



**Cell 1 Regional Coastal Monitoring Programme
Coastal Walkover Inspections 2010**

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Abbreviations and Acronyms

Acronym / Abbreviation	Definition
CAM	Condition Assessment Manual
NFCDD	National Flood and Coastal Defence Database

Asset Condition Grades

Grade	Condition Description
1	Very Good
2	Good
3	Fair
4	Poor
5	Very Poor

Glossary of Terms

Term	Definition
Beach nourishment	Artificial process of replenishing a beach with material from another source.
Berm crest	Ridge of sand or gravel deposited by wave action on the shore just above the normal high water mark.
Breaker zone	Area in the sea where the waves break.
Coastal squeeze	The reduction in habitat area which can arise if the natural landward migration of a habitat under sea level rise is prevented by the fixing of the high water mark, e.g. a sea wall.
Downdrift	Direction of alongshore movement of beach materials.
Ebb-tide	The falling tide, part of the tidal cycle between high water and the next low water.
Fetch	Length of water over which a given wind has blown that determines the size of the waves produced.
Flood-tide	Rising tide, part of the tidal cycle between low water and the next high water.
Foreshore	Zone between the high water and low water marks, also known as the inter-tidal zone.
Geomorphology	The branch of physical geography/geology which deals with the form of the Earth, the general configuration of its surface, the distribution of the land, water, etc.
Groyne	Shore protection structure built perpendicular to the shore; designed to trap sediment.
Mean High Water (MHW)	The average of all high waters observed over a sufficiently long period.
Mean Low Water (MLW)	The average of all low waters observed over a sufficiently long period.
Mean Sea Level (MSL)	Average height of the sea surface over a 19-year period.
Offshore zone	Extends from the low water mark to a water depth of about 15 m and is permanently covered with water.
Storm surge	A rise in the sea surface on an open coast, resulting from a storm.
Swell	Waves that have travelled out of the area in which they were generated.
Tidal prism	The volume of water within the estuary between the level of high and low tide, typically taken for mean spring tides.
Tide	Periodic rising and falling of large bodies of water resulting from the gravitational attraction of the moon and sun acting on the rotating earth.
Topography	Configuration of a surface including its relief and the position of its natural and man-made features.
Transgression	The landward movement of the shoreline in response to a rise in relative sea level.
Updrift	Direction opposite to the predominant movement of longshore transport.
Wave direction	Direction from which a wave approaches.
Wave refraction	Process by which the direction of approach of a wave changes as it moves into shallow water.

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 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 till to varying thicknesses, softer rock cliffs, and extensive landslide complexes.

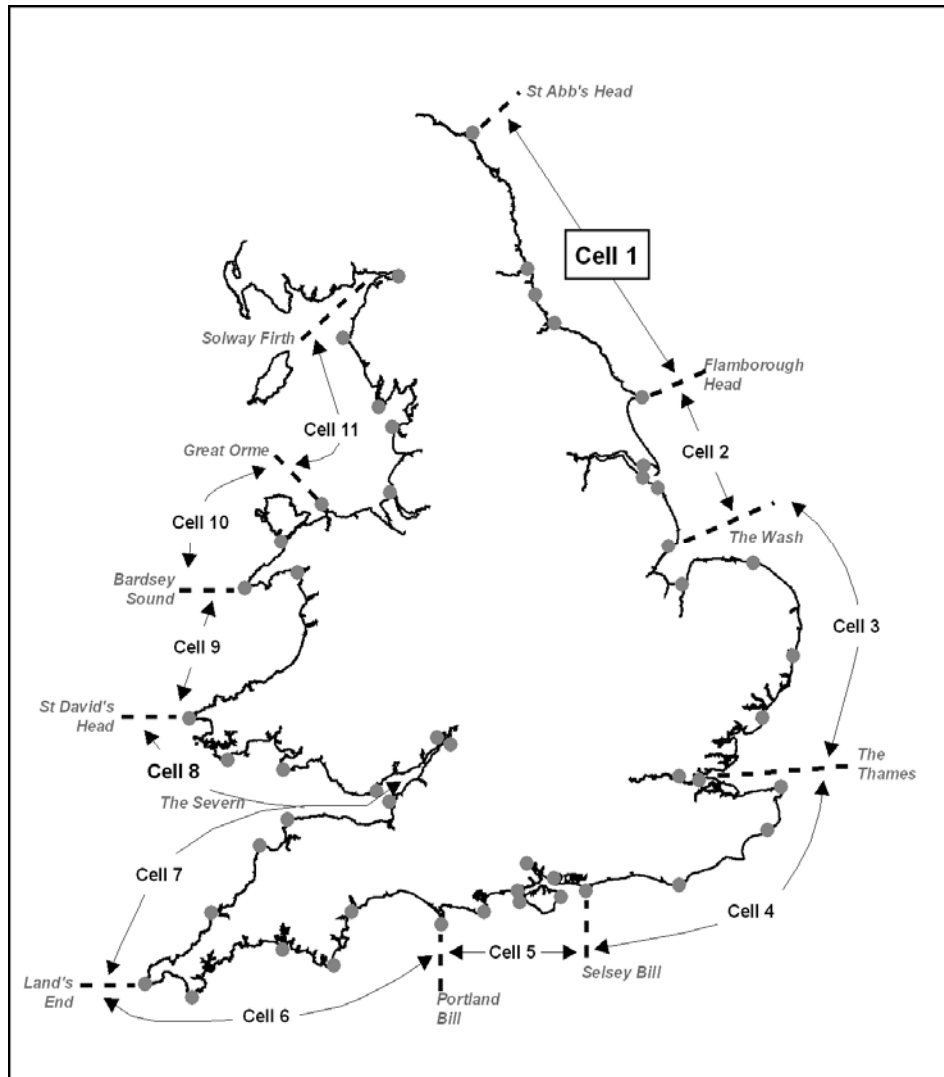


Figure 1 - Sediment Cells in England and Wales

The programme commenced in its present guise in September 2008 and is managed by Scarborough Borough Council on behalf of the North East Coastal Group. It is funded by the Environment Agency, working in partnership with the following organisations.



The data collection, analysis and reporting is being undertaken as a partnership between the following organisations:



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

The present report is **Coastal Walkover Inspections 2010** and provides a summary of the main findings from the walkover inspections of Hartlepool Borough Council’s frontage that are undertaken once every 2 years.

