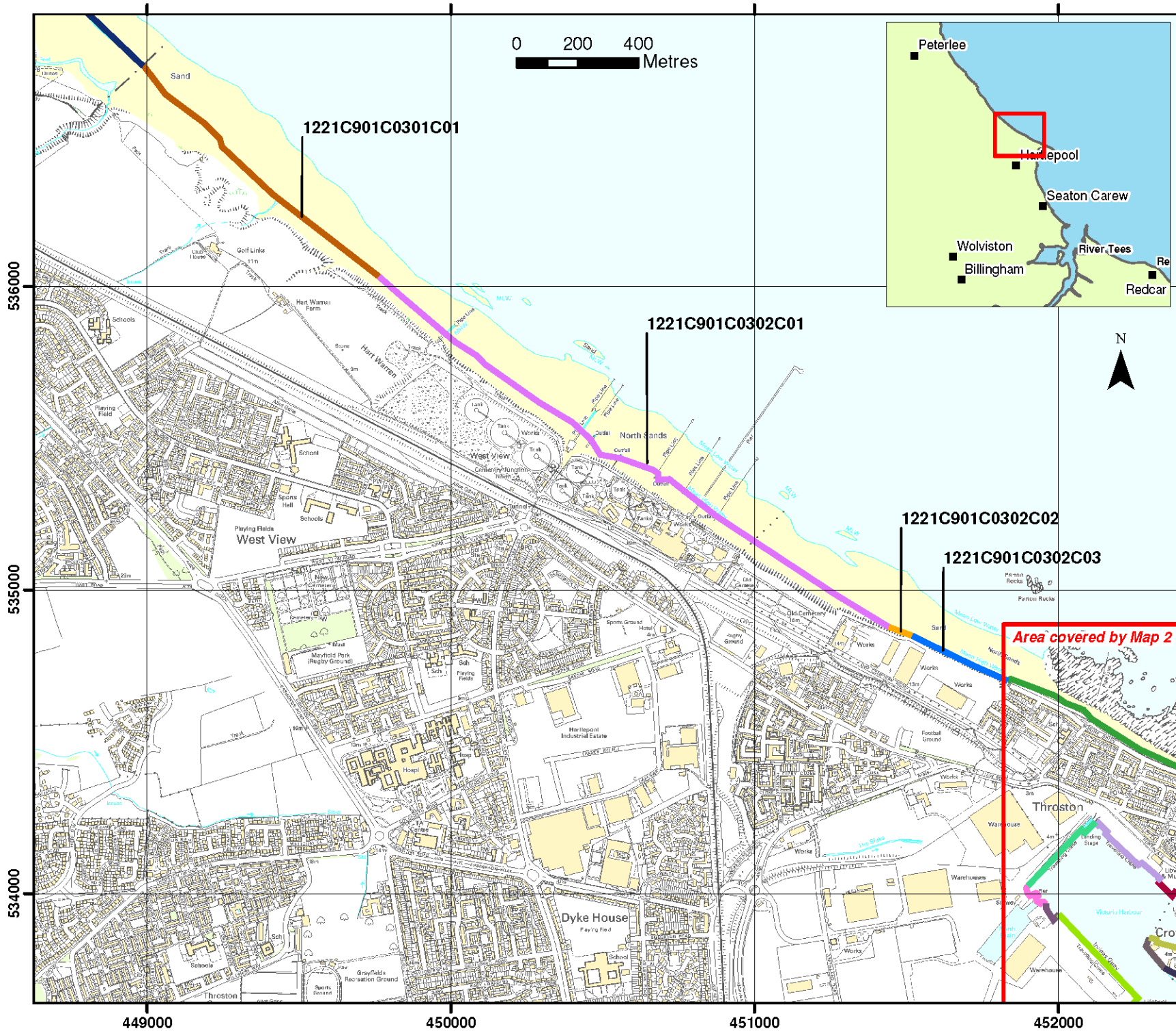
The defences should be re-inspected at the south end of Seaton Carew once the water company has completed their works to check that the reinstatement has been completed adequately. The promenade, access ramp and adjacent armouring should also be checked at newborn bridge, where it is was being used as a contractor's compound and site access to work on the large outfall.

