Royal HaskoningDHV
Enhancing Society Together

Cell 1 Regional Coastal Monitoring Programme
Walkover Inspection Surveys 2016

North Tyneside Council

North Tyneside Council

September 2016

North Tyneside Council

Walkover Inspection Surveys 2016

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Authorised
1	0	First issue	06/09/2016	N. J. Cooper

Contents

Appendices

Disclaimer

Royal HaskoningDHV has prepared this report in accordance with the instructions of our client Scarborough Borough Council (SBC)[1] for the client's sole and specific use. Any other persons who use any information contained herein do so at their own risk. Royal HaskoningDHV has used reasonable skill, care and diligence in the interpretation of data provided to them and accepts no responsibility for the content, quality or accuracy of any Third party reports, monitoring data or further information provided either to them by SBC or, via SBC from a Third party source, for analysis under this term contract.

Data and reports collected as part of the Cell 1 Regional Coastal Monitoring Programme are available to download via the North East Coastal Observatory via the webpage: www.northeastcoastalobservatory.org.uk.

The North East Coastal Observatory does not "license" the use of images or data or sign license agreements. The North East Coastal Observatory generally has no objection to the reproduction and use of these materials (aerial photography, wave data, beach surveys, bathymetric surveys, reports), subject to the following conditions:

1. North East Coastal Observatory material may not be used to state or imply the endorsement by North East Coastal Observatory or by any North East Coastal Observatory employee of a commercial product, service, or activity, or used in any manner that might mislead.

2. North East Coastal Observatory should be acknowledged as the source of the material in any use of images and data accessed through this website, please state "Image/Data courtesy of North East Coastal Observatory". We recommend that the caption for any image and data published includes our website, so that others can locate or obtain copies when needed. We always appreciate notification of beneficial uses of images and data within your applications. This will help us continue to maintain these freely available services. Send e-mail to Robin.Siddle@scarborough.gov.uk

3. It is unlawful to falsely claim copyright or other rights in North East Coastal Observatory material.

4. North East Coastal Observatory shall in no way be liable for any costs, expenses, claims, or demands arising out of the use of North East Coastal Observatory material by a recipient or a recipient's distributees.

5. North East Coastal Observatory does not indemnify nor hold harmless users of North East Coastal Observatory material, nor release such users from copyright infringement, nor grant exclusive use rights with respect to North East Coastal Observatory material.

North East Coastal Observatory material is not protected by copyright unless noted (in associated metadata). If copyrighted, permission should be obtained from the copyright owner prior to use. If not copyrighted, North East Coastal Observatory material may be reproduced and distributed without further permission from North East Coastal Observatory.

[1] Scarborough Borough Council is acting as client on behalf of all Local Authorities within 'Coastal Cell 1'.

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.

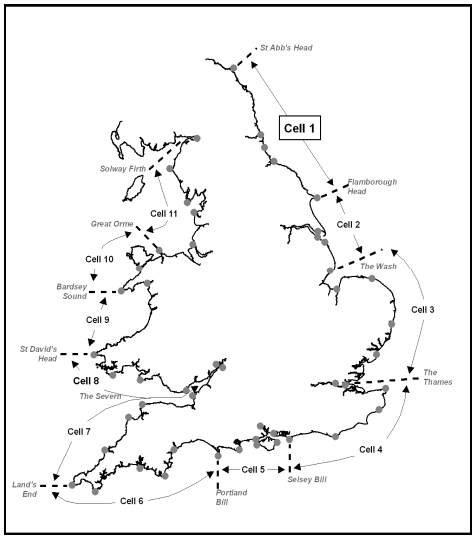


Figure 0-1 - Sediment Cells in England and Wales

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 2016** and provides a summary of the main findings from the walkover inspections of North Tyneside 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

North Tyneside Council's coastal frontage is approximately 11km in length extending from Hartley to the north bank of the River Tyne in the south, shown in **Figure 1-1**. This frontage includes approximately 52 man-made assets and 15 natural assets (67 total assets). Detailed maps showing the location of each of these assets are presented in **Appendix A**.

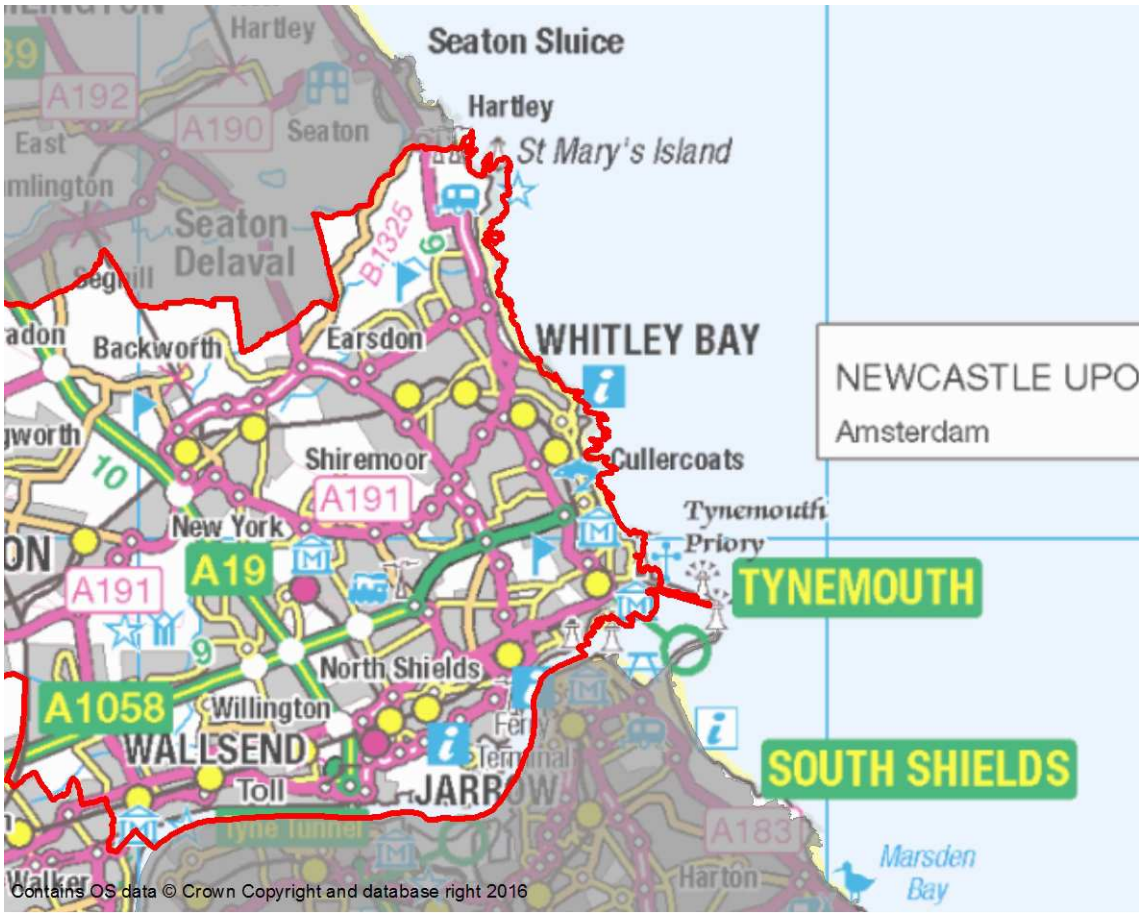


Figure 1-1: North Tyneside Council study area

1.2 Methodology

This section presents the approach taken by the asset inspectors for the North Tyneside Council coastal frontage.

The walkover inspection surveys for the North Tyneside Council frontage were undertaken on 24th June and 18th July 2016. 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. Additionally, all data from the obsolete Northumberland Coastal Group MS Access database previously used for North Tyneside coastal defence inspections from 2002 to 2010 has been imported to the SANDS database and a new asset data display form “North Tyneside Sea Defence” has been created in SANDS to allow easy viewing of the data.

2. Overview

The following significant findings were observed during the 2016 walkover inspection surveys:

- **Hartley Cove** – A local slump occurred in 2009 in the undefended cliff close to the access steps, resulting in the erection of some temporary fencing by the Council for safety purposes, but this does not appear to have worsened significantly since the initial failure event.

- **Hartley Cove to Curry's Point** – The undefended cliffs have experienced continued rockfalls and slippages.

- **St. Mary's Island** – The causeway has received a number of previous repairs but still remains heavily abraded in places. Causeway improvements are planned in the future as part of the Whitley Bay Seafront Master Plan.

- **Trinity Road Sea Wall** – The wall is well maintained but requires minor ongoing maintenance. The T-Block defences which were constructed at the southern end of the wall in 2014 to prevent outflanking are appearing to be effective at the present time.

- **Municipal Golf Course** – The undefended cliffs have experienced ongoing slumping and cut-back of the cliff top position.

- **Whitley Links Sea Wall** – The wall requires maintenance, especially at the joints between the main body and the coping, and at construction joints within the main body. Worst affected areas are typically access steps and access ramps. The entire area of promenade behind the sea wall was closed off at the time of the inspection, with construction activity ongoing by Kier to deliver part of the Whitley Bay Seafront Master Plan.

- **Central Lower Promenade** – The sea wall has suffered abrasion damage to its toe and coping, although the main brickwork section appears fair. The entire area of promenade behind the sea wall was closed off at the time of the inspection, with construction activity planned by Owen Pugh to deliver part of the Whitley Bay Seafront Master Plan. Further south, the concrete wall has suffered an ongoing loss of render and exposure of underlying reinforcement bars.

- **Southern Lower Promenade** – The repair works to the wall and promenade damaged in the December 2013 storms are holding well.

- **Brown's Bay Sea Wall** – The sea wall is in generally fair condition, although there are some gaps between the main wall and its coping, and the access ramp is in poor condition with missing lower hand railing.