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.

1. Introduction

1.1 Study Area

Hartlepool Borough Council's frontage extends from Crimdon Beck in the north to the North Gare Breakwater in the south. It comprises natural dunes, towns defended by sea walls and revetments, and key maritime structures such as port and harbour breakwaters.

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.

1.2 Methodology

The walkover inspections for the Hartlepool Borough Council frontage were undertaken on the 14th July 2010 (Crimdon Beck to Victoria Harbour) and 12th August 2010 (Victoria Harbour to North Gare). The weather experienced during the inspections was dry and bright with good visibility.

The frontage has been split into a number of 'asset lengths' (Appendix A), the location and numbering of which correlates with those defined in the National Flood and Coastal Defence Database (NFCDD) which is maintained by the Environment Agency. All maritime Local Authorities that act as Coast Protection Authorities have a duty to report findings from walkover inspections into the NFCDD.

The walkover inspections cover both built defence assets and natural defence assets such as cliffs, slopes and dunes. All assets were visually inspected, photographed and graded based on their condition in accordance with the Environment Agency's Condition Assessment Manual (CAM), with estimates made of their residual life and assessments made of the urgency of any necessary repair work.

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.

In addition to this report, all detailed inspection reports and a selection of appropriate photographs have been entered into the NFCDD.

2. Overview

There have been only minor changes in the condition of the built and natural defence assets along the Hartlepool frontage since the previous formal inspections in November 2008.

- **North Sands** – redistribution of bricks following works to remove the failing gabion baskets fronting the former industrial unit south of the cemetery. Evidence of slope instability in slag and rubble embankments.
- **Marine Drive & Hartlepool Headland** – further spalling and abrasion to the concrete seawall with failure of concrete toe south of the Town Moor. Undercutting of older sections of concrete toe locally.
- **Fish Sands** – extensive cracking and spalling to the concrete wall backing the access ramp at the root of the old pier
- **Town Wall** – low beach level exposing the timber piles and concrete apron. Undercutting and potential void formation at the base of the Scheduled Ancient Monument.
- **West Harbour** – undercutting of the concrete access steps and slipway north of Tees and Hartlepool Yacht Club. Minor settlement in the concrete block revetment.
- **North Gare** – further deterioration of the structure including evidence of settlement of the seaward end of the structure.

3. Condition Assessment

3.1 North Sands

The dunes to the south of Crimdon Dene fronting Hartlepool Golf Course were high and steep with sparse vegetation coverage (below left). Minor slumping had occurred locally and cliffing had occurred at the toe caused by flows in Crimdon Beck. No flow was evident in the beck on the day of inspection although standing water was present along the embankment toe. 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.



The former Steetley Magnesite works is located to the south of the golf course. This frontage consists of a slag and rubble embankment fronted by sand dunes (below left). The crest height of the slag embankment appeared fairly consistent along the frontage with the exception of a low point at the location of the main access to the beach, through the site from West View Road.

The slag embankment was actively slumping throughout with several areas bare of vegetation (below left). Accretion of sand has led to the formation of small dunes in front of the slag embankment. The dunes had a fairly consistent vegetation coverage and appeared stable. Remains of dilapidated structures from the works were protruding from the embankment and local lowering of the crest and steepening of the embankment slope was evident due to scour from wind blown sand (below right).



The timber pier carrying a disused (assumed) outlet pipe from the former works was generally in fair condition (below left). Minor scour was evident around the timber standards of the structure and metal elements appeared severely corroded. South of the timber pier, the dunes fronting the cemetery had greater vegetation coverage with minor erosion locally due to trampling as people have crossed the dunes to access the beach (below right).



South of the cemetery, the embankment steepens in front of another former industrial structure (right). The embankment is broken up by a short length comprising of brick filled wire mesh gabions. The majority of the visible steel was heavily corroded and many of the gabions had failed completely with bricks spreading along the toe of the dunes (below left).



The profile of the embankment appeared fairly consistent suggesting a degree of stability although the thinning of material at the toe is likely to lead to stability issues and potential failure. There has been a significant redistribution of material since the 2008 inspection following work carried out to remove failing gabion baskets on health and safety grounds. The asset now consists of a slope/revetment rather than the vertical structure observed in 2008 (below, left and right).





South of the brick gabions, random rubble and slag was present in front of steep, unvegetated slopes with evidence of recent slope failure and ongoing undercutting of material (left). Several large pieces of slag were visible on top of the rubble.

The slag and rubble embankment to the north of Marine Drive appeared to be effectively protecting the steeper vegetated embankment to the rear (below left). Historic slope failures were visible throughout the seaward face of the embankment with a more recent slip observed towards the north (below right). Further south, the rubble mixes with a cobble-sized stone revetment which appeared more uniform in size and distribution and the backing slopes appeared more stable. The majority of the frontage had a coverage of vegetation (with the exception of the steepest sections). Large pieces of broken slag were present on the surface and within the rubble revetment.

The rock revetment to the southern extent of the slag embankment appeared in good condition with no evidence of outflanking of the seawall fronting Marine Drive.



3.2 Marine Drive and Hartlepool Headland

The seawall fronting Marine Drive was cracking and spalling locally with the crest particularly affected (below left). Previous patch repairs had been carried out and 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 right).



Minor damage was noted to the bitumen surfacing of the promenade which appeared to be caused/exacerbated by overtopping. The concrete revetment backing the promenade generally appeared in fair condition with minor widening of construction joints, some of which contained vegetation. Minor repairs including vegetation removal should be carried out as part of regular maintenance.

Further south, the seawall fronting Sea View Terrace is constructed from larger concrete blocks (right). Spalling of the concrete coping units was extensive (below) and abrasion of the blockwork surface appeared to worsen to the south (below right).



A concrete toe is present along the majority of the length of seawall. The concrete appeared to have been added in several stages, consisting of a variety of older stepped concrete profiles to more recent massive concrete blocks and was in good condition throughout. The most recently placed sections were in very good condition, with lifting eyes visible (below left). Where new concrete units were not present at the toe, the older (original?) toe was beginning to be undercut locally (below right).