It is highly recommended that continued monitoring is undertaken for all assets, with specific recommendations for individual assets given in the table in Appendix B

Appendices

Appendix A

Asset Locations



Legend

— Asset location

— NFCDD Asset Number

Notes:

All maps taken from 2010 Asset Inspection Reports and updated where necessary

Lead Authority: Scarborough Borough Council

Project: Cell 1 Regional Coastal Monitoring Programme

**Figure 1- Map 1
Hartlepool
Council Frontage**

Coastal Walkover
Inspection Report

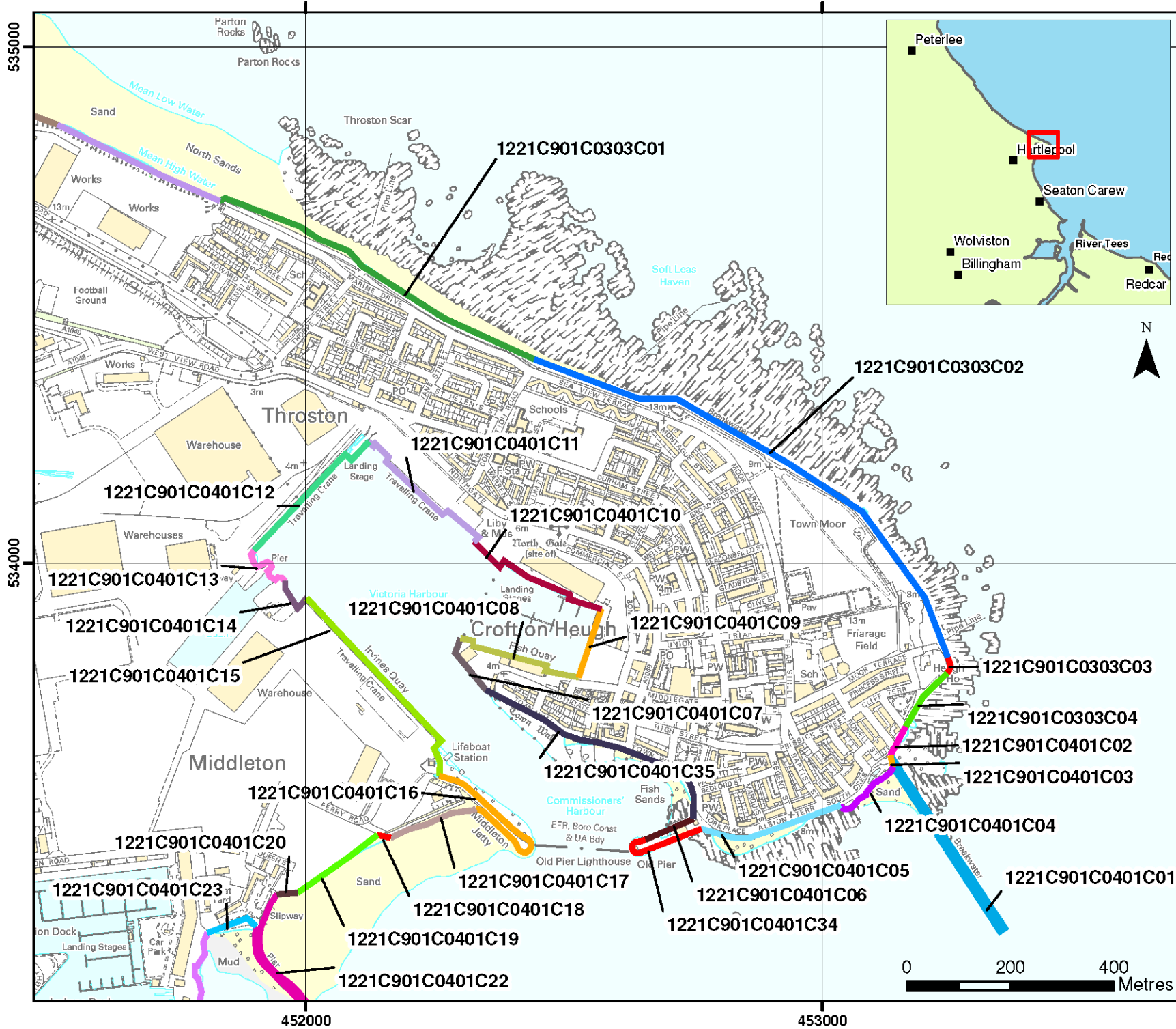
Drawing Scale 1:17,000 at A4

Halcrow Group Limited

Burderop Park
Swindon
Wiltshire
SN4 0QD

+44 (0)1793 812479





Legend

Asset location

NFCDD Asset Number

Notes:

All maps taken from 2010 Asset Inspection Reports and updated where necessary

Lead Authority: Scarborough Borough Council

Project: Cell 1 Regional Coastal Monitoring Programme

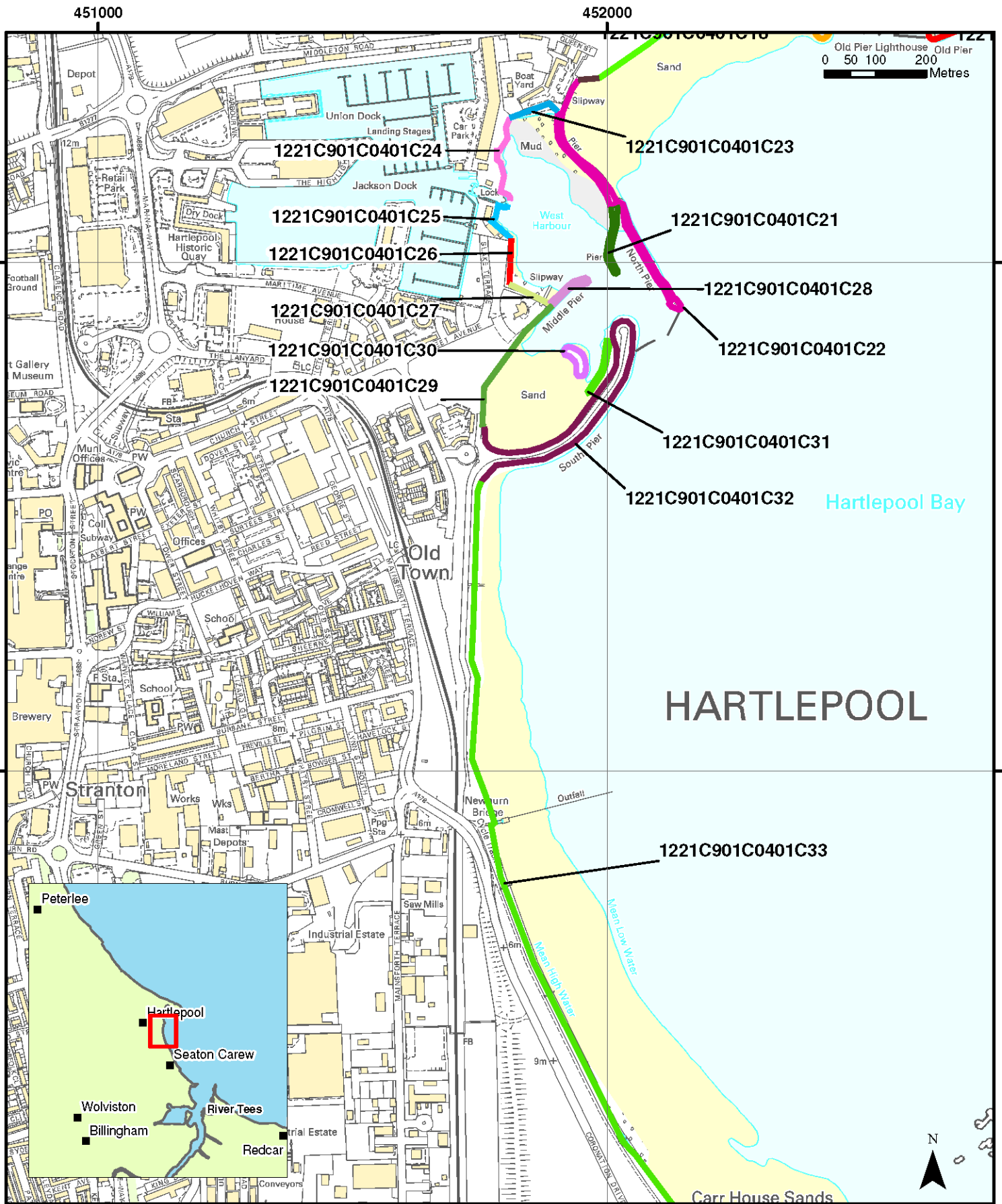
**Figure 1 - Map 2
Hartlepool
Council Frontage**

Coastal Walkover
Inspection Report



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Halcrow Group Limited
 Burderop Park
 Swindon
 Wiltshire
 SN4 0QD
 +44 (0)1793 812479





Legend

-  Asset location
-  NFCDD Asset Number

Lead Authority: Scarborough Borough Council
 Project: Cell 1 Regional Coastal Monitoring Programme

