



**Cell 1 Regional Coastal Monitoring Programme  
Walk-over Visual Inspections of Assets**



**Durham County Council  
Final Report**

**September 2012**

Durham County 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.

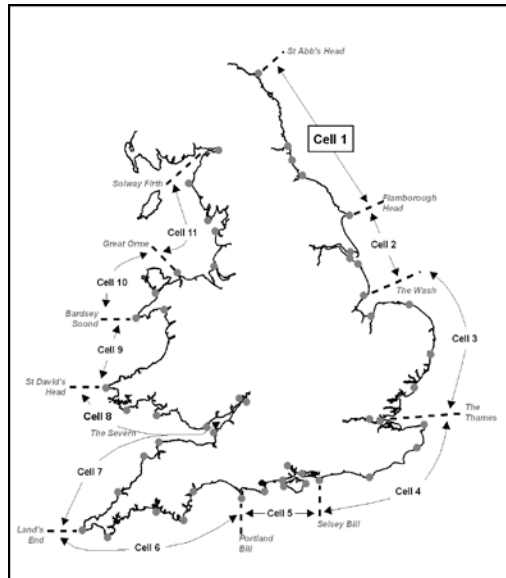


Figure 0-1: Sediment Cells in England and Wales

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 visual inspections

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 Durham County Council's frontage that were carried out in October 2012.

# 1. Introduction

## 1.1. Study Area

Durham County Council's frontage is approximately 17.5km in length and extends from Ryhope Dene at the boundary with Sunderland in the north to Crimdon Beck at the boundary with Hartlepool in the south, see Figure 1-1.

In accordance with previous coastal inspection surveys, this frontage is sub-divided into approximately 35 coastal assets, 27 of which are man-made assets while 8 are natural assets. Detailed maps showing the location of each of these coastal assets are presented in Appendix A.

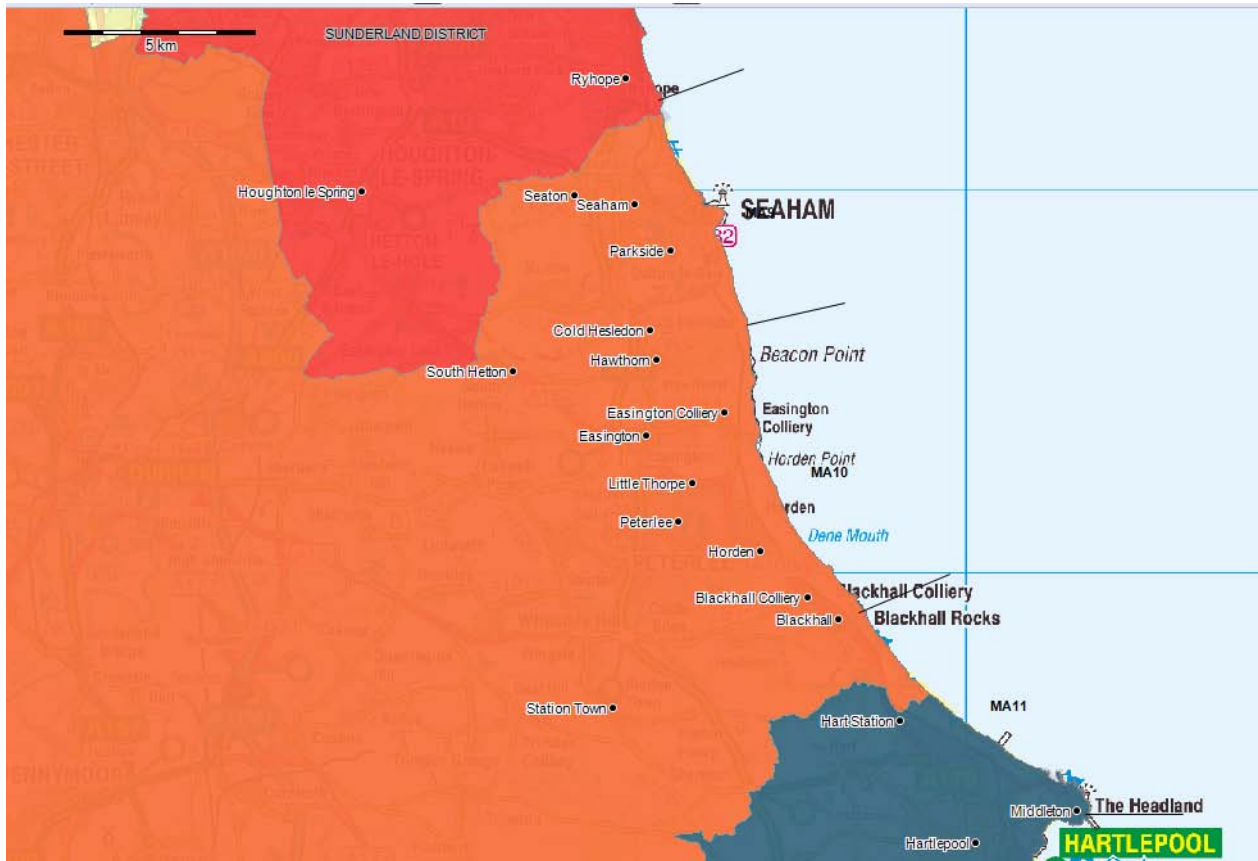


Figure 1-1: Durham County Council study area.

## 1.2. Methodology

This section presents the approach taken by the coastal asset inspectors for the Durham County 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 Durham County Council frontage were undertaken on the 28th September and 4th 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 majority of the quay walls and breakwaters within Seaham Harbour, were not inspected because they are not classified as coastal defence assets and they are located within privately owned areas not accessible to the public.

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 both the natural and built defence assets along the Durham County frontage since the previous formal inspections in July and August 2010. The following significant findings were observed during the 2010 inspections:

- There have been ongoing localised rock falls in the harder rock cliffs (including cracking, formation of caves and arches, and overhangs) and occasional slumps in the overlying till along undefended sections of cliff.
- The shingle and cobble beach levels along the northern Seaham frontage were generally quite high. The heavy rainfall at the end of September had cut a deep channel through the shingle beach where the beck from Seaham Dene enters the sea.
- At the south end of the public beach at Seaham the low beach levels were exposing the remains of piles from former groynes, which are a potential trip hazard and should be removed if confirmed redundant.
- Seaham Harbour north basin was still undergoing redevelopment, with the construction of a new floating pontoon, lock gates and dock-side facilities.
- The rock armour cliff toe protection south of Seaham harbour remains in good condition, although there were signs of surface slips in the softer cliff material above.
- There was very little colliery spoil left on the foreshore north of Nose's Point and there are an increasing number of local slumps in the backing cliffs.
- There had been further minor erosion of the spoil in Blast Beach, but there remains a sufficient width of beach to significantly protect the generally stable backing cliffs across much of the bay.
- The colliery spoil continues to erode on the foreshore, in the bays between Chourdon Point and Blackhall Rocks. Where sufficient spoil is present, such as at Horden Denes the backing cliffs are afforded protection and are relatively stable. Where spoil is absent, the cliffs are actively eroding.
- The dunes north of Crimdon Beck were generally well vegetated although informal paths through the dunes was resulting in localised erosion. At Crimdon Beck the discharge had been deflected to the south resulting in erosion of the face of the dunes to the south.