South of the Town Moor, several older concrete units had fallen from the base of the wall onto the foreshore (right). This failure is possibly attributable to scour effects due to the proximity of the rock outcrop on the foreshore. The displaced sections are large and will continue to offer a degree of protection to the base of the wall although in a large event, may be tossed against the wall causing impact damage.



The masonry seawall at the eastern extent of the headland defences was in fair condition with surface abrasion and some mortar loss (right). The wall and revetment backing the promenade is generally in fair condition although the concrete render is cracked and missing locally (overleaf left). The promenade guardrail had been painted since the 2008 inspection. Repairs to the bitumen surfacing of the footway were also observed (overleaf right).





South of the easternmost point of the defences a multitude of repairs were evident in the masonry seawall including infill of voids with masonry, concrete and brickwork and repointing work (below left). Voids were present locally where masonry was missing or previous infill repairs had failed. The surface of a significant proportion of the masonry forming the lower courses was pitted (below right). Missing or deeply recessed mortar and open joints were also evident, with loss of masonry from the protruding buttresses. The wall was bulging throughout and generally in a poor condition. The concrete toe protection was generally in fair condition with minor damage locally and some abrasion/spalling of the seaward edge.



The masonry seawall fronting the access ramp was generally in fair condition. Erosion of masonry in the lowest visible courses and a lowering of the beach level was evident (below left) although no undercutting or void formation was observed. Several smaller masonry units had been lost and the abraded surface of the concrete was providing a key for vegetation growth on the wall at the tie in with the Heugh Breakwater (below right).





The Heugh Breakwater (left) is not accessible to members of the public and fencing and signage was present at approximately mid-length. Viewed from the foreshore, the structure generally appeared in fair condition with no significant displacement of material or undercutting and only minor mortar loss and abrasion. Local repairs were evident in the form of concrete deck repairs and local infilling of voids. It is understood that a collapse of the seaward end of the structure had occurred.

Bock Sands is located in the lee of the Heugh Breakwater. Spalling was evident to the curved coping of the concrete seawall (right) and undercutting and voids were beginning to form locally at the north of the asset (below left). Beach levels increased to south and the wall generally appears to be in good condition with minor spalling of the top edge of the concrete wall. The retaining wall fronting South Crescent/Albion Terrace/York Place appeared to be in fair condition (below right).



Old Pier is a concrete structure with accropod armour protection at the southern extent which provides shelter to Fish Sands (below left). The structure appeared in fair condition with minor settlement of blockwork observed on the inward face (below right). Armour units appeared in good condition with appropriate voids and good interlock between the concrete accropod units.



Construction joints within the concrete parapet wall were beginning to widen suggesting minor displacement (below left). No global movement or distress was noted to the end of the structure therefore the foundations were assumed to be performing satisfactorily with movement isolated in the parapet wall.

The concrete wall to the rear of the access ramp at the root of Old Pier was extensively spalled and beginning to crack (below right).



In the lee of Old Pier at the south-eastern end of Town Wall, the beach level at Fish Sands was healthy and the masonry wall appeared in fair condition (below left). Local repairs and repointing were evident and these appeared to be performing well. To the west of the access gate, lower beach levels exposed the timber piles forming the foundation of the wall and undercutting below the concrete apron was evident throughout (below right). The beach level prevented the inspection of the timber piles and extensive seaweed coverage prevented detailed inspection of the concrete apron. It was unclear to what extent undercutting of the concrete had led to void formation at the base of the wall although the existing gap and any voids should be infilled to prevent further deterioration which may affect the stability of the Scheduled Ancient Monument.



The bolts within the section of concrete blockwork wall were extensively corroded and the surrounding concrete stained with rust (right & below left). The lower concrete blocks were beginning to spall. These defects had a predominantly aesthetic impact as the structure showed no evidence of global movement. Of greater concern was the undercutting of the concrete buttresses flanking the blockwork and the subsequent loss of masonry (below right). These voids should be infilled to prevent further undercutting of the toe.



Beach levels increased leeward of the four dilapidated groyne structures and the apron and toe of the wall were buried up to the end of the length of seawall accessible to the public (below, left & right). The visible portion of the wall generally appeared to be in fair condition although local bulges were evident which should continue to be monitored. The paving stones and highway retained to the rear of the seawall appeared to be in very good condition with no evidence of movement of the structure.



3.3 Middleton

The concrete accropodes of Middleton Jetty appeared to have a very good interlock, with only a single unit apparently displaced from the structure (below, left & right).



The landward end of the jetty ties into a gabion basket wall with a stepped profile. Gabion baskets generally appeared intact and were fronted by sand dunes in the north and rock armour in the south (below left). Rock armour units increased in size towards the south and appear to be performing well. The gabion baskets had settled locally (below right) which may have affected the stability of the fenceposts immediately landward, but did not appear to be affecting the structures behind. The baskets were still intact although should be monitored as the wall could unravel rapidly should baskets fail. Additional rubble appeared to be added on top of some sections of gabion basket.



South of the rock armour, rubble was present at the access point off Perry Road (right). The slope to the southern side of the access appeared to be steep and less stable than that to the north. The purpose and frequency of use of the access ramp were unknown however it would be prudent to regrade/stabilise steep slopes to avoid failure under future use.



The wall fronting the industrial property was in fair condition. Local widening of construction joints was evident in addition to minor bulging (below left) and missing blocks (below right).



The concrete block wall to the south had extensive abrasion of the blockwork facing (below left) and where occurring in the lower courses had provided a key for vegetation growth (below right). Cracking of the concrete coping was also observed.



3.4 West Harbour

West Harbour provides access to Jackson Dock 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 access to the structures would still be possible at low tide via steps in the masonry apron presenting potential health and safety issues.

The outside face of the structure appeared in fair condition from the landward end (below left). The inside face of the structure appeared in poor condition with significant areas of masonry loss, extensive patchwork repairs and several large concrete repairs (below right). The seaward end of the structure is encased in concrete which could not be inspected although when viewed from the South Pier, appeared in fair condition (below left).



The seawall fronting the Navigation Point development was generally in fair condition although voids and missing mortar were observed locally in the masonry elements (below, left & right). Extensive seaweed coverage of the lower wall prevented inspection although there was no evidence of undercutting at the toe of the wall and no global movement or distress to the structure which suggests that the foundations were performing satisfactorily.