**Figure 1 - Map 3
 Hartlepool Council
 Frontage**

Coastal Walkover
 Inspection Report
 Drawing Scale 1:10,000 at A4

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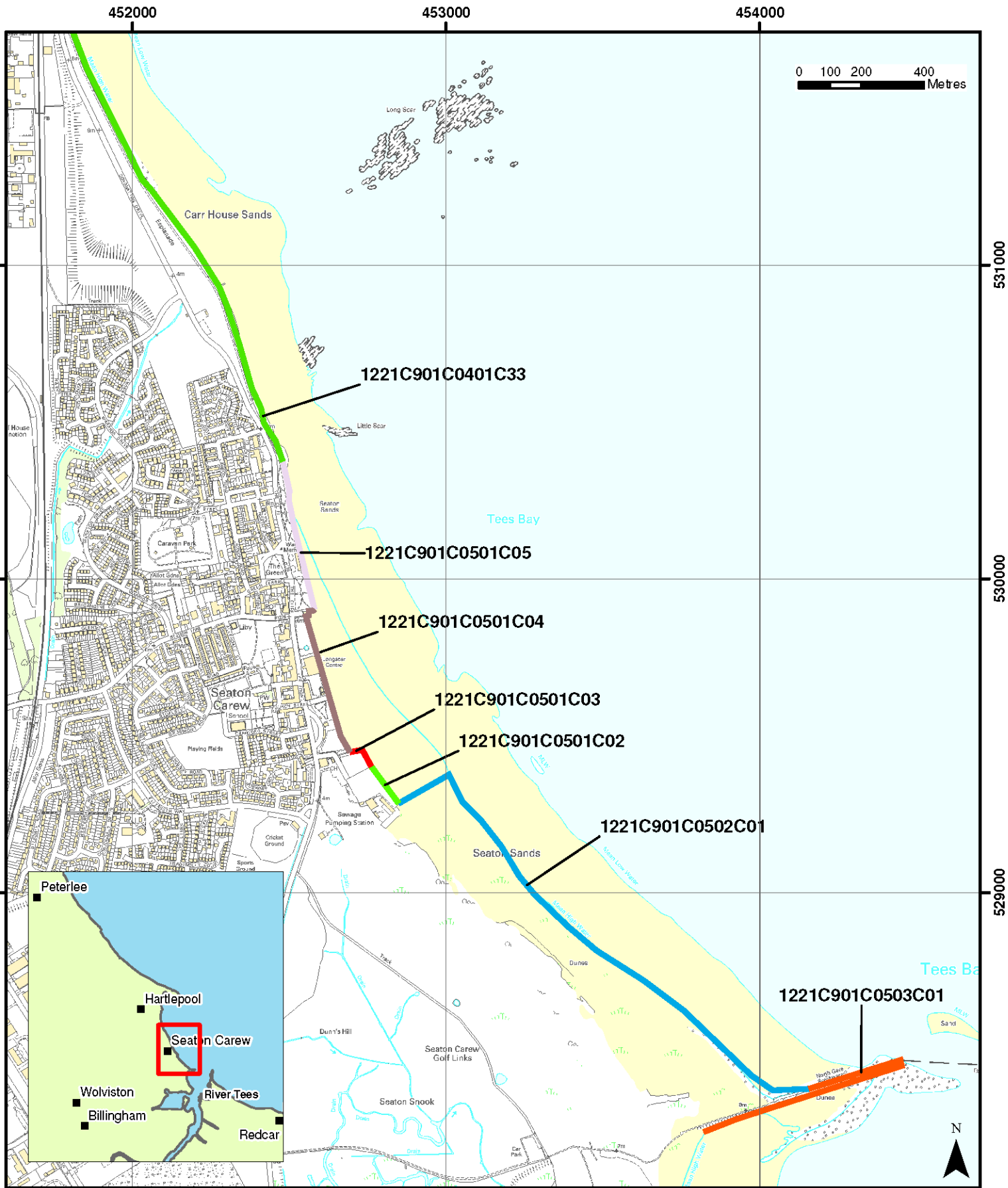
Burderop Park
 Swindon
 Wiltshire
 SN4 0QD

+44 (0)1793 812479





Notes:

All maps taken from
 2010 Asset Inspection Reports
 and updated where necessary



Legend

-  Asset location
-  NFCDD Asset Number

Lead Authority: Scarborough Borough Council
 Project: Cell 1 Regional Coastal Monitoring Programme

**Figure 1 - Map 4
 Hartlepool Council
 Frontage**

Coastal Walkover
 Inspection Report
 Drawing Scale 1:16,000 at A4

Halcrow Group Limited

Burderop Park
 Swindon
 Wiltshire
 SN4 0QD

+44 (0)1793 812479



Notes:

All maps taken from
 2010 Asset Inspection Reports
 and updated where necessary

Appendix B

Asset Condition & Recommendations Table

Asset NFCDD Reference Number	Alternative Asset Reference	Description of Asset (As recorded in NFCDD)	Asset Type (As recorded in NFCDD)	Asset Location description (As recorded in NFCDD)	Asset Length (m)	Inspection Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
1221C901C0301C01		Undefended	Undefended	NZ48983672, NZ49763603	1051.5	04/10/2012	Generally good, but Crimdon beck has moved S, eroding dune toe, so fair overall. Healthy beach levels in front of dunes. Dunes well vegetated with golf links.	3	3	>20	Monitor erosion at toe dune due to Crimdon Beck.	no repairs
1221C901C0302C01		Undefended	Undefended	NZ49763603, NZ51443487	2070.3	04/10/2012	Obsolete structures still present along foreshore. Dunes appear to be generally accreting and relatively healthy, despite being low & narrow. Demolition of tank farm underway. Dunes beginning to form /vegetate at back healthy beach in front of SKcemetery.	3	4	11 - 20	Complete removal of obsolete structures (H&S)	routine
1221C901C0302C02	CPSE-220/6701/01	670101 Brick filled welded mesh gabions with rubble above. Gabions in very poor condition.	Gabions	NZ51443487, NZ51523484	81.9	04/10/2012	Very poor, / obsolete. Corrosion of gabion baskets. Most have failed / gone shedding bricks over foreshore, actively eroding. Works above now demolished.	5	5	1 - 5	Monitor erosion and remove debris from obsolete defence.	routine
1221C901C0302C03	CPSE-220/6702/01	Slag waste embankment with poured slag apron to toe.	Embankment	NZ51523484, NZ51833470	345.5	04/10/2012	Slag bank eroding as chemical apron breaking up. Rock armour placed at southern end to arrest outflanking of Marine Drive Sea Wall. Areas of undercutting and overbanas.	4	4	1 - 5	Monitor effectiveness of rock armour at southern end.	no repairs
1221C901C0303C01	CPSE-220/6703/02	Upper revetment in need of repairs.	Seawall	NZ51833470, NZ52443439	691	04/10/2012	Repairs underway at north return end / ramp. Short section of rock armour fronting the wall near its northern end. The wall is in good condition. There have been a number of repairs to the capping beam previous repairs are holding well but more required	2	3	>20	Monitor effectiveness of rock armour and extend if nec.	routine
1221C901C0303C02	CPSE-220/6704/01	Concrete block wall voiding to joints and spalling.	Wall	NZ52443439, NZ53243381	1037.6	05/10/2012	Some spalling to face of concrete blocks and capping beam. Concrete toe protection has failed locally. Generally looks structurally sound but cosmetically affected by spalling and abrasion.	3	4	11 - 20	Local repair to spalling/abrasion. Replace worst affected failed toe protection.	routine
1221C901C0303C03	CPSE-220/6705/01	Concrete wall to Coastguard with toe (02).	Wall	NZ53243378, NZ53243381	33.1	05/10/2012	Concrete blocks are slightly stepped. Repairs to capping beam are damaged in places. Extensive previous repairs. Recessed/missing mortar & void formation. Pitting of masonry.	3	3	>20	Continue inspection/maintenance. Local repair to spalling & abrasion.	routine
1221C901C0303C04	CPSE-220/6706/02	Concrete toe to high wall. Access ramp to part of length.	Apron	NZ53163368, NZ53243378	133	05/10/2012	Smaller blockwork. Fair to poor condition. Some missing blocks, extensive abrasion, cracking in buttress. Numerous previous repairs (some are now failed)	3	3	11 - 20	Continue inspection and maintenance regime.	routine
1221C901C0401C01	CPSE-220/6708/01	Old breakwater, some repair carried out in 1990 but major problems foreseen particularly at seaward end. Important protection to areas South.	Breakwater (Heugh Breakwater)	NZ53343328, NZ53133362	791.9	05/10/2012	Southern end of breakwater not inspected. Linear blockwork with no gaps or missing blocks. Landward end in fair to good cond. No public access from mid-length.	3	3	>20	Detailed structural inspection - seaward end.	routine
1221C901C0401C02	CPSE-220/6707/01	Dressed stone wall continuing from pier.	Wall	NZ53133362, NZ53163368	62.2	05/10/2012	Considerable abrasion to lower courses. Some pointing missing between blocks. Evidence of previous repairs.	3	3	>20	Replace missing pointing in joints. Monitor abrasion.	routine
1221C901C0401C03	CPSE-220/6709/01	Concrete and masonry wall poor in places. Protected by breakwater. Amenity area then wall to road and property behind.	Wall	NZ53133360, NZ53133362	23.5	05/10/2012	Short section of protected wall at root of Heugh breakwater. As previous inspection - No gaps between blocks. No displacement of blocks. Minor (local) abrasion.	2	2	>20	Continue inspection and maintenance regime.	routine
1221C901C0401C04	CPSE-220/6710/01	New concrete wall but with some voiding to toe in places.	Wall	NZ53033353, NZ53133360	141	05/10/2012	Fronting Block Sands Paddling Pool, wall Fair, but with some abrasion and undermining / undercutting at the toe. Rear wall in good condition.	3	3	>20	Infill voids at toe.	routine
1221C901C0401C05	CPSE-220/6711/02	Concrete wall as (01) but with high beach levels.	Wall	NZ52763348, NZ53033353	282.5	05/10/2012	Blockwork wall fronted by rocky foreshore. Cobble beach at crest level in centre. Spalling at crest at both ends of lower wall. Minor abrasion. Rear retaining wall gen good condition, but some cracking and missing mortar.	3	3	11 - 20	Repair spalling and damage.	routine
1221C901C0401C06	CPSE-220/6713/01	Concrete wall inside protection of jetty. Upper wall to road and houses.	Wall	NZ52653346, NZ52753350	101.2	05/10/2012	Inside face of Old Pier. Some settlement and sagging of masonry blockwork where Acropodes tail off.	3	3	11 - 20	Monitor settlement of blockwork. Rebuild or encase in future.	routine
1221C901C0401C07	CPSE-220/6736/01	673601 Blue brickwork quay.	Wall	NZ52343375, NZ52293385	123.7	31/03/1998		3	3	>20		no repairs
1221C901C0401C08	CPSE-220/6737/01	673701 Timber suspended deck Fish Quay.	Wall	NZ52293385, NZ52523377	259.8	31/03/1998		3	3	>20		no repairs