- **Cullercoats Bay –** Repairs to the North Pier are holding well and following refurbishment of the South Pier it remains in very good structural condition. Previous refurbishment to the low wall around the lifeguard station and repairs to the wall fronting the Dove Marine Laboratory are both also proving to have been highly effective interventions.

- **Tynemouth North Point** – the cliffs have arches and caves at their base in the lower rock sections, with evidence of slippages in the upper softer section of cliff. On the south side of the headland, at the very northern end of Tynemouth Long Sands, there is one rock stack

which is precariously balanced and likely to topple imminently. This beach is used widely by the public and the present state of the stack presents a safety risk.

- **Tynemouth Long Sands** – The dunes are experiencing a phase of natural recovery, assisted by the Council's dune restoration programme. There is sand accretion at the toe of the dunes and evidence of embryonic vegetation growth. A new building, The View, has been constructed at the lower end of the northern access ramp to the frontage since the last inspections.

- **King Edward's Bay** – There are still considerable areas of abrasion at the toe of the sea wall and on the sloping revetment face, in places exposing the reinforcement bars. In some areas, previous render repairs to these defects are breaking-up, requiring further maintenance.

- **Sandy Goit** – the masonry walls around this headland have received some maintenance attention but in places some voids in the joints remain.

- **Riverside** – the riverside walls are in fair condition and clearly have received maintenance intervention to positive effect over time. There are however some areas of cracking and abrasion damage. The rock revetment leading towards the Fish Quay has been improved through the addition of rock armourstones at its root but there remain areas of 'thin' rock coverage and apparent 'sinking' of the sloping face which require continued observation for signs of deterioration.

3. Condition Assessment

This section provides an account of observations made on the condition of natural and built assets within North Tyneside Council's coastline, running from north to south.

3.1 Hartley Cove to Curry's Point (MU 24)

This management unit extends from Hartley Cove to Curry's Point. The northern boundary of North Tyneside's coastline is part way along Hartley Cove and the North Tyneside portion of this unit is approximately 1km in length and includes 4 assets, comprising mostly high cliffs and with occasional man-made access points.

The undefended cliffs between Hartley Cove and Curry's Point have been subject to historic rock falls and slippages in the overlying softer material. There is also evidence of recent rock falls and slippage especially between the access steps at Hartley Cove and the causeway to St. Mary's Island. This cliff top recession continues to narrow the footpath in sections necessitating the need to realign the footpath inland.

Slippages in soft material along upper cliffs (/4401C22)

Rock falls in hard material along lower cliffs (/4401C22)

One local slump in particular occurred in soft material immediately adjacent to foreshore access steps at Hartley Cove in 2009 and at this time the cliff top fencing was relocated. This cliff section does not appear to have worsened since the original slippage. The access steps are in fair condition with no significant signs of damage. As in the previous inspections, repairs to grouting between blocks and upper masonry remain good and the hand railings are in good condition

At Curry's Point, erosion of the soft earth slopes continues initiating outflanking of the north end of the rock revetment, which is in good condition.

Slippages in soft material adjacent to Hartley Cove access steps (/4401C23)

Erosion adjacent to rock revetment by St Mary's Island causeway (/4401C24)

3.2 Curry's Point to Brown's Point (MU 25)

This management unit is approximately 4.5km in length and extends from Curry's Point in the north to Brown's Point in the south encompassing St Mary's Island, Whitley Sands and Brown's Bay. This frontage includes approximately 21 assets, comprising mostly medium to high concrete and masonry seawalls with occasional lengths of high vegetated slopes and rock headlands.

The causeway to St. Mary's Island has a number of previous patch repairs and is generally in a fair overall condition. The deck is very heavily abraded and breaking-up in several places despite previous deck repairs. One notable area of undermining to the northern flank of the landward end of the causeway has been repaired but there remains one nearby section with very heavy abrasion damage. It is known that causeway improvements are planned in the future as part of the Whitley Bay Seafront Master Plan.

The buildings on St. Mary's Island are generally well protected by a variety of defences, although the low masonry wall on western side fronting access ramp still suffers from voiding caused by loss of masonry. Remedial works to the masonry on some of the outbuildings and walls was in progress at the time of the inspections. The masonry wall on north facing corner of the island is in good condition. The high masonry walls around east side of the island are well founded on the rock foreshore and remain in good overall condition.

The Trinity Road seawall is generally well founded on the rock foreshore and in good condition with no signs of movement. There is clear evidence that previous repairs have been undertaken and these mostly remain effective, although a small number of previously sealed joints need re-sealing. There are some areas of wall where minor abrasion or spalling has occurred to the concrete face and some cold joints (cracks at construction joints) are apparent, but these do not deter from the overall effectiveness of the structure. The access ladders, promenade surfacing and shallow grass earth embankment behind the wall are in good condition.

Trinity Road seawall in good overall condition, but with some minor maintenance required (/4501C04)

Trinity Road seawall in good overall condition, note the construction joints (/4501C04)

A long-standing problem of erosion, potentially leading to outflanking of the Trinity Road seawall at its southern end, has been addressed since the previous inspections by the construction of a short T-Block wall installed in late 2014. The T-Block units were fabricated by Lafarge Tarmac and installed by North Tyneside Council's framework partner ESH Group. The T-Block wall remains in 'as built' condition but future inspections should check for signs of erosion at their southern end and slippage in the cliffs above the units. .

New T-Block units (constructed in 2014) prevent outflanking at the southern end of Trinity Road seawall (/4501C04)

The undefended sea cliffs at the northern end of Whitley Sands are actively slumping, grading almost imperceptibly into more stable (but still locally active) cliffs further south. As this erosion continues, the cliff top cuts back through successive slumping failures, approaching ever closer to the public footpath. In time, this process will start to affect the seaward edge of the municipal golf course and Briardene Car Park. In fact, signs have been erected along the cliff top section of the golf course warning the public away from unstable cliffs and the cliff top path seaward of the car park has been closed off due to erosion.

Warning signs along cliff top at municipal golf course (/4501C05)

Closed cliff top footpath at Briardene car park (/4501C05)

The Walkover Inspection Survey report from 2014 reports that work began in October 2014 to build a concrete blockwork wall along this frontage, although there was no evidence of this at the time of the present inspections, perhaps because the beach levels at the toe of the cliffs were high.

At the boatyard at the north end of Whitley Sands, the sand levels were high, covering much of the wall but the visible sections were relatively poor in condition. The access ramp shows signs of abrasion and is only in fair condition. The concrete repairs to the south end of the boatyard were largely buried by sand due to high beach levels, but as with previous inspections there is evidence of terminal erosion of the cliffs at the southern end of the boatyard.

High beach levels at boatyard (/4501C05)

Erosion of the cliffs immediately south of the boatyard (/4501C05)

At the time of the inspections, there was barely any flow discharging through Briardene Burn. The rock revetment immediately to the south of the burn remains in good condition and was fronted by a high cobble berm overlying sand on the upper beach.

The Whitley Links sea wall extends in front of the Northern Promenade. The access ramp at the northern end has a few cracks and areas of spalling in the deck which would benefit from minor maintenance. The sea wall itself is in fair overall condition and several past repairs are notable. A small number of previous joint seals are re-opening and would benefit from maintenance. There is also occasional spalling or cracking in the coping wall with drainage holes which sits at the crest of the main wall. Along almost the entire length there are small open joints between the main wall and its coping wall.

Previous repairs and local open joints which would benefit from maintenance (/4501C07)

Cracked coping unit (/4501C07)

There are several sets of access steps within the wall, and in many of these locations previous repairs are holding well. However there are some access steps where cracking to the wing walls has occurred and maintenance should be undertaken. This is especially prevalent towards the south of the asset length and the single worst area is around an outfall in the wall. Around this location there are remnants of a concrete outfall across the foreshore where the concrete is heavily abraded. The main sea wall also starts to exhibit increased evidence of cracking with progression south and the entirety of this wall would benefit from maintenance.

Previous repairs and local open joints which would benefit from maintenance (/4501C07)

Cracked blocks in wing wall to access steps (/4501C07)

The rendered sections of the sea wall along the Panama Gardens frontage are in fair condition. In some locations there is clear evidence of previous repairs which are holding well, especially in terms of replaced coping units and filled cracks and joints. The wall has several shallow horizontal cracks (construction joints) but structurally appears sound. Next to this, the yellow painted concrete wall at the site of the former Boardwalk Cafe is in good condition. The exposed timber piles and undermining identified in previous inspections were not observed due to high beach levels. The entire area of promenade behind these two sea wall sections was closed off at the time

of the inspection, with construction activity ongoing by Kier to deliver part of the Whitley Bay Seafront Master Plan.

Previous repairs to rendered sea wall (/4501C08)

Yellow painted sea wall at site of former Boardwalk Cafe (/4501C09)

Along the Spanish City frontage is a steep vegetated slope protected initially by a blockwork revetment and low concrete wall. The repaired area of blockwork 2009/10 remains in good condition and the wall ties-in to a low section of rock.

The lower section of the Central Promenade is protected by various sections of sea wall. The first section comprises brickwork above a concrete base and with a concrete cope. There is extensive abrasion damage to the concrete, especially along the toe and the coping. The two short lower access ramps remain extensively abraded and cracked on both sides and at risk of becoming voided and collapsing. The concrete surfacing to the main full height access ramp is also cracking in places. The spalling, abrasion and cracking damage appears to be worst at a set of access steps from the promenade to the beach and this whole section should be rebuilt as part of future capital works associated with the Whitley Bay Seafront Master Plan. In fact, the entire area of promenade behind the sea wall was closed off at the time of the inspection, with construction activity planned by Owen Pugh to deliver part of the Master Plan.