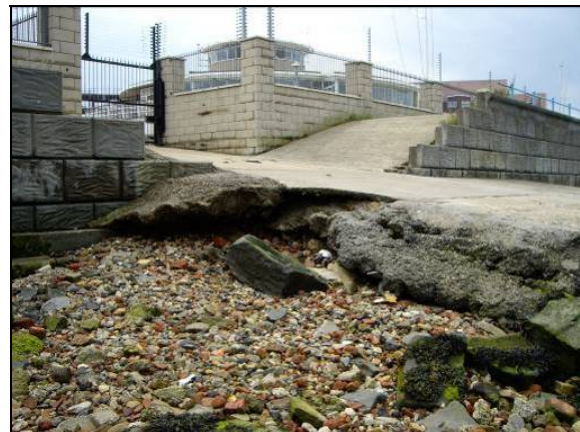
The concrete elements of the wall were in good condition with minor spalling evident to the upper edge (below, left & right). The masonry parapet wall was in very good condition throughout. The concrete structures forming the lock entrance were in good condition although water level prevented the inspection of the lower section of the walls (below left).



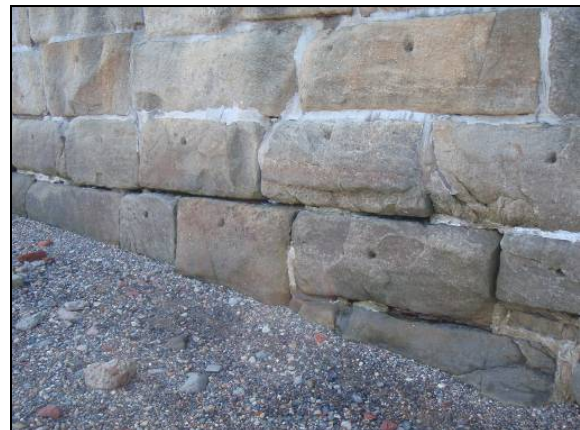
A concrete block revetment is present fronting Slake Terrace (right). A local depression recorded in the 2008 inspection was observed at the northern end of the revetment with a diameter of approximately 2m. This is indicative of a local loss of fill material below the concrete blocks and should continue to be monitored as further loss could reduce the integrity of the asset.



Undercutting of access steps and the slipway to the north of the Tees and Hartlepool Yacht Club was observed (below, left & right). Previous insitu concrete repairs were also beginning to fail. The concrete blockwork wall appeared in good condition with no evidence of undercutting at the toe.



The concrete head of Middle Pier appeared to be in fair condition (below left). The masonry body of the structure ties into a masonry seawall which was in good condition. In areas where beach material was lower, mortar loss had occurred between the lower courses of masonry. Previous repointing works were evident in the upper courses but this did not appear to extend into the lower courses (below right).



The South Pier was in good condition with rock armour (western face) and accropodes (roundhead and eastern face) maintaining a consistent profile with good interlock between units fronting the concrete structure.



3.5 Carr House Sands

To the south of South Pier the accropode armour ties into a dolerite rock armour revetment fronting a recurved concrete splash wall (right). The defences along Carr House Sands remain in very good condition as reported in the 2008 inspection. The revetment appeared to have a consistent profile and a good degree of interlocking between armour units was present throughout.



3.6 Seaton Carew

The beach levels along the Seaton Carew frontage were higher than during 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.



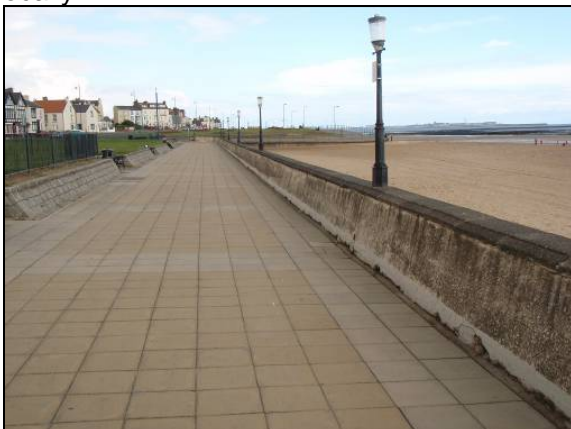
The structures along the Seaton Carew frontage consist of various concrete and masonry structures with toe rock armour units locally (below, left). There was no global movement or distress noted to any of the defence assets and therefore it was assumed that the foundations were performing satisfactorily and that no significant deterioration had taken place below the beach level. The structures were generally in fair condition with predominantly aesthetic defects which were previously recorded in the 2008 inspections (below right).



Defects included abrasion of concrete exposing aggregate and reinforcement locally (below left) and spalling of concrete (particularly copings and surrounding impact damage) (below right). Some mortar loss from the grouted masonry revetment was visible in areas with lower beach level such as access points although this did not appear to have worsened since the 2008 inspections.



Abrasion and minor spalling was evident along the base of the wall on the promenade side (below, left & right). This erosion was most likely caused by wind blow sand and water draining from the promenade and previous patch repairs were evident although these were also eroded locally.



The low concrete wall fronting the public car park was generally in fair condition with displaced sections of wall at the northern extent as reported in 2008 (right). Rock armour units are present although predominantly as a barrier to prevent vehicular access to the beach.

During the 2008 inspections undercutting of the concrete apron was identified (below left High beach levels during the 2010 inspections (below right) meant that this undercutting was buried. Additionally, wind blown sand had accumulated on the landward side of the wall (below right).



3.7 Seaton Sands

South of the sewage pumping station, the frontage is undefended and comprises of a relatively stable dune system forming the Seaton Dunes Nature Reserve (below 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. Local cliffing was observed towards the south in close proximity to the North Gare breakwater (below 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.





A stone/rubble revetment is present to the south of the dunes tying into the North Gare Breakwater (left). Concrete armour units are also present to prevent outflanking. The revetment appeared to be effective with a consistent profile and only minor displacement of blocks.

3.8 North Gare Breakwater

The southern extent of the Hartlepool frontage is the North Gare Breakwater. As reported in 2008, the structure remained in poor condition. Fencing was present at the landward end of the structure (right) and signs warned members of the public not to enter although on the day of inspection several members of the public were present on the structure angling and watching ships entering the River Tees.