### 3. Condition Assessment

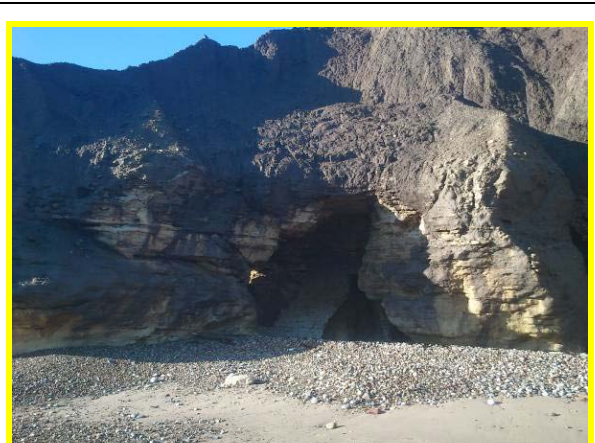
#### 3.1 Pincushion Rocks to Chourdon Point (MA 09)

##### 3.1.1 Ryhope Dene to Seaham

The most northern NFCDD asset length (121AB901B0804C01) within Durham County Council's jurisdiction extends along undefended sea cliffs from Ryhope Dene to the picnic site located at the north of Seaham, near Seaham Hall. The cliffs comprise a Magnesian Limestone base with overlying glacial till (below left). There remains ongoing active slumping in the till upper cliff along the whole undefended length and due to the heavy rainfall in Autumn 2012 there were frequent slumps and mudslides, below left. There are frequent caves and arches formed in the limestone rock at the base of the cliffs caused by differential erosion by waves (below right).



Looking south from Ryhope Dene. Frequent slumps and mudslides in upper till. (Asset ref. No. 121AB901B0804C01)



Caves in lower cliff with mudslides in till above. (Asset ref. No. 121AB901B0804C01)

Immediately adjacent to the access steps from the picnic site car park is a stream that discharges to the foreshore. The 2008 report notes that this stream was in spate due to the heavy rainfall that preceded the inspection (below left). During the 2010 inspections, there was very little flow (below right). Despite the heavy rain at the end of September there was little flow in the beck at the time of the inspection on 4th October 2012. The outflanking noted at the short length of blockwork wall immediately to the north of the stream, appeared unchanged since 2010, see photos below and overleaf.





Outflanking at north of steps unchanged from 2010. (Asset ref. No. 121AB901B0804C01)



Looking north from near access steps. Mudslides covering sections of the limestone base. (Asset ref. No. 121AB901B0804C01)

Immediately south of the car park access steps is a short undefended length of cliff, followed by a short (approximately 10m) length of low-level wall at the tie in to the main Seaham seawall to the south. As during the 2010 inspections the beach levels at the wall were quite high, offering protection to the structure (below right). Backing the southern end of this low-level wall, and continuing behind the very northern end of the Seaham sea wall is a blockwork revetment on the backing slope which remains in fair condition.



Wall at north end of Seaham. Photo from 2010 report.



Minor outflanking at interface with wall. (Asset ref. No. 121AB901B0804C01)

### 3.1.2 Seaham

The main Seaham sea wall, (Asset ref. no. 121AC901C0102C01) is fronted by a shingle beach, which was fairly high at the time of the inspection, covering a large part of the front face of the wall, with levels generally similar to the previous inspection in 2010. However, the heavy rainfall prior to the 2012 inspection had cut a significant scour channel through the beach extending from the outfall from Seaham Dene, see below right. The wall and promenade were in fair condition (below left). There was some vegetation growth in construction joints and cracks in the promenade, which should be removed and the joints sealed. Locally where beach levels were high the promenade drainage holes were blocked with shingle. Abrasion damage was evident to the wall in places. As the beach levels were high the groynes and piling noted in NFCDD were not visible. Some of the drainage holes in crest wall were blocked with shingle/cobble from the high beach. There was some apparently redundant steel piling from former or buried groynes present on lower beach at the south end which could be a health and safety hazard to people using the beach, so should be removed if confirmed redundant, see below lower right.



Cracks to promenade with vegetation growth.  
Well vegetated cliff to rear.  
(Asset ref. No. 121AC901C0102C01)



Scour channel at outfall from Seaham Dene  
(Asset ref. No. 121AC901C0102C01)



Minor abrasion damage to lower wall  
(Asset ref. No. 121AC901C0102C01)



Groyne piles on beach at south end.  
Recommended to confirm redundant and  
remove to reduce H&S risks.  
(Asset ref. No. 121AC901C0102C01)

To the south of the seawall there is a rock armour berm providing toe protection to the cliffs around the headland adjacent to Featherbed rocks. The rock armour appeared in good condition. The cliffs to the rear show continued slow erosion and slumping of the upper till layers, see below right.



Rock armour protecting headland south of  
seawall in good condition  
(Asset Ref. No.121AC901C0103C01)



Continued slumping of upper cliff behind rock  
armour berm.  
(Asset Ref. No. 121AC901C0103C01)

South of the headland, the rock armour protects a short length of concrete wall with a large outfall from the culverted Dawdon Dene, (below left), which is NFCDD asset 121AC901C0103C04. At the north and south of the wall there is some masonry placed to fill the previous slight outflanking at the tie-in to the limestone cliffs. This has been damaged at the south corner, see below right and needs a small repair. The crest wall has vertical cracks which should be repaired.



The rock revetment extends around the small headland to south of the outfall. Although the rock armour is in good condition the limestone cliff is continuing to erode through weathering, see below right, and this is putting the cliff top properties and boundary fence at imminent risk from erosion see below.



Then rock armour starts to taper out with progression south (below left), with asset ref. 121AC901C0103C06 a transition from the armour to undefended, see below right. There is evidence of previous surface slumps in the cliff face, but at the time of the inspection the cliff was well vegetated with no signs of movement.



Rock armour protecting cliff toe tapers out  
(Asset Ref. No. 121AC901C0103C06)



Signs of previous slumping in cliff to north of  
beach access ramp.  
(Asset Ref. No. 121AC901C0103C06)

The beach access ramp and steps are supported by a vertical concrete wall, below left that has a large diagonal crack through the full height. The crack is also present on the photo from in 2010 so the situation does not seem to have significantly worsened. There was also minor cracking to retaining wall at toe of slope to rear of ramp.



Photo from 2010 report  
(Asset Ref. No. 121AC901C0103C07)



Beach access ramp and steps.  
(Asset Ref. No. 121AC901C0103C07)



Undefended length south of beach ramp.  
(Asset Ref. No. 121AC901C0103C05)

There was a high cobble beach running from north of the access steps through the bay to the northern extent of Seaham Harbour. This gives a high degree of protection to the cliff

toe, see above right. There was evidence of former movement at several locations in the cliff vegetation, but the cliff was vegetated and appeared stable at the time of the inspection.

At the south end of the bay there is a rock armour revetment, asset 121AC901C0104C02, which is in good condition, see photos below. This defence forms the link to the root of the North Pier of Seaham Harbour and in a protected location where there had previously been outflanking of the North Pier.



Rock armour in good condition  
(Asset Ref. No. 121AC901C0104C02)



Rock armour at rear of harbour reclamation.  
(Asset Ref. No. 121AC901C0104C02)

### 3.1.3 Seaham Harbour

Seaham Harbour is privately-owned by the Seaham Harbour Dock Company, with most areas not being publicly-accessible. The 2010 inspections report notes that, construction work was ongoing as part of the Council-supported £3M North Dock Regeneration Project, which will include a new floating pontoon, lock gates and dock-side facilities. The work was still underway at the time of the 2012 inspections, with opening of the facilities expected in early Spring 2013. Due to the restricted access due to redevelopment construction work in the North Dock and port related activity along South Dock, the site was not entered and structures were only inspected from a distance, as with the 2010 inspections.