Cracking to boat ramp (/4601C02)

Abrasion damage to wall toe and cope (/4601C02)

There is a slipway which extends to the beach in front of the southern end of the brickwork wall. This is founded over rock, but cracks are evident and sections of concrete have been re-cast. The rock base is, in places, becoming undercut.

The final section of straight concrete sea wall at the south end of Whitley Sands is generally in fair to poor condition with no signs of movement or undermining. There is, however, continued loss of the concrete render along much of the face of the wall exposing the reinforcement mesh which has corroded and been lost in many places. There is also one section of missing coping. The hand railing at the access steps is in very poor (corroded) condition or is missing and at the time of inspection a pool of water was retained at the toe of the structure.

Loss of render and exposed reinforcement mesh (/4601C03)

Missing section of cope (/4601C03)

The high curved masonry blockwork sea wall 'bullnose' adjacent to South Parade Road is in fair condition, although there is evidence of heavy staining to the face. At one location at the northern end there was a gap between the main blockwork sea wall and the upper masonry brickwork section which would benefit from sealing.

Blockwork sea wall at first 'bullnose' (/4601C04)

Gap between blockwork and masonry walls (/4601C04)

The straight section of high masonry seawall to the south is also in fair condition with no signs of movement or undermining. However, there is noticeable abrasion at the toe and lower to mid sections of the face and also noticeable horizontal gaps in the upper brickwork below the crest, as identified in the previous inspections.

High blockwork sea wall (/4601C05)

Gap between blockwork in upper section of wall (/4601C05)

To the south, the curved masonry blockwork wall ‘bullnose’ and upper sloping brickwork is generally in fair condition with no gaps observed in the lower concrete blocks. There remain two sections of missing brickwork at the south of the upper wall, although these do not appear to have significantly worsened since first identified in 2012.

Blockwork sea wall at second ‘bullnose’ (/4601C06)

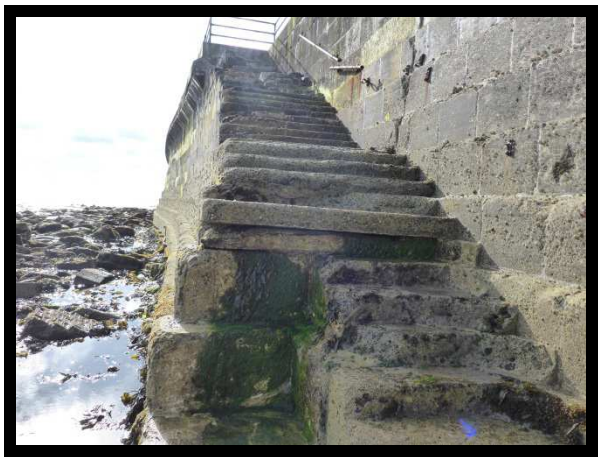
Two sections of missing brickwork (/4601C06)

The short section of concrete sea wall with intermediate promenade is in overall fair condition. However, the lower access steps to the beach remain highly abraded with no hand railing along lower section. These steps are in a dangerous condition and have been closed at the south end.

The high masonry blockwork wall with in-filled masonry arched upper section supporting Promenade Road is in fair condition although there are a few cracks around the bullnose section which could be in-filled.

To the south, a masonry blockwork fronts the lower Southern Promenade. This section of wall was damaged during the severe weather in December 2013. The coping blocks were removed by the storms resulting in damage to the adjacent surfacing and concrete bays constructed after the 2010 inspection. Other sections of asphalt surfacing and kerbing along the center section were damaged and some hand railing in the area was lost. At the time of the previous inspections, the area of damaged wall and promenade was fenced off for safety reasons. At the time of the present inspections, the repair works to the damaged area had been completed and were holding well. However, the beach access steps remain heavily abraded and are now redundant since they were closed off a few years ago.

Repaired deck following storm damage in 2013 (/4601C08)



Heavily abraded access steps – now redundant (/4601C08)

The north end of Brown's Bay is marked by hard rock cliffs fronted by an extensive rock ledge of Table Rocks, within which an outdoor bathing poor was created in the late 19th Century.

Brown's Bay has two separate sections of sea wall. In the northern part of the bay the wall is generally in fair condition, although there are some gaps between the main wall and its coping, especially at the access ramp. The ramp to the beach area is locally in poor condition and has missing hand railing. The promenade behind the northern section of sea wall has cracked deck at its northern end.

Brown's Bay northern sea wall in generally fair condition (/4601C10) (/4601C10)

Cracked promenade deck at northern end (/4601C10)

The southern wall is generally in fair condition. The hand railing along the top of the wall is in good condition. The rear wall between the Promenade and road is generally in a fair/good condition it has been well maintained with rock bolts and wire meshing. There is cracking to the access ramp and damage to hand railing.

Brown's Bay southern sea wall in generally fair condition (/4701C01)

Rock bolts and netting on slopes to rear of promenade (/4701C01)

The cliffs at Brown's Point initially are comprised of hard rock with a small capping of soft till. As reported during previous inspections the hard rock continues to show signs of fracture with evidence of several local rock falls on the foreshore and some cave formations at the base of the cliffs. South of Brown's Point the hard rock dips leaving a greater thickness of softer capping material. No significant change since previous survey was observed with several historical rock falls having led to slippages in the overlying till. Part of the garden to Bay View has been fenced off in one area of slippage, with warning signs erected.

3.3 Brown's Point to Tynemouth North Pier (MU 26)

This management unit is approximately 3.8km in length and extends from Brown's Point to Tynemouth North Pier encompassing Cullercoats Bay, Tynemouth Long Sands and Tynemouth Short Sands (also known as King Edward's Bay). This frontage includes approximately 31 assets, comprising a mix of high concrete/ masonry seawalls and piers/ breakwaters with sections of high rock cliffs and partially vegetated sand dunes.

There are three sections of sea wall extending southwards to meet the north pier of Cullercoats Bay. The first section of sea wall is a concrete recurve wall in good condition, but with abrasion evident at the toe of the access steps. The mid-section of sea wall is a concrete blockwork wall which is in overall fair condition. It is experiencing some relatively minor abrasion on its face and pigeons are nesting in several of the weep holes. A poured concrete apron at the toe is founded over bedrock and boulders and in one area the boulders have been 'plucked' from the concrete, although the wall remains sound. A set of access steps along this wall is heavily abraded and has no hand railing along the mid to lower section. Access to the steps from the promenade is now fenced-off due to the dilapidated condition.

First section of sea wall in generally good condition (/4701C04)

Middle section of sea wall in generally fair condition but with face abrasion (/4701C05)

The final section of sea wall, extending to meet the Cullercoats North Pier, is comprised of stepped blockwork lower and sloping blockwork upper wall, with an upper wave return. A concrete apron at the toe makes way to a charcoal-coloured small 'brickwork' revetment toe with a concrete base. The concrete base has broken away from the wall in one area and in one further area there is some undercutting of the toe apron, requiring remedial works. Where this wall ties-in to the pier, the blockwork main wall makes way to a short rendered section of wall. The render is breaking away and where underlying cracks are exposed there is considerable vegetation growth in the wall.

Final section of sea wall in generally fair condition, but with some defects at the toe requiring remedial attention (/4701C06)

Final section of sea wall in generally fair condition, but with some defects at the tie-in remedial attention (/4701C06)

Sections of Cullercoats North Pier have been repaired within the past few years and the repairs are holding well. The outer face of the pier has one or two slightly 'sunken' areas of revetment blocks towards the landward end but otherwise appears in good condition. The rock armour that was used to plug a breach which occurred several years ago is also in good condition. The deck has one notable area of concrete spalling but is otherwise fine and the inner face and terminal end are generally sound despite heavy abrasion and a small number of open joints.

At the north end of Cullercoats Bay the low concrete wall fronting the lifeguard station and concrete works north of the station are in a very good condition with the provision of new steps and hand railing. This shows the benefit of the refurbishment works that were undertaken at this location in the past few years. The masonry wall at the back of the wide stepped concrete apron is in fair condition with no obvious cracks or gaps.

Cullercoats North Pier in good condition following repair works (/4701C07)