Asset NFCDD Reference Number	Alternative Asset Reference	Description of Asset (As recorded in NFCDD)	Asset Type (As recorded in NFCDD)	Asset Location description (As recorded in NFCDD)	Asset Length (m)	Inspection Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
1221C901C0401C09	CPSE-220/6738/01	673801 Masonry quay wall.	Wall	NZ52523377, NZ52573391	139.1	31/03/1998	Quay walls to Victoria Harbour basin not inspected under the regional Monitoring programme.	3	3	>20		no repairs
1221C901C0401C10	CPSE-220/6739/01	673901 Rubble revetment to Quay.	Revetment	NZ52323404, NZ52573391	302.7	31/03/1998		3	3	>20		no repairs
1221C901C0401C11	CPSE-220/6740/01	674001 Sheet steel piling with suspended dock in front.	Piling	NZ52123423, NZ52333405	319.1	31/03/1998		2	2	>20		no repairs
1221C901C0401C12	CPSE-220/6741/01	674101 Suspended deck concrete quay on concrete piles.	Piling	NZ51903402, NZ52123423	320.5	31/03/1998		2	2	>20		no repairs
1221C901C0401C13	CPSE-220/6742/01	674201 Masonry quay wall with apron.	Wall	NZ51893401, NZ51963396	131.4	31/03/1998		3	3	>20		no repairs
1221C901C0401C14	CPSE-220/6743/01	674301 Rubble revetment.	Revetment	NZ51983391, NZ51963396	86.2	31/03/1998		2	2	>20		no repairs
1221C901C0401C15	CPSE-220/6744/01	674401 Sheet steel pile and steel tubular pile quay wall with concrete coping.	Wall	NZ52253358, NZ52003393	455.5	31/03/1998		1	1	>20		no repairs
1221C901C0401C16	CPSE-220/6715/01	Concrete armour units to breakwater with slag core. Acts to protect to North and retain beach to South.	Breakwater	NZ52253358, NZ52433345	378.1	05/10/2012	Accropodes armoured breakwater. Armouring providing good protection to core. Appears good condition.	2	2	>20		no repairs
1221C901C0401C17	CPSE-220/6716/01	Brick filled welded gabions fronted by rock armour revetment. Protects RNLI, boat club and industrial property.	Gabions	NZ52163346, NZ52323352	175.2	05/10/2012	Brick filled gabions form wall with stepped profile, some distorted /displaced / locally settled. Rock armour revetment with variable size armour to south, high beach to north.	3	3	11 - 20	Monitor settled gabions. Add more rock / reprofile rock armour.	routine
1221C901C0401C18		Undefended	Undefended	NZ52133347, NZ52163346	26.4	05/10/2012	Rubble placed at informal access point to the beach to armour the shore between the revetment and wall. Steep slope at southern side of access ramp, potential instability with adjacent defence.	4	4	11 - 20	Monitor end of defences for outflanking.	no repairs
1221C901C0401C19	CPSE-220/6717/01	Warehouse and industrial property above. Blockwork wall.	Seawall	NZ51983336, NZ52133347	189.7	05/10/2012	W 1/3 is conc block wall. E 2/3 is near vertical loose stacked block / brick wall. Some missing or damaged blocks. Local widening of construction joints. Minor settlement cracking and bulging locally.	3	3	11 - 20	Fill voids. Replace missing blocks.	routine
1221C901C0401C20	CPSE-220/6718/01	Concrete block wall with commercial property above.	Wall	NZ51943335, NZ51983336	40.5	05/10/2012	Badly abraded / spalling blockwork with damaged blocks. Cracks in coping units.	3	3	11 - 20	Infill voids. Local repair to abrasion/spalling.	routine