The North Pier was viewed through the locked access gate, see photo below left. The concrete deck shows significant damage and weathering, see photo below left, although the massive structure still clearly provides an effective coast protection function and is therefore assumed to be in fair overall condition.

The dressed masonry wall at the back of the beach in the outer harbour appeared to be in fair condition when viewed from a distance, below right.

It is recommended that more detailed inspections, including vessel based and underwater inspection are undertaken by the Dock Company once the regeneration project is complete and if not already in progress a maintenance programme should be put in place.



View of North Pier  
(Asset Ref. No. 121AC901C0104C03)



Dressed masonry revetment slope with new marina building to rear.  
(Asset Ref. No. 121AC901C0104C05)

The South Pier was only inspected from a distance as it is within the port operational area, see photos below. The main pier appeared to be in fair overall condition, although there are visible areas of damage seaward of the rock armour. At the root of the pier rock armour has been placed at the tie in to the coast, below right as part of a previous phase of regeneration. The armour continues to the south protecting the port access road and appeared to be in very good condition.



View of South Pier  
(Asset Ref. No. 121AC901C0104C17)



Rock armour at root of South Pier.  
(Asset Ref. No. 121AC901C0104C01)

### 3.1.4 Dawdon

The frontage between Seaham Harbour South Pier and Seaham Fleet Rock is protected by a continuation of the rock armour revetment extending southwards from the South Pier. In the north the armour is against the cliff toe, where there is evidence of a former vertical wall (below left), whilst in the south it is placed as a bund slightly seaward of the near vertical cliff, below right. The rock armour is in very good condition. There was some evidence of localised surface slumping in the vegetated slopes between the rock armour and the road.





Rock armour south of port  
(Asset Ref. No. 121AC901C0105C01)



Rock armour bund seaward of cliff  
(Asset Ref. No. 121AC901C0105C01)

South of the revetment between Seaham Fleet Rock and Nose's Point, the unprotected cliffs were previously fronted by a colliery spoil beach but this has now been almost completely eroded and there are an increasing number of local slumps in the backing cliffs. Debris exposed by the eroding beach should be removed routinely.

### 3.1.5 Nose's Point and Blast Beach

At Nose's Point headland, the cliffs characteristically have caves and arches formed at their base (below left). The headland appears relatively stable and exerts a control on both the Dawdon frontage to its north and Blast Beach to the south.



Caves and arches at Nose's Point from 2010 report. (Asset Ref. No. 121AC901C0107C01)



Cliffs with caves at Nose's Point  
(Asset Ref. No. 121AC901C0107C01)



Photo of Blast beach from 2010 report  
(Asset Ref. No. 121AC901C0107C01)



Eroding colliery Spoil at Blast beach  
(Asset Ref. No. 121AC901C0107C01)

To the south of Nose's Point is the bay of Blast Beach, above left and right. The near vertical cliff line at the rear of the bay has been relict for many years as it is protected by an artificial beach formed of colliery spoil. The colliery waste is eroding fairly rapidly and has been almost totally lost at the south where it meets Chourdon Point. In future the limestone cliffs will become active again.



Eroding spoil at north end of Blast beach  
(Asset Ref. No. 121AC901C0107C01)



Blast beach looking south to Chourdon Point  
(Asset Ref. No. 121AC901C0107C01)

### 3.2 Chourdon Point to Blackhall Rocks (MA 10)

#### 3.2.1 Chourdon Point

Unlike the cliffs to the north and south, Chourdon Point (Asset ref no 121AC901C0107C02) has no protection from the colliery spoil and so similarly to Nose's Point there are caves, overhangs and arch formations at the base of the cliffs due to the weathering and erosion process.

#### 3.2.2 Hawthorne Hive, Shippersea Bay and Easington Colliery

The coast between Chourdon Point in the north and Horden Point in the South consists of a single NFCDD asset reference 121AC901C0107C01. This unit has been classed as "locally Active" and includes the bays of Hawthorne Hive and Shippersea, which both contain artificial beaches of eroding colliery spoil at the base of the natural cliffs. Further south the artificial beach is narrow or almost completely eroded.

Where there is no colliery waste beach the cliffs are subject to cave and arch formation at their base, with local rockfalls occasionally occurring and slumping in the upper till layers.



View looking north to Shippersea Point  
(Asset Ref. No. 121AC901C0201C01)



View of beach at Easington Colliery, between  
Loom and Fox Holes showing colliery waste in  
centre of bay and localised slumps and a cliff  
fall in the centre of the picture  
(Asset Ref. No. 121AC901C0201C01)

#### 3.2.3 Horden Denes

Between Horden Point and Blackhall Rocks there is a long uninterrupted length of colliery spoil beach, which is NFCDD asset 121AC901C0201C02. This protects the backing cliffs from marine action, enabling them to become relatively stable and vegetated. However, despite the protection afforded by the foreshore and spoil beach, there remains occasional local slumping in the backing slopes.

In many locations there is debris on the beach such as old pipes and metalwork that is being exposed as the spoil erodes. This should be removed routinely to reduce health and safety hazards.

At the time of the inspection the eroding face of the colliery spoil had formed a low cliff on the beach between 0.5m and 1m in height, see below. Seaward of the beach cliff there was a large cobbles wedge at the back of the inter-tidal beach. It was noted that the upper beach

is used by a number of recreational vehicles. This should be discouraged as the cliff at the edge of the eroding waste forms a significant hazard that can change on a daily basis.



Eroding edge of colliery spoil at Horden Beach  
(Asset Ref. No. 121AC901C0201C02)



Eroding edge of colliery spoil at Horden Beach  
(Asset Ref. No. 121AC901C0201C02)



Eroding edge of colliery spoil at Horden Beach  
(Asset Ref. No. 121AC901C0201C02)



View of artificial beach looking north from  
Blackhall Nature Reserve  
(Asset Ref. No. 121AC901C0201C02)

### 3.3 Blackhall Rocks to Heugh Breakwater (MA 11)

#### 3.3.1 Blackhall Rocks and Crimdon Park Caravan Site

At Blackhall Rocks there is an extensive rocky outcrop on the foreshore (below left), and the backing cliffs have extensive cave formation at their base (below right).



The frontage south of Blackhall Rocks is protected by the rock scars of the foreshore, see below left and right. The cliffs are formed from softer material overlying a near vertical hard rock base. As in the 2010 inspection there were signs of the softer material slumping throughout although the extensive vegetation coverage indicates a relatively slow rate of erosion. Where material has fallen onto the foreshore, vegetation was present, suggesting a relatively stable environment, particularly where the beach is wide. Rock falls from over-steepened/overhanging sections are evident locally. Fractures are visible in the rock indicating potential failure locations in the future.

Near the north end of the caravan park, between Limekiln Gill and the caravan park access steps there are extensive cliff slumps and cliff failures. The 2010 report noted that a 10m length of the caravan park fence had been damaged, see left photo overleaf. As the cliff is expected to continue to erode the fence should be regularly relocated as required.