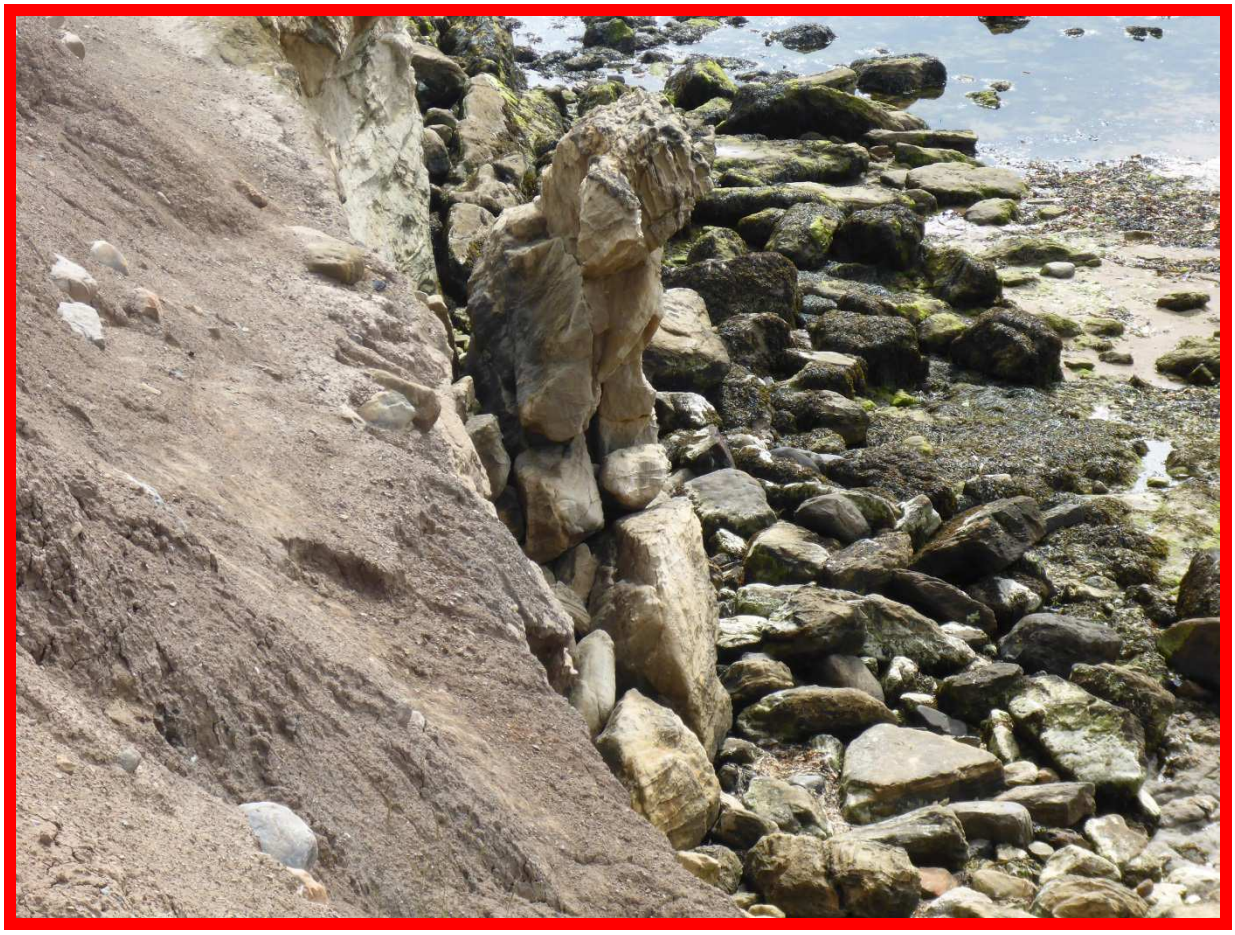
The concrete wall fronting the Dove Marine Laboratory is in fair condition with no signs of movement or undermining. Minor vertical cracks previously identified were repaired in the past few years and remain in good condition. The brickwork retaining wall to the south of Dove Maritime Laboratory is in fair condition, although there is missing mortar between some blocks at each end of the wall.

The cliffs at the centre of the bay remain stable despite extensive caves formed at the base. No significant changes are apparent since previous inspection. Both the low and high sections of masonry seawalls at the south side of Cullercoats Bay continue to be stable. The hand railing and concrete promenade surfacing appeared to be well maintained and in good condition.

The South Pier at Cullercoats Bay has recently been extensively reconstructed and is in very good condition. There are no open joints or problems at the toe of the structure. A short blockwork section of inner face at the landward end was not encased in concrete by the works and this section remains heavily abraded but appears structurally sound.

Cullercoats South Pier in very good condition following refurbishment works (/4701C15)

The cliffs around Tynemouth North Point have arches and caves at their base in the lower rock sections, with evidence of slippages in the upper softer section of cliff. On the south side of the headland, at the very northern end of Long Sands, there is one rock stack which is precariously balanced and likely to topple imminently. This beach is used widely by the public and the present state of the stack presents a safety risk.



Rock stack near Tynemouth North Point that has the potential to topple imminently (/4701C16)

The masonry wall at the north of Tynemouth Longsands is in fair overall condition but future inspections will need to pay attention to the risk of slumping and outflanking at the northern end. Also, the concrete toe is abraded and one block is undercut, requiring repair, whilst small gaps are beginning to open at the crest, where the slope becomes concreted-over.

Slumping in cliffs near northern end of masonry wall (/4701C17)

Undercutting at toe of wall (/4701C17)

The sea wall protecting the promenade and vegetated coastal slope remains in fair condition despite some abrasion of the concrete apron toe where visible above high beach levels along the northern half of the wall.

Along the sloping blockwork revetment, which is in overall fair condition despite abrasion, there is evidence of previous repairs, but some damage remains to the copings which will require future repair. To the rear of the access ramp the concrete block wall to the vegetation slope is in good condition.

A new building, The View, has been constructed at the southern end of the access ramp on the site of the former public conveniences.

The undefended dunes along the Long Sands appear to be benefiting from a programme of fencing and planting to restore the dunes. It is clear that a management strategy is in place with the construction of a new boardwalk and improved signage to manage the dunes and pedestrian movements. There is notable sand accretion at the toe of the dunes and in several places this is accompanied by embryonic vegetation growth.

New building The View at the southern end of the northern access ramp to Long Sands (/4701C19)

Dunes being restored along Long Sands (/4701C20)

Where the dunes merge seamlessly into low cliffs, there has been a shallow slippage but as the dunes re-emerge the previously eroded toe is recovering through sand accumulation and vegetation growth.

Crusoe's Cafe is protected by timber and concrete which is in a fair condition. The ramp at the foot of the Spa Car Park has been repaired within the past few years, including new blocks, surfacing and fencing, and these repairs remain effective. The concrete access steps south of the newer concrete platform remains cracked with some concrete breaking away.

The wall extending to Tynemouth Pool is generally in fair condition, with evidence of considerable re-pointing remaining effective. A small number of blocks have open joints and cracks which would benefit from minor maintenance.

Around Tynemouth Pool the wall is generally fair apart from in one areas of previous repairs to a vertical crack, which needs re-sealing. The wave return wall is very heavily abraded and cracked. The short section of wall at the southern landward tie-in is in relatively poor condition, being abraded and spalling, with extensive corrosion to the steel sheet piles.

Further repairs to an area of previous repair at the Outdoor Pool (/4701C24)

Tie-in wall between Outdoor Pool and undefended rock cliffs (/4701C25)

The cliffs around Sharpness Point remain highly fractured and have experienced several rock falls. There is also evidence of recent movement and slippage in upper soft cliffs. The access steps are heavily abraded and broken-up at the bottom end.

The sea wall that protects the Lower Promenade in King Edward's Bay has at its northern end a concrete apron tie in to the cliffs at Sharpness Point. This apron has been repaired in recent years. The main body of the wall and the revetment are generally in fair condition although there is one small void at the apron's toe and loss of revetment blocks in one area. There are still considerable areas of abrasion at the toe and on the sloping revetment face, in places exposing the reinforcement bars. In some areas, previous render repairs to these defects are breaking-up, requiring further maintenance.

Sea wall in fair condition with abrasion of the apron leading to exposed rebar (/4701C27)

Exposed rebar (/4701C27)

The curved sea wall in King Edward's Bay is in fair condition with only minor abrasion and gaps between joints. Recent works have been carried out to access slope and steps, including a new concrete ramp onto the beach which was largely buried by sand at the time of the inspections, and stone-filled gabion baskets protection.

The cliffs at Tynemouth Headland have a highly fractured rock structure and there are several areas with rock falls on the foreshore in places. This has left overhangs in the cliff face with boundary walls of Tynemouth Priory close to the cliff edge. There are recent signs of further slippage on the vegetated cliff slopes to the bay and in one area the rock netting has come away with a section of failed cliff.

The high arched retaining walls extending along a short length close to the northern side of the landward end of the North Pier remain in a fair condition. The short section of cliff north of the pier remains in fair condition.

3.4 Tynemouth North Pier to Mussel Scarp (MU 27)

This management unit is approximately 1.7km in length and extends from Tynemouth North Pier in the north to Mussel Scarp in the south, encompassing Prior's Haven and The Knotts Flats. This frontage includes approximately 11 assets, comprising mostly man-made defences including the 1.7km long Tynemouth North Pier and various other seawalls and revetments.

The North Pier was only inspected from a distance because at the time of the inspections the access cut was closed, preventing access to the pier by members of the public, because maintenance work by the Port of Tyne was ongoing. It appears in generally good condition, except for notable abrasion on the crest wall, and is pro-actively maintained. The presence of a fair number of masonry blocks stored on the ramp and deck of the pier and a large crane suggests that the maintenance activity towards the seaward end of the pier involved replacement of damaged blocks.

North Pier appears in good overall condition and is well maintained (/4801C01)

Areas of previous repairs at toe (/4801C01)

The masonry revetment at Prior's Haven remains in good condition although there is one area of slightly 'sunken' blocks near the landward end which will need continued observation. The sandy bay backed with a coastal slope within Prior's Haven also remains in good condition. Whilst the rock headland at Freestone Point is highly fractured it also remains in good condition, with no signs of recent rock falls.

The masonry and concrete arched seawall has bricks missing and there are signs of cracking and missing mortar in joints. The adjacent masonry wall with a sloping concrete revetment at Sandy Goit has been subject to repair works in recent years but there still voids in the joints in places.

To the eastern end of riverside walls the section immediately west of Sandy Goit is a masonry retaining wall. Whilst cracks and spalling have been repaired in recent years, the slope at the intersection of this wall and the riverside walls is slumping above the wall.

The riverside wall commences with a concrete panel sloping revetment with a concrete toe wall and concrete recurved wall at the crest. The overall condition of this structure is fair, with occasional cracked concrete panels.

The adjacent section of the sea wall is generally also in fair condition and leads into a rock revetment which runs along to the Fish Quay. Despite previous repairs, including the addition of new rock armourstones at the intersection of the rock revetment and the adjacent sea wall, there remain several 'sunken' sections of the rock revetment towards the upstream end.

The short section of pitched stone revetment extending to the jetty downstream of the Fish Quay was also in generally good condition. Rock protection to the end of the pitched stone revetment is in good condition.

4. Comparison with Previous Assessment

The previous formal assessment across the whole study frontage was undertaken in August 2014.

