



**Cell 1 Regional Coastal Monitoring Programme
Walkover Inspection Surveys 2018**



Durham County Council

August 2018

Durham County Council

Walkover Inspection Surveys 2018

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Contents

Disclaimer	i
Preamble	ii
1. Introduction	1
1.1 Study Area	1
1.2 Methodology.....	1
2. Overview.....	3
3. Condition Assessment	5
3.1 Pincushion Rocks to Chourdon Point (MA 09)	5
3.1.1 Ryhope Dene to Seaham.....	5
3.1.2 Seaham	6
3.1.3 Seaham Harbour.....	11
3.1.4 Dawdon.....	13
3.1.5 Nose's Point and Blast Beach	14
3.2 Chourdon Point to Blackhall Rocks (MA 10).....	15
3.2.1 Chourdon Point	15
3.2.2 Hawthorne Hive, Shippersea Bay and Easington Colliery	15
3.2.3 Horden Denes.....	17
3.3 Blackhall Rocks to Heugh Breakwater (MA 11)	18
3.3.1 Blackhall Rocks and Crimdon Park Caravan Site	18
3.3.2 Crimdon Park Caravan Site to Crimdon Beck.....	19
4. Comparison with Previous Assessment	19
5. Problems Encountered and Uncertainty in Analysis	19
6. Conclusions and Recommended Actions	20

Appendices

Appendix A Asset Location Maps

Appendix B Asset Condition & Recommendations

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

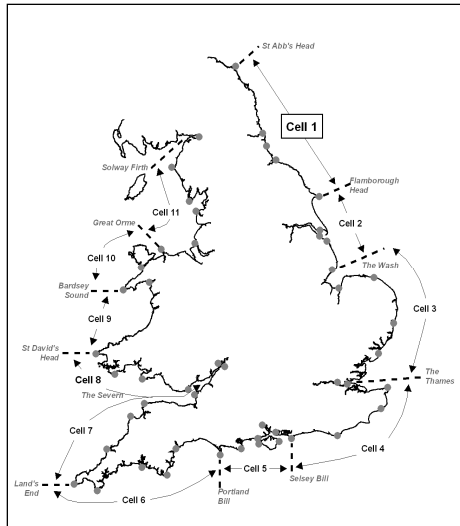


Figure 0-1 - Sediment Cells in England and Wales

The work commenced with a three-year monitoring programme in 2008 that was managed by Scarborough Borough Council on behalf of the North East Coastal Group. This initial phase was followed by a five-year programme which started in 2011 and the current five-year programme which started in 2016. The programme funded by the Environment Agency, working in partnership with 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
- walkover inspection surveys

Royal HaskoningDHV has been appointed to provide Analytical Services in relation to the Cell 1 Regional Coastal Monitoring Programme 2016 - 2021.

The present report is **Walkover Inspection Surveys 2018** and provides a summary of the main findings from the walkover inspections of Durham County 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

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. This frontage includes 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 assets are presented in **Appendix A**.

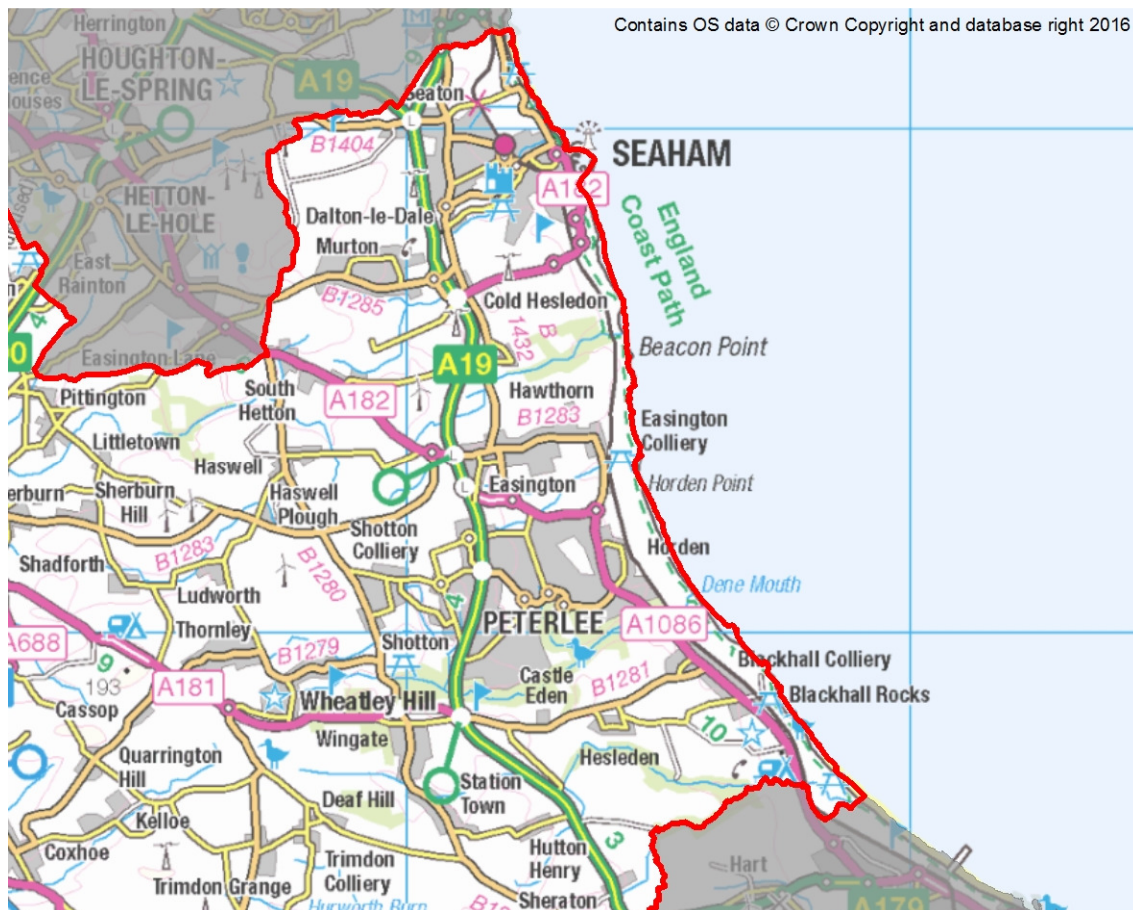


Figure 1-1: Durham County Council study area

1.2 Methodology

This section presents the approach taken by the asset inspectors for the Durham County Council coastal frontage.

The walkover inspection surveys for the Durham County Council frontage were undertaken on 1st and 29th June 2018. The weather experienced during the inspections was warm and fine with no access or visibility problems caused by adverse weather.

The frontage has been split into a number of 'asset lengths' (Appendix A), as defined in the National Flood and Coastal Defence Database (NFCDD) that was established by the Environment Agency.

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 and an estimate made of their residual life.

For built assets the grading classification was undertaken in accordance with the Condition Assessment Manual (EA, 2012), 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 built asset photographs presented in this report have also been bordered with the colours key indicated below.