Cliff failure near north end of caravan park.  
Photo from 2010 report.  
(Asset Ref. No. 121AC901C0301C01)



Vegetated cliff slopes adjacent to caravan park  
(Asset Ref. No. 121AC901C0301C01)

### 3.3.2 Crimdon Park Caravan Site to Crimdon Beck

From Crimdon Park Caravan Site to the southern limit of the Durham coast at the boundary with Hartlepool at Crimdon Beck, the frontage comprises of extensive dunes (below left and right). There is a wide sandy beach that has formed in the bay controlled by the resistant rocks of Hartlepool headland to the south. This has encouraged the growth of the dune system, which before development was continuous through to the headland.



North end of dune system near caravan park  
(Asset Ref. No. 121AC901C0301C01)



View of dune system looking south from  
caravan park, showing paths through dunes  
(Asset Ref. No. 121AC901C0301C01)



Sand dunes north of Crimdon Beck  
(Asset Ref. No. 121AC901C0301C01)



Sand dunes at Crimdon Beck, showing erosion  
of dune face to south (Asset Ref. No.  
121AC901C0301C01)

At the north of the dunes they tie in to the well vegetated slope at the south of the caravan park. Further south, the crest level falls and the dunes widen into a dune field. The seaward dunes have experienced minor slumping locally, particularly to the south on the seaward dunes which are generally steeper and have more sporadic vegetation cover.

A network of informal footpaths crosses the dunes in addition to more formal boardwalks and aggregate footpaths. In places this has led to loss of vegetation and localised erosion of the dunes. Chestnut paling fences to stabilise the dunes, reduce trampling and limit access have been used in places.

There was some flow in Crimdon Beck at the time of the inspection, which was after a period of heavy rain and storms at the end of September 2012. The beck diverts to the south as it enters the beach and this is causing erosion of the front face of the dunes within Hartlepool BC's area, see photo above right.

## **4. Comparison with Previous Assessments**

Previous formal assessments across the whole study frontage were undertaken in November 2008 and July 2010. Comparative photographs have been included in the main text for a number of key locations.

The 2010 report noted that between 2008 and 2010 several areas of undefended cliff have suffered from further fracturing of the rock structure, which in some cases this had led to local rock falls, sometimes accompanied by small slumps in the overlying till. In one location near Loom, the 2010 report noted the collapse of a section of several tens of metres of cliff top, necessitating the diversion inland of the public footpath.

The October 2012 inspections found the condition of the hard defences along the frontage appears to be very similar to that found in the 2008 and 2010 inspections. There has been further erosion of the artificial beaches formed from colliery waste that protect the relict cliffs in many of the bays south of Seaham, although the differences are not dramatic.

## **5. Problems Encountered and Uncertainty in Analysis**

All assets were inspected at suitable stages of the tide and therefore there were no problems encountered. As in previous years the privately owned assets within Seaham Harbour were not inspected.

The inspections took place at the beginning of October 2010, shortly after a period of heavy rainfall and storms which may have temporarily lowered beaches in places. The subsequent Autumn and Winter periods were exceptionally wet and this is expected to have precipitated slumps in the upper layers of the soft cliffs in susceptible locations.

## **6. Conclusions and Recommended Actions**

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

In the majority of locations the ongoing erosion of undefended sea cliffs does not appear to be causing significant increase in risk to people, property or infrastructure. There are a number of locations where cliff toe protection is reducing the rate of erosion, but assets on the cliff top are still at risk related to weathering and continued erosion of partly protected cliffs.

It is highly recommended that continued monitoring is undertaken for all assets. Specific recommendations for individual assets are given in the table in Appendix B.



# Appendices

# **Appendix A**

## **Asset Locations**

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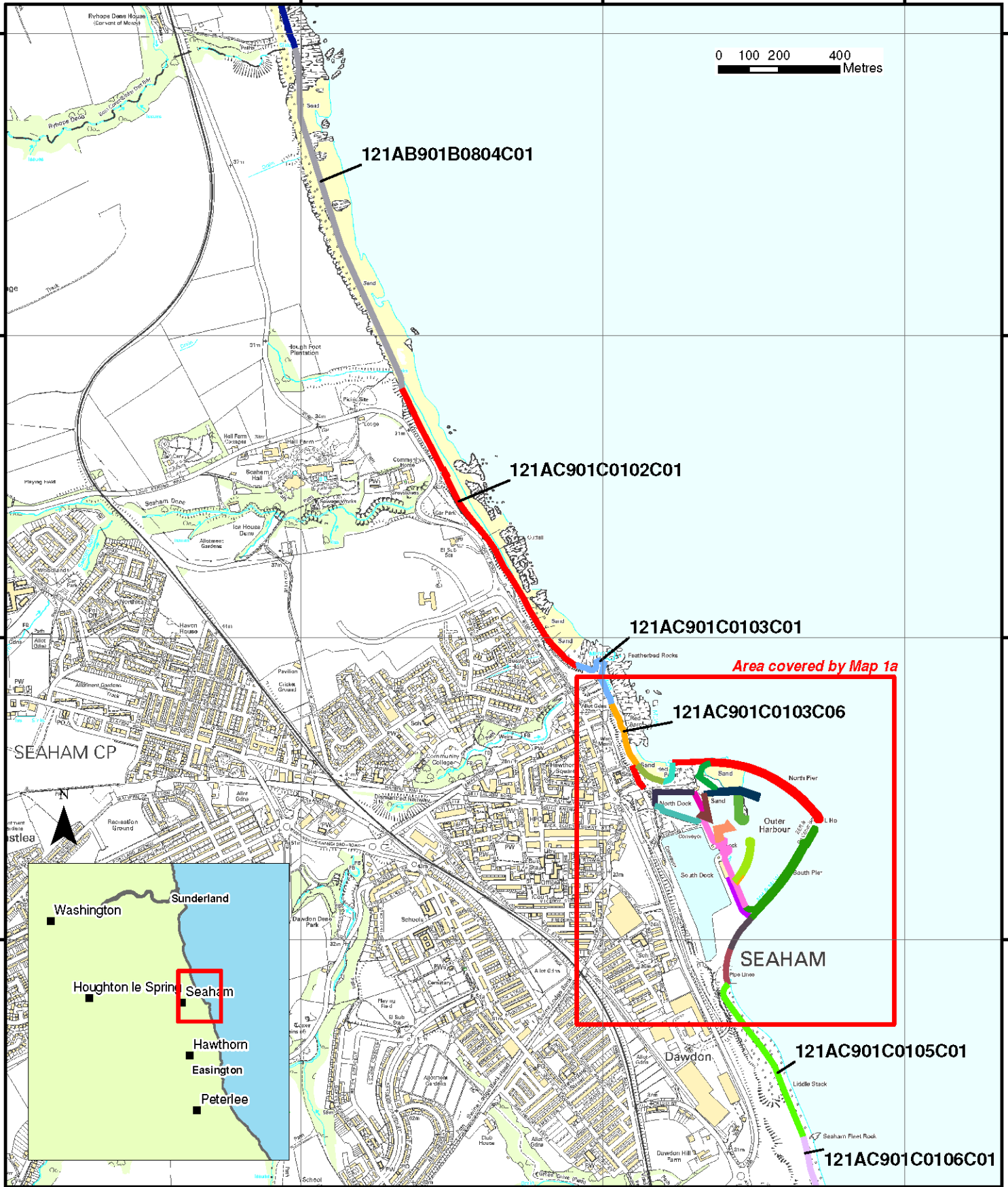
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**Legend**

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 1  
 Durham County Council  
 Frontage**