1221C901C0401C21	CPSE-220/6745/02	New concrete head to masonry breakwater.	Breakwater (Inner arm of North Pier)	NZ52013297, NZ52013311	279.3	05/10/2012	No public access along piers. Only inspected from distance. Appears fair condition. Concrete head in fair condition.	3	3	>20	Detailed structural survey including boat/dive survey.	routine
1221C901C0401C22	CPSE-220/6719/01	Breakwater and root wall to sheds and protection of redeveloped harbour area.	Breakwater (North Pier)	NZ52143290, NZ51943335	1033.5	05/10/2012	Recent repairs at steps at N end. No public access along breakwater. Missing /recessed mortar, loose/missing masonry. Cracks and voids in concrete apron. Timber piles visible at toe.	3	4	>20	Repair voids in apron adjacent to beach. Grout voids. Boat survey to end.	urgent
1221C901C0401C23	CPSE-220/6746/01	Rock armour revetment.	Revetment	NZ51803328, NZ51903329	105	05/10/2012	No change from prev survey - Relatively new rock revetment in fair condition. Former stepped stone revetment evident beneath rock armour.	3	3	>20		no repairs
1221C901C0401C24	CPSE-220/6747/01	Massive masonry quay wall.	Wall	NZ51803312, NZ51803328	188.9	05/10/2012	Masonry faced flood wall on top of quay wall. in good visual cond. Ties into lock gate at slight lower level. Lower quay wall mix of conc and masonry, gen fair to good condition. Seaweed prevented inspection of lower wall.	3	3	>20	Private survey from boat.	routine
1221C901C0401C25	CPSE-220/6748/01	New concrete block quay wall with a block revetment apron.	Wall	NZ51813304, NZ51803311	110.3	05/10/2012	Block wall appears good cond Lower apron could not be inspected due to seaweed coverage.	2	2	>20	Monitor	no repairs
1221C901C0401C26	CPSE-220/6749/02	Concrete splash wall to precast concrete block revetment.	Revetment	NZ51803295, NZ51813304	89.7	05/10/2012	Good condition apart from one local area of settlement in block sett revetment (approx 2m diameter)	3	3	>20	Repair the area of settlement	routine
1221C901C0401C27	CPSE-220/6750/01	Block wall with rubble foreshore.	Wall	NZ51803295, NZ51883291	87.1	05/10/2012	Undercutting of concrete access steps and slipway and wall between slipway and steps. Otherwise good condition.	3	3	>20	Infill voids at toe. Add toe armour. Make good steps and slipway.	routine
1221C901C0401C28	CPSE-220/6752/02	Masonry structure with concrete head.	Wall (Middle Pier)	NZ51883291, NZ51963296	187.3	05/10/2012	As prev inspection: Some gaps due to mortar loss. Lower structure largely obscured by seaweed. Vegetation growth in construction joints of deck.	3	3	>20	Repointing. Remove vegetation from deck.	routine
1221C901C0401C29	CPSE-220/6752/02	Masonry quay wall with later addition of upper concrete wall.	Wall	NZ51763267, NZ51893291	289.8	05/10/2012	As previous survey: Some gaps due to mortar loss in lower courses. Crest wall in good condition.	3	3	>20	Repointing lower courses.	routine