Grade	Rating	Description
1	Very Good	'As built' condition or cosmetic defects that have no effect on performance.
2	Good	Minor defects that will not reduce overall performance of the asset.
3	Fair	Defects that could reduce overall performance of the asset.
4	Poor	Defects that would significantly reduce overall performance of the asset.
5	Very Poor	Severe defects resulting in overall performance failure of the asset.

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

In addition to the above grading classification, for natural assets such as cliffs and slopes the same five point activity scale used in previous walkover inspections within Cell 1 was used. This grading classification is presented in *Table 1-2*. For ease of reference the natural asset photographs presented in this report have also been bordered with the colours key indicated below.

Grade	Class	Description
1	Dormant	Features with no interaction with marine processes.
2	Inactive	Features with no visible evidence of erosion or landsliding activity.
3	Locally active	Features with localised evidence of small erosion or landsliding activity.
4	Partly active	Features with widespread evidence of small erosion or landsliding activity or areas of intense erosion or landsliding.
5	Totally active	Features with large-scale or intense erosion or landsliding.

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 are provided in **Appendix B**.

In addition to this report, full details of the inspection and a selection of appropriate photographs have been entered into the SANDS (Shoreline And Nearshore Database System) database and provided along with this report with SANDS viewer software.

2. Overview

The following significant findings were observed during the 2018 walkover inspection surveys:

- **Ryhope Dene to Seaham Hall picnic site** - a relatively large 'bench' failure has occurred in the glacial till cliffs, releasing a substantial volume of material to a talus slope at the cliff toe. Local slumping remains ongoing elsewhere along this length.
- **Seaham Hall picnic site** – the outflanking of the revetment by the beach access steps has previously been identified and this situation appears unchanged since 2010.
- **Seaham sea wall northern tie-in** – the blockwork revetment on the backing slope remains in fair condition despite a little outflanking at its northern end. There are small slippages in the slope above the revetment. Both areas would benefit from local maintenance.
- **Seaham sea wall and promenade** – the structure remains in fair condition, although joints in several areas of the sea wall would benefit from re-sealing. The access ramp at the south of the promenade is in poor condition with a hole in the deck and exposed reinforcement poses a hazard to pedestrians. Immediate remedial works should be undertaken to trim protruding reinforcement bars. Abrasion damage to the main sea wall increases with progression south.
- **Dawdon Dene outfall** - a section of masonry wall above a sloping poured concrete revetment is actively breaking up on the northern side of the concrete platform by the outfall. In addition, a short length of low masonry wall around the southern edge of the outfall's concrete platform has previously been reported as being damaged but remains unrepaired.
- **Seaham Harbour** – The North Dock Regeneration Project opened in early 2013 improving the amenity and function of the North Dock, including the public realm. A local low spot was noted in the rock revetment at the root of the North Pier leading to erosion of the bank. Whilst, generally speaking the walls around North Dock are in fair condition, all have some open joints between masonry blocks in their faces and these would undoubtedly benefit from a routine maintenance programme involving re-pointing, with a small number of asset lengths being particularly in need of such attention.
- **Seaham Harbour South Pier** – This structure appeared from afar to have significant damage to sections of the crest and outer face. At the root of the pier, rock armour has been placed at the tie-in to the coast as part of a previous phase of regeneration. It is recommended that, if not already in place, detailed vessel-based and underwater inspections are undertaken and a maintenance programme should be put in place
- **Shippersea Bay** – Only small volumes of colliery spoil now remain and the cliffs have started to re-activate in one area.
- **Crimdon Dene Caravan Park** - As in the previous inspections there were signs of the softer material slumping in the cliffs. 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, there are extensive cliff slumps and cliff failures. The access steps have been closed due to cliff falls. The fence appears to have

been relocated landward in the region of the slip. As the cliff is expected to continue to erode the fence should be regularly relocated as required.

3. Condition Assessment

3.1 Pincushion Rocks to Chourdon Point (MA 09)

3.1.1 Ryhope Dene to Seaham

The most northern asset length (/B0804C01) 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 glacial till and are slumping along almost the entire length. At one location there is a relatively large 'bench' type failure involving a substantial volume of material.



*Ryhope Dene
(northern boundary of /0804C01)*



*'Bench' type failure in glacial till sea cliffs
(/0804C01)*

Further towards the southern end of the frontage length, the till sits on top of a harder Magnesian Limestone base. At these locations, there is evidence of recent local slumping in the upper till cliff. There are also frequent caves and arches formed in the limestone rock at the base of the cliffs caused by differential erosion by waves.



*Undefended sea cliffs with till sitting on
limestone (/0804C01)*



*Localised slumping of upper till within the cliffs
(/0804C01)*

Within this asset length is a set of access steps from the picnic site car park near Seaham Hall with a small stream discharging to the foreshore over an adjacent stone revetment. There was little flow in the stream at the time of the inspection, but the previously identified outflanking of the revetment appears unchanged since 2010. There is also a small diameter pipe encased in concrete running alongside the steps. This was not discharging at the time of the inspection.



Access steps and stone revetment (/0804C01)



Outflanking of revetment (/0804C01)

Immediately south of the car park access steps is a short undefended length of cliff which continues to show local slippages.

This is followed by a short (approximately 10m) length of low-level wall at the tie-in to the main Seaham seawall to the south. Beach levels at the wall were approx. 0.5m lower than the previous inspection in 2016.

3.1.2 Seaham

Backing the southern end of the low-level tie-in 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 despite a little outflanking at its northern end. There are small slippages in the slope above the revetment. Spalling was noted to the concrete bullnose below the revetment. The access ramp at the northern end to the main Seaham promenade has small cracks in the deck.



Minor outflanking of blockwork revetment (/0102C01)



Cracks in deck of access ramp at northern end of promenade (/0102C01)

The main Seaham sea wall is fronted by a high shingle beach. Both the wall and promenade are in fair condition. Joints in the main sea wall are mostly intact but a few areas would benefit from re-sealing, particularly between access steps and the main sea wall. There is some vegetation growth in construction joints and cracks in the promenade, which should be removed and the joints sealed.



Seaham sea wall (/0102C01)



Sealant missing at joint between sea wall and access steps (/0102C01)

With progression to the south, abrasion damage to the main sea wall increases, but does not significantly affect the overall condition grading. In local areas, spalling/corrosion damage was noted to the bullnose of the seawall. Several plastic flap valves on the drainage outlets appear to have been lost/removed since the previous inspection, and some are partially buried by high shingle beach levels.



Spalling of bullnose on sea wall (/0102C01)



Missing flap valve at access ramp (/0102C01)

To the rear of the sea wall and promenade there is an area of stone infill between the coastal slopes and the steeper cliffs, which may have been installed to repair a past slope failure. The area of stone infill appears to have 'sunken' into the slope and remedial works are recommended.