Coastal Walkover  
 Inspection Report  
 Drawing Scale 1:15,000 at A4

**Halcrow Group Limited**

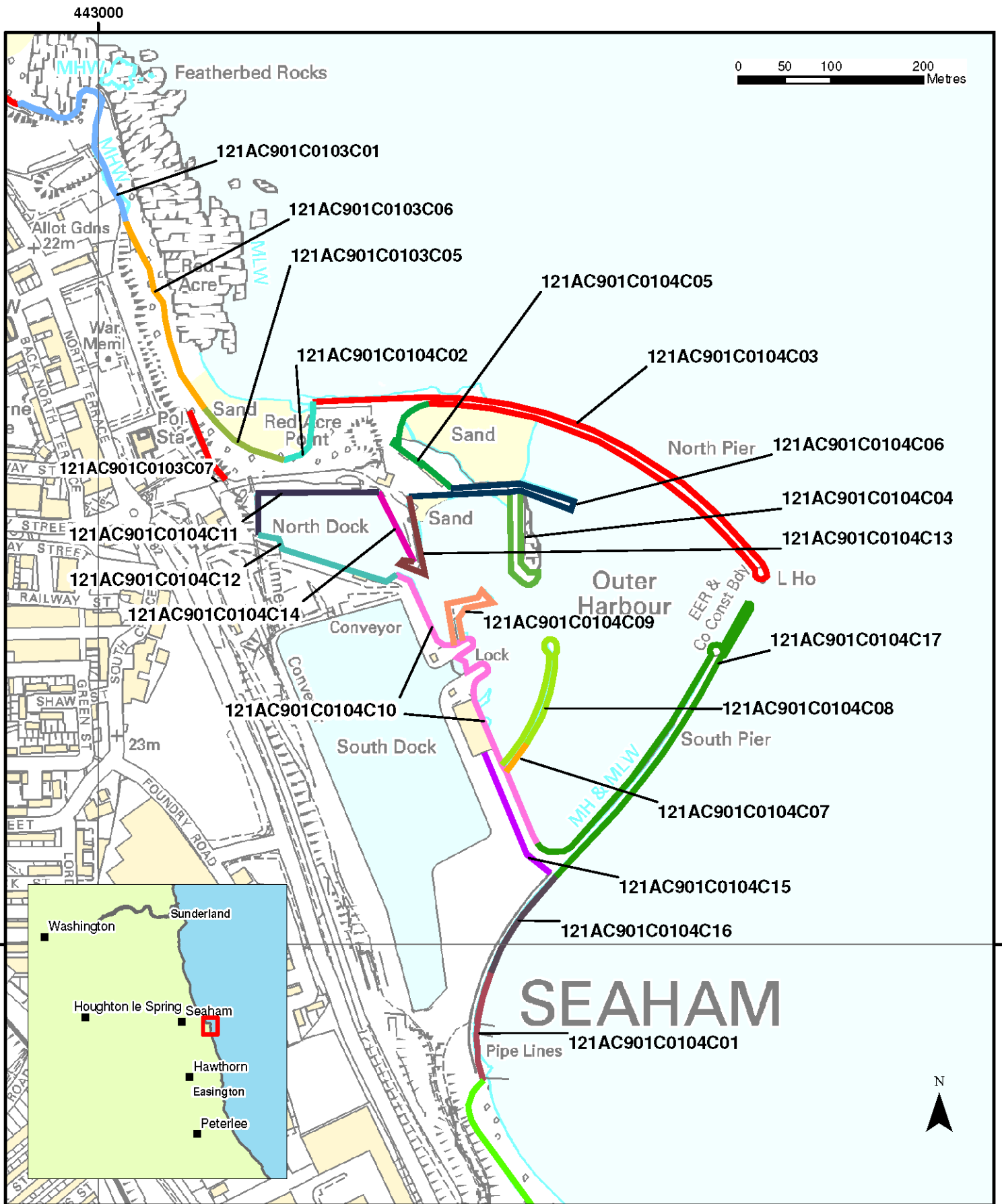
Burderop Park  
 Swindon  
 Wiltshire  
 SN4 0QD