Since that time it is notable that several areas have benefited from ongoing maintenance or more substantial repairs. Most evidently, the promenade and wall crest at Whitley Bay's Southern Lower Promenade have been repaired and these works are holding well.

One new capital scheme has been introduced at the southern end of Trinity Road sea wall (in late 2014), to reduce the risk of outflanking of the wall. This is currently proving to be effective.

Several areas of promenade are currently undergoing construction works as part of the Whitley Bay Seafront Master Plan. As part of these works, opportunities should be taken to maintain or improve the sea walls and in some areas access steps to the beach at the same time.

Area of Whitley Bay lower promenade closed-off awaiting redevelopment as part of Seafront Master Plan

Area of Whitley Bay upper promenade near Spanish City already redeveloped as part of Seafront Master Plan

In one area around Tynemouth North Point erosion has led to the formation of a rock stack which is largely detached from the surrounding headland and is somewhat precarious in its form. It is possible that this stack may topple.

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.

Tynemouth North Pier was only observed from a distance because the access gate to the pier deck was closed to the public due to ongoing maintenance work by the Port of Tyne.

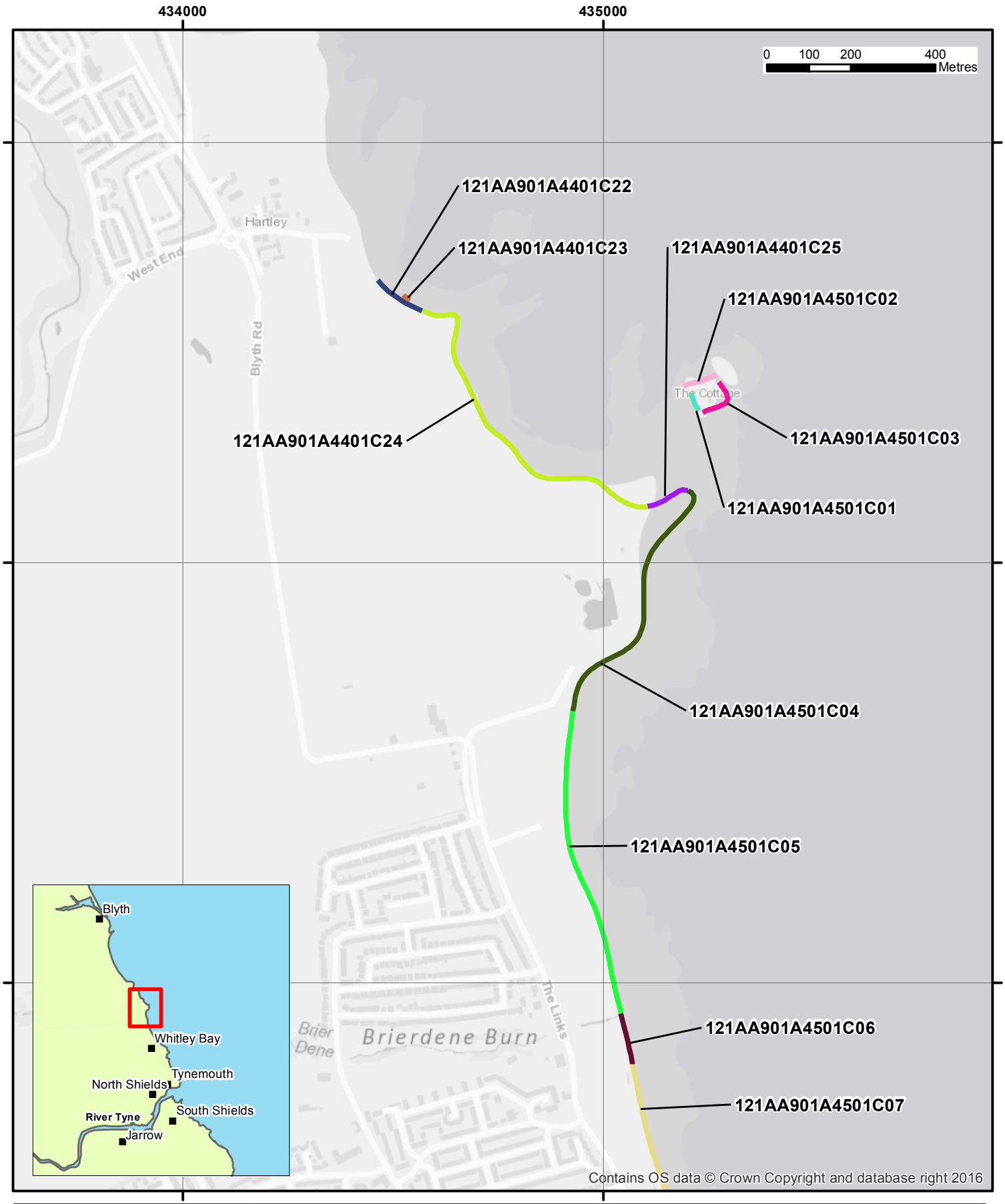
6. Conclusions and Recommended Actions

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



Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 1

North Tyneside Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

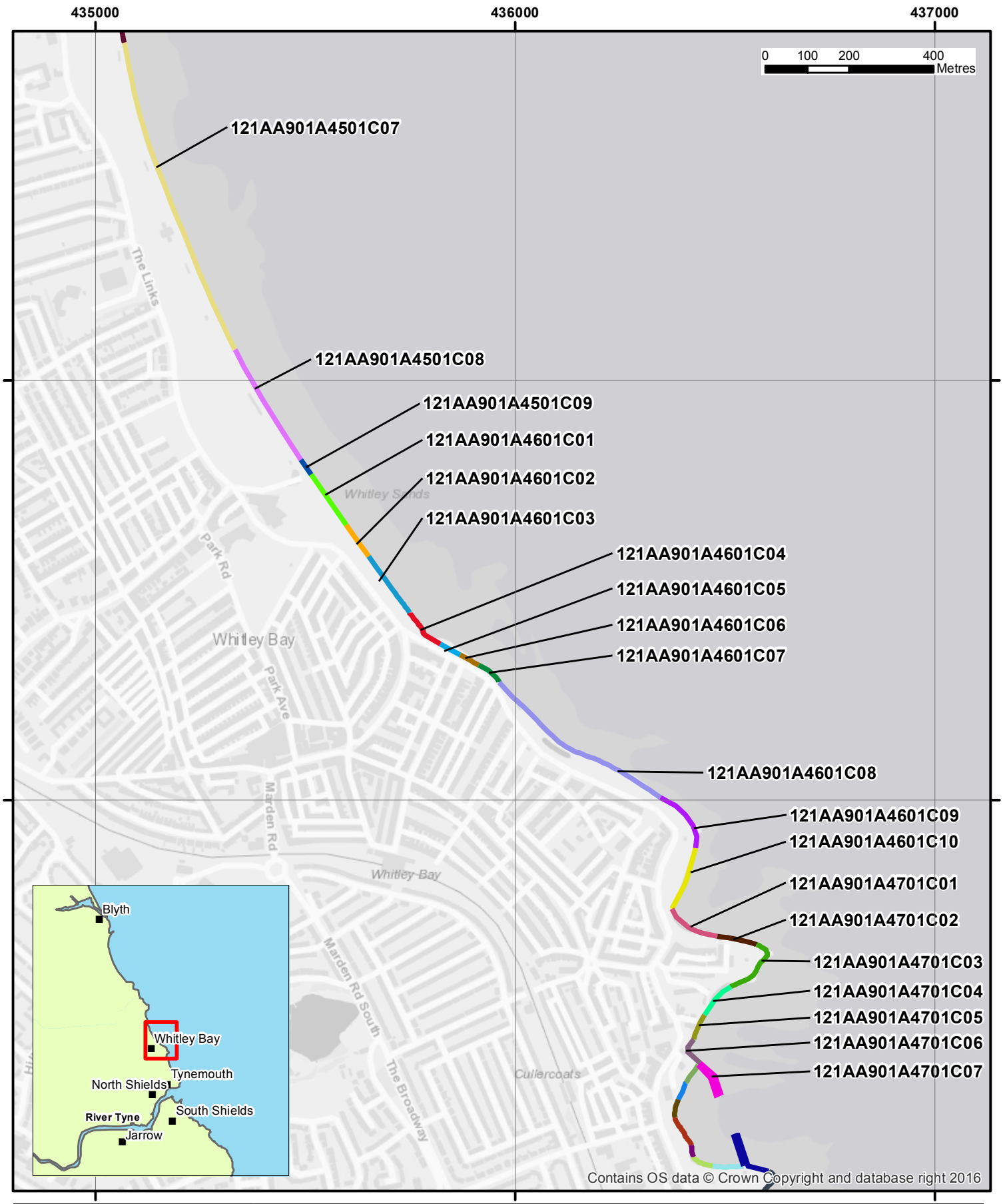
Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

WATER
Royal HaskoningDHV
Marlborough House
Marlborough Crescent
Newcastle upon Tyne
NE1 4EE