Towards the southern end, the sea wall is fronted by remnants of groynes which have a concrete base and timber boards fixed to vertical steel piles. In many places there is no longer timber boarding present and the steel piles remain upstanding and exposed.



Remedial works needed to 'sunken' area of stone infill (/0102C01)



Remnants of groynes (/0102C01)

At the southern end of the sea wall, the access ramp is heavily abraded and its deck is cracked/broken locally exposing underlying fill which may be vulnerable to washout. Reinforcement is also exposed due to abrasion damage posing a health and safety hazard. Immediate remedial works should be undertaken to trim protruding bars.

Also around this location, the cliffs behind the promenade are steeper and past episodes of slippage have left a headscarp visible, although no 'fresh' slippages were noted during the inspection.



Cracks in deck of access ramp at southern end of promenade (/0102C01)



Hole in deck of ramp, exposed reinforcement (/0102C01)



Headscarp in backing cliffs formed by previous slippages (/0102C01)

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 continues south of the headland, initially protecting a short length of concrete wall with a large outfall from the culverted Dawdon Dene, and then protecting the cliffs in front of Allotment Gardens and the northern end of the Seaham War Memorial Gardens. The rock armour appears in good condition although the cliffs to the rear show continued slow erosion and slumping of the upper till layers. In particular, there is one rock fall at the cliffs of Featherbed Rocks, just to the north of the outfall and measurable slumping in the cliffs to the south of the culvert. At the Dawdon Dene culvert, beach levels appear to be higher than 2016.



Rock berm around Featherbed Rocks headland (/0103C01)



Rock berm around Dawdon Dene culvert and further south (/0103C04)

At the tie-in of the outfall's concrete platform to the cliffs to the north, a section of masonry wall above a sloping poured concrete revetment is actively breaking up. In addition, a short length of low masonry wall around the southern edge of the outfall's concrete platform has previously been reported as being damaged but remains unrepaired. Immediately south of the outfall's concrete platform cliff recession continues to affect fence line in the vicinity of the Coastguard Station.



Masonry wall and concrete revetment at tie-in to cliffs breaking-up (/0103C04)



Erosion affecting fence line of properties to south of Dawdon Dene outfall (/0103C02)

The rock armour starts to taper out with progression south and forms a transition from defended to undefended sections of cliff. The cliff line is generally locally slumping and access to the cliff top has been prevented by fencing along the War Memorial Gardens. The beach access ramp and steps to the small pocket beach below these cliffs, located just north of Seaham Harbour, are supported by a vertical concrete retaining wall that has a number of cracks in the rendered face

and visible gaps between the wall and its coping. A deck slab has moved, potentially due to settlement, posing a trip hazard.



Local slumps in cliffs (/0103C06)



Access ramp and steps (/0103C07)



Cracking in retaining wall to access steps and ramp (/0103C07)



Movement of deck slabs in access ramp (/0103C07)

The cobble beach running from north of these access steps through the small pocket bay to the north of Seaham Harbour was high and the backing cliff was vegetated and appeared stable at the time of the inspection.

At the southern end of the bay there is a rock armour revetment which forms the link to the root of the North Pier of Seaham Harbour. Its function is to limit the risk of outflanking of the North Pier. The rock revetment is formed from armour of varying sizes, and a notable low spot was noted adjacent the mesh storage building where local erosion to the bank was apparent.



Low spot in revetment causing erosion to bank (/0103C07)

3.1.3 Seaham Harbour

Seaham Harbour is privately-owned by the Seaham Harbour Dock Company. The Council-supported £3m North Dock Regeneration Project, including a new floating pontoon, lock gates and dock-side facilities, opened in early 2013.

Access to the North Pier is restricted by a locked access gate at the landward end. The concrete deck shows cracking on the accessible sections, although the massive structure still clearly provides an effective coast protection function and is therefore assumed to be in fair overall condition. Recent repairs to previously-reported defects to the deck and both coping and upper sections of the inner face were noted beyond the access gate, but these could not be inspected in detail. The inner face was inspected from the beach at low tide and appears in fair condition. It is recommended that, if not already in place, more detailed vessel-based and underwater inspections are undertaken by the Dock Company and if not already in progress a maintenance programme should be put in place.



Seaham Harbour North Pier (/0104C03)



Deck of Seaham Harbour North Pier (/0104C03)



Seaham Harbour North Pier Outer Face (/0104C03)



Seaham Harbour North Pier Inner Face (/0104C03)



Seaham Harbour North Pier Inner Face (/0104C03)

The wall at the back of the beach in the outer harbour (0104C05) consists of two parts, the first being a vertical wall at the car park, which ties into North Pier, and the second a dressed masonry sloping revetment that ties into the breakwater to the south of the beach. Both parts appeared to be in fair condition, although there is vegetation growth on open joints which should receive attention.



Open joints and vegetation growth on masonry revetment (/0104C05)

Generally speaking, the walls around North Dock are in fair condition, but all have some open joints between masonry blocks in their faces and these would undoubtedly benefit from a routine maintenance programme involving re-pointing. Assets 0104C04, 0104C06, 0104C11 and 0104C14 require only localised re-pointing, but assets 0104C09 and 0104C13 are in need of slightly more attention. The asset which needs the greatest attention in this regard, however, is 0104C12.



Gaps between blocks at Seaham North Dock (/0104C12)



Several damaged/chipped blocks (/0104C06)

Access to South Pier and South Dock is prohibited due to port-related activity and the structures were only inspected from a distance. The South Pier appeared from afar to have significant damage to sections of the crest and outer face. At the root of the pier, rock armour has been placed at the tie in to the coast as part of a previous phase of regeneration. There is an area of tipped rubble in front of the rock armour. The armour continues to the south protecting the port access road and appeared to be in good condition.



Seaham Harbour South Pier (/0104C17)



Tipped rubble (/0104C16) and rock revetment (/0104C01)

3.1.4 Dawdon

The frontage between Seaham Harbour's South Pier and Seaham Fleet Rock is protected by a continuation of the rock armour revetment extending southwards from the South Pier. In most places the armour is against the cliff toe, but where there is evidence of a former vertical wall, it is placed as a bund slightly seaward of the cliff. The rock armour is in good condition. There was some evidence of localised surface slumping in the vegetated slopes between the rock armour and the road.

South of the revetment between Seaham Fleet Rock and Nose's Point, the unprotected cliffs were previously fronted by a colliery spoil beach (known as Chemical Beach) but this has now been virtually completely eroded and there are an increasing number of local slumps in the backing cliffs, some of which consists of colliery waste. Debris exposed by the eroding beach should be removed routinely. The erosion appears greatest towards the south of Chemical Beach, just to the north of Nose's Point.



Rock revetment from South Pier to Chemical Beach (/0105C01)



Little remaining spoil on beach (/0106C01)



Recent slumping at headscarp (0106C01)



Slippage in cliff at Chemical Beach (/0106C01)

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. The headland appears relatively stable and exerts a control on both the Dawdon Chemical Beach frontage to its north and Blast Beach to the south.