+44 (0)1793 812479



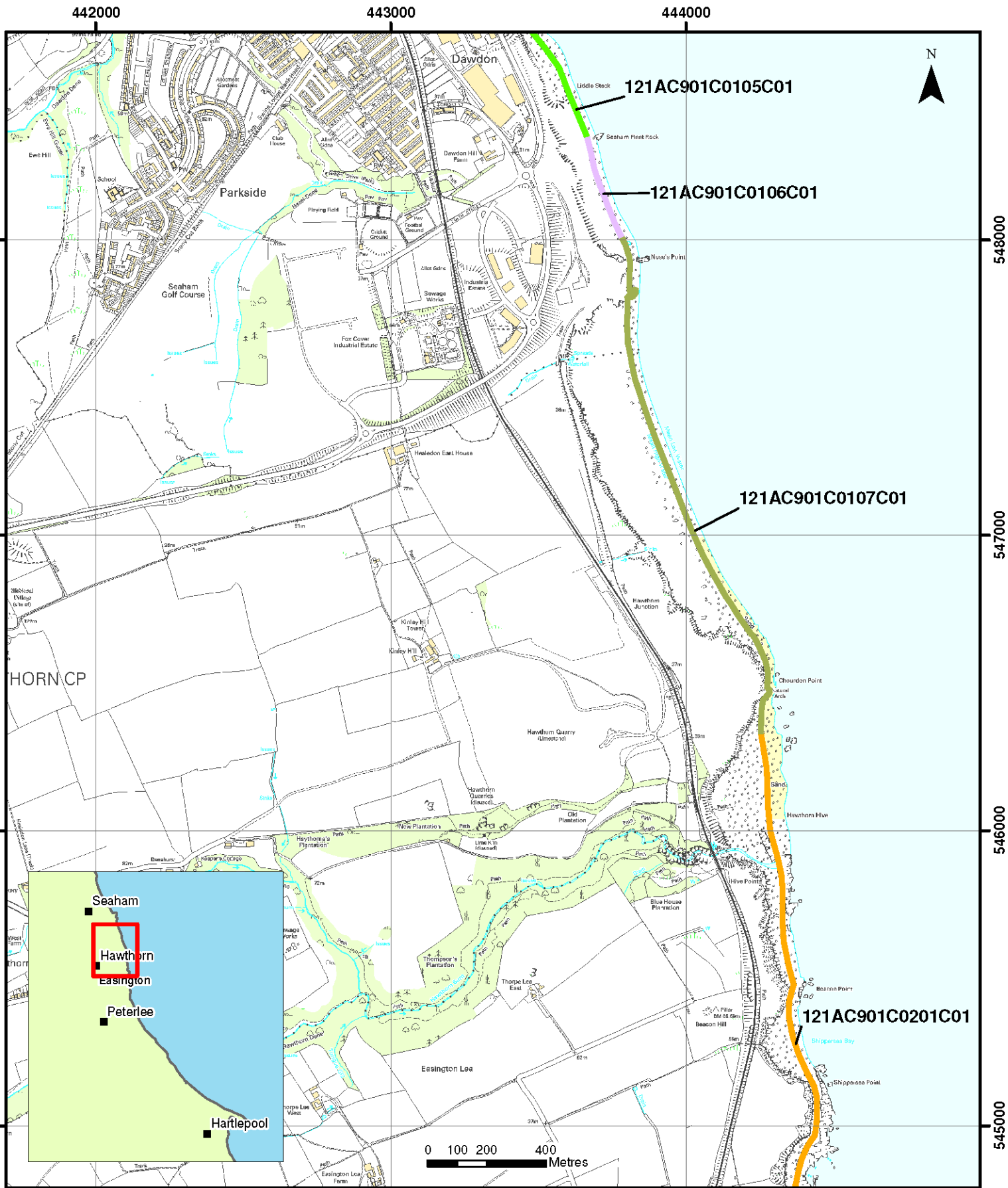
**Notes:**

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



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<p><b>Legend</b></p> <p> Asset location</p> <p> NFCDD Asset Number</p>	<p>Lead Authority: Scarborough Borough Council</p> <p>Project: Cell 1 Regional Coastal Monitoring Programme</p> <p><b>Figure 1 - Map 1a</b></p> <p><b>Durham County Council</b></p> <p><b>Frontage</b></p> <p>Coastal Walkover Inspection Report</p> <p>Drawing Scale 1:15,000 at A4</p>	<p><b>Halcrow Group Limited</b></p> <p>Burderop Park Swindon Wiltshire SN4 0QD</p> <p>+44 (0)1793 812479</p> <p> A CH2M HILL COMPANY</p>	<p><b>Notes:</b></p> <p>All maps taken from 2010 Asset Inspection Reports and updated where necessary</p>
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**Legend**

- Asset location
- NFCDD Asset Number

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

**Figure 1 - Map 2**  
**Durham County Council**  
**Frontage**

Coastal Walkover  
 Inspection Report

Drawing Scale 1:15,000 at A4

**Halcrow Group Limited**  
 Burderop Park  
 Swindon  
 Wiltshire  
 SN4 0QD

+44 (0)1793 812479

A CH2M HILL COMPANY

**Notes:**

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

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**Legend**

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 3  
 Durham County Council  
 Frontage**

Coastal Walkover  
 Inspection Report  
 Drawing Scale 1:15,000 at A4

**Halcrow Group Limited**

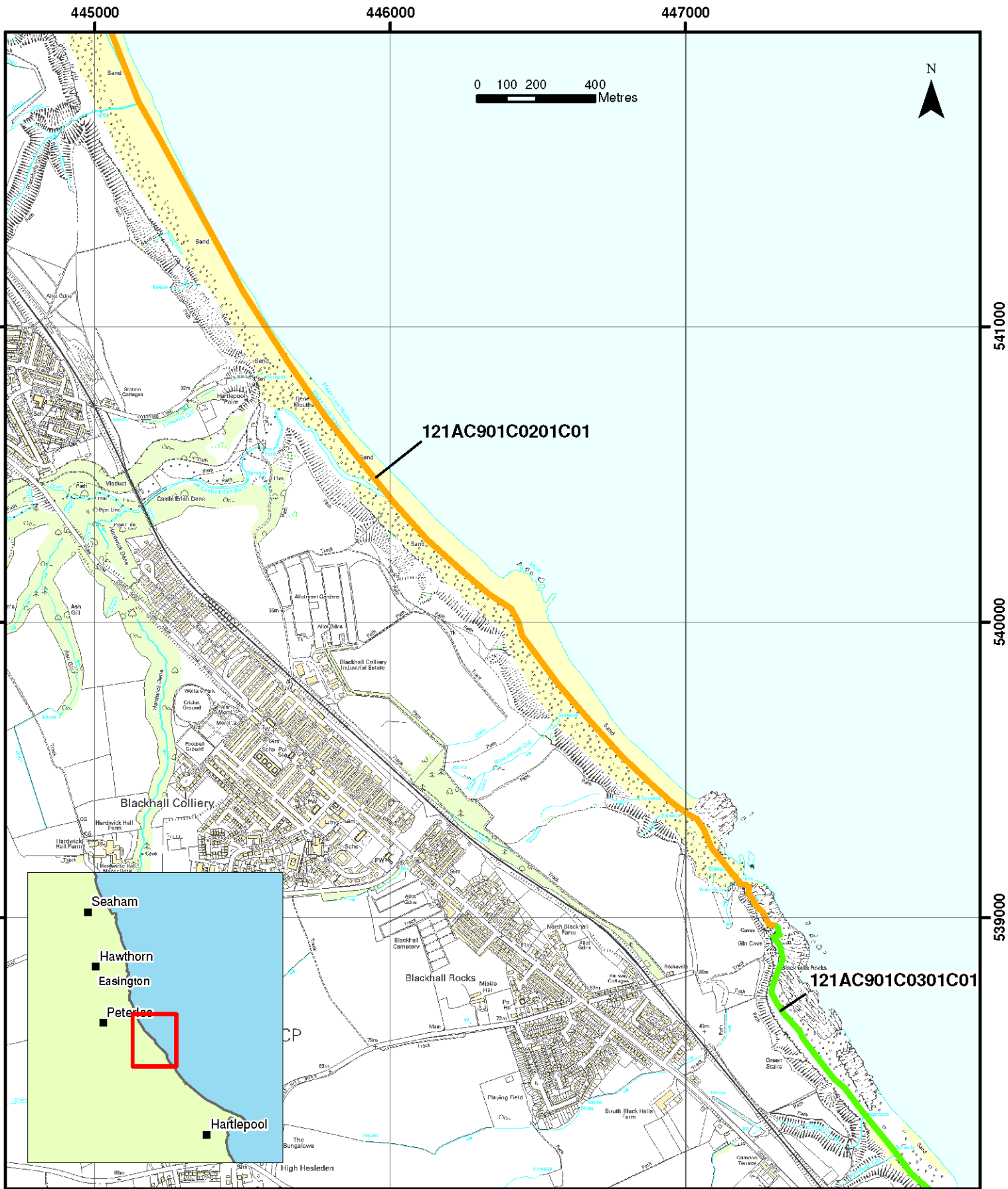
Burderop Park  
 Swindon  
 Wiltshire  
 SN4 0QD

+44 (0)1793 812479





**Notes:**

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



**Legend**

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 4  
 Durham County Council  
 Frontage**