The breakwater is constructed from a combination of concrete and masonry elements, with extensive areas of previous repair including pre-cast concrete blocks, concrete bagwork of various sizes and insitu concrete pours (right).



Bagwork to the northern face was holding together reasonably well although starting to be undercut and outflanked (below left). The mass concrete apron was broken up into several large pieces which were largely independent from the structure (below right). The concrete remaining on the structure was beginning to be undercut and extensive voids were present.



Extensive spalling of concrete was evident throughout particularly to the lower deck surface and the precast recurve units (below left & right).



An area of the upper deck on the northern side of the structure had been taped off with steel bars and plastic tape with "KEEP OFF" painted onto the concrete (right). The reason for this was unclear although the slabs in this location were extensively cracked and potentially settling towards the seaward edge.



Displaced material and large cracks observed at the seaward end of the structure suggested that the head of the pier was becoming dislocated, possibly due to scour around the foundations (below, left & right). "KEEP OFF" was painted across the deck at the seaward extent of the structure. Large concrete armour units including accropodes around the nose of the pier were visible from the deck.



Several large pieces of concrete which appeared to have fallen from the structure were present on the foreshore to the south of the structure (below left). The nose of the breakwater appeared to step out on its northern face (below right).



The southern side of the structure is fronted by an extensive rubble embankment and well vegetated sand dunes (right & below left). 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 (below right).



4. Comparison with Previous Assessment

The previous formal assessment across the whole study frontage was undertaken in November 2008.

The condition of the hard defences along the frontage appears to be very similar to the 2008 inspections with no significant deterioration or improvement to any of the assets. The 2010 inspections generally identified further deterioration of defects recorded in the 2008 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

There is an urgent need for work at the Town Wall to prevent further undercutting a the toe and associated void formation beneath the Scheduled Ancient Monument

There is also the 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 has continued to deteriorate.

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

Defence	Location	Description	Priority	Recommended Action Date	Recommended Action	Details
1221C901C0301C01	North Sands	Dunes	Low	31/12/2012	Continue active monitoring	Monitor erosion to dunes at the mouth of Crimdon Beck.
1221C901C0302C01	North Sands	Dunes	Low	31/12/2012	Work required for health and safety	Remove obsolete industrial structures (pier, outfalls)
1221C901C0302C02	North Sands	Dunes	Low	31/12/2012	Continue active monitoring	Stabilise wall and slag bank.
1221C901C0302C03	North Sands	Embankment	Low	31/12/2012	Continue active monitoring	-
1221C901C0303C01	Marine Drive	Wall	Medium	31/12/2012	Improve condition through maintenance	Monitoring effectiveness of rock armour at northern end of seawall. Remedial work to beach access steps and ramp.
1221C901C0303C02	Hartlepool headland	Wall	Medium	31/12/2011	Improve condition through maintenance	Local repairs to abrasion & spalling. Replace failed concrete toe protection.
1221C901C0303C03	Hartlepool headland	Wall	Medium	31/12/2011	Improve condition through maintenance	Local repairs to abrasion & spalling.
1221C901C0303C04	Hartlepool headland	Wall	Medium	31/12/2011	Improve condition through maintenance	Infill voids. Local repairs to abrasion and spalling.
1221C901C0401C02	Hartlepool headland	Wall	Low	31/12/2012	Improve condition through maintenance	Repoint locally. Replace missing masonry.
1221C901C0401C03	Hartlepool headland	Wall	Low	31/12/2012	Improve condition through maintenance	Repoint locally. Replace missing masonry.
1221C901C0401C01	Heugh Breakwater	Breakwater	Medium	31/12/2011	Improve condition through maintenance / include in capital programme?	Detailed structural inspection.
1221C901C0401C04	Block Sands	Wall	Low	31/12/2012	Improve condition through maintenance	Infill voids and monitor for further undermining. Monitor spalling of coping units.

Defence	Location	Description	Priority	Recommended Action Date	Recommended Action	Details
1221C901C0401C05	Block Sands	Wall	Low	31/12/2012	Improve condition through maintenance	Monitor spalling of coping units.
1221C901C0401C34	Old Pier	Breakwater	Low	31/12/2012	Improve condition through maintenance	Minor concrete repairs to parapet wall.
1221C901C0401C06	Old Pier	Breakwater	Low	31/12/2012	Improve condition through maintenance	Monitor minor settlement of blockwork. Infill cracks and repair spalling to rear of access ramp.
1221C901C0401C35	Town Wall	Wall	High	31/12/2011	Include in capital programme	Infill voids formed at base of wall. Produce long term solution for loss of groynes and reduction in beach levels.
1221C901C0401C16	Middleton Jetty	Breakwater	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C17	Middleton	Gabion Wall	Low	31/12/2012	Continue active monitoring	Monitor settlement and integrity of displaced gabion baskets.
1221C901C0401C18	Middleton	Undefended	Low	31/12/2012	Continue active monitoring	Monitor potential over-steepening of access ramp
1221C901C0401C19	Middleton	Wall	Low	31/12/2012	Improve condition through maintenance	Infill voids.
1221C901C0401C20	Middleton	Wall	Low	31/12/2012	Improve condition through maintenance	Infill voids. Local repairs to abrasion and spalling.
1221C901C0401C22	North Pier	Breakwater	High	31/12/2011	Improve condition through maintenance / include in capital programme?	Detailed structural inspection
1221C901C0401C23	West Harbour	Revetment	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C24	West Harbour	Wall	Medium	31/12/2012	Improve condition through maintenance	Repoint locally. Infill voids.