To the south of Nose's Point is the bay of Blast Beach. 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 continuing to erode and has been almost totally lost at the south where it meets Chourdon Point. In future the limestone cliffs will become active again when the spoil beach has been washed-away, likely starting towards the informal steep access route at the south of the beach.



Residual spoil beach at Blast Beach – view looking south (/0103C07)



Residual spoil beach at Blast Beach – view looking north (/0103C07)

3.2 Chourdon Point to Blackhall Rocks (MA 10)

3.2.1 Chourdon Point

Unlike the cliffs to the north and south, Chourdon Point (0107C02) 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.



South side of Chourdon Point (/0201C01)

3.2.2 Hawthorne Hive, Shippersea Bay and Easington Colliery

The coast between Chourdon Point in the north and Horden Point in the south (C0201C01) includes the bays of Hawthorne Hive and Shippersea. Although these bays did not directly receive colliery waste from direct tipping activities, they both accumulated significant quantities of waste from tipping areas further north.

In Shippersea Bay in particular very little colliery spoil now remains and the cliffs have started to slip in one area. Spoil tipping did directly occur on the beaches fronting Easington Colliery and notable quantities still remain. Here the cliffs are generally relatively stable although there is one location between Shot Rock and Loom where a slippage has occurred and tension cracks are noted in the path at the clifftop, suggesting that further slippage may occur.

In the sections of cliff which form headlands between the bays, there is typically cave and arch formation at their base, with local rockfalls occasionally occurring and slumping in the upper till layers. Just north of Horden Point, in an area where there is no colliery spoil, a large rock fall has occurred. Again, there are tension cracks observable in the cliff top around 100m north of this slippage, indicating potential further movement in the future.



Residual spoil beach at Hawthorne Hive (/0201C01)



Residual spoil beach at Hawthorne Hive (/0201C01)



Hawthorn Dene at Hawthorn Hive (/0201C01)



Little residual spoil beach at Shippersea Bay (/0201C01)



Tension cracks in path at cliff top (/0201C01)



Exposed slopes to north of Horden Point (/0201C01)

3.2.3 Horden Denes

Between Horden Point and Blackhall Rocks there is a long uninterrupted length of colliery spoil beach (0201C02). 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 shallow slumping in the backing slopes, especially in the centre of the frontage. 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. There is an outfall structure encased in concrete at one location. The encasement is heavily abraded and in poor condition.



Looking northwards from Warren House Gill (/0201C01)



Debris from abandoned car near Horden Grasslands Nature Reserve (/0201C01)



Northwards from Castle Eden Dene (/0201C01)



Undercutting at toe of coastal slope from mouth of Castle Eden Dene (/0201C01)



Horden beach (/0201C01)



Residual spoil beach at Horden beach – view north from Blackhall Rocks (/0201C01)

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, and the backing cliffs have extensive cave formations at their base.

The frontage south of Blackhall Rocks is protected by the rock scar outcrops on the foreshore. The cliffs are formed from softer material overlying a near vertical hard rock base. As in the previous inspections there were signs of the softer material slumping throughout although the extensive vegetation coverage indicates a relatively slow rate of erosion. 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 the steep gill at the north of Crimdon Dene Caravan Park and the beach access steps within the park there are extensive cliff slumps and cliff failures. The access steps have been closed due to cliff falls in two locations. The fence appears to have been relocated landward in the region of the slip. As the cliff is expected to continue to erode the fence should be regularly relocated as required.



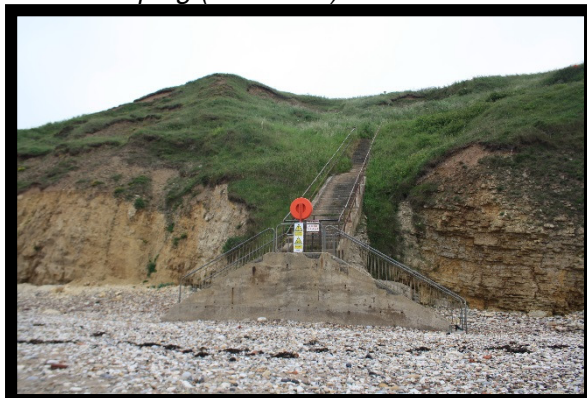
View south from Blackhall Rocks (/0301C01)



Local slumping (/0301C01)



Cave formation (/0301C01)



Closed access steps (/0301C01)



Closed access steps (/0301C01)

3.3.2 Crimdon Park Caravan Site to Crimdon Beck

From Crimdon Park Caravan Site to the southern limit of Durham County Council's jurisdiction, at the boundary with Hartlepool Borough Council at Crimdon Beck, the frontage comprises of extensive dunes. These are generally in a healthy condition. In one short length, the relict cliffing from a previous erosion episode was evident but this has now been almost fully restored by natural sand accumulation and the onset of embryo vegetation growth.

In an area of stable upper beach immediately to the north of Crimdon Beck, fencing is erected to safeguard the nesting Little Terns. Ringed Plover, Greenshank and Common Sandpiper are also at this location.

There was limited flow in Crimdon Beck at the time of the inspection. 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 Borough Council's area.



Stable dunes at Crimdon (/0301C02)



Nesting birds adjacent to Crimdon Beck, taken 2016 (/0301C02)

4. Comparison with Previous Assessment

The previous formal walkover inspections across the whole study frontage were undertaken in summer 2016. The frontage remains largely unchanged in overall condition grading and behaviour patterns since that time, with few major problems.

Flap valves installed to drainage outlets on the Seaham sea wall prior to the 2016 inspection appear to have been lost at several locations, and some are partially buried by high shingle beach levels. In several areas of the Seaham sea wall there is local spalling/cracking and exposed reinforcement, which has deteriorated since the previous inspection.

In the access ramp onto the beach to the north of Seaham Harbour a deck slab is noted to have moved posing a trip hazard to pedestrians.

Colliery spoil beaches along the frontage continue to erode landwards, in particular at Chemical Beach and in Shippersea Bay where in places the spoil has all but disappeared and the cliffs are starting to re-activate.

5. Problems Encountered and Uncertainty in Analysis

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

The assets around Seaham Harbour are privately owned by the Seaham Harbour Dock Company and access to North Pier, South Pier and South Dock in particular is prohibited due to port-related activity. Due to this several structures were only inspected from a distance. It is recommended that

a programme of vessel-based inspections (and if necessary underwater inspections) is undertaken by the Seaham Harbour Dock Company to inform their ongoing maintenance and capital investment regimes.

6. Conclusions and Recommended Actions

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

All condition assessment data and selected photographs have been uploaded to SANDS (Shoreline And Nearshore Database System). This includes all data and photographs from the previous inspections since 2002 that were originally held on an MS Access Databases that had become obsolete.