Tel: +44 (0)191 211 1300
Fax: +44 (0)191 211 1313
www.royalhaskoning.com

Royal HaskoningDHV
Enhancing Society Together



Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 2

North Tyneside Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

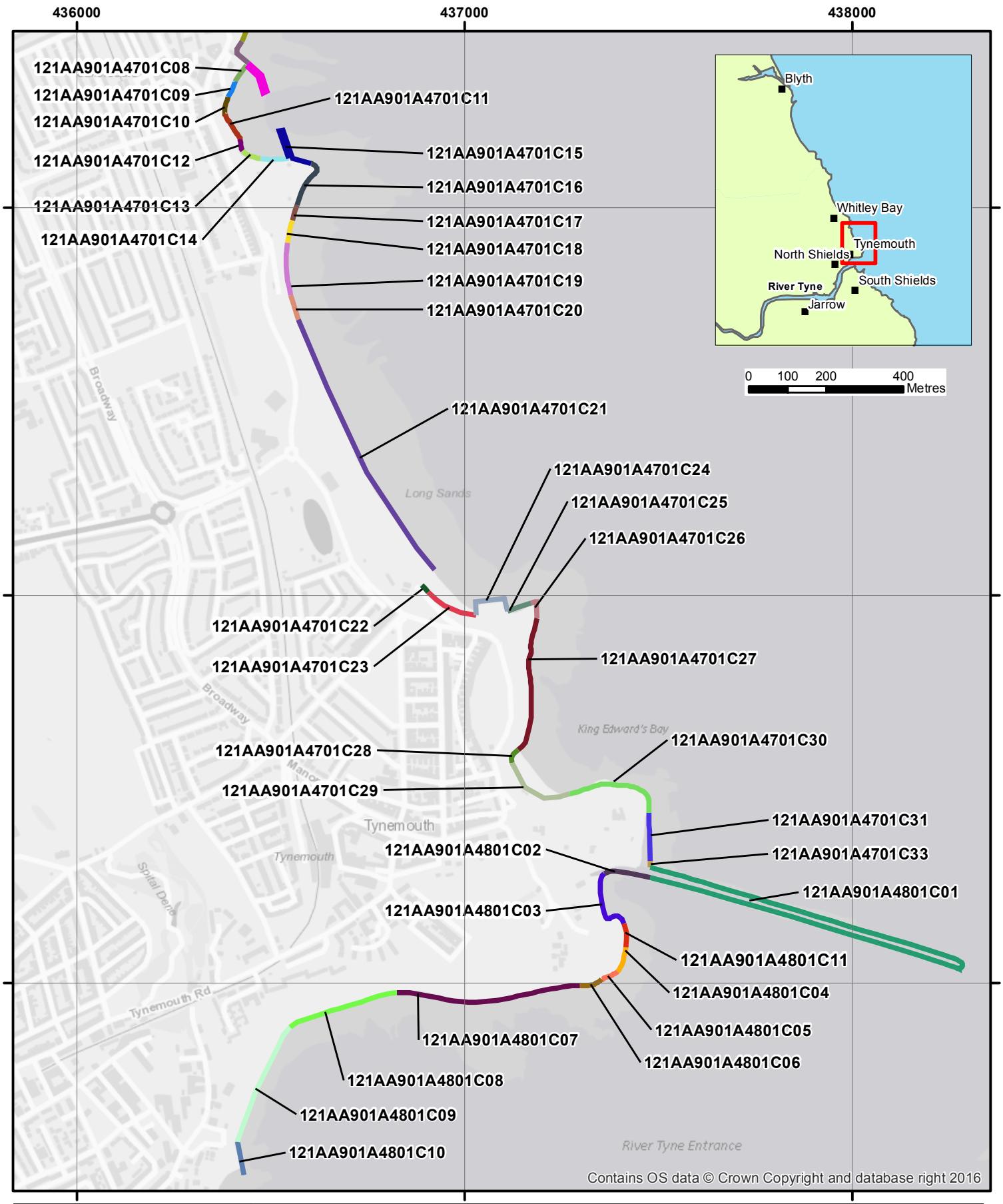
Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

WATER
Royal HaskoningDHV
Marlborough House
Marlborough Crescent
Newcastle upon Tyne
NE1 4EE

Tel: +44 (0)191 211 1300
Fax: +44 (0)191 211 1313
www.royalhaskoning.com

Royal HaskoningDHV
Enhancing Society Together



Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 3

North Tyneside Council Frontage

Asset Inspection Report

Drawing Scale 1:15,000 at A4

Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

WATER
Royal HaskoningDHV
Marlborough House
Marlborough Crescent
Newcastle upon Tyne
NE1 4EE