Coastal Walkover  
 Inspection Report  
 Drawing Scale 1:15,000 at A4

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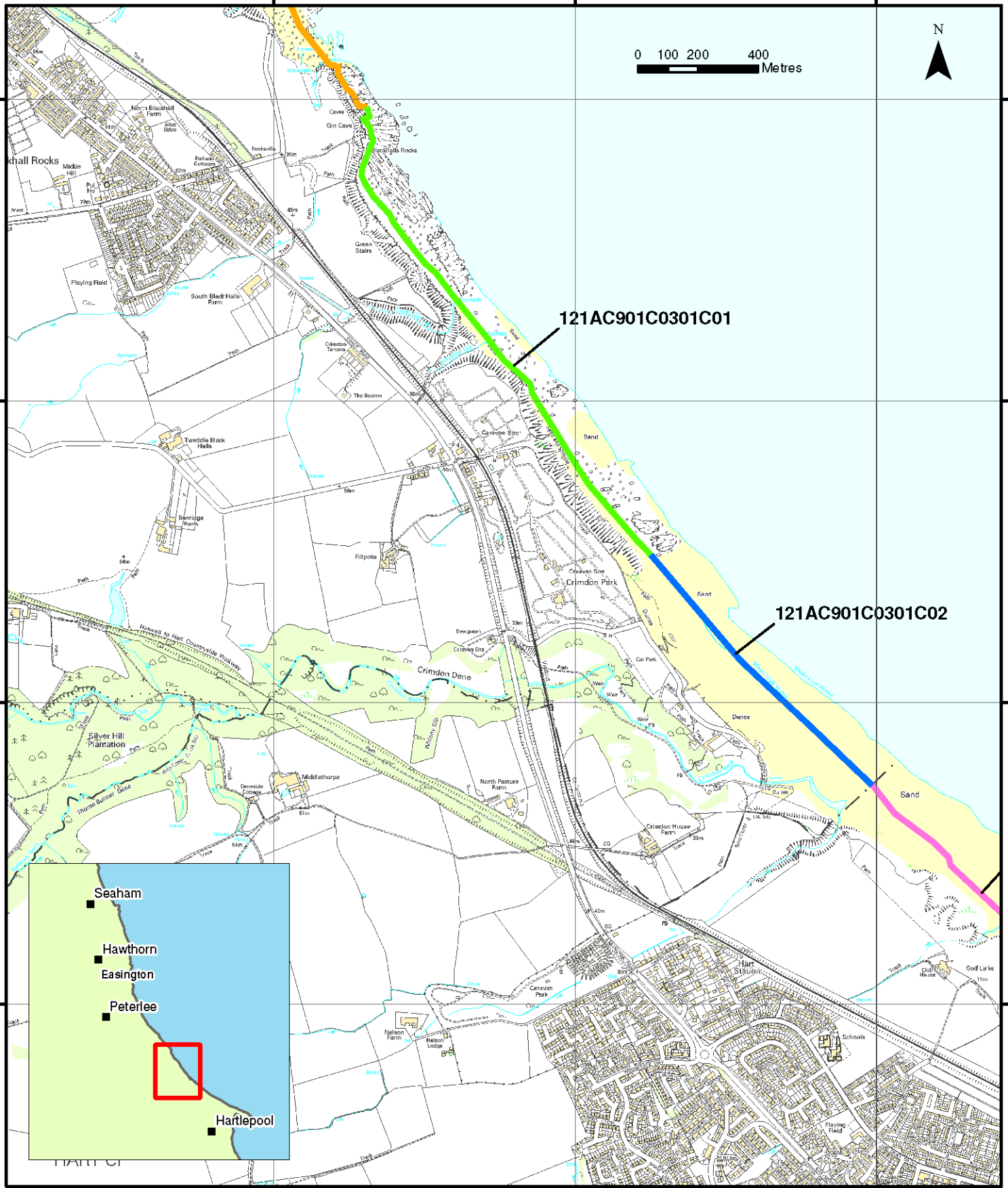
**Notes:**

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



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**Legend**

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 5  
 Durham County Council  
 Frontage**