Appendices

Appendix A

Asset Location Maps

442000

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0 100 200 400 Metres

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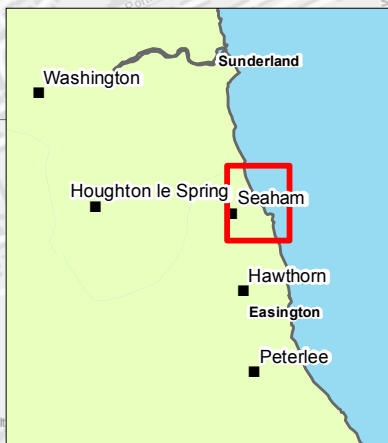
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Area covered by Map 1a

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
-  Asset location
-  NFCDD Asset Number

Figure 1 - Map 1

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

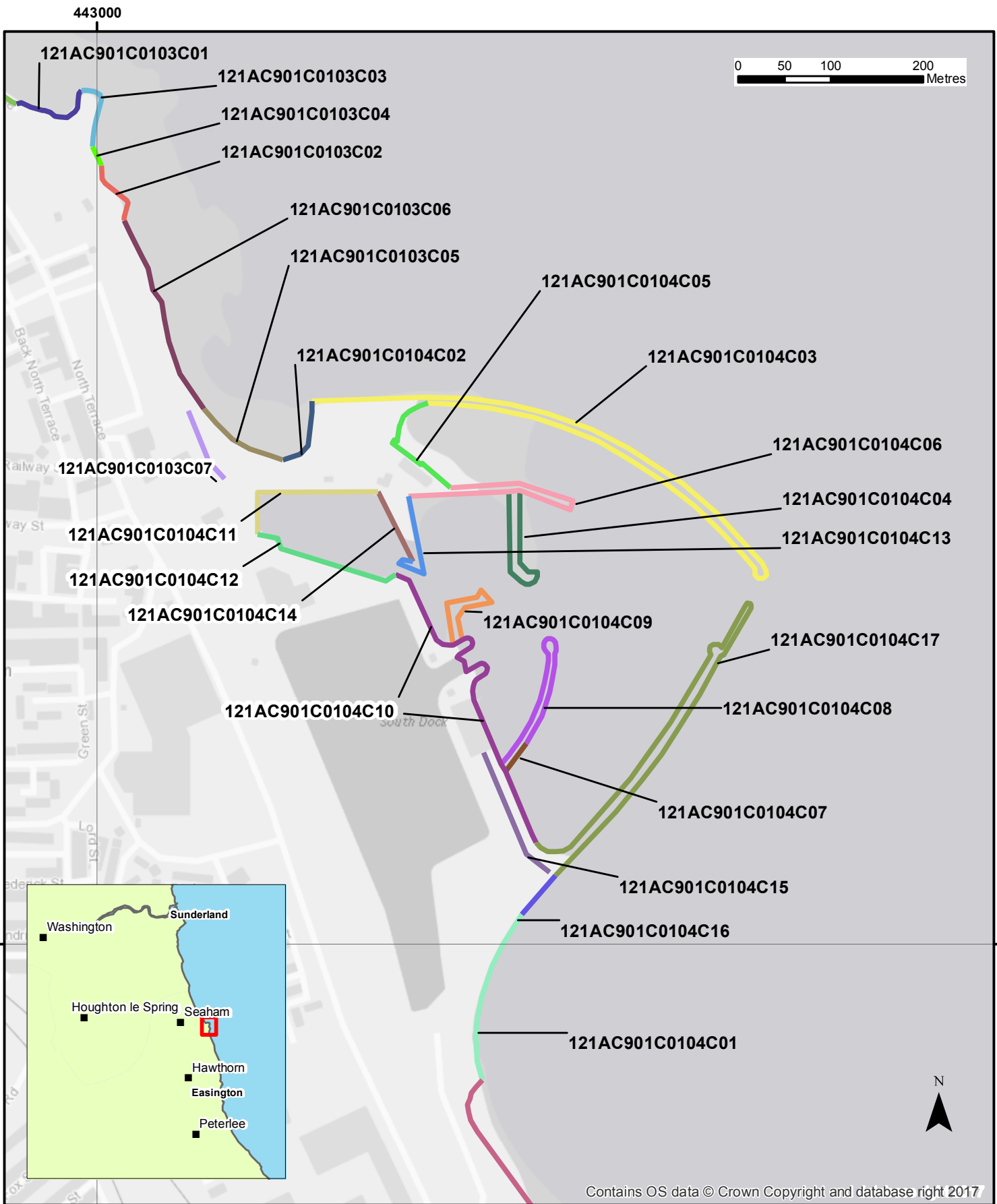
Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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www.royalhaskoning.com





Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 1a

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

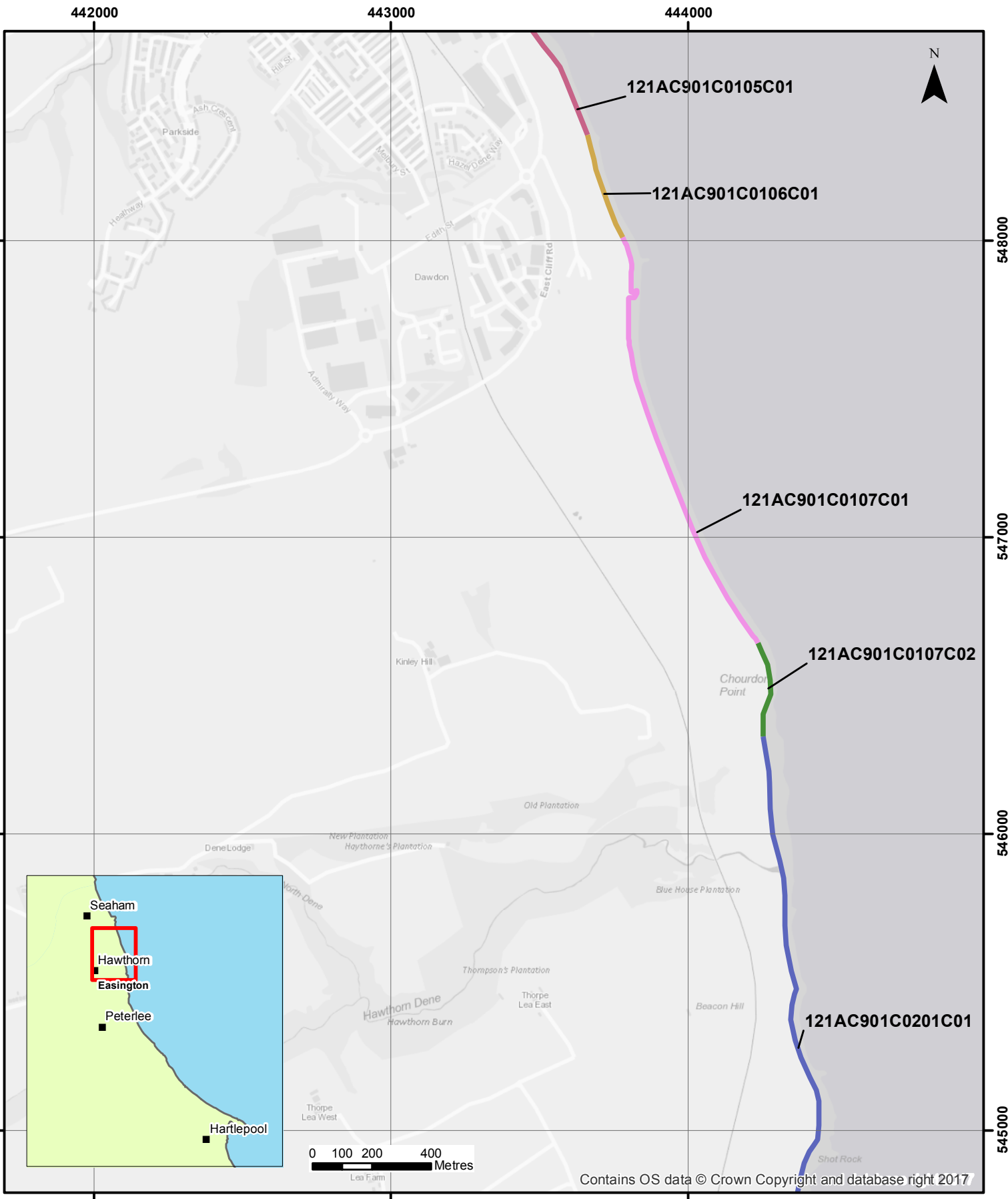
Client:
North East Coastal Group

Project:
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Legend

 Asset location

 NFCDD Asset Number

Figure 1 - Map 2

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

Client:
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Project:
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
-  Asset location
-  NFCDD Asset Number

Figure 1 - Map 3

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

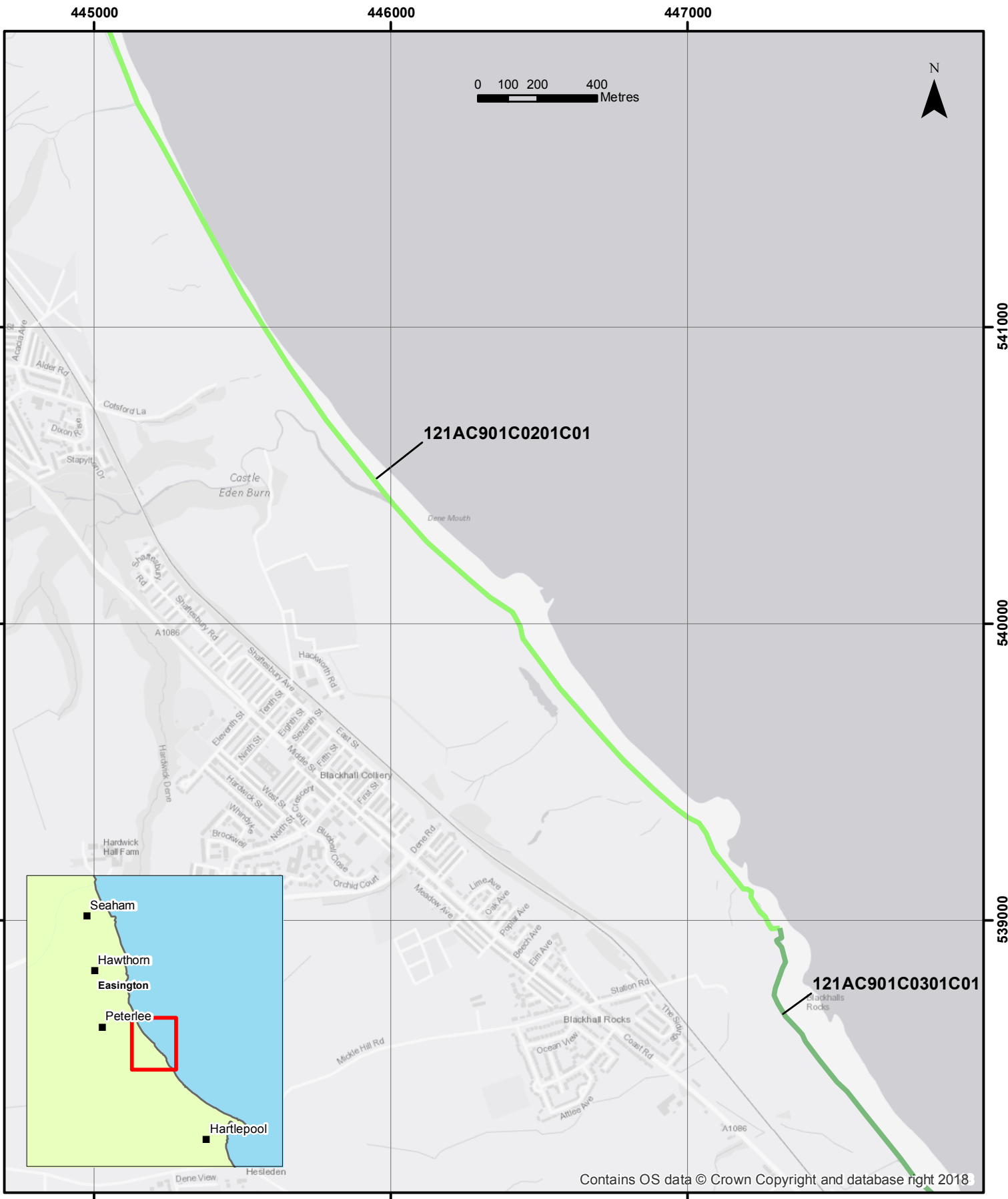
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-  Asset location
-  NFCDD Asset Number

Figure 1 - Map 4

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

Client:
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Project:
Cell 1 Regional Coastal Monitoring Programme