Tel: +44 (0)191 211 1300
Fax: +44 (0)191 211 1313
www.royalhaskoning.com

Royal HaskoningDHV
Enhancing Society Together

Appendix B
Asset Condition & Recommendations

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4401C22	Steep rock cliff fronted by a scree slope and rocky foreshore.	Cliff - The Steadings	129	24/06/2016	Royal HaskoningDHV	No significant change since last survey. Evidence of localised rock falls and localised relict slippage in the upper soft cliff material. No properties at risk.	3	>20	Monitor erosion.	no repairs
121AA901A4401C23	Sea wall with access steps to the beach. The sea wall is founded on rock.	Sea Wall - Hartley	20	24/06/2016	Royal HaskoningDHV	Steps generally in good condition. Minor abrasion and minor cracks to lower steps, abrasion and some loss of facing concrete to outer wall. Upper masonry retaining walls appears stable, repointing in good condition. Hand railing in good condition.	3	>20	None.	routine
121AA901A4401C24	Rock cliff forming headland fronted by a scree slope and sandy beach.	Cliff - Hatley	816	24/06/2016	Royal HaskoningDHV	Evidence of rockfalls, relict slippage of soft material on upper slopes. Some slips close to cliff-path, path fenced-off, re-routed where necessary. Towards southern end of the bay, slip frequency increases.	3	11 - 20	Re-route footpath as erosion occurs.	routine
121AA901A4401C25	Concrete ramp to St Marys Island Causeway with rock armour protection protecting earth embankment	Embankment - St Marys Island Causeway	105.4	24/06/2016	Royal HaskoningDHV	Revetment in good condition, no signs of settlement of displacement of stones. Erosion and cliffing of soft cliffs at north end, onset of outflanking. Concrete ramp in fair condition, minor undermining but no settlement, minor cracks and abrasion.	3	6 - 10	Fill undermining, repair cracks. Causeway improvement works planned.	routine
121AA901A4501C02	Straight masonry wall fronting lighthouse. Some isolated concrete and low sloped masonry stablisation works in front of the straight masonry wall.	Sea Wall - St Mary's Island	83.7	24/06/2016	Royal HaskoningDHV	Masonry wall in good condition, no signs of movement. No cracking to blocks, no loss of mortar.	2	6 - 10	Monitor and maintenance.	routine
121AA901A4501C03	Large block Masonry wall fronted by a concrete apron and rocky foreshore	Sea Wall - St Mary's Island	115.5	24/06/2016	Royal HaskoningDHV	Masonry wall generally in good condition, well founded on rock foreshore. No signs of movement or undermining. No deterioration since the 2006 survey.	2	>20	Monitor and maintenance.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4501C01	Low masonry wall fronting residential properties. Some sections of the wall are ungrouted. The wall is founded to rock and is fronted by a rocky foreshore.	Sea Wall - St Mary's Island	45.6	24/06/2016	Royal HaskoningDHV	Continue to monitor and repair gaps as necessary.	2	6 - 10	Monitor and maintenance.	routine
121AA901A4501C04	Concrete Seawall fronted by a rocky/sandy beach	Sea Wall - Whitley Sands	645.6	24/06/2016	Royal HaskoningDHV	Seawall in good condition. No signs of settlement or undermining. Minor cracks, loss of sealant, localised spalling at joints. Beach levels relatively good, some abrasion evident. New oufflanking defence (T-Blocks) at southern end.	2	>20	Replace joint sealant.	routine
121AA901A4501C05	Eroding vegetated clay cliff fronted by a wide sandy beach. Short section of rock revetment at the tie in with Defence Code 45/05/01	Cliff - Whitley Sands	740.7	18/07/2016	Royal HaskoningDHV	Soft cliffs actively slumping along entire frontage. Masonry wall fronting small boatyard repaired but vulnerable to undermining. Sand and boulder beach levels relatively low.	3	11 - 20	Monitor and realign footpath.	routine
121AA901A4501C06	Rock revetment on the southern bank of the Brierdene Burn with rock gabions and timber jetty on the northern bank.	Revetment - Whitley Sands	123.7	18/07/2016	Royal HaskoningDHV	Revetment in good condition. Some displacement of stones at toe. No signs of damage along crest. Erosion of river bank close to revetment toe.	2	>20	Monitor erosion of river bank.	routine
121AA901A4501C07	Concrete block seawall with stepped access to a wide sandy beach in front.	Sea Wall - Whitley Bay Links	779.7	18/07/2016	Royal HaskoningDHV	Wall in fair condition. Some localised abrasion, gaps between blocks and cracking. Gaps below crest blocks in many places. Surfacing in good condition. Many repairs evident, some crest blocks replaced.	3	>20	Repair cracks, abrasion and spalling. Repoint below cope. Monitor cracks.	routine
121AA901A4501C08	Concrete Seawall with grassy bank behind fronted by a sandy beach	Sea Wall - Whitley Sands	305.4	18/07/2016	Royal HaskoningDHV	Wall in fair condition. Previous repairs to cracks still good. Coping badly cracked at one location. Minor crack/ spalling in wall at southern end exposing mesh rebar. Beach access steps badly damaged. Some drainage holes blocked.	3	11 - 20	Fill cracks, joints and repair abrasion damage.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4501C09		Sea Wall - Whitley Bay	43.4	18/07/2016	Royal HaskoningDHV	Seawall in fair condition, no undermining evident. Minor abrasion, no significant cracks apparent. Beach levels relatively high, timber piled toe just buried. Hand railings in good condition.	3	6 - 10	Monitor beach levels and condition of timber piled toe when exposed.	routine
121AA901A4601C01	Concrete seawall with patchy revetment on top of the wall. The wall fronts a steep vegetated slope with stepped access to the road above. The wall is fronted by a wide sandy beach.	Sea Wall - Whitely Bay	146.2	18/07/2016	Royal HaskoningDHV	Revetment and concrete toe wall in fair/ good condition. No signs of settlement or undermining. Some cracks/ spalling of wall at north end and steps. Some gaps between masonry blocks, recently replaced blocks evident. No erosion to slope.	3	11 - 20	Monitor.	routine
121AA901A4601C02	Concrete / rendered blockwork near vertical seawall fronted by a wide sandy beach.	Sea Wall	91.7	18/07/2016	Royal HaskoningDHV	Wall in poor/ fair condition. No movement or undermining evident. Concrete toe heavily abraded and spalled, loss of facing concrete. Cracks access ramp, steps, capping beam. New brickwork columns and infill panels in good condition. Railings good.	3	11 - 20	Repair cracks and areas of spalling/ abrasion.	routine
121AA901A4601C03	Concrete seawall with gunite render facing fronted by a sandy beach	Sea Wall - Whitley Sands	165.5	18/07/2016	Royal HaskoningDHV	Wall in poor/fair condition. No signs of movement or undermining. Continued loss of facing render exposing mesh rebar. Filling to horizontal cracks at south end good. Handrailing generally fair, missing on access steps. Some paving breaking up.	3	>20	Repairs to render. Fill cracks.	routine
121AA901A4601C04	Curved concrete block seawall with masonry crest. Sandy beach fronting the wall	Sea Wall - Whitley Sands	108.2	18/07/2016	Royal HaskoningDHV	Blockwork wall generally in good condition, no signs of movement or undermining. Heavy calcium staining. No gaps between blocks. Upper masonry wall appears sound. Beach levels relatively low, concrete toe beam exposed.	3	>20	None.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4601C05	Straight concrete blockwork wall fronted by a sandy beach.	Sea Wall - Whitley Sands	54.1	18/07/2016	Royal HaskoningDHV	Wall generally in fair/good condition. No signs of movement or undermining, heavy leaching/ staining. Some horizontal joint gaps evident in concrete blocks near crest. Handrailing in good condition. Beach levels relatively low exposing concrete toe.	3	>20	Fill gaps between blocks.	routine
121AA901A4601C06	Curved concrete block wall with a masonry upper wall/crest.	Sea Wall - Whitley Sands	50.4	18/07/2016	Royal HaskoningDHV	Wall generally in good condition. No gaps in lower concrete blocks, some missing masonry at south end. Some leaching/ staining in upper masonry wall. Beach levels relatively low, onset of undermining at toe. Hand railing in good condition.	3	>20	Repair areas of damaged masonry.	routine
121AA901A4601C07	Concrete wall with a concrete apron to rock. Retaining wall behind promenade to support the road	Sea Wall - Whitley Sands	65.2	18/07/2016	Royal HaskoningDHV	Wall generally in fair condition. No signs of movement or undermining of toe apron. Significant abrasion to access steps, missing hand railing. Gaps in joints and spalling along crest blocks. Terrace surface poor. Upper wall good condition.	3	11 - 20	Repair damaged concrete at crest, monitor undermining at toe.	routine
121AA901A4601C08	Vertical concrete block wall with stepped toe detail and full height arched openings in the wall in northern end. Promenade and road above along majority of its length.	Sea Wall - Whitley Sands	475.5	18/07/2016	Royal HaskoningDHV	Wall subject to damage caused during December2013 storms. Repairs undertaken to coping and promenade.	5	1 - 5	Monitor and maintenance.	routine
121AA901A4601C09	Rock cliff with vegetated slope at the crest. Low masonry running on top of the cliff.	Cliff - Brown's Bay	159.7	18/07/2016	Royal HaskoningDHV	No change evident since last survey. Cliffs appear to be stable, little evidence of erosion, well sheltered by the fronting rock platform of Table Rocks. Access steps and masonry wall in good condition.	2	>20	None.	no repairs
121AA901A4601C10	Concrete blockwork wall with wide promenade backed by a coastal slope	Sea Wall - Brown's Bay	156.2	18/07/2016	Royal HaskoningDHV	Wall in generally good condition, with some vertical gaps, concrete abrasion and localised spalling. Also some gaps between the wall and coping wall. Access ramp in poor condition with localised repairs required.	2	>20	Fill gaps in joints. Patching to spalling concrete. Repairs to south stairs.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4701C01	Concrete recurved wall with high, near vertical masonry walls or rock-bolted natural cliffs behind with road and housing above. The wall is fronted by a concrete apron.	Sea Wall - Brown's Bay	132	18/07/2016	Royal HaskoningDHV	No significant change since last survey. Generally the wall is in fair condition. Some abrasion evident at the base of the wall and the toe of the ramp down to the beach. Undermining at the toe in one location, but not worsened since 2010.	3	>20	Monitor undermining at toe, repair cracking/ abrasion to steps.	routine
121AA901A4701C02	Rock cliff	Cliff - Brown's Point	94.5	18/07/2016	Royal HaskoningDHV	No access as private property. Lower rock highly fractured, several local rock falls leaving overhangs. Some concrete fill evident. Upper soft cliff eroding along most of frontage, back to boundary fence. Property at risk.	3	>20	Monitor rock falls/ erosion.	routine
121AA901A4701C03	Rock cliff with BT radio centre and mast to cliff top	Cliff - Brown's Point	157.6	18/07/2016	Royal HaskoningDHV	No access to private property. Previous evidence of three erosion events, involving rock falls and associated slippages in the overlaying soft material. Three other individual large rocks have fallen, with no associated slippages. Property at risk.	3	>20	Monitor rockfalls/ erosion.	routine
121AA901A4701C04	Concrete block recurve wall to coastal slope and houses above	Sea Wall	93.7	18/07/2016	Royal HaskoningDHV	Good condition; abrasion evident at toe of steps.	2	>20	Continue monitoring.	routine
121AA901A4701C05	Concrete blockwork seawall fronted by a concrete apron	Sea Wall - Cullercoats	63.9	18/07/2016	Royal HaskoningDHV	Sea wall generally in good condition but apron being undermined and localised spalling. As previously reported there has been deterioration of apron which in places is now breaking up. Access steps are not usable, but closed off at top.	2	>20	Maintenance at toe apron.	routine
121AA901A4701C06	Stepped concrete block wall with masonry wall above and apron below	Sea Wall	73.8	18/07/2016	Royal HaskoningDHV	Wall is in fair condition. Some undermining of and damage to apron. Minor abrasion to blockwork in one area. Noted that concrete repair works have been undertaken to pier and adjacent walls / bridge to marine observatory.	3	11 - 20	Maintenance at toe apron.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4701C07	Masonry breakwater with sloped outer face and vertical inner face that acts to protect the bay.	Breakwater - North Pier, Cullercoats	185	18/07/2016	Royal HaskoningDHV	Area of rock armour protection to seaward side of pier has been improved. Within masonry pier there remains localised areas where joints need to be maintained between courses.	2	>20	Continue monitoring.	routine