Defence	Location	Description	Priority	Recommended Action Date	Recommended Action	Details
1221C901C0401C25	West Harbour	Wall	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C26	West Harbour	Revetment	Low	31/12/2012	Improve condition through maintenance	Repair area of settled blockwork – potential grout infill.
1221C901C0401C27	West Harbour	Wall	Low	31/12/2012	Improve condition through maintenance	Infill voids and make good access steps and slipway.
1221C901C0401C28	Middle Pier	Breakwater	Low	31/12/2012	Continue active monitoring	Remove vegetation from deck.
1221C901C0401C29	Middle Pier to South Pier	Wall	Low	31/12/2012	Improve condition through maintenance	Repoint lower courses.
1221C901C0401C30	Middle Pier to South Pier	Breakwater	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C31	Middle Pier to South Pier	Breakwater	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C32	South Pier	Breakwater	Low	31/12/2012	Continue active monitoring	-
1221C901C0401C33	Carr House Sands	Revetment	Low	31/12/2012	Continue active monitoring	Minor repairs to local concrete defects and corroded guardrails.
1221C901C0501C05	Seaton Sands	Wall	Medium	31/12/2012	Improve condition through maintenance	Infill cracks in concrete. Remedial work to access steps.
1221C901C0501C04	Seaton Sands	Wall	Medium	31/12/2012	Improve condition through maintenance	Infill cracks in concrete. Replace missing masonry. Replace missing grout.
1221C901C0501C03	Seaton Sands	Wall	Medium	31/12/2012	Improve condition through maintenance	Repoint masonry wall. Replace concrete render to north of revetment.
1221C901C0501C02	Seaton Sands	Wall	Low	31/12/2012	Improve condition through maintenance	Relocate displaced wall section. Infill cracks in concrete wall.

Defence	Location	Description	Priority	Recommended Action Date	Recommended Action	Details
1221C901C0502C01	Seaton Sands	Dunes	Low	31/12/2012	Continue active monitoring	Monitor erosion due to trampling. Consider fencing to control access.
1221C901C0503C01	North Gare Breakwater	Breakwater	High	31/12/2012	Include in capital programme	Detailed structural survey. Significant remedial works.*

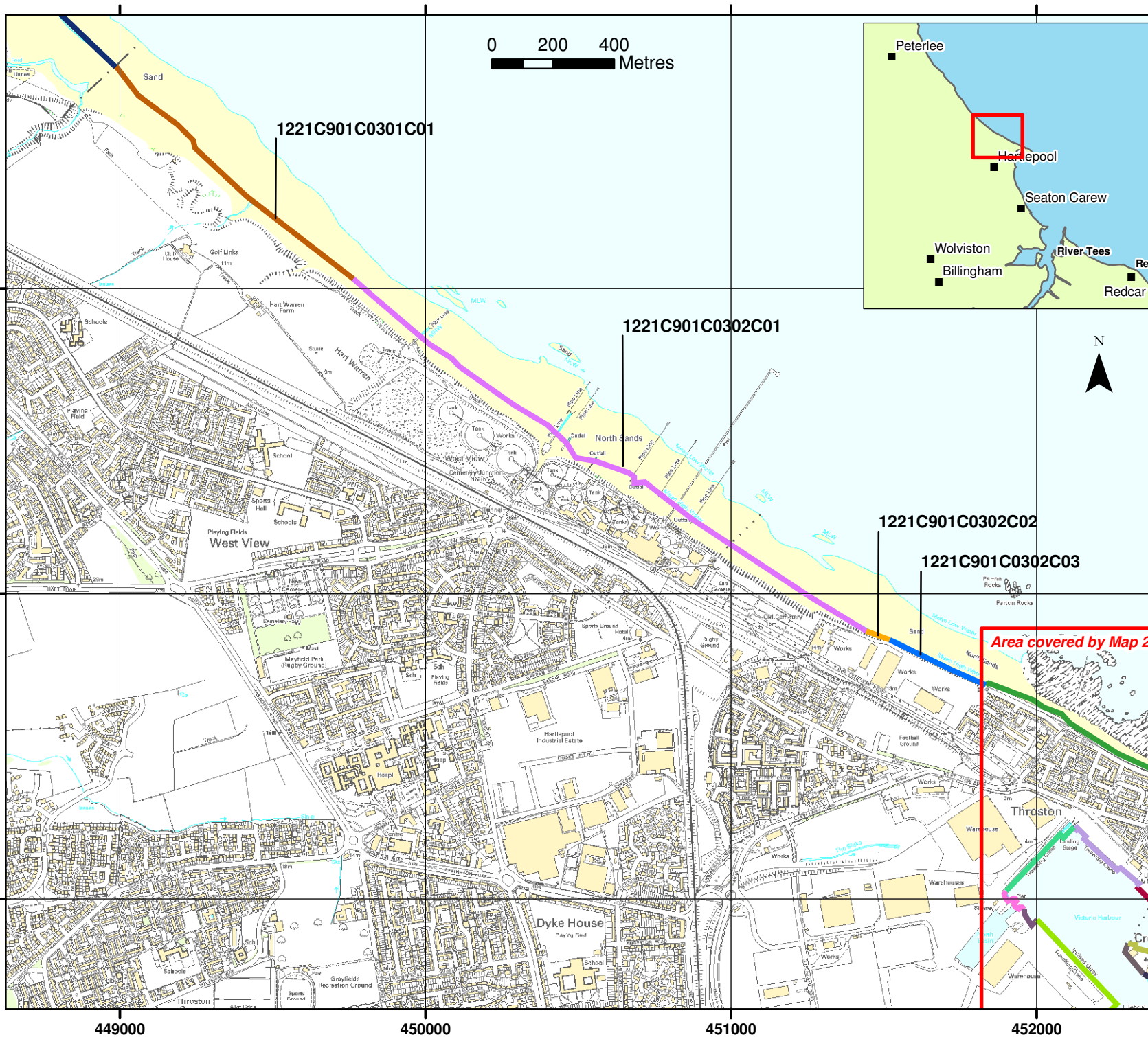
* The priority level encompasses the asset condition, residual life and weighting of the asset in addition to the nature, scale and cost of remedial work required. A guide to each of the priority levels is provided below:

Priority	Description
Low	Routine maintenance or local repairs
Medium	More significant survey and/or extensive maintenance work
High	Urgent investigation and/or extensive repair works. Potential replacement of asset elements or asset as a whole