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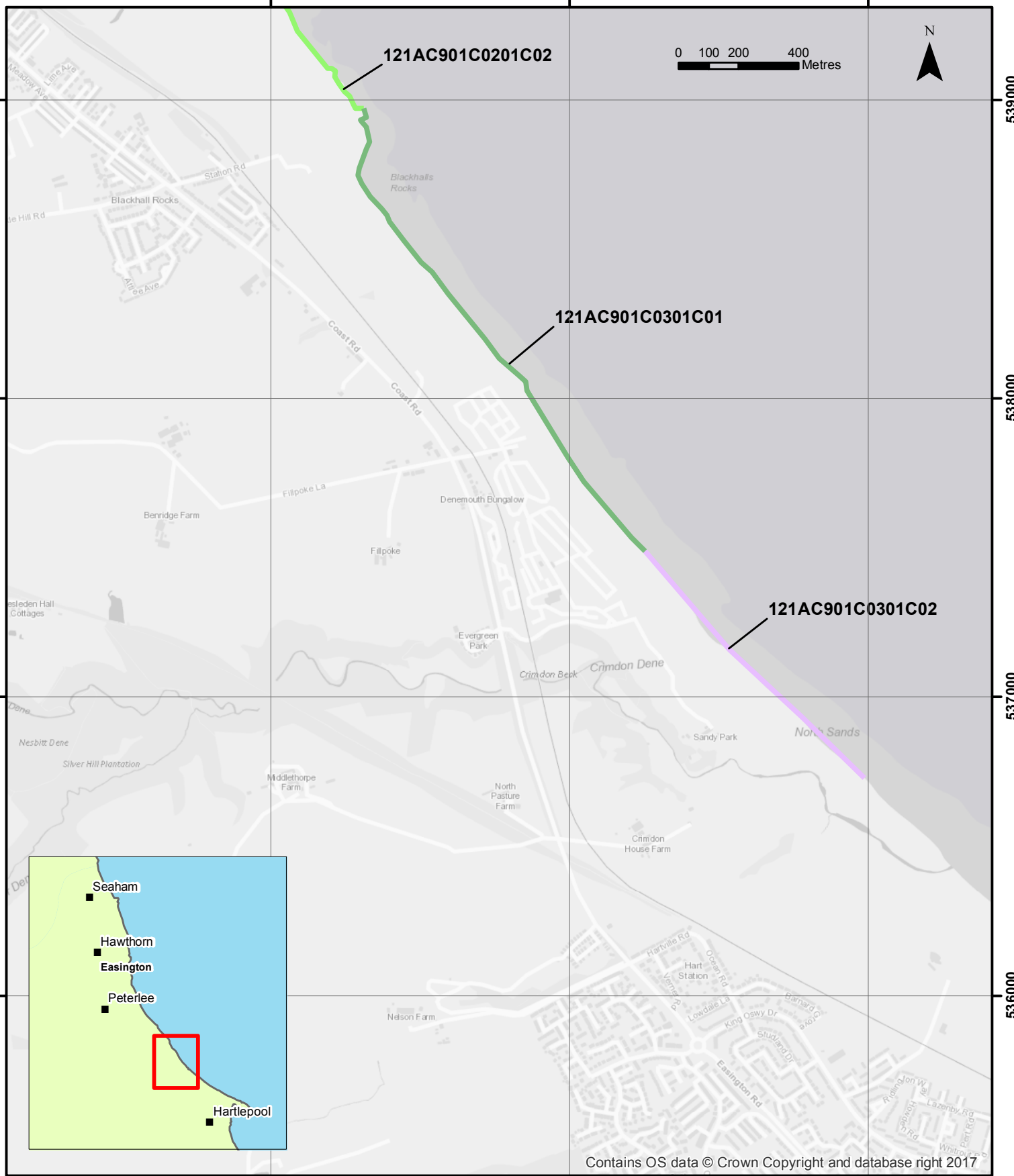


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
-  Asset location
-  NFCDD Asset Number

Figure 1 - Map 5

Durham County Council Frontage

Asset Inspection Report

Drawing Scale 1:17,000 at A4

Client:
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Appendix B Asset Condition & Recommendations

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AB901B0804C01	Eroding cliff to agricultural land.	Cliff - south of Ryhope Dene	1193	01/06/2018	Royal HaskoningDHV	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. Many recent mudslides / slips of upper cliff onto beach,	3	>20	Continue monitoring.	no repairs
121AC901C0102C01	680202. Seawall. Three individual lengths of sheet steel pile toe to main wall. Buried under beach no visual inspection.	Seaham seawall	1098	01/06/2018	Royal HaskoningDHV	Seawall in fair condition. Abrasion damage evident in places. Beach levels low, many derelict groynes visible. Groyne piling on lower beach appears redundant (S end) poss H&S hazard. Visible parts of groynes v poor. Abrasion damage at access ramp exposing reinforcement posing public safety risk.	3	>20	Review need for groynes and refurb or remove redundant groyne piling. At access ramp, trim protruding reinforcement and repair abrasion damage.	urgent
121AC901C0103C01	680301. Rock berm.	Rock Revetment - Featherbed Rocks	93.5	01/06/2018	Royal HaskoningDHV	Rock armour berm/revetment extends around Featherbed Rocks. 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 headland.	3	>20	Monitor.	no repairs
121AC901C0103C06	Undefended over much of length, but some light protection by rock armour in north.	Cliff - Red Acre, Seaham	223.3	01/06/2018	Royal HaskoningDHV	Partly undefended, but is a 'transition zone' from rock armour to north to undefended bay. Cliffs in south well vegetated, but with signs of continued slumping. Erosion and slumping continue in north, with sheds / fence close to edge.	3	>20	Public safety needs monitoring - access to cliff top controlled by fencing.	routine
121AC901C0103C03	680401 Concrete wall to base of eroding cliff. Very poor condition. Collapsed slab behind.	Wall	78.6	01/06/2018	Royal HaskoningDHV	Rock armour revetment constructed in front of cliff toe. Ongoing slow erosion of cliff behind through weathering.	3	11 - 20	Monitor cliff behind armour	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AC901C0103C04	680503 Gunnited rock toe to wall. Rock protection scheme under study.	Apron	22.6	01/06/2018	Royal HaskoningDHV	Rock armour protecting short length of wall with large outfall. Wall in fair condition, armour good. Damage to wall at S corner where returns toward eroding rock outcrop. Large cracks in wall face at N end.	3	11 - 20	Monitor for outflanking. Repair cracks in crest wall.	routine
121AC901C0103C02	680601 Concrete wall to base of eroding cliff. Rock protection at toe.	Wall	72.6	01/06/2018	Royal HaskoningDHV	Rock armour revetment in good condition, but erosion of cliff edge continues due to weathering. Fence and shed at cliff edge at high erosion risk.	3	>20	Monitor.	no repairs
121AC901C0104C03	681002 Crest wall to river end of North Pier. Overtopping protection to pier and reclaimed land.	Wall	986.3	01/06/2018	Royal HaskoningDHV	Seaward face and crest not accessible. Inner face fair, evidence of repairs, which are holding. Some missing mortar and voids between masonry blocks. Structure is heavily overtopped at high tide.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0103C05	High shingle/cobble beach at toe.	Cliff - Red Acre Point, Seaham	103.9	01/06/2018	Royal HaskoningDHV	High levels of pebble beach berm protecting cliff toe. Upper beach remains high but has steepened. Large slip in the cliff between steps and start of rock armour.	2	>20		no repairs
121AC901C0104C02	Rock armour slope to rear of harbour area reclaiming land.	Armour - Red Acre Point, Seaham	80.7	01/06/2018	Royal HaskoningDHV	Substantial rock armour sizes and stable profile of works. Some erosion of land at root, but not worsened since 2008.	2	>20	Monitor.	no repairs
121AC901C0103C07	Wall protecting access ramp with small retaining wall to slope to rear of ramp.	Wall - Red Acre Point, Seaham	84.1	01/06/2018	Royal HaskoningDHV	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. Local movement of ramp deck posing trip hazard, location of movement coincides with transition/cracks in rear wall.	3	11 - 20	Repairs to cracks. investigate cause of movement at ramp and repair accordingly.	urgent