Asset NFCDD Reference Number	Alternative Asset Reference	Description of Asset (As recorded in NFCDD)	Asset Type (As recorded in NFCDD)	Asset Location description (As recorded in NFCDD)	Asset Length (m)	Inspection Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
1221C901C0401C30		Undefended	Undefended	NZ51943277, NZ51923283	161.9	05/10/2012	Rock breakwater island . Not a CP asset? Looks in good cond. Rock armour has consistent profile - no significant displacement.	2	3	>20	n/a	no repairs
1221C901C0401C31	CPSE-220/6753/01	Old breakwater within harbour.	Breakwater	NZ51963274, NZ51993284	229.6	05/10/2012	As per last survey, Slowly deteriorating. Voids and spalling. Redundant / historic structure as main breakwater provides protection. Vegetation growth on deck.	3	3	>20		no repairs
1221C901C0401C32	CPSE-220/6720/02	Concrete unit armour to breakwater on rock core.	Armour	NZ51753256, NZ52023288	964.3	05/10/2012	No change since previous inspection: Rock armour on lee side, concrete accropode armour on seaward side. Good condition.	2	3	>20	Remove vegetation from structure. Boat survey of outer face & seaward end at LW.	no repairs
1221C901C0401C33		Concrete recurved splash wall above concrete wall and behind rock armour. Promenade and development land behind.	Recurved Wall	NZ51733228, NZ51753256	2381.1	15/10/2012	Crest wall good, with minor mainly aesthetic defects locally at joints. No significant visible defects in concrete. Rock revetment density fairly consistent, with crest and bank profile intact, but some minor displacement of rocks, especially near steps.	2	2	>20	Minor local repairs to concrete surface, steps and rails.	routine
1221C901C0401C34	CPSE-220/6712/01	Fishing breakwater with armoured head. Important protection to inner area.	Breakwater	NZ52633345, NZ52763348	181.3	05/10/2012	No change from 2010 insp. Concrete wall with accropode protection at seaward end. The wall is in fair condition, with the revetment good. Cracking in deck adjacent to wall and through crest wall.	3	3	>20	Minor concrete repairs locally and grout voids / cracks.	routine
1221C901C0401C35	CPSE-220/6714/02	Masonry apron to toe of wall over mid section.	Apron	NZ52343375, NZ52753354	509.1	05/10/2012	Town Wall. Works underway to place concrete apron toe protection and repair wall. Minor voids and recessed/lost mortar in places. Exposed piles and apron to East with undercutting of wall.	2	2	>20	Complete scheme to protect toe. Repointing. Consider replacement of groynes.	urgent
1221C901C0501C02	CPSE-220/6734/01	Low crest wall to lower concrete plinth above high sands. CarPark and pump station behind.	Wall	NZ52852928, NZ52762940	146.1	15/10/2012	Works underway at sewage pumping station. Large excavation in front of wall and sections of wall dismantled at time of inspection.	4	4	1 - 5	Complete works and repair / replace flood wall.	routine
1221C901C0501C03	CPSE-220/6733/01	Concrete revetment. High accreting sand levels moving into dune area.	Revetment	NZ52692944, NZ52762940	100.3	15/10/2012	Works underway at time of inspection, with defence sections dismantled.	4	4	1 - 5	Repair / replace wall - complete ongoing works.	routine
1221C901C0501C04	CPSE-220/6732/01	Crest wall in fair condition some minor repair needed.	Wall	NZ52692944, NZ52582990	500.3	15/10/2012	Fair to poor locally. Frequent cracking and spalling. High beach level covered masonry apron which was previously missing blocks. Works underway at time of inspection.	3	4	6 - 10	Repair damage. Improve seawall.	urgent
1221C901C0501C05	CPSE-220/6731/01	Concrete wall generally in fair condition but beach low by Northern corner and evidence of voiding in promenade. Corner of wall interacts with waves lowering beach levels.	Wall	NZ52582990, NZ52483037	482.8	15/10/2012	Access steps improved since last survey, with repairs to adjacent sections of wall. Repairs to coping and joints appear to be holding well.	2	2	>20	Repairs to joints / cracks as required.	routine
1221C901C0502C01		Undefended	Undefended	NZ52852928, NZ54152837	1755.2	15/10/2012	As prev survey: Relatively stable - good cover of est. vegetation. Localise areas of non vegetated dune. Strand line on upper beach fronting dunes. Localised erosion caused by public makeshift footpaths through dunes.	2	3	>20	Localised trampling - consider fencing to control access.	no repairs
1221C901C0503C01	CPSE-220/6735/02	North Gare Breakwater	Breakwater	NZ53822823, NZ54452844	986.7	15/10/2012	Multiple adhoc repairs. Evidence of undercutting and voids. Closed to public. Massive structure retains beach and dune systems to north and south, condition based on function is fair, but structurally appears poor / very poor in places.	4	5	6 - 10	Monitor for outflanking at root. Maintain integrity of structure.	urgent