Appendices

Appendix A

Asset Locations



Legend
 Asset location
 *NFCDD Asset Number*

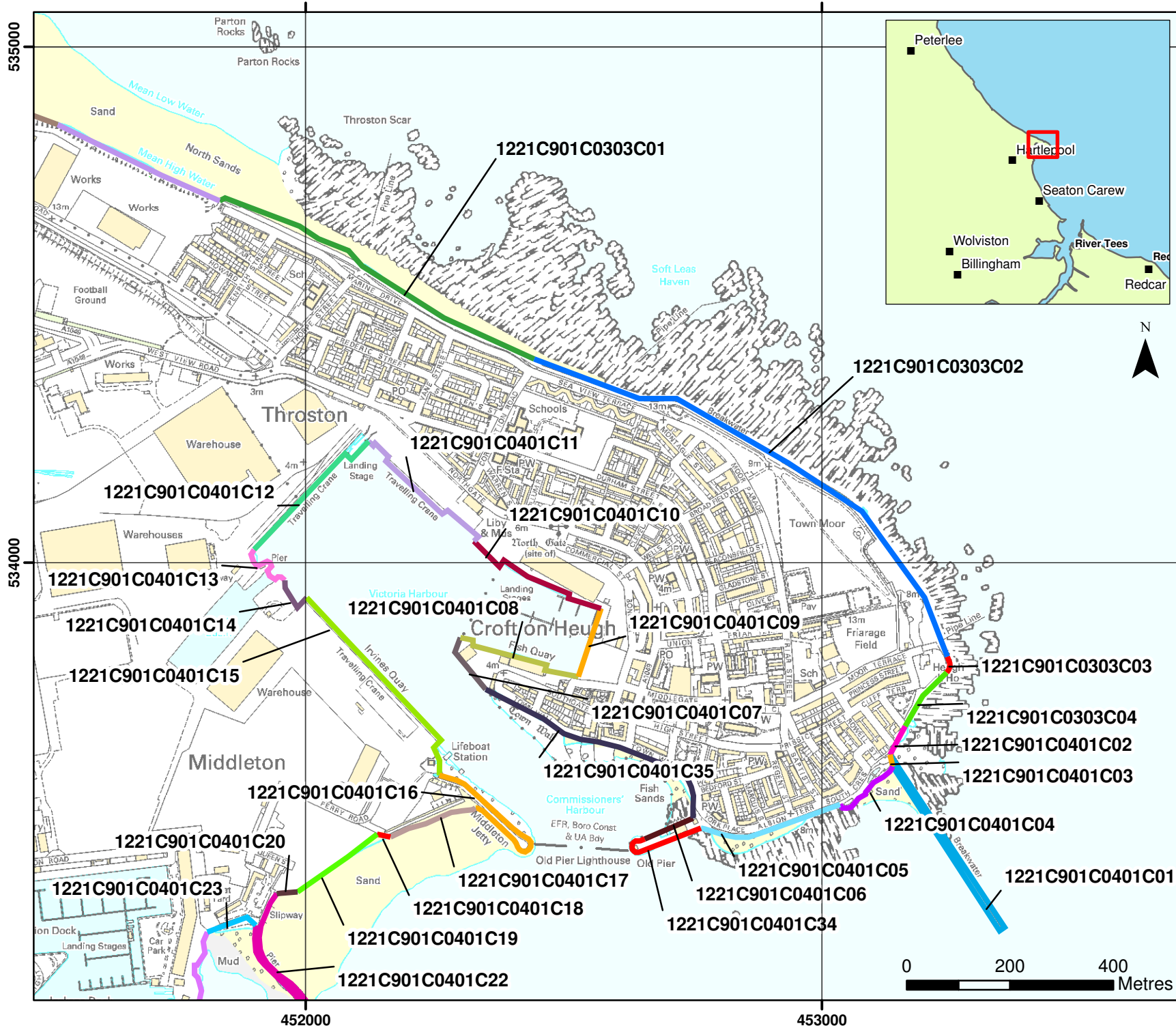
Client: North East Coastal Group
 Project: Cell 1 Regional Coastal Monitoring Programme

**Figure 1 - Map 1
 Hartlepool
 Council Frontage**
 Asset Inspection
 Report 2010

Drawing Scale 1:17,000 at A4

Drawn by: TC	Date: 25/05/2010
Checked by: MD	Date: 15/10/2010
Approved by: MD	Date: 15/10/2010

 ROYAL HASKONING	 Halcrow
Royal Haskoning Marlborough House Marlborough Crescent Newcastle upon Tyne NE1 4EE	Halcrow Group Ltd Lyndon House 62 Hagley Road Edgbaston Birmingham B16 8PE
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Legend

- Asset location
- NFCDD Asset Number

Client: North East Coastal Group
 Project: Cell 1 Regional Coastal Monitoring Programme

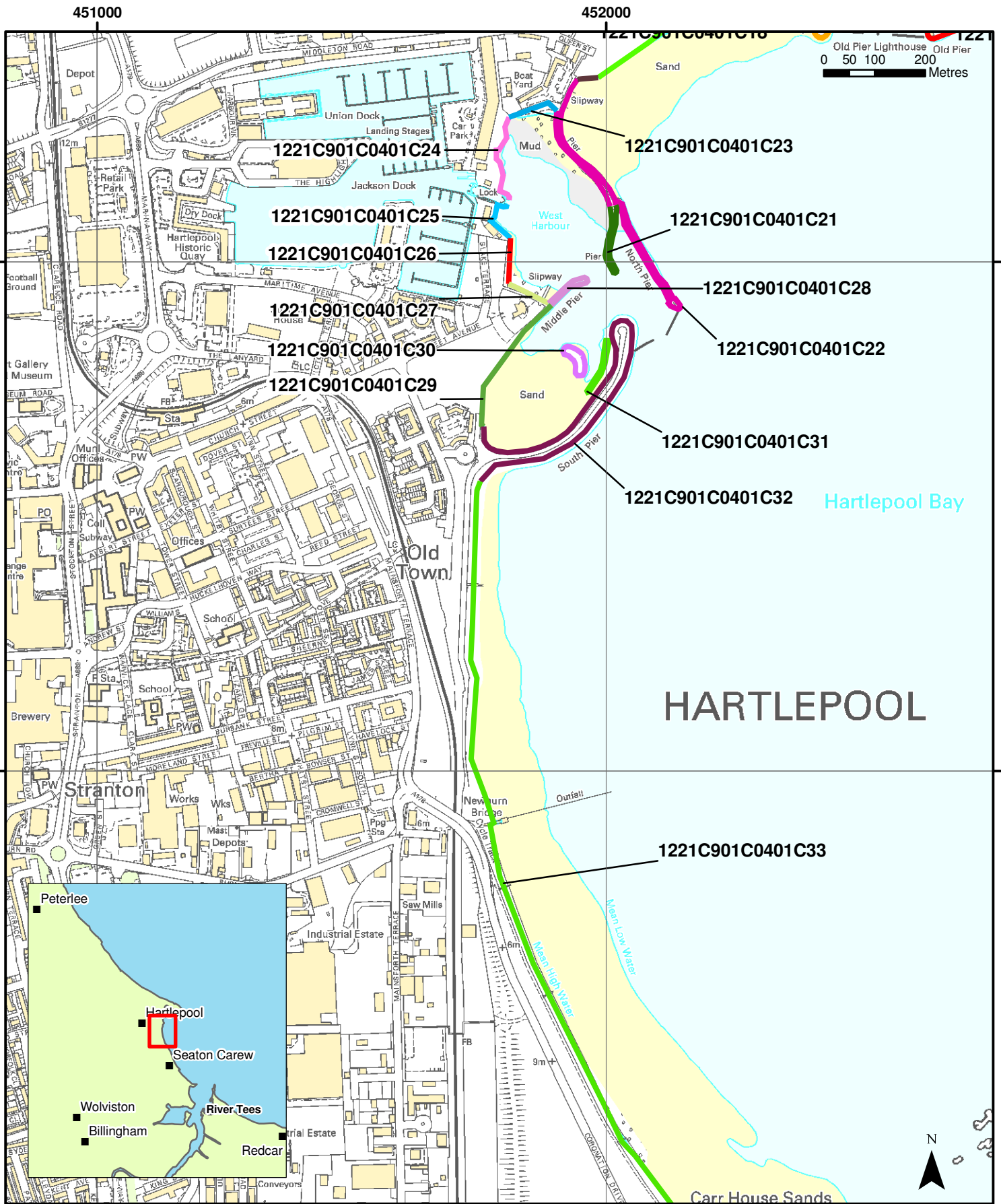
Figure 1 - Map 2
Hartlepool
Council Frontage
 Asset Inspection Report 2010