121AA901A4701C08	Wide concrete steps with low masonry wall behind, retaining the access ramp between the beach and the road and houses above.	Sea Wall - Cullercoats Bay	52	18/07/2016	Royal HaskoningDHV	Masonry wall in good condition, no signs of movement or cracks. Slight undermining at corner wall at north end, minor abrasion. Wide concrete steps in good condition, new concrete edge beam in very good condition. Beach levels healthy, toe of ramp abraded.	2	>20	Continue monitoring.	routine
121AA901A4701C09	Concrete walls to RNLI and Dave Marine Lab significantly protected by breakwater	Sea Wall - Cullercoats Bay	43.1	18/07/2016	Royal HaskoningDHV	Concrete wall in good condition. No signs of movement or undermining. Repairs to vertical cracks appear good.	2	>20	Monitor beach levels.	routine
121AA901A4701C10	Steep rock cliff with a masonry wall above fronted by a sandy beach	Cliff	44.7	18/07/2016	Royal HaskoningDHV	Masonry wall and the vegetated top to the cliffs appear to be stable. Some loss of mortar between brickwork at crest.	2	11 - 20	Replace mortar.	routine
121AA901A4701C11	Soft rock cliffs in centre of bay with numerous caves throughout.	Cliff - Cullercoats Bay	76.6	18/07/2016	Royal HaskoningDHV	No evidence of slippage or rock falls or erosion of upper vegetated slopes.	2	>20	None.	no repairs
121AA901A4701C12	Concrete wall to promenade and slope with main coast road and houses above	Sea Wall - Cullercoats Bay	30	18/07/2016	Royal HaskoningDHV	Wall in good condition, no signs of movement or undermining. No significant gaps between blocks. Hand railing and surfacing in good condition.	2	>20	None.	no repairs
121AA901A4701C13	Masonry stone wall with lower section to the north and transition to seaward end, protected by the breakwater.	Sea Wall - Cullercoats Bay	51.9	18/07/2016	Royal HaskoningDHV	Wall in good condition.	2	>20	Repair cracks at crest, monitor for further movement.	routine
121AA901A4701C14	Concrete revetment to vegetated cliff. Fronted by a concrete apron with concrete stairs adjacent.	Revetment - Cullercoats Bay	72.9	18/07/2016	Royal HaskoningDHV	No change evident since previous inspection. Abrasion of seaward face of apron creating an overhang of the concrete revetment.	3	>20	Improve facing of the apron	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4701C15	Masonry pier which acts as a breakwater to protect the bay. The masonry pier has a sloped outer face and vertical inner face with a concrete crest slab and concrete facing to all surfaces.	Breakwater - South Pier, Cullercoats	210.8	18/07/2016	Royal HaskoningDHV	Extensive repair works to pier since 2010 inspection.	1	>20	none.	no repairs
121AA901A4701C16	Rock cliffs with earth slope above - on headland south of southern pier.	Cliff - Tynemouth North Point	130.4	18/07/2016	Royal HaskoningDHV	Areas of local rockfall. Elsewhere occasional local slumping in upper soft cliff. Evidence of recent slumping of cliff face at southern end.One rock stack is pre??? and likely to topple.	3	>20	Consider risk assessment relating to precarious rock stack.	urgent
121AA901A4701C17	Short section of masonry wall protecting access road and continuity of defence with a masonry/concrete revetment above the wall	Sea Wall - Long Sands	39.9	18/07/2016	Royal HaskoningDHV	Generally good condition. Evidence of repairs to masonry wall. Concrete toe apron locally broken up.	2	11 - 20	Repair concrete toe apron.	routine
121AA901A4701C18	Concrete seawall with promenade and vegetated slope above. Concrete apron to main wall.	Sea Wall - Long Sands	60.1	18/07/2016	Royal HaskoningDHV	The wall is in fair condition but there is abrasion of the concrete apron toe along the northern half of the wall. At times of low beach levels this is exposing underlying Coal Measures, but not seen on present inspection.	2	11 - 20	Consider toe works to prevent undermining.	routine
121AA901A4701C19	Concrete block revetment to promenade and grass slope to access road and properties behind. Masonry splash wall to the rear of the promenade.	Revetment - Long Sands	135.5	18/07/2016	Royal HaskoningDHV	Revetment blockwork in fair condition. Some cracks at the joint between the sloped revetment and the vertical wall.	2	11 - 20	Repair coping, localised repointing.	routine
121AA901A4701C20	Concrete block wall to vegetated slope to road and properties	Sea Wall - Long Sands	66.8	18/07/2016	Royal HaskoningDHV	Good condition wall. No outflanking evident.	2	11 - 20	Continue monitoring.	routine
121AA901A4701C21	Partially vegetated sand dune with wide sandy beach in front, and backed by Grand Parade.	Dunes - Long Sands	737	18/07/2016	Royal HaskoningDHV	Generally relatively stable dunes which have a gentle slope and are well vegetated. Beach management and maintenance plan in place with new fencing, planting and management of pedestrian movements. Works include recently constructed timber boardwalk.	2	>20	Monitor new beach management	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4701C22	Masonry revetment and concrete stairs to access slipway. Retaining wall fronting coastal slope behind slipway. Road and houses above. New concrete wall/platform adjacent to stairs on beach.	Revetment - Longs Sands	25	18/07/2016	Royal HaskoningDHV	Repairs made to previous damage. Some cracks remain in concrete steps.	2	>20	Fill cracks.	routine
121AA901A4701C23	Masonry wall with curved concrete wave deflector. Promenade above with masonry wall retaining coastal slope.	Sea Wall - Long Sands	140.2	18/07/2016	Royal HaskoningDHV	The wall is generally in a good condition. Some mortar missing/ cracking between joints. Cracking in wall at southern access steps.	2	>20	Repoint joints in masonry seawall	routine
121AA901A4701C26	Rock cliff headland with earth slopes above.	Cliff - Sharpness Point	57.9	18/07/2016	Royal HaskoningDHV	Rock structure is highly fractured leading to rockfalls and slumps in upper softer material. Evidence of recent movement.	3	11 - 20	Consider further risk assessment if slumping progresses. Repair access steps.	urgent
121AA901A4701C25	Brick wall with a concrete crest with a masonry wall behind fronting a vegetated slope. Steel sheet piled structure in front of brick wall.	Sea Wall - Sharpness Point	64.6	18/07/2016	Royal HaskoningDHV	The lower portion of the wall is still in poor condition showing signs of abrasion. The apron is cantilevered off the foreshore. (Not seen on present inspection due to high beach levels.)	4	6 - 10	Repair/ patch lower portion of brick wall.	routine
121AA901A4701C24	Concrete wall to disused swimming pool and then coastal slope to road.	Sea Wall - Long Sands	143.9	18/07/2016	Royal HaskoningDHV	Some cracks and abrasion evident. Spalling of previous patching. Defects with interior coping wall (rust-staining, abrasion, spalling)	3	11 - 20	Patch up previous repairs/infill remaining cracks. Patch up local defects.	routine
121AA901A4701C27	Concrete block revetment with a concrete re-curve coping protecting promenade and coastal slope behind.	Revetment - King Edwards Bay	349.3	18/07/2016	Royal HaskoningDHV	Concrete repairs undertaken to northern end at Sharpness Point. Abrasion to concrete toe with exposed rebar. Cracking in revetment and coping. Upper slope sign of cracking/ movement, as previously reported.	3	11 - 20	Repair abrasion on toe and face. Monitor slope movement.	routine
121AA901A4701C28	Curved masonry seawall with promenade and coastal slope above.	Sea Wall - King Edwards Bay	42.4	18/07/2016	Royal HaskoningDHV	The wall is in a fair condition, with only minor abrasion and minor gaps between joints. Abrasion/ cracking in coping stones on steps to the beach.	3	>20	Repoint joints, filling of cracks. Repair undermining.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4701C29	Concrete wall to narrow promenade below coastal slope to road and properties.	Sea Wall - King Edwards Bay	195.1	18/07/2016	Royal HaskoningDHV	Wall and concrete ramp to beach repaired and protected with gabion baskets.	3	6 - 10	Monitor	no repairs
121AA901A4701C30	Vegetated steep rock slope fronted by a sandy beach	Cliff - King Edwards Bay	256.3	18/07/2016	Royal HaskoningDHV	Some falls of large-sized rock leaving overhangs in cliff face. Evidence of recent movement and slippage in cliffs.	3	>20	Consider further risk assessment if slumping progresses.	routine
121AA901A4701C31	High arched retaining wall structure to upper cliff. Concrete toe protection structure added in 2003.	Cliff - Tynemouth Castle	124.3	18/07/2016	Royal HaskoningDHV	Fair condition. Some signs of movement of upper soft cliffs	3	11 - 20	Consider further risk assessment if slumping progresses.	routine
121AA901A4701C32	Concrete cliff stability works fronted by a rocky beach	Cliff	47.5	18/07/2016	Royal HaskoningDHV	Fair condition.	3	11 - 20	Continue monitoring.	no repairs
121AA901A4701C33	Small section of wall to cliff at root of North pier. Wall fronted by a concrete apron and shingle beach.	Sea Wall - Tynemouth	16.3	18/07/2016	Royal HaskoningDHV	Minor cracking in wall.	2	11 - 20	Continue monitoring.	routine
121AA901A4801C01	Masonry breakwater that provides protection to areas of North and South tyneside. Concrete apron fronting the breakwater	Breakwater - North Pier, Tynemouth	1690	18/07/2016	Royal HaskoningDHV	Breakwater in good condition, evidence of minor abrasion at toe. Cosmetic appearance of decking poor (cracking/abrasion) but no obvious structural defects in visible sections above water-line. Evidence of repairs in progress at time of inspection (Pier closed).	2	>20	Continue monitoring and maintaining.	routine
121AA901A4801C03	Vegetated slope fronted by a sandy beach.	Coastal slope - Prior's Haven	177.2	18/07/2016	Royal HaskoningDHV	Generally good condition, although some signs of slipping to upper slopes.	2	>20	Consider further risk assessment if slumping progresses.	urgent
121AA901A4801C02	Masonry revetment	Revetment - Priors Haven	120.5	18/07/2016	Royal HaskoningDHV	The revetment appears to be in good condition.	2	>20	Continue monitoring.	no repairs
121AA901A4801C11	Hard rock cliff and fronting rock platform.	Sea Wall - Freestone Point	61.8	18/07/2016	Royal HaskoningDHV	No significant change since last survey. Highly fractured cliff.	2	>20	Continue monitoring.	routine
121AA901A4801C04	Short section of masonry and concrete arched seawall with vegetated slope behind fronted by a rocky foreshore.	Sea Wall - Freestone Point	66.2	18/07/2016	Royal HaskoningDHV	The arched wall is generally in a fair condition. The wall is fronted by a protective foreshore.	3	>20	Ongoing maintenance.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4801C05	Masonry wall fronting vegetated slope to coast guard station .	Sea Wall - Sandy Goit	46.4	18/07/2016	Royal HaskoningDHV	There are blocks missing at the toe, leading to undermining and voiding. Signs of cracking and missing mortar in joints.	3	11 - 20	Ongoing maintenance.	routine
121AA901A4801C06	Masonry seawall with concrete revetment supporting a low earth slope above.	Sea Wall - Sandy Goit	60.1	18/07/2016	Royal HaskoningDHV	The wall and revetment are failing, with extensive cracking in concrete revetment. Low earth slope is eroding in places.	3	6 - 10	Monitor cracks.	routine
121AA901A4801C07	Concrete recurved wall with promenade and slope to properties behind. Precast concrete panel revetment fronted by a concrete toe.	Revetment - Black Maiden	478.2	18/07/2016	Royal HaskoningDHV	Structurally sound but some abrasion and cracking of concrete in revetment panels, and some gaps between panels in local sections. Localised cracked revetment panels. Abrasion to toe beam.	2	>20	Repair gaps and cracks in revetment panels.	routine
121AA901A4801C08	Concrete wall with paved promenade to coastal slope. Concrete revetment fronted by a concrete apron.	Revetment - The Flats	290.5	18/07/2016	Royal HaskoningDHV	Abrasion damage to the sea wall and localised cracks to coping.	2	11 - 20	Ongoing maintenance.	routine
121AA901A4801C09	Pattern placed rock revetment fronting promenade	Revetment - Mussel Scarp	325.8	18/07/2016	Royal HaskoningDHV	Revetment in relatively poor condition despite previous repairs. Some areas of 'thin' coverage and some areas appear 'sunken'.	4	6 - 10	Consider improvement works.	routine
121AA901A4801C10	Grouted stone revetment with road and promenade behind	Revetment - Low Lights	87.6	18/07/2016	Royal HaskoningDHV	Revetment generally in sound condition.	2	6 - 10	Continue monitoring.	routine