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AC901C0104C05	681501 Dressed masonry revetment slope in harbour.	Revetment	146.5	01/06/2018	Royal HaskoningDHV	Low vertical wall between beach and car park good. Sloping dressed masonry revetment has missing mortar between blocks and vegetation growth in gaps. Uneven profile noted in slope of revetment which may be indicative of loss of fill.	3	>20	Grout gaps between blocks in revetment. Monitor revetment profile for movement.	routine
121AC901C0104C06	681601 Massive masonry breakwater. Vertical sided on southern side at landward end only.	Breakwater	323.8	01/06/2018	Royal HaskoningDHV	Only inspected from north side due to access restrictions. North side fair, some missing grout between masonry blocks.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C11	681802 Masonry retaining wall to high ground inshore.	Wall	175	01/06/2018	Royal HaskoningDHV	Some missing grout between masonry blocks.	3	>20	Re-pointing to fill gaps.	routine
121AC901C0104C12	681802 Masonry retaining wall to high ground inshore.	Wall	164.2	01/06/2018	Royal HaskoningDHV	Some missing grout between masonry blocks.	4	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C14	681802 Masonry retaining wall to high ground inshore.	Wall	84.2	01/06/2018	Royal HaskoningDHV	Some missing grout between masonry blocks.	3	>20	Re-pointing to fill gaps.	routine
121AC901C0104C13	681901 Breakwater between north dock and outer harbour.	Breakwater	132.8	01/06/2018	Royal HaskoningDHV	Some missing grout between masonry blocks.	3	>20	Re-pointing to fill gaps.	routine
121AC901C0104C04	681702 Masonry toe on seaward side only.	Apron	231	01/06/2018	Royal HaskoningDHV	Only viewed from Marina side due to access restrictions. Appears fair overall. Some missing mortar between masonry blocks.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C09	682101 Breakwater side slopes vary along length. Damage in parts. Some concrete bagwork repairs.	Breakwater	172.6	01/06/2018	Royal HaskoningDHV	Inspected on north face from North Dock. Missing grout between blocks.	0	>20	Re-pointing to fill gaps.	routine
121AC901C0104C08	682201 Breakwater is pierced by regular holes at high tide level.	Breakwater	277.6	01/06/2018	Royal HaskoningDHV	Not inspected.	0	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C07	682201 Breakwater is pierced by regular holes at high tide level.	Breakwater	37.5	01/06/2018	Royal HaskoningDHV	Not inspected.	0	>20	Detailed inspection by Seaham Harbour Dock Company.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AC901C0104C10	682001 Breakwater between seaham south harbour and outer breakwater.	Wall	412.9	01/06/2018	Royal HaskoningDHV	Appeared fair but only viewed from distance.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C15	682001 Breakwater between seaham south harbour and outer breakwater.	Wall	150.6	01/06/2018	Royal HaskoningDHV	Appeared fair but only viewed from distance.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C17	681101 South Pier to Harbour acting as protection to internal frontages.	Breakwater	746.7	01/06/2018	Royal HaskoningDHV	Only inspected from cliff due to access restrictions.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0104C01	Root of South Pier with recurved splash wall set back from main wall. Protection against overtopping into South Dock. Rock armour protection to wall.	Wall - Seaham	190.7	01/06/2018	Royal HaskoningDHV	Only viewed from cliff due to access restrictions to port. Rock armour revetment appears to still be in good condition.	2	>20	2-yearly inspections.	routine
121AC901C0104C16	Root of South Pier with a recurved splash wall set back from main wall. Protection against overtopping into South Dock.	Wall - Seaham	55.4	01/06/2018	Royal HaskoningDHV	Only inspected from cliff due to access restrictions. Fronted by areas where rubble has been tipped on seaward side.	3	>20	Detailed inspection by Seaham Harbour Dock Company.	routine
121AC901C0105C01	Eroding cliff to South of harbour within Dock Co. property. Derelict industrial land above.	Cliff / Scarp - Dawdon	575	01/06/2018	Royal HaskoningDHV	Rock armour in good condition. In the north armour is against the toe, further south there is also a bund set forward of cliffs at former wall remnants. Cliffs to rear are protected but still evidence of surface movement and slow erosion.	2	>20	2-yearly inspections. Monitor for outflanking at S end.	no repairs
121AC901C0106C01	Colliery spoil slope protecting cliffs.	Recharge - near Seahm Fleet Rock	366.9	01/06/2018	Royal HaskoningDHV	Colliery waste has now gone. Slowly eroding near vertical cliffs with little vegetation and occasional slumps in upper till.	4	11 - 20	Clear-up of debris as spoil erodes. Monitor rate of cliff recession.	routine
121AC901C0107C01	Spoil beach fronting now relict cliffs.	Recharge - north of Chourdon Point	1513	01/06/2018	Royal HaskoningDHV	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. Erosion edge close to rear of pill box on beach at S of access steps.	3	>20	Monitor rate of erosion of colliery spoil and the rate of cliff recession.	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AC901C0107C02	Hard rock cliff with overlying till. Rock platform subject to chemical weathering.	Cliff - Chourdon Point	327.8	01/06/2018	Royal HaskoningDHV	Weathering of rock platform and slow erosion of cliffs, forming caves and arches. Unstable sections with caves and arches. Rockfalls at 'point' have left notable overhangs.	3	>20	2-yearly inspections.	no repairs
121AC901C0201C01	undefended	Cliff / Scarp - Chourdon Point to Horden Point	3489	29/06/2018	Royal HaskoningDHV	Generally localised slumping in softer material with arch/cave formation in base of harder rock. In some of the bays there is eroding colliery waste protecting the cliffs although in some locations only a narrow band remains.	3	>20	Monitor rate of erosion of colliery spoil and the rate of cliff recession.	routine
121AC901C0201C02	Colliery spoil protecting backing cliffs.	Recharge - Horden Point to Blackhalls Rock	4913	29/06/2018	Royal HaskoningDHV	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. Cliff in eroding beach about 1.5m high N of Blackhall, beach ridge at S end.	3	>20	Monitor rate of erosion of colliery spoil and the rate of cliff recession.	no repairs
121AC901C0301C01	undefended	Cliff / Scarp - Blackhalls Rocks to Crimdon Caravan Park	1846	29/06/2018	Royal HaskoningDHV	Slumps in upper till evident along parts of caravan park frontage seaward of fence. Main steps path to beach closed due to cliff falls. Steps at north end also closed.	3	>20	Monitor erosion of cliff.	no repairs
121AC901C0301C02	undefended	Dunes fronted by sandy beach - south of Crimdon Caravan Park	1056	29/06/2018	Royal HaskoningDHV	Dunes and beach in front of and protecting cliffs. Dunes appear relatively stable and well vegetated.	2	>20	Monitor changes to dunes.	no repairs