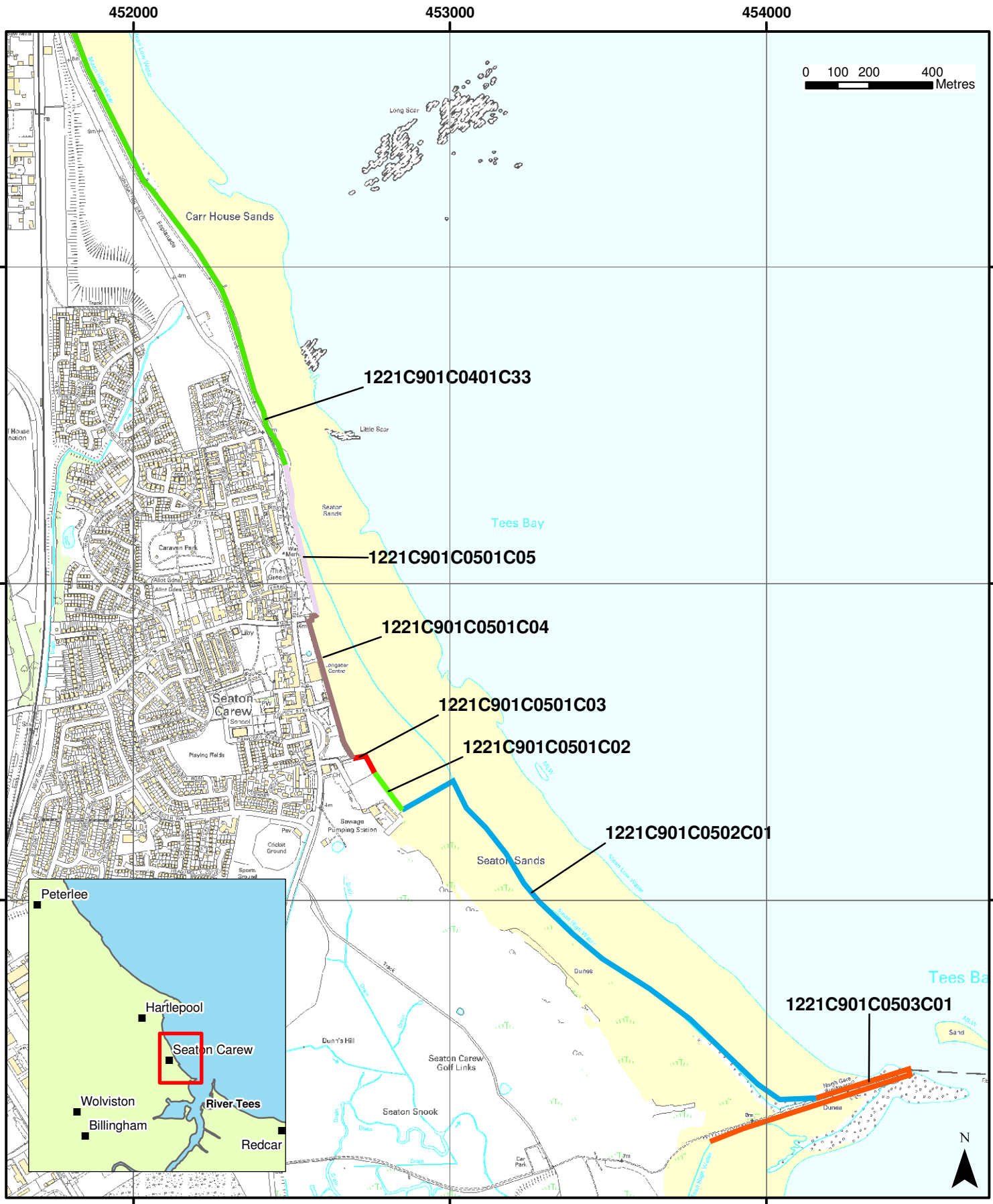
Drawing Scale 1:15,000 at A4

Drawn by: TC	Date: 25/05/2010
Checked by: MD	Date: 15/10/2010
Approved by: MD	Date: 15/10/2010

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Legend

- Asset location
- NFCDD Asset Number

Client: North East Coastal Group
 Project: Cell 1 Regional Coastal Monitoring Programme

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

Asset Inspection
 Report 2010

Drawing Scale 1:16,000 at A4



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Drawn by: TC	Drawn by: TC
Checked by: MD	Checked by: MD
Approved by: NC	Approved by: MD