Coastal Walkover  
 Inspection Report  
 Drawing Scale 1:15,000 at A4

**Halcrow Group Limited**

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 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	Inspect Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
121AB901B0804C01	CPSE-220/6801/01	Eroding cliff to agricultural land.	Cliff - south of Ryhope Dene	NZ42335082, NZ41985195	1193.4	04/10/2012	Small-scale but regular ongoing slumping in soft material that overlays the solid geology base. Occasional caves and arches formed at the base of the cliffs. Outflanking of wall by car park access steps at southern end. Many recent mudslides / slips	3	2	>20	Continue monitoring.	no repairs
121AC901C0102C01	CPSE-220/6802/02	680202 Three individual lengths of sheet steel pile toe to main wall. Buried under beach no visual inspection.	Toe Piling	NZ42914990, NZ42335082	1097.7	04/10/2012	Seawall in fair condition. Abrasion damage evident in places. Beach levels very high, groynes and piling not visible. Some drainage holes in crest wall blocked with shingle/cobble. Groyne piling on lower beach appears redundant (S end) poss H&S	3	3	>20	Inspect groynes/ piling if beach levels drop. Remove redundant groyne piling?	routine
121AC901C0103C01	CPSE-220/6803/01	680301	Cliff / Scarp	NZ42914990, NZ42984992	93.5	04/10/2012	As Prev:Rock armour berm/revetment extends around Featherbed Rocks south. Armour in good condition. Some continued erosion of sea cliffs to south where berm is seaward of cliff toe. Some outflanking between concrete platform/cliffs to south of	2	2	>20	Monitor.	no repairs
121AC901C0103C02	CPSE-220/6806/01	680601 Concrete wall to base of eroding cliff. Rock protection scheme under study.	Wall	NZ43024978, NZ43004984	72.6	04/10/2012	Rock armour revetment in good condition, but erosion of cliff edge continues due to weathering.	2	2	>20	Monitor.	no repairs
121AC901C0103C03	CPSE-220/6804/01	680401 Concrete wall to base of eroding cliff. Very poor condition. Collapsed slab behind. Rock protection scheme under study.: Emergency rock armour repairs to breac	Wall	NZ42994986, NZ42984992	78.6	04/10/2012	Rock armour revetment constructed in front of cliff toe. Some ongoing erosion of cliff behind through weathering.	2	3	11 - 20	Monitor cliff behind armour	no repairs
121AC901C0103C04	CPSE-220/6805/03	680503 Gunnited rock toe to wall. Rock protection scheme under study.	Apron	NZ43004984, NZ42994986	22.6	04/10/2012	Rock armour protecting short length of wall with large outfall. Wall in fair condition, armour good. Damage to wall at S corner where ties into eroding rock outcrop.	3	3	11 - 20	Monitor for outflanking. Repair cracks in crest wall.	routine
121AC901C0103C05	CPSE-220/6808/01	680801 Slipping cliff. To path and police station.	Cliff / Scarp	NZ43114957, NZ43204952	103.9	04/10/2012	As previous survey. High levels of pebble beach berm protecting cliff toe. Healthy beach levels and no signs of slipping in the cliff.	2	2	>20		no repairs
121AC901C0103C06	CPSE-220/6807	undefended	Cliff / Scarp. Limestone	NZ43114957, NZ43024978	223.3	04/10/2012	Fair. Partly undefended, but is a 'transition zone' from rock armour to north to undefended frontage. Cliffs in south well vegetated, but with signs of continued slumping. Erosion and slumping continue in north, with sheds / fence close to edge.	3	4	>20	Public safety needs monitoring - access to cliff top controlled by fencing.	routine
121AC901C0103C07	CPSE-220/6808/01	680801 Slipping cliff. To path and police station.	Cliff / Scarp	NZ43134950, NZ43094957	84.1	04/10/2012	Diagonal cracking to seaward face of wall retaining access ramp/steps. Beach levels high. Minor cracking to retaining wall at toe of slope to rear of ramp.	3	4	11 - 20	Repairs to cracks.	routine
121AC901C0104C01	CPSE-220/6812/02	681202 Recurved splash wall set back from main wall. Protection against overtopping into South dock.	Splash Wall	NZ43414885, NZ43424897	190.7	04/10/2012	Only viewed from distance due to access restrictions to port. Rock armour revetment appears to still be in very good condition.	1	1	>20	2-yearly inspections.	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	Inspect Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
121AC901C0104C02	CPSE-220/6809/01	680901 Rock armour slope to rear of harbour area reclaiming land.	Armour	NZ43204952, NZ43234958	80.7	04/10/2012	No change from prev surveys. Substantial rock armour sizes and stable profile of works. Some erosion of land at root, but not worsened since 2008.	2	2	>20	Monitor.	no repairs
121AC901C0104C03	CPSE-220/6810/02	681002 Crest wall to river end of North Pier. Overtopping protection to pier and reclaimed land.	Wall	NZ43234958, NZ43724939	986.3	04/10/2012	Only inspected from a distance due to access restrictions. Appears fair.	3	3	>20	Detailed inspection	routine
121AC901C0104C04	CPSE-220/6817/02	681702 Masonry toe on seaward side only.	Apron	NZ43464938, NZ43454949	231	01/09/2008	Not inspected			>20	Detailedinspection	routine
121AC901C0104C05	CPSE-220/6815/01	681501 Dressed masonry revetment slope in harbour.	Revetment	NZ43384949, NZ43354958	146.5	04/10/2012	Only inspected from a distance due to access restrictions. Appears fair.	3	3	>20	Detailed inspection	routine
121AC901C0104C06	CPSE-220/6816/01	681601 Massive masonry breakwater. Verticle sided on southern side at landward end only.	Breakwater	NZ43334948, NZ43514947	323.8	01/09/2008	Only inspected from a distance due to access restrictions. Appears fair.	3	3	>20	Deatilled inspection	routine
121AC901C0104C07	CPSE-220/6822/01	682201 Breakwater is pierced by regular holes at high tide level.	Breakwater	NZ43444918, NZ43464921	37.5	01/09/2008	Not inspected.	0	0	>20	Detailed inspection.	routine
121AC901C0104C08	CPSE-220/6822/01	682201 Breakwater is pierced by regular holes at high tide level.	Breakwater	NZ43434919, NZ43484932	277.6	01/09/2008	Not inspected.			>20	Detailed inspection.	routine
121AC901C0104C09	CPSE-220/6821/01	682101 Breakwater side slopes vary along length. Damage in parts. Some concrete bagwork repairs.	Breakwater	NZ43384932, NZ43414938	172.6	01/09/2008	Not inspected.			>20	Detailed inspection.	routine
121AC901C0104C10	CPSE-220/6820/01	682001 Breakwater between seaham south harbour and outer breakwater.	Wall	NZ43474911, NZ43324939	412.9	10/09/2008	Not inspected.			>20	Detailed inspection.	routine
121AC901C0104C11	CPSE-220/6818/02	681802 Masonry retaining wall to high ground inshore.	Wall	NZ43174948, NZ43304948	175	01/09/2008	Only inspected from a distance due to access restrictions. Some vegetation growths in joints.			>20	Detailed inspection.	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	Inspect Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
121AC901C0104C12	CPSE-220/6818/02	681802 Masonry retaining wall to high ground inshore.	Wall	NZ43174944, NZ43324939	164.2	01/09/2008	Not inspected.			>20	Detailed inspection.	routine
121AC901C0104C13	CPSE-220/6819/01	681901 Breakwater between north dock and outer harbour.	Breakwater	NZ43354939, NZ43334948	132.8	01/09/2008	Only inspected from a distance due to access restrictions. Appears to be some voids in blockwork.	4	4	>20	Deatiled inspection	routine
121AC901C0104C14	CPSE-220/6818/02	681802 Masonry retaining wall to high ground inshore.	Wall	NZ43344941, NZ43304948	84.2	01/09/2008	Only inspected from a distance due to access restrictions. Appears fair. Some vegetation growth in joints.			>20	Detailed inspection	routine
121AC901C0104C15	CPSE-220/6820/01	682001 Breakwater between seaham south harbour and outer breakwater.	Wall	NZ43484907, NZ43414920	150.6	01/09/2008	Not Inspected.			>20	Detailed inspection.	routine
121AC901C0104C16	CPSE-220/6812/02	681202 Recurved splash wall set back from main wall. Protection against overtopping into South dock.	Splash Wall	NZ43424897, NZ43494907	126.2	28/07/2010	Only inspected from a distance due to access restrictions. Fronted by areas where rubble has been tipped on seaward side.			>20	Detailed inspection by Seaham Harbour Dock company.	routine
121AC901C0104C17	CPSE-220/6811/01	681101 South Pier to Harbour acting as protection to internal frontages.	Breakwater	NZ43494907, NZ43704936	746.7	01/09/2008	Only inspected from a distance due to access restrictions. Areas of previous damage repairs visible at root of pier where rock/rubble tipped on seaward side. Appears Fair.	3	3	>20	Detailed inspection.	routine
121AC901C0105C01	CPSE-220/6813/01	681301 Eroding cliff to South of harbour within Dock Co. property. Derelict industrial land above.	Cliff / Scarp	NZ43534863, NZ43414885	575	04/10/2012	Rock armour still in very good condition. In the north armour is agains the toe, further south it is a bund set forward of cliffs. Cliffs to rear are protected but still evidence of surface movement.	1	1	>20	2-yearly inspections.	no repairs
121AC901C0106C01	CPSE-220/6814/01	681401 Colliery waste tip eroding fast. Review of importance as sediment supply is currently being undertaken.	Recharge	NZ43784801, NZ43594853	554.7	04/10/2012	Minimal colliery waste is now left. Actively eroding colliery waste, with vertical cliffing at toe and occasional slumps above.	4	4	11 - 20	Clear-up of debris as spoil erodes.	routine
121AC901C0107C01		undefended	Cliff / Scarp	NZ44254632, NZ43784801	1847.9	04/10/2012	Cliffing in colliery waste as it erodes back. Some local slumps and cracking in backing cliff. Colliery waste becoming narrow, esp at ends of bay.	3	3	>20	Monitor rate of erosion of colliery spoil.	no repairs
121AC901C0107C02		Hard rock cliff with overlying till. Rock platform subject to chemical weathering.	Cliff - Chourdon Point	NZ44234664, NZ44254632	327.8	04/10/2012	Inspected from distance only. Weathering of rock platform and cliffs, forming caves. Unstable sections with caves and arches. Rockfalls at 'point' have left notable overhangs.	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	Inspect Date	Inspection Comments for 2012	Overall Condition	Worst Condition	Residual Life	Recommendations	Urgency
121AC901C0201C01		undefended	Cliff / Scarp	NZ47313897, NZ44254632	8397.6	04/10/2012	Generally localised slumping in softer material with arch/cave formation in base of harder rock. In the bays there is eroding colliery waste protecting the cliffs but in some locations only a narrow band remains.	3		>20	Monitor using aerial survey data	routine
121AC901C0201C02		Colliery spoil protecting backing cliffs.	Recharge - Horden Point to Blackhalls Rock	NZ44564307, NZ44254632	4913.4	04/10/2012	Long uninterrupted length of eroding colliery spoil beach backed by cliffs. Occasional slumps in cliffs but good protection afforded by spoil beach except at headlands.	3	3	>20	Monitor, remove debris (wire, pipes etc) from mine spoil as exposed.	no repairs
121AC901C0301C01		undefended	Cliff / Scarp	NZ48983672, NZ47313897	2901.5	04/10/2012	Cliffs are eroding locally with cave formation in limestone base in N. Slumps in upper till but low rate of erosion. Cliffs appear relatively stable adjacent to Caravan park at S end.	2		>20	Monitor.	no repairs
121AC901C0301C02		undefended	Dunes fronted by sandy beach - south of Crimdon Caravan Park	NZ48263750, NZ47313897	1055.9	04/10/2012	Dunes and beach in front of and protecting cliffs. Dunes appear relatively stable and well vegetated. Further south towards Crimdon Beck the dunes are lower. Network of formal and informal footpaths crossing dunes.	2		>20	Monitor changes to dunes.	